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

NOV 0 9 2005

05-TOD-084

Mr. E. S. Aromi, President
and Chief Executive Officer
CH2M HILL Hanford Group, Inc.
Richland, Washington 99352

Dear Mr. Aromi:

CONTRACT NO. DE-AC27-99RL14047 – INTEGRATED SAFETY MANAGEMENT SYSTEM REVIEW OF THE TANK FARM CONTRACTOR – FINAL REPORT

The U.S. Department of Energy (DOE), Office of River Protection (ORP) conducted an annual review of the Tank Farm Contractor's (TFC) Integrated Safety Management System (ISMS) from October 10, 2005, through October 14, 2005. The final report is attached.

The report concludes that the CH2M HILL Hanford Group, Inc. (CH2M HILL) ISMS is implemented and, with some exceptions, is effective. The information from this report will be substantially used in ORP's ISMS declaration to DOE Headquarters.

The review team identified 4 Strengths, 4 Findings, and 6 Observations. CH2M HILL is expected to formally address the Findings identified in the attached report, and to make appropriate improvements to processes, procedures, and practices based on the observations provided. CH2M HILL has made significant improvements to ISM over the past year. Improvements made as a result of the Findings and Observations identified in this report will further strengthen the ISMS.

If you have any questions, please contact me, or your staff may contact Shirley J. Olinger, Deputy Manager, (509) 372-3062.

Sincerely,

Roy J. Schepens
Manager

TOD:MCB

Attachment

cc: See page 2

cc w/attach:
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Attachment
05-TOD-084

Integrated Safety Management System Review of the Tank Farm Contractor

Final Report

(71 pages total,
including coversheet)

Integrated Safety Management System (ISMS)

Review of the Tank Farm Contractor (TFC)

FINAL REPORT

October 2005

Shirley J. Olinger
Team Leader

Report Approval

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Keith Smith, Observer
Hanford Advisory Board

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Attachments

List of Acronyms

ALARACT	As Low As Reasonably Achievable Control Technology
AMS	Articulated Mast System
CFR	Code of Federal Regulations
CRAD	Criteria Review and Approach Document
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-HQ	DOE Headquarters
DSA	Documented Safety Analysis
ECN	Engineering Change Notice
ESRB	Executive Safety Review Board
ESTARS	Electronic Suspense Tracking and Routing System
FY	Fiscal Year
HAB	Hanford Advisory Board
HAMTC	Hanford Atomic Metal Trades Council
HDBK	Handbook
HRT	Hazard Review Template
IH	Industrial Hygiene
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JHA	Job Hazard Analysis
MOP	Management Observation Program
OA	DOE Office of Independent Oversight and Performance Assurance
OEL	Occupational Exposure Limit
ORP	DOE Office of River Protection
PER	Problem Evaluation Request
PISA	Potential Inadequacy in the Documented Safety Analysis
SAR	Supplied Air Respirator
SBCRB	Safety Basis Change Review Board
SER	Safety Evaluation Report
SJHA	Standing Job Hazard Analysis
SME	Subject Matter Expert
TFC	Tank Farm Contractor
TSR	Technical Safety Requirements
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
WFO	Waste Feed Operations

Executive Summary

The objective of this Integrated Safety Management System (ISMS) annual review was to provide a U.S. Department of Energy (DOE) Office of River Protection (ORP) evaluation of the Tank Farm Contractor's (TFC) ISM program and processes. This review will be used to support the line management annual ISMS declaration to DOE Headquarters (DOE-HQ). The ISMS Team evaluated improvements made to ISM since the ISMS Improvement Validation Reviews (conducted in October 2004 and March 2005), determined the effectiveness of corrective actions (including actions taken in response to the October 2004 and March 2005 reviews), reviewed the TFC work planning/control process, evaluated the TFC ISM self-assessment program, evaluated feedback and improvement processes, and evaluated progress towards resolving the Tank Farm vapor issues. The review was performed on October 10-14, 2005.

The ISMS Team performed and implementation review of the TFC ISMS using criteria developed from a variety of sources, including DOE-HDBK-3027-99, *Integrated Safety Management Systems (ISMS) Verification Team Leader's Handbook*, the DOE Implementation Plan in response to Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-1, and draft work planning/control Criteria Review and Approach Documents (CRAD) developed as part of the aforementioned Implementation Plan.

The review was led by the ORP Deputy Manager, assisted by four independent senior technical personnel, one senior ORP Facility Representative, a member of the Hanford Atomic Trades Council (HAMTC), and an experienced technical editor, and observed by a member of the Hanford Advisory Board (HAB). The review resulted in the identification of 4 Strengths, 4 Findings, and 6 Observations which are summarized as follows:

Strengths

- The use of the Executive Safety Review Board (ESRB) is an excellent forum for senior management to understand the health of their safety management programs and communicate expectations regarding those programs. (FI-2-S-1)

- The Tank Farm Industrial Hygiene (IH) database provides an excellent tool to make data-driven IH hazard control determinations. (HAZ-1-S-1)

- The Safety Basis Change Review Board (SBCRB) provides an effective forum for integrated analysis and preparation of Documented Safety Analysis (DSA) changes. (SB-1-S-1)

- Lead craft personnel in Waste Feed Operations (WFO) took an active role in work execution, significantly improving efficiency. (WP-4-S-1)

Findings

- Hazards analysis and work control processes associated with the C-200 Series Tank Retrieval Project were less than adequate. (WP-1-F-1)

- A vulnerability exists in that some Unreviewed Safety Question (USQ) evaluations are prepared without consideration of ORP-approved safety basis amendments that have not yet been implemented by the TFC. (SB-2-F-1)

- Several organizations were not conducting final pre-job walkdowns with the work team, contrary to the work control procedure. (WP-4-F-1)

- Workers performing insulation removal during performance of work order CLO-WO-05-001346 did not follow Job Hazard Analysis (JHA) controls for the use of sharp objects. (WP-4-F-2)

Observations

- The bases for excluding TFC work packages from the Unreviewed Safety Question (USQ) screening process should be documented by Categorical Exclusion. (SB-2-O-1)

- The Job Hazard Analysis (JHA) process does not require the evaluation of upset conditions and "what-if" scenarios. (WP-2-O-1)

- Corrective actions of some recent events to prevent reoccurrence appear weak. (FI-2-O-1)

- The Lessons Learned Program and work control feedback process require improvement. (WP-4-O-1)

- Some work instructions and operating procedures reviewed did not adhere to Conduct of Operations principles for ensuring clear, unambiguous direction. (WP-3-O-1)

- Some closure packages were documented as closed when, in some cases, evidence in the work package or field suggested otherwise. (FI-2-O-2)

Conclusion

The ISMS Team determined that the TFC ISMS is implemented and, with some exceptions, is effective. Although the TFC has made significant progress since the October 2004 ISM Improvement Validation Review, additional improvements are warranted to address deficiencies identified in this report and to fully address previously identified Findings from the October 2004 and March 2005 reviews. Of particular note, the ISMS Team identified hazard analysis and work control process deficiencies associated with the C-200 Series Tank Retrieval Project. In this case, the TFC failed to conduct a detailed project hazard analysis that included all phases of the project in an integrated manner, including the hazards involved in system disconnect/reconnect when moving the retrieval system from tank-to-tank.

1.0 INTRODUCTION

This is the U.S. Department of Energy (DOE) Office of River Protection (ORP) annual review of the Tank Farm Contractor's (TFC) Integrated Safety Management System (ISMS). The review was conducted on October 10-14, 2005.

2.0 PURPOSE AND SCOPE

The purpose of this review was to conduct an annual line management evaluation of the TFC ISMS to support the DOE line management annual ISMS declaration to DOE Headquarters (DOE-HQ). The ISMS Team evaluated improvements made to Integrated Safety Management (ISM) since the ISMS Improvement Validation Reviews (conducted in October 2004 and March 2005), determined the effectiveness of corrective actions (including actions taken in response to the October 2004 and March 2005 reviews), reviewed the TFC work planning/control process, evaluate the TFC ISM self-assessment program, evaluated feedback and improvement processes, and evaluated progress towards resolving the Tank Farm vapor issues.

The objectives of this review of the TFC ISMS were to:

1) Identify the progress and improvements in the TFC ISMS since the March 2005 ISMS Improvement Validation Review;

2) Evaluate the TFC's work control/planning processes to determine the effectiveness of work planning and work control processes at the activity level. This was accomplished through the use of draft criteria being considered by DOE-HQ for complex-wide implementation of Commitment 5.3.2 of the DOE *Implementation Plan to Improve Oversight of Nuclear Operations*, June 2005, developed in response to the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-1; and

3) Evaluate the TFC's ISM performance relative to High Reliability Principles and attributes provided in Appendix F ("Requisite Environment for Effective Implementation of Integrated Safety Management (ISM) Systems") to the DOE *Implementation Plan to Improve Oversight of Nuclear Operations*, June 2005, developed in response to the DNFSB Recommendation 2004-1.

3.0 TFC ISMS BACKGROUND

In August 2004, ORP performed a focused review of the TFC ISMS as part of the annual ISM declaration. As a result of that review, the team recommended that an ISM Improvement Validation Review be performed to examine the effectiveness of corrective actions taken in response to recent radiological and operational incidents.

In October 2004 (report issued in November 2004), the pre-implementation portion of the ISM Improvement Validation Review was performed. The pre-implementation effort identified eight Findings. The ISMS Team concluded that the TFC had identified required improvements for ISM and had established a path forward that could be successful provided that significant management team in-field presence and involvement and worker buy-in were in place to achieve improvements.

In March 2005, the post-implementation portion of the ISM Improvement Validation Review was performed. The post-implementation review identified no Findings and concluded that a year or more of continued deliberate management attention will be required to assure sustained improvement and culture change. The team recommended deliberate management attention to continuing improvement in the following areas: implementing task specific job hazard analysis (JHA); improving assurance of readiness to proceed with work; improving

implementation of Conduct of Operations expectation; improving Problem Evaluation Request (PER) closure effectiveness, timeliness, and feedback; and increasing sufficiency of engineering and management oversight of work performance.

4.0 APPROACH AND DELIVERABLES

This review was performed consistent with the guidance of DOE Handbook (HDBK) 3027-99, *Integrated Safety Management Systems (ISMS) Verification Team Leader's Handbook*, and the draft work planning/control criteria being considered by DOE-HQ for complex-wide implementation of Commitment 5.3.2 in DOE Implementation Plan for DNFSB Recommendation 2004-1, DOE *Implementation Plan to Improve Oversight of Nuclear Operations*.

Major elements of the review, consistent with the guidance of DOE-HDBK-3027-99 and the DOE Implementation Plan for DNFSB Recommendation 2004-1, included the following:

- Preparation of a Review Plan, including the review scope, schedule, and Criteria Review and Approach Documents (CRADs)
- Selection of the team
- Pre-review activities
- Fieldwork activities
- Development of a Final Report (including the CRADs as Attachment A)

4.1 Development of the Review Plan and CRADs

The team member qualifications, protocols, review plan, and other aspects of the task were prepared and implemented in accordance with the appropriate guidance of DOE-HDBK-3027-99. CRADs were developed using various sources, including a tailored set of objectives and criteria from those established in DOE-HDBK-3027-99 and using DOE *Implementation Plan to Improve Oversight of Nuclear Operations*. The approach established within each CRAD was tailored to specific focus areas, based on the special considerations for the review.

4.2 Selection of the Team

An experienced and capable team was assembled to perform this review. The ISMS Team was comprised of senior ORP management and staff, and personnel from outside the ORP organization. These personnel provided an experienced perspective on the effectiveness of TFC ISM improvements, effectiveness of completed corrective actions, and overall ISMS performance. The team members were selected based on a number of criteria, including the following:

- Prior ISMS verification experience;
- Prior assessment experience;
- Knowledge of and experience with DOE nuclear facility operations;
- Independence; and
- ORP management recommendations.

Biographical summaries for each of the ISMS Team members are included in Attachment B.

4.3 Pre-Review Activities

The following activities were conducted prior to the review:

- Finalized the CRADs and Review Plan
- Identified interview candidates and activities to observe during the fieldwork portion of the review
- Determined which team members will support the various CRAD lines of inquiry
- Performed preliminary document reviews

4.4 Fieldwork Activities

Fieldwork activities began on October 10, 2005, and lasted one week. The ISMS Team observed field activities, attended various meetings and review boards, interviewed selected personnel, and reviewed documents.

The ISMS Team held an entrance meeting with TFC management on October 10, 2005, where the TFC provided a briefing on the programs relative to the CRADs in the review plan. During the period of on-site work, the ISMS Team held daily meetings to review and discuss observations from the day's activities and identify areas requiring follow-up. In addition, the Team Leader provided daily status briefings to senior TFC management on the Team's activities, observations, and emerging issues. Both strengths and weaknesses were noted. Potential issues and weaknesses were verified and validated with the TFC as they were identified throughout the course of the assessment. A formal closeout meeting was held on October 14, 2005, with the senior TFC management and ORP line management.

5.0 REVIEW RESULTS

The on-site review was led by the ORP Deputy Manager, assisted by four independent senior technical personnel, one senior ORP Facility Representative, a member of the Hanford Atomic Trades Council (HAMTC), an experienced technical editor, and observed by a member of the Hanford Advisory Board (HAB). During the review, 213 interviews were conducted, 197 documents were reviewed, and 29 facility visits were made to observe work activities and work planning meetings.

The Strengths, Findings, and Observations identified by the Team are listed in Sections 5.1, 5.2, and 5.3.

The following provides a summary of each objective and criteria reviewed by the Team. Detailed information for each objective can be found in Attachment A to this Report.

Objective: Safety Basis SB-1

The TFC has established policies and procedures to identify, analyze, and categorize nuclear and non-nuclear safety and health hazards. A comprehensive set of Environment, Safety and Health (ES&H) standards has been identified and is incorporated into the TFC contract. A procedure is in place for the TFC to periodically review new and revised DOE directives, standards, laws, and regulations for applicability to the work conducted under the contract and to flow down the requirements to the appropriate procedures. The Safety Basis Change Review Board (SBCRB) was determined to be an effective forum for integrated analysis and preparations of Documented Safety Analysis (DSA) changes (**Strength SB-1-S-1**).

Objective: Safety Basis SB-2

Nuclear safety procedures satisfactorily implement DOE expectations for nuclear safety management, facility safety and categorization, and DSAs. The TFC has established an integrated process to develop and establish nuclear safety basis controls to mitigate the identified hazards for the facility and process activities. This process includes the preparation, review, approval, implementation, and maintenance of safety basis documentation for Hazard Category 2 and 3 nuclear facilities managed by the TFC and it adequately implements Title 10 *Code of Federal Regulations* Part 830 and Subpart B. The TFC process for management of DSA changes has been effectively implemented but does exhibit some weaknesses. In a number of instances the ISMS Team observed that the lag between ORP approval of a DSA amendment and TFC implementation was excessive, sometimes exceeding several months. As a result, a vulnerability exists in that some Unreviewed Safety Question (USQ) evaluations are prepared without consideration of ORP-approved safety basis amendments that have not yet been implemented by the TFC (**Finding SB-2-F-1**). Additionally, the ISMS Team found that the TFC does not conduct USQ screens of work packages; however, Engineering Change Notices (ECN) are USQ screened. The ISMS Team believes that the basis for excluding TFC work packages from the USQ screening process should be documented by Categorical Exclusion (**Observation SB-2-O-1**). Hazards and accident analysis are provided in the DSA, and the controls to mitigate the hazards are identified in the Technical Safety Requirements (TSR). Once approved, operations authorization for TFC nuclear facilities is established through the Authorization Agreement with DOE.

Objective: Safety Basis SB-3

The TFC has established procedures to ensure that subject matter experts conducting identification of hazards and controls are trained and qualified commensurate with their responsibilities. The ISMS Team found environmental, safety and health professionals, nuclear safety analysts, field work supervisors, and Tank Farm workers properly trained, knowledgeable, and qualified.

Objective: Work Planning WP-1

The TFC work control procedure provides adequate instruction to line management, work planners, subject matter experts, and workers for the development of work instructions. A vulnerability was identified in the TFC's work control process in that the work control procedure did not include formal turnover requirements for field work supervisors during work activities; the contractor agreed and planned to add this requirement to the procedure. The ISMS Team determined that the C-200 Series Tank Retrieval Projects' hazard analysis focus on initial equipment installation and operation, and did not thoroughly evaluate hazards during equipment disconnect, movement to other tanks, reconnect and restart (**Finding WP-1-F-1**). Specifically, the TFC project hazard analysis did not evaluate hazards throughout the project life-cycle, including detailed analysis of the hazards associated with equipment disconnect/reconnect when moving the retrieval system from tank-to-tank. In addition, the TFC identified and the ISMS Team noted that turnover between the different operating and field crews from phase-to-phase was not completed, the work crew performing retrieval operations operated the system outside of normal parameters, work instructions were unclear, and the crews performing the connection and disconnection work did not have an adequate understanding of system operation. The TFC had previously identified a vulnerability in the significant number of Standing Job Hazard Analyses (SJHA); the ISMS Team agreed with the TFC approach to reduce this number and focus more on the use of job-specific JHAs.

Objective: Work Planning WP-2

The TFC has established work planning and JHA processes that include worker involvement that evaluates common hazards to the worker. However, upset conditions and "what-if" scenarios that may be associated with specific work activities are not evaluated (**Observation WP-2-O-1**). Coupled with the decision to exclude work packages not including ECNs from the USQ screening process, this weakness may result in non-conservative hazard analysis and control identification (**Observation SB-2-O-1**).

Objective: Work Planning WP-3

The ISMS Team determined that work control documents and operating procedures were developed in a manner to enable safe and efficient completion of work activities. Work steps were properly sequenced, contained appropriate technical and administrative requirements, and were generally written in a clear and concise manner. Some deficiencies were identified with work documents related to vague or ambiguous notes and work steps, and one deficiency was found in relation to incorporation of JHA control placement in the work instructions (**Observation WP-3-O-1**).

Objective: Work Planning WP-4

Workers and supervisors performed work in accordance with approved work control documents. In the Waste Feed Operations (WFO) organization, lead craft personnel took an active role in work planning and work execution, significantly improving efficiency (**Strength WP-4-S-1**). Some workers were involved in work planning. The ISMS Team determined that the final walkdown by the work team, prior to the pre-job brief, was not being conducted by some of the TFC organizations, contrary to the work control procedure (**Finding WP-4-F-1**). This was considered by TFC management to be a crucial element of the work control process. Additionally, one instance was identified where a control identified in the JHA was not implemented in the field (**Finding WP-4-F-2**). This indicated that more attention is needed in the implementation of JHA controls. The ISMS Team observed good feedback between participants during post-job reviews. However, the TFC needs to ensure that these valuable improvement mechanisms are consistently applied (**Observation WP-4-O-1**).

Objective: Work Planning WP-5

The TFC has established and implemented procedures to ensure line management and assessment personnel perform timely oversight of the work planning and control process and resulting work packages.

Objective: Hazards Identification HAZ-1

The TFC has made much progress in developing an industrial hygiene (IH) technical basis and a comprehensive program to support final resolution of the tank vapor issues. The technical basis is being updated to reflect some recent sampling and monitoring data. The Tank Farm IH database provides an excellent tool to make data-driven IH hazard control determinations (**Strength HAZ-1-S-1**). The TFC has a project management plan to incrementally (by A-prefix Tank Farms first, then S, and finally C Tank Farms) move away from the default, mandatory use of supplied-air respirators for entry into any tank farm. The project plan will allow IH controls to be tailored to the actual hazards present in the work activity. The TFC project management plan should be updated, as necessary, to reflect actual status of accomplishing the plan milestones, and include the plan/milestones as part of the ISMS fiscal year (FY) 2006 annual performance objectives, measures, and commitments. This is an important safety and health initiative that can reduce the increase in injuries resulting from the use of supplied-air respirators and provide long-term resolution of the tank vapor issue; the TFC should continue to place emphasis on this important initiative.

Objective: Feedback and Improvement FI-1

The TFC has developed procedures for the conduct of formal self-assessment activities. The TFC conducted over 60 formal management assessments and hundreds of Management Observation Program (MOP) surveillances during FY05 in order to evaluate their performance at all levels, including the determination of TFC ISMS effectiveness. A FY06 assessment schedule has been developed showing approximately 10-12 management assessments. While there are fewer scheduled formal management assessments, they will cut across and more fully evaluate all line and support organizations, provide cross-training opportunities between organizational lines, and promote a more consistent application of TFC policies and procedures.

Objective: Feedback and Improvement FI-2

Through interviews and review of procedures and assessment documentation, the TFC was observed to actively and systematically monitor performance through multiple means, including management field observations, performance indicators and trend data, self-assessments, and independent assessments. The ISMS Team observed the Executive Safety Review Board (ESRB) and determined that it is an excellent forum for senior management to understand the health of their safety management programs (**Strength FI-2-S-1**). Assessment planning was observed to be comprehensive and implemented. Also, assessment findings and key observations from assessments were, in most cases, identified to be carried through into the Corrective Action Program as PERs. The Team did find that some closure packages contained inadequate documentation for PER/issue closure (**Observation FI-2-O-2**). Additionally, the ISMS Team determined that corrective actions for some recent events to prevent recurrence appeared weak (**Observation FI-2-O-1**).

All levels of the organization were observed to be aware of the various means available to report problems. Management encouraged workers to identify problems, regardless of their severity, and actively sought such feedback from the workforce. Management was observed to use lessons learned from both inside and outside their facility and organization to continuously improve performance and safety (including communication of results of external oversight reviews). However, some deficiencies were identified with the use of Lessons Learned Program and worker feedback in the work control process.

