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Fluor Hanford Integrated Safety Management System Phase II Verification

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

**United States
Department of Energy**
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United States Government

Department of Energy

Richland Operations Office

memorandum

DATE: JUL 25 2000

REPLY TO
ATTN OF: AMSE:JEP/00-AMSE-032

SUBJECT: INTEGRATED SAFETY MANAGEMENT SYSTEM (ISMS) - FLUOR HANFORD,
INC. (FHI)/RL VERIFICATION

TO: Keith A. Klein
Manager

The attached report, DOE/RL-2000-47, Volumes I and II, documents the verification of FHI's ISMS implementation and RL's ISMS development and implementation that was conducted between June 12 and June 30, 2000. This verification was conducted in accordance with the DOE Guide 450.4-1A, the ISMS Verification Team Leader's Handbook, DOE-HDBK-3027-99, and with full consideration of your guidance and recommendations in your memorandum dated May 15, 2000. The verification was conducted with exceptional response and support from both DOE and FHI personnel.

The verification team recommends that the Approval Authority consider the FHI ISMS adequately implemented. The verification team also recommends that the Approval Authority direct FHI to address all of the opportunities for improvement identified in the report as part of FHI's continuous improvement process. However, it should be noted that these opportunities for improvement should not be considered prerequisites for recognition of successful ISMS implementation.

The verification team recognizes that RL has made a significant commitment to Integrated Safety Management (ISM) as demonstrated with the complete redesign of their processes and procedural system into a single integrated management system (RIMS). This system does provide the appropriate framework for implementing ISM. In general, RL has accomplished implementation of ISM, but the following three areas need specific management attention:

- In the area of feedback and improvement, there is a lack of a formally documented and implemented assessment program consistent with DOE P 450.5, Line Environment Safety and Health Oversight.
- Roles and responsibilities need additional definition and understanding by RL staff.
- The RL Integrated Management System development and implementation process needs additional rigor.

JUL 25 2000

Therefore, the verification team recommends that the Approval Authority assures that RL addresses each of the three opportunities for improvement described above and further defined in the report prior to declaring RL has adequately implemented their ISMS.

Overall, the team continuously observed a strong commitment to the ISMS as evidenced by several noteworthy practices within both RL and FHI.

If you have any questions, please contact me on (509) 376-2876.

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**Integrated Safety Management System
Phase II Verification**

Volume I
Richland, Washington
June 12 - July 15, 2000

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I, by signature below, concur with the ISMS Verification team, Team Leader and Team Lead Advisor in the issues, Opportunities for Improvement, Noteworthy Practices, and recommendations of this report.

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EXECUTIVE SUMMARY

The U.S. Department of Energy (DOE) is committed to conducting work efficiently and in a manner that ensures protection of the workers, public, and environment. DOE policy mandates that safety management systems be used to systematically integrate safety into management and work practices at all levels while accomplishing mission goals in an effective and efficient manner.

The purpose of the Fluor Hanford (FH) Integrated Safety Management System (ISMS) verification was to determine whether FH's ISM system and processes are sufficiently implemented to accomplish the goal of "Do work safely." The purpose of the DOE, Richland Operations Office (RL) verification was to determine whether RL has established processes that adequately describe RL's role in safety management and if those processes are sufficiently implemented.

SCOPE

This ISMS verification evaluated FH and the following four project management areas: Fast Flux Test Facility, Nuclear Material Stabilization Project, River Corridor Project, and Waste Management Project. FH's Analytical Services Provider safety system implementation was also verified relative to FH's ISM System Description (FH 2000). Additionally, RL's role in safety management was verified as part of this review. To conduct the overall verification, the ISMS Verification Team was divided into three subteams that focused on both FH and RL. The ISMS verification was conducted using Criteria and Review Approach Documents (i.e., Assessment Forms) based on the core functions and guiding principles from DOE P 450.4, *Safety Management System Policy* and DOE G 450-4A, *Integrated Safety Management System Guide*. Specific summaries are provided in Section 6.0 of this report (Volume 1). Details of the verification are contained in the Assessment Forms (Volume 2).

RESULTS

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Overall, FH ISMS implementation was observed to be maturing adequately at different paces within the FH projects. While the implementation effort that occurred at an accelerated pace during recent months was successful, efforts in some organizational areas need continued focused attention. The ISMS culture is clearly being absorbed and adopted by most of the FH workforce, corresponding to the respective state of the projects' ISMS implementation. To fully institutionalize ISMS within FH, significant FH and RL senior management attention will be required on a continued basis.

Safety management implementation processes and mechanisms were well thought-out and demonstrate that safety is an integral part of work planning and execution. A team approach to work planning was consistently observed and implementation of the Automated Job Hazard Analysis process provides an efficient and credible way to identify hazards and develop the controls necessary to conduct work in a safe manner. The Automated Job Hazard Analysis screening process is used for identifying and analyzing hazards and is used extensively by the workforce. While job planning now requires additional effort for hazard identification and analysis and establishing work controls, work is now being conducted more efficiently.

The level of FH workers' engagement in the implementation of ISMS is noteworthy. Line management fosters and embraces worker involvement during all phases of work planning, execution, and feedback. This positive attitude was demonstrated in interviews, meetings, and during observed work evolutions. Due to the above conditions, a safety-conscience work environment was found to exist within FH.

The ISMS verification identified 10 Opportunities for Improvement. Examples of areas needing improvement include the following:

- The implementation of environmental protection/chemical management mechanisms at the Analytical Service Provider.
- Processes that ensure potential deficiencies and Opportunities for Improvement are formally addressed and effectively communicated.
- Roles and responsibilities need further definition and communication.
- A comprehensive hazard analysis and plan to disposition accumulated samples at the 222-S Laboratory Hot Cells.

The ISMS Verification Team determined that FH has adequately implemented their ISMS as described by HNF-MP-003, *Project Hanford Management Contract Integrated Environment, Safety, and Health Management System Plan* (FH 2000). Therefore, the Approval Authority has sufficient evidence to declare the FH ISMS implemented.

U. S. Department of Energy, Richland Operations Office

For the most part, RL has adequately developed and implemented an ISMS. RL management is in the process of implementing significant change affecting both the Operations Office infrastructure and all RL personnel. This change is a result of a major reorganization coupled with the adaptation of ISMS utilizing a new, web-based, RL Integrated Management System (RIMS). This verification identified Opportunities for Improvement that mostly involved the quality of processes that are used to implement current requirements as well as new management concepts.

RL management has made a significant commitment in their approach to implementing ISM with a complete redesign of their processes and procedural system through the development and implementation of RIMS. The RIMS concept and design provides a good framework for implementing ISM. The current implementation phase of RIMS was designed to capture all the

tenants of ISM and be completed by the start of this verification. In general, RL has accomplished this milestone, but with three areas needing specific management attention.

- In the area of Feedback and Improvement, while there is a very sound Facility Representative Program, there is a lack of a formally documented and implemented assessment program consistent with DOE P 450.5, *Line Environment, Safety, and Health Oversight*.
- Roles and responsibilities need additional definition and understanding by RL staff.
- The RIMS development and implementation process needs additional rigor.

Due to the immaturity of the new RIMS processes and procedures, the effectiveness of implementation could not be fully verified.

RECOMMENDATIONS

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The ISMS Verification Team recommends that the Approval Authority consider the FH ISMS adequately implemented. All Opportunities for Improvement identified in this report should be addressed as part of FH's continuous improvement process and should not be considered prerequisites for successful implementation. These items should be tracked through the FH Corrective Action Management process. In addition, FH self-assessments in the next year should focus on these specific issues to ensure that ISM continues to be effectively implemented.

U. S. Department of Energy, Richland Operations Office

Full maturity of ISMS via RIMS is achievable with appropriate management focus on the Opportunities for Improvement. This verification also identified Noteworthy Practices that are examples of exemplary behavior and practices that should be adopted, as applicable, throughout RL. In addition, RL self-assessments in the next year should focus on these specific

Opportunities for Improvement to ensure that ISM continues to be effectively implemented. The ISMS Verification Team recommends that the Approval Authority address the Opportunities for Improvement (described in the “Results” section above) prior to declaring RL has adequately implemented their ISMS.

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ACRONYMS

AA	Authorization Agreements
AJHA	Automated Job Hazard Analysis
ALARA	As Low as Reasonably Achievable
ASP	Analytical Services Provider
DEAR	Department of Energy Acquisition Regulations
DOE	U. S. Department of Energy
ECO	Environmental Compliance Officer
ES&H	Environment, Safety and Health
FFTF	Fast Flux Test Facility
FH	Fluor Hanford
FRAM	Functions, Responsibilities, and Authorities Manual
ISMS	Integrated Safety Management System
JCS	Job Control System
MYWP	Multi-Year Work Plan
NMS	Nuclear Material Stabilization
NP	Noteworthy Practice
OFI	Opportunity for Improvement
PFP	Plutonium Finishing Plant
PHMC	Project Hanford Management Contract
RCP	River Corridor Project
RIMS	RL Integrated Management System
RL	DOE, Richland Operations Office
RWP	Radiological Work Permits
SME	Subject Matter Expert
SWT	Solid Waste Treatment
USQ	Unreviewed Safety Question
WMP	Waste Management Project

1.0 INTRODUCTION

The U. S. Department of Energy (DOE) is committed to conducting work efficiently and in a manner that ensures protection of workers, the public, and the environment. DOE policy mandates that safety management systems be used to systematically integrate safety into management and work practices at all levels while accomplishing mission goals in an effective and efficient manner. In simple terms, DOE and its contractors will “Do work safely.”

The goal of an Integrated Safety Management System (ISMS) is to integrate Environmental, Safety and Health (ES&H) requirements in the work planning and execution processes. DOE P 450.4, *Safety Management System Policy*, as well as Department of Energy Acquisition Regulation (DEAR) 970.5204-2 (b), requires institutionalized and integration of ISM into all aspects of management and operation of both DOE and its contractors.

2.0 PURPOSE

The purpose of this ISMS verification was to determine whether ISM systems and processes were sufficiently implemented to accomplish the goal of “Do work safely.” The focus of the verification was to accomplish the following:

- Assess implementation of the Fluor Hanford (FH) ISM System Description (FH 2000) for the projects and facilities managed and operated by FH under the Project Hanford Management Contract (PHMC).
- Verify processes related to maintaining the Authorization Agreement documents are current and accurately implemented.
- Ascertain whether, within the activities and operations under the provisions of the PHMC, the work planning and execution processes were in place and functioning to effectively protect the health and safety of workers, the public, environment, and federal property at the current facility life cycle stages.
- Verify the existence of a safety conscious work environment.
- Assess the adequacy of the development and implementation of the DOE, Richland Operations Office (RL) Integrated Management System (RIMS).

3.0 BACKGROUND

This ISMS verification evaluated FH and the following FH project areas, under the scope of the PHMC:

- Analytical Services Provider (ASP) – The ASP is one of the primary service providers to FH Projects. The mission is to provide high-quality analytical services in support of the Hanford Site cleanup and environmental restoration mission.
- Fast Flux Test Facility (FFTF) – The mission is to maintain FFTF and affiliated 400 Area buildings in a safe and compliant standby condition.
- Nuclear Material Stabilization (NMS) – The mission is to provide for the safe stabilization, storage, repackaging, and shipment of the Plutonium Finishing Plant inventory of plutonium-bearing materials and other nuclear materials to other locations for reuse, long-term storage, and/or final disposition.
- River Corridor Project (RCP) – The mission is to deactivate contaminated facilities in preparation for decontamination and decommissioning.
- Waste Management Project (WMP) - The mission is to provide safe, compliant, and cost-effective waste management services for the Hanford Site and the DOE complex. These services include solid waste storage, treatment, disposal, and management of liquid effluents.

A Phase I ISMS Verification of the FH ISM System Description (FH 2000) was conducted in April 2000, and documented in DOE/RL-2000-30, Volumes 1 and 2, *Fluor Hanford Integrated Safety Management System Phase I Verification* (DOE/RL 2000a). The Phase I Verification concluded that the FH ISM System Description (FH 2000) was responsive to the DEAR clauses and to RL management direction. However, specific identified weaknesses were required to be corrected prior to considering the system description complete. Identified weaknesses included less-than-adequate definition of FH roles and responsibilities at the project/facility level; inadequate institutionalization of issue management systems independent of the corrective action management system; and inadequate resolution of two corrective actions from the previous ISMS Phase I verifications (DOE/RL 1999b). Subsequently, these weaknesses were corrected and the FH ISM System Description (FH 2000) was approved.

Due to the broad scope of facilities and activities to be reviewed, three subteams were established: Subteam A focused on NMS and RCP; Subteam B focused on ASP, FFTF, and WMP; and Subteam C focused on the review of RL. The subteams were further divided to focus on specific functional areas and areas of expertise.

The functional areas reviewed by the FH portion of the verification included the following:

- Management Oversight
- Hazards Identification and Standards Selection

- Operations
- Subject Matter Expert (SME) areas:
 - Radiation Controls and Protection
 - Occupational Safety and Health
 - Environmental Protection/Chemical Management
 - Quality Assurance
 - Criticality Safety (Subteam A only).

RL has recently undergone a major realignment and reorganization. Subsequently, the RL Functions, Responsibilities and Authorities Manual (FRAM) has been updated. The RIMS is being developed to further define FRAM elements. RIMS provides the policies, processes, and procedures for RL management and staff to efficiently and effectively conduct work.

RL prepared an ISMS Program Description (DOE/RL 2000b) that describes the RL ISMS as implemented through RIMS. Subteam C performed a combined ISMS Phase I/II Verification of RL ISM implementation. The functional areas reviewed by Subteam C for RL were consistent with the objectives and criteria in the ISMS Verification DOE Team Leader's Handbook (DOE 1999).

4.0 SCOPE

The objectives of this ISMS verification were to accomplish the following:

- Verify that the FH ISM System Description (FH 2000) and associated plans, manuals of practice, and procedures were adequately implemented at the institutional, project, and activity level.
- Verify that RL had adequately described and implemented an ISMS consistent with the objectives and criteria specified in the ISMS Verification DOE Team Leader's Handbook (DOE 1999).

Because of previous ISMS verifications performed on the Spent Nuclear Fuels Project, no verification activities for this project were conducted.

5.0 PREREQUISITES

RL's decision to proceed with this ISMS verification review was based on the following:

- A declaration by FH management of readiness for an ISMS Phase II Verification.

- Confirmation that the two Opportunities for Improvement (OFI) and two outstanding corrective actions (listed in Section 3.0) had been adequately addressed by FH.

6.0 VERIFICATION RESULTS

6.1 ANALYTICAL SERVICES PROVIDER

The mission of ASP is to provide safe, high-quality analytical services in support of the Hanford Site cleanup and environmental restoration mission.

ASP met all but one of the ISMS Phase II Verification objectives. Inconsistent implementation of ASP mechanisms associated with environmental protection/chemical management does not preclude ASP from successfully implementing ISMS. Although no adverse environmental conditions were noted, work practices in the field do not follow implementing mechanisms, environmental resources are not appropriately utilized, and effective integration of environmental protection into work processes is lacking.

ASP performance relative to ISMS core functions is summarized in the following sections. Additional detail can be found in the Assessment Forms contained in Volume 2 of this report.

6.1.1 Define Scope of Work

ASP has implemented mechanisms to appropriately define the scope of work. Definition of scope is complicated for the Laboratory involves maintaining the functionality of the facilities while meeting an ever-changing workload and customer base. The facilities require a base funding profile while the workload may vary significantly from year to year. Final cost to the customers can be substantial. Major customers include RPP, NMS, and the Spent Nuclear Fuel Project.

The customer identifies the sample requirement, develops a sample plan, and works with the laboratory to establish turnaround times and priorities. Sample analysis priorities (and associated funds) frequently change due to changing customer priorities. Interviews showed this process is well understood by the laboratory management and staff. However, the policies and processes used by ASP to balance production, infrastructure requirements and customer expectations has not been formally developed nor implemented. Long-term planning and hazard controls are strongly influenced by this lack of clear policy and process. During observations of Plan of the Day and Plan of the Week sessions, the conduct of work planning was informal, unstructured, lacked clear work prioritization, and lacked an adequate feedback component.

6.1.2 Identify and Analyze Hazards

ASP adequately plans work to ensure hazards are identified and analyzed. The project has identified the applicable requirements at the Hanford Site level and has incorporated these into ASP-specific mechanisms, procedures, and policies for identification of facility hazards and controls. However, no clear path forward has been established to address the build-up of

archived samples within the 222-S Laboratory Hot Cell Complex. The growing number of these samples impacts operations and presents an increasing liability and unanalyzed hazard.

The primary mechanism for identifying activity-level hazards and controls is the Automated Job Hazard Analysis (AJHA) system. In most cases, this has proven to be an excellent tool for identifying and analyzing hazards as the process compels thought on potential hazards and has institutionalized worker involvement. However, in its current configuration, the AJHA is not tailored to analyze and propose appropriate controls for complex chemical and radiological conditions within a laboratory environment. This is mitigated by a number of mechanisms such as extensive employee involvement (including appropriate Subject Matter Experts [SME]) in the work planning process, facility health and safety walkdowns, and inputs from the employee safety committee.

Shortfalls were identified within the environmental area of work planning hazard identification and analysis. Environmental Compliance Officer (ECO) positions are not fully staffed nor do the incumbents provide the level of support required by procedure. Additionally, a formal training and qualification process is either lacking or not fully implemented for the ECOs or delegates. Although this has not resulted in performance issues, this inconsistency could lead to unidentified or insufficiently analyzed hazards.

6.1.3 Develop and Implement Controls

ASP has mechanisms to develop and implement hazard controls. However, maintenance of the 222-S Laboratory (one of the ASP laboratories) Authorization Envelope is lacking. Controls that are necessary to mitigate hazards for specific work activities are identified in the work planning process. This process includes pre-jobs, screening and development of AJHAs, a permitting system, lockouts/tagouts, As Low As Reasonably Achievable (ALARA) Management Worksheets, Radiological Work Permits (RWP), and an Unreviewed Safety Question (USQ) Program. The work planning process integrates the development and implementation of controls for radiological safety, industrial safety, health, environmental protection, chemical management, quality assurance, and criticality safety into work activities. Numerous examples of worker involvement in the development of hazard controls were noted.

The environmental protection area presents a counterpoint to the above discussion. Although no adverse environmental conditions were noted, environmental work practices in the field do not follow implementing mechanisms, nor are environmental resources appropriately utilized. Additionally, effective integration of environmental protection into the process of job planning is lacking.

6.1.4 Perform Work Within Controls

Interviews and observations demonstrate that line management is dedicated to performing work safely. Management involvement was evident through observation of their presence and influence in the field. Furthermore, the workforce demonstrated a safety-conscious work environment throughout planning and performance of work.

ASP has implemented the procedures and mechanisms to perform work within controls. ASP

personnel work to standard procedures that are based on the Job Control System (JCS). The ASP work control procedures define roles and responsibilities for performance of work and personnel understand their roles and responsibilities. Observations and interviews demonstrate that individuals who perform work control processes have competence commensurate with their responsibilities. ASP controls positively contribute to performance of work in a safe and efficient manner as evidenced by the job preparation and readiness confirmation processes.

Training requirements and roles and responsibilities associated with the 222-S Laboratory Leader position have not been formally defined or documented. Management is not consistently enforcing the expectations for procedure use and review established in ASP-200, *Analytical Services Procedures*. A lack of management oversight, organizational structure, and defined roles and responsibilities is evidenced in the ASP Hazard Materials Group.

6.1.5 Feedback and Continuous Improvement

The ASP has implemented feedback and continuous improvement processes such that opportunities for improving the planning and execution of work are identified and implemented. Management is actively involved in oversight and self-assessment and participates with workers in feedback forums such as safety and accident councils. The practice of documenting post-job reviews on all completed tasks was institutionalized at ASP.

Post-job reviews and safety meetings are well-run and interactive; valuable information is captured, promulgated to the staff, and included into work processes. Roles and responsibilities, relative to feedback and improvement processes, are understood and implemented.

Interviews with managers and workers indicate that increased worker involvement in work planning and feedback processes provide a valuable improvement mechanism for ISMS implementation. Workers at ASP participate in planning and hazard identification and felt they were providing a valuable addition to ISMS implementation.

However, feedback concerns, including ineffective communication between workers and management and a lack of field supervision, were noted within the ASP Hazardous Materials Group. Additionally, the ASP Corrective Action Management process has not addressed recurring issues identified during external assessments.

6.1.6 Strengths

- Bargaining unit personnel at the 222-S Laboratory are given the opportunity to participate as team leaders in the identification, analysis, and mitigation of workplace hazards. **(ASP MGO.2-1)**
- The Management Field Assessment program is a positive and valuable immediate feedback and improvement mechanism. **(ASP MGO-3.1)**
- The Automated Job Hazard Analysis process facilitates a comprehensive analysis of the potential hazards associated with the evaluated work scope. **(ASP OP.1-1)**

- The Automated Job Hazard Analysis process ensures, and has institutionalized, worker involvement in work planning. **(ASP OP.1-2)**
- Worker involvement in planning stages has reduced frequency of job delays during the pre-jobs and during work execution. **(ASP OP.1-3)**
- Readiness preparation for the californium capsule actively supported ISM. **(ASP OP.2-1)**
- Post-job feedback on every maintenance activities observed was exemplary. **(ASP OP.2-2)**
- ASP has a balanced and effective safety-conscious workforce environment. **(ASP OP.2-3)**
- Extensive measures are being taken to identify, analyze, and control radiological hazards. **(ASP SME.1-1)**
- Extensive employee involvement in hazard identification and corrective actions is evident. **(ASP SME.2-1)**
- “Analytical Services Permit Implementation Matrix” provides a useful tool for the line manager to ensure that environmental requirements are implemented. **(ASP SME.3-1)**

6.1.7 Concerns

- Hazards identification and accident analysis for the 11-A Hot Cell Facility is not comprehensive, and the Automated Job Hazard Analysis process has not been applied to the hot cell operations. **(ASP HAZ.1-1)**
- The Interim Safety Basis does not reflect an integrated consideration and bounding of all hazards present in hot cell operations. **(ASP HAZ.2-1)**
- A transition process for systematic and timely application of improved hazard controls identified from the Automated Job Hazard Analysis reviews of existing procedures to other operating procedures, which are awaiting such reviews, is lacking. **(ASP HAZ.2-2)**
- A formal process for maintaining the 222-S Laboratory and Waste Sampling and Characterization Facility Authorization Envelopes is lacking. **(ASP HAZ.2-3)**
- The processes in place for planning and prioritization of project work performed are not supported by documentation that provide details or requirements to ensure current practices are consistently applied and will continue. **(ASP MGO.1-1)**
- Plan of the Day and Plan of the Week sessions were informal, unstructured, and lacked clear work prioritization and an adequate feedback component. **(ASP MGO.1-2)**

- No clear path forward has been established for addressing the accumulation of samples in the 222-S Laboratory hot cells. **(ASP MGO.1-3)**
- The HNF-PRO-074, *Safety Responsibilities* requirement for managers/supervisors to “incorporate specific safety and health responsibilities and requirements into formal job descriptions” has not been implemented for bargaining unit personnel. **(ASP MGO.2-2)**
- The training and roles and responsibilities associated with the 222-S Laboratory Leader position have not been formally defined or documented. **(ASP MGO.2-3)**
- A lack of management oversight, organizational structure, and defined roles and responsibilities is evidenced in the ASP Hazardous Materials Group. **(ASP MGO.2-4)**
- The formal training and qualification process for work planners is not consistent at ASP and throughout the WMP. **(ASP OP.1-4)**
- A generic caveat in many of technical procedures, “Sections, or steps within sections, of this procedure may be performed out of sequence, as required” may desensitize workers on the importance of procedural adherence. Contrary to this statement, many steps within the body of the procedure need to be worked in the specified order. **(ASP OP.2-4)**
- The Occupational Safety and Health Training Program Description has not been fully implemented. **(ASP SME.2-2)**
- Observations, interviews, and document reviews indicate that the Environmental Compliance Officer is not providing input to the Waste Planning Checklist as required per the procedure. **(ASP SME.3-2)**
- Procedure ASP-310, *Analytical Services Procedure Manual*, Section 1.16, “Resource Integration,” does not specify the utilization of environmental resources for work planning. **(ASP.SME.3-3)**
- HNF-PRO-233, *Review and Approval of Documents* requires an E designator when regulatory requirements are to be implemented. However, LO-120-050, *Receiving and Documentation for the Standards Laboratory* does not include this designator. **(ASP SME.3-4)**
- The facility has not consistently and appropriately implemented the requirements as defined under the roles and responsibilities, for the Environmental Compliance Officer review, but has allowed the chemical management point of contact to perform these Environmental Compliance Officer functions. **(ASP SME.3-5)**
- The facilities chemical management implementing responsibilities involving integration between environmental, operations, chemical management and safety are not implemented as described in facility procedures. **(ASP SME.3-6)**

- The Environmental Compliance Officer is not implementing the mechanisms listed in the ISM System Description by not formally approving all ASP work packages that have the potential to impact the environment (ASP-200, *Analytical Services Procedures* and HNF-PRO-233, *Review and Approval of Documents*). (ASP SME.3-7)
- There is no documentation of the implementing mechanisms to assign an Environmental Compliance Officer designee and qualification requirements are not defined for the Environmental Compliance Officer designee as prescribed in ASP-200, *Analytical Services Procedures*, Section 3.1, "Work Management." (ASP SME.3-8)
- ASP/222-S Laboratory management is not consistently enforcing the expectations for procedure use and review established in ASP-200, *Analytical Services Procedures*, Section 2.16, "Technical Procedures." (ASP SME.4-1)
- Software quality control requirements are not well understood nor effectively implemented at ASP. (ASP SME.4-2)
- The Corrective Action Management System has not effectively addressed issues identified in external assessments. (ASP SME.4-3)

6.2 FAST FLUX TEST FACILITY

The FFTF project mission is to maintain the FFTF and affiliated 400 Area Buildings in a safe and compliant standby condition.

The FFTF met all ISMS Phase II Verification objectives. FFTF performance relative to ISMS core functions is summarized below. Additional detail can be found in the Assessment Forms contained in Volume 2 of this report.