5.1 Strengths

- The use of the Executive Safety Review Board (ESRB) is an excellent forum for senior management to understand the health of their safety management programs and communicate expectations regarding those programs. (FI-2-S-1)

- The Tank Farm Industrial Hygiene (IH) database provides an excellent tool to make data-driven IH hazard control determinations. (HAZ-1-S-1)

- The Safety Basis Change Review Board (SBCRB) provides an effective forum for integrated analysis and preparation of Documented Safety Analysis (DSA) changes. (SB-1-S-1)

- Lead craft personnel in Waste Feed Operations (WFO) took an active role in work execution, significantly improving efficiency. (WP-4-S-1)

5.2 Findings

- Hazards analysis and work control processes associated with the C-200 Series Tank Retrieval Project were less than adequate. (WP-1-F-1)
- A vulnerability exists in that some Unreviewed Safety Question (USQ) evaluations are prepared without consideration of ORP approved safety basis amendments that have not yet been implemented by the TFC. (SB-2-F-1)
- Several organizations were not conducting final pre-job walkdowns with the work team, contrary to the work control procedure. (WP-4-F-1)
- Workers performing insulation removal during performance of work order CLO-WO-05-001346 did not follow Job Hazard Analysis (JHA) controls for the use of sharp objects. (WP-4-F-2)

5.3 Observations

- The bases for excluding TFC work packages from the Unreviewed Safety Question (USQ) screening process should be documented by Categorical Exclusion. (SB-2-O-1)
- The Job Hazard Analysis (JHA) process does not require the evaluation of upset conditions and "what-if" scenarios. (WP-2-O-1)
- Corrective actions of some recent events to prevent reoccurrence appear weak. (FI-2-O-1)
- The Lessons Learned Program and work control feedback process require improvement. (WP-4-O-1)
- Some work instructions and operating procedures reviewed did not adhere to Conduct of Operations principles for ensuring clear, unambiguous direction. (WP-3-O-1)
- Some closure packages were documented as closed when, in some cases, evidence in the work package or field suggested otherwise. (FI-2-O-2)

6.0 OVERALL RESULTS OF THE GENERAL REVIEW OBJECTIVES

The ISMS Team determined that the TFC ISMS is implemented and, with some exceptions, is effective. Although the TFC has made significant progress since the October 2004 ISM Improvement Validation Review, additional improvements are warranted to address deficiencies identified in this report and to fully address previously identified findings from the October 2004 and March 2005 reviews. Of particular note, the ISMS Team identified hazard analysis and work control process deficiencies associated with the C-200 Series Tank Retrieval Project. In this case, the TFC failed to conduct a detailed project hazard analysis that included all phases of the project in an integrated manner, including the hazards involved in system disconnect/reconnect when moving the retrieval system from tank-to-tank. The following summary is provided for the review objectives:

ISM Improvements: As previously mentioned, the TFC has made substantial improvements to ISM over the past year. Based on the results of this review, additional improvements are needed to strengthen existing programs and to reinforce existing management expectations for ISMS implementation and improvement. Safety basis processes and procedures satisfactorily implement DOE expectations for nuclear safety management, facility safety and categorization, and DSAs. Some opportunities for improvement were noted by the Team.

Work Control/Planning Processes: The TFC has a well-defined work control and planning process. Over the past year, significant changes have been made to the work control procedure. Continued emphasis of existing requirements, routine self-assessments of implementation, and program improvements indicated in this Report will ensure a consistent and effective work control program. Contractor management should continue their effort to improve worker involvement, including in the area of work planning and control.

High Reliability Principles: The ISMS Team used some of the attributes contained in the "High Reliability Principles for Effective Safety Management System Implementation," contained in Appendix F to the DOE Implementation Plan for DNFSB Recommendation 2004-1, in the development of the criteria for this Review. Clearly, the TFC exhibited a number of these highly reliable organizational attributes. Specific examples of those attributes observed (on a limited basis due to the short period of this review) are provided below (objective numbers from this Report are provided for each attribute):

- Operational anomalies, even small ones, get prompt attention and evaluation, which allows early detection of problems so necessary action is taken before problems grow. (FI-2)
- Workers are systematic and rigorous in making decisions that support safe, reliable operations. Workers are expected and authorized to take conservative actions when faced with unexpected or uncertain conditions. Leaders support and reinforce conservative decisions. (WP-4)
- Candid dialogue, debate, and healthy skepticism are encouraged when safety issues are being evaluated. Differing professional opinions are welcomed and respected. Robust discussion and constructive conflict are recognized as a natural result of diversity in expertise and experience. (FI-2)
- Workers are involved in job planning. Workers follow approved procedures. Workers at any level can stop unsafe work or work during unexpected conditions. (WP-4)
- Workers are actively involved in identification, planning, and improvement of work and work practices. (WP-4)
- Workers promptly report errors and incidents. Workers feel safe from reprisal in reporting errors and incidents; workers offer suggestions for improvement and innovative solutions. (WP-4)
- Performance Assurance includes a diversity of independent "fresh looks" to ensure completeness and to avoid complacency. A mix of internal and external oversight reviews reflects an integrated and balanced approach. This balance is periodically reviewed and adjusted as needed. (FI-2)
- Linkages with other performance monitoring inputs are examined, high-quality causal analyses are conducted, as needed, and corrective actions are tracked to closure with effectiveness verified to prevent future occurrences. (FI-2)
- Senior executives are periodically briefed on results of oversight group activities to gain insight into organizational performance and to direct needed corrective actions. (FI-2)
- The organization actively and systematically monitors performance through multiple means, including leader walkarounds, issue reporting, performance indicators, trend analysis, benchmarking, industry experience reviews, self-assessments, and performance assessments. Feedback from various means is integrated to create a full understanding. (FI-2)

Attachment A – Criteria and Review Approach Documents

Review Form – SB-1

Objective

SB-1: The full spectrum of hazards associated with the work are identified, analyzed, and categorized. Those individuals responsible for the analysis of the environmental, health and safety, and worker protection hazards are integrated with personnel assigned to analyze the processes.

Criteria

1. Contractor procedures require identification, analysis, and categorization of all hazards associated with the site. The resulting hazards are utilized in selection of standards included in the contract as requirements of applicable Federal, State, and local regulations and the requirements of DOE directives (List B). Hazards that are considered include nuclear, chemical, industrial or others applicable to the work being considered. Contractor procedures for analysis of hazards reflect accepted rigor and methodology.

2. Procedures and/or mechanisms are in place and utilized by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined, complete, and meets DOE expectations. The execution of these mechanisms ensures that personnel responsible for the analysis of environmental, health and safety concerns are integrated with those assigned to analyze the hazards for the facility or activity. These mechanisms ensure direction and approval from line management and integration of the requirements.

3. Procedures and/or mechanisms are in place and utilized by personnel that describe the interfaces, roles, and responsibilities of those personnel who identify and analyze the hazards of the scope of work. Personnel assigned to accomplish those roles are competent to execute those responsibilities.

Documents Reviewed

- RPP-13033, *Tank Farms Documented Safety Analysis*
- HNF-SD-WM-TSR-006, *Tank Farm Facility Technical Safety Requirements*
- HNF-15279, 242A, *Evaporator Technical safety Requirements*
- HNF-12125 222-S, *Laboratory Technical Safety Requirements*
- DE-AC27-99RL14047, *Tank Farm Contract*
- RPP-15194, *River Protection Project Authorization Agreement between the U.S. Department of Energy, Office of River Protection and CH2M HILL Hanford Group, Inc.*
- TFC-PLN-32, S*afety Management Programs*
- RPP-MP-003, *ISMS System Description*
- HNF-SD-MP-SRID-001, *Tank Farm Contractor Standards/Requirements Identification Document*
- HNF-IP-1266, *Tank Farms Operations Administrative Controls*
- TFC-CHARTER-33, *Safety Basis Change review Board Charter,*
- TFC-ENG-SB-C-03, *Unreviewed Safety Question Process*
- TFC-BSM-TQ-STD-09, *Unreviewed Safety Question Qualification Process*
- TFC-OPS-OPER-C-24, *Occurrence Reporting and Processing of Operations Information*
- 03-TED-110, *DOE Safety Evaluation Report for the Tank Farms Unreviewed Safety Question Process Categorical Exclusions for the Documented Safety Analysis*
- FY-2003-CH2M-I-0155, *CH2M HILL Hanford Group, Inc. Assessment report for Executive-Level Independent Assessment of the Implementation of the Documented Safety Analysis,* dated August/September 2003

- DOE G 424.1-1, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*
- Review Report, *Review of tank Farms Technical Safety Requirement Implementation,* dated June 2005
- FY2005-CHM2-1-0009, *Independent Assessment of CH2M Hill Integrated Safety Management System, Final Report*
- TFC-ENG-SB-C-01, *Safety Basis Documents Change and Maintenance*
- TFC-OPS-OPER-C-02, *Safety Basis Implementation Checklist Preparation, Review, and Approval*
- TFC-03-3850-D, *Categorical Exclusion for Specific Types of Engineering Change Notice Changes to Drawing and Supporting Documents*
- TFC-03-3851-D, *Categorical Exclusion for to Allow Procedures to be Revised to Incorporate the U.S. Department of Energy-Approved Safety Basis Changes*
- TFC-03-3852-D, *Categorical Exclusion for Labeling Activities and Corresponding Changes to Non-Safety basis Documents to Update Structures, Systems of Components Identification Information*
- PER-2005-1934, Problem Evaluation Request
- PER-2005-2037, Problem Evaluation Request
- PER-2005-2039, Problem Evaluation Request
- PER-2005-2049, Problem Evaluation Request
- PER-2005-2058, Problem Evaluation Request
- Tank Farm USQ Evaluator Qualification Records (4)

Interviews Conducted

- TFC Vice President, Nuclear Operations
- TFC Director, Nuclear Safety and Licensing
- TFC USQ Coordinator
- TFC USQ Reviewers (4)
- TFC System Engineers (4)
- TFC Safety Specialists (2)
- TFC Director for Safe Work Environment
- ORP Director, Tank Farms Engineering Division
- ORP Nuclear Safety Analysts (2)

Observations of Work

- Safety Basis Change Review Board (SBCRB) Meeting
- Executive Safety Review Board (ESRB) Meeting
- Safety Basis Change Docketing Meeting

Discussion

The requirements associated with hazards identification and analysis are based on 10 Code of Federal Regulations (CFR) Part 830, Subpart B, "Nuclear Safety Management"; DOE Order 420.1A, *Facility Safety;* DOE-STD-1027-94, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports;* and DOE-STD-3009-94, *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports.* These requirements flow down through TFC documents, such as DOE Contract DE-AC27-99RL14047, the *Tank Farm Contractor Standards/Requirements Identification Document* (S/RID), *Tank Farms Documented Safety Analysis* (DSA), *Technical Safety Requirements* (TSR), Safety Management Programs, and the ISMS System Description for hazards identification and analysis. The ISMS Team reviewed these documents and found them to be consistent with the Nuclear Safety Rule and DOE standards.

In 2003, the TFC prepared and submitted a new DSA for Tank Farm operations detailing hazards, safety-related structures, systems and components, and implementation of safety related controls. The DSA addresses the continuing management of highly radioactive tank waste; retrieval, pretreatment, immobilization, interim storage, and disposal of tank waste; and performance of operations necessary for closure of the tanks after removal of the waste. The principle focus of the DSA is activities related to the continued safe storage of tank waste, and the transfer of liquid wastes between tanks and transition or operating facilities. While a number of retrieval and closure activities are addressed, the retrieval mission was added late in the DSA development process. As a consequence, a significant number of safety basis amendments have been generated to support retrieval or closure activities not originally bounded by the DSA. The final hazard categorization of the tank farm facilities was determined based on the requirements of 10 CFR 830 and the methodology of DOE-STD-1027-92. The final hazard categorization of tank farms, including single-shell tanks, double-shell tanks, the associated waste-transfer systems, 204-AR Waste Unloading Facility, 244-AR Vault, 244-CR Vault, and a number of other inactive facilities, is Hazard Category 2.

Safety Limits described in the TSRs include Limiting Conditions for Operation (LCOs) for transfer leak detection systems, backflow prevention systems, double-shell tank primary ventilation systems and single-shell tank passive ventilation systems. Administrative Controls (ACs) are prescribed for organization, safety management programs, emergency preparedness, source term controls, flammable gas controls, transfer controls, administrative lock controls, bulk chemical addition controls, tank farm installed instrumentation, a corrosion mitigation program, and vacuum retrieval controls. In addition, a number of design features are specified.

The ISMS Team conducted interviews to discuss the DSA development and implementation process, applicable safety management programs, safety bases flow down to implementing procedures, and the change control processes. Interviews included Nuclear Safety and Licensing personnel, system engineers, safety specialists, operations personnel, and ORP Engineering Division personnel. Each of the individuals interviewed was personally involved in the DSA development or approval processes and provided valuable insight on the process utilized for identification and characterization of Tank Farm hazards and associated controls. The DSA was implemented in October 2003 and implementation was validated by an executive-level independent assessment. Since implementation, the DSA has been amended 24 times to incorporate changes in mission, technological approach, and annual updates. In addition, some 700 Unreviewed Safety Questions Determinations (USQD) have been documented. Based on the review of several amendments and a number of USQDs, the ISMS Team concluded that addition of a "Retrieval Mission" late in the DSA development process was a significant contributor to the number of changes observed. The influence of these changes is further discussed in "Review Form – SB-2" of this Report.

The ISMS Team found that requirements defined in safety basis documents have been appropriately translated into TFC implementing procedures and work control documents for activities such as Conduct of Operations, routine maintenance, and surveillance activities. TFC procedures and mechanisms are in place and implemented to ensure that contractor hazards analysis are comprehensive, tailored to risk, and sufficient to control identified hazards. TFC procedures are also in place to ensure that safety and health inspections or assessments are conducted to assist in the identification of additional hazards (e.g., external or interfacing hazards that are not necessarily tied to a work activity or task that is typically identified in the Hazard Review Template (HRT) or Job Hazard Analysis (JHA) process). The TFC maintains a comprehensive program to identify and analyze non-nuclear worker safety and health hazards for all its work. TFC ISMS procedures reflect acceptable rigor. The resulting standards in the TFC contract and associated Standards/Requirements Identification Documents (S/RIDs) set appear sufficient to address the recognized hazards associated with the scope of work. The TFC Nuclear Safety and Licensing organization maintains a process to formally identify new DOE directives, DOE technical standards, consensus standards, and new Federal, state, and local laws and regulations that have potential applicability to the contracted work. This process emphasizes those standards related to safety and health, and it provides a mechanism to formally identify new standards, evaluate the applicability of the new or

revised requirement by subject matter experts (SMEs), negotiate with ORP, and document any new requirements in the TFC S/RIDs set.

Procedures are in place to describe the responsibilities for safety basis development, maintenance, implementation, and oversight. The Nuclear Safety and Licensing organization: 1) provides direction on nuclear safety-related matters, 2) develops and maintains nuclear safety (including criticality safety) policies, procedures, guides, and instructions, and 3) interfaces with ORP on nuclear safety documents (including DSAs, TSRs, positive USQs, etc.). Nuclear Safety and Licensing personnel and USQ Evaluators are matrixed or deployed to various projects to provide the appropriate oversight and direction with respect to hazard identification and requirements. Additional discussion of the experience, knowledge and skills of TFC personnel responsible for hazards analysis is provided in "Review Form – SB-3".

Knowledge of activity hazards and associated TSR controls was also evident during interviews with work force supervision and work crews. Personnel interviewed discussed their participation in the development of work scope, pre-job walk downs, review of hazards analysis, preparation of work packages, and post-job critiques and lessons learned.

The ISMS Team observed a Safety Basis Change Review Board (SBCRB) meeting. This committee was chartered by the TFC Vice President of Nuclear Operations to review safety basis changes and their effects on the end users with particular emphasis on proposed amendments to the TSRs. Other review responsibilities include: proposed amendments to DSAs for the Tank Farm, Evaporator, and 222-S Analytical Laboratory, requests for Justification for Continued Operation, proposed new safety basis documents that require field implementation, and changes directed by ORP. SBCRB membership is appointed by the Vice President of Nuclear Operations and is augmented by the Authorization Agreement Authorization Basis compliance leads for the affected DSA. The ISMS Team reviewed the SBCRB draft Charter and observed a SBCRB meeting involving the review of a proposed change to DSA AC 5.16, *Corrosion Mitigation Control.* During the meeting, board members and attendees were technically inquisitive, and key issues were addressed. The appropriate personnel were in attendance, and included safety analysts, operations personnel, engineering, and the safety basis implementation lead. The ISMS Team concluded that the SBCRB provides an effective forum for integrated analysis and preparations of DSA changes **(Strength SB-1-S-1)**.

The USQ process is defined in TFC-ENG-SB-C-03 which describes requirements for conducting USQ applicability assessments, screening, and determinations for changes or conditions at all TFC nuclear facilities in accordance with 10 CFR 830.203.

Conclusion

The criteria for this objective were met.

Strengths

SB-1-S-1 The Safety Basis Change Review Board (SBCRB) provides an effective forum for integrated analysis and preparation of Documented Safety Analysis changes.

Findings

None

Observations

None

Review Form – SB-2

Objective

SB-2: An integrated process has been established and is utilized to develop controls that mitigate the identified hazards present within a facility or activity. The set of controls ensures adequate protection of the public, worker, and the environment and are established as agreed upon by DOE. These mechanisms demonstrate integration, which merge together at the workplace.

Criteria

1. Contractor procedures utilize acceptable methodologies to identify adequate hazard control standards at both the site and facility level to protect the public, worker, and environment. Controls at the site level appear in the contract while those at the facility level are reflected in the authorization basis documentation.

2. Contractor procedures ensure controls are tailored to the hazards associated with the work or operations to be authorized.

3. Contractor procedures ensure that the identified controls, standards, and requirements are agreed upon and approved prior to the commencement of the operations or the work being authorized.

4. Contractor procedures utilize accepted and structured methods and processes to identify, select, gain approval for, periodically review, and maintain safety standards and requirements.

5. Procedures and/or mechanisms are in place to develop, review, approve, and maintain current all elements of the facility authorization basis documentation and worker Health and Safety Plans.

6. Procedures and/or mechanisms that identify and implement appropriate controls for hazards mitigation within the facility or activity are developed and utilized by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.

Documents Reviewed

- RPP-13033, *Tank Farms Documented Safety Analysis*
- HNF-SD-WM-TSR-006, *Tank Farm Facility Technical Safety Requirements*
- HNF-15279, *242A Evaporator Technical safety Requirements*
- HNF-12125, *222-S Laboratory Technical Safety Requirements*
- DE-AC27-99RL14047, *Tank Farm Contract*
- RPP-15194, *River Protection Project Authorization Agreement between the U.S. Department of Energy, Office of River Protection and CH2M HILL Hanford Group, Inc.*
- TFC-PLN-32, *Safety Management Programs*
- RPP-MP-003, *ISMS System Description*
- HNF-SD-MP-SRID-001, *Tank Farm Contractor Standards/Requirements Identification Document*
- HNF-IP-1266, *Tank Farms Operations Administrative Controls*
- TFC-CHARTER-33, *Safety Basis Change review Board Charter*
- TFC-ENG-SB-C-03, *Unreviewed Safety Question Process*
- TFC-BSM-TQ-STD-09, *Unreviewed Safety Question Qualification Process*
- TFC-OPS-OPER-C-24, *Occurrence Reporting and Processing of Operations Information*

- FY-2003-CH2M-I-0155, *CH2M HILL Hanford Group, Inc. Assessment report for Executive-Level Independent Assessment of the Implementation of the Documented Safety Analysis,* dated August/September 2003
- DOE G 424.1-1, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*
- Review Report, *Review of tank Farms Technical Safety Requirement Implementation,* dated June 2005
- FY2005-CHM2-1-0009, *Independent Assessment of CH2M HILL Integrated Safety Management System, Final Report*
- TFC-ENG-SB-C-01, *Safety Basis Documents Change and Maintenance*
- TFC-OPS-OPER-C-02, *Safety Basis Implementation Checklist Preparation, Review, and Approval*
- TFC-03-3850-D, *Categorical Exclusion for Specific Types of Engineering Change Notice Changes to Drawing and Supporting Documents*
- TFC-03-3851-D, *Categorical Exclusion for to Allow Procedures to be Revised to Incorporate the U.S. Department of Energy-Approved Safety Basis Changes*
- TFC-03-3852-D, *Categorical Exclusion for Labeling Activities and Corresponding Changes to Non-Safety basis Documents to Update Structures, Systems of Components Identification Information*
- 03-TED-110, DOE Memorandum, *Contract No. DE-AC27-99RL14047 – Safety Evaluation Report (SER) for approval of Categorical Exclusions for the Documented Safety Analysis*
- PER-2005-2058, Problem Evaluation Request
- PER-2005-1934, Problem Evaluation Request
- PER-2005-2037, Problem Evaluation Request
- PER-2005-2039, Problem Evaluation Request
- PER-2005-2049, Problem Evaluation Request
- Tank Farm USQ Evaluator Qualification Records (4)
- TF-05-1237-AA, USQ Process Applicability Assessment
- TF-05-092-AA, USQ Process Applicability Assessment
- TF-05-1240-AA, USQ Process Applicability Assessment
- TF-03-3447-D, USQ Determination
- TF-03-3257-D, USQ Determination
- TF-05-1262-D, USQ Determination

Interviews Conducted

- TFC Director, Nuclear Safety and Licensing
- TFC USQ Coordinator
- TFC USQ Reviewers (4)
- TFC System Engineers (4)
- TFC Safety Specialists (2)
- TFC Director, for Safe Work Environment
- ORP Director, Tank Farms Engineering Division
- ORP Nuclear Safety Analysts (2)

Observations of Work

- Safety Basis Change Review Board (SBCRB) Meeting
- Executive Safety Review Board (ESRB) Meeting
- Safety Basis Change Docketing Meeting
- Table top walkdown for C-103 breather filter replacement
- Job Hazard Analysis for C-103 breather filter replacement

Discussion of Results

The TFC utilizes an integrated process to develop and disseminate controls designed to mitigate identified hazards for facility and process activities. Nuclear Safety and Licensing personnel, as part of the hazard evaluation safety analysis process, identify controls to prevent or mitigate potential hazardous conditions and postulated accidents at the Tank Farms. Radiological and toxicological risk bins are used for identifying safety-significant structures, systems, and components (SSCs) and Technical Safety Requirements (TSRs). These controls are also considered for significant facility worker hazards, and other non-safety SSC and TSRs design features and administrative features are identified for defense-in-depth. At the contract level, the TFC complies with the standards and requirements identified in its prime contract with DOE. These include a set of S/RIDs for Conduct of Operations, engineering, maintenance, and work activities. These requirements are captured in TFC implementing procedures providing direct control of tank farm work activities.

The ISMS Team reviewed the TFC process to validate control set implementation. This included review of the implementation of safety basis documents through a readiness checklist process. This process consists of a multidisciplinary team of specialists that conduct a formal review with the following objectives:

- Verify that flowdown of safety basis requirements to implementing procedures is complete.
- Verify that safety basis controls and requirements are incorporated into appropriate command media.
- Verify that facility personnel are knowledgeable of the safety basis controls.
- Verify that the safety basis controls and requirements have been implemented.

To accomplish these objectives, the TFC process prescribes the use of checklist and formal lines of inquiry. Review of example checklist and lines of inquiry provided to the ISMS Team suggests that the TFC has outlined a comprehensive and generally thorough approach for determining the status of safety basis implementation within its nuclear facilities.

The TFC procedures provide direction on the hazard control hierarchy for worker safety and health hazards identified through the hazard assessment process. These procedures implement the control hierarchy of engineering controls, then administrative controls, and finally the use of personal protective clothing as required by DOE worker safety and health directives. The Hazard Review Templates (HRTs) or Job Hazard Analyses (JHA) reviewed by the ISMS Team, as well as work observed during the review, effectively confirmed the implementation of controls for the hazards identified at the activity or task level. With one noted exception in "Review Form – WP-4" of this Report, the workers observed by the ISMS Team were following the appropriate hazard controls in the HRT and work procedures, and effectively demonstrated the flowdown of standards agreed to by DOE for the work and hazards applicable to the contract.

TFC procedures governing work activities are subject to a rigorous change control process designed to ensure that the contractor carefully evaluate any proposed change to ensure that it will not affect the safety basis for the facility. Title 10 Code of Federal Regulations (CFR) Part 830, Section 203, *Unreviewed Safety Question Process*, requires the TFC to establish, implement, and take actions consistent with an Unreviewed Safety Question (USQ) process that meets the requirements of this section. DOE Guide 424.1-1, *Implementation Guide for Use in Addressing Unreviewed Safety Questions Requirements,* provides information to assist in the implementation and interpretation of 10 CFR 830.203. ORP approval of the TFC procedure to implement the USQ process is required by the CFR.

ORP approved the TFC USQ procedure in August 2002, and approved changes to address Defense Nuclear Facilities Safety Board (DNFSB) comments in February 2003. In June 2003, ORP approved additional procedural changes that modified documentation requirements for using categorical exclusions and applicability assessment criteria. The TFC maintains the process for USQ applicability assessments, screening and determinations for changes or conditions at all TFC nuclear facilities in accordance with 10 CFR 830.203. The governing procedure TFC-ENG-SB-C-03, *Unreviewed Safety Question Process,* applies to changes within TFC nuclear facilities and changes outside TFC nuclear facilities when those changes have the potential to affect the safety of TFC nuclear facility operations. The procedure applies to implementing documents for the following situations:

- Temporary or permanent change in the facility, as described in the existing DSA;
- Temporary or permanent change in the procedures, as described in the existing DSA; or
- Test of experiment not described in the existing DSA.

The procedure defines responsibilities, training and qualification, and applicability requirements for all USQ activities. Attachments provide formal questions and considerations for USQ screening and for the USQ determination (USQD). The procedure also specifies that screening and determination questions cannot be changed without prior ORP approval. The current TFC USQ process includes an applicability assessment that is used to determine if the USQ process is applicable to a proposed change or conditions. If the USQ process is determined to be applicable, the USQ applicability assessment is exited and a USQ screening or determination is initiated. Two broad categories of questions are addressed by the applicability assessment. Section 1 questions are designed to screen out exempted activities from the USQ process, and Section 2 questions are designed to screen out activities that require ORP review and approval from the USQ process. The ISMS Team reviewed a selection of USQ process applicability assessments, and completed USQDs. Applicability assessments included retrieval activities in the C-200 area (TF-05-0952-AA and TF-05-1237-AA) and removal of the Central Water Distribution Device (TF-05-1240-AA). USQDs reviewed included: evaluation of equipment removal; modification and installation activities for retrieval of wastes in tanks 241-S-102 and 241-S-102 (TF-03-3257-D), review of an engineering change notice for the Remote Water Lance Installation (TF-05-1262-D); and evaluation of removal, modification, and installation activities for retrieval of wastes in C-200 Series tanks (TF-03-3447-D). The ISMS Team concluded that these reviews were technically adequate and conducted in accordance with the TFC procedure. Common USQ process implementation problems, such as nonconservative screening criteria, a too-narrow margin of safety definition, personnel qualification requirements, and inadequate reviewer independence, were not observed.

In July 2003, ORP approved the Tank Farms Documented Safety Analysis (DSA) and implementation was completed in late October of the same year. Since that time, all USQs have been performed against the DSA. Since implementation, the DSA has been amended 24 times to incorporate changes in mission, technological approach, and annual updates. In addition, some 700 USQDs have been documented. As indicated in "Review Form – SB.1," the ISMS Team review of several amendments and a number of USQDs, suggests that the addition of a "retrieval mission" late in the DSA development process was a significant contributor to the number of changes observed. Effective management of this large number of changes represents a significant effort on the part of the TFC and the ORP. For example, approximately 5000 applicability assessments, screenings, and USQ evaluations were performed in Calendar Year 2003 alone. To ensure that the quality of USQ process is not compromised, the TFC has conducted quarterly assessments to verify that evaluations meet management expectations. The ISMS Team reviewed several of the assessment reports and determined that appropriate rigor had been applied in assessing process compliance and that identified performance issues were formally addressed in the TFC Problem Evaluation Requests (PER) program. However, the ISMS Team identified a potential problem with respect to the timing of the approval and implementation of safety basis amendments. In a number of instances, the ISMS Team observed that the lag between ORP approval of a DSA amendment and TFC implementation was excessive, sometimes exceeding several months. As a result, a vulnerability exists in that

some USQ evaluations are prepared without consideration of ORP-approved safety basis amendments that have not yet been implemented by the TFC **(Finding SB-2-F-1)**.

In 2004, the TFC conducted a management assessment to review and evaluate the USQ process to ensure that all aspects of the process are compliant and being implemented correctly, efficiently, and effectively, and to identify potential process weaknesses and opportunities for improvement. The assessment report concludes that the USQ process is generally effective and complies with 10 CFR 830.203.

During review activities, the ISMS Team noted that the TFC had requested and received approval for three Categorical Exclusions. TF-3851-D is a Categorical Exclusion to allow procedures to be revised to incorporate DOE safety basis changes. TF-03-3852-D is a Categorical Exclusion for labeling activities and corresponding changes to non-safety basis documents to update SSC identification information. TF-03-3850-D is a Categorical Exclusion for specific types of Engineering Change Notice (ECNs) changes and supporting documents. The ORP Safety Evaluation Report (SER) forwarding approval of these Categorical Exclusions provides the following evaluation for TF-03-3850-D:

> "Changes to drawings and supporting documents subject to the Engineering Change Notice (ECN) process generally require USQ evaluation consistent with TFC-ENG-SB-C-03, *Unreviewed Safety Question Process*. USQDs are required for changes to a nuclear facility that alter a structures, systems, and components (SSC) design, function, or method of performance as described in existing safety analyses by, text, drawing, or other information relied upon as the SB. Certain changes processed via the ECNs, however, do not meet these criteria. Changes to drawings and supporting documents made via the ECN process that can be categorically excluded from the USQ process are those that only:
>
> 1. Revise the document to incorporate non-technical information (i.e., not related to the integrity of design), such as, but not limited to: engineering work scope; task descriptions; deliverables; responsibilities; work schedules; cost estimates; organizational names and codes; or personal names.
>
> 2. Revise the document(s) to incorporate outstanding ECNs issues against the document(s). The ECNs being incorporated must have been previously subjected to the USQ process. (Note: USQ Applicability Assessment Section 1, Questions #2 may apply for individual ECNs.)
>
> 3. Update the document to add or update traceability references to drawings or supporting design documentation.
>
> 4. Revise the document to add supplementary information (i.e., notes, symbols, units of measure, views, details, figures, tables) relating to any existing item in the document (provided meaning or intent is not changed).
>
> 5. Revise the document to change any item associated with prototypical or developmental equipment that will not be used in the facility.
>
> 6. Revise the document to change equipment design/analysis details prior to release of the equipment design for facility/SSC modification or facility installation. (Note this categorical exclusion does not apply to drawings H-14-104175, Waste Transfer Piping Diagram 200 East Area, and H-14-104176, Waste Transfer Piping Diagram 200 West Area."

The ORP ISMS Team evaluated USQD TF-03-3850-D Revision 0 for application under the USQ procedure for the Documented Safety Analysis (DSA) and finds that it meets the criteria as described in Reference 1 and that the changes described can be Categorically Excluded from the 10 CFR 830.203 process.

The ISMS Team discussed this Categorical Exclusion with the Director of Nuclear Safety and Licensing. The Exclusion was approved in October 2003 and remained in effect until July of 2004. On July 29, 2004, the ECN procedure was revised to eliminate the practice of deferring USQ evaluations on ECNs. In September 2004, the TFC conducted a Management Observation Program (MOP) assessment to verify that USQ evaluations were being performed satisfactorily on ECNs rather than deferring to the USQ evaluations to be performed on the corresponding work packages. The assessment found that in a significant number of cases evaluators inappropriately took credit for the Categorical Exclusion which, in effect, circumvented the change to the ECN procedure which required each ECN to have a USQ evaluation. Based on the assessment results, the TFC took immediate corrective actions to ensure that affected ECNs received the appropriate USQ evaluation. During discussion of this issue, the ISMS Team was informed that the USQ evaluations are no longer performed on tank farm work packages. The rationale provided for this approach was that the USQ process is intended to evaluate changes in procedure or conditions that may affect the DSA and that TFC work packages are not designed to affect this type of change.

Following this discussion, the ISMS Team revisited the TFC USQ process procedure to further understand the technical basis for excluding work packages from USQ evaluations. No specific guidance or procedural steps are documented within the procedure with reference to the practice of excluding work packages. The ISMS Team also consulted with ORP safety basis personnel to gain an understanding of the regulatory perspective on this subject. The discussion revealed that the TFC approach had been communicated, but that no official ORP position had been established as to its adequacy. Further, as of the date of this review the TFC had not submitted a request for Categorical Exclusion of work packages from the 10 CFR 830.203 process. The impact of this approach could not be fully evaluated during this review. Consequently, the ISMS Team believes that the bases for excluding TFC work packages from the USQ screening process should be documented by Categorical Exclusion **(Observation SB-2-O-1).**

Conclusion

The criteria for this objective were partially met.

Strengths

None

Findings

SB-2-F-1 A vulnerability exists in that some USQ evaluations are prepared without consideration of ORP approved safety basis amendments that have not yet been implemented by the TFC.

Observations

SB-2-O-1 The bases for excluding TFC work packages from the USQ screening process should be documented by Categorical Exclusion.

Review Form – SB-3

Objective

SB-3: Contractor procedures ensure that contractor personnel responsible for analyzing the hazards and developing, reviewing, or implementing the controls, have competence that is commensurate with their responsibilities. Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.

Criteria

1. Contractor procedures have clearly defined roles and responsibilities for personnel assigned to oversee, review, approve the analysis of hazards, and establish controls associated with facilities and activities.

2. Contractor procedures require that personnel responsible for analyzing hazards and identification of adequate controls have competence that is commensurate with their responsibilities.

Documents Reviewed

- RPP-13033, *Tank Farms Documented Safety Analysis*
- HNF-SD-WM-TSR-006, *Tank Farm Facility Technical Safety Requirements*
- HNF-15279, *242A Evaporator Technical safety Requirements*
- HNF-12125, *222-S Laboratory Technical Safety Requirements*
- DE-AC27-99RL14047, *Tank Farm Contract*
- RPP-15194, *River Protection Project Authorization Agreement between the U.S. Department of Energy, Office of River Protection and CH2M HILL Hanford Group, Inc.*
- TFC-PLN-32, *Safety Management Programs*
- RPP-MP-003, *ISMS System Description*
- HNF-SD-MP-SRID-001, *Tank Farm Contractor Standards/Requirements Identification Document*
- HNF-IP-1266, *Tank Farms Operations Administrative Controls*
- TFC-CHARTER-33, *Safety Basis Change review Board Charter,*
- TFC-ENG-SB-C-03, *Unreviewed Safety Question Process*
- TFC-BSM-TQ-STD-09, *Unreviewed Safety Question Qualification Process*
- TFC-OPS-OPER-C-24, *Occurrence Reporting and Processing of Operations Information*
- 03-TED-110, *DOE Safety Evaluation Report for the Tank Farms Unreviewed Safety Question Process Categorical Exclusions for the Documented Safety Analysis*
- FY-2003-CH2M-I-0155, *CH2M HILL Hanford Group, Inc. Assessment report for Executive-Level Independent Assessment of the Implementation of the Documented Safety Analysis,* dated August/September 2003
- DOE G 424.1-1, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*
- Review Report, *Review of tank Farms Technical Safety Requirement Implementation,* dated June 2005
- FY2005-CHM2-1-0009, *Independent Assessment of CH2M HILL Integrated Safety Management System, Final Report*
- TFC-ENG-SB-C-01, *Safety Basis Documents Change and Maintenance*
- TFC-OPS-OPER-C-02, *Safety Basis Implementation Checklist Preparation, Review, and Approval*
- TFC-03-3850-D, *Categorical Exclusion for Specific Types of Engineering Change Notice Changes to Drawing and Supporting Documents*

- TFC-03-3851-D, *Categorical Exclusion for to Allow Procedures to be Revised to Incorporate the U.S. Department of Energy-Approved Safety Basis Changes*
- TFC-03-3852-D, *Categorical Exclusion for Labeling Activities and Corresponding Changes to Non-Safety basis Documents to Update Structures, Systems of Components Identification Information*
- PER-2005-2058, Problem Evaluation Request
- PER-2005-1934, Problem Evaluation Request
- PER-2005-2037, Problem Evaluation Request
- PER-2005-2039, Problem Evaluation Request
- PER-2005-2049, Problem Evaluation Request
- Tank Farm USQ Evaluator Qualification Records (4)

Interviews Conducted

- TFC Director, Nuclear Safety and Licensing
- TFC USQ Coordinator
- TFC USQ Reviewers (4)
- TFC System Engineers (4)
- TFC Safety Specialists (2)
- TFC Director, for Safe Work Environment
- TFC Field Work Supervisors (15)
- DOE ORP Director, Tank Farms Engineering Division
- DOE ORP Nuclear Safety Analysts, (2)

Observations of Work

- Safety Basis Change Review Board (SBCRB) Meeting
- Executive Safety Review Board (ESRB) Meeting
- Safety Basis Change Docketing Meeting

Discussion

TFC procedures describe the responsibilities for Nuclear Safety and Licensing Program definition, implementation, and oversight. The Nuclear Safety and Licensing organization: 1) provides direction on nuclear safety-related matters; 2) develops and maintains nuclear safety (excluding criticality safety) policies, procedures, guides, and instructions; and 3) interfaces with ORP on nuclear safety documents (including Documented Safety Analyses (DSAs), Technical Safety Requirements (TSRs), positive Unreviewed Safety Questions (USQs), etc.).

TFC personnel assigned to analyze worker safety and health hazards meet DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, requirements. Procedure TFC-BSM-TQ-STD-09, *Unreviewed Safety Question Qualification Process,* defines the roles and responsibilities for personnel developing and reviewing hazards analysis and controls, and it establishes the training and qualifications for personnel holding these positions. The TFC has developed a training implementation matrix that identifies the required training for nuclear safety analysts and the USQ process personnel. The matrix identifies the source requirements, including applicable codes and standards, as well as TFC references. For example, TFC Course #350935 *Tank Farm USQ Evaluator Training*, TFC Course #350945, *Tank Farm USQ Applicability Assessor Qualification Card,* TFC Course #305936, *Tank Farm USQ Evaluator Requalification Training.* The TFC Nuclear Safety and Licensing staff and several USQ Evaluators were interviewed, and all of those interviewed were found to meet or exceed the requirements of the governing procedure, and that they possess the requisite knowledge and experience to sufficiently carry out their nuclear safety responsibilities. A sample of

qualification records was reviewed and found to contain adequate documentation of their qualifications, including requalification requirements.

The ISMS Team obtained a list of qualified USQ preparers and reviewers, and reviewed the qualification records for several of the personnel on the list. Each of the records reviewed supplied sufficient evidence regarding the associated training and/or experience required for performing USQDs in accordance with TFC procedures. Some of those on the list were also interviewed, and it was apparent they possessed the requisite knowledge and/or experience.

Field Work Supervisors have been assigned and qualified to manage all work at nuclear facilities operated by the TFC. Roles and responsibilities for Field Work Supervisors are clearly defined and include the following, incorporation of ISM principles into work activities, work authorization authority, identification of hazards, and development of hazard controls. The ISMS Team interviewed several of Field Work Supervisors and work crews during observations of work activities and each was found to be very knowledgeable, and actively involved in daily identifications of work hazards.

Conclusion

The criteria for this objective were met.

Strengths

None

Findings

None

Observations

None

Review Form – WP-1

Objective

WP-1: Work Control Program Documentation: The contractor has developed an effective work planning and control process.

Criteria

1. Contractor work control manual/procedure for initiating, analyzing, and developing work control documents is approved and implemented.

2. The contractor's work control process establishes the level of review and approval for different types of work control documents. The type of document chosen is based upon the degree of risks, hazards, and complexity of the work activity.

3. The contractor has established work planning/control requirements for all personnel performing work at their site, including sub-contractors. Affected personnel are trained on these requirements.

4. The contractor's work control manual/procedure includes turnover requirements when line management and/or first line supervisor responsibilities are transferred.

5. The contractor's work control manual/procedure includes a process for lessons learned/feedback during the execution of work control activities, including incorporation of lessons learned into active and in-development work control documents and/or the work control manual/procedure.

6. The contractor's work control manual/procedure includes a process for post work activity review, including incorporation of lessons learned into active and in-development work control documents and/or the work control manual/procedure.

7. The qualification requirements for Work Control Managers and Planners are established.

8. Records that document the successful completion of Work Control Managers and Planners qualification are retained and auditable.

Documents Reviewed

- TFC-OPS-MAINT-C-01, Revision 1-1, *Tank Farm Contractor Work Control*
- Work Planner qualification card
- Work Planner qualification records
- 7K000-NJM-05-031, Final Event Investigation Report 2005-047, *"C Farm Personnel Contamination Event,"* dated October 10, 2005
- Management Observation Checklist *"Work Order 2W-04-00643/W,"* dated September 30, 2005
- Occurrence Report EM-RP-CHG-TANKFARM-2005-0041, *Personnel Contaminated Removing An Air Line From The Articulated Mast System*
- TFC-ESHQ-RP_ADM-C-11, *ALARA Joint Review Group*

Interviews Conducted

- TFC Vice President for Nuclear Operations
- TFC Work Planning Director
- TFC Closure Operations "C" Farm Work Management Director
- TFC Closure Operations "S" Farm Work Management Director
- TFC Waste Feed Operations Work Management Director
- TFC Closure Operations Surveillance and Maintenance Senior Director
- TFC Closure Operations Surveillance and Maintenance Work Control Manager

Observations of Work (if applicable)

- N/A

Discussion of Results

TFC-OPS-MAINT-C-01, Rev I-1, *Tank Farm Contractor Work Control*, was reviewed to verify that the procedure contains the necessary attributes of an effective work control program. The procedure has been formally approved and the latest revision was effective on September 12, 2005. The procedure adequately delineates the roles and responsibilities of all personnel involved in the work control program from the beginning of the planning process to the completion of work, including post-job reviews. The procedure establishes a satisfactory methodology to determine the required level of hazard analysis and work planning, approval, and authorization based on work activity risk, complexity, and effect on safety systems.

The major phases of the Tank Farm work control program are scoping, walkdowns, job hazard analysis, team planning meeting, final walkdown, and post-job review. With the exception of scoping, workers are expected to be involved in each phase, although the only time the workers who will perform the work are required to be involved in the planning process is during the final walkdown. Workers perform the final walkdown to verify they understand and can follow the approved work instructions during performance of the planned work. A post-job review is to be completed both at the end of work each day and at the completion of field work. The procedure provides some direction on what work planners should do with this feedback, and how to incorporate lessons learned and feedback from previous activities into work package(s) being planned. However, based on interviews and document reviews, this process is inadequately defined to ensure consistent implementation across the TFC organization **(Observation WP-4-O-1)**.

While the procedure adequately defines the process to plan and conduct work, it does not provide requirements for the transfer of responsibility (for turnover) of line management and/or first line supervisors during a work activity. First Line Supervisors perform informal turnover when possible prior to transferring responsibility. If the previous supervisor is not available, the on-coming supervisor reviews the work package and performs a walkdown of the work area prior to performing the work. This informal process was discussed with the Work Planning Director who, while agreeing in principle with the approaches being taken, felt the turnover process should be formalized. He agreed to include a formal turnover process in the next revision to the Tank Farm Work Control procedure. While not a part of the turnover process, for high risk work at the Tank Farms, all first line supervisors for a particular high risk activity are required to be approved by the Joint Review Group according to TFC-ESHQ-RP_ADM-C-11, *ALARA Joint Review Group*.

The Qualification Cards and Records for Tank Farm Work Planners and Lead Planners were reviewed. The TFC has made an extensive effort to retrain and re-qualify planners on the work control process, job hazard analysis methods, and other planning-related functions of their job. The Contractor provided records showing that 50 of 51 planners were re-qualified early in Fiscal Year (FY) 2005; however, it should be noted that a recent reduction

in force resulted in the loss of a significant number of these planners. Training and qualification records for four current planners were reviewed and found to be complete.