6.2.1 Define Scope of Work

The FFTF has implemented the appropriate mechanisms for defining the scope of work. The process for work prioritization is described by facility administration procedures and work is prioritized, performed, or delayed based upon the facility mission. FFTF utilizes an integrated planning process to develop and maintain their Multi-Year Work Plan (MYWP). Identification of mission-related tasks are performed at the project level by integrating each of the project functional areas. The formulation of the MYWP begins with requirements directed by DOE through the Budget Updating Guidance, to the project level. FFTF develops baseline elements within the given guidance including ES&H risk summaries, then rolls the projections back to FH. FH factors work variables, including the ES&H risk, into work prioritization to establish the Integrated Priority List.

6.2.2 Identify and Analyze Hazards

The FFTF has implemented mechanisms to analyze hazards and identify controls for its facilities, including the FFTF plant and several radiological, non-nuclear, and industrial facilities

in the 300 and 400 Areas. The FFTF has incorporated requirements into facility-specific procedures and mechanisms for identification and analysis of facility hazards. For example, the safety analyses for FFTF adequately identify and address hazards such as sodium fires and oxygen-depletion, which are specific to facilities involving sodium systems.

The primary mechanism for identifying hazards and controls associated with specific work activities is the AJHA. The FFTF provides adequate facility-specific guidance for applying the AJHA. Worker involvement was evident during safety meetings and by participation in the AJHA process, including pre-job briefings and field walkdowns. The identification, analysis, and control of radiological hazards is a strength. Observations indicated that the recognition of certain industrial hazards, such as the potential for fall injuries and heat stress, needs greater emphasis.

6.2.3 Develop and Implement Controls

The FFTF has implemented mechanisms to develop and implement controls to prevent or mitigate identified hazards. At the facility-level, the FFTF safety Authorization Basis consists of the Final Safety Analysis Report, Auditable Safety Analyses, and hazard baseline documents. The Final Safety Analysis Report was prepared and approved to the standards of the U.S. Nuclear Regulatory Commission for civilian nuclear power plants. The document reflects less emphasis on an integrated assessment of hazards to the worker than the Authorization Basis documents prepared to DOE standards. For other radiological, non-nuclear, and industrial facilities, the FFTF has implemented Auditable Safety Analyses or hazard baseline documents, as appropriate. The FFTF has also developed Authorization Envelopes for its facilities and has completed the Authorization Agreement for the FFTF plant. The FFTF follows a USQ process for maintaining its Authorization Basis.

Hazards and the controls necessary to mitigate the hazards for specific work activities are identified during work planning. This process includes pre-job briefings, AJHA meetings, ALARA management worksheets, RWPs, shielding and dose calculations, and the USQ program for review and approval of work activities. The work planning process at FFTF integrates the development and implementation of controls for the various functional areas, such as radiological safety, environmental protection, chemical management, and quality assurance. Observation of FFTF work activities, such as isolation valve testing, repair of air blower, and erection of scaffolding to support heating, ventilation and air conditioning work, demonstrate that the workforce uses the approved procedures and mechanisms to develop and implement hazard controls. Interviews, observations, and document reviews indicate that FFTF's integrated process to control hazards involves both line management and workers, and ensures that the controls provide adequate protection of the public, worker, and environment.

6.2.4 Perform Work Within Controls

The FFTF has implemented procedures and mechanisms to perform work within controls. The FFTF personnel work to standard procedures and have ensured that work is performed within the established controls. The work control procedures are generated as part of the JCS.

The FFTF work control procedures define roles and responsibilities for performance of work.

Individuals who perform the work control process have competence commensurate with their responsibilities. The integration of highly experienced and qualified personnel throughout the work process ensures a high level of competence at FFTF. Emphasis on procedure compliance, coupled with a strong conduct of operations culture ensures that work is performed within controls.

The FFTF has established procedures, mechanisms, and processes to ensure that work is performed within controls including work preparation, readiness confirmation, and performing the work in a safe, environmentally protective, and efficient manner. The main tool used for recognizing hazards and identifying the appropriate controls at the activity level is the AJHA. Worker involvement is achieved in the work control process through AJHA sessions, pre-job briefings, and post-job reviews.

The FFTF workers interviewed indicated that a safety-conscious work environment exists throughout the FFTF facilities and projects. However, an inconsistency in implementation of the stop-work process and a lack of stop-work process definition in HNF-PRO-3468, *Stop Work Responsibility*, has led FFTF to develop plans for a facility-level procedure that clearly defines stop work and restoration criteria. Development of a facility-level stop work procedure may lead to inconsistency and confusion for workers whose jobs may require work at other PHMC project or other Hanford Site contractors. HNF-PRO-3468 should be examined to address those issues identified by FFTF.

6.2.5 Feedback and Continuous Improvement

The FFTF has implemented feedback and continuous improvement processes such that opportunities for improving the planning and execution of work are identified and implemented. Management is involved in oversight and self-assessment, and participates with workers in feedback forums such as safety councils and post-job reviews. Roles and responsibilities, relative to feedback and continuous improvement processes are well understood and fully implemented. An exception was noted where concerns brought to the safety council are not being managed in accordance with the Corrective Action Management process.

Throughout the FFTF, managers and workers indicate that increased worker involvement in work planning and feedback processes provides a valuable improvement mechanism associated with ISMS implementation. Workers at the FFTF are highly experienced, well trained, confident, and actively participate in planning, hazard identification, and the feedback and improvement process. The FFTF staff is enthusiastic about ISMS implementation and committed to continuous improvement.

6.2.6 Strengths

- The integration of operationally qualified and experienced personnel throughout the workforce is unique to FFTF and ensures a high level of competence is applied to the implementation of ISMS Core Functions and Guiding Principles. **(FFTF MGO.2-1)**
- FFTF conducts 100% verification of completed corrective actions. **(FFTF MGO.3-1)**

- The events database allows for a comprehensive historical query of lessons learned at FFTF and is very beneficial because of its longevity. **(FFTF MGO.3-2)**
- Personnel who perform planning were included in the technical staff training and qualification programs. **(FFTF OP.1-1)**
- Extensive measures are being taken to identify, analyze and control radiological hazards. **(FFTF SME.1-1)**
- Training requirements for Safety and Health personnel have been established and consistently implemented. **(FFTF SME.2-1)**
- The FFTF Maintenance Shop Supply has a structured and controlled Chemical Management System. **(FFTF SME.3-1)**
- The FFTF monthly As Low As Reasonably Achievable/Pollution Prevention meetings provide an excellent mechanism to maintain environmental awareness. **(FFTF SME.3-2)**
- A strong ISMS culture exists at FFTF. **(FFTF SME.4-1)**
- An active feedback and improvement culture and effective communications of information within and between various parts of FFTF supports the ISMS process. **(FFTF SME.4-2)**

6.2.7 Concerns

- Roles and responsibilities in the FFTF Plant Policy Manual do not adequately reflect ownership and management of the plant's Authorization Basis. **(FFTF HAZ.2-1)**
- There is a need to emphasize awareness of industrial hazards, such as fall protection and heat stress. **(FFTF HAZ.2-2)**
- Concerns brought to the safety council are not going through the Administrative Procedure A-37, *Corrective Action Management System* process. **(FFTF MGO.3-3)**
- Inconsistency and lack of process definition in HNF-PRO-3468, *Stop Work Responsibility*, has resulted in FH facilities developing their own process definition or protocol, causing confusion for workers. **(FFTF OP.2-1)**
- There is an inconsistent use of, or plans to use the Automated Job Hazard Analysis in respect to pre-existing procedures in the FH facilities. **(FFTF OP.2-2)**
- FFTF does not have an Environmental Compliance Officer qualification program. This is inconsistent with other FH projects. **(FFTF SME.3-3)**

6.3 NUCLEAR MATERIAL STABILIZATION

The mission of the NMS Project is to provide for the safe stabilization, storage, repackaging, and shipment of the Plutonium Finishing Plant (PFP) inventory of plutonium-bearing materials and other nuclear materials to other locations for reuse, long-term storage, and/or final disposition.

The NMS Project met all ISMS Phase II Verification objectives. The NMS Project performance relative to ISMS core functions is summarized below. Additional detail can be found in the Assessment Forms contained in Volume 2 of this report.

6.3.1 Define Scope of Work

The NMS Project, i.e., PFP, uses an integrated planning process that incorporates multiple layers of work plans and activities from the MYWP down to the in-field work package. An integral component of the integrated planning process is technical basis review planning that establishes the technical basis, inputs deliverables, reference documents, enabling assumptions, prioritization, and functional requirements of activities. The NMS Project process for defining scopes of work was used by all personnel responsible for planning and scheduling mission task and work activities.

The NMS Project personnel generally understand their roles and responsibilities and required qualifications for work scope definition. All senior managers interviewed demonstrated an awareness of and dedication to ISM.

6.3.2 Identify and Analyze Hazards

The NMS Project has in place the necessary mechanisms to ensure hazards are identified and analyzed. The NMS Project has identified the applicable requirements at the Hanford Site level and incorporated these into PFP facility-specific mechanisms, procedures, and policies.

The primary mechanism for identifying hazards and controls associated with performing work is the AJHA system. SME reviews for environmental protection/chemical management, occupational safety and health, quality assurance, radiological controls and protection, and criticality safety have identified the AJHA and other tools as effective methods to integrate ES&H requirements into work planning. Although the AJHA is an effective tool for analyzing hazards, weaknesses were noted in its implementation of the AJHA at the PFP. Concerns include the lack of an integrated team approach to work planning and hazards analysis, and the absence of emphasis on waste minimization efforts. From the nuclear and criticality safety standpoint, the primary processes used for identifying hazards and controls are specified in Hanford Site and facility-specific procedures. PFP has established a Nuclear Safety program that complies with DOE nuclear safety orders and other nuclear standards and requirements.

Interviews, observations, and document reviews indicate that PFP has established and implemented an integrated process to ensure the full spectrum of hazards associated with the scope of work is identified, analyzed, and categorized. Additionally, those individuals responsible for the identification of ES&H requirements and worker protection hazards are integrated with personnel assigned to analyze work processes. However, the NMS Project

Standards/Requirements and Identification Documents (S/RIDS) which specifies the applicable ES&H-related requirements was not updated annually as required.

6.3.3 Develop and Implement Controls

The NMS Project has mechanisms in place to develop and implement hazard controls. Controls to mitigate hazards for specific work activities are identified during work planning. This process includes pre-job briefings, AJHA meetings, and ALARA work planning for review and approval of work activities. The work planning process integrates the development and implementation of controls for radiological safety, nuclear and industrial safety, environmental protection, chemical management, quality assurance, and criticality safety into work activities.

Interviews, observations, and document reviews indicate that the NMS Project has established and implemented an integrated process that is used to develop controls that mitigate the identified hazards present at the PFP. The process involves both line management and workers and ensures that the controls provide adequate protection of the worker, public, and environment.

The NMS Project Quality Assurance Program Plan does not reflect the current company and project structure. Although the plan was revised in September 1999, management and functional changes have occurred which significantly outdates the document.

6.3.4 Perform Work Within Controls

The NMS Project performs work within controls using self-contained work teams to plan and perform a large percentage of work without the need for outside resources. This structure has the advantage of maximizing worker involvement through a focused work team that can prioritize planning and work activities and manage their assigned responsibilities while supporting mission objectives. Although the work teams must continue to mature, mechanisms have been established to ensure that work is performed within controls.

Fieldwork teams understand their roles and responsibilities related to work planning, authorization, and execution. Personnel training and qualification programs are institutionalized and establish the necessary competence commensurate with responsibilities. Senior management has recognized the need to provide additional system-specific training that will drive continuous improvement. Fieldwork teams were observed fostering worker involvement, although opportunities to strengthen SME participation in the team environment exist.

Resource brokering and fieldwork team-to-team communication, which are a function of the fieldwork team concept, have not been fully developed. This hinders the work prioritization process and communication to the worker concerning daily assignments.

During the work review and release process, the Building Emergency Director effectively implements operations authorizations. During the performance of work, the Person-in-Charge is responsible for ensuring that hazard controls are established and remain in place while the hazard exists. Mechanisms are established to integrate feedback from work performance into future work planning.

Personnel interviews and observations demonstrate that line management is dedicated to performing work safely. Senior management involvement was evident through observation of their presence and influence in the field. Furthermore, the workforce demonstrated a safety-conscious work environment throughout the planning and performance of work.

6.3.5 Feedback and Continuous Improvement

The NMS Project has implemented feedback and improvement processes. In addition, these processes are causing improvement in the NMS Project's work control processes. Management at each level of the organization is involved in providing and receiving feedback and opportunities for process improvement. During the FH ISMS Phase I Verification (DOE/RL-2000a), concerns with the Corrective Action Management Program were identified. While the facility management team has developed changes to improve this program, those improvements have not yet been implemented.

The facility personnel appear to be involved in producing a safety-conscience work environment at the NMS Project. These workers are involved in each phase of work, starting with planning and identification of potential hazards to the feedback of ideas on how the work activity can be completed more safely and effectively in the future.

The NMS Project has not fully implemented its ALARA Council. In addition, there is no effective feedback process to ensure ALARA suggestions are tracked and implemented. In general, the ISMS Verification Team observed that post-job reviews were not being conducted on a routine basis and some pre-job meetings and post-job reviews were not effectively being conducted. The Management Assessment Program at the NMS Project did not appear to be of sufficient depth or breadth to ensure continuous improvement.

6.3.6 Strengths

- The Multi-Year Work Plan database used for the NMS Project can be modified and exported into their scheduling software (Primavera Project Planner^{TM1}) eliminating the need to change several thousand resources manually, saving time and resources. **(NMS MGO.1-1)**
- The daily Director's briefing effectively communicates the facility operating status and the priority activities for each manager. **(NMS MGO.3-1)**
- The Lockout/Tagout Program administration is very good and the responsible Nuclear Chemical Operator demonstrated a high level of competency. **(NMS OP-2.1)**
- Senior management has taken an active role in providing clear expectations to ensure that work packages are planned so that dose to the worker is addressed and all reasonable steps are taken to keep the dose as low as reasonably achievable. **(NMS SME.1-1)**

¹ Primavera Project PlannerTM is a registered tradename of Primavera Systems, Inc., Bala Cynwyd, Pennsylvania.

- The input for job planning from Radiological Controls Technicians and Radiological Engineers for moderate– and high–risk radiological work is very good. (NMS SME.1-2)
- Senior management’s review and approval of all Administrative Control Level dose extensions before being submitted to FH Radiological Control and Pacific Northwest National Laboratory for processing is very good. This senior management review ensures that the request for extension is justified and the additional dose meets the intent of as low as reasonably achievable. (NMS SME.1-3)
- Widespread awareness and acceptance of ISM is noticeable throughout the facility. (NMS SME.2-1)
- Personal accountability and willingness to assume responsibility for their safety and the safety of others is exemplary and noteworthy. (NMS SME.2-2)
- Team approach for work planning and identification and evaluation of risks is evident and admirable. (NMS SME.2-3)
- PFP staff has planned the integration of historic process information with the new Hanford Site chemical inventory database so that a single Chemical Management System can be used by PFP for identifying hazards and controls when performing work on chemical process systems. (NMS SME.3-1)
- The FH Level III Inspector Training Program provides a high level of confidence, excellent records, and has had multiple previous reviews with outstanding results. Both certified inspectors and their management recognize this program as superior. (NMS SME.4-1)
- The Criticality Safety staff training program is exemplary, and as a result, PFP has a number of well-qualified and well-trained staff members. (NMS SME.5-1)
- PFP has a mature, well-organized, and expertly managed and presented lessons learned program. The criticality safety related lessons learned were well written, concise, and conveyed the essential information adequately. (NMS SME.5-2)
- At PFP, an extremely effective, yet informal, process of continuous improvement and feedback exists within the Criticality Safety Program at the activity level. (NMS SME.5-3)

6.3.7 Concerns

- Post–job reviews are not being consistently conducted. (NMS HAZ.1-1)
- Interviews with participants and observations of the Automated Job Hazard Analysis process seemed to indicate that the AJHA tool was sometimes used piecemeal instead of using an integrated team concept as it was designed to do. (NMS HAZ.2-1)

- Pre-planning work conducted by the Person-in-Charge, related to the Automated Job Hazard Analysis process, on various jobs appears not to be communicated to the work team. **(NMS HAZ.2-2)**
- An apparent lack of resources has impaired work planning, especially in the area of Radiological Control. **(NMS HAZ.2-3)**
- HNF-SD-MP-SRID-003, *PFP Standards Requirements Identification Document* has not been updated annually as required by HNF-PRO-265, *Standards/Requirements Identification Document Process*, Section 2.1.5, and as described in HNF-MP-003, Appendix E, Section 3.3. **(NMS MGO.1-2)**
- Terms and Conditions 4.2 of the PFP Authorization Agreement have not been met. **(NMS MGO.1-3)**
- The HNF-PRO-074, *Safety Responsibilities*, requirement for managers/supervisors to “incorporate specific safety and health responsibilities and requirements into formal job descriptions” has not been implemented for bargaining unit personnel. **(NMS MGO.2-1)**
- The NMS Project has a formal management assessment process addressing the requirements of HNF-PRO-246, *Management Assessment*. At this time, the NMS Project has only selected and scheduled approximately 12 assessments for this year. The breadth and depth of those completed assessments do not give management much value. Currently, the NMS Project is aware of the issue, and is developing a set of management expectations, and a request for all managers to recommit to a set of assessments that could add value to the organization and project. **(NMS MGO.3-2)**
- The Radiological Engineering staff was brought into the planning efforts late in the Residue Pipe and Go Project. **(NMS SME.1-4)**
- An As Low As Reasonably Achievable Committee was recently established and the first meeting was not until June 19, 2000 to review the overall conduct of the Radiological Control Program. **(NMS SME.1-5)**
- Formal job descriptions have not been developed for the Radiological Control organization. **(NMS SME.1-6)**
- There is no formal method to identify, track, or provide feedback for As Low As Reasonably Achievable suggestions or improvements made by the workforce. **(NMS SME.1-7)**
- Sampling of the Automated Job Hazard Analysis and efforts by the Automated Job Hazard Analysis User Group indicate that the program is continually developing and improving. Thus, there is room to improve the identification of hazards and the application of the process. **(NMS SME.2-4)**

- As a best management practice, risks concerning rotating shift work (i.e., health hazards, safety hazards, family and social issues) should be acknowledged and appropriately addressed. In addition, shift workers should be represented at various forums that discuss safety and health issues. (NMS SME.2-5)
- PFP needs to facilitate the Automated Job Hazard Analysis process during meetings and summarize earlier planning sessions so that pollution prevention and waste minimization is integrated more at the worker level. (NMS SME.3-2)
- PFP has not fully implemented the review and approval process for National Environmental Policy Act in accordance with the site and facility implementing mechanisms listed in HNF-MP-003, *Integrated Environment, Safety, and Health Management System Description*. (NMS SME.3-3)
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vol. 2, Section 15.1, "Quality Assurance Program Plan," is outdated and does not recognize current corporate or project structure. (NMS SME.4-2)
- Quality Assurance required reading is not being accomplished by Engineering and Quality Assurance personnel. (NMS SME.4-3)
- Criticality Safety technical staff do not appear to be adequately involved in the Standard/Requirements Identification Documents process for nuclear safety. (NMS SME.5-4)
- Failure to verify compliance with the American National Standards Institute/American Nuclear Society standards potentially leaves gaps in the management systems affected by criticality safety and effectively prevents the development of proactive corrective measures aimed at strengthening the existing program. Thus, at the NMS Project and RCP, it appears that existing formal assessment processes are not adequately driving continuous improvement in criticality safety at the programmatic level. (NMS SME.5-5)

6.4 RIVER CORRIDOR PROJECT

The mission of the RCP is to deactivate radiologically contaminated facilities in preparation for decontamination and decommissioning.

RCP met all ISMS Phase II Verification objectives. In general, a safety-conscious work environment exists within the RCP. Field observations across the RCP indicate that workers and management are concerned about safety and are actively engaged in protecting one another, the environment, and the public. However, interviews indicate that the communication and feedback loops within the 327 Building are very strained and not conducive to ISMS implementation. As a result, management suspended work at the building and is pursuing a number of corrective actions intended to improve the 327 Building work environment.

RCP performance relative to ISMS core functions is summarized below. Additional detail can be found in the Assessment Forms contained in Volume 2 of this report.

6.4.1 Define Scope of Work

The processes and mechanisms for work at the MYWP level and the task execution levels are in place, understood, and used by personnel. Interviews, field observations, and documentation reviews demonstrate that planning and prioritization of work include all required elements of ISM and are being executed by RCP management.

RCP personnel understand their roles and responsibilities and required qualifications for work scope definition. Job descriptions include a description of essential duties and responsibilities, qualifications, education and experience, language skills, reasoning ability, certificates, licenses and registrations, physical demands, and a description of the work environment. Job descriptions for personnel with strategic planning and work package planning responsibilities were reviewed and found to contain adequate descriptions of responsibilities. Personnel performing these duties were aware of their position description requirements and met the listed qualification requirements.

During interviews, personnel demonstrated an awareness of and dedication to ISM. All understood that line management has responsibility for safety and first line management and worker involvement supported the identification and development of safety controls.

6.4.2 Identify and Analyze Hazards

The RCP has mechanisms in place to identify and analyze hazards. The RCP has identified the applicable requirements at the Hanford Site level and has incorporated these into project activities.

The primary mechanism for identifying hazards and controls associated with performing work is the AJHA, which is an effective method for integrating ES&H requirements into work planning. From the nuclear and criticality safety standpoint, the primary processes used for identifying hazards and controls are specified in Hanford Site and facility-specific procedures. The RCP has established a Nuclear Safety program that complies with the DOE nuclear safety orders and other nuclear standards and requirements.

During interviews, observations, and document reviews it was determined that the RCP has established and implemented an integrated process to ensure hazards are identified, analyzed, and categorized. Additionally, those individuals responsible for the analysis of ES&H requirements and worker protection hazards are integrated with personnel assigned to analyze the processes.

6.4.3 Develop and Implement Controls

The RCP has mechanisms in place to develop and implement hazard controls. Hazard controls are identified during work planning, which includes pre-job briefings, AJHA meetings, and ALARA work planning. The work planning process integrates the development and

implementation of controls for radiological safety, nuclear and industrial safety, environmental protection, chemical management, quality assurance, and criticality safety into work activities.

Interviews, observations, and document reviews indicate that the RCP has established and implemented an integrated process to develop controls that mitigate the identified hazards. This process involves both line management and workers and ensures that the controls provide adequate protection of the worker, public, and environment.

During the verification, it was noted that the RCP Quality Assurance Program Plans were outdated and did not reflect current company and organization structure. This weakness had already been self-identified by the RCP staff.

6.4.4 Perform Work Within Controls

The RCP has implemented work control procedures (generated as part of the JCS) and mechanisms to ensure work is performed within the established controls.

The RCP work control procedures have defined roles and responsibilities for performance of work. Interviews with RCP personnel and observations of activities related to work control indicate that the personnel understand their roles and responsibilities. Personnel performing work control processes have competence commensurate with their responsibilities.

The RCP has established procedures, mechanisms, and processes to ensure work is performed within the controls. The RCP work control processes require operations involvement in the establishment of hazard controls and ensure those controls are in place prior to releasing work.

In general, a safety-conscious work environment exists within the RCP. Field observations across the RCP indicate that workers and management are concerned about safety and are actively engaged in protecting one another, the environment, and the public. However, interviews indicate that the communication and feedback loops within the 327 Building are very strained and not conducive to ISMS implementation. As a result, management suspended work at the 327 Building and is pursuing a number of corrective actions intended to improve the work environment.

6.4.5 Feedback and Continuous Improvement

The RCP has implemented feedback and improvement processes. The RCP has implemented management assessment, corrective action management, and post-job review processes to ensure problems identified during the conduct of work are captured and factored into future work activities.

RCP has implemented several feedback tools to ensure concerns can be raised without fear of retribution. For example, personnel involved with the work control process effectively use the "J-5" form to feed back information about problems that arise during the conduct of work. In addition the "Safety Logs" used at the 324 and 327 Buildings are effective tools that allow workers to document safety concerns, and have management respond. The concerns are usually quickly resolved.

The oversight of environmental compliance, including self-assessments, has not been fully implemented at the RCP. The 324 and 327 Buildings have incorporated environmental compliance into their program, but have not scheduled or performed the required assessments.

6.4.6 Strengths

- The 324 and 327 Buildings have implemented and are effectively using a Safety Log process that facilitates the facility management team in addressing issues in a very timely manner, and providing meaningful feedback to concerned employees. **(RCP MGO.3-1)**
- RCP has developed an effective procedure observation process to overview and check procedural adequacy, usability, and compliance. **(RCP MGO.3-2)**
- The scheduling and prioritization of activities and resources at the Plan of the Day and Plan of the Week meetings are excellent at Building 324. **(RCP OP.2-1)**
- Building 324 performs Post-Job As Low As Reasonably Achievable reviews that are thorough, complete, and include active participation from each craft that performed the work activity. **(RCP SME.1-1)**
- Videotaping pertinent meetings, particularly those addressing safety and health issues, is a strength and should be encouraged at other facilities. **(RCP SME.2-2).**
- The recent issuance of FSP-3647, *200 Area Deactivation Project Administration*, Section WM-3, "Waste Information Data Systems (WIDS) Sites Management" procedure is an excellent tool to ensure that inactive waste sites are monitored for impacts to the environment. **(RCP SME.3-1)**
- All critical characteristics used in procurement of Commercial Grade Items in the 324 and 327 Buildings are recorded in an engineering document for each facility. These documents are updated by Engineering Change Notice, thus placing this data under configuration control and ensuring the information is available for future reference. **(RCP SME.4-1)**
- The Criticality Safety Representatives at the 324 and 327 Buildings regularly observe work activities involving the handling or movement of significant quantities of fissionable material. The Criticality Safety Representative at the 324 Building reports that he observes all such movements providing real-time oversight and ownership of the process. **(RCP SME.5-1)**
- At the 200 Area Deactivation Project, recent improvements have resulted in a significantly enhanced Criticality Safety Program. **(RCP SME.5-2)**

6.4.7 Concerns

- The RCP has developed a procedural process to assure that regulatory requirements are implemented, and that there is an oversight process to monitor compliance. The Management Assessment Program is used at the 324 and 327 Buildings to provide the necessary oversight. At this time, it does not appear that a *similar approach (using the Management Assessment process)* is being used for other RCP facilities. **(RCP MGO.3-3)**
- A concern that strained communications and a work environment that is not conducive to ISMS implementation currently exists at Building 327. This condition is recognized by facility personnel and actions are underway intended to improve the situation. **(RCP OP.2-2)**
- Interviews with Radiological Control exempt staff indicated that most individuals were unaware their roles and responsibilities were listed on a formal job description. **(RCP SME.1-2)**
- Sampling of the Automated Job Hazard Analysis and efforts by the Automated Job Hazard Analysis User Group indicate that the program is continually developing and improving. Thus, there is room to improve the identification of hazards and the application of the process. **(RCP SME.2-1)**
- The Automated Job Hazard Analysis process needs to integrate, document, and communicate waste minimization techniques, processes, and goals as a part of work planning. **(RCP SME.3-2)**
- Oversight of environmental compliance has not been fully implemented into the management or self-assessment programs at the RCP. **(RCP SME.3-3)**
- All RCP Quality Assurance Program Plans are outdated and do not recognize the current corporate or project structure. **(RCP SME.4-2)**
- Quality Assurance personnel have not completed required individual training plans in accordance with HNF-IP-1281, *River Corridor Training Plan*, and HNF-IP-1264, *324/327 Facilities Stabilization Projects*, Section 2.16, Facility Worker Training,” Attachment E. **(RCP SME.4-3)**
- Failure to verify compliance with the American National Standards Institute/American Nuclear Society standards potentially leaves gaps in the management systems affected by criticality safety and effectively prevents the development of proactive corrective measures aimed at strengthening the existing program. Thus, at the NMS Project and RCP, it appears that existing formal assessment processes are not adequately driving continuous improvement in criticality safety at the programmatic level. **(RCP SME.5-3)**

- The Criticality Safety staff at RCP do not, in general, get the benefit of any continuous training in the form of offsite conferences or visits by nationally-recognized criticality safety experts, etc. **(RCP SME.5-4)**

6.5 WASTE MANAGEMENT PROJECT

The mission of the WMP is to provide safe, compliant, and cost-effective services for the Hanford Site and the DOE complex. These services include solid waste storage, treatment, and disposal, and management of liquid effluents.