The ISMS Team reviewed the investigation report for a recent personnel contamination event associated with the "C" Farm C-200 Series Tanks Retrieval Project, which resulted in six personnel with skin contamination. This Project is completed in three phases for each of the four C-200 Series tanks: Articulated Mast System (AMS) connection, tank retrieval operations, and AMS disconnection. The ISMS Team determined that the Project's hazard analysis was not performed with adequate detail from an overall project perspective (including going from a maintenance/install mode, to an operational/retrieval mode, and back to a maintenance/disconnect/reconnect mode) **(Finding WP-1-F-1)**. In addition, the TFC identified and the ISMS Team noted that turnover between the different operating and field crews from phase-to-phase was not completed, the work crew performing retrieval operations operated the system outside of normal parameters, work instructions were unclear, and the crews performing the connection and disconnection work did not have an adequate understanding of system operation. The combination of these issues resulted in a contaminated air line, the disconnection crew not knowing the air line was pressurized leading to the contamination release and skin contaminations, and the declaration of a Potential Inadequacy in the Documented Safety Analysis (PISA). Corrective actions have been taken by the TFC to address radiological operations personnel performance, but no actions have been taken to address the conduct of operations or work control issues (although the TFC had not yet completed a root cause analysis for the event) **(Observation FI-2-O-2 example)**.

Conclusion

The criteria for this objective were partially met.

The ISMS Team concluded that the contractor's work control procedure provides adequate instruction to line management, work planners, subject matter experts, and Tank Farm workers for the development of work instructions. Including formal turnover requirements in the work control procedure will address a vulnerability identified in the TFC process. The hazard analysis and work control issues associated with the C-200 contamination event are based on planning the work as three separate activities, not as a single, integrated project. Specifically, the TFC project hazard analysis did not evaluate hazards throughout the project life-cycle, including detailed analysis of the hazards associated with equipment disconnect/reconnect when moving the retrieval system from tank to tank.

Findings

WP-1-F-1 Hazard analysis and work control process associated with the C-200 Series Tank Retrieval Project were less than adequate.

Observations

None

Strengths

None

Review Form – WP-2

Objective

WP-2: Work Planning and Control: Proposed work activities are adequately defined and analyzed to identify hazards and their associated controls.

Criteria

1. Initial discussion/walkdown of the proposed work activity is performed by appropriate personnel (e.g., line management, engineer, planner, etc.) to ensure that the work is properly scoped and that boundaries are understood.

2. A team (Team) comprised of the appropriate personnel (e.g., planner, work supervisor, workers, safety and health SMEs, etc.) is selected by line management to participate in the development of the work control document. Workers are involved in job planning.

3. The Team performs effective walkdowns and Job Hazard Analyses in order to develop work steps/techniques and identify possible hazards and their associated controls.

4. The Team selects controls based upon the following hierarchy: (1) hazard elimination/reduction; (2) engineered controls; (3) administrative controls; and (4) personal protective equipment.

5. The Team ensures that the level of control established for a hazard is maintained throughout the activity or until the hazard has been eliminated or reduced (controls can be graded to level of hazard reduction).

6. The Team evaluates the possibility of creating additional hazards due to selected controls (i.e., excessive PPE causing heat exhaustion) and also evaluates the possibility of negative synergistic effects of selected controls.

Documents Reviewed

- TFC-OPS-MAINT-C-01, Revision 1-1, *Tank Farm Contractor Work Control*
- TFC-ESHQ-S_SAF-C-02, Revision B-4, *Job Hazard Analysis*
- CLO-WO-05-001721, *241-C-201 Modify Lines to R6*
- CLO-WO-05-001919, *241-S-112 Install Remote Water Lance*
- TF-SJHA-0425, *Supplemental Tank Farms Job Hazard Analysis-Respiratory Protection*
- TF-SJHA-0341, *Tank Closure Projects-JHA supports verbal direction/RWR/Minor Planned Work Packages*
- CLO-WO-05-001346, *Job Hazard Analysis*
- TF-SJHA-0001, *General Tank Farm Hazards (JHA)*

Interviews Conducted

- TFC Work Planning Director
- TFC Closure Operations "C" Farm Work Management Director
- TFC Closure Operations "S" Farm Work Management Director
- TFC Waste Feed Operations Work Management Director
- TFC Closure Operations Surveillance and Maintenance Senior Director
- S-112 Salt Mantis installation and operation planning team

- C-103 breather filter replacement planning team
- CLO-WO-05-001721, *241-C-201 Modify Lines to R6* planning team
- Work Planners (4)
- Hose-in-Hose Transfer Line (HIHTL) System Engineer
- Field Work Supervisors (3)
- Radiological Planner
- Environmental Compliance

Observations of Work

- Table top walkdown for C-103 breather filter replacement
- Job Hazard Analysis for C-103 breather filter replacement
- Joint Review Group for radiological controls investigative survey procedure approval

Discussion of Results

The ISMS Team reviewed TFC-OPS-MAINT-C-01, *Tank Farm Contractor Work Control*, to verify that the procedure contains the necessary attributes to define and analyze proposed work activities in order to identify associated hazards and controls. The procedure establishes requirements for scoping proposed work activities and establishing a planning team to complete walkdowns and hazard analysis. The procedure adequately delineates the roles and responsibilities of all personnel involved in each of these activities. A critical component of the TFC work control program is early and continuous worker involvement in the planning process.

The ISMS Team also reviewed TFC- ESHQ-S_SAF-C-02, *Job Hazard Analysis,* for adequacy. The procedure established a process to determine if a job specific Job Hazard Analysis (JHA) needs to be generated for a proposed work activity or if the hazards and controls are addressed by an existing Standing JHA (SJHA). The TFC has identified the over reliance on SJHAs and is in the process of reducing their use. Specifically, the TFC has determined that there are too many SJHAs. The concern is that SJHAs may not adequately cover all hazards associated with a specific job. The TFC has also determined that job-specific JHAs are more appropriate in some cases. Once again, workers are involved early on and continuously through this process. The procedure directs subject matter experts (SME) involved in the JHA process to recommend to the work team controls based on the hierarchy of hazard elimination, engineered controls, administrative controls, and personal protective equipment. Based on interviews and document reviews, this requirement is being met. Additionally, interviews with workers confirmed that this procedural hierarchy of controls is generally used during JHA planning meetings. The procedure does not include provisions for evaluating the possibility of creating additional hazards due to selected controls nor the possibility of negative synergistic effects of selected controls. However, based on interviews and document reviews, additional hazards are sometimes identified based on the control set selected for some work activities. Additionally, TF-SJHA-0425, *Supplemental Tank Farms Job Hazard Analysis-Respiratory Protection*, was developed to address the hazards associated with respiratory protection. The ISMS Team identified a weakness with the JHA process. While common hazards to the worker are evaluated, upset conditions and "what-if" scenarios that may be associated with specific work activities are not **(Observation WP-2-O-1)**.

On October 13, 2005, the ISMS Team observed a tabletop walkdown and subsequent JHA conducted for the replacement of a breather high efficiency particulate air (HEPA) filter for tank 241-C-103. The filter had clogged earlier than anticipated, resulting in a condition that may limit or prevent airflow through the tank, thus creating a potential accumulation of flammable gases in the tank headspace. As a result, the system engineer stated that surveillance frequency had been increased to every six months from annually. The tabletop and JHA meetings were led by the lead planner for the activity. Participants in the meetings included the system engineer, quality assurance, radiological controls technicians and supervisors, millwright, two operators, two field work supervisors, industrial hygiene technician, and radiological planning. The team systematically identified the sub-

tasks associated with each task for the activity, associated hazards, and controls. The team also evaluated additional hazards associated with the identified controls. After the meetings were complete, ISMS Team members asked the system engineer if the greater than anticipated frequency of HEPA filter clogging had been screened for nuclear safety impacts. The system engineer did not know and contacted nuclear safety personnel. Nuclear safety personnel had not evaluated the condition, but started evaluations after the conversation. On October 14, 2005, a Potential Inadequacy in the Documented Safety Analysis (PISA) was declared due to the condition. The TFC does not evaluate work packages that do not result in an Engineering Change Notice through the Unreviewed Safety Question screening process. A screen of this activity by the TFC may have identified the issue.

The ISMS Team also completed interviews of personnel involved in planning for the S-112 Salt Mantis Project and the *241-C-201 Modify Lines to R6* work package (CLO-WO-05-001721). Workers for each activity had been active participants in the planning walkdown and JHA development. The Salt Mantis Project workers were in the process of completing mock-up training and were very knowledgeable in system operations. Once the system is installed in the field it will be operated by a subcontractor. The planning team has established a formal chain of command/turnover for this activity between the Salt Mantis Project and the subcontractor. Workers involved in the C-201 planning stated that they felt there would be value added from both a safety and efficiency perspective, if the workers who were involved in the planning process for high risk and/or high complexity work, are assigned to perform the work. This desire has been discussed with senior TFC management. The ISMS Team discussed the logistic difficulties in having the same personnel perform both the planning and execution of work for activities with the C-201 team. This led to a discussion regarding the TFC-OPS-MAINT-C-01, Rev. 1-1, *Tank Farm Contractor Work Control*, final walkdown process. The workers stated that they felt that such a walkdown was a great idea and wondered why they weren't performed as required **(Finding WP-4-F-1 example)**.

The ISMS Team observed a Joint Review Group (JRG) meeting conducted to approve a procedure governing radiological controls personnel performing investigative surveys. The JRG consisted of radiological, safety, engineering, and work control personnel. The JRG demonstrated a thorough review of the procedure and provided several value-added changes. Although the JRG concept is relatively new to the Tank Farms, its continued use should improve work control documents for workers' use in the field.

Conclusion

The criteria for this objective were partially met.

The TFC has established work planning and job hazard analysis processes that include worker involvement, but the job hazard analysis process does not evaluate upset condition(s) or "what-if" scenarios. Coupled with the decision to exclude work packages not including Engineering Change Notices from the Unreviewed Safety Question screening process, this weakness may result in non-conservative hazard analysis and control identification.

Findings

None

Observations

WP-2-O-1 The Job Hazard Analysis Process does not require the evaluation of upset conditions and "what-if" scenarios.

Strengths

None

Review Form – WP-3

Objective

WP-3: Work Planning and Control: The contractor work planning process results in work control documents that enable safe and efficient completion of work activities.

Criteria

1. The work scope and associated boundaries are clearly defined.
2. The work control document is written in a clear, concise, and worker friendly manner.
3. The work steps for activities are properly sequenced.
4. Work control documents adequately incorporate technical and administrative requirements (e.g., safety basis, regulatory, consensus codes, etc.,)
5. Work hazard controls identified in the Job Hazards Analysis (JHA) have been incorporated into the work control document.
6. The controls for activity specific hazards are delineated immediately before the work control document step where the hazard is encountered and are highlighted to emphasize their importance.

Documents Reviewed

- 7W100-TLJ-05-004, *Work Planning Improvements and Job Hazard Analysis Management Assessment*, dated August 25, 2005
- 72200-EMJ-05-021, *Independent Assessment of the CH2M HILL Hanford Group, Inc. Integrated Safety Management System*, dated September 30, 2005
- WFO-WO-05-001097, *241-AP Valve Pit Assessment/Clean & Paint* (work package)
- CLO-WO-05-001241, *Disconnect/Reconnect Slurry Hose to C-201 Riser 6* (work package)
- PER-2004-5832
- *Discussion of Work Schedule Delays* memorandum, dated October 11, 2005
- *Task/JHA/Planning Process Flow* chart
- CLO-WO-05-001930, *241-C-103 POR008 Change Pre-Filter and HEPA Filters 1 & 2*
- 7W100-TLJ-05-004, *Work Planning Improvement and Job Hazard Analysis Management Assessment*, dated August 25, 2005
- TFC-OPS-MAINT-C-01, *Tank Farm Contractor Work Control*, Revision I-1, September 12, 2005
- ALARACT 6, 14
- *Expectations for the Implementation of the Integrated Safety Management System*, Revision 1, dated April 15, 2005
- Tank Farm Operations Daily Report
- TFC-ESHQ-RP_ADM-C-11, REV C-2, *ALARA Joint Review Group*, dated August 4, 2005
- TFC-ESHQ-S_SAF-C-02, REV B-4, *Job Hazard Analysis*, dated August 16, 2005
- TFC-OPS-MAINT-D-02, Rev A, *Work Planning Standing Instructions*, dated August 2, 2004
- A-6003-707, *Work Order Planning Checklist*

- DOE Order 5480.19, *Conduct of Operations Requirements*
- CLO-WO-05-001346, *Flush and Remove SX Hose-in-Hose Transfer Lines (HIHTL's)*
- CLO-WO-05-001346, *Job Hazard Analysis*
- Radiological Work Permit IS-616, *Perform High-Volume Flush, Removal of HIHTLs in SX-A Pit and Associated Tasks*
- ALARA Management Worksheet AW-0973, *Perform Flush and Remove HIHTL's on Tanks 241-SX-101, -102, -103, and -105 from SX-A Pit*
- CLO-WO-05-001721, *241-C-201 Modify Lines to R6*
- CLO-WO-05-001241, *241-C-202 Relocate Slurry Hoses to C-201*
- TF-SJHA-0425, *Supplemental Tank Farms Job Hazard Analysis-Respiratory Protection*
- TF-SJHA-0341, *Tank Closure Projects-JHA supports verbal direction/RWR/Minor Planned Work Packages*
- Radiological Work Permit CO-211, *241-C-200-Move Hoses from C-202 Riser #6. Move Slurry Hose from C-202 to C-201 Riser #7*
- ALARA Management Worksheet AW-0989, *241-C-200- Move Hoses from C-202 Riser #6 to C-201 Riser #6. Move Slurry Hoses from C-202 to C-201 Riser #7*

Interviews Conducted

- Tank Waste Services Operations Manager
- Field Work Supervisor (CO-9, ATS-3, WFO-3)
- Field Work Supervisor (Fluor Government Group, construction forces)
- Nuclear Chemical Operators (11)
- Radiological Control Technicians (7)
- Electricians (3)
- Shift Operations Manager (3)
- Industrial Hygiene Technician (1)
- Hanford Atomic Metal Trades Council (HAMTC) Safety Representatives (5)
- Work Planners (5)
- Closure Operations Maintenance Director
- Closure Operations Work Planning Lead (2)
- Waste Feed Operations Facility Radiological Control Supervisor
- Waste Feed Operations Component/System Engineer
- Pipefitter (1)
- Waste Feed Operations Safety Specialist
- Waste Feed Operations Industrial Hygiene Manager
- ORP Facility Representatives (8)
- Industrial Safety Manager
- Waste Feed Operations Work Management Director
- Senior Vice President of Nuclear Operations
- Vice President and Deputy of Nuclear Operations
- Work Planning Director (2)
- TFC Work Planning Director

Observations of Work

- AP Valve Pit Decontamination (WFO-WO-05-001097)
- Pre-job brief for core sampling equipment set-up at AW-103
- Pre-job brief for decontamination of AP Valve Pit (2)

- Meeting with Waste Feed Operations Radiological Control Technicians (RCT) regarding alpha exempt survey requirements
- Waste Feed Operations RCT Routines
- Morning work planning meetings for Waste Feed Operations (2)
- Morning work planning meeting for Sampling
- Morning worker brief for Waste Feed Operations RCTs
- Afternoon Plan of the Day meeting for Closure Operations (CO)
- Morning work planning meetings for Closure Operations (2)
- Move hoses from C-202 to C-201 (CLO-WO-05-001721)
- Pre-job brief for moving hoses from C-202 to C-201 (CLO-WO-05-001721)
- Post-job review for moving hoses from C-202 to C-201 (CLO-WO-05-001721)
- Remove Hose-in-Hose Transfer Lines (HIHTLs) from trenches with crane (CLO-WO-05-001346)
- Pre-job brief for removing HIHTLs from trenches (CLO-WO-05-001346)
- Post-job review for HIHTLs from trenches (CLO-WO-05-001346)
- Pre-job brief for relocating slurry hoses (CLO-WO-05-001241)

Discussion of Results

Contractor procedures and processes defined specific requirements for work control documents. These requirements were primarily contained in TFC-OPS-MAINT-C-01, *Tank Farm Contractor Work Control.* Additional guidance for the preparation of work orders was contained in Form A-6003-707, *Work Order Planning Checklist.* These documents prescribed the TFC process to ensure that work control documents enabled safe and efficient completion of work activities.

During the course of this Review, numerous work control documents were evaluated to determine their compliance with TFC procedural requirements, ISM guidance, and Conduct of Operations principles. The documents reviewed generally adhered to prescribed requirements. The work scope was clearly defined and the work instructions were written in a worker friendly manner.

Some deficiencies were identified with the documents reviewed, indicating inconsistent and incomplete implementation of the aforementioned requirements. Numerous instances were identified in the work documents and operating procedures where information provided in notes and the direction provided in process steps was ambiguous or vague, lending the procedure to interpretation by the Field Work Supervisor (FWS) or TFC operations. This was not consistent with the requirements of DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities,* or the TFCs work control procedure for ensuring clearly stated actions **(Observation WP-3-O-1)**. The following examples and discussion are provided:

a. TO-080-503, *Push Mode Sampling with Truck 1*, contains the following note:

> NOTE - All Steps within each Section must be performed in order. However, Sections 5.2 through 5.20 may be performed in any logical order or not at all as necessary to facilitate sampling.

Although this step was intended to allow a certain amount of operational flexibility during tank sampling evolutions, it is sufficiently vague to permit inconsistent sampling operations.

b. WS-04-00643, Move air, water, and hydraulic lines from C-202 Articulated Mast System (AMS) to C-201 AMS, contains the following notes and instructions:

NOTE - Ensure that hydraulic, air and water have been relieved of any pressures within lines.

Notes are not intended to contain action steps. Additionally, there was no means to verify the lines were depressurized or to depressurize the lines.

- Steps authorizing the completion of a task per FWS directions.

The use of this type of non-specific work instruction is an inappropriate work planning practice that can contribute to poor Conduct of Operations and work execution. Additionally, inadequate identification of specific tasks makes subsequent hazard analysis and control identification extremely difficult.

Work control documents adequately incorporated technical and administrative requirements, including safety basis requirements, environmental requirements, and other technical direction. It was noted in one case, where the technical requirement was made more restrictive in the work instruction than the actual requirement. WFO-WO-05-001097, *241-AP Valve Pit Assessment/Clean & Paint*, step 4.9.2.1 states that if contamination levels are <100,000 dpm/100 cm2 beta-gamma, then use of the portable exhauster is not required—this step was overly restrictive and did not reflect the actual ALARACT 14 requirement, which specifies "uniformly distributed removable contamination" limits. This deficiency was identified by the TFC and immediately corrected.

Hazard controls were properly delineated in the work documents reviewed in most cases. One example was identified where the controls were not specifically located at the prescribed part of the work instruction as required by TFC-OPS-MAINT-C-01, *Tank Farm Contractor Work Control*: heat stress controls were not incorporated into the precautions of work order CLO-WO-05-001346 as identified in the Job Hazard Analysis (JHA) for the work package.

Conclusion

The criteria for this objective were partially met.

The ISMS Team determined that work control documents and operating procedures were developed in a manner to enable safe and efficient completion of work activities. Work steps were properly sequenced, contained appropriate technical and administrative requirements, and were generally written in a clear, concise manner. Some deficiencies were identified with work documents related to vague or ambiguous notes and work steps, and related to incorporation of JHA control placement in the work instructions.

Findings

None

Observations

WP-3-O-1 Some work instructions and operating procedures reviewed did not adhere to Conduct of Operations principles for ensuring clear, unambiguous direction.

Strengths

None

Review Form – WP-4

Objective

WP-4: Work Planning and Control Oversight: Contractor personnel perform work in accordance with approved work control documents.

Criteria

1. First line supervisors and workers are knowledgeable of their work control documents.

2. Operations work control authority reviews and authorizes all work control documents prior to commencement of work.

3. Effective pre-evolutionary briefings are performed.

4. First line supervisors and workers follow work control document instructions as written. If they cannot perform the work as written, or if unexpected conditions arise, workers and supervisors take conservative decisions to stop the work and follow the approved change control process to modify the work instructions. The bias is set on proving work activities are safe before proceeding, rather than proving them unsafe before halting.

5. First line supervisors and workers understand their stop work authority. Workers at any level can stop unsafe work or work during unexpected conditions. Individuals understand and demonstrate responsibility for safety. Safety and its ownership are apparent in everyone's actions and deeds.

6. Work control documents contain adequate documentation (i.e., work status log) regarding work status including the nature of and response to unexpected conditions.

7. Lessons learned/feedback is incorporated into active and in-development work control documents and/or the work control manual/procedure in a timely manner. Workers are actively involved in identification, planning, and improvement of work and work practices.

Documents Reviewed

- 7W100-TLJ-05-004, *Work Planning Improvements and Job Hazard Analysis Management Assessment*, dated August 25, 2005
- 72200-EMJ-05-021, *Independent Assessment of the CH2M HILL Hanford Group, Inc. Integrated Safety Management System*, dated September 30, 2005
- WFO-WO-05-001097, *241-AP Valve Pit Assessment/Clean & Paint* (work package)
- CLO-WO-05-001241, *Disconnect/Reconnect Slurry Hose to C-201 Riser 6* (work package)
- PER-2004-5832
- *Discussion of Work Schedule Delays* memorandum, dated October 11, 2005
- *Task/JHA/Planning Process Flow* chart
- CLO-WO-05-001930, *241-C-103 POR008 Change Pre-Filter and HEPA Filters 1 & 2*
- 7W100-TLJ-05-004, *Work Planning Improvement and Job Hazard Analysis Management Assessment*, dated August 25, 2005
- TFC-OPS-MAINT-C-01, *Tank Farm Contractor Work Control*, Revision I-1, dated September 12, 2005

- ALARACT 6, 14
- *Expectations for the Implementation of the Integrated Safety Management System*, Rev. 1, dated April 15, 2005
- Tank Farm Operations Daily Report
- TFC-ESHQ-RP_ADM-C-11, REV C-2, *ALARA Joint Review Group*, dated August 4, 2005
- TFC-ESHQ-S_SAF-C-02, REV B-4, *Job Hazard Analysis*, dated August 16, 2005
- TFC-OPS-MAINT-D-02, Rev A, *Work Planning Standing Instructions*, dated August 2, 2004
- A-6003-707, *Work Order Planning Checklist*
- DOE Order 5480.19, *Conduct of Operations Requirements*
- CLO-WO-05-001346, *Flush and Remove SX Hose-in-Hose Transfer Lines (HIHTL's)*
- CLO-WO-05-001346, *Job Hazard Analysis*
- Radiological Work Permit IS-616, *Perform High-Volume Flush, Removal of HIHTLs in SX-A Pit and Associated Tasks*
- ALARA Management Worksheet AW-0973, *Perform on Tanks 241-SX-101, -102, -103, and -105 from SX-A Pit Flush and Remove HIHTL's*
- CLO-WO-05-001721, *241-C-201 Modify Lines to R6*
- TF-SJHA-0425, *Supplemental Tank Farms Job Hazard Analysis-Respiratory Protection*
- TF-SJHA-0341, *Tank Closure Projects-JHA Supports Verbal Direction/RWR/Minor Planned Work Packages*
- Radiological Work Permit CO-211, *241-C-200-Move Hoses from C-202 Riser #6. Move Slurry Hose from C-202 to C-201 Riser #7*
- ALARA Management Worksheet AW-0989, *241-C-200- Move Hoses from C-202 Riser #6 to C-201 Riser #6. Move Slurry Hoses from C-202 to C-201 Riser #7*

Interviews Conducted

- Tank Waste Services Operations Manager
- Field Work Supervisor (CO-9, ATS-3, WFO-3)
- Field Work Supervisor (Fluor Government Group, construction forces)
- Nuclear Chemical Operators (11)
- Radiological Control Technicians (7)
- Electricians (3)
- Shift Operations Manager (3)
- Industrial Hygiene Technicians (1)
- Hanford Atomic Metal Trades Council (HAMTC) Safety Representatives (5)
- Work Planners (5)
- Closure Operations Maintenance Director
- Closure Operations Work Planning Lead (2)
- Waste Feed Operations (WFO) Facility Radiological Control Supervisor
- WFO Component/System Engineer
- Pipefitter (1)
- WFO Safety Specialist
- WFO Industrial Hygiene Manager
- ORP Facility Representatives (8)
- Industrial Safety Manager
- WFO Work Management Director
- Senior Vice President of Nuclear Operations
- Vice President and Deputy of Nuclear Operations
- Work Planning Director
- Closure Operations Shift Manager

Observations of Work (if applicable)

- Pre-job brief for core sampling equipment set-up at AW-103
- Pre-job brief for decontamination of AP Valve Pit (2)
- Meeting with WFO Radiological Control Technicians (RCTs) regarding alpha exempt survey requirements
- Work to decontaminate AP Valve Pit (WFO-WO-05-001097)
- Waste Feed Operations RCT Routines
- Morning work planning meetings for Waste Feed Operations (2)
- Morning work planning meeting for Sampling
- Morning worker brief for Waste Feed Operations RCTs
- Afternoon Plan of the Day meeting for Closure Operations
- Morning work planning meetings for Closure Operations (2)
- Move hoses from C-202 to C-201 (CLO-WO-05-001721)
- Pre-job brief for moving hoses from C-202 to C-201 (CLO-WO-05-001721)
- Post-job review for moving hoses from C-202 to C-201 (CLO-WO-05-001721)
- Remove Hose-in-Hose Transfer Lines (HIHTLs) from trenches with crane (CLO-WO-05-001346)
- Pre-job brief for removing HIHTLs from trenches (CLO-WO-05-001346)
- Post-job review for HIHTLs from trenches (CLO-WO-05-001346)
- Pre-job brief for relocating slurry hoses (CLO-WO-05-001241)

Discussion of Results

TFC supervisors and workers performed work in accordance with the approved work orders. During observation of several work activities, the ISMS Team determined that work packages were properly authorized by appropriate personnel, approved for work by the operations organizations, and were performed as written.

First line supervisors for the most part were very knowledgeable of their scope of work and the work packages. They understood the work instructions and were able to adequately convey the instructions to workers during the pre-job briefs. Additionally, the ISMS Team noted an enhancement to the existing work control process in the Waste Feed Operations (WFO) organization. Lead craft personnel in WFO assumed a strong leadership role in overseeing the development of planning packages, assembling the workforce for the work activity, ensuring work activity readiness, and working with the Field Work Supervisor to ensure that the workforce was ready to safely execute the work activity as scheduled. This was noted as an efficiency improvement since the March 2005 Post-Implementation Portion of the ISMS Validation Review **(Strength WP-4-S-1)**.

During work observations and interviews, the ISMS Team identified that very few of the workers had been involved in the development (planning) of the work packages. This was consistent with a Finding during the October 2004 ISM Improvement Validation Review, which stated that "Worker involvement in work planning appears to be less than effective."

In response to the October 2004 Finding on worker involvement in work planning, the TFC instituted a final work package walkdown with the work team, prior to the pre-job brief, in order to ensure that the actual workers who performed the job understood the work package. In the March 2005 Post-Implementation Portion of the ISM Improvement Validation Review, the report stated that worker involvement in the pre-job walkdown was sufficient to ensure an understanding of the scope the work and safety-related information.

Based on interviews and document reviews, this final pre-job walkdown was not being performed by several organizations, contrary to the TFC work control procedure **(Finding WP-4-F-1)**. Specifically, the Closure Operations and Waste Sampling organizations were not conducting pre-job walkdowns per the work control

procedure. WFO was conducting the required pre-job walkdowns, but only with representatives from the work disciplines, not the entire work team. Only the 222-S Laboratory and the construction group (Fluor Government Group) were performing the pre-job walkdowns according to the work control procedure requirements. The TFC has determined that it is not feasible to involve the entire work team in the work package development and planning process. Therefore, the final pre-job walkdown becomes a critical planning step to ensure the work team understands the scope of work and detailed work instructions. During an interview with some of the workers, the workers stated that they felt that such a walkdown was a great idea and wondered why it was not performed as required.

Several pre-job briefs were observed and were determined to be well-conducted. Supervisors were knowledgeable of the scope and content of the work packages and work instructions. Workers received an adequate briefing on their roles and responsibilities for the work. Workers were involved and actively participated in the briefings, including raising questions and discussing communications and logistics. Contingencies and possible abnormal conditions were discussed, along with emergency response actions and responsibilities.

The ISMS Team observed several work activities in the field. Based on these observations and based on interviews, the ISMS Team determined that TFC supervisors and workers follow work control document instructions as written. One instance was observed where the required personal protective equipment delineated in the Job Hazard Analysis (JHA) was not used (see discussion below). The ISMS Team also observed an instance where the work instructions were not consistent with (but more restrictive than) As Low as Reasonably Achievable Control Technology (ALARACT) 14 requirements. The TFC identified this inconsistency, and properly modified the work instructions prior to beginning that portion of the work.

The pre-job brief, execution of work, and post-job review for removing hose-in-hose transfer lines (HIHTLs) from trenches (CLO-WO-05-001346) were observed. During the pre-job brief, the Field Work Supervisor (FWS) reviewed the scope of the planned activities, specific tasks, and with one exception, the hazards and controls associated with the planned work. The FWS discussed the need to remove insulation from the hose once it was removed from the trenches, but did not discuss the use of knives to complete the task. While observing the workers prepare to remove insulation from the hoses, the ISMS Team noted that the workers were wearing surgeon gloves and carrying long, fixed blade knives. The ISMS Team asked an ORP Facility Representative if the workers should be wearing cut resistant gloves. The Facility Representative questioned the FWS who did not know. The FWS asked the workers who said leather gloves were not required. The FWS did not have the work package for the activity at the work site, thus could not verify if such a control existed. During subsequent review of the JHA at the change trailer, it was noted that for the work involving sharp objects, leather gloves or equivalent were required when handling sharp objects and that workers were to use retractable type knives **(Finding WP-4-F-2)**. This was addressed by the FWS at the post-job review. Of the approximately 25 workers performing this activity, none had been involved in the planning process and approximately forty percent had completed a final walkdown.

The pre-job brief, execution of work, and post-job review for moving hoses from Tank 241-C-202 to Tank 241-C-201 (CLO-WO-05-001721) were observed. The FWS adequately covered the scope of the day's activities, associated hazards and controls, and personnel roles during the pre-job brief. Work activities were performed per work package instructions, but field conditions did not provide for efficient work. A scaffold and hoses in the work area provided ergonomic hazards for the workers. Additionally, due to elevated contamination levels in the glove bag, extensive decontamination was required. Between the ergonomic and contamination issues, the work took longer than anticipated and the work crew ran out of air bottles. Workers had to wait in a tent while additional bottles were found. This was appropriately addressed by one of the workers at the post-job review. Only one of the approximately 20 workers performing the work had been a member of the planning team for the work, and none of the workers had performed a final walkdown per the requirements of TFC-OPS-MAINT-C01, *Tank Farm Contractor Work Control.*

The pre-job brief and execution of work for decontamination of the AP Valve Pit (WFO-WO-05-001097) were observed. At the pre-job brief, out of 20 workers, only two nuclear chemical operators from the work crew had been involved in the work planning activities (in addition to the FWS). Review of the work package indicated that a walkdown was performed prior to the pre-job brief, but included only representatives from each work discipline, and not the entire work team. The pre-job brief was thorough, covered applicable hazards and controls, and involved the workers. The work was executed as planned with no upset conditions.

The pre-job brief for relocating slurry hoses (CLO-WO-05-001241) was observed. The FWS adequately discussed the planned scope, hazards, controls, and a recent pen and ink change to the work package. This work was not performed as scheduled in the morning due to an issue with a driver's air line.

The ISMS Team interviewed one Closure Operations Shift Manager. During the interview, the Shift Manager demonstrated adequate knowledge of the Tank Farm Documented Safety Analysis Technical Safety Requirements and his role in releasing new and existing work activities.

Personnel interviewed, including managers, supervisors, and workers, clearly understood their authority and responsibility to stop work for unsafe or unexpected conditions. Workers stated that they did not fear reprisal when raising safety issues or when exercising their stop work authority.

The ISMS Team observed several work activities in the field. Based on the observations and interviews, the ISMS Team determined that TFC supervisors and workers follow work control document instructions as written. One instance was observed where this was not the case. During the performance of work order WO-05-001346, workers did not follow the JHA controls for the use of personal protection equipment when using sharp tools (knives) **(Finding WP-4-F-2)**. The ISMS Team also observed an instance where the work instructions were not consistent with (but more restrictive than) ALARACT 14 requirements. In this case, the work instructions were properly modified prior to beginning that portion of the work.

Work control documents were also reviewed to ensure that adequate work documentation was recorded to describe the status of work progress and for response to unexpected conditions. The FWS adequately documented the requisite information in the work record. Although the ISMS Team determined that there is room for improvement in this area, no specific Findings or Observations were identified. Generally, FWSs should strive to ensure that the work record adequately documents the historical progression of the work activity. In addition, the work record is the critical tool to document work package feedback for use by the planner in future similar work packages.

The feedback element of the work control process was reviewed and observed. Workers interviewed by the ISMS Team stated that they were satisfied with the feedback function relative to the work planning and control process. They felt that their feedback was actively sought and used to improve the work processes. The ISMS Team observed consistent use of worker feedback by the FWS during work execution, making changes to the work instructions on a real-time basis when appropriate.

The ISMS Team reviewed the procedures and processes for the Lessons Learned Program and feedback associated with work planning and determined that these programs require improvement, and that use in work planning was not consistent **(Observation WP-4-O-1)**. Additional improvement is warranted in this area. The ISMS Team determined that the planners were not consistently acting upon the feedback provided in the work packages upon work completion, and not consistent in searching for available feedback when planning work packages. The TFC should evaluate the existing procedural requirements for use of Lessons Learned and worker feedback, evaluate existing processes used by planners to search for feedback when planning packages, and determine program enhancements to improve consistent use of worker feedback. (Note: Additional review

comments on the overall TFC Lessons Learned Program can be found in "Review Form – FI-2" of this Report; however, this Objective focuses on the use of Lessons Learned and feedback specific to the work control process).

Conclusion

The criteria for this objective were partially met.

Workers and supervisors performed work in accordance with approved work control documents. Some workers were involved in work planning. The ISMS Team determined that the final walkdown by the work team, prior to the pre-job brief, was not being conducted by some of the TFC organizations, contrary to the work control procedure. This was considered by TFC management to be a crucial element of the work control process. Additionally, one instance was identified where a control identified in the JHA was not implemented in the field. This indicated that more attention is needed in the implementation of JHA controls. The ISMS Team also identified that more attention is needed in the areas of Lessons Learned and worker feedback, to ensure that these valuable improvement mechanisms are consistently applied to effect continuous improvement to TFC processes and procedures.

Findings

WP-4-F-1 Several organizations were not conducting final pre-job walkdowns with the work team, contrary to the work control procedure.

WP-4-F-2 Workers performing insulation removal during performance of work order CLO-WO-05-001346 did not follow Job Hazard Analysis (JHA) controls for the use of the sharp objects.

Observations

WP-4-O-1 The Lessons Learned Program and work control feedback process require improvement.

Strengths

WP-4-S-1 Lead craft personnel in Waste Feed Operations (WFO) took an active role in work execution, significantly improving efficiency.

Review Form – WP.5

Objective

WP-5: Work Planning and Control Oversight: The Contractor has an established process that requires line management and assessment personnel perform timely assessments/surveillances of the work planning and control process, including periodic reviews active and in-development work control documents.

Criteria

1. The contractor has scheduled and performed independent and self-assessment of the work planning and control process. These activities are of sufficient scope, detail, and quantity that the contractor can ascertain the status of their work planning and control process.

2. Line Managers periodically perform surveillances which include the observations of job walkdowns and JHA walkdowns/meetings, pre-evolution briefings, and work performed to work control documents.

3. Line Managers periodically review in-development and approved work control documents.

4. The contractor tracks and trends the results of oversight activities performed on their work planning and control process and takes appropriate actions.

Documents Reviewed

- TFC-ESHQ-AP-C-01, Revision C-1, *Management Assessment,* dated May 31, 2005
- TFC-ESHQ-AP-C-02, Revision B-1, *Independent Assessments,* dated September 13, 2005
- TFC-ESHQ-AP-C-03, Revision A-9, *Management Observation Program,* dated August 19, 2005
- TFC-OPS-MAINT-C-01, Revision I-1, *Tank Farm Contractor Work Control,* dated September 12, 2005
- Interoffice memo from Work Planning to V. M. Pizzuto, *Work Planning Improvements and Job Hazard Analysis Management Assessment*, dated August 25, 2005
- Interoffice memo from Performance Assurance to D. I. Allen, *Transmittal of CH2M HILL Hanford Group, Inc. Mid-Point Assessment of Fiscal Year 2004 Integrated Safety Management System Corrective Action Plan*, dated December 21, 2004
- Interoffice Memo from Assessments to V. M. Pizzuto, "Independent Assessment of the CH2M Hill Hanford Group, Inc. Integrated Safety Management System," dated September 30, 2005
- Interoffice Memo from assessments to V. M. Pizzuto, March 1, 2005, "CH2M HILL Hanford Group, Inc. Midpoint Assessment of the Integrated Safety Management System Consolidated Corrective Action Plan
- Spreadsheet Table "Evaluation of Management Assessment Reports for [FY05] showing color-coded evaluation grades/scores for each management assessment
- Interoffice Memo from Closure Support to E. J. Millikin, July, 2005, subject: "Management Observation Program Report for June and July 2005"
- Interoffice Memo from WFO Support to E. J. Millikin, August 25, 2005, subject: "Waste Feed Operations Assessment Report for June and July 2005"
- Interoffice Memo from Work Planning to V. M. Pizzuto, August 25, 2005, subject: "Work Planning Improvements and Job Hazard Analysis Management Assessment"
- Interoffice Memo from Closure Work Planning to E. J. Millikin, April 15, 2005, subject: "Work Control Feedback Process Management Assessment"

- Interoffice Memo from Closure Support, July 22, 2005, subject: "Fiscal Year 2005 – Management Assessment Corrective Action Management-Drill Program Schedule Adherence/Drill Performance"
- Interoffice Memo from Waste Feed Operations Support to J. A. McDonald, March 7, 2005, subject: "Management Assessment Report for Fiscal Year 2005 – Waste Feed Operations-M-0137, Waste Feed Operations First Line Manager Effectiveness," with completed March 9, 2005
- Interoffice Memo from Engineering Services to R. S. Popielarczyk, June 28, 2005, subject: "Engineering Management Observation Program (MOP)
- Interoffice Memo from Engineering Services to R. S. Popielarczyk, August 18, 2005, subject: "Engineering Management Observation Program (MOP)
- Work Planning Director Management Observation on C-202 Contamination Event

Interviews Conducted

- TFC Assessment Manager
- TFC Assessment and Corrective Actions Manager (recently reassigned to position)
- TFC Closure Operations Deputy Executive Vice-President
- TFC Closure Operations Support Manager (Management Assessment Coordinator)
- TFC Engineering Services Vice-President Retrieval Operations Director
- TFC Environmental Health Director
- TFC Work Planning Director
- TFC Waste Feed Support Management Assessment coordinator
- HAMTC Safety Representative
- TFC Waste Feed Operations Executive Vice-President
- TFC Waste Feed Industrial Hygiene (IH) Manager
- TFC Waste Feed Senior Operations Director
- TFC Waste Feed Lead IH Technician
- TFC Waste Feed IH Technician
- TFC Closure Operations IH Technicians (2)
- TFC Closure Operations IH Manager

Observations of Work (if applicable)

- Job Hazard Analysis (JHA)/Table Top Review

Discussion of Results

The TFC has scheduled and performed independent and self-assessments regarding the work planning and control activities. Examples include management assessments conducted by the Work Planning Director and Closure Work Planning organization during FY 2005, and several independent assessments evaluating the effectiveness of the TFC Integrated Safety Management System. These assessments appeared to be effective in identifying areas needing improvement. See "Review Form – FI-1" on overall discussion of the TFC self-assessment program and "Review Form – FI-2" for discussion on corrective action effectiveness.

Line managers scheduled and performed numerous surveillances (management observations under the Management Observation Program or MOP) of field work activities and work packages. Many of the documented MOPs target observations of work planning activities, including job walkdowns, Job Hazard Analysis (JHA) and work package tabletop meetings, pre-job briefings, as well as work performance in the field. Based on interviews, managers are performing senior supervisory watch functions, including attending the pre-job briefing Joint Review Group meetings, and selected field observations. Industrial hygiene managers interviewed

noted that they periodically review work planning and work activities. There is evidence that managers are performing routine oversight by reviewing work packages being prepared and final work packages, and observing work performed in the field.

The TFC has performed some work performance tracking and trending through quarterly performance indicators. In the area of work execution readiness, some contractor managers are maintaining and monitoring, on a daily basis, performance indicators which contribute to work execution delays. Use of these performance metrics were used on a routine basis to improve efficiency and to effect changes to deficient aspects of the work control programs.

Conclusion

The criteria for this objective were met.

The TFC established and implemented procedures to ensure line management and assessment personnel perform timely oversight of the work planning and control process, and resulting work packages.

Findings

None.

Observations

None.

Strengths

None.

Review Form – HAZ.1

Objective

HAZ-1: Industrial Hygiene Occupational Exposure Assessment and Control of Tank Vapors: The contractor accurately identifies actual and potential occupational exposures to tank vapors and implements controls appropriate to the hazard.

Criteria

1. The contractor is making adequate progress in implementing corrective actions in response to the DOE Office of Independent Oversight and Performance Assurance (OA) investigation and follow-up OA review of worker exposures at the Hanford Tank Farm. The EM-1 approved corrective action plan is being tracked in EH CATS and accurately reflects status of corrective actions.

2. Facility-related tank vapor engineering controls (e.g., stack extensions, filtered ventilation, and remote venting of tanks) are in place or specific/funded project plans are in place for completion.

3. Work planning uses results of tank vapor headspace characterization and industrial hygiene occupational exposure assessments to implement hazard-appropriate controls.

4. Occupational Assessment/monitoring data is appropriately documented for occupational medical and future hazard analysis/work planning purposes.