WMP met all ISMS Phase II Verification objectives. WMP performance relative to ISMS core functions is summarized below. Additional detail can be found in the Assessment Forms contained in Volume 2 of this report.

6.5.1 Define Scope of Work

WMP uses an integrated planning process to develop and maintain their MYWP. Identification of mission-related tasks are performed at the project level by integrating each of the project functional areas. FH factors ES&H risk into work prioritization to establish the Integrated Priority List.

Interviews indicate that work planning in support of the MYWP is executed as a continual process throughout the fiscal year. Facilities accomplished these planning steps in weekly, monthly, and quarterly planning sessions. An example encountered at the Solid Waste Treatment (SWT) facility is the maintenance of a 90-day look-ahead schedule that is reviewed and updated weekly, incorporating lessons learned and hazard identification/revision. However, mechanisms for planning and prioritizing work above the task level have not been developed.

6.5.2 Identify and Analyze Hazards

The WMP facilities have the necessary mechanisms in place to plan work to ensure that hazards are analyzed and controls are identified. The WMP has identified the applicable requirements at the Hanford Site level and has incorporated these into the facility-specific measures, procedures, and policies for identification of facility hazards and controls.

The primary mechanism for identification of hazards and controls associated with performing work is the AJHA system. The AJHA process forces the workforce to seriously consider potential hazards and has institutionalized worker involvement. Worker involvement in planning stages has reduced frequency of job delays during the pre-job briefings and during work execution. This has also been identified by the SME reviews for radiological control, environmental protection/chemical management, occupational safety and health, quality assurance, and criticality safety, as the tool to integrate ES&H requirements into work planning. From the nuclear safety standpoint, the primary processes for identifying hazards and controls is the implementation of Hanford Site and facility-specific procedures. The WMP has established a Nuclear Safety program that complies with DOE nuclear safety orders and other nuclear standards and requirements.

Interviews, observations, and document reviews indicate that WMP has established and implemented an integrated process to ensure the full spectrum of hazards associated with the scope of work is identified, analyzed, and categorized. Additionally, those individuals responsible for the analysis of ES&H and worker protection hazards are integrated with personnel assigned to analyze the processes. However, the formal training and qualification process for work planners and Safety and Health personnel is not consistent. There is some indication that WMP personnel lack the understanding of the controls established to mitigate high-wind hazards for outdoor waste management activities.

6.5.3 Develop and Implement Controls

WMP has mechanisms in place to develop and implement hazard controls. However, the mechanisms do not include a formal process for maintaining WMP Authorization Agreements and Authorization Envelopes. Controls are identified by WMP and developed during work planning. This process includes pre-job briefings, AJHA meetings, ALARA management worksheets, RWPs, shielding and dose calculations, and a USQ program. The AJHA process has institutionalized worker involvement. The work planning process integrates the development and implementation of controls for radiological safety, nuclear and industrial safety, environmental protection, chemical management, quality assurance, and criticality safety into work activities.

Interviews, observations, and document reviews indicate that the WMP facilities have established and implemented an integrated process to develop controls to mitigate hazards. The process involves both line management and workers and ensures the controls provide adequate protection to the worker, public, and environment. Work activities at SWT demonstrate strong emphasis on the control of hazards, and display excellent working relationships between operators and safety professionals.

At the WMP, a lack of timely incorporation of redline technical procedure changes was noted. Additionally, roles and responsibilities of the Chemical Inventory Coordinator are not being followed as described in the chemical management procedures.

6.5.4 Perform Work Within Controls

The WMP has implemented procedures and mechanisms to perform work within controls. The WMP projects/facilities work to standard procedures that ensure work is performed within established controls.

The WMP work control procedures define roles and responsibilities for performance of work and are clearly understood by WMP staff except for bargaining-unit personnel. Staffing plans are inconsistent in the level of detail and bargaining-unit personnel are not aware of the documented requirements. Individuals performing work control activities have competence commensurate with their responsibilities. Worker involvement in the planning stages has reduced the frequency of job delays. The WMP has established procedures, mechanisms, and processes to ensure that work is performed within controls. A notable exception to the appropriate implementation of roles and responsibilities was observed with the WMP Maintenance Project Support, Central Services. A lack of management oversight, organization structure, and defined roles and

responsibilities is evident. Supporting evidence includes a lack of procedural detail for rigging and noncurrent Department of Transportation inspections.

Interviews indicate a safety-conscious work environment exists throughout the WMP facilities and projects. However, various WMP facilities have developed different philosophies and graded approaches for stop work policies that may lead to confusion for a shared workforce.

6.5.5 Feedback and Continuous Improvement

The WMP has implemented feedback processes such that opportunities for improving the planning and execution of work are identified and implemented. Management is involved in oversight and self-assessment, and participates with workers in feedback forums such as Safety and Accident Prevention Councils. Post-job reviews and end-of-the-day meetings are effective processes for obtaining worker feedback. Roles and responsibilities, relative to feedback and improvement processes, are understood and implemented.

Throughout the WMP, managers and workers indicate that increased worker involvement in work planning and feedback processes provides a valuable improvement mechanism associated with ISMS implementation. Workers at each WMP facility participate in planning and hazard identification and felt they were a valuable addition to ISMS implementation.

Concerns were noted with application of the corrective action management process. These included tracking Opportunities for Improvement and the potential for insufficient corrective action development due to inconsistent interpretation of procedure HNF-PRO-052, *Corrective Action Management*.

6.5.6 Strengths

- Work activities at SWT demonstrate strong emphasis on control of hazards, and display excellent working relationships between operators and safety professionals. **(WMP HAZ.2-1)**
- SWT maintains a 90-day look-ahead schedule that is reviewed and updated weekly, incorporating lessons learned and hazard identification/revision. **(WMP MGO.1-1)**
- SWT's use of a post-evolution analysis that includes lessons learned and input from multi-facility interfaces provides an effective mechanism to improve facility performance. **(WMP MGO.1-2)**
- SWT functional interface meetings are an effective approach for communicating and managing services received from functional support groups. **(WMP MGO.2-1)**
- The "End of Day Worker" meeting is a positive and valuable feedback mechanism. **(WMP MGO.3-1)**

- Management of the Corrective Action Management process at WESF proves to be very effective in reducing Deficiency Evaluation Group meeting time and in the research and identification of the issue. **(WMP MGO.3-2)**
- The Automated Job Hazard Analysis process facilitates a comprehensive analysis of the potential hazards associated with the evaluated work scope. **(WMP OP.1-1)**
- The Automated Job Hazard Analysis process ensures, and has institutionalized, worker involvement in work planning. **(WMP OP.1-2)**
- Worker involvement in planning stages has reduced frequency of job delays during the pre-jobs and during work execution. **(WMP OP.1-3)**
- Safety issues are effectively being addressed at WMP. **(WMP OP.1-4)**
- The advent of the Automated Job Hazard Analysis has caused a significant increase in worker involvement at all levels. **(WMP OP.2-1)**
- Extensive measures are being taken to identify, analyze and control radiological hazards. **(WMP SME.1-1)**
- Strong employee involvement in hazard identification and development of controls was evident at WMP. **(WMP SME.2-1)**
- The LWPF environmental compliance matrix is an excellent tool for the line manager to ensure that environmental requirements are implemented. **(WMP SME.3-1)**
- An active feedback and improvement culture and effective communications of information within and between various parts of the WMP supports the ISMS process. Quality Assurance personnel and other personnel who perform quality-affecting work are aggressive in identifying Opportunities for Improvement and implementing appropriate actions. **(WMP SME.4-1)**

6.5.7 Concerns

- WMP personnel seem to lack the understanding of the controls established to mitigate high-wind hazards and other natural phenomenon hazards for outdoor waste management activities. **(WMP HAZ.1-1)**
- There is no driver to assure professional qualifications are maintained at a high level. This is exacerbated by a severe lack of training/travel funds to support maintenance of professional certifications. **(WMP HAZ.1-2)**

- WMP Support Engineering appears to experience significant delays and problems in placing single-source subcontracts to procure the services of appropriate safety analysts. **(WMP HAZ.2-2)**
- A transition process for systematic and timely application of improved hazard controls identified from the Automated Job Hazard Analysis reviews of existing procedures to other operating procedures, which are awaiting such reviews, is lacking. **(WMP HAZ.2-3)**
- A formal process for maintaining Authorization Agreements and Authorization Envelopes is lacking. **(WMP HAZ.2-4)**
- Documentation that defines higher-level work planning and prioritization does not provide adequate details or requirements to ensure current practices are consistently applied and will continue. **(WMP MGO.1-3)**
- The HNF-PRO-074, *Safety Responsibilities*, requirement for managers/supervisors to “incorporate specific safety and health responsibilities and requirements into formal job descriptions” has not been implemented for bargaining unit personnel. **(WMP MGO.2-2)**
- WMP staffing plans are not consistent in level of detail, and bargaining unit personnel are not aware of the documented roles and responsibilities. **(WMP MGO.2-3)**
- A lack of management oversight, organizational structure, and defined roles and responsibilities is evident in the WMP Maintenance Project Support group of Central Services. **(WMP MGO.2-4)**
- Incomplete and inconsistent development of corrective actions may occur for environmental, safety, and health issues affected by interpretation of the definition for deficiency use in HNF-PRO-052, *Corrective Action Management*. **(WMP MGO.3-3)**
- WMP-200, *Waste Management Project Procedures*, Section 1.3, “Corrective Action Management,” does not address continuous improvement opportunities as stated in the WMP ISM System Description (HNF-MP-003, Appendix D). **(WMP MGO.3-4)**
- HNF-MD-6410, *Fluor Hanford Issue Management Systems*, does not address the Waste Services and the WESF action tracking systems. **(WMP MGO.3-5)**
- The formal training and qualification process for work planners is not consistent at ASP and throughout the WMP. **(WMP OP.1-5)**
- Supplemental information is needed on Work-It-Now tickets for WMP Maintenance Project Support, Central Services. **(WMP OP.2-2)**
- Timely incorporation of redline technical procedure changes is needed. **(WMP OP.2-3)**

- Items in the Safety Log Book at the SWSD and WRAP Facility that are not immediate safety concerns are allowed to linger and are not removed when routed through other channels for resolution. **(WMP OP.2-4)**
- Establishment and implementation of training requirements for Safety and Health personnel is inconsistent. **(WMP SME.2-2)**
- In accordance with HNF-PRO-079, *Job Hazard Analysis*, not all jobs require an Automated Job Hazard Analysis based on risk and complexity. Within the WMP, there is no mechanism in place to further define risk and complexity in terms of environmental protection; as such, environmental hazards and controls could be overlooked. **(WMP SME.3-2)**
- Facilities and central support could improve the achievement of Waste Minimization/Pollution Prevention objectives through better communication as part of pre-job activities and through active involvement of central Waste Minimization/Pollution Prevention services in facility activities. **(WMP SME.3-3)**
- Roles and responsibilities of the Chemical Inventory Coordinator are not being followed as described in the chemical management procedure (WMP-200, *Waste Management Project Procedures*, Section 4.08). **(WMP SME.3-4)**

6.6 U. S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE

6.6.1 Define the Scope of Work

RL has developed and implemented mechanisms to appropriately define the scope of work. RIMS adequately describes RL's processes for defining the scope of work, translating mission needs into work, setting expectations, prioritizing tasks, allocating resources, authorizing and controlling work, and reporting results. The RIMS Financial Management System, Acquisition Management System, and Integrated Planning System all address at a very high level, the processes for preparing Mission Planning Guidance, Project Priority Lists, performance objectives and incentives. Annual Work Plans were reviewed to verify that these processes were implemented. The above-mentioned systems, as well as other crosscutting RIMS procedures, only broadly define roles and responsibilities that could negatively impact effective RIMS implementation.

Financial and Acquisition Services staff are deployed on the Hanford Site to facilitate support to mission elements and interface with contractors. Personnel interviews and observation of meetings confirmed that these people actively attend meetings and participate in multi-disciplinary teams. The RIMS Acquire Funds process addresses the budgeting process, which includes working with regulators, the Hanford Advisory Board and conducting public meetings on the budget priority list. This expanded openness with stakeholders is another example of RL's proactive interfacing. The Materials Disposition Division has recently implemented a weekly meeting with support and service organizations to strengthen communication and integration. These meetings were observed by Subteam C. These activities, in conjunction with RL's leadership role in the contractor's Lessons Learned Users Group, are examples of how RL

uses multi-disciplinary teams to promote safety and integration. Additional detail can be found in the Assessment Forms contained in Volume 2 of this report.

6.6.2 Identify and Analyze Hazards

RL has developed and implemented mechanisms to identify and analyze hazards. Personnel interviews and document reviews were conducted to assess RL's processes for ensuring the adequacy of Authorization Basis Documents and the contractor's hazards identification, categorization, and analysis process. In addition, the clarity of RL's roles and responsibilities and associated level of competence was reviewed.

RL has established procedures in RIMS for the review and approval of hazard analyses and Authorization Basis documents. Specifically, the Safety and Health Management System and Environmental Management System establish requirements for RL oversight of contractor nuclear and industrial safety programs, and environmental protection programs, and other related activities, including hazard analyses. The Safety and Health Management System contains procedures for the 1) review and approval of Authorization Basis documents, 2) review of the annual update to the Authorization Basis documents, 3) USQs, and 4) review and approval of Safety Analysis Reports for packaging. The mechanisms that address these function are adequate and that RL management and staff are qualified for these safety functions; however, nuclear safety review and approval processes need to be better communicated and coordinated with all relevant RL staff. In addition, the process for maintaining competency of the RL staff via the development of Individual Development Plans described in RIMS needs to be implemented.

Operational awareness and observation of contractor work activities related to the identification, analysis, and categorization of hazards associated with the scope of work is monitored by Facility Representatives. The Facility Representatives monitor ongoing operational hazards and analyses processes of the contractors through periodic observation of work planning and activity level hazards analysis processes used by various Hanford Site contractors.

6.6.3 Develop and Implement Controls

RL has implemented mechanisms to develop and implement controls. The Safety and Health Management System describes responsibilities for development and approval of operational controls derived from hazard analyses of non-nuclear and nuclear facilities and operations. RL has developed and implemented a mechanism for the review and approval of Authorization Agreements. The Authorization Agreements specify the key terms and conditions for safe facility operations. Authorization Agreements have been approved by RL for Hanford Site category I/II nuclear facilities.

The RIMS Requirements Management process has recently been developed to analyze new or revised requirements and to prepare RL and the Hanford Site contractors for the implementation of the new/revised requirements. The Safety and Health Management System also contains a mechanism for the review and approval of S/RIDs.

While processes for overseeing the control of hazards appear to be adequate, the mechanisms to formally update contract requirements on a timely basis, including facility-specific requirements, needs to be improved. In addition, the process and responsibilities for oversight of Phase 1 and 2 implementation of the S/RIDS is not clear.

Interviews indicated that roles and responsibilities across all ISMS core functions need additional definition and understanding by RL staff; however, the roles and responsibilities of the Facility Representatives and their interfaces with mission elements and contractors appear to be well understood. Additional understanding of RIMS and ISMS by RL staff is also needed. It was also noted that Individual Performance Plans, especially for senior executive service personnel, do not contain specific expectations for safety.

With the phase-out of the RL Functions, Responsibilities, and Authorities Manual (now an interim document), there will be no assurance that RIMS will reflect the expectations of senior management or the RL Manager with respect to roles, responsibilities, and authorities. Approval within RIMS of roles, responsibilities, and authorities is established at the System Steward level, and then with the RL Manager.

6.6.4 Perform Work Within Controls

Reviews of processes and procedures and personnel interviews verified the adequacy of RL's processes for ensuring operational readiness and performance of work within controls. RL has developed and implemented mechanisms to assure work is performed within controls. RIMS was also reviewed for its adequacy as a tool for implementing ISM at RL.

The RL Facility Representatives routinely monitor contractor work activities at the facility and activity level to ensure work is performed within the specified controls. The RL Startup and Restart of Facilities procedure serves as the implementing mechanism for operational readiness reviews and readiness assessments. Other procedures contained in RIMS that support performance of work within controls includes, but is not limited to, Conduct of Operations, Radiation Safety, Worker Safety and Health, Federal Employees Occupational Safety and Health, Fire Protection and Hoisting and Rigging.

RL management has made a significant commitment in their approach to implementing ISM with a complete redesign of their processes and procedural system through the development and implementation of RIMS. However, RIMS (Phase I) was just recently brought online and effective and comprehensive implementation could not be verified. RIMS development and implementation processes need additional discipline and rigor. It did not appear that Phase I of RIMS implementation included all tenants of ISMS nor that the transition processes into RIMS was well understood by RL or contractors. While the Facility Representative Program (which is critical to ISMS) is well documented and implemented, it has not been incorporated into RIMS.

6.6.5 Feedback and Continuous Improvement

RL has not developed or implemented an effective feedback and continuous improvement process such that opportunities for improving the conduct of contractor and RL work can be readily identified and acted upon.

Within RIMS, the Integrated Performance Evaluation Management System establishes the requirements for RL oversight of contractor activities, including industrial and nuclear safety programs. Oversight includes the following: (1) continuous awareness of contractor activities and identifying, communicating, and resolving issues; (2) performing technical assessments of safety programs and activities; and (3) reviewing and approving applicable compliance packages, Authorization Agreements, Authorization Basis documents, and USQ documentation.

While RL has developed and implemented several processes to oversee and interface with Hanford Site contractors, there is a lack of a formal documented assessment program consistent with DOE P 450.5. RL has put into place a very sound and effective Facility Representative Program, including clear roles and responsibilities; however, RL is not regularly conducting assessments of the contractors and is not providing effective oversight of the contractor's self-assessment program. In addition, the RL internal processes for continuous improvement are not fully developed and implemented. Although RL is currently developing an internal Lessons Learned Program, they are taking a leadership role with a contractor Lessons Learned Users Group.

Several observations, interviews, and document reviews indicate that RL has a strong commitment to safety and continuous improvement. Examples include the significant commitment for the development and implementation of RIMS and the conduct of two significant management self-assessments in preparation for the ISMS verification review.

6.6.6 Strengths

- RL's presence as part of multi-discipline integrated teams within RL and with contractors is viewed as a strength and demonstrates general top-level implementation of this criterion to the new RL culture as more of a site integrator role. **(DOE.1-1)**
- Financial Services and Procurement Services staff located onsite with the programs and contractors and regularly scheduled interface meetings is viewed as a strength and demonstrates implementation of roles and responsibilities, accountability, and authority to the new RL culture. **(DOE.1-2)**
- RL provided detailed budget information for analysis and review by stakeholders and tribes, including input on criteria for decisions on budget priorities. **(DOE.1-3)**

- The Facility Representative Program is well developed, documented, and understood by the Facility Representatives and mission element personnel. **(DOE.2-1)**
- The RIMS Safety and Health Management system procedures for the “Review and Approval of Nuclear Safety Documents” crosscutting process are well defined and provide RL personnel with a uniform process for the review and approval of hazard analysis and controls. **(DOE.2-2)**
- Materials Disposition Division has implemented a weekly Plutonium Finishing Plant team meeting that includes Materials Disposition Division, Engineering, Safety and Standards Division, Facility Representatives, and other mission support and support service staff to improve teaming, communication, and interdependency. **(DOE.2-3)**
- RL mission element and mission support personnel responsible for reviewing and approving hazard analysis and controls are technically competent and well qualified for the functions they perform. **(DOE.2-4)**
- The RIMS Safety and Health Management System, *Startup and Restart of Facilities* procedure, is well defined and provides RL personnel with a uniform process for reviewing and verifying operational readiness. **(DOE.2-5)**
- The RL Lessons Learned Coordinator chairs a user group of contractor Lesson Learned Coordinators and points of contact. **(DOE.3-1)**
- The roles and responsibilities of the Facility Representatives and their interfaces with the mission elements and contractors appear to be well understood. **(DOE.4-1)**
- RL senior management is committed to a sound safety culture. **(DOE.4-2)**
- RL has made a significant investment in its future with the development and implementation of RIMS. **(DOE.4-3)**
- RL management conducted two significant self-assessments to identify issues and gaps associated with the implementation of ISMS and RIMS. **(DOE.4-4)**
- The standards identification process for the River Protection Project–Waste Treatment Plant Project is a strength. **(DOE.5-1)**

6.6.7 Concerns

- Roles and responsibilities for crosscutting processes are only broadly described in RIMS and position descriptions, and may affect effective ISMS implementation. **(DOE.1-4)**
- The mechanisms used to formally update contract and facility-specific requirements, on at least an annual basis as current and relevant to work activities, should be improved. **(DOE.1-5)**
- Although well documented, the Facility Representative procedures are critical to ISMS, but have not been incorporated in RIMS. **(DOE.2-6)**
- The “Review and Approval of Nuclear Safety Documents” crosscutting process and *Startup and Restart of Facilities* procedure have not been effectively coordinated with and communicated to all relevant RL staff. **(DOE.2-7)**
- The roles and responsibilities between mission element and mission support personnel should be clarified and clearly communicated to staff to ensure there are no uncertainties in safety expectations. **(DOE.2-8)**
- The Individual Performance Plans process does not specifically address performance expectations relative to safety. **(DOE.3-2)**
- The Individual Development Plan process is not yet fully implemented. **(DOE.3-3)**
- Overall, documents governing the assessment program do not delineate a requirement or a systematic process for conducting assessments or oversight of the contractors’ self-assessment program as required by DOE P 450.5. **(DOE.3-4)**
- There is lack of a defined self-assessment process within RL. **(DOE.3-5)**
- There is no evidence that oversight of contractors’ self-assessments has been performed. **(DOE.3-6)**
- The lack of effective use of these tools for improving environmental, safety, and health performance is a concern. **(DOE.3-7)**
- There is an incomplete understanding of roles, responsibilities, ISMS, and RIMS. **(DOE.4-5)**
- Phase I of RIMS development does not capture all tenets of ISMS. **(DOE.4-6)**
- The process of transitioning to the RIMS is not well understood by some staff. **(DOE.4-7)**
- The RIMS development and implementation process lacks rigor and discipline. **(DOE.4-8)**

- A new Approval Authority for roles and responsibilities has been established, but the RL Manager has not formally delegated this authority. **(DOE.4-9)**
- “New” requirements, which may be time urgent, may not be incorporated into the Standards/Requirements Identification Documents for Hazard Category 1 and 2 nuclear facilities until the annual update of the Standards/Requirements Identification Documents. **(DOE.5-2)**
- Based on current RL Integrated Management System documentation and interviews, roles and responsibilities to ensure that the contractor annually updates the Standards/Requirements Identification Documents are not clear. **(DOE.5-3)**
- Although the RIMS crosscutting process indicates that RLPs will be integrated into the RIMS, at present it is not apparent how RLP 1380.5 will be incorporated into RIMS and how oversight of Phase 1 and 2 of the Standards/Requirements Identification Documents process will be conducted. **(DOE.5-4)**

6.7 NOTEWORTHY PRACTICES AND OPPORTUNITIES FOR IMPROVEMENT

The ISMS Verification Team identified several Noteworthy Practices (NP) and OFIs. NPs should be encouraged and further developed, while OFIs serve as focal areas for achieving future process improvements. Below are the NPs and OFIs with associated strengths and concerns that provide the basis for the NPs and OFIs. (The numbering system correlates to the specific strengths and concerns in the Assessment Forms in Volume 2.)