Documents Reviewed

- TFC-PLN-43, Rev A-5, August 3, 2005, subject: "Tank Farm Contractor Health and Safety Plan"
- TFC-PLN-55, Rev A-1, April 15, 2005, subject: "Industrial Hygiene Safety Management Program Plan"
- TFC-PLN-76, Rev A, September 19, 2005, subject: "Project Management Plan for Resolution of the Tank Farm Vapor Issues
- TFC-ESHQ-S_IH-D-27, Rev A-1, August 22, 2005, subject: "Tank Vapor Source Monitoring"
- TFC-ESHQ-S_IH-CD-35, Rev A, February 8, 2005, subject; "Managing Air Monitoring Zones"
- TFC-ESHQ-IH-STD-03, Rev A, November 30, 2004, subject: "Exposure Monitoring, Reporting, and Records Management"
- TFC-BSM-TQ-STD-07, Rev B, February 10, 2005, subject: "Industrial Hygiene Technician Training and Qualification Requirements"
- "Vapor Solutions Project" schedules with Gantt chart, dated October 6 and 13, 2005
- Interoffice Memo from Mark W. Jones, Environmental Health to T. J. Anderson, October 3, 2005, subject: "EAS Implementation Plan"
- Tank Farm Industrial Hygiene database presentation handouts on Air Sampling Records Flow, Monitoring Records Flow, and IH Instrument Structure
- "Industrial Hygiene Chain of Custody and Laboratory Request" Form
- Interoffice Memo from Waste Feed Operations Industrial Hygiene to J. A. McDonald, August 1, 2005, subject: Waste Feed Operations Injury/Illness Analysis
- Letter from CH2M HILL Environmental Health Industrial Hygiene to (individual's name redacted for privacy reasons), July 19, 2005, subject: "Industrial Hygiene Monitoring Results" as well as 9 similar examples of communicating IH monitoring results to individuals monitored
- Interoffice Memo from Closure Operations Industrial Hygiene to T. J. Anderson, September 1 2005, subject: "BY-108 Breather Filter Stack Extension Installation Air Sample Results"

- Chemical Vapor Solutions Team Meeting Minutes for July 27, August 10 and October 5, 2005
- Memo from Glenn S. Podonsky, OA, to Roy J. Schepens, ORP Manager, August 10, 2005, subject: "Final Report- Office of Independent Oversight and Performance Assurance Follow-up Review of Worker Vapor Exposures and Occupational Medicine Program at the Hanford Site, June 2005"
- EH Corrective Action Tracking System for ORP/Hanford Site Tank Vapor Exposure Corrective Action Plan Status
- ORP Assessment Report, A-05-ESQ-TANK FARM-007, subject: Fiscal Year 2005 Review of CH2M HILL Hanford Group, Inc. Industrial Hygiene Program," April 25-29, 2005
- Briefing Charts "Contract Performance, July 2005, the TFC presented to HQ EM Senior Management
- Briefing Charts "Vapor Progress, PER-2003-3497/PER-2004-2193, End Point Assessments" with Vapor Timeline Chart
- Briefing Charts "Vapor Sampling Update," August 17, 2005
- Briefing Char "A-Prefix Sampling Summary," September 30, 2005
- Table "A-Prefix Sampling Summary – Status of Sampling Progress and Results," September 30, 2005
- Administrative Interface Agreement between CH2M HILL Hanford Group, Inc. and AdvanceMed Hanford for Information Transfer and Feedback on Exposure Potential, Medical Services and Medical Needs
- DOE Computerized Accident/Incident Reporting System (CAIRS) User Defined Search Report on TFC injury/illness data for FY05

Interviews Conducted

- ORP Tank Farms Project Assistant Manager
- ORP Director, Office of Environmental, Safety and Quality
- TFC Environmental Health Director
- TFC Environmental Science and Technology Vice-President
- TFC Closure Operations Deputy Executive Vice-President
- TFC Engineering Services Vice-President Retrieval Operations Director
- TFC Waste Feed Operations Executive Vice-President
- TFC Waste Feed Industrial Hygiene Manager
- TFC Waste Feed Senior Operations Director
- TFC Waste Feed Lead Industrial Hygiene (IH) Technician
- TFC Waste Feed IH Technician
- TFC Environmental Health IH Technician
- TFC Closure Operations IH Technicians (2)
- TFC Closure Operations IH Manager
- HAMTC Safety Representative

Observations of Work

- IH Instrumentation Issue Station

Discussion of Results

There has been much progress during the past year to address the technical challenges that need to be addressed in order to bring resolution to the tank vapor and industrial hygiene programmatic issues facing the TFC. The contractor has sampled tank headspace for chemicals of potential concern (COPC) and is finalizing the establishment of occupational exposure limits (OEL) for chemicals with no OELs recognized by the typical sources, such as the Occupational Safety and Health Administration, the American Conference of Governmental Industrial Hygienist, or the National Institute for Occupational Safety and Health. The TFC established an

independent toxicology panel to critique the technical basis for self-imposed OELs assigned to the COPC. In addition, progress has been made in the:

- Development of an Industrial Hygiene (IH) technical basis document and IH exposure monitoring strategy following DOE guidance;
- Establishment and implementation of improved IH technician training and qualification protocols;
- Improvement of sampling and monitoring technical protocols; and
- Development and management of a database.

While the Corrective Action Plan for the DOE OA tank vapor investigation has been completed as documented in the DOE Corrective Action Tracking System, the corrective actions were not sufficiently effective at the time of this review to rescind the mandatory use of supplied-air respirators (Self-Contained Breathing Apparatus or air line respirators) (SARs) for entry into the Tank Farms. The mandatory use of SARs was prompted by the potential for occupational exposures to nitrous oxide, elemental mercury, dimethyl mercury, and formaldehyde. While many of the technical components of functioning IH program have been established, the TFC believes there are some final technical basis updates required to address recent sampling and monitoring results prior to fully utilizing the improved IH program to characterize occupational exposures during work planning activities and establish data-driven hazard controls. Based on interviews, the ISMS Team found that ORP will not close the OA issues until ORP conducts an effectiveness review currently planned in early fiscal year (FY) 2006. The TFC has also scheduled an effectiveness review of the IH program for October-November 2005.

In June 2005, OA conducted a follow-up review to their FY04 investigation and indicated that corrective actions were well under way, but recommended a project plan be prepared to bring all the actions to complete and effective resolution. TFC-PLN-76, Rev A, *Project Management Plan for Resolution of Tank Farm Vapor Issues*, was established to address the OA recommendation. The project management plan outlines the path forward to phase out the mandatory use of SARs on a Tank Farm-by-Tank Farm basis, with the A-prefix Tank Farms being the first. The S-prefix and the C-prefix Tank Farms would follow using appropriate controls tailored for the level of hazard present, rather than default to mandatory use of SARs. TFC-PLN-76 indicates that the TFC will not stop the mandatory use of SARs in the A-prefix Tank Farms for non-waste intrusive work until October 2006. This long delay is due to a very conservative approach to the completion of planned IH technical basis activities. Tank Farm Vapor Resolution schedules provided to the ISMS Team indicate that removal of the mandatory use of SARS in the A-prefix Tank Farms may be as early as the second quarter of FY06. In addition, interviews with many TFC senior managers and IH professionals indicate that they are actually looking to "go off fresh air" in the A-prefix Tank Farm in January 2006, and has communicated this to workers at tailgate safety meetings. It is recommended that TFC-PLN-76 be updated to reflect the actual timing of the A-prefix Tank Farm milestone, based on planned activities that were completed in a shorter time than planned and/or planned activities that were completed in parallel, and that the TFC consider including these expectations in their ISMS annual performance objectives, performance measures, and commitments. The elimination of the mandatory SAR's use in the A-prefix Tank Farms is important to performing work safely/efficiently and ensuring controls are tailored to the hazards; an up-to-date, well communicated plan will help ensure all managers and workers understand the process and schedule.

Facility-related tank vapor engineering controls consisting of sealing tanks for vapor leaks and extending ventilation stacks were accomplished in FY04 and early FY05. Most of the leak paths have been sealed and ongoing maintenance is in progress; however, not all stack extensions have been completed as originally planned. While the potential for installation of a remote stack outside the C Tank Farm and completion of other stack extensions still exists, the decisions will be based on the final results of tank farm vapor characterization from the sampling and monitoring currently taking place. The TFC indicates that the tank vapor data taken after the initial installation of stack extensions indicate there may be no major benefit to raising the stacks in most cases. That is, the TFC is finding little or no exposures over the OELs regardless of stack height. Interviews with senior managers indicate that stack extensions are still a potential engineering control, but will be based on data analysis that shows such extensions would be effective in controlling at OEL action levels or higher.

Work planning activities do not currently rely on the tank vapor headspace characterization and IH occupational exposure assessment data to implement controls appropriate to the hazard, since the TFC is still requiring the mandatory use of SARs in the Tank Farms. The TFC has established the IH and work planning protocols, as well as the development of a new Tank Farm Industrial Hygiene database, to allow for occupational exposure assessment data to help identify IH hazards involved in work being planned, and to apply controls appropriate to the hazards identified. The TFC should verify the effectiveness of these protocols and use of database information in work planning, prior to discontinuing the use of SARs in the A-prefix Tank Farms.

The TFC developed an IH database to support the IH monitoring and sampling data analysis, occupational medical activities, and epidemiological analyses. The database developer/manager demonstrated the database for the ISMS Team. Notable features of the database includes documentation of IH equipment and calibration status, chain of custody for IH samples sent to the laboratory, the generation of field survey forms, direct data input into the database, the generation of electronic presentations of data, and quality control and oversight of data by lead IH personnel. The TFC has established an administrative interface document with AdvancedMed Hanford, the primary occupational medical services provider at the Hanford Site. This agreement provides AMH real-time access to worker exposure data for medical surveillance and occupational health diagnosis purposes. The database provides an excellent tool to make data-driven IH hazard control determinations **(Strength HAZ-1-S-1)**. The database is currently being enhanced to include documentation for workers included in "similarly exposed groups." "Similarly exposed groups" are predefined groups of individuals that do similar work activities; e.g., tank pit entry or breather filter replacement. The ability to capture personal air sampling results of a specific individual (normally the individual with the highest potential for exposure due to relationship to the hazard source), and correlate it with workers in the "similarly exposed group" is an important tool to: 1) evaluate future potential exposures during work planning activities; and 2) link industrial hygiene monitoring data to all workers for occupational medical surveillance and epidemiological purposes.

Conclusion

The criteria for this objective were met.

The TFC has made much progress in developing an IH technical basis and a comprehensive program to support final resolution of the tank vapor issues. The technical basis is being updated to reflect some recent sampling and monitoring data, and the TFC has a project management plan to incrementally (by A-prefix Tank Farms first, then S, and finally C Tank Farms) move away from the default, mandatory use of supplied-air respirators for entry into any Tank farm. In addition, the project plan will allow IH controls tailored to the actual hazards present in the work activity. The TFC project management plan should be updated, as necessary, to reflect actual status of accomplishing the plan milestones, and include the plan/milestones as part of their ISMS FY06 annual performance objectives, performance measures and objectives. This is an important safety and health initiative that can reduce the increase in injuries resulting from the use of supplied-air respirators and provide long-term resolution of the tank vapor issue; and the TFC should continue to place emphasis on this important initiative.

Findings

None.

Observations

None.

Strengths

HAZ-1-S-1 The Tank Farm Industrial Hygiene (IH) database provides an excellent tool to make data-driven IH hazard control determinations.

Review Form – FI.1

Objective

FI-1: Contractor Self-Assessments: The contractor uses self-assessment to evaluate performance at all levels to determine effectiveness of their Integrated Safety Management System.

Criteria

1. The contractor has established a self-assessment process. It includes guidance for both ongoing and periodic focused self-assessments.

2. The contractor has scheduled self-assessments that are of sufficient scope, detail, and quantity that the contractor can ascertain the status of their Integrated Safety Management System.

3. Self-assessments, which focus on hands-on work and the implementation of administrative processes, involve workers, supervisors, and managers to encourage identification and resolution of deficiencies at the lowest level practicable (e.g., workplace inspections and post-job reviews).

4. Each organization routinely conducts its own self-assessments of programs, processes, and performance. Leaders throughout the organization set an example for safety through their direct involvement in oversight activities and associated performance improvement.

5. Support organizations perform self-assessments of their performance and the adequacy of their processes.

6. Self-assessment results are documented commensurate with the significance of and risks associated with activities being evaluated and communicated to affected groups and individuals.

7. The contractor assesses the implementation and adequacy of their self-assessment process, including analysis of the collective results of lower-level self-assessments.

8. Personnel conducting self-assessments have the necessary expertise.

9. Self-assessments identify meaningful results and areas for improvement.

10. Leaders are in close contact with the front-line; leaders pay attention to real-time operational information. Maintaining operational awareness is a priority. Leaders identify critical performance elements and monitor these closely.

11. Independent oversight groups periodically evaluate programs, processes, and performance.

Documents Reviewed

- TFC-PLN-10, Rev B, April 1, 2005, *Assessment Program Plan*
- TFC-ESHQ-AP-C-01, Rev C-1, May 31, 2005, *Management Assessment*
- TFC-ESHQ-AP-C-02, Rev B-1, September 13, 2005, *Independent Assessments*
- TFC-ESHQ-AP-C-03, Rev A-9, August 19, 2005, *Management Observation Program*

- TFC-ESHQ-AP-D-05, Rev A, February 26, 2004, *Integrated Assessment Schedule Administration*
- "FY2006 CH2M HILL Integrated Assessment Schedule, Rev 1," dated October 6, 2005
- Table "Waste Feed Operations FY2006 Assessments (Integrated Schedule)" showing Proposed Management Assessment topic, manager assigned, month scheduled, and justification for selection
- Briefing Charts "Assessment Results" prepared for presentation to the Executive Safety Review Board scheduled for October 14, 2005
- Spreadsheet Table "Evaluation of Management Assessment Reports for [FY05] showing color-coded evaluation grades/scores for each management assessment
- Spreadsheets dated October 13, 2005, "FY2005 MA's Completed" showing assessment report number, title, team lead, month due, month completed, status, and type (55 Management Assessments were listed as completed; 5 were listed as not yet complete)
- Management Assessment Postponement or Cancellation Form (6 completed/signed by TFC Deputy General Manger)
- "ISMS Review Feedback and Improvement" CH2M HILL In-briefing presentation
- Interoffice Memo from Closure Support to E. J. Millikin, July, 2005, subject: "Management Observation Program Report for June and July 2005"
- Interoffice Memo from WFO Support to E. J. Millikin, August 25, 2005, subject: "Waste Feed Operations Assessment Report for June and July 2005"
- Interoffice Memo from Work Planning to V. M. Pizzuto, August 25, 2005, subject: "Work Planning Improvements and Job Hazard Analysis Management Assessment"
- Interoffice Memo from Closure Work Planning to E. J. Millikin, April 15, 2005, subject: "Work Control Feedback Process Management Assessment"
- Interoffice Memo from Closure Operations Maintenance to E. J. Millikin, May 10, 2005, subject: "Fiscal Year 2005 Management Assessment – Preventive Maintenance"
- Interoffice Memo from Closure Support to E.J. Millikin, August 25, 2005, subject: "Specialty Assessment – Closure Operations Government Vehicle Control and Access"
- Interoffice Memo from Closure Support to E. J. Millikin, June 29, 2005, subject: "Fiscal Year 2005-Management Assessment Corrective Action Management – ESTARS/PER Actions"
- Interoffice Memo from Closure Support, July 22, 2005, subject: "Fiscal Year 2005 – Management Assessment Corrective Action Management-Drill Program Schedule Adherence/Drill Performance"
- Interoffice Memo from Mission Analysis to M.R. Kenbel, March 30, 2005, subject: "Management Assessment on Waste Feed Operation On-The-Job Training, FY2005-WFO-M-0136," with completed Assessment Program Office Review Form dated April 12, 2005
- Interoffice Memo from Waste Feed Operations Support to J. A. McDonald, March 7, 2005, subject: "Management Assessment Report for Fiscal Year 2005 – Waste Feed Operations-M-0137, Waste Feed Operations First Line Manager Effectiveness," with completed March 9, 2005
- Interoffice Memo from Wasted Feed Operations Maintenance to C. E. Anderson, April 29, 2005, subject: "Management Assessment Report: FY2005-WFO-M-140, Waste Feed Operation Preventive Maintenance Program and Process Effectiveness," with completed Assessment Program Office Review Form dated March 4, 2005.
- Interoffice Memo from Waste Feed Operations to E. J. Milliken, May 31, 2005, subject: Fiscal Year 2005 – Management Assessment Report 'Records Management'," with completed Assessment Program Office Review Form (undated)
- Interoffice Memo from Engineering Services to R. S. Popielarczyk, June 28, 2005, subject: "Engineering Management Observation Program (MOP)
- Interoffice Memo from Engineering Services to R. S. Popielarczyk, August 18, 2005, subject: "Engineering Management Observation Program (MOP)

Interviews Conducted

- ORP Assistant Manager for Tank Farms
- TFC Assessment Manager
- TFC Lead Quality Assurance Assessor
- TFC Lessons-Learned Program Manager
- TFC Closure Operations Deputy Executive Vice-President
- TFC Closure Operations Support Manager (Management Assessment Coordinator)
- TFC Engineering Services Vice-President Retrieval Operations Director
- TFC Environmental Health Director
- TFC Waste Feed Support Management Assessment coordinator
- HAMTC Safety Representative
- TFC Environmental Science and Technology Vice-President
- TFC Assessment and Corrective Actions Manager (recently reassigned to position)
- TFC Waste Feed Operations Executive Vice-President
- TFC Waste Feed Industrial Hygiene Manager
- TFC Waste Feed Senior Operations Director
- TFC Waste Feed Lead Industrial Hygiene (IH) Technician
- TFC Waste Feed IH Technician
- TFC Environmental Health IH Technician
- TFC Closure Operations IH Technicians (2)
- TFC Closure Operations IH Manager

Observations of Work (if applicable)

N/A

Discussion of Results

The TFC developed a plan (TFC-PLN-10, *Assessment Program Plan*) that addresses the overall assessment program. In addition, procedures have been developed and implemented on the scheduling of assessments (TFC-ESHQ-AP-D-05, *Integrated Assessment Schedule Administration*), as well as the conduct of self-assessments through a management assessment program (TFC-ESHQ-AP-C-01, *Management Assessment*) and a management observation program (MOP) (TFC-ESHQ-AP-C-03, *Management Observation Program*). The TFC also has procedures for conducting assessments that target specific issues to complement the scheduled management assessments and MOPs. The TFC plans and procedures provide a solid foundation for scheduling, conducting, tracking assessment performance, and identifying opportunities for improving the conduct of their work activities.

In FY 2005, the TFC originally scheduled 65 management assessments, and added three later in the fiscal year. Of those 68 scheduled: 55 were completed mostly on schedule within the fiscal year; five management assessment reports were still pending at the time of the Review; and eight were cancelled with TFC Chief Operating Officer approval. The management assessments (including MOPs) appear to be of sufficient quantity, scope and detail to help managers understand their organization's performance and areas requiring improvement. Many of the self-assessment activities directly address one or more of the ISM core functions. Based on interviews with senior line management and a review of the FY06 Integrated Assessment Schedule, TFC management will be performing significantly fewer management assessments in FY06. The rationale for this reduction is that the management assessments will be larger in scope and cross all line organizations. TFC management is attempting to provide managers opportunities for cross training between line organizations, and ensure consistent application of company processes.

Each major TFC organization conducts and documents an analysis of all the MOPs occurring within a two-month timeframe, for a total of six rollup analyses per year. Bimonthly analyses are used as a performance tracking tool to ensure Management Observation Program (MOP) assessments are scheduled and completed as scheduled, and evaluate documentation of formal tracking of issues in the Problem Evaluation Request (PER) system. The rollup analyses were found to be effective in tracking MOPs and there was some evidence of trending and identification of recurring issues. Many MOPs are scheduled to review a topical area that is to be covered by an upcoming, more formal, management assessment. Several management assessment reports were found to include analysis of the results of these targeted MOPs and subsequent rollup analyses. Based on review of selected management assessment reports and MOP rollup reports, it appears that self-assessments are providing meaningful results that are useful to management to ensure continued improvement. For a review of the effectiveness of corrective action management of self-assessment activities, see "Review Form – FI-2."

Self-assessments were found to cover both administrative processes and the actual conduct of work. Based on interviews and a review of MOP reports, it appears that there is an effort to resolve deficiencies by managers taking direct action themselves and submitting a PER, when necessary, if determined important to track for trending purposes.

Each TFC organization proposes its own management assessment schedule for inclusion in an overall company annual integrated schedule, and assigns managers to lead and participate in the management assessments. Resulting management assessment reports are routinely provided to all line management and the Assessment Director, and the results are presented at Executive Safety Review Board meetings. The assessment procedure requires managers that conduct management and specialty assessments to be qualified. To participate in management assessments, managers must complete an online training module and participate in a 4-hour training course on assessment techniques. To lead an assessment, managers must complete the same training and an oral board with the Assessment Director. Through review of selected management assessment plans and final reports, documentation was found that indicates assessment team members and leads met the training and qualification requirements, with only a few not meeting the training requirements. The assessment organization also formally "grades" each management assessment plan and final report. A table was provided to the ISMS Team that summarizes the results of the formal evaluation (grading) of the assessment results. This table also showed that almost all team members were properly qualified by the procedure. The evaluation also looked at: assessment planning and preparation; assessment performance; assessment reporting; and the assessments' contribution to the organization's process improvement.

Through interviews with line managers, it was found that they maintain operational awareness of work activities through the MOPs, PER review, participation in event critiques, review or preparation of occurrence reporting, and attendance at safety, plan-of-the-day, and work planning meetings. One line organization reported that managers' schedules are planned to dedicate a day in the field each week. Many of the MOPs are used to evaluate actual training courses workers are receiving to ensure adequacy of training and that management policy is properly being communicated. Line management conducted periodic self-assessments of program effectiveness in their respective areas. The individuals were knowledgeable, experienced, and had the necessary expertise. Results of self-assessments were considered valuable by the line managers, and were used for continuous improvement.

In the area of work execution readiness, some managers maintained performance indicators and monitored, on a daily basis, factors which contributed to work execution delays. The performance metrics were used on a routine basis to improve efficiency and effect changes to deficient aspects of the work control programs.

Conclusion

The criteria for this objective were met.

The TFC has developed procedures for the conduct of formal self-assessment activities. The TFC conducted over 60 formal management assessments and hundreds of management observation program surveillances during FY05 in order to evaluate performance at all levels, including determine the effectiveness of the TFC ISMS. A FY06 assessment schedule has been developed with approximately 10-12 management assessments to be conducted during the fiscal year. While there are fewer scheduled formal management assessments, they will cut across and more fully evaluate all line and support organizations, provide cross-training opportunities between organizational lines, and promote a more consistent application of TFC policies and procedures.

Findings

None.

Observations

None.

Strengths

None.

Review Form – FI.2

Objective

FI.2: Improvement Mechanisms and Corrective Action Programs: Internal and external feedback mechanisms are integrated with Corrective Action programs to drive ISM program improvement.