6.7.1 Noteworthy Practices

- **FH NP - 1:** The AJHA facilitates worker involvement in the work planning process and provides a comprehensive mechanism to identify and control activity level hazards.
 - ASP OP.1-1
 - ASP OP.1-2
 - ASP OP.1-3
 - ASP SME.2-1
 - WMP OP.1-1
 - WMP OP.1-2
 - WMP OP.1-3
 - WMP OP.2-1
 - WMP SME.2-1
 - NMS SME.2-3
- **FH NP-2:** FH workers and senior management are committed to Integrated Safety Management and “Doing Work Safely.”
 - ASP MGO.2-1

- ASP OP.2-3
 - ASP SME.1-1
 - FFTF SME.1-1
 - FFTF SME.4-1
 - NMS SME.1-1
 - NMS SME.2-1
 - NMS SME.2-2
 - WMP OP.1-4
 - WMP SME.1-1
 - WMP SME.4-1
- **RL NP-1:** RL is clearly committed to improving safety.
 - DOE.4-2
 - DOE.4-3
 - DOE.4-4
- **RL NP-2:** RL has developed and implemented a strong Facility Representative Program
 - DOE.2-1
 - DOE.4-1
- **RL NP-3:** Multi-disciplinary teams are used to promote safety and interdependency.
 - DOE.1-1
 - DOE.1-2
 - DOE.1-3
 - DOE.2-3
 - DOE.3-1

6.7.2 Opportunities for Improvement

- **FH OFI-1:** The implementation of environmental protection/chemical management mechanisms at the Analytical Service Provider needs improvement.
 - ASP SME.3-2
 - ASP SME.3-3
 - ASP SME.3-4
 - ASP SME.3-5
 - ASP SME.3-6
 - ASP SME.3-7
 - ASP SME.3-8

- **FH OFI-2:** Processes that ensure potential deficiencies and opportunities for improvement are formally addressed and effectively communicated need to be strengthened.
 - ASP SME.4-3
 - FFTF MGO.3-3
 - NMS HAZ.1-1
 - NMS SME.1-7
 - WMP OP.2-4
 - WMP MGO.3-3
 - WMP MGO.3-4
 - WMP MGO.3-5
- **FH OFI-3:** Technical procedure development and implementation processes need to be strengthened.
 - ASP OP.2-4
 - ASP SME.4-1
 - WMP OP.2-3
 - WMP SME.3-3
- **FH OFI-4:** Maintenance of Standards/Requirements Identification Documents, and Authorization Agreements/Authorization Envelopes needs to be improved.
 - ASP HAZ.2-3
 - NMS MGO.1-2
 - NMS MGO.1-3
 - WMP HAZ.2-4
- **FH OFI-5:** Quality Assurance Program Plans need to be updated and maintained.
 - NMS SME.4-2
 - RCP SME.4-2
- **FH OFI-6:** Management assessment processes need to be strengthened.
 - NMS MGO.3-2
 - RCP MGO.3-3
 - RCP SME.3-3
- **FH OFI-7:** Roles and responsibilities need further definition and communication.
 - ASP MGO.2-2
 - ASP MGO.2-3
 - ASP MGO.2-4
 - FFTF HAZ.2-1
 - NMS MGO.2-1

- NMS SME.1-6
 - RCP SME.1-2
 - WMP MGO.2-2
 - WMP MGO.2-3
 - WMP MGO.2-4
- **FH OFI-8:** The work planning and job hazard analysis processes need to continue to be improved.
 - ASP MGO.1-2
 - FFTF HAZ.2-2
 - NMS HAZ.2-1
 - NMS HAZ.2-2
 - NMS SME.2-4
 - NMS SME.3-2
 - NMS SME.3-3
 - RCP SME.2-1
 - RCP SME.3-1
 - WMP SME.3-4
- **FH OFI-9:** Identification and implementation of qualification and training requirements for technical staff needs to be improved.
 - ASP OP.1-4
 - ASP SME.2-2
 - FFTF SME.3-3
 - NMS SME.4-3
 - RCP SME.4-3
 - WMP OP.1-5
 - WMP SME.2-2
- **FH OFI-10:** A comprehensive hazard analysis and plan to disposition accumulated samples at the 222-S Laboratory Hot Cells need to be completed.
 - ASP HAZ.1-1
 - ASP HAZ.2-1
 - ASP MGO.1-3
- **RL OFI-1:** Mechanisms to fully implement DOE P 450.5, *Line Environment, Safety, and Health Oversight* need to be better defined and implemented.
 - DOE.3-4
 - DOE.3-5
 - DOE.3-6

- **RL OFI-2:** Roles and responsibilities need additional definition and understanding by staff.
 - DOE.1-4
 - DOE.2-8
 - DOE.4-5
 - DOE.4-9
 - DOE.5-3
- **RL OFI-3:** RIMS development and implementation need significant additional discipline and rigor.
 - DOE.2-6
 - DOE.2-7
 - DOE.4-6
 - DOE.4-7
 - DOE.4-8
- **RL OFI-4:** The RL requirements management processes need to be improved.
 - DOE.1-5
 - DOE.5-2
 - DOE.5-4

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 FLUOR HANFORD

Overall, FH ISMS implementation was observed to be maturing adequately, although at different paces within the various FH projects. While the implementation effort that occurred at an accelerated pace during recent months was successful, efforts in some organizational areas need focused attention. It is apparent that the ISMS culture is being absorbed and adopted by most of the FH workforce, corresponding to the respective state of the projects' ISMS implementation. Noteworthy is the level of FH workers' engagement in the implementation of ISMS. To fully institutionalize ISMS within FH, significant FH and RL senior management attention will be required on a continued basis.

Each of the 10 OFIs identified in this report should be addressed as part of FH's continuous improvement process and should not be considered prerequisites for successful implementation declaration. All objectives were verified as being implemented, with the exception of ASP environmental protection/chemical management requirements and processes.

The ISMS Verification Team determined that FH has adequately implemented their ISMS as required by DOE policies and the related safety management DEAR clauses and as described by HNF-MP-003, *Project Hanford Management Contract Integrated Environment, Safety, and*

Health Management System Plan (FH 2000). Therefore, the Approval Authority has sufficient evidence to declare the FH ISMS implemented.

7.2 U. S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE

For the most part, RL has adequately developed and implemented an ISMS. RL management is in the process of implementing a *significant amount of change affecting both the Operations Office infrastructure and all RL personnel*. This change is a result of a major reorganization coupled with the adaptation of ISMS utilizing a new, web-based, integrated management system (RIMS). This verification process identified OFIs that mostly involved the quality of processes used to implement current requirements as well as new management concepts.

RL management has made a significant commitment in their approach to implementing ISM by redesigning their processes and procedural system through the development and implementation of RIMS. The initial implementation phase of RIMS was designed to capture all the tenants of ISM and be completed before the start of this ISMS verification.

This verification identified four OFIs and three NPs. Three of the OFIs were judged to need specific management attention prior to declaring RL has adequately implemented their ISMS. In the area of Feedback and Improvement, while there is a sound Facility Representative Program in place, there is a lack of a formally documented and implemented assessment program consistent with DOE P 450.5. In the Roles and Responsibilities area, there needs to be additional definition and understanding of roles and responsibilities by RL staff. Additionally, the RIMS development and implementation process itself needs additional rigor. Due to the immaturity of the new RIMS processes and procedures, the effectiveness of implementation could not be fully verified.

Full maturity of ISMS via RIMS is achievable with appropriate management focus. This verification process also identified NPs that should be seen as examples of exemplary behavior and practices that should be adopted, as applicable, throughout RL. In addition, RL self-assessments in the next year should focus on these specific issues to ensure that ISM continues to be implemented. It is recommended that the Approval Authority address each of the four OFIs described.

8.0 LESSONS LEARNED

The ISMS Verification Team, based on their current and previous ISMS verification experience, generated several lessons learned. Several points should be of value to contractors as well as DOE.

8.1 PREPARATION

- Contractor documentation concerning the verification and required reading should be transmitted to the ISMS Verification Team members prior to the verification. In addition, it would be beneficial to have more instructions and evidence documentation prior to the onsite/projects/facility visit.
- The development of common WMP OP.1-5 helped to focus the subteams and provide a degree of consistency between the subteams during the verification. For some team members, participation in the development of the lines of inquiry helped in their preparations for the review.
- Some computers provided for the team to use for word processing and accessing documentation on the Hanford Local Area Network were not connected, pre-tested, and fully operational at the start of the verification. A better system of pre-testing all the computers to ensure they were fully functional before the arrival of the team would help in the preparation process prior to infield visits.
- When forming large teams to conduct ISMS verifications, the ratio of experienced assessors to first-time assessors should be maintained as high as possible.

8.2 ADMINISTRATION

Subteams A and B elected to use a "combined" Assessment Forms approach to report the results for the contractor projects assessed during the verification. This combined approach complicated the method for writing the forms, administering their completion, and identifying consistency among the identified strengths and concerns. The combined forms did not directly enhance the overall correlation of the results. In the end, it is recommended that large ISMS teams that are evaluating several various projects consider using a simpler approach rather than using combined Assessment Forms.

8.3 PLANNING/COORDINATION

- All three subteams identified difficulties with scheduling interviews and events for observations during the verification. Development of a system to consolidate interviews and events, along with a standard method to communicate interview/schedule requests and changes through a single point of contact for the team, helped resolve many of the scheduling difficulties as the verification progressed.

- Throughout the verification, a maximum effort was devoted to foster interaction between the three subteams for the benefit of lessons learned and the correlation of results, concerns, and strengths. Unfortunately, due to location, geographical spacing of facilities and sequencing of the assessment of the five projects and RL during the 3-week review, much of the desired interaction did not occur, or occurred only at the completion of the review. This interaction should always be encouraged and promoted at all times and special integration meetings should be conducted whenever possible during a large verification.
- Involvement of contractor personnel during the subteam's daily status briefings was an early concern amongst the team for this verification. For the second part of this verification, all subteams agreed to have some contractor personnel in attendance during the daily status briefings. This immediately led to easier and faster resolution of identified problems, provided more time outside of meetings to the subteam members, and reportedly did not harm the active participation by Subteam members during their end of day status briefing discussions. This system appears to work better to assist in team and contractor interface during an verification.

9.0 REFERENCES

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DOE P 450.4, *Safety Management System Policy*, U. S. Department of Energy, Washington, D.C., as amended.

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HNF-PRO-3468, *Stop Work Responsibility*, Fluor Hanford, Richland, Washington.

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OBJECTIVE

HAZ.1 - The full spectrum of hazards associated with the scope of work is identified, analyzed, and categorized. Those individuals responsible for the analysis of environmental, safety, and health (ES&H) and worker protection hazards are integrated with personnel assigned to analyze the processes.

Criteria

1. Procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented.
2. Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.

Approach

Record Review

- Review the documents that govern the conduct, review, and approval of facility or activity hazard analysis and documentation such as Process Hazards Analysis, Preliminary Hazards Review, Preliminary Safety Analysis Report (SAR), Job Hazard Analysis (JHA), and Work Control Permits.
- Verify that the records of facilities and activity hazard analyses conform to the hazard analysis requirements.
- Coordinate the review of work-related documents such as JHAs, and work packages with the OP subteam and Subject Matter Expert (SME) functional area reviewers.
- Review procedures governing the performance of hazard analysis to verify that ES&H personnel are integrated into the process.

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Interviews

- Interview personnel responsible for the identification and analysis of work hazards.
- In nuclear facilities, for example, this should include personnel responsible for Unreviewed Safety Question (USQ) determination, lock and tag preparation, procedure technical reviews, etc.

Observations

If possible, observe the actual preparation and field implementation of the analysis of hazards. In nuclear facilities, this should include USQ determination, preparation of a JHA, SAR/Technical Safety Requirement, or Criticality Safety Evaluation, etc.

Record Review

- 1C000-00-DBK-012, *Fast Flux Test Facility Roles and Responsibilities, Corrective Actions*, May 19, 2000
- 8D000-RJG-00-053, *Authorization Envelope for Analytical Services Project*, February 1, 2000
- 48 CFR 970.5204-78, "Laws, Regulations, and DOE Directives," Title 48, *Code of Federal Regulations*, (Department of Energy Acquisition Regulation) Section 970.5204-78, as amended
- 48 CFR 970.5204-2, "Integration of Environment, Safety, and Health Into Work Planning and Execution," Title 48, *Code of Federal Regulations*, (Department of Energy Acquisition Regulation) Section 970.5204-2, as amended
- ASP-200, *Analytical Services Procedures*, Section 1.13, "Analytical Services Project Procedures, Health and Safety Self-Inspection Program," Rev. 3, December 20, 1999
- ASP-310, *Analytical Services Project Administration*
 - Section 1.12 (USQ), "Administration of 222-S Laboratory Complex, Criticality Safety Program," Rev. 3, January 18, 2000
 - Section 2.3 (USQ), "Operation Compliance", Rev. 2, April 11, 2000
- Automated Job Hazard Analysis (AJHA) Software, Version 4
- BWHC-9856373, *Fast Flux Test Facility Integrated Safety Management System Implementation Plan*, July 29, 1998
- DOE-RL-00-WMD-113, *Contract No. DE-AC06-96RL13200- Approval of the Authorization Agreements (AA) for Waste Management Project Facilities*, June 2, 2000
- DOE/RL-96-92, *Hanford Strategic Plan*
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 - ECN 643470, *Sodium Hydroxide Pulsation Dampeners*, November 1, 1999
 - ECN 643568, *LCO Deletion Table*, undated
 - ECN 655125, *Engineering Change Notice - Update to WRAP Drawing List*, April 7, 2000
- Fast Flux Test Facility (FFTF) Administrative Procedure
 - A-28, *Pre-Job Briefing Signoff Sheet, SC-51-9, Control Room & DHXs*, Rev. 13 FC, June 26, 2000
 - A-29, *Unreviewed Safety Question Screening Form*, Rev. 1A FC, Appendix B, undated
 - A-39, *Operating Procedure, Unreviewed Safety Questions*, Rev. 1A FC, May 3, 1994
- Fast Flux Test Facility Performance Indicators for May 2000
- *Fast Flux Test Facility Integrated Environment, Safety and Health Management System (ISMS) Phase I/II Internal Readiness Review Plan*, Rev. 1, January, 27, 2000
- FFTF Plan of the Day Priority
 - June 22, 2000
 - June 26, 2000
- FDH-9955657A R1, *Contract No. DE-AC06-96RL13200 – Issuance of Plutonium Finishing Plant (PFP) Authorization Agreement (AA)*, Correspondence from L. J. Olguin, Fluor Daniel Hanford, to A. Clark, B&W Hanford Company, August 26, 1999
- FH-0002357, *Summary of Unreviewed Safety Question Evaluations at the Fast Flux Test Facility*, Correspondence from D. B. Klos and W. A. Dautel, FH, to O. A. Farabee, RL, May 4, 2000
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vols. 1 and 2
 - Introduction, “PFP Integrated Environment, Safety, and Health Management System Description,” Rev. 4, April 17, 2000
 - Section 13.3, “Operational Safety Requirement Compliance,” July 2, 2000
 - Section 13.4, “Work Management Process Description and Job Control System Process,” Rev. 21, April 6, 2000
 - Section 13.5, “Processing PFP Documents,” Rev. 15, May 25, 2000
 - Section 2.23, “Identification and Resolution of Unreviewed Safety Questions,” Rev. 23, May 1, 2000
 - Section 2.39, “PFP Authorization Envelope,” Rev. 3, May 1, 2000
- HNF-1936, *Waste Receiving and Processing (WRAP) Facility Safety Equipment List*, Rev. 1, April 22, 1998
- HNF-3676, *Hazard Baseline Documentation and Auditable Safety Analysis for the 337B Building (337 High Bay) and the 3718-M Building*, Rev. 1, December 14, 1999
- HNF-5243, *Fast Flux Test Facility Authorization Agreement Between U.S. Department of Energy, Richland Operations Office and Fluor Hanford*, Rev. 0, February 22, 2000
- HNF-5247, *400 Area Authorization Envelope*, Rev. 0, March 6, 2000
- HNF-5608, *300 Area Authorization Envelope*, Rev. 0, March 6, 2000
- HNF-5810, *324 Bldg Deactivation Project Authorization Agreement*, Rev. 1, April 27, 2000

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- HNF-IP-1264, *324/327 Facilities Stabilization Projects*
 - Section 1.1, “Nuclear and Criticality Safety Programs,” Rev. 2, January 28, 2000
 - Section 4.1, “Job Control System Implementation,” Rev. 10, June 21, 2000
 - Section 4.3, “Person-In-Charge,” Rev. 4, June 21, 2000
- HNF-MP-001, *Fluor Hanford Management Plan*, Rev. 2, February 25, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor Project ISMS Description”
 - Appendix G, “Fast Flux Test Facility ISMS Description”
 - Appendix H, “Analytical Services ISMS Description”
- HNF-PRO-058, *Critique Process*, Rev. 2, July 20, 1999
- HNF-PRO-079, *Job Hazards Analysis*, Rev. 5, May 5, 2000
- HNF-PRO-246, *Management Assessment*, Rev. 2, October 25, 1999
- HNF-PRO-3468, *Stop Work Responsibility*, October 22, 1999
- HNF-SD-CP-SAR-021, *PPF Final Safety Analysis Report*, January 15, 1999
- HNF-SD-ISB-002, *222-S Laboratory Interim Safety Basis*, Rev. 4, June 27, 1999
- HNF-SD-PRP-HA-015, *Fast Flux Test Facility Hazards Assessment*, Rev. 4A, April 5, 2000
- Job Review Committee, *Review of Task 2 Evolution for Work Package 2S-99-00650*, June 6, 2000
- LA-514-115, *Waste Management Laboratory Procedure and Approval Form, Thermal Stability and Percent Water Using the TA DSC and TGA*, Rev. A-1, December 28, 1999
- LO-090-101-USQ, *Waste Management Laboratory 222-S Laboratory Sample Receiving and Custodianship*, Rev. U-0, January 15, 2000
- LO-100-107, *Hanford Analytical Laboratory Operations, Cubicle Housekeeping, Waste Disposal, and Management*, Rev. E-1, November 18, 1999
- RCP-310, *LEF Project Administration Procedures*
 - Section 2.01, “Organization and Administration,” Rev. 0, March 15, 2000
 - Section 4.07, “Planning, Scheduling, and Coordination of Work Activities,” Rev. 1, May 5, 2000
 - Section 7.02, “Unreviewed Safety Question,” Rev. 1, June 13, 2000
- RCP-5653, *Engineering Manual*, Appendix A, “RCP Design Authority List,” Rev. 0, May 4, 2000
- RCP-MD-001, *RCP Roles, Responsibilities and Functions*, Rev. 1, May 19, 2000
- RCP-MD-003, *Requirements for Review and Approval of Safety Basis Documentation*, Rev. 0, May 22, 2000
- RCP-PRO-012, *Authorization Envelope and Authorization Agreement Requirements for Industrial, Radiological, Non-Nuclear, and Nuclear Facilities*, Rev. 1, June 13, 2000
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- USQ Screening Form (Sample), undated
- WMH-310, *Hanford Analytical Laboratory Operations Administration*, Section 4.5, "The 222-S Chemical Hygiene Plan," Rev. 0, May 4, 1998
- WRP1-SV-1603, *Waste Receiving and Processing (WRAP) Facility Inspection Form*, June 14, 2000
- Waste Sampling and Characterization Facility Laboratory Hazard/Complexity Determination Checklist, Rev. 1, draft, October 6, 1999.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Authorization Basis Lead/Design Authority
- Chairman, Employee Safety Council/ISM Core Team
- Chemical Hygiene Officer
- Chemical Technologist
- Craft Instrumentation Specialist/Work Planner/AJHA Coordinator
- U.S. Department of Energy (DOE) Facility Representative, 222-S Laboratory
- Fire Protection Engineer
- Maintenance Lead, 222-S Laboratory
- Manager, Analytical Services
- Manager, Engineering, 222-S Laboratory
- Production Support Manger, Waste Sampling and Characterization Facility
- Safety Representative, 222-S Laboratory
- Team Lead, Authorization Basis
- Team Lead, Chemical Safety
- Team Lead, Hot Cells
- Team Leader, Chemical Management.

Observations

- Plan of the Day Meeting, 222-S Laboratory, June 21, 2000
- Inorganic/Organic Analysis Turnover Meeting, June 21, 2000
- Employee Safety Council Meeting, June 21, 2000
- Walkdown, 11-A Hot Cells, June 21, 2000
- Walkdown, safety improvements, balance of plant, June 21, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented.*

A series of interviews, tours, and observations of work activities at the ASP 222-S Laboratory indicated that procedures and mechanisms are in place to identify and analyze the broad range of hazards associated with its operations. The guiding ISM principles of "Line Management being Responsible for Safety," "Clear Roles and Responsibilities," and "Worker Involvement," have been met within the ASP activities. The level of understanding of the bases of the ISM system was high and universal, as was the enthusiasm with which those interviewed seemed to support this methodology for assuring a safe workplace. This eagerness to embrace the ISM system by

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the greater part of the ASP work force, along with a commitment to utilize the AJHA process, bodes well for ISM at the 222-S Laboratory.

However, there is one general area in which ISM at ASP is not fully mature. The operations at the 11-A Hot Cell Facility have not yet been subject to the AJHA process, partially because the AJHA tool, at least in its current configuration, is not tailored to fit complex chemical and radiological analytical procedures. **(ASP HAZ.1-1)**

In addition, observation of hot cell activities and interviews with hot cell operators, supervisory hazards analysts, and authorization basis stewards, revealed that the first two ISM core functions ("Define Scope of Work," and "Analyze Hazards") have not been completely applied to the activities. Since 90% of the radiological inventory in the 222-S Laboratory is concentrated within these cells, this operation is a clear candidate for emphasizing ISM implementation. This is obvious by the fact that about 4,200 samples are stored in the cells. Several of these samples contain high levels of radioactivity, representing the contents of 133 tank farm tanks, and the high radiation levels are beginning to degrade the integrity of the storage containers (see **ASP MGO.1-3**).

While the hazards involved in each of the separate sample analyses is clearly understood by the cell operators, and are controlled by a combination of step-by-step operating procedures and the skill and experience of the operators, the ISMS Verification Team could find no evidence of an overall hazards analysis of hot cell operations that considered the following:

- Hazards that might arise from interaction of the various analytical operations being conducted within the cells.
- Hazards that might arise from potential lack of understanding by operators of the hazards bases inherent in the operations that occur in the cells that are done for other customers and/or done by other customer operators.
- Chemical incompatibility between materials from differing operations and/or residuals from earlier operations. This is compounded by a lack of formal documentation.
- Combustible loading of the cells.
- Age, condition, or previous use of filters.
- Potential pressurization of storage containers.
- Physical degradation of storage containers.

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This lack of a comprehensive hazards identification and analysis for the hot cells is at least partially due to an over reliance on the “bounding” accident analysis that is contained in HNF-SD-ISB-002, *Interim Safety Basis for the 222-S Facility*. This approach establishes an upper boundary dose for an extremely unlikely accident for the Authorization Basis and categorization purposes. Unfortunately, this has the result of minimizing the perceived need to analyze and control more likely accidents with lesser consequences, even though these are the accidents that may actually occur and could have devastating effects on both worker safety and facility operation. **(ASP HAZ.1-1)**

Criterion 2: *Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.*

Procedures and mechanisms were found to be in place and implemented within the 222-S Laboratory that adequately describe the interfaces, roles, and responsibilities of those personnel who identify and analyze the hazards of the scope of work, thus fulfilling the ISM Guiding Principle of “Clear Roles and Responsibilities.”

Interviews were conducted with a wide range of both management and workers. In addition to the enthusiastic acceptance of the ISM process, it was clear that at each level, the technical and policy complexities were clearly understood at an appropriate level for the individual to be able to competently recognize and act upon hazards in the workplace. Each person was able to directly state what his or her job was, and to readily elaborate on what that meant in the context of their duties and responsibilities within ISM.

Examples of worker comprehension of roles and responsibilities include the following:

- Enthusiastic participation in and discussion of the Employee Safety Council meeting by both workers and management illustrated an understanding of ownership of ISM and the role of the employee.
- In touring the facility areas, employees frequently pointed out safety improvements that had been accomplished by workers recognizing potential hazards, bringing the hazards to the attention of appropriate personnel, and the resulting actions that resolved the issue.
- Explanation by a senior analyst of how a pipe fitter’s suggestion for positive release of a californium source from a magnet significantly improved the safety of the operation.

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However, several of these duties and responsibilities have not been fully delineated, as the ISM structure within ASP grows and matures. The mechanisms and procedures, however, are well established and there is every indication that any gaps in employees understanding their individual or organizational roles in hazard identification will soon be filled.

Conclusion

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- AJHA Implementation Team Lead
- DOE Facility Representative (2)
- Electrical Technician, Safety Council Founder & Member
- Final SAR Administrator
- Maintenance Manager
- Manager, Mechanical, Thermal, and Fluid Systems Engineering
- Millwright, Safety Council Member
- Nuclear Legacies Management Lead
- Nuclear Safety Implementation Plan Lead
- Operations Manager
- Safety Observer, "Safety First Program"
- Safety Team Lead
- Shift Operations Manager
- Training Team Lead.

Observations

- Plan of the Day meeting, June 26, 2000
- Pre-Job Briefing, 4F SC-051-9, Sodium Isolation Valve Closure Testing, June 26, 2000
- Work Activity, Dump Heat Exchanger Sodium Isolation Valve Testing, June 26, 2000
- Monthly Safety meeting, June 26, 2000
- Operations Crew "B" Safety meeting, June 27, 2000
- Safety Awareness Council meeting, June 27, 2000
- Closed-Loop Ex-Vessel Monitoring Control System Work Activities, June 27, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented.*

A series of interviews, tours, and observations of work activities at FFTF led to the conclusion that procedures and mechanisms are in place to identify and analyze the broad range of hazards associated with its operations. The Guiding ISM Principles of "Line Management being Responsible for Safety," "Clear Roles and Responsibilities," and "Worker Involvement," in particular, are well on their way to being met within the FFTF activities. It was noted that the level of employee and management "buy-in" on ISM principles of "Definition of Work," and "Identify Hazards" at FFTF was not as universally high or enthusiastic as at some other facilities

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examined by the Team. This can be attributed to the late ISM start at FFTF, and an early reluctance of some to support the ISM program.

The above, coupled with an early incident in which a Quality Assurance worker was observed within the Dump Heat Exchanger Facility standing on elevated unguarded piping without fall protection, led to the concern by the Team that such attitudes and lapses in safety might be endemic. As a result, emphasis was given to this area during interviews and work observations. The Team wanted to determine if an attitude of complacency toward safety was caused by a combination of FFTF specific issues, i.e., a) The facility being authorized and earlier regulated to "reactor standards", as apposed to DOE Orders; b) The facility being in a "standby" mode of operation, with severely limited funds; c) The facility having an aging core workforce, with many years of plant experience; and the facility having an unclear and non-urgent mission. The single incident is judged to have been an isolated one, and could be attributed to the fact that the AJHA process has not yet been extended to the class of procedure-driven maintenance activities under which the work was done.

The above being said, it should be noted that, while the objectives of this criteria have been met for the current mode of operation of FFTF, i.e., "Standby", any change of mission, either to "Restart" or "Shutdown" will require a reexamination of the fundamental authorization basis of the facility to bring it in line with current DOE policies and Orders in this area. A greater emphasis in identifying hazards to the worker and environment will need to be stressed in revision of the authorization basis. A robust ISM program will be essential at that time.

Criterion 2: *Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.*

Procedures and mechanisms were found to be in place within the FFTF that adequately describes the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work, thus fulfilling the ISM Guiding Principle of "Clear Roles and Responsibilities."

During the verification process, interviews were conducted with a wide range of both management and workers. Despite some evidence that the acceptance of ISM and the AJHA processed was initially less than enthusiastic, it became quite clear that at each level the technical and even policy complexities were clearly understood at an appropriate level for the individual to be able to competently recognize and act upon hazards in the workplace. Each person was able to directly state what his or her job was, and to readily elaborate on what that meant in the context of his or her duties and responsibilities, even though the responses were not often couched in the terminology of ISM.

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Conclusion

It should be noted that a number of these duties and responsibilities have not been fully delineated, as the ISM structure within FFTF is still growing and maturing. For example, the AJHA procedure has been applied to work packages generated by on-demand maintenance needs but has not been used with the numerous work actions driven by procedures. Additionally, a screening procedure for AJHAs has not been implemented at FFTF. The mechanisms and procedures to reach these goals, however, are solidly in place and there is every indication that any gaps will soon be filled. (See **OP.1**.)

As discussed in Criteria 1, and in **HAZ.2**, a particularly important responsibility for a restart effort would be that for updating the authorization basis. While the current assignment of responsibilities in this area is judged adequate for the standby mode of operation, the organizational infrastructure for this function will need to be considerably more sharply defined and strengthened if the FFTF is to be expected to make the transition to the new DOE regulatory structure and safety culture. A total rewrite of the FFTF SAR is planned in conjunction with formation of an Authorization Basis organization.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Acting Chief Engineer, and Acting Manager of Technical Support
- Authorization Basis Manager
- Building Emergency Director
- Cognizant Engineer on Safety Systems
- DOE Facility Representative
- Electrician
- Heating, Ventilation, and Air Conditioning (HVAC) Team Leader
- Insulator
- Mechanical Engineer, HVAC Team
- Nuclear Chemical Operator (3)
- Nuclear Safety Engineer
- Operational Safety Requirement (OSR) Representative
- Painter
- Project Control Engineer (also a Person-In-Charge)
- Radiation Technician (2)
- Solid Waste Operator
- USQ Program Manager.

Note: Personnel interviewed included dayshift and back shift personnel.

Observations

- Shift Turnover at PFP, June 15, 2000
- Daily Manager's Meeting, June 15, 2000
- Water, Ventilation, and Steam Team Meeting, June 15, 2000
- Plan of the Day, June 16, 2000
- Thermal Stabilization Team Turnover, June 19, 2000
- Pre-Job Brief for Thermal Stabilization – Transfer of Loss of Ignition Samples, June 19, 2000
- Pre-Job Brief for Thermal Stabilization – Transport of Isolated Transport Containers, June 19, 2000
- Furnace Preparation and Startup, June 19, 2000.

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Discussion of Results

Criteria 1: *Procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented.*

HNF-MP-003, *Integrated Environment, Safety, and Health Management System Description* requires adequate planning of work to ensure hazards are analyzed and controls are identified. FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vol. 1, "PFP Integrated Environment, Safety, and Health Management System Description," (NMS System Description) is the Facility-level document describing facility-level planning and integration of ES&H into the process. HNF-PRO-079, *Job Hazards Analysis*, establishes a mechanism for the integration of ES&H into the work planning. This process allows participation from engineers, craft, SMEs, and others early into the process to ensure hazards are accurately forecasted. Low, medium, and high hazard tasks can be specified for analysis.

The AJHA is the primary mechanism for identifying hazards associated with a job and the subsequent controls that will be necessitated. AJHAs are widely used at PFP and interviews indicated that the workers are comfortable with the process. Furthermore, workers feel the AJHA tool adequately and accurately identifies the hazards associated with the job.

From a nuclear safety standpoint, the FSP-PFP-5-8, Section 2.23, "Identification and Resolution of Unreviewed Safety Questions," Section 2.39, "PFP Authorization Envelope," and Section 13.3, "Operational Safety Requirement Compliance" have been established to comply with DOE nuclear safety orders and other nuclear standards and requirements.

FDH-9955657A R1, *Contract No. DE-AC06-96RL13200 – Issuance of Plutonium Finishing Plant (PFP) Authorization Agreement (AA)* describes the authorized set of terms and conditions approved by DOE and the contractor for the operational parameters of the facility.

The Acting Chief Engineer, Authorization Basis Team Leader, USQ Program Manager, OSR Representative, and Nuclear Safety Engineer are very knowledgeable in the nuclear safety arena and appear to adequately execute programs in general compliance with the Authorization Basis, USQ, and OSR requirements. These personnel are also accustomed to identifying hazards, which is necessary in their participation in AJHAs as SMEs. OSRs are referenced in the procedures, and the operators and craft personnel interviewed knew the importance of OSR recognition and compliance.

The annual update of the SAR was being routed for review during the timeframe of the ISMS verification. Management attention was given to this issue in the daily manager's meeting and it appeared that the appropriate groups were involved in the review. Thus, the safety documentation is defined and implemented at PFP.

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Interviews with PFP workers indicated the principles of ISM were understood and implemented. Overall, the AJHA process was familiar to the workers and was touted as a good tool for analyzing job hazards. Although most of the individuals interviewed had participated in AJHAs, it was expressed that sometimes not all required personnel were present. Additionally, sometimes AJHAs were routed and not conducted in an integrated fashion (see **NMS HAZ 2.1**). Also, several craft personnel indicated post-job briefings are not being consistently conducted. (**NMS HAZ.1-1**)

Through document reviews, work observations and interviews, procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented at PFP.

Criteria 2: *Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.*

FSP-PFP-5-8, Vol. 1, "PFP Integrated Environment, Safety, and Health Management System Description," is the facility-level document describing roles and responsibilities and facility-level planning and integration of ES&H into the process. HNF-SD-CP-SAR-021, *PFP Final Safety Analysis Report* describes facility roles and responsibilities. Personnel job descriptions further describe individual's responsibilities.

HNF-PRO-079 establishes a mechanism for the integration of ES&H into the work planning. The AJHA is the primary mechanism for identifying hazards associated with a job and the subsequent controls that will be necessitated. The execution of the AJHA ensures personnel responsible for the analysis of ES&H concerns are integrated with those assigned to analyze the hazards for the facility or activity. As discussed before, AJHAs are widely used at PFP and interviews revealed that overall, workers are comfortable with the process as a whole. Furthermore, workers feel this tool adequately and accurately identifies the hazards associated with the job.

FSP-PFP-5-8, Section 13.4, "Work Management Process Description and Job Control System Process," describes the work control process and allows for the appropriate line management approvals for work activities. These procedures ensure direction and approval from line management and integration of the requirements. Interviews with personnel indicate the work management process is being implemented within the established guidelines.

The organization at PFP is based on a work team concept. From the hazards analysis standpoint, an ES&H team exists under the Acting Manager for Technical Support. That person is responsible for ensuring ES&H personnel integration with hazards identification and analysis.

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These individuals become integrated in AJHAs (as SMEs), as well as safety analysis reviews and other hazards documentation (e.g., hazard analysis). These individuals utilize the HNF-PRO-700 series when performing safety documentation/hazard analysis activities.

Integration of appropriate personnel occurs through plan of the day meetings, shift turnover, team turnovers/meetings, daily management meetings, pre-jobs, AJHAs, and work evolutions. The daily manager's meeting involved key ES&H personnel and management was attentive to overall safety and safety documentation priorities. The thermal stabilization turnover meeting was observed and the two pre-jobs conducted went well. Hazards identified were effectively communicated to the team members. The Water, Ventilation, and Steam Team meeting was well attended by Water, Ventilation, and Steam Team members and craft personnel who discussed hazards; however, the logic and flow of information could have been presented more clearly.

Several interviews indicated that personnel understood ISM and the importance of identifying hazards. Furnace operations showed good logbook keeping, repeat backs, procedure compliance, and data recording. Of particular note were the HVAC and the Thermal Stabilization dayshift teams because they seemed pleased with the safety culture of their team. On the other side of the spectrum, Radcon noted room for improvement with some of the planning in that organization. Likewise, some of the backshift workers identified areas for improvement with radiation protection organization practices (see **NMS HAZ.2-3**). Several workers interviewed felt upper management performing management walkthroughs in the process areas on all shifts would help make improvements.

Document reviews, facility observations, and personnel interviews indicate that procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.

Conclusion:

Interviews, observations, and document reviews indicate that PFP has established and implemented an integrated process to ensure the full spectrum of hazards associated with the scope of work is identified, analyzed, and categorized. Additionally, those individuals responsible for the analysis of ES&H and worker protection hazards are integrated with personnel assigned to analyze the processes.

This objective has been met.

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OBJECTIVE: **HAZ. 1**
DATE: July 10, 2000

RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Administrator, USQ (2)
- Chief Engineer
- Cognizant Engineer
- Electrician (2)
- Engineer, Quality Assurance
- Health Physics Technician
- Hot Cell Technician (3)
- Millwright (3)
- Radiation Control Technician
- Senior Nuclear Criticality Safety Engineer.

Observations

- AJHA – Removal of Sodium Hydroxide Pulsation Dampeners, June 21, 2000
- Plan of the Week, Building 324, June 21, 2000
- AJHA – Adjusting Belts on Exhaust Fans, Building 327, June 22, 2000
- RCP Safety Council Meeting, June 22, 2000
- Priorities, Procedures, and Work Plans Meeting for Building 327, June 26, 2000
- Plan of the Day for Building 327, June 26, 2000.

Discussion of Results

Criteria 1: *Procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented.*

Facility operations were curtailed at Building 327 to upgrade procedures prior to the ISM verification. Operations were scheduled to resume after the verification, thus, it was difficult to observe many field activities.

HNF-MP-003, *Integrated environment, Safety, and Health Management System Description*, Appendix F, "River Corridor Project ISMS Description" adequately describes the planning of work to ensure hazards are analyzed and controls are identified. The RCP ISMS System Description is a facility-level document that describes level planning and integration of ES&H into the process. HNF-PRO-079, *Job Hazards Analysis*, establishes a Hanford Site-wide mechanism for the integration of ES&H into the work planning. This process allows participation from engineers, craft personnel, SMEs, and others early into the process to ensure hazards are accurately forecasted.

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The AJHA is the primary mechanism for identifying hazards associated with a job and the subsequent controls that will be necessitated. AJHAs are widely used at RCP on procedures and routine and specialized work. Interviews with personnel reveal that the workers are comfortable with the process as a whole. Furthermore, they feel this tool adequately and accurately identifies the hazards associated with the job and typically involves appropriate personnel.

From a nuclear safety standpoint, site and facility procedures have been established to comply with DOE nuclear safety orders and other nuclear standards and requirements. Facility hazards have been identified and analyzed.

The AA describes the authorized set of terms and conditions approved by DOE and the contractor for the operational parameters of the facility. Safety documentation exists for the facilities, although several documents are in the annual review process. The contractor produced documentation where the Safety Analysis Review upgrades had been transmitted to RL; however, several iterations of comments and comment resolution have delayed timely approval of the documents.

Standard/Requirements Information Documents are approved for the facilities. OSRs are referenced in the procedures and the operators and craft interviewed knew the importance of the OSR recognition and compliance. Thus, the safety documentation is defined and implemented at RCP.

The Chief Engineer, the Senior Nuclear Safety Engineer, and the USQ administrators are knowledgeable in the nuclear safety arena and appear to adequately execute programs in general compliance with the Authorization Basis, USQ, and OSR requirements.

Interviews with the RCP workers indicated the principles of ISM were understood and implemented and hazards were identified and analyzed. The AJHA process was familiar to the workers. Most of the individuals interviewed had participated in AJHAs at some point and indicated it was a positive process. Some workers felt that the use of the AJHAs had improved the overall quality of the work packages. Most of the workers interviewed felt that pre-job and post-job reviews were being conducted adequately. A perception did seem to exist among some workers that overall safety practices could improve at Building 327 (see **RCP OP.2-2**).

Through document reviews, work observations, and interviews, procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with facility work have been identified and analyzed. The resulting documentation is defined and implemented at RCP.

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Criteria 2: *Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.*

The RCP ISMS System Description is the facility-level document that describes roles and responsibilities and facility-level planning and integration of ES&H into the process. A procedure exists that describes RCP roles, responsibilities, and functions. Personnel job descriptions further describe individual's responsibilities. Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work.

As discussed before, AJHAs are widely used at RCP and interviews indicated that workers are comfortable with the process as a whole. Furthermore, they feel this tool adequately and accurately identifies the hazards associated with the job. The execution of the AJHAs ensures personnel responsible for the analysis of ES&H concerns are integrated with those assigned to analyze the hazards for the facility or activity.

HNF-IP-1264, *324/327 Facilities Stabilization Projects*, Section 4.1, "Job Control System Implementation," Section 4.3, "Person-in-Charge," describes the work control process and allows for the appropriate line management approvals for work activities. These procedures provide the vehicle to obtain direction and approval from line management and integration of the requirements. Interviews with personnel indicate the work management process is being implemented within the established guidelines at several of the facilities in the 300 Area. However, it should be noted that Building 327 initiated a stand-down during the review timeframe to upgrade the quality of the procedures.

RCP organization is based on a work team concept. From the ES&H standpoint, ES&H Quality Assurance professionals report to the Director, ES&H, and Quality Assurance. The Director is responsible for ensuring ES&H personnel integration with hazards identification and analysis. Nuclear Safety personnel are also in this group. Safety documentation professionals report to the Chief Engineer. They are responsible for safety analysis reviews and other hazards documentation (i.e., hazards analysis). These individuals utilize the HNF-PRO-700 series when performing safety documentation/hazards analysis activities. The facilities also have USQ administrators who report to the building managers. These three groups effectively interact.

Integration of appropriate personnel occurs through plan of the day meetings, shift turnover, team turnovers/meetings, daily management meetings, pre-jobs, AJHAs, work evolutions, and post-jobs. The facility Zero Accident Council meeting integrates the building managers, the ISMS point of contact, and workers to share lessons learned and discuss safety topics. The Building 324 plan of the week meeting involved key building personnel that effectively discussed the weekly activities and resource planning.

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Most interviews indicated that personnel understood ISM and the importance of identifying hazards. Personnel interviewed did note inconsistencies between the conduct of building operations. Specifically, they noted Building 327 operations could improve from a safety culture standpoint, in their opinion (see **RCP OP.2-2**).

Document reviews, facility observations, and personnel interviews indicated that procedures and/or mechanisms that describe the interfaces, roles, and responsibilities of personnel who identify and analyze the hazards of work scopes are in place and used by personnel. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.

Conclusion

Interviews, observations and document reviews indicate that RCP has established and implemented an integrated process to ensure the full spectrum of hazards associated with the scope of work is identified, analyzed, and categorized. Additionally, those individuals responsible for the analysis of ES&H and worker protection hazards are integrated with personnel assigned to analyze the processes.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Design Authority, Low-Level Burial Grounds (LLBG)
- Engineering Manager, Liquid Waste Processing Facility (LWPF)
- Facility Manager, WRAP Facility
- Facility Safety Officer, LWPF
- Facility Work Supervisor, Central Waste Complex (CWC)
- Field Work Supervisor, Maintenance, WRAP Facility
- Forecaster, RL Meteorological Center
- Industrial Hygienist, Liquid Waste Processing Facility
- Industrial Hygienist, Solid Waste Treatment (SWT)
- ISM Core Team Liaison/Occupational Safety, Solid Waste
- Lead, Field Operations Team, Trench 29
- Manager, Conduct of Operations/Readiness Reviews
- Manager, Design Authority, SWT
- Manager, Engineering, Waste Encapsulation and Storage Facility (WESF)
- Manager, LWPF
- Manager, Operations Disposal
- Manager, Solid Waste Storage and Disposal (SWSD)
- Manager, WESF
- Nuclear Safety Discipline Lead (2)
- Occupational Safety Representative, CWC
- Occupational Safety Representative, SWT
- Occupational Safety Technician, SWT
- Operations Manager, LWPF
- Program Support Manager, SWT Contract/Engineering Manager
- Radiation Control Program Manager/Design Lead
- Radiation Program Manager, LWPF
- Safety Basis/Authorization Basis Engineer, WESF
- Safety Engineer, WESF
- Safety Management Lead
- Safety Officer, WRAP Facility
- Scribe, LLBG.

Observations

- Plan of the Day, SWSD, June 14, 2000
- Detailed SWT/CWC Detailed Schedule Meeting, June 14, 2000
- Turnover Meeting, CWC, June 14, 2000
- AJHA, Sample Returns, T-Plant, June 14, 2000

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- Transuranic Drum Retrieval and Transport, Trench-29, June 14, 2000
- Transuranic Drum Receipt, CWC, June 14, 2000
- Pre-job Briefing, Sample Returns, T-Plant, June 15, 2000
- Progress Report, T-Plant Manager to DOE Assistant Manager for Environmental Restoration and Waste, June 15, 2000
- Morning Turnover Meeting, SWT, June 16, 2000
- Pre-Job Briefing, SWT, June 16, 2000
- Morning Turnover Meeting, WRAP Facility, June 19, 2000
- Pre-Job Briefing, WRAP Facility, June 19, 2000
- Critique, High-Wind Hazard Job Control/Authorization SWSD, June 19, 2000
- Management Planning Meeting, LWPF, June 20, 2000
- Plan of the Day, LWPF, June 20, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented.*

Procedures and mechanisms are in place to ensure hazards associated with the work conducted by Waste Management have been identified and analyzed. Core Functions 1 and 2, "Define Scope of Work" and "Analyze Hazards," respectively, are fulfilled by a thorough set of procedures that govern the identification of hazards through the entire scope of the project, and at each facility and within each activity. HNF-MP-001, *Fluor Hanford Management Plan* and HNF-MP-003, *Integrated Environment, Safety, and Health Management System Description*, were used to develop the *Waste Management Project Integrated Environment, Safety and Health Management System Description* (HNF-MP-003, Appendix D), which details the structure and roles and responsibilities of the WMP. At the facility level, facility-specific procedures require identification of hazards at each level of planning and execution of work evolutions or campaigns. Constant awareness of the changing hazards presented by specific projects during the operation of the project is maintained by requiring rigorous and detailed use of the USQ process for each modification or work evolution, along with a closely linked AJHA process.

During interviews with workers and their supervisors, several examples were used to illustrate how hazards were being identified daily through both the AJHA process, and by newly empowered workers taking the initiative to identifying 1) potential hazards: 2) more efficient ways of doing the work: 3) and methods of reducing exposure to both ionizing radiation and chemical exposure. Numerous work operations were observed, including AJHAs, pre-job briefings, and post-job critiques. It was especially evident that the workers felt empowered, and that both workers and supervisors would invariably take a conservative approach, rather than an expedient one.

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OBJECTIVE: **HAZ. 1**
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One occurrence in the LLBG indicated a lack of maturity in the effective implementation of hazard controls. That instance involved a work activity performed to SW-100-129, Management of Solid Waste, which applies to both the LLBG and the CWC. **(WMP HAZ.1-1)**

While observing relocation of transuranic drums at the LLBG, the ISMS Verification Team member discussed the hazards of strong winds with the workers and later with their supervisors. This discussion was held to discern worker familiarity with the hazard identification and control process relative to wind, as described in SW-100-129, Section 3.2.2. This section states, "If wind speeds exceed 10 mph, Radiological Control and Operations management must approve continued activities." Responses indicated there was a general lack of familiarity with the procedure, lack of understanding of the controls that should have been in place, and a lack of understanding of the proper actions to take to mitigate the high-wind hazard. The operation continued although a high-wind advisory for above 35 mph had been issued by the site weather forecaster earlier in the day. Instruments read a short time later in 200 West Area indicated wind speeds of 47 mph. Clearly, the procedure was not followed in that management was not notified as required. From an ISM perspective, a clear process from hazard identification to implementation of controls was not present. **(WMP HAZ.1-1)**

Following a report of the incident, a critique was held that involved the appropriate mix of workers to identify the need for additional definition and control of wind and other natural phenomenon hazards, and to establish a clear path forward to allow feedback and improvement to occur.

Criterion 2: *Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.*

WMP procedures and mechanisms adequately describe the interfaces, roles, and responsibilities of personnel who identify and analyze the hazards of the scope of work, thus fulfilling Guiding Principle 2, "Clear Roles and Responsibilities." Detailed procedures describe which functional specialists must be involved in developing the work scope for each project, and through increasing use of the AJHA process. This is supplemented with a technically qualified and closely involved cadre of supporting SMEs from central locations, which ensures the appropriate mix and level of expertise is applied to hazard identification.

Although mechanisms and procedures are in place, they are not yet universally or fully implemented. In most facilities the AJHA process has not been applied to all procedures, although that is scheduled to be done. In addition, due to a reorganization, all of the procedures in use at WESF have not been fully transitioned to match WMP procedures in use within the rest of WMP, though it is noted a transition plan has been developed with actions scheduled for completion by November 1, 2000.

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During the ISMS Phase II Verification, the interviews and work observations indicated that appropriately designated and trained personnel are used to identify and analyze the hazards present in the facilities. While a high degree of both competence and dedication to assuring a safe workplace was observed, the procedures for fulfilling Guiding Principle 3, "Competence Per Responsibility" is not so clear. While current competence is evident, there appears to be no mechanisms and/or requirements that drive professionals or their management to keep these professional qualifications current and of high quality.

Training/travel funds have been severely curtailed in areas (such as nuclear safety) that could potentially impact maintenance of this high level of competence. Various WMP personnel expressed that some of the professional staff could have benefited by attending training/certification classes at workshops not locally available. In addition, participation in working groups, standard-setting bodies, and technical committees, as well as presentation of technical papers at professional conferences, have not been allowed.

While current personnel exhibit a high degree of professional competence, the long-term result of such lack of professional development activities will lead to a decrease of competence in areas in which exposure to technical developments at other DOE and contractor sites engaged in similar activities is essential for both safety and economy of operation. Continued technical isolation of the WMP professional staff will result in both loss of competent personnel and a reduction of competence of those remaining. While no direct or immediate threat to the ability of WMP to recognize or analyze the hazards presented by the varied work activities is evident, reversal of the trend should be viewed as an area for improvement. **(WMP HAZ.1-2)**

Conclusion:

This objective has been met.

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Strengths:

None.

Concerns:

- Hazards identification and accident analysis for the 11-A Hot Cell Facility is not comprehensive, and the Automated Job Hazard Analysis process has not been applied to the hot cell operations. **(ASP HAZ.1-1)**
- Post-job reviews are not being consistently conducted. **(NMS HAZ.1-1)**
- WMP personnel seem to lack the understanding of the controls established to mitigate high-wind hazards and other natural phenomenon hazards for outdoor waste management activities. **(WMP HAZ.1-1)**
- There is no driver to assure professional qualifications are maintained at a high level. This is exacerbated by a severe lack of training/travel funds to support maintenance of professional certifications. **(WMP HAZ.1-2)**

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<p>Submitted: <u>Kimberly Davis</u> Kimberly Davis, Team A <i>Team Member</i></p> <p><u>Dick Grill</u> Dick Grill, Team B <i>Team Member</i></p>	<p>Approved: <u>Ed Parsons</u> Joe (Ed) Parsons <i>Team Leader</i></p>
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OBJECTIVE

HAZ.2 - An integrated process has been established and is used 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. Procedures and/or mechanisms are in place and utilized by personnel to develop, review, approve, maintain, and implement all elements of the facility Authorization Basis Documentation with an integrated workforce.
2. Procedures and/or mechanisms that identify and implement appropriate controls for hazards mitigation within the facility or activity are developed and used by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.
3. Standards and requirements are identified before work is performed and appropriately tailored to the hazards.
4. Procedures and/or mechanisms are in place to develop, maintain, and utilize (and effectively and accurately implement) Authorization Agreements (AA).

Approach

Record Review

- Review a sample of hazard control documents to verify safety controls are provided for the hazards identified and that the control strategy encompasses a hierarchy of the following:
 - Hazard elimination
 - Engineering controls
 - Administrative controls
 - Personnel protective equipment.

NOTE: Typical documents include AAs, Safety Analysis Reports (SAR), Technical Safety Requirements (TSR), Health and Safety Plans (HASP), Radiological Work Permits (RWP), operating procedures, etc.

- Review procedure/processes for the selection and maintenance of appropriate standards and requirements.
- Review procedures/processes for the preparation, review, approval, and revision of AAs.

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- Review procedures and mechanisms to ensure accurate and effective implementation of Authorization Basis documentation.
- Sample actual implementing documentation.
- Coordinate the review of work-related documents, such as RWPs and operating procedures with the OP and Subject Matter Expert functional area reviewers.

Interviews

Interview personnel responsible for developing and implementing hazard controls and/or Authorization Basis documentation at the facility level. This should include personnel such as those responsible for SAR/TSR preparations and implementation, as low as reasonably achievable (ALARA) review requirements, Process Hazards Analysis, activities, job hazard analyses, etc.

Observations

Observe the actual process development, review, approval, and implementation of SAR/TSR, AA, and other Authorization Basis documents as available.