Criteria

1. Management standards and expectations are explicit, well communicated, and permeate the organization.
   a. The management chain and workforce understand and are working to fulfill the expectations
   b. Management assessment processes measure performance against the expectations
   c. Executive management understands how well the expectations are being fulfilled

2. The organization actively and systematically monitors performance through multiple means, including management field observations; issue reporting, performance indicators, trend analysis, benchmarking, industry experience reviews, self-assessments, and performance assessments. Feedback from various means is integrated to create a full understanding.
   a. A high level of trust is established where management encourages employees at all levels in the organization to identify and report a broad range of problems; all information is valued. Employees who identify problems receive prompt feedback about corrective actions. Candid dialogue and debate and a healthy skepticism are encouraged when safety issues are being evaluated. Differing professional opinions are welcomed and respected. Robust discussion and constructive conflict are recognized as a natural result of diversity of expertise and experience. A variety of methods is available for personnel to raise safety issues, without fear of retribution.
   b. Management formally defines problem reporting criteria, the problem reporting system(s) to be used, the desired levels of problem evaluation, and the timeliness of corrective actions.
   c. New problems reported in the corrective action program are screened promptly for their effect on safety, reliability, operability and reportability, and are reported to management when appropriate. Incident reviews are conducted promptly to uncover lessons, learn from mistakes, determine compensatory measures (if needed), and to determine the full extent of the problem.
   d. Problems are evaluated commensurate with significance to determine the cause(s) based on a graded approach for both major and minor incidents. Any failure, no matter how small, is viewed as a window into the system that can spur learning.
   e. Trained individuals or teams conduct high quality root cause analyses; they evaluate significant problems using a formally defined process consisting of a structured root cause methodology to identify root and contributing causes and corrective actions to prevent recurrence.
   f. Performance Assurance is used constructively to strengthen safety and improve performance, and includes an appropriate mix of internal and external oversight reviews, reflecting an integrated and balanced approach. This balance is periodically reviewed and adjusted as needed.
   g. Information in lower tier performance observation or reporting programs is periodically assessed for trends needing additional evaluation or corrective action.
   h. Independent oversight evaluates the effectiveness of and makes recommendations on the corrective action program.
   i. The performance assurance program is formally defined, consists of robust, frequent, and independent oversight, conducted at all levels of the organization, and includes independent evaluation of performance indicators and trend analysis.

j. Knowledgeable, trained individuals conduct independent assessments as scheduled, communicate closely with those being assessed to help assure understanding of and ownership for results, and provide meaningful results to management for use in planning improvements in performance.

3. Vigorous corrective and improvement action programs are in place and effective. Rapid response to problems and closeout of issues ensures that small issues do not become large ones. Managers are actively involved to balance priorities to achieve timely resolutions.
   a. Management assures that corrective actions are approved, prioritized, and completed in a timely manner consistent with their significance.
   b. Problems and associated causes are trended to identify repeat occurrence, generic issues, and vulnerabilities at a low level before significant problems result. Recent occurrences and problem reports do not reveal significant recurring problems.
   c. Corrective actions designed to prevent recurrence of significant problems are checked for effectiveness.
   d. Management appropriately communicates results of internal independent oversight, DOE Facility Representative and other DOE programmatic reviews, and other external stakeholder (e.g., Defense Nuclear Facilities Safety Board [DNFSB]) reviews to affected groups and verifies that the Corrective Action Program is effectively and appropriately used for identification, prioritization, tracking, and resolution of associated issues.

4. ISM Improvement Validation issues and recommendations have been effectively resolved.
   a. Findings from the November 8, 2004, ISM Improvement Validation Report:
      - Finding 1 regarding worker involvement in work planning
      - Finding 2 regarding adequacy of Job Hazards Analyses (JHAs)
      - Finding 7 regarding adequacy of critiques
      - Finding 8 regarding level of knowledge in the practical application of radiological controls for ionizing radiation
   b. Recommendations from the March 28, 2005, ISM Improvement Validation Report regarding:
      - Assurance of readiness to proceed with work
      - effectiveness and timeliness of Problem Evaluation Request (PER) closure and sufficiency of PER closure feedback to affected employees
      - sufficiency of engineering and management oversight of work performance

5. Operating experience is highly valued, and the capacity to learn from experience is well developed. The organization regularly examines and learns from operating experiences, both internal and in related industries.

6. Senior executives are periodically briefed on results of oversight group activities to gain insights into facility safety performance (i.e., significant ORP and DNFSB staff review issues identified since January 2005).

7. Management uses lessons learned from both inside and outside their facility and organization to continuously improve performance and safety (with specific emphasis on lessons learned pertinent to Hanford tank farm activities that were associated with the Columbia Shuttle Accident, the Davis Besse reactor vessel head cladding degradation incident, and the 2004 Savannah River Site and Hanford fatalities).

Documents Reviewed

- ISMS Pre-validation Finding 1 *"Worker involvement in work planning appears to be less than adequate,"* PER 2004-5832, and associated closure documentation.
- ISMS Pre-validation Finding 2 *"Job Hazard Analyses reviewed do not provide a job-specific work step analysis of the hazards,"* PER 2004-5833, and associated closure documentation.

- ISMS Pre-validation Finding 7 *"Inadequacies identified in the critique of the CR Vault event were not formally identified, nor were corrective actions taken as a result of the poor critique,"* PER 2004-5838, and associated closure documentation.
- ISMS Pre-validation Finding 8 *"First line supervisors and their work crews demonstrated weaknesses in level of knowledge in the practical application of radiological controls for ionizing radiation (including fundamentals and limitations). Additionally some first line supervisors were unable to clearly articulate Conduct of Operations and ISMS attributes,"* PER 2004-5839, and associated closure documentation.
- Final Report FY2005-CH2M-I-0009, *Independent Assessment of CH2M HILL Integrated Safety Management System,* dated September 2005, and associated PERs 2005-3419, 2005-3420, and 2005-3421.
- Final Report FY2005-PP&C-M-0135, Management *Assessment of Work Planning Improvements and Job Hazard Analysis,* dated August 2005, and associated PERs 2005-3066, 2005-3067, and 2005-3069.
- Final Report, *End-Point Management Assessment of Problem Evaluation Request 2004-4057,* dated September 2005, and associated PER 2005-2946.
- Final Report FY2005-CH2M-I-0001, *Independent Assessment of CH2M HILL Radiological Records Program,* dated December 2004.
- Final Report FY2005-CH2M-I-0011, *Mid-Point Assessment of CH2M HILL Integrated Safety Management System Consolidated Corrective Action Plan,* dated January 2005, and associated PER 2005-0866.
- Final Report FY2005-CH2M-I-0002, *Quality Assurance Audit of the CH2M HILL Hanford Group, Inc. Project W-464 Office of Civilian Waste Management Program,* dated March 2005.
- Final Report FY2005-CO-M-0108, *Management Assessment Corrective Action Management ESTARS / PER Actions,* dated June 2005, and associated PERS 2005-2560.
- Final Report FY2005-PA-M-0159, *Management Assessment PER Process Assessment,* dated May 2005.
- Final Report FY2005-CH2M-I-0014, *Independent Assessment of CH2M HILL Occupational Injury and illness: Roles and Responsibilities of Management/Employees for Investigation and Follow-Through,* dated August 2005.
- Final Report FY2005-CH2M-I-0008, *Independent Assessment of CH2M HILL Hanford Group, Inc, Independent Assessment of Workers' Recognition of Workplace hazards and Controls,* dated August 2005.
- Final Report FY2005-CH2M-I-0013, *Independent Assessment of CH2M HILL Internal and External Dosimetry Programs,* dated June 2005.
- Management Observation Checklist from Tony Jennings dated 9/30/05 regarding work order 2W-04-00643/W
- FY 2006 TFC Integrated Assessment Schedule, Rev 1, dated October 6, 2005
- Final Event Investigation Report, EIR-2005-047, *C Farm Personnel Contamination Event,* dated October 10, 2005
- Conduct of Operations Mentoring Activities Mentoring Evaluation 12/04-09/05 and associated narrative information
- Conduct of Operations Mentoring Activities, Work Delays (Preventable) 05/05-09/05 and associated narrative information
- Metrics regarding work delays during April & May 2005, June& July 2005, August 2005, and September 2005, and associated narrative information
- PER Program Performance Indicators April 05 – September 05
- TFC Focus Issue 52, October 10, 2005
- DNFSB Hanford Site Representatives' Report of July 15, 2005 and related PER 2005-3491
- PER-2004-3383 discussing DNFSB concerns with errors in safety basis documents and process engineering
- Office of River Protection Tank Farm Facility Representative Weekly Report for the Week of August 22-25, 2005 and associated PERs 2005-3132, 3133, 3134, and 3135.
- Letter Edward S. Aromi (TFC) to R.J. Schepens (DOE) dated September 15, 2005, "Contract Number DE-AC27-99RL14047 – Integrated Environment, safety, and Health Management System Fiscal Year 2006 Declaration of Readiness
- TFC-Charter-32, Rev A-2, dated 9/22/05, *Executive Safety Review Board*

- TFC-PLN-32, Rev B-5, dated 10/06/05, *Tank Farm Contractor Safety Management Programs*
- TFC-PLN-10, Rev B, dated 4/15/05, *Assessment Program Plan*
- TFC-ESHQ-AP-C-01, Rev C-1, dated 05/31/05, *Management Assessment*
- TFC-ESHQ-AP-C-02, Rev B-1, dated 09/13/05, *Independent Assessments*
- TFC-ESHQ-Q_C-C-01, Rev B-14, dated 08/09/05, *Problem Evaluation Request*
- TFC-ESHQ-Q_ADM-C-11, Rev B-5, dated 08/15/05, *Root and Common Cause Analysis and Corrective Action Planning*
- TFC-ESHQ-Q_ADM-C-12, Rev A-4, dated 08/15/05, *Apparent cause Analysis and Corrective Action planning*
- TFC-ESHQ-Q_C-02, Rev B-1, dated 06/30/05, *PER Tracking Data and Trending analysis Program*
- TFC-OPS-OPER-C-28, Rev A-1, dated 04/01/05, *Lessons Learned*
- PER 2005-1582 dated 4/15/05, *Loss of Drill String*, and associated ESTARS
- PER 2005-2407 dated 6/9/05, C Farm *Contamination Event (C203-C202)*, and associated ESTARS
- PER 2005-3339 dated 9/21/05, C Farm *Contamination Event (C202-C201)*, and associated ESTARS
- PER 2005-3354 dated 9/21/05, *Inadequacies Identified During Operation of Decon Trailer*
- Procedure TO-080-503
- Critique reports 2005-047, 2005-036, and Loss of Drill String in Tank AY-102 Report for Causal Analysis
- ALARACT 2

Interviews Conducted

- HAMTC Representatives (4)
- Nuclear Operations Senior Vice President
- Performance Assurance Vice President
- Prior Assessment Director
- Prior Corrective Action Program Manager
- Assessment Program staff (2)
- Operations Mentors (2)
- Safety Health and Quality Director
- Executive Vice President and Chief Operating Officer
- Corrective Action Program staff (3)
- Nuclear Operations Technical Services Vice President
- Prior Safety Programs Senior Director
- First Line Supervisors (2)
- Electricians (2)
- Pipe-fitter (1)
- Instrument Technician (1)
- ATS Planner (1)
- ATS Manager (1)
- CO Planner (1)
- WFO Planners (2)
- ATS Field Work Supervisors (2)
- Operations Specialist (1)
- ATS RadCon Director
- WFO Support (1)
- RadCon Programs Director
- HPTs (8)
- IHTs (6)

Observations of Work

Executive Safety Review Board (ESRB) Meeting on October 14, 2005

Discussion of Results

Interviews with managers, supervisors and workers mostly revealed a detailed understanding of management expectations for the implementation of ISMS. These expectations were provided to the TFC staff in various ways, such as posters, employee briefings, and excerpts in the TFC Daily Operations Report and other presentation and communication channels. Personnel were observed to clearly understand their role in the safe execution of work, in applying the principles of ISM, and in being an active participant in fostering a safe work environment. Additionally, based on interviews, personnel were held accountable at all levels of the organization for adhering to these defined expectations. Limited exceptions were observed during interviews in which some personnel conveyed Integrated Safety Management (ISM) as one of the DOE imposed programs that get in the way of achieving efficiency in getting work done. This type of comment is indicative of the need for management to continuously reinforce ISM being embraced as a value.

One specific example was observed where management's expectations were not fully understood. As noted during assessment of the Work Planning criteria, several organizations were not conducting final pre-job walkdowns with the work team, contrary to the work control procedure and contrary to management's expectations. Other examples, however, were observed where management's expectations were well communicated, explicit, and fully understood. One communicated expectation involved "the need to assume that structures, systems and components (SSCs) that are in contact with radiological systems are radiologically contaminated until proven otherwise," and a second involved "appropriately specific scope definition and activity identification during planning to enable proper development of Job Hazard Analysis (JHA) controls at the activity level." Personnel interviews and observation of planning activities indicate that these expectations were appropriately understood by TFC staff.

The ISMS Team observed an Executive Safety Review Board (ESRB) meeting conducted on October 14, 2005. The agenda items included discussions on the "health" of two safety management programs: environmental management and waste management. The briefings presented to the ESRB on the "health" of these programs were well done and provided useful and candid information. Meaningful questions were posed by ESRB members, and expectations for improvement or clarification were clearly communicated to the program owners. The ISMS Team considers that the use of the ESRB is an excellent forum for senior management to understand the health of their safety management programs and communicate expectations regarding those programs **(Strength FI-2-S-1)**.

Through interviews and review of procedures and assessment documentation, the TFC was observed to actively and systematically monitor performance through multiple means including management field observations, performance indicators and trend data, self-assessments, and independent assessments. Assessment planning was observed to be comprehensive and implemented. Also, assessment findings and key observations from assessments were, in most cases, identified to be carried through into the Corrective Action Program as Problem Evaluation Requests (PERs).

All levels of the organization were observed to be aware of the various means available to report problems. Management encouraged workers to identify problems, regardless of their severity, and actively sought such feedback from the workforce. Input was viewed as valuable by management and, with some limited exception, was actively pursued to ensure closure of the identified issues. The workforce was encouraged to identify and resolve issues at the lowest levels possible. Workers were observed to not be reticent to raise issues to management, did not have a fear of retaliation, and were involved in issue resolution. In most cases, feedback was provided to workers regarding the resolution of the identified issues. Based on interviews, evidence of

improvement in the level of trust between workers and management has been observed, with some limited exception. Regarding the reporting of injuries and unsafe conditions, this trust is corroborated by the number of first aid visits in fiscal year FY 2004 (244) and the number of PERs written in Calendar Year 2005 (4612) which cover a broad spectrum of significance levels.

Senior management was observed to participate in briefings of the results of oversight groups, such as this Team, and was observed to actively pursue understanding of oversight issues and their resolution. Management was also observed to be aware of select DOE and Defense Nuclear Facilities Safety Board (DNFSB) staff issues. DOE and DNFSB staff issues selected for review were ascertained to be identified in the TFC's Corrective Action Program.

Based on interviews and review of procedures, PERs, and associated investigation, causal analysis and closure documentation, rigorous corrective and improvement action programs were observed to be in place, and, with exception noted herein, observed to be effective. The PER program/process has a sufficient timeline for the screening of newly generated PERs and assignment to responsible managers. This is a three-part process that typically happens within approximately three days. Through this process a determination is made on which type of investigation and causal analysis (root cause or apparent cause) is required depending on the significance of the PER. This determination then feeds what type of investigation team with requisite qualifications is formed.

The ISMS Team selected four PERs for review: 1) PER 2005-1582 dated April 15, 2005, *Loss of Drill String*; 2) PER 2005-2407 dated June 9, 2005, *Contamination Event (C203-C202)*; 3) PER 2005-3339 dated September 21, 2005, *Contamination Event (C202-C201)*; and 4) PER 2005-3354 dated September 21, 2005, *Inadequacies Identified During Operation of Decon Trailer.* This set of incidents provided a variety of screening, investigation, and causal analyses techniques. The ISMS Team determined that investigation and causal analyses performed for these incidents followed procedural guidelines and that personnel involved were appropriately trained. However, investigation and causal analysis for the C-203 to C-202 contamination event was considered weak in that it did not appropriately address the lack of hazard analysis for upset conditions. Corrective actions are required to be derived from the causal analyses in order to prevent recurrence and are documented using "ESTARS" (Electronic Suspense Tracking and Routing System). Once actions are appropriately completed, the corrective actions and associated issues are documented to be closed. There were no ESTARS written for the Decon Trailer Operability incident (PER 2005-3354) since corrective action was taken as immediate action. Corrective actions for the C-203 to C-202 contamination event (PER 2005-2407) were documented using ESTARS and completed by the assigned due dates; however, the ISMS Team considers that they were not sufficient to prevent recurrence as evidenced by the subsequent C-202 to C-201 contamination incident. The ISMS Team considers that recurrence prevention might have been better assured if "the lack of hazard analysis for upset conditions" had been appropriately addressed **(Observation FI-2-O-1)**. Corrective actions identified for the Dropped Drill String incident (PER 2005-1582) were determined to be sufficient if appropriately implemented. One associated corrective action ESTAR CH2M-PER-2005-1583.1 was documented to be closed; however, review of procedure TO-080-503 revisions to incorporate this corrective action did not, in the ISMS Team's view, provide an appropriate level of detail "to consistently perform the evolution, including specific revisions to introduce a step in Section 5.17 requiring verification of foot clamp closure and a requirement for inclusion of a secondary restraint during removals" **(Observation FI-2-O-1 and FI-2-O-2 example)**.

For the incidents specifically reviewed, it appeared that the fact findings/critiques were thoroughly conducted in a timely manner. Examples of appropriate implementation of interim corrective actions were also observed. One example of timely immediate corrective action involved issuing a standing order (CO-05-011) to treat activities and associated equipment as radiologically contaminated when breaching tank farm systems. However, in this example, the ISMS Team observed that important Conduct of Operations issues were not addressed for immediate action. Another example of implementation of prompt corrective actions was observed in response to the 702 AZ Decon trailer incident. The management team responsible for this piece of equipment has corrected all known deficiencies and revised the procedure.

The ISMS Team evaluated the extent to which the TFC tracks and trends issues and issue resolution. The TFC was observed to track and trend PERs both internal (PER to PER) and external as a result of occurrence reports. This track and trend activity will trigger a "trend PER" if conditions exceed a designated management threshold. While the TFC does not credit this trending to prevent recurrence of incidents, it uses this activity to help detect potential for more significant events. The TFC was also observed to track and trend PER backlog average age and cycle time at closure. Performance data indicates that, since April 2005, the ESTARS backlog has been reduced from 1412 open tasks to 979 open tasks, average age has increased from 129 days to 153 days, but cycle time at closure has decreased from 130 days to 113 days.

The ISMS Team reviewed closure documentation associated with the following Findings from the November 8, 2004, ISM Improvement Validation Report:

- Finding 1 regarding worker involvement in work planning: Some deficiencies were identified with the TFC closure of this issue. Specifically, the TFC was not conducting the final pre-job walk down of the work site and work package instructions in accordance with procedural requirements **(Observation FI-2-O-2 example)**. Other specific details are provided in the "Review Form – WP-4," of this report. While feedback was observed to be provided during post-job reviews, the process to record and preserve this information, in the TFC's own documentation, was weak and generally ineffective. Specifically, a corrective action listed for the aforementioned Finding 1 was to conduct a management assessment of the effectiveness of the daily post-job review. This management assessment was performed and identified deficiencies in the process post-job review process. The corrective actions for resolving specific post-job review issues were captured in PERs 2004-4057 and 2005-0447; however, closure documentation for Finding 1 corrective actions did not reflect these PERs, thus giving an apparent false sense of adequate closure of the original issue **(Observation FI-2-O-2 example)**.

- Finding 2 regarding adequacy of Job Hazard Analysis (JHA): Actions included review and revision of the JHA procedure to use clear and understandable language and terminology. Additional actions were identified to select a model JHA as an example to use in the corrective action process, and to perform a management assessment of the actions' efficacy, subsequent to their implementation. A TFC's management observation found significant weaknesses in the revised process. There were six Findings, two Observations, and two noteworthy practices. It noted good understanding and willingness to use worker involvement in the hazard identification process and a good recognition of the value of using a JHA; however, it also identified a lack of understanding of how to define work in enough detail at the task level, for good hazard identification, a lack of understanding of job-specific job hazard analyses and how to align identified hazards to the task. Inconsistent application of procedure training and the need for more coaching were also identified as contributory deficiencies. In spite of the above, the issue was closed out. The management review mentioned above did create further corrective action in the form of 3 PERs and one internal memorandum which resulted in personnel training for hazard recognition, formulation of JHAs, and revisions to the JHA process. It is apparent that revision to the JHA process is currently in progress at this time, including the reduction of the number of Standing JHAs. Closure documentation for the aforementioned Finding 2 did not reflect these new PERs, thus giving an apparent false sense of adequate closure of the issue **(Observation FI-2-O-2 example)**. Similar to the discussion related to closure of Finding 1 above, when management assessments are performed to evaluate the effectiveness of corrective actions, and when those reviews result in significant related issues, then closure documentation of the management assessment issues should be included with the parent issue (in this case, Finding 1 and 2 corrective action/closure files). This provides a "cradle-to-grave" audit trail of the original issue, corrective actions, effectiveness evaluations, and subsequent corrective actions, if necessary.

- Finding 7 regarding adequacy of critiques: Seven ESTARS actions were established to initiate corrective action on this subject. The primary criticism of this matter was that too many people attended a critique, causing it to be less effective than it should have been. The Contractor revised the procedure describing a

critique activity, limiting the number of people in attendance, and defining the roles and responsibilities of each attendee. There were deletions and additions made to the procedure to improve its efficiency and efficacy. A flow chart was graphed for the investigation and critique process. This PER was closed on February 2, 2005. There was no evidence in the corrective action document as to how the effectiveness and efficacy of the revised process was established before closure of the PER. In discussion, management indicated that they intend to watch the effectiveness with which critiques are conducted and make corrections if needed.

- Finding 8 regarding level of knowledge in the practical application of radiological controls for ionizing radiation: Interviews with workers and supervisors revealed an improved understanding of radiological controls and instrumentation. Detailed discussions were observed regarding survey techniques, frequencies, and differentiation between the various types of ionizing radiation. Discussions were also observed between the workers and supervisors regarding expected radiation and contamination levels, including permit limits and contingency measures for unexpected high values.

The ISMS Team also reviewed closure actions associated with the following items noted in the March 28, 2005, ISM Improvement Validation Report:

- Assurance of readiness to proceed with work: The TFC was observed to have placed an emphasis on improving work activity readiness. Workers and supervisors understood management's expectations for ensuring readiness for work prior to and upon completion of the pre-job brief. As discussed in "Review Form – FI-1," some TFC organizations have developed and are tracking performance indicators for work delays and the causes for those work delays. Review of these performance indicators revealed that TFC efforts to improve work activity readiness were having a positive effect; however, additional-continued focus on this area appears to be warranted

- Effectiveness and timeliness of PER closure and sufficiency of PER closure feedback to affected employees: Through worker interviews it was concluded that, with some limited exception, the PER feedback loop has improved. Performance data indicates that, since April 2005, the ESTARS backlog has been reduced from 1412 open tasks to 979 open tasks, average age has increased from 129 days to 153 days, but cycle time at closure has decreased from 130 days to 113 days.