Record Review

- 1C000-00-SVD-015, *Updated Standards/Requirements Identification Document Phase 2 Assessment Schedule*, June 22, 2000
- 242-A Evaporator Authorization Agreement Between U.S. Department of Energy Richland Operations Office and Fluor Hanford, March 16, 2000
- 2S-99-00650, Task 2 Description, *Prepare CF Transfer Tubing and Perform Mock-ups*, Review of Task 2 Evolution for Work Package, June 6, 2000
- 324/327 Buildings Standards/Requirements Identification Documents (S/RID) Phase I Assessment, September 7, 1999
- 3J000-00-LWR-007, *WRAP Facility Authorization Envelope*, February 2000, Letter from L. W. Roberts, Waste Management Hanford (WMH), to C. J. Wolfe, WMH, February 10, 2000
- 3M000-00-DKS-008, *200 Area Liquid Waste Processing Facilities (LWPF) Authorization Envelope (AE)*, Letter from D. K. Smith, WMH, to C. J. Wolfe, WMH, February 17, 2000
- 8D000-RJG-00-053, *Authorization Envelope for Analytical Services Project*, Letter from R. J. Giroir and L. F. Perkins, WMH, to C. J. Wolfe, WMH, February 1, 2000
- Automated Job Hazard Analysis (AJHA) Report, *Campaign 2, TRU Retrieval, Remove Suspect TRU Exposed Drums from Burial Ground 218-W-4C*, Standing AJHA, ID 2X-83, June 5, 2000
- AJHA Report, *Verify and Repackage Sample Returns at Treatment Facility (2706-T)*, June 14, 2000

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- ASP-200, *Analytical Services Procedures*
 - Section 1.13, "Health and Safety Self-Inspection Program," Rev. 3, January 20, 2000
 - Section 4.3, "Unreviewed Safety Questions," Rev. 4, December 13, 1999
 - Section 4.5, "Safety Analysis," Rev. 0, December 30, 1997
- ASP-310, *Analytical Services Project Administration*
 - Section 1.12, "Administration of 222-S Laboratory Complex Criticality Safety Program," Rev. 3, January 18, 2000
 - Section 2.3, "Operational Compliance," Rev. 2, April 11, 2000
 - Section 4.5, "The 222-S Chemical Hygiene Plan," Rev. 0, May 4, 1998
- ASP-MD-043, *Approval Designators for Radiological Control, Nuclear Safety, and Criticality Safety Activities*, Rev. 1, February 10, 2000
- Alkali Metal Safety Training, 400 Area (G. Eder, Instructor)
- BWHC-9856373, *Fast Flux Test Facility Integrated Safety Management System Implementation Plan*, July 29, 1998
- *Comprehensive Baseline Hazard Assessment; Industrial Hygiene Review of the 484 Building, FFTF, 400 Area*, April 1, 1998
- DO-100-035, *Verify and Repackage Waste at Treatment Facility*, Section 6.2, "Greenhouse Activities," September 15, 1999
- Engineering Change Notice 643568, *LCO Deletion Table*, page 4
- Fast Flux Test Facility (FFTF) Operations Administrative Procedure
 - A-28, *FFTF Work Management Process*, Rev. 13 FC, December 31, 1997
 - Appendix U, "Pre-Job Briefing Signoff Sheet, SC-51-9, Control Room & DHxs," Page U13, June 26, 2000
 - Appendix U, "400 Area Pr-Job Briefing Checklist, FC 98.45, FC 00.189, SC-51-9," Page 12, June 28, 2000
 - A-40, "Plant Review Committee," August 30, 1996
 - A-39, "Unreviewed Safety Questions," Rev. 1A, May 22, 1998
- *Fast Flux Test Facility Performance Indicators*, May 2000
- *Fast Flux Test Facility Integrated Environment, Safety and Health Management System (ISMS) Phase I/II Internal Readiness Review Plan*, Rev. 1, January, 27, 2000
- FFTF Plan of the Day Priority
 - June 22, 2000
 - June 26, 2000
- FH-0002357, *Summary of Unreviewed Safety Question Evaluations at the Fast Flux Test Facility*, Correspondence from D. B. Klos and W. A. Dautel, FH, to O. A. Farabee, RL, May 4, 2000
- FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual Organization, Responsibilities, and Authority*, May 17, 2000
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, January 5, 2000
 - Section 2.23, "Identification and Resolution of Unreviewed Safety Questions," Rev. 23, May 1, 2000
 - Section 2.39, "PFP Authorization Envelope," Rev. 3, May 1, 2000

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- Section 13.4, “Work Management Process Description and Job Control System Process,” Rev. 21, April 6, 2000
- Section 13.5, “Processing PFP Documents,” Rev. 15, May 25, 2000
- FSP-WESF-001, *WESF Project Administration*
 - Section CM-3, “Work Management Process,” Rev. 5, December 13, 1999
 - Section MS-06, “S/RID Configuration Management,” May 8, 1998
- HEDL-TI-75001, *Fast Flux Test Facility Final Safety Analysis Report*, December 1975 (as amended)
- HNF-1936, *WRAP Safety Equipment List*, Rev. 1, April 21, 1998
- HNF-2122, *WRAP Drawing List*, Rev. 3, April 7, 2000
- HNF-3676, *Hazard Baseline Documentation and Auditable Safety Analysis for the 337B Building (337 High Bay) and the 3718-M Building*, Rev. 1, December 14, 1999
- HNF-4667, *327 Facility Basis for Interim Operations*, Rev. 0, September 29, 1999
- HNF-5243, *Fast Flux Test Facility Authorization Agreement Between U.S. Department of Energy, Richland Operations Office and Fluor Hanford*, Rev. 0, February 22, 2000
- HNF-5247, *400 Area Authorization Envelope*, Rev. 0, March 6, 2000
- HNF-5608, *300 Area Authorization Envelope*, Rev. 0, March 6, 2000
- HNF-6148, *300 Area Liquid Effluent Facilities Authorization Envelope*, Rev. 0, March 30, 2000
- HNF-IP-1264, *324/327 Facilities Stabilization Projects Administrative Manual*, Rev. 75, May 11, 2000
 - Section 1.1, “Nuclear and Criticality Safety Program,” Rev. 2, January 28, 2000
 - Section 2.3, “Technical Procedure Development and Control,” Rev. 4, November 22, 1999
 - Section 2.7, “Unreviewed Safety Questions,” Rev. 7, October 29, 1999
 - Section 2.8, “Plant Review Committee,” Rev. 5, May 17, 2000
 - Section 2.23, “324/327 OSR Overview Program,” Rev. 3, November 22, 1999
 - Section 4.1, “Job Control System Implementation,” Rev. 10, June 21, 2000
 - Section 4.3, “Person-In-Charge Program,” Rev. 4, June 21, 2000
- HNF-MP-001, *Fluor Hanford Management Plan*, Rev. 2, February 25, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor ISMS Description”
 - Appendix G, “Fast Flux Test Facility ISMS Description”
 - Appendix H, “Analytical Services ISMS Description”
- HNF-PRO-062, *Identifying and Resolving Unreviewed Safety Questions*, Rev. 1, May 1, 2000
- HNF-PRO-079, *Job Hazard Analysis*, Rev. 5, May 5, 2000
- HNF-PRO-265, *Standards/Requirements Identification Document Process*, Rev. 5, April 25, 2000
- HNF-PRO-3468, *Stop Work Responsibility*, October 22, 1999

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- HNF-PRO-533, *Change Control*, Rev. 1, April 5, 2000
- HNF-PRO-2701, *Authorization Envelope and Authorization Agreement*, Rev. 0, July 29, 1999
- HNF-SD-CP-ISA-002, *222-S Laboratory Interim Safety Basis*, Rev. 4, May 27, 1999
- HNF-SD-CP-SAR-021, *PFP Final Safety Analysis Report*, Rev. 1, August 2, 1999
- HNF-SD-CP-SDD-014, *Authorization Basis Support Documents for PFP*, Rev. 2, not dated
- HNF-SD-FF-ASA-002, *Maintenance and Storage Facility (MASF) Auditable Safety Analysis*, January 27, 2000
- HNF-SD-MP-SRID-003, *Standards/Requirements Identification Document*, Rev. 1, December 3, 1998
- HNF-SD-MP-SRID-007, *Waste Encapsulation and Storage Facility S/RID*, January 27, 2000
- HNF-SD-MP-SRID-008, *324/327 Standards/Requirements Identification Document Release*, Rev. 1, January 26, 2000
- HNF-SD-MP-SRID-011, *Waste Management Hanford S/RID*, November 11, 1999
- HNF-SD-PRP-HA-015, *Fast Flux Test Facility Hazards Assessment*, Rev. 4A, April 5, 2000
- HNF-SD-SPJ-SAR-001, *324 Facility Safety Analysis Report*, Rev. 1, October 1998
- HNF-SD-SPJ-SAR-001, *324 Facility Safety Analysis Report*, Rev. 2, August 26, 1999
- HNF-SD-SPJ-OSR-001, *324 Facility Operational Safety Requirements*, Rev. 1, October 1998
- HNF-SD-SPJ-OSR-001, *324 Facility Operational Safety Requirements*, Rev. 2, August 26, 1999
- HNF-SD-SPJ-SAR-002, *327 Facility Safety Analysis Report*, Rev. 1, October 1998
- HNF-SD-SPJ-OSR-002, *327 Facility Operational Safety Requirements*, Rev. 1, October 1998
- HNF-SD-SPJ-OSR-002, *327 Facility Operational Safety Requirements*, Rev. 3, September 29, 1999
- HNF-SD-W026-SAR-002, *Waste Receiving and Processing Facility Final Safety Analysis Report*, Rev 0-H, October 24, 1997
- HNF-SD-WM-BIO-002, *Waste Encapsulation and Storage Facility Basis for Interim Operation*, Rev. 0, May 4, 1998
- HNF-SD-WM-ISA-002, *Solid Waste Burial Grounds Interim Safety Basis*, Rev. 3A, September 30, 1998
- HNF-SD-WM-SAR-023, *200 Area Liquid Waste Processing Facilities 242-A Evaporator Safety Analysis Report*, Rev. 3, March 30, 1998
- LA-514-115, *Thermal Stability and Percent Water using the TA DSC and TGA, Procedure Review and Approval*, Rev. B0, January 17, 2000
- LO-090-101, *222-S Laboratory Sample Receiving and Custodianship*, November 5, 1999
- LO-100-107, *Cubicle Housekeeping, Waste Disposal, and Management*, October 18, 1999
- Low-Level Burial Grounds (LLBG) Authorization Agreement Between U.S. Department of Energy Richland Operations Office and Fluor Hanford, March 16, 2000
- RCP-PRO-012, *Authorization Envelope and Authorization Agreement Requirements for Industrial, Radiological, Non-Nuclear and Nuclear Facilities*, Rev. 1, June 13, 2000

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- Safety Awareness Council: 00-010, *400 Area Safety Awareness Council Meeting Minutes*, June 26, 2000
- SW-100-129, *Management of Solid Waste*, May 19, 2000
- Unreviewed Safety Question (USQ) Screening Form (Sample)
- WESF-99-001-SAF, *WESF Safety Program Baseline Hazard Assessment*, September 1999
- WHC-SD-CP-OSR-010, *PFP Operational Safety Requirements*, Rev. 0-M, May 2000
- WHC-SD-ETF-ASA-001, *200 Area Effluent Treatment Facility Auditable Safety Analysis*, Rev. 4A, April 4, 2000
- WHC-SD-MP-SRID-006, *FFTF Standards/Requirements Identification Document*, Rev. 0, November 11, 1996
- WHC-SD-W026-TI-007, *Probability of an Explosion in WRAP-1 Gloveboxes*, 1993
- WMH-MD-043, *Approval Designators for Radiological Control, Nuclear Safety, and Criticality Safety Activities*, Rev. 0, June 17, 1999
- WMH-SWSD, *Industrial Hygiene and Safety Hazards Baseline Assessment for Solid Waste Storage and Disposal*, January 2000
- WMP-200, *Waste Management Project Procedures*
 - Section 3.1, "Work Management," Rev. 4, March 28, 2000
 - Section 4.3, "Unreviewed Safety Questions," Rev. 4, December 13, 1999
 - Section 4.5, "Safety Analysis," Rev. 4, December 30, 1997
- WMP-320, *300 Area Liquid Effluent Facilities Administration*, Section 1.15, "Authorization Envelope," Rev. 0, September 23, 1999
- WMP-331, *200 Liquid Waste Processing Facility Procedures*, Section 3.12, "Authorization Bases Review," Rev. 1, April 9, 1999
- WMP-340, *Solid Waste Treatment Project Procedures*, Section 1.9, "Conduct Periodic Solid Waste Treatment Facility Environmental Compliance Inspections," Rev. 0, January 28, 2000
- WMP-350, *WRAP Procedures*, Section 1.12, "Compliance Matrix Identification and Control," Rev. 2, January 19, 2000.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Chair, Safety Council
- Chemical Hygienist, Standards Laboratory
- Fire Protection Engineer, ASP/Waste Management Project (WMP)
- Health and Safety Representative
- Lead, Hot Cell Laboratory
- Manager, Analytical Services
- Manager, Engineering
- Senior Operations Specialist
- Team Lead, Hot Cell and Standards Laboratory
- Work Control Planner.

Observations

- Plan of the Day meeting, June 21, 2000
- Organic/Inorganic Analysis Turnover meeting, June 21, 2000
- Standards Laboratory Chemical Management System meeting, June 21, 2000
- Safety Council meeting, June 21, 2000
- Fissionable Material Inventory Control System meeting, June 21, 2000
- Walkdown of all operational areas with Safety and Health Representative, June 21, 2000
- Pre-job meeting, June 21, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place and utilized by personnel to develop, review, approve, maintain, and implement all elements of the facility Authorization Basis Documentation with an integrated workforce.*

An important aspect of the safety basis for the 222-S Laboratory is the amount and distribution of fissile material inventory. The fissile material content also significantly governs the radiological dose. The 222-S Laboratory operates as an isolated facility for criticality safety purposes, and is limited to a fissionable material inventory of one-third of a minimum critical mass (177 grams plutonium). This limit drives the inventory management and control of the samples analyzed in the facility. The facility has developed a unique system of controlling the inventory of diverse radioactive samples through the use of a unit, "Core Equivalent Sample." Because of nuclear material security requirements, the fissile material inventory is segregated into material balance areas and non-reportable fissionable material storage. A review of records of the 222-S Laboratory's fissile material inventory in the various storage areas indicated that the established mechanisms were adequately implemented.

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Based on evaluating a bounding accident and comparing the estimated offsite and onsite radiological doses against risk evaluation guidelines, the 222-S Laboratory staff has determined that neither safety class nor safety-significant equipment is necessary. The postulated bounding accident is an earthquake-induced internal fire, which is in the extremely unlikely probability category, and therefore compared with the maximum dose limit. A more probable fire or other accident scenario would be compared with a lower consequence limit. The ISB identifies the potential ignition of flammables and combustibles in the hot cell, but does not provide the estimated dose consequence and comparison to the evaluation guidelines. **(ASP HAZ.2-1)** Such an evaluation of potential accidents and comparison with evaluation guidelines for onsite worker consequences could lead to further insights, and possibly the identification of additional defense-in-depth measures, including safety-significant equipment (e.g., ventilation and fire-suppression systems).

Various fire and other accident scenarios could be postulated in the hot cell (which has about 90% of the radioactive inventory) with differing assumptions and consequences from the standpoint of the safety of facility and co-located workers. The hot cell operational procedures, which are specific to analysis and other tasks, address only specific hazards. The hazards analysis in the ISB addresses limited number of broadly defined conditions, but does not discuss the integrated or cumulative consideration of hot cell operations as an interacting system of various simultaneous activities in and around the hot cells, and different conditions within the interrelated hot cells. The potential deleterious effects of degradation, pressurization, and accumulation of the inventory of samples, and the potential adverse interactions between the tasks performed and the sample inventory within the hot cells also have not been discussed. Furthermore, it does not appear that the ISB or the Fire Hazards Analysis has established and discussed the limits on the combustible loading per cell (other than the limit on flammable liquids contained in the Chemical Hygiene Plan). Thus, it is not clear from the hazards analysis the extent to which hazardous conditions have been considered and bounded. **(ASP HAZ.2-1)** Additional discussion of this issue is presented in **HAZ.1**.

The AB implementation and maintenance mechanisms were similar to those for WMP facilities (discussed in the WMP Section) and judged to be adequate. Maintaining the AB and making changes to design and procedures by applying the USQ screening and evaluation process was also selectively checked and found to be adequate. Furthermore, the WMP support engineering staff provides safety expertise, and procures, as necessary, safety analysis support through subcontracts with external organizations. A Nuclear Safety Representative within WMP provides independent safety review of AB documents. The representative also performs quarterly reviews in selected functional areas, such as USQ and criticality safety implementation. Comments relative to these aspects are similar to those for WMP.

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Criterion 2: *Procedures and/or mechanisms that identify and implement appropriate controls for hazards mitigation within the facility or activity are developed and used by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.*

At the 222-S Laboratory, the Plan of the Day, turnover, and Safety Council meetings, as well as walkdowns of several operational areas and interviews with workers and managers, demonstrated a high degree of worker participation and commitment to maintaining all operations within the safety controls established.

Several selected analytical and operating procedures and their history files were reviewed. The procedures reflected adequate reference to the hazards (e.g., potential for explosion or thermal burns), and sufficient review by appropriate functional disciplines (e.g., USQ screening and quality assurance).

The 222-S Laboratory has initiated the review of operating and analytical procedures using AJHA. These reviews have significantly benefited from active participation by workers and appropriate environment, safety, and health professionals. In addition to the institutional-level guidance on applying the AJHA review process to new and existing procedures, a hazard-based screening checklist has been developed to prioritize this effort. The use of the checklist is formalized through its reference in the contractual statement of work. While this mechanism exists to prioritize the procedure revision process, the timely application of improved hazard controls identified in AJHA reviews to other similar procedures awaiting such reviews, is lacking. Additional discussion of this concern is provided in the WMP Section. **(ASP HAZ.2-2)**

The operational practices at the 222-S Laboratory, which holds a significant inventory of chemicals, are based on an adherence to chemical hazards control principles and requirements. For example, the screening, segregation, labeling, and tracking of chemicals were in accordance with the applicable standards. The Laboratory also has plans established to validate the chemical inventory after it transitions to a new chemical management system.

An extensive walkdown of the 222-S Laboratory with the Safety and Health Representative provided several examples of industrial and radiological hazards previously identified by workers, for which the required actions and corrective measures already had been completed to make the workplace safe. The representative's strong involvement was clearly evident.

Similarly, the Safety Council meeting and interview with the Chair Council displayed strong emphasis on understanding and evaluating the nature of the hazards identified by facility personnel; identifying workable controls to prevent or mitigate the hazards; and tracking the status of open-action items.

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Criterion 3: *Standards and requirements are identified before work is performed and appropriately tailored to the hazards.*

The planning and preparation activities reviewed for moving an instrument into the 222-S hot cells demonstrated the facility's commitment to ensure that hazard control measures are properly implemented prior to commencement of work. The activities included a significant degree of training provided to new operators.

A review of the field implementation of the 222-S Laboratory's Safety and Health Self-Inspection Program also indicated a superior approach and execution. A team of workers and managers perform worksite analysis and complete self-inspections on a schedule that covers all areas of the facility every quarter. The approach affords an excellent opportunity for workers and managers to gain expertise in identifying health and safety hazards, along with ensuring that adequate controls are in place to ensure their safety.

Criterion 4: *Procedures and/or mechanisms are in place to develop, maintain, and utilize (and effectively and accurately implement) Authorization Agreements (AA).*

ASP has documented the AE for both its facilities, 222-S Laboratory and Waste Sampling and Characterization Facility, as required by HNF-PRO-2701, *Authorization Envelope and Authorization Agreement*. Because neither of these facilities is a Hazard Category 2 facility, an Authorization Agreement is not required.

HNF-PRO-2701 also requires a periodic update schedule and a process to be established for maintaining the AE current, and for ensuring that work is performed according to the requirements, permits, and controls in the AE. However, ASP does not have a formal process and schedule for maintaining the AE documents. For example, the functional review steps, responsibilities of key individuals, and requirements pertaining to self-assessments and configuration control for an AE have not been defined. This concern is the same as that expressed for WMP, except that this is limited to the AEs. A formal process for maintaining the 222-S Laboratory and WSCF AEs is lacking. **(ASP HAZ.2-3)**

The environment, safety and health requirements that apply to a facility constitute the requirements basis portion of an AE. The S/RID for WMP (HNF-SD-MP-SRID-011, *Waste Management Hanford S/RID*) includes ASP facilities by identifying unique conditions and applications for those facilities. The implementation status of that S/RID is discussed in the WMP Section. However, with a separate project structure for ASP facilities, the process for performing assessments of the AE requirements basis and its implementation is not clear. **(ASP HAZ.2-3).**

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Conclusion

Observations of field activities, personnel interviews, and reviews of selected lowest-tier implementing mechanisms and procedures indicate that ASP has established and implemented a satisfactory process to implement hazard controls to protect the public, worker, and the environment. The controls for hazards in the work place are developed and used by workers and there are adequate mechanisms to ensure that requirements and controls are in place before commencement of work. The AB for the 222-S Laboratory needs a more comprehensive hazards analysis, and a formal process should be established to maintain the AE for ASP facilities.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- "Safety First Program" Safety Observer
- Facility Representative (DOE)
- Facility Safety Analysis Report (FSAR) Administrator
- Lead for Training Team and AJHA Implementation Team
- Mechanical, Thermal, and Fluid Systems Engineering Manager (Acting Engineering Manager)
- Nuclear Legacy Program Lead
- Nuclear Safety Implementation Plan Lead
- Operations Manager
- Program Manager (DOE)
- S/RIDs Coordinator
- Safety Team Lead
- Senior Engineer, Fuel Handling Instrumentation and Control Engineering
- Shift Operations Manager.

Observations

- Plan of the Day meeting, June 26, 2000
- Pre-job Briefing, 4F SC-051-9, Sodium Isolation Valve Closure Testing, June 26, 2000
- Dump heat exchanger Sodium Isolation Valve Testing, June 26, 2000
- Engineering Safety meeting, June 26, 2000
- Operations Support Crew Safety meeting, June 27, 2000
- Safety Awareness Council meeting, June 27, 2000
- Closed-Loop Ex-Vessel Monitoring (CLEM) Control System Upgrade activities, June 27, 2000.

Discussion of Results

Criterion 1: Procedures and/or mechanisms are in place and utilized by personnel to develop, review, approve, maintain, and implement all elements of the facility Authorization Basis Documentation with an integrated workforce.

The FFTF Project includes the FFTF plant, presently a Hazard Category 2 nuclear facility, as well as various radiological, nonnuclear and industrial facilities in the 400 and 300 Areas. The AB for the FFTF plant is HEDL-TI-75001, *Fast Flux Test Facility Final Safety Analysis Report*, Amendment 78, as supplemented by other documents listed in the AA for the plant. All other facilities under the purview of the FFTF Project have safety bases in the form of an Auditable

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Safety Analysis (ASA) or a Hazard Baseline Assessment depending on the category of the facility.

This review indicated that the existing mechanisms are adequate to define and maintain the AB of the FFTF plant, and to maintain safe and compliant conditions for its present standby status. The AB for standby conditions is adequately described in FFTF's FSAR, which has appendices that have been added after receiving the shutdown order. Previous assessments, including those by RL and Facility Evaluation Board, have identified specific deficiencies and areas for improvement, which are being addressed by the FFTF plant.

FFTF's FSAR was developed according to the Nuclear Regulatory Commission's Regulatory Guide 1.70, and is not intended to meet the requirements of DOE Order 5480.23 for Safety Analysis Reports. However, FFTF's AB is maintained by applying the USQ process that is intended to follow requirements of DOE Order 5480.21. The FFTF Operating Procedure A-39, *Unreviewed Safety Questions*, does not conform to HNF-PRO-062, *Identifying and Resolving Unreviewed Safety Questions*, but is separately approved by RL, as allowed for by HNF-PRO-062. The procedure identifies general criteria for obtaining RL approval when changes are made to the procedure. Thus, not all changes must be reviewed and approved by RL, as long as the procedure is consistent with instructions in DOE Order 5480.23. This ISMS review has identified the following concerns regarding FFTF's implementing procedure for the USQ process.

The USQ Screening Form (Procedure A-39, Appendix B) appears to have two errors that could result in implementation problems, although these have not resulted in any problems so far. The body of the procedure does not provide much guidance on this screening form, as it is considered to be self-explanatory. First, the form requests response to only one of three questions, without requiring the user to classify the subject item into one of three possible categories (i.e., change, issue, or test/experiment). The categories are intended to be mutually exclusive, but this is not clear in the procedure. Second, all plant modifications are intended by the procedure to receive a USQ evaluation; however, the first question on the form includes proposed facility changes for screening. Unfortunately, the distinction between a plant modification and a facility change also may be confusing, since the definition of a physical plant modification is simply given as "any proposed change to FFTF plant physical structures, systems, or components." FFTF staff intend to evaluate and revise the procedure as necessary.

Another concern relating to FFTF's USQ process, already recognized by RL, concerns the DOE Order 5480.21 requirement to submit a summary of all USQ evaluations with the periodic FSAR update. Presently, the FFTF plant is submitting to RL only those evaluations submitted to, and evaluated by, the Plant Review Committee. This process is consistent with procedure A-39 approved by RL. However, there appears to be no documented justification for this exemption from the DOE Order requirement. The Administrative Procedure A-39 is being revised to address this issue.

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Because the FFTF FSAR is not intended to meet DOE requirements and guidance for Safety Analysis Reports, there is relatively limited discussion in the document of all potentially significant hazards to the plant and co-located workers. The FSAR does discuss certain major hazards, such as sodium fires, as part of defining design-basis bounding accidents. More recently, somewhat narrowly defined hazard assessments have been performed from the standpoint of emergency planning and industrial hygiene. Also, the AJHAs on the numerous operating and maintenance procedures, when completed, would provide task-specific hazards analysis. However, an integrated assessment of all hazards for the facility and its operations (e.g., as provided for in DOE Standard 3009 for nuclear facilities), from the standpoint of worker safety and with the objective of identifying and ensuring proper controls, does not exist. This review indicates that the current implementation plan for DOE's nuclear safety orders prescribes the actions that would be taken, and budgeted for, with respect to AB upgrades.

The safety envelope for the present defueled condition of the FFTF plant (e.g., as defined by postulated bounding accident scenarios) is well within that described by the original FSAR. This situation, however, raises certain issues for maintaining the original safety envelope (e.g., safety systems and structures, procedures, and experienced personnel), if the plant is directed to restart. The plant's USQ process for maintaining the current AB is not adequate to protect the AB for a future operating plant. Thus, the plant must meet the challenge of maintaining another larger safety envelope for a yet-to-be-defined mission without the "full force" of authorities and resources that are associated with establishing and maintaining an AB.

Certain structures and components critical to FFTF's future operation may degrade due to lack of optimum utilization and maintenance. The FFTF plant is dealing with this issue by making best efforts to maintain the qualifications and operability of plant equipment (e.g., items on the original Master Equipment List) that more appropriately reflect the previously operating plant. For example, the ISMS review revealed that the seismic qualification of Safety Class 1 equipment defining the primary coolant boundary is being maintained through sampling and testing of snubbers on a periodic basis. Also, the knowledge and experience of a core staff very familiar with the design and operation of FFTF is playing a key role in maintaining the plant's AB.

Finally, it was observed that the responsibility relative to the plant's AB in FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual Organization, Responsibilities, and Authority* is mentioned only as part of the description of the responsibilities of the Transition Project Office (TPO) Manager. That responsibility is to administer FSAR documentation, and is described in the context of the TPO Manager's functions to provide business, financial and program integration support, and maintain Transition Project files. However, most resources for implementing the FFTF's AB are provided by the engineering organization. The responsibilities of the Engineering Manager do not directly mention maintaining or implementing the AB. Thus, the responsibilities of neither the TPO Manager nor the Engineering Manager adequately reflect ownership and management of the AB. It appears that the authority and a major responsibility of the FFTF Project to implement and manage FFTF's AB are not properly covered in the FFTF Plant Policy Manual. **(FFTF HAZ.2-1)**

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Criterion 2: *Procedures and/or mechanisms that identify and implement appropriate controls for hazards mitigation within the facility or activity are developed and used by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.*

Evidence of disciplined work and emphasis on safety were clear in most of the activities observed and the interviews conducted. Examples include the following:

- Detailed discussion of recent changes made to the work management procedure, including the AJHA screening process, at the Engineering Safety meeting
- A thorough review of the heat-exchanger isolation valve testing procedure and discussion about the availability of all the necessary tools to perform the task at the pre-job briefing for the task
- Discussion of the status of corrective actions from the ISMS Internal Readiness Review, including the explanation for changes to the Stop Work policy
- Active participation of members in the Operations Support Crew safety meeting
- An effective presentation of a potentially unsafe work activity (observed by the ISMS team and discussed under Criterion 3), along with articulating the need to address fall protection properly during future AJHAs.

FFTF is initiating a review, using the AJHA, of its operating and maintenance procedures, which total a few thousand. The plant has developed a screening checklist to prioritize this effort. However, interviews with personnel indicated they did not expect the AJHA to add much value to the already well-established plant procedures and to the procedure validation effort that was recently completed. They expressed frustration at the exercise of undergoing AJHA reviews of procedures. Such issues do not appear to have been considered at the institutional level where guidance on the application of AJHAs is developed. Further discussion and a concern related to this topic is discussed in **OP.2**.

Significant alkali metal inventories exist in diverse systems within the 300 and 400 Area Buildings. The residual sodium and sodium-potassium legacy wastes are currently in the process of being cleaned out in Building 337 of the FFTF Project. Review of the applicable ASAs and interviews with cognizant engineers indicated that the hazards associated with the alkali metal are very well understood and controlled. The Technical Program Lead for the Nuclear Energy Legacy Program demonstrated considerable knowledge of the operational activities and the hazard control measures in place. Furthermore, training on Alkali Metal Safety is provided to operators, engineers, and maintenance personnel. The course material was reviewed and found to be excellent.

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A walkdown of the FFTF plant with the Lead for Safety and unplanned discussions with workers during the tour demonstrated a high degree of worker commitment to maintaining all operations within the established safety controls.

Criterion 3: *Standards and requirements are identified before work is performed and appropriately tailored to the hazards.*

The testing of the dump heat exchanger isolation valves and instrumentation and control activities in support of upgrading the CLEM system were observed and evaluated.

A thorough pre-job briefing on the testing procedure was discussed in Criterion 2. Interviews with work crew members indicated that heat stress was a particular hazard when performing the valve tests during summer months, when the temperatures at the work place would be high. The test of 24 valves generally takes a few days and the testing is performed once a year. A suggestion to schedule the annual testing during another more suitable period of the year was thought to be interesting, but there was reluctance by the line supervisor and the manager to consider this further.

While observing the valve testing, the ISMS Verification Team identified that a worker verifying valve-stroking time performed the activity in a potentially unsafe manner by standing on secondary sodium piping and leaning without adequate fall protection. This incident was brought to the attention of the Shift Operating Manager and the Operations Manager. It also appeared from further observations that the unsafe work practice may have been conducted during testing of other heat exchanger isolation valves. The location of these valves within congested spaces shared with other equipment is such that there is significant potential for fall and injuries. Appropriate measures were taken following this incident to prevent recurrence. In addition, the Safety Team Lead, who was also present during the observation of this activity, presented the issue to the Safety Council in an exemplary manner. However, the above observations regarding the performance of a task without adequate fall protection and the reluctance to examine a change in the isolation valve testing schedule to avoid potential heat-stress hazards, indicates that there is a need to emphasize awareness of these industrial hazards. **(FFTF HAZ.2-2)**

The CLEM upgrade activity on the reactor floor and an interview with the senior instrumentation and control engineer responsible for the work demonstrated a high level of understanding of the potential issues associated with digital instrumentation and control failures. The crew was familiar with requirements for the work and the test procedures in use.

Except for the above-mentioned incident, all observations and interviews demonstrated the plant's commitment to ensure that hazard control measures are properly implemented prior to commencing work.

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Criterion 4: *Procedures and/or mechanisms are in place to develop, maintain, and utilize (and effectively and accurately implement) Authorization Agreements (AA).*

The FFTF Project has completed the AA for the FFTF plant, and has the AEs in place for all its radiological, nonnuclear, and industrial facilities in the 300 and 400 Areas, as required by HNF-PRO-2701, *Authorization Envelope and Authorization Agreement*.

HNF-PRO-2701 also requires a periodic update schedule and a process to be established for maintaining the AE current, and for ensuring that work is performed according to the requirements, permits, and controls in the AE. The AEs developed by the FFTF Project incorporate an annual schedule and mechanisms for maintaining the documents.

The environment, safety and health requirements that apply to a facility constitute the requirements basis portion of an AA or an AE. The implementation status of the FFTF S/RID was reviewed. Its last revision was reviewed and approved by RL in December 1999. The Phase 1 administrative compliance assessment was completed in February 2000, per the schedule. The plant has a schedule for performing Phase 2 adherence compliance assessments, about 20 to 40 assessments per quarter. While certain issues and delays have been identified with respect to S/RIDs in a few functional areas, FFTF appears to be satisfactorily following the 3-year cycle for assessing each functional area.

Conclusion

This assessment comprising observations of field activities, interviews with personnel, and reviews of selected lowest-tier implementing mechanisms and procedures indicates that FFTF has established and implemented a satisfactory process to implement hazard controls to protect the public, worker, and the environment. FFTF has an adequately implemented AB, although certain specific issues have been identified relative to the USQ procedure. The controls for hazards in the work place are developed and used by workers and there are adequate mechanisms to ensure that requirements and controls are in place before commencement of work. The FFTF Project also has satisfactorily established the AA for the FFTF plant and AEs for its other facilities.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Acting Director, Short-Term Planning
- AB Team Leader
- Building Emergency Director
- Chief Engineer (acting)
- Electrician
- Insulator
- Mechanical Engineer
- Nuclear Chemical Operator
- Nuclear Safety Engineer
- Operational Safety Requirement (OSR) Representative
- Radiological Control Technician (RCT)
- Senior Radiological Control Technician
- Solid Waste Operator
- Team Leader, Heating, Ventilation and Air Conditioning
- USQ Program Manager.

Observations

- Building Emergency Director Shift Turnover meeting, June 15, 2000
- Directors Brief, June 15, 2000
- Water, Air, Ventilation, Steam Self-Directed Team meeting, June 15, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place and utilized by personnel to develop, review, approve, maintain, and implement all elements of the facility Authorization Basis Documentation with an integrated workforce.*

Interviews with cognizant staff and a review of resultant documents indicated that the procedures contained in the Plutonium Finishing Plant (PFP) System Description were understood and followed. Roles and responsibilities of the AB Team were clear and well defined. Personnel responsible for PFP's Unreviewed Safety Question Program and Operational Safety Requirement program were knowledgeable in the DOE requirements as well as plant procedures. Interviews with craft personnel indicated that hazards identified by the authorization basis group were addressed in the AJHA and work instructions involving an OSR were clearly marked indicating that a significant safety system was involved in the task. The summation of interviews, observations and document reviews indicate that the procedures and mechanisms adequately implement their AB documentation.

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Criterion 2: *Procedures and/or mechanisms that identify and implement appropriate controls for hazard mitigation within the facility or activity are developed and used by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.*

PFP uses the AJHA tool as a mechanism to identify proper controls to mitigate or eliminate hazards associated with the defined scope of work. Through interviews and observations, the Team found application of the AJHA tool to be inconsistent. Apparently, all personnel necessary to derive the full benefit of the AJHA tool do not always attend the computerized AJHA meetings. Interviews with participants and observations of the AJHA process seemed to indicate that the AJHA tool was sometimes used piecemeal instead of using an integrated team concept as it was designed to do. (NMS HAZ.2-1)

Interviews indicated that conduct of and participation in pre-planning walk-downs was also inconsistent. The team did note that most work conducted by the self-directed work teams responsible for maintaining the plant infrastructure was routine in nature and may not require a separate pre-planning walk-down. Additionally, the PFP Job Control System allows the Person-In-Charge (PIC) considerable flexibility in conducting pre-job planning in conjunction with the work planner. Pre-planning work conducted by the PIC, related to the AJHA process, on various jobs appears not to be communicated to the work team. (NMS HAZ.2-2)

Interviews consistently indicated that radiological control planning was not as effective as it could be, relative to work package development. Interviews also pointed to a shortage of resources as a contributing cause for this concern. It was indicated to the team that very often, the RCT who participated in the AJHA for a particular work package was not the RCT assigned to cover the activity when that work was scheduled. Other craft interviewed indicated that the lack of radiological control resources impaired work. An apparent lack of resources has impaired work planning, especially in the area of Radiological Control. (NMS HAZ.2-3)

It is important to note that at no time did any individual indicate to the team that these issues resulted in unsafe working conditions or omitted hazards. The summation of interviews, observations and document reviews indicate that the procedures and mechanisms adequately implement identified hazard controls.

Criterion 3: *Standards and requirements are identified before work is performed and appropriately tailored to the hazards.*

At the facility level, PFP has implemented a process consistent with HNF-PRO-265. Interviews and document review indicated that the process is generally being implemented effectively. However, the team did note the facility has not completed its annual update for submittal to RL for review and approval as required by the procedure. All other aspects of HNF-PRO-265 were adequately implemented, satisfying this criterion. See MGO.1 for further discussion of this issue.

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At the activity level, PFP utilizes the AJHA process. This process is discussed in detail in Criterion 2. See also discussions in **HAZ.1**, **OP.1**, and **OP.2**.

Criterion 4: *Procedures and/or mechanisms are in place to develop, maintain, and utilize (and effectively and accurately implement) Authorization Agreements (AA).*

PFP uses HNF-PRO-2701 to develop, review, approve and maintain the plant's AA. In the sections of the plant's AA that pertain to the AB, the team found adequate evidence that the terms and conditions (Section 4) are being adequately implemented. However, the team also found indications that the sections relative to S/RIDs and Quality Assurance were not adequately implemented. Further discussion of these issues is contained in **MGO.1** and **SME.4**, respectively.

Conclusion

Interviews, observations, and document reviews indicate that PFP has established and implemented an integrated process that is used to develop controls that mitigate the identified hazards present within a facility or activity. The process ensures these controls provide adequate protection of the public, worker, and the environment. Mechanisms are in place that requires DOE review and approval of these standards and controls.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Chief Engineer
- Electrician (2)
- Hot Cell Technician (3)
- Millwright (2)
- Nuclear Chemical Operator (2)
- Quality Assurance Engineer
- Radiological Control Technician (2)
- Senior Nuclear Engineer
- USQ Administrator (2).

Observations

- AJHA, 327 Building, June 22, 2000
- Plan of the Day meeting, 200 ADP, June 22, 2000
- 327 Building Work Package/Procedure Prioritization meeting, June 26, 2000
- 327 Building all hands safety meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place and utilized by personnel to develop, review, approve, maintain, and implement all elements of the facility Authorization Basis Documentation with an integrated workforce.*

Interviews and document reviews indicated that the procedures identified in HNF-MP-003, *Integrated, Environment, Safety and Health Management System Description*, Appendix F, "RCP ISMS Description," Sections 3.3 and 3.4 were understood and adequately implemented. Roles and responsibilities are clearly defined relating to the review, approval, and update process for AB documents. The RCP had completed and submitted annual updates to Safety Analysis Reports within the required timeframes.

The contractor has created an adequate integrated AB documentation process involving the Chief Engineer and his staff, the Environment, Safety, Health and Quality organization and the facility AB groups to develop and maintain the AB.

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Criterion 2: *Procedures and/or mechanisms that identify and implement appropriate controls for hazards mitigation within the facility or activity are developed and used by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.*

At the facility level, the contractor has established Operational Safety Requirements (OSR) for the nuclear facilities under their cognizance. These OSRs identify and implement controls developed through the accident and hazard analysis process performed during the development of the SAR. These controls are clearly identified in work packages and procedures and communicated to the work force during pre-job briefs. Interviews and document reviews confirmed this process satisfies this criterion and is adequately implemented at RCP nuclear facilities.

At the activity level, the AJHA process has been implemented at the RCP. Interviews indicated that the process is adequate for hazard identification and the stipulation of hazard controls. Problems, such as SME and craft personnel participation that had been evident at other FH projects, were not identified by interviews or through observations at the RCP.

The RCP is apparently further along in its implementation of the AJHA process and the project's use of this tool to identify and implement hazard controls than other projects.

Criterion 3: *Standards and requirements are identified before work is performed and appropriately tailored to the hazards.*

RCP uses HNF-PRO-265, *Standards/Requirements Identification Document Process*, to develop, review, approve, and maintain an appropriate set of standards and requirements for nuclear facilities. HNF-PRO-264 was previously reviewed and deemed adequate. Annual updates are being completed and submitted to RL on schedule and the Phase II assessment process is underway at this time.

Interviews and document reviews indicate the RCP is implementing HNF-PRO-265 in a manner to adequately tailor standards to the hazards.

Criterion 4: *Procedures and/or mechanisms are in place to develop, maintain, and utilize (and effectively and accurately implement) Authorization Agreements (AA).*

HNF-PRO-2701 provides guidance to the RCP on how to develop and maintain AAs. The RCP has augmented this procedure with RCP-PRO-012 that clearly defines roles and responsibilities relating to annual review and revisions to the AA and the authorization envelopes for nuclear and non-nuclear facilities. Interviews and document reviews indicate that these roles and responsibilities are understood and being followed.

The RCP has submitted its annual revision to RL on time and the RCP appears to be in compliance with all terms and conditions stated in the AA at the time of the ISMS verification.

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Conclusion

The RCP has established an integrated system that allows for the development, review and approval of AB documents. Hazard controls developed through the hazard and accident identification and analysis process are clearly communicated to the workforce and effectively implemented. The operational nuclear facilities under the cognizance of the RCP have current approved S/RIDs. AAs are also in place for these facilities, which are current, and the terms and conditions stated in these agreements are being met.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Design Authority, LLBG
- Design Authority, Solid Waste Treatment (SWT)
- Engineering Manager, LWPF
- Engineering Manager, Waste Encapsulation and Storage Facility (WESF)
- Environmental Scientist, Conduct of Operations, WMP
- Facility Manager, Waste Receiving and Processing (WRAP) Facility
- Facility Safety Representative, LWPF
- Field Work Supervisor (FWS), Central Waste Complex (CWC)
- FWS, Maintenance, WRAP Facility
- Industrial Hygienists, SWT
- ISMS Manager
- Manager, Conduct of Operations
- Manager, LWPF
- Nuclear Chemical Operators, CWC and LLBG
- Nuclear Safety Lead, WMP
- Operations Disposal Manager, Solid Waste Storage and Disposal (SWSD) and LLBG
- Program Support Manager, SWT
- Project Support Engineering Manager
- Radiological Controls Manager, LWPF
- S/RIDs Coordinator, WMP
- Safety AB Engineer
- Safety Engineer, WESF
- Safety Representative, SWT
- Safety Representative, WRAP Facility
- Safety Staff, Support Engineering, WMP
- Staff Engineer for AB, WMP.

Observations

- Plan of the Day and Detailed Schedule meetings (CWC and LLBG), June 14, 2000
- AJHA on Sample Returns, SWT, June 14, 2000
- Briefing by SWT Manager to RL Assistant Manager Waste Management, June 14, 2000

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- Relocation of seven drums containing transuranic waste from LLBG Trench 29 to CWC, June 14, 2000
- Pre-Job Briefing for Sample Returns Task, June 15, 2000
- Preparation for Samples Return Activity in Greenhouse/TA Building, June 15, 2000
- Plan of the Day meeting, LWPF, June 19, 2000
- All-Hands meeting, LWPF, June 19, 2000
- Walkdown Effluent Treatment Facility (ETF) with Safety Representative, June 19, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place and utilized by personnel to develop, review, approve, maintain, and implement all elements of the facility Authorization Basis Documentation with an integrated workforce.*

Implementation by WMP of the processes to develop and implement ABs for its nuclear facilities was reviewed, using as examples a few recently completed or ongoing major activities related to safety basis development, such as Project W259 (construction of 2706-TB for Resource Conservation and Recovery Act of 1976 (RCRA) compliant hazardous liquid collection and storage); modification to the AB for SWT to address the storage of sludge from K Basins; and the AB for WRAP.

Line management ownership of the AB was clearly evident at all WMP facilities. Managers demonstrated good working knowledge of the technical issues that may be involved in AB modifications (e.g., heat and gas generation from sludge, and criticality safety). At LWPF, the Engineering Manager was the author of the procedure for evaluating and managing changes to the safety basis of radiological and non-nuclear facilities. The facility managers ensure that AB documents, as well as procedure changes, receive adequate input and review from operations and engineering staff. Interviews with SWT management and engineering staff showed that close and careful attention is presently being given to streamlining the development of an appropriate AB for K Basin sludge storage with a high level of participation by line management. The managers also facilitate AB implementation, which typically includes new or revised procedures, training operations personnel, exercises on mock-ups as appropriate, and start-up readiness reviews.

A Nuclear Safety Representative within WMP Conduct of Operations supports the line management and operations of all WMP facilities by providing an independent review of safety documentation, as well as guidance and assistance in addressing operational safety issues (e.g., relating to procedure changes identified by operations personnel, and AJHAs). The Nuclear Safety Representative also performs quarterly reviews in selected functional areas, such as USQ and criticality safety implementation.

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The Engineering Manager of a WMP facility is typically the customer for the safety analysis support from Support Engineering. Support Engineering's safety personnel are sufficiently familiar with operations at the facilities to which they are assigned, so that they are frequently called upon for assistance. Interviews with safety staff from Support Engineering provided examples of how their understanding enabled providing greater operational flexibility (e.g., limits on inventory) without compromising safety. Their knowledge of operations also enables them to guide and work with safety analysts from subcontractor organizations, whose services are procured for developing major AB documents.

The subcontracts for procuring safety analysis assistance typically specify the expectations and standards to be utilized, such as for performing hazards assessment, criticality safety evaluation, and safety analyses, and requirements for computer code validation, as necessary and applicable. Subcontracts also provide qualification and experience requirements for safety analysts working on contracted tasks. Safety analyses prepared by subcontractors receive peer review within the contractor organization, as well as an independent review within the WMP by personnel from operations, engineering, nuclear safety, and various other professional disciplines. The centralization of safety support to facilities has resulted in more uniform and consistent safety analyses. The central group also develops a consolidated list of safety analysis needs for the WMP facilities, provides prioritization for the effort, and makes budget recommendations to WMP management.

The facility management and WMP Support Engineering staff clearly recognize the importance of obtaining assistance from safety analysts who are familiar with facility engineering and operations, because the quality and usefulness of their deliverables depends strongly on this familiarity. The safety analysts familiar with WMP facilities are dispersed among different external organizations. Support Engineering appears to experience significant delays and problems in placing subcontracts to procure the services of appropriate safety analysts. Procurement issues affecting the quality and timeliness of safety analysis assistance have the potential to adversely impact the safety of facilities. **(WMP HAZ.2-2)**

The content of AB documentation was examined with respect to certain aspects in selected cases and was found to be adequate. For example, a postulated bounding accident scenario evaluated in WRAP's FSAR involves fire and explosion in the Transuranic Process Enclosure. In the case of explosion, the estimated dose to a worker exceeds the risk evaluation guidelines specified in HNF-PRO-514, *Risk Guidelines*, for onsite consequences from an unlikely accident. The FSAR provides a technical basis for accepting this risk by considering defense-in-depth measures and defining the enclosure as safety-significant equipment that is capable of generally withstanding the explosion except for certain enclosure components, such as gloves, gaskets, and plastic glove port plugs. With these assumptions, the postulated accident is in the extremely unlikely category and within the risk evaluation guidelines. The analysis providing the technical basis for the assumption that the process enclosure is not breached is documented in WHC-SD-W026-TI-007, *Probability of an Explosion in WRAP-1 Gloveboxes*. This review inspected the master equipment list and the essential equipment list identifying the specific components of the process enclosure, which are and which are not safety-significant. Additionally, the FWS for

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maintenance, who was responsible for a glovebox modification work package, was interviewed, and a surveillance record for the equipment was checked and found satisfactory. Furthermore, a senior staff engineer responsible for the WRAP AB was also interviewed to examine the thoroughness in AB implementation and the rigor with which AB changes are controlled. WRAP utilizes a compliance matrix approach to manage AB implementation in a systematic and traceable manner. WRAP has also established a special Review Board to provide oversight of AB implementation and configuration control.

Once implemented, the nuclear facility AB is maintained through the use of WMP-200, *Waste Management Project Procedures*, Section 4.3, "Unreviewed Safety Questions (USQ)." (The AB of radiological facilities within LWPF is maintained through a unique USQ-like process contained in WMP-331, *200 liquid Waste Processing Facility Procedures*, Section 3.12, "Authorization Basis Review.") USQ screening, such as for facility design, engineering, and procedure changes, is typically performed by the facility's cognizant engineers. Each USQ screen must be reviewed and concurred upon by another engineer trained and qualified for performing USQ screening. Assistance for USQ evaluations, safety analyses for AB amendments, and annual AB updates is provided by the safety staff of Support Engineering. The Plant Review Committee of WMP, each of whose members are trained and qualified USQ reviewers, also reviews USQ evaluations. Several USQ screens were examined during this review, and it was verified that applicable procedures were correctly followed.

Controls and other requirements established in the AB documents define the bounding parameters for operations and activities. Examples are limits on fissile material content of drums, integrity of safety-significant process gloveboxes in WRAP, and ventilation requirements in various operational areas. As discussed under Criteria 2 and 3, this review found that such controls flowed down to the activity level, and that managers, FWSs, and operators were knowledgeable of such controls. In the case of LWPF, where the ABs for two radiological facilities consists of ASA, the hazards analyses performed as part of the ASAs are utilized in the AJHAs for various activities to identify and implement work controls (e.g., address chemical hazards).

Criterion 2: *Procedures and/or mechanisms that identify and implement appropriate controls for hazards mitigation within the facility or activity are developed and used by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.*

Several different work-planning meetings and actual field activities were observed to assess worker and management involvement in the development and implementation of hazard controls. In addition, numerous interviews with facility management and workers were conducted. These observations and activities demonstrated a high degree of understanding of the hazards and commitment to maintaining all operations and activities within the safety bounds established for the activities to be undertaken.

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At WMP's CWC and LLBG, the activities associated with relocating drums from Trench 29 to Building 2404-WC containing transuranic wastes were observed. The Plan of the Day meeting defined the relocation operations. The CWC and LLBG crews were clearly informed of those activities that affect or relate to the safety of other parallel activities. The subsequent separate planning meetings for CWC and LLBG operations personnel covered the drum relocation task in considerable additional detail. The meeting included required reading of specific procedures; detailed schedule and work assignments; criteria for proper verification of drums; review of relevant material from the Daily Operating Log; applicable information from the AJHA; deficiencies identified in previous work; and the importance of a relevant electrical inspection highlighted by recent work experience.

The transuranic drum relocation activities were conducted in accordance with procedure SW-100-129, *Management of Solid Waste*. The AJHA for the specific drum relocation activities had been completed on June 5, 2000. The precautions and controls exercised during the drum retrieval and transfer activities reflected the hazards that had been identified and addressed in the AJHA. Also the hazards associated with the work were previously assessed in a baseline hazards assessment document that serves as a comprehensive hazard information source for all SWSD personnel. Interviews with the FWS and Nuclear Chemical Operators showed they had an excellent understanding of the envelope of requirements and controls within which they had to perform the drum relocation activities. Further discussion on the implementation of hazard controls during these activities is presented under Criterion 3, and an issue related to identifying and controlling hazard due to high winds is discussed in HAZ.1.

Procedures governing SWSD operations are revised with input from operators and other personnel, and these procedures continue to be improved to facilitate operations. The Operations Disposal Manager routinely requests operators to validate draft revised procedures. The procedures, including measures to control hazards, are significantly benefited by participation of Occupational Safety and Health, Radiological Control, and other professionals in the quarterly self-inspections and periodic RCRA-based inspections.

At SWT, the evolution of work relating to repackaging for returning hazardous waste samples from three facilities (Building 324, Plutonium Finishing Plant, and Building 103) was observed. The AJHA for this work was well coordinated, with the participation of operators and other personnel representing appropriate functional disciplines, such as Industrial Hygiene, Radiological Engineering, and Quality Assurance. Personnel interviews indicated that they understood the focus of AJHA on identifying requirements and controls for a range of hazards, such as potentially pressurized container, release of gas or vapor, and slipping. During the AJHA, the operators identified hazards and also raised questions (e.g., relating to fissile material control and screening for environmental requirements) that were addressed by functional specialists. Controls identified during the exercise included respiratory protection with a proper cartridge specified by the industrial hygienist, ventilation control, exposure monitoring, area monitoring, drum-lid restraining device, maintaining the pertinent Material Safety Data Sheets at hand, and various other engineering and administrative controls.

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At WESF, a highly qualified safety engineer performs about 45 surveillances a year focusing on Occupational Safety and Health and Industrial Hygiene. The safety engineer was responsible for updating the facility's Baseline Hazard Assessment. The engineer is also routinely involved in AJHAs and walkdowns of new procedures for validation. The interview with the engineer provided evidence of his involvement in ensuring that administrative and other controls are implemented in the work place.

The deliberations and work of the Safety Councils throughout WMP facilities also provide an effective channel for identification and communication of proper hazard controls by the work force. For example, the Safety Council at LWPF meets every 2 weeks to discuss worker hazards and corrective measures to control hazards. The Council establishes priorities and recommends the top 10 issues for resolution or action to line management. Examples of Safety Council recommendations at LWPF include actions relating to replacement of vulnerable Chlorinated polyvinyl chloride piping carrying sulphuric acid; ladder modifications; and safety shower upgrades. Following an acid spill accident at ETF, which resulted in acid burns to a worker, the management and facility operators worked as a team to understand the accident causes, and to identify and implement numerous additional or improved hazard control measures, such as interlocks, improved egress, personnel protective equipment requirements, two-person rule, and revisions to procedures.

Criterion 3: *Standards and requirements are identified before work is performed and appropriately tailored to the hazards.*

The planning and preparation for moving drums containing transuranic wastes from a trench in LLBG to the CWC and for other drum movements demonstrated the measures taken to ensure that proper standards are identified and hazard controls implemented prior to commencement of work. For example, the work planning led by the FWS checks for any revisions to the applicable procedure. The planning discussion reinforced the controls derived from AB documents (e.g., limits on fissile material content of drums). The work planning review properly identified the need to segregate and hold work on one drum because the Threshold Exposure Limits for a chemical could not be established for the purpose of verifying whether facility acceptance criteria would be met. Prior to moving drums from the trench, drums and the surroundings were inspected with Radiological Control Technician support. Also, interviews with field personnel indicated that operators who may not have participated in similar activities or in the AJHA would be informed of the work hazards, and that all operators understood the hazardous conditions that could result in backing away from proceeding with the assigned work.

There is one notable exception to the above observations on drum relocation activities, which concerns the implementation controls for drum movements in the presence of strong winds. A requirement in the applicable procedure SW-100-129 is to obtain the approval of Radiological Controls and Operations when wind speed exceeds 10 miles per hour. The drums were moved in the presence of wind gusts exceeding this level without the required evaluation and approvals. Also, there was no evidence that the weather advisory was heeded to before conducting the field activities. Interview with the Operations Disposal Manager indicated that the wind speed

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requirement was interpreted differently and only used as a general guideline. Further discussion of this concern relating to the identification and response to the high-wind hazard is provided in **HAZ.1**.

At the SWT facilities, the pre-job briefing and subsequent evolution of the sample repackaging and return activities (following the AJHA for this task, which was discussed under Criterion 1) continued to demonstrate the working team's good understanding of the hazards and its efforts to ensure that proper controls were in place. The activities also displayed excellent working relationships between operators and safety professionals. **(WMP HAZ.2-1)** The task was governed by the procedure, DO-100-035, *Verify and Repackage Waste at Treatment Facility*. Examples of activities supporting these positive observations include the following:

- Use of a checklist derived from the AJHA, to ensure that hazards are controlled
- Discussion of other parallel activities affecting the task
- Identification of checks to be made during the work evolution by an Industrial Hygienist, based on operator comments and concerns (e.g., dust generation).

Furthermore, an inspection prior to the start of the activity identified that certain work relating to ventilation monitoring equipment had not been completed as expected, which led to postponing the planned activity until that work had been accomplished.

Periodic inspections of facility operational areas, such as by a safety representative, contribute to ensuring that hazard controls are in place. At LWPF, for example, the safety representative's monthly inspections use checklists to cover a broad range of industrial hazards, while separate monthly inspections focus on potential chemical and industrial hygiene concerns.

Presently, existing operational procedures at several facilities are being reviewed and upgraded using the AJHA to systematically identify hazards and implement appropriate controls. Interviews with supervisors and operators indicate that this AJHA application has generally helped identify and control new hazards or has improved hazard prevention and mitigation. Because of its team concept, the AJHAs performed in support of developing or revising procedures have also made those procedures much more workable. Examples of enhancing safety through procedure improvements include requiring the use of appropriate personal protective equipment and applying the two-person rule when conditions warrant. While each facility generally has prioritized the procedures needing AJHA reviews and has a schedule for completing those reviews, numerous procedures in use involving hazardous activities would not have the benefit of an AJHA review for a relatively long time. For example, the LWPF manager indicated that there were 30 to 40 procedures that still needed AJHA review. The management has a worthy approach to involve as many shift managers and other appropriate personnel as possible in AJHA reviews of procedures. However, this strategy also leads to a longer schedule for completing the reviews.

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Meanwhile, completed AJHA reviews of procedures have identified improvements that are waiting to be incorporated into other similar procedures at the facility. A substantive procedure improvement (e.g., the use of protective or monitoring equipment) could prevent injury or adverse health effects. However, there does not appear to be a process for systematic and timely application of any improved hazard controls identified from AJHA reviews of existing procedures to other operating procedures at the facility, which have not had the benefit of AJHA reviews. This concern applies especially to the period during which gradual transition is being made to a much wider use of the AJHA tool for procedure upgrades. Unfortunately however, the governing procedure, HNF-PRO-079, *Job Hazard Analysis*, does not provide guidance on this transition issue. **(WMP HAZ.2-3)**

Criterion 4: *Procedures and/or mechanisms are in place to develop, maintain, and utilize (and effectively and accurately implement) Authorization Agreements (AA).*

AAs have been successfully completed for all WMP Hazard Category 2 nuclear facilities, as required by the Project Hanford Management Contract and HNF-PRO-2701, *Authorization Envelope and Authorization Agreement*. For lower hazard facilities, WMP has developed the required AE. However, this review has identified several issues related to maintaining the AA and AE, for which a formal process is lacking.

The issues are clearly not unique to WMP, but may be generic to all FH projects. For example, the process steps needed to capture and ensure that an updated AA/AE reflects the pertinent changes to the nuclear facility's safety, requirements, and environmental bases, and to its terms and conditions in the AA, are not formalized. Responsibilities of key individuals, and requirements pertaining to self-assessments and configuration control of an AA/AE to ensure compliance, have also not been defined. It is not clear whether the central responsibility for maintaining an AA will reside at the facility, project, or at the institutional level. Also, the annual review and approval process, both within the contractor and RL organizations has not been established for an AA. Basically, most of the AAs at the Hanford Site have been established only recently, and there is little experience in maintaining an AA. Furthermore, the governing procedure, HNF-PRO-2701, specifies the requirement to update AAs and AEs without providing sufficient guidance to address the issues mentioned above. **(WMP HAZ.2-4)** The SWT Project Support Manager indicated that SWT is planning to develop a facility-specific administrative procedure to maintain its AE. It is also worth noting that the RCP has a lower-tier implementing procedure for establishing, maintaining, and managing the AAs and AEs for its facilities, as discussed in DOE/RL-2000-30, *Fluor Hanford Integrated Safety Management System Phase I Verification* (**HAZ.2** Assessment Form).

Since S/RIDs constitute the requirements basis portion of an AA, the status of S/RID and its implementation for WMP facilities was also reviewed. WMP has two separate S/RIDs at present: one for WESF, and the other for the rest of its facilities. The plan for WESF transition to WMP calls for consolidation of the two documents next year.

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The last annual update of the S/RID for WMP facilities (except WESF) was approved by RL on November 1, 1999. The implementation of an S/RID involves two phases. The Phase 1 (administrative compliance) was completed on January 1, 2000. The Phase 2 (adherence compliance) is in the middle of its 3-year cycle, with assessments for about 50% of the functional requirements areas completed. In the case of WESF, the last annual update of the S/RID was approved by RL on January 27, 2000. Phase 1 implementation assessment was completed on April 17, 2000, and the Phase 2 assessment recently commenced.

The ongoing S/RID Phase 2 summary assessments were reviewed for selected areas and found to be adequate.

The ISMS Phase I Verification (DOE/RL-2000-30) found inconsistent application of the recommendation in the governing procedure (HNF-PRO-265) that facilities develop a facility-specific procedure for administering the S/RID. Two projects (Spent Nuclear Fuel and NMS) have a facility-specific S/RID configuration control procedure while WMP does not. Based on this, a concern was expressed (see **HAZ.2-3**, DOE/RL-2000-30) that "criteria and guidance for determining the need for a facility-specific S/RID configuration control procedure is lacking."

Conclusion

Observations of field activities, personnel interviews, and reviews of selected lowest-tier implementing mechanisms and procedures indicate that WMP has established and implemented a sound process to implement hazard controls to protect the public, worker, and the environment. Specifically, the AB of WMP facilities is well implemented; the controls for hazards in the work place are developed and used by workers; and there are adequate mechanisms to ensure that requirements and controls are in place before commencement of work. AAs for WMP Hazard Category 2 nuclear facilities are in place, although there is a concern that a formal process at the institutional level for maintaining AAs is lacking.

This objective has been met.

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Strengths:

- Work activities at SWT demonstrate strong emphasis on control of hazards, and display excellent working relationships between operators and safety professionals. (WMP HAZ.2-1)

Concerns:

- The Interim Safety Basis does not reflect an integrated consideration and bounding of all hazards present in hot cell operations. (ASP HAZ.2-1)
- A transition process for systematic and timely application of improved hazard controls identified from the Automated Job Hazard Analysis reviews of existing procedures to other operating procedures, which are awaiting such reviews, is lacking. (ASP HAZ.2-2)
- A formal process for maintaining the 222-S Laboratory and WSCF Authorization Envelopes is lacking. (ASP HAZ.2-3)
- Roles and responsibilities in the FFTF Plant Policy Manual do not adequately reflect ownership and management of the plant's Authorization Basis. (FFTF HAZ.2-1)
- There is a need to emphasize awareness of industrial hazards, such as fall protection and heat stress. (FFTF HAZ.2-2)
- Interviews with participants and observations of the Automated Job Hazard Analysis process seemed to indicate that the AJHA tool was sometimes used piecemeal instead of using an integrated team concept as it was designed to do. (NMS HAZ.2-1)
- Pre-planning work conducted by the Person-in-Charge, related to the Automated Job Hazard Analysis process, on various jobs appears not to be communicated to the work team. (NMS HAZ.2-2)
- An apparent lack of resources has impaired work planning, especially in the area of Radiological Control. (NMS HAZ.2-3)
- WMP Support Engineering appears to experience significant delays and problems in placing single-source subcontracts to procure the services of appropriate safety analysts. (WMP HAZ.2-2)

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- A transition process for systematic and timely application of improved hazard controls identified from the Automated Job Hazard Analysis reviews of existing procedures to other operating procedures, which are awaiting such reviews, is lacking. **(WMP HAZ.2-3)**
- A formal process for maintaining Authorization Agreements and Authorization Envelopes is lacking. **(WMP HAZ.2-4)**

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Submitted: Steve Bertness, Team A <i>Team Member</i> Shivaji Seth, Team B <i>Team Member</i>	Approved: Joe (Ed) Parsons <i>Team Leader</i>
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FUNCTIONAL AREA: Management Oversight	OBJECTIVE: MGO.1 DATE: July 10, 2000
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OBJECTIVE

MGO.1- An integrated process has been established and is used to identify and prioritize specific mission-discrete tasks, mission-process operations, modifications, and work items.

Criteria

1. Line management identifies and prioritizes mission-related tasks and processes, modifications, and work items are in place and used by personnel.
2. Personnel define the roles and responsibilities for the identification and prioritization of mission-related tasks and processes, facility or process modification, and other related work items.
3. Personnel ensure identified work (i.e., mission-related tasks and process, processes or facility modification, maintenance work, etc.) can be accomplished within the standards and requirements identified for the facility.

Approach

Record Review

- Review the facility or activity long-range planning documentation. This should include such items as the following: summary schedules, plans of the week, long-range maintenance schedules, modification schedule, etc.
- Review the procedures and mechanisms that line managers utilize to identify and prioritize mission-related tasks and processes, modifications, and work items.
- Review the procedures and/or mechanisms that are used by the facility or activity to ensure that identified work can be accomplished in accordance with established standards and requirements.

Interviews

Interview management personnel responsible for the identification and prioritization of work. This should include personnel responsible for long-range planning documentation, schedule preparation, etc.

Observations

Observe work definition and planning activities such as plan of the week meetings, long-range scheduling meetings, etc.

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Record Review

- 300 Area Liquid Effluent Facilities Plan of the Week Schedule, June 21, 2000
- 300 Area Liquid Effluent Facilities Work Control User's Guide, Rev. 1, April 30, 1998
- ASP-100, *Analytical Services Policies*, Section 4.6, "ASP Integrated Safety Management Roles, Responsibilities, and Functions," Rev. 0, May 23, 2000
- ASP-200, *Analytical Services Procedures*, Section 3.1, "Work Management," Rev. 5, June 7, 2000
- Analytical Production Schedules
 - Grab Samples SY102
 - Projects AY-102 and SY103, June 11, 2000
- Automated Job Hazard Analysis (AJHA)
 - 3I-129, *Repair Preheat Coil Leaks by Soldering or by Plugging*, February 10, 2000
 - 3I-261, *Zone I and II HEPA Filter Inspection*, April 27, 2000
 - 3I-277, *Replace Spring Valves with Ball Valves*, May 9, 2000
 - 3I-288, *Replace Relays for AHU-1 Roof Top AC Unit*, May 19, 2000
 - 3M-133, *Replace Lead Screw on A-Cell Loadout*, March 24, 2000
 - 3M-131, *Replace Micropump on Serf Cell*, March 15, 2000
- Building 324 Plan of the Week Schedule, June 22, 2000
- Chain of Custody Record Characterization Project Operation, AZ-101, April 13, 2000
- DOE/RL-2000-28, *Richland Operations Environmental, Safety and Health Fiscal Year 2002 Budget & Risk Management Summary*, May 2000
- DOE/RL-99-28, *Hanford Site Environment, Safety and Health Fiscal Year 2001 Budget – Risk Management Summary*, Rev. 0, May 1999
- *Hanford Site Fiscal Year (FY) 1999 Environmental, Safety, and Health, (ES&H) Commitment Affirmation*, Memorandum K. A. Klein, RL and R. T. French, ORP, to J. M. Owendorff, Assistant Secretary, Office of Environmental Management, EM-1, U.S. Department of Energy (DOE)-Headquarters, January 31, 2000
- Engineering Change Notices
 - 656249L, *Temporary Need to Install a Different Fan*, December 20, 1999
 - 643470, *Remove Pulsation Dampeners*, October 19, 1999
- Exempt Job Description
 - Deputy Director, Nuclear Material Stabilization (NMS) Project, March 24, 2000
 - Director, 324 Building Deactivation Project, May 15, 2000
 - Director, 327 Building Deactivation Project, May 15, 2000
 - Director, River Corridor Project (RCP) Business Management and Integration, May 15, 2000
 - Manager, NMS Business Manager, April 5, 2000
 - Manager, NMS Near-Term Planning, May 29, 1997
 - Manager, Plutonium Finishing Plant (PFP) Infrastructure Services, May 10, 1999
 - Manager, Project Control and Business Support, May 15, 2000

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- FDH-9955657A R1, *Contract No. DE-AC06-96RL13200 - Issuance of the Plutonium Finishing Plant (PFP) Authorization Agreement (AA)*, Letter from L. Olguin, Fluor Hanford (FH), to A. Clark, B&W Hanford Company, August 12, 1999
- Fast Flux Test Facility (FFTF) 00-3 Work Phase Schedule
- FFTF Operations Administrative Procedure
 - A-28, *FFTF Work Management Process*, Rev. 14, December 31, 1997
 - A-33, *FFTF Work Prioritization and Scheduling*, Rev. 4, March 24, 1998
- FH Memorandum, *Plutonium Finishing Plant Staffing Plan*, Rev. 3, May 18, 2000
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Section 13.4, "Work Management Process Description and Job Control System Process," January 5, 2000
- FSP-WESF-001, *WESF Project Administration*
 - Section MS-11, "Requirements Management," Rev. 1, April 12, 2000
 - Section MS-13, "Work Prioritization and Scheduling," Rev. 1, April 12, 2000
- HNF-3617, *Integrated Project Management Plan for the PFP Stabilization and Deactivation Project*, Rev. 0, April 28, 1999
- HNF-IP-1289, *324/327 Buildings Stabilization/Deactivation Project – Project Management Plan*, Rev. 3, January 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, "Waste Management Project ISMS Description"
 - Appendix E, "Nuclear Material Stabilization Project ISMS Description"
 - Appendix F, "River Corridor ISMS Description"
 - Appendix G, "Fast Flux Test Facility ISMS Description"
 - Appendix H, "Analytical Services ISMS Description"
- HNF-PRO-200, *Technical Procedure Process*, Rev. 2, June 30, 2000
- HNF-PRO-229, *Technical Procedure Standard*, Rev. 4, January 14, 2000
- HNF-PRO-265, *Standards/Requirements Identification Document Process*, Rev. 5, April 25, 2000
- HNF-PRO-2701, *Authorization Envelope and Authorization Agreement*, Rev. 0, July 29, 1999
- HNF-PRO-522, *Multi-Year Work Planning*, Rev. 0, September 1, 1999
- HNF-PRO-585, *Cost Estimating*, Rev. 0, March 26, 1999
- HNF-PRO-2701, *Authorization Envelope and Authorization Agreement*, Rev. 0, July 29, 1999
- HNF-SD-MP-SRID-003, *PFP Standards/Requirements Identification Document*, Rev. 1, July 20, 1999
 - Configuration Management
 - Packaging and Transportation
 - Safeguards and Security
- HNF-SD-MP-SRID-008, *324/327 Buildings Standards/Requirements Identification Document*, Rev. 1, January 5, 2000
- IPL-115, *Integrated Priority List – FY 2002 Planning*, June 7, 2000

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- IPL-235, *Project Priority*, May 24, 2000
- JCS-110, *NMS Plan of the Week Report*, June 20, 2000
- JCS-110, *RCP Plan of the Week Report*, June 20, 2000
- Job Description, Team Leader, NMS Solution Handling, June 22, 1999
- Material Safety Data Sheet 12678, *DAP Inc., Weldwood Contact Cement*, March 24, 1992
- NMS-1951, *Spent Nuclear Fuel (NMS) Baseline Change Control*, December 18, 1997
- NMS Project Baseline Summary Notebook – FY 2000
- NMS Project Level III Current Schedule, October 21, 1999
- PFP Director Priorities Meeting Minutes
 - June 12, 2000
 - June 19, 2000
- PFP Planning and Progress Schedule, June 14, 2000
- PFP – Thermal Stabilization Level III Schedule, June 15, 2000
- Performance Assessment and Development Description
 - *Planner-Building 327*, February 14, 2000
 - *Planner/Scheduler-Building 327*, February 22, 2000
 - *Planner/Scheduler-Building 310/TEDF*, March 2, 2000
- Preliminary Hazard Analysis (Draft) for Shipping Port Fuel Movement, not dated
- Primavera Project Planner (P3) Level 7 Summary Schedule, January 12, 2000
- P3 Scheduling Database, November 1998
- RCP-MD-001, *RCP Roles, Responsibilities and Functions*, Rev. 1, May 19, 2000
- Radiological Work Permit Z-538, *Opening DOS Ports and Annual Aerosol Testing of E-4 Filter Systems*, Rev. 020, April 26, 2000
- RCP Level III Current Schedule, January 2000
- Path Forward Activities Status
 - 327 Building Deactivation Project, June 26, 2000
 - 324 Building Deactivation Project, June 26, 2000
 - 324/327 Buildings Environmental Activities Status, June 26, 2000
- SI-324 Bldg-015, *Prioritization and Scheduling of Operations/Maintenance Work at the 324 Building*, Rev. 0, June 14, 2000
- Standards/Requirements Identification Document (S/RID) Phase I Assessment Checklist (Configuration Management), September 14, 1999
- Unreviewed Safety Question Evaluation, 324-FH-00-102, *Inspection of Zone I and II HEPA Filters*, April 27, 2000
- Unreviewed Safety Question Screen, USQ-K-99-1262, *Remove Equipment away from the Isolation Door Support Brackets in 105KE Discharge Chute*, October 23, 1999
- WMP-100, *Waste Management Project Policies*, Section 4.6, “WMP Integrated Safety Management Roles Responsibilities, and Functions,” Rev. 0, May 23, 2000
- WMP-200, *Waste Management Project Procedures*, Section 3.1, “Work Management,” Rev. 5, June 7, 2000

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- Waste Encapsulation and Storage Facility (WESF) Transition to Waste Management Project (WMP) June 14, 2000
- Work Packages:
 - 2Z-99-01022, *Decon HC-1 West End Conveyor*, June 16, 1999
 - 2Z-00-00143/M, *Replace SF-1 and SF-2 in 2736-ZB Room 602*, December 20, 1999
 - 2Z-00-00167/P, *SEC Maintenance PM CAMI-PFP.01E*, January 24, 2000
 - 2Z-00-00296/P, *Quarterly PM ZSR-12N-002 for Emergency Lights*, February 22, 2000
 - 2Z-00-00433/S, *Perform Annual Aerosol Test for Filter Box FB-22*, March 15, 2000
 - 3I-00-00075/W, *Resolder Tube on EPN-901 Preheat Coil*, February 8, 2000
 - 3I-00-00197/W, *Zone I and II HEPA Filter Inspection Room 6, 7, 9, and 10*, April 21, 2000
 - 3I-00-00134/W, *Replace Spring Valves with Ball Valves*, March 20, 2000
 - 3I-00-00210/W, *Replace Relays for AHU-1 Roof Top AC Unit*, May 17, 2000
 - 3M-00-00059/W, *Replace Lead Screw on A-Cell Loadout*, March 23, 2000
 - 3M-00-00054/W, *Replace Micropump on Serf Cell (Oxygen Sample)*, March 8, 2000.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Manager, 222-S Laboratory Operations
- Manager, 222-S Laboratory Project
- Manager, Hanford Analytical Services Program
- Manager, Project Support
- Scheduler, 222-S Laboratory
- Vice President, Analytical Services.

Observations

- DOE/ASP Interface meeting, June 22, 2000
- 222-S Laboratory hot cell walkdown, June 22, 2000.

Discussion of Results

Criterion 1: *Line management identifies and prioritizes mission-related tasks and processes, modifications, and work items are in place and used by personnel.*

ASP identifies and prioritizes mission-related tasks and processes, modifications, and work items. Observations and interviews indicated evidence that the five Core Functions of ISMS are integrated into the project planning, prioritization, and execution of work at all levels within each facility.

The planning prioritization of work at ASP is a two-part challenge. The two parts were explained as production work and infrastructure during the interview process. The production work planning and prioritization is dependent upon customers that use the 222-S Laboratory service for sample counting and analysis. Major customers include the River Protection Project, NMS Project, and Spent Nuclear Fuel Project. The customer identifies the sample need, develops a sample plan (Tank Sampling Analysis Plan), and works with the 222-S Laboratory to establish turnaround times and priorities. The Tank Sampling Analysis Plan is screened and hazards identified based upon historical data and requested sample analysis. Additional hazards are also identified with the sample on chain-of-custody records. Unknown hazards of a sample must be anticipated.

The analysis requirements, identified by the customer and implemented by the 222-S Laboratory, are tracked in a software database (LABCORE). Sample analysis priorities frequently change due to changing customer priorities. Interviews showed that this process is well understood by the 222-S Laboratory management and staff. The processes in place for planning and prioritization of project work performed are not supported by documentation that provide details

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or requirements to ensure current practices are consistently applied and will continue.
(ASP MGO.1-1)

ASP uses an integrated planning process to develop and maintain their Multi-Year Work Plan (MYWP) for the infrastructure-related work. Identification of mission-related tasks is performed at the project-level by effectively integrating each of the project functional areas. The formulation of the MYWP begins with requirements directed by RL. Interviews with the FH Long-Range Planning management showed that FH "flows" the requirements, with guidance, based upon the DOE Budget Updating Guidance, to the project level. ASP develops baseline elements within the given guidance including ES&H risk summaries. The project information then rolls back up to FH. FH factors work variables including the ES&H risk, into work prioritization to establish the Integrated Priority List (IPL).

The capital equipment budget for ASP has been declining over the last several years and equipment replacement has been postponed. ASP management, in interviews, displayed charts, graphs, and calculations that showed important instrumentation was reaching the end of useful life. The downtime of some instrumentation has reached 80% in some cases. The impact associated with this issue is that the 222-S Laboratory may not be able to support Hanford Site emergencies or meet sample turnaround times. ASP management also displayed a capital plan to replace instrumentation with requested budget increases from \$280,000 in FY 2000 to \$1,269,000 in FY 2002. However, FH and DOE must support these projected expenditures.

Observations and interviews conducted at the 222-S Laboratory hot cell complex included discussion on the build-up of archived samples within the hot cell operating spaces. The samples are generally contained in glass jars with plastic lids and stored in small metal racks or trays. The trays and individual containers are found stacked along walls of some hot cells and one cell is now dedicated to storage (although it was not designed for this purpose). The archived samples do not present an immediate hazard since they are stored in the hot cell, but represent an increasing and future liability. Additionally, aging of the plastic lids has led to quality control issues due to shattered, unclean plastic contaminating the samples. Although not an immediate hazard, the accumulation of samples does require additional hazards analysis and control to account for various issues including increase radiological loading on the cells, spillage, and operational hazards. The interviews indicated that efforts have been made in the past to address this issue. However, due to many factors including budgetary priorities, final decisions have been postponed. No clear path forward has been established for addressing the accumulation of samples in the 222-S hot cells. **(ASP MGO.1-3)**

Members of the ISMS Verification Team observed Plan of the Day and Plan of the Week sessions and reported that the conduct of this level of work planning was informal, unstructured, and lacked clear work prioritization and an adequate feedback component. **(ASP MGO.1-2)**

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Criterion 2: *Personnel define the roles and responsibilities for the identification and prioritization of mission-related tasks and processes, facility or process modification, and other related work items.*

Interviews with ASP and FH management showed a good understanding of ISMS principles and how those principles are incorporated into the overall work planning and prioritization processes. Roles and responsibilities for the multiple levels of planning are defined in existing process procedures. Facility managers interviewed displayed knowledge and understanding of their respective roles and responsibilities associated with the identification and prioritization of mission-related tasks and processes and facility/process modifications.

Criterion 3: *Personnel ensure identified work (i.e., mission-related tasks and process, processes or facility modification, maintenance work, etc.) can be accomplished within the standards and requirements identified for the facility.*

The configuration control of requirements at FH and ASP is controlled by various procedures. Interviews indicated