- Sufficiency of engineering and management oversight of work performance: The TFC has placed a sufficient priority on ensuring engineering and management presence in the field conducting work oversight. Interviews revealed that management has promulgated clear expectations for engineers and managers to provide field oversight of work. Workers stated that they frequently observe engineers and managers in the field during the performance of work (this was not the case for radiological engineers due to their few numbers). This is an improvement since the March 2005 ISMS Improvement Validation Review.

In summary, the following types of weaknesses were noted with closure of these issues **(Observation FI-2-O-2)**: Closure documentation was incomplete; in some cases, it did not contain reference(s) to additional PERs which were generated as actions to remediate issues identified in the original PER or did not adequately document the basis for closure. In this regard, a lack of complete documentation makes the audit trail unnecessarily complicated and may give an apparent false sense of adequate closure of the issue. In two cases, closure was indicated when field activities clearly contradicted that the key issues had been effectively resolved. These involved lack of pre-execution walkdowns by work groups who will perform the work and current weaknesses with JHAs.

Management was observed to use lessons learned from both inside and outside of their facility and organization to continuously improve performance and safety (including communication of results of external oversight reviews). TFC management puts forth an effort to convey Lessons Learned to the employees via bulletins, Lessons Learned corner in the Focus, as well as the most recent recordable injuries being briefed at the Presidents Accident Prevention Counsel, which encourages all area managers to then report the details to the workers. However, the ISMS Team found during interviews involving recent events, including the recent C-202 personnel contamination, C-203 personnel contamination, 702-AZ Decon trailer, and the Dropping of the Drill String, that the Lessons Learned Program is not adequate to assure that the workforce and organizations really learn from the lessons. When asked of their knowledge of the above four tank farm events, the majority of individuals interviewed indicated that they had heard of them but had no knowledge of the details **(Observation WP-4-O-1 example)**. The knowledge was observed to be somewhat higher when asked about two national events (Columbia Shuttle Accident and the Davis Besse reactor vessel head cladding degradation incident).

In addition, the ISMS Team observed weaknesses in recording and preserving post-job review comments from workers and support personnel. While Team members observed many comments being made during post-job reviews and observed someone recording the comments, attempts to obtain worker post-job comments from field management failed to elicit those comments. Rather than being able to always use comments from post-job reviews, planners, by their own admission during interviews, frequently rely entirely on their personal knowledge, worker input at the planning stage, and information gleaned during pre-job walkdowns. While the latter is commendable, leaving out the use of post-job worker comments seems to be a failure to use all available information in work planning, and creates the possibility that a previous lesson is not applied to a current situation **(Observation WP-4-O-1 example)**.

Conclusion

The criteria for this objective were met.

Findings

None

Observations

FI-2-O-1 Corrective actions of some recent events to prevent reoccurrence appear weak.

FI-2-O-2 Some closure packages were documented as closed when, in some cases, evidence in the work package or field suggested otherwise.

Strengths

FI-2-S-1 The use of the Executive Safety Review Board (ESRB) is an excellent forum for senior management to understand the health of their safety management programs and communicate expectations regarding those programs.

Attachment B – Team Member Biographical Summaries

Team Member Biographical Summaries

Team Member	Organization	Team Position	Team Assignment (CRADs)
Shirley J. Olinger	DOE Office of River Protection	Team Leader	All
Frank McCoy	Washington Safety Management Solutions (WSMS)	Senior Advisor	FI-1, FI-2
Terry Krietz	DOE Office of Environmental Management	Team Member	WP-5, HAZ-1, FI-1
Mark Brown	DOE Office of River Protection	Team Member	WP-1, WP-2, WP-3, WP-4
Elizabeth Norton	HAMTC Safety Representative, CH2M HILL	Team Member	WP-2, WP-3, FI-1, FI-2
Don Rack	DOE Consolidated Business Center	Team Member	WP-1, WP-2, WP-3, WP-4
Dan Ford	Ford Consulting Group, Inc.	Team Member	SB-1, SB-2, SB-3
Keith Smith	Hanford Advisory Board	Observer	N/A
Susan J. Coleman	Innovations Group, Inc.	Coordinator/Editor	N/A

Shirley J. Olinger was named the Deputy Manager for the Office of River Protection November 1, 2004. As Deputy Manager, she supports the manager in all his responsibilities associated with the safe storage, retrieval, treatment, and disposal of 53 million gallons of high-level radioactive waste at the Hanford Site. Before coming to the Office of River Protection, she served in various senior management positions. This included Assistant Manager for River Corridor and End States Project Lead, and Assistant Manager for Safety and Engineering at DOE's Richland Operations Office from January 2001 to October 2004. As the Assistant Manager for SE, she was responsible for authorization bases, nuclear safety facility representative program, Integrated Safety Management System, quality assurance programs, health and safety programs, and readiness reviews. As the Assistant Manager for the River Corridor, she was responsible for oversight of the River Corridor and Fast Flux Test Facility (FFTF) projects. Ms. Olinger was the Acting Assistant Manager for Engineering at the Rocky Flats Field Office from 1998 to 2000 where she was responsible for authorization bases, nuclear safety, engineering (including criticality and fire protection), quality assurance programs, health and safety programs, Integrated Safety Management System, readiness reviews, and terms and conditions. Prior to that, she held various management positions at Rocky Flats from 1990 to 1998. She has also worked at DOE Headquarters with the Defense Programs and Environment, Safety and Health organizations. Ms. Olinger was a nuclear manager at Pearl Harbor Naval Shipyards from 1982 to 1987. She was responsible for oversight of overhaul, defueling, and testing of several naval nuclear propulsion plants. From 1979 to 1982, she performed structural and civil engineering work for a private A&E firm in Hawaii and for the U.S. Forest Service in Oregon (e.g., designing/constructing bridges, roads) and served as COTR. Ms. Olinger received her Bachelor's degree in civil engineering from the University of Hawaii. Half of her degree was obtained at Purdue University. She also received extensive nuclear course work from the Pearl Harbor Naval Shipyard in the nuclear navy program.

Frank McCoy has over thirty-five years of experience in the operation, regulation, and management of U.S. DOE, commercial and naval nuclear facilities including power and production reactors, chemical processing facilities, and laboratories. This experience has included management and senior executive positions with DOE, Department of Navy, and the U.S. Nuclear Regulatory Commission (NRC), as well as private sector companies. Currently Mr. McCoy is a Principal with Washington Safety Management Solutions (WSMS) where he is responsible for managing all WSMS services for closure projects. He also has a collateral responsibility to the President, Washington Group, Energy and Environment Business Unit, as Chief Nuclear Safety Officer. In this regard, he has programmatic responsibility for nuclear safety assurance of all Washington Group nuclear projects and operations. Additionally, he currently serves as Chairman of the Department of Energy's Nuclear Safety Research Review Panel. As a WSMS Principal, Mr. McCoy has also personally supported many sites in both the DOE and DOD including: supporting West Valley Nuclear Services Company with deactivation, decontamination and decommissioning activities; supporting the Yucca Mountain Project with Integrated Safety Management (ISM) development and implementation; supporting SRS in senior safety committee reviews, accident investigations and safety and management assessments; providing nuclear facility management, operational readiness, and ISM consulting services to Bechtel at the Nevada Test Site and Hanford Waste Treatment Plant Project; supporting Oak Ridge National Laboratory in the Operational Readiness Review of the High Flux Isotope Reactor; providing Integrated Safety Management and Quality Assurance assessment services to Rocky Flats Environmental Technology Site, Hanford Tank Farms, and Brookhaven National Laboratory; and providing management support to the Army Chemical Demilitarization facilities at Tooele, Umatilla, and Anniston. Prior to retiring from government service and joining WSMS, Mr. McCoy was a Senior Executive within DOE where his last assignment was serving as Deputy Manager at the Savannah River Site (SRS). In this capacity he served as Chief Operating Officer for SRS nuclear operations. In 1996 and 1997, he served as a Special Assistant to the Under Secretary of Energy where he led the DOE's efforts to establish and implement an Integrated Safety Management System across the DOE complex. Prior to joining DOE, Mr. McCoy was a manager in NRC where his last assignment was as Assistant Director for Inspection Programs. In this capacity, he was responsible to the NRC's Office of Special Projects for inspection and assessment activities associated with recovery of the five TVA licensed reactors following prolonged shutdown as "watch-listed" problem utilities. While in NRC, his activities also involved leading and/or participating in the Operational Readiness Reviews for NRC operating license approval of the Vogtle, Sheron Harris, and Catawba nuclear units. He also performed numerous onsite response inspections of reactor unusual events, routine assessments of licensed operator training, maintenance, and operations programs and participated in Safety System Functional Inspections and Augmented Inspection Team Inspections. During nearly 15 years with the Department of Navy, Mr. McCoy was a Chief Refueling Engineer, Project Manager, and Physicist at the Charleston Naval Shipyard. Mr. McCoy holds a Masters degree in Physics from Georgia Tech and Bachelor of Science degree from The Citadel.

Mark C. Brown is a DOE Facility Representative for the Office of River Protection, where he is responsible for the oversight of operations and activities at the 222-S Laboratory. Mr. Brown has over 21 years of experience with nuclear operations and providing oversight of environmental restoration activities. Mr. Brown has been a Facility Representative for the Office of River Protection for over nine years. His oversight of DOE contractor operations and activities at the Hanford Site includes numerous Operational Readiness Reviews, Readiness Assessments, safety program assessments, safety basis implementation reviews, and ISMS reviews. Mr. Brown is an NQA-1 certified lead auditor. Prior to joining DOE, Mr. Brown's nuclear career included over 11 years as a naval nuclear submarine officer. He qualified for and supervised the operations, maintenance, and overhaul of several naval reactor plants, including two years as the Lead Instructor in the operation of naval reactor and steam plants. He holds a Bachelor of Science degree in Mathematics from the University of Texas.

Terry E. Krietz is a Worker Safety and Health Manager for the Office of Safety and Engineering in the Office of Environmental Management. He has 26 years of experience in the safety management field. Fifteen of those years were spent developing DOE-wide worker safety and health policy and providing technical assistance and oversight to the DOE field elements. He earned Bachelor of Science degrees in Biology and Geo-Environmental Studies at Shippensburg University.

Before joining DOE, Mr. Krietz served as Safety Director at the Sierra Army Depot and the Senior Safety Manager for the U.S. Army Depot System Command. He completed the Army Materiel Command Safety Management Intern Program and technical training in the chemical, explosives, nuclear, and radiological areas. Mr. Krietz has served as lead, co-lead, or participant on over 40 comprehensive safety and health program evaluations of Army Depot System Command installations. He has also been accident investigation board chairman for fatality investigations at the Anniston and Tobyhanna Army Depots. He has been the lead, co-lead, or participant on preoperational surveys of toxic chemical weapon operations at Anniston, Blue-Grass, Pueblo, Tooele, and Umatilla Army Depots, and he has been the lead for Army safety and health inspections of industrial, explosives, nuclear, and construction operations at Army Depots. With DOE, he has served as an evaluator for the DOE Voluntary Protection Program evaluations at the Savannah River Site (SRS) and Idaho National Laboratory, and he has been an evaluator for DOE Office of ES&H and Office of Environmental Management reviews of site safety and health programs. Mr. Krietz served as a team member on the CH2M HILL Hanford Group, Inc. ISMS Verification at the Office of River Protection Tank Farms and Bechtel National, Inc., the ISMS Verification of the Waste Treatment Plant Project at Hanford, the ISMS reverifications of BJC and ORO in Oak Ridge, and various Environmental Management line oversight assessments of the DOE field elements.

Susan J. Coleman: Ms. Coleman has over 25 years experience in the areas of program/project management, security, and technical editing/document production, as evidenced during assignments with the U.S. Department of Energy Hanford Site and U.S. Navy/Naval Reserve (CTACS, Retired). Due to knowledge and/or extensive experience in numerous areas of the DOE Office of River Protection mission, Ms. Coleman currently supports the Manager's Office and senior management team in various capacities, such as developing technical reports and documents, and facilitating closure of a wide range of technical activities; as an experienced technical expert in the area of Security she supports the ORP Security Program Manager in the oversight of the DOE program and prime contractors, CH2M HILL Hanford Group, Inc. responsible for the Hanford Site tank farms, and Bechtel National, Inc. responsible for the design, construction and commissioning of a vitrification plant. She is an advisor to the DOE Federal Technical Capability Panel Chairman and Panel, which is responsible for overseeing, developing, implementing, and/or resolving issues related to recruiting, developing, and retaining technical capability within DOE. In 1999, Ms. Coleman participated on a team to successfully place a contract valued at $6.5 billion to develop a Waste Treatment Complex and the team negotiating an extension of the current Tank Farms contract. From 1986 to 1999, Ms. Coleman supported the organization responsible for integrating activities between DOE and the two prime contractors, CH2M HILL and BNFL, Inc., and the $9M Single-Shell Tank Program, responsible for the technical activities for waste retrieval, technology demonstration, tank farm closure, tank leak contamination studies and corrective measures including reviewing authorization basis documents and developing evaluation reports; necessary to continue safe operation of the Hanford Site Tank Farms. From 1995 to 1996, Ms. Coleman supported the team responsible for developing the initial Request for Proposals (RFP) provided to commercial industry to build the nation's largest vitrification facility to treat nuclear waste. From 1994 to 1995, Ms. Coleman coordinated the DOE Standards/Requirements Identification Document (S/RID) project, which developed a comprehensive document that included the environmental, health and safety requirements necessary to manage the Hanford Site. During 1993, Ms. Coleman was Project Lead of a group responsible for identifying historical information relevant to the "Downwinders" class-action lawsuits; which charged deleterious health effects to people in the Hanford vicinity during the period 1944 to 1947. Ms. Coleman holds a Bachelor of Science degree in Business Administration (with a Labor Relations concentration) from Bowie State University.

Donald Rack has over 22 years experience in the nuclear industry in both nuclear facility operations and oversight. He served for 8 years in the U.S. Navy specializing in reactor plant operation, control system maintenance, and radiological controls. For the last 14 years he has worked for the Department of Energy (DOE) at Rocky Flats before transitioning to the DOE-Environmental Management Consolidated Business Center. At Rocky Flats he was a qualified DOE Facility Representative in Buildings 371 and 374. He served as the DOE Review Team Lead and developed the Safety Evaluation Reports for the Building 771/774, 371/374, and 559 Decommissioning Basis for Operations (DBIO) documents. He also led the DOE Implementation Validation Teams for each of the 3 DBIOs. Mr. Rack has either led or participated in several Operational Readiness Review and Readiness Assessments. He

has performed numerous formal assessments of contractor activities at Rocky Flats including Conduct of Operations, work control, fire protection/combustible controls, operator training and qualification, Technical Safety Requirement Administrative Control implementation, and radiological controls.

Dan Ford currently serves as Senior Technical Consultant to the University of California at the Los Alamos National Laboratory and has 26 years of experience in nuclear facilities engineering, safety management, and regulatory oversight. He was a senior-level consultant to the United States Nuclear Regulatory Commission (NRC) for 11 years and has testified as an expert witness on behalf of the NRC during several Atomic Safety and Licensing Board hearings. As Senior Technical Consultant, he assisted the Department of Energy's Office of Nuclear Safety in the areas of event analysis, authorization basis, and nuclear safety oversight. At Rocky Flats for seven years, he was technical consultant to the DOE Field Office in the areas of facility and process authorization basis, engineering, internal assessment, and coordinated Field Office initiatives in response to Defense Nuclear Facilities Safety Board recommendations. Mr. Ford holds American National Standards Institute (ANSI) nuclear systems inspection and testing certifications in the areas of electrical power and instrumentation and control systems and an American Society for Quality Control (ASQC) quality engineering certificate.

Mr. Ford's formal assessment experience includes participation in nuclear safety assessment of over forty commercial license holders while serving as a consultant to the NRC, and assisting the NRC in development of assessment programs for examination of plant licensing, design, installation, operation, maintenance, inspection and testing programs. While with the Office of Nuclear Safety, Mr. Ford participated in Operational Readiness Reviews including the High Level Tank Draining evolution at RFETS Building 771, resumption activities in RFETS Building 707, and review of nuclear operations at Savannah River and Pantex. Under contract to the Rocky Flats Field Office, he conducted the Operational Readiness Review of the Plutonium Stabilization and Packaging System (PuSPS), and numerous Readiness Assessment Activities.

Elizabeth ("Liz") Norton has worked at the Hanford site for 23 years as a Nuclear Chemical Operator (NCO). She is currently a Hanford Atomic Metal Trades Council (HAMTC) Safety Representative for CH2M HILL Hanford Group, Inc. She is a member of the Paper, Allied-Industrial, Chemical and Energy Workers International Union (PACE) Local 8-0369 (PACE is a member of the Hanford Atomic Metal Trades Council [HAMTC]). Prior to her employment with CH2M HILL, Ms. Norton performed NCO duties in several facilities and for various contractors, including PUREX/UO3 during nuclear fuel processing operations, Waste Receiving and Processing (WRAP) facility, where she was involved in two Operational Readiness Reviews and facility startup, and the Solid Waste Organization. Ms. Norton has been a CH2M HILL HAMTC Safety Representative for the past 2 years.

In the past 2 years, Ms. Norton has been heavily involved in the Department of Energy Voluntary Protection Program (VPP). Her involvement in VPP included the recertification of VPP Star status at the 222-S Laboratory, and in mentoring other candidate VPP sites. She has been a team member for several VPP self-assessments, and has also been a member of several DOE-HQ onsite reviews for VPP recertification.

Task# ORP-TOD-2005-0073

E-STARS™ Report
Task Detail Report
11/09/2005 0954

TASK INFORMATION			
Task#	ORP-TOD-2005-0073		
Subject	Concurrence: 05-TOD-084 INTEGRATED SAFETY MANAGEMENT REVIEW OF THE TANK FARM CONTRACTOR – FINAL REPORT		
Parent Task#		**Status**	CLOSED
Reference	05-TOD-084	**Due**	
Originator	Perez, Annez	**Priority**	High
Originator Phone	(509) 372-1382	**Category**	None
Origination Date	11/03/2005 1226	**Generic1**	
Remote Task#		**Generic2**	
Deliverable	None	**Generic3**	
Class	None	**View Permissions**	Normal
Instructions	bcc: TOD Off File TOD Rdg File MGR Rdg File S. J. Olinger, DEP-ORP R. C. Barr, ESQ J. L. Polehn, ESQ C. J. Bosted, TF T. Z. Smith, TF M. C. Brown, TOD Daniel Ford Ford Consulting Group, Inc. 2011 Tournament Court Evergreen, Colorado 80432 Frank McCoy Washington Safety Management Solutions, LLC 2131 S. Centennial Ave. SE Aiken, SC 29803		

ROUTING LISTS		
1	Route List	Inactive
	• Brown, Mark C - Review - Concur with comments - 11/03/2005 1307 *Instructions:*	
	• Smith, Zack - Review - Concur with comments - 11/04/2005 0836 *Instructions:*	
	• Olinger, Shirley J - Review - Concur - 11/08/2005 1510 *Instructions:*	
	• Schepens, Roy J - Approve - Approved - 11/09/2005 0944 *Instructions:*	

Task# ORP-TOD-2005-0073

ATTACHMENTS

Attachments	1. 05-TOD-084.mcb.ch2m.doc

COLLABORATION

COMMENTS

Poster	Brown, Mark C (Brown, Mark C) - 11/03/2005 0111
	Concur
	1. Need to change attachment cover page to include a "TOD" letter number 2. Need to fill in the actual letter numbers on each page 3. Need to include # pages of attachment on the attachment cover page
Poster	Smith, Zack (Perez, Annez) - 11/04/2005 0811
	Concur
	Chris Bosted Concurred for Zack Smith 11/4/05.

TASK DUE DATE HISTORY

No Due Date History

SUB TASK HISTORY

No Subtasks

-- end of report --

Task# ORP-TOD-2005-0073

E-STARS™ Report
Task Detail Report
11/03/2005 1253

TASK INFORMATION			
Task#	ORP-TOD-2005-0073		
Subject	Concurrence: 05-TOD-084 INTEGRATED SAFETY MANAGEMENT REVIEW OF THE TANK FARM CONTRACTOR – FINAL REPORT		
Parent Task#		**Status**	Open
Reference	05-TOD-084	**Due**	
Originator	Perez, Annez	**Priority**	High
Originator Phone	(509) 372-1382	**Category**	None
Origination Date	11/03/2005 1226	**Generic1**	
Remote Task#		**Generic2**	
Deliverable	None	**Generic3**	
Class	None	**View Permissions**	Normal
Instructions	bcc: TOD Off File TOD Rdg File MGR Rdg File S. J. Olinger, DEP-ORP R. C. Barr, ESQ J. L. Polehn, ESQ C. J. Bosted, TF T. Z. Smith, TF M. C. Brown, TOD Daniel Ford Ford Consulting Group, Inc. 2011 Tournament Court Evergreen, Colorado 80432 Frank McCoy Washington Safety Management Solutions, LLC 2131 S. Centennial Ave. SE Aiken, SC 29803		

ROUTING LISTS

1	Route List	Active
	• Brown, Mark C - Review - Awaiting Response *Instructions:* MCB 11/3/05	
	• Smith, Zack - Review - Awaiting Response *Instructions:* TZS 11/4/05	
	• Olinger, Shirley J - Review - Awaiting Response *Instructions:* Concur 11/7/05	
	• Schepens, Roy J - Approve - Awaiting Response *Instructions:*	

Task# ORP-TOD-2005-0073

ATTACHMENTS

Attachments	1. 05-TOD-084.mcb.ch2m.doc

COLLABORATION

COMMENTS

No Comments

TASK DUE DATE HISTORY

No Due Date History

SUB TASK HISTORY

No Subtasks

-- end of report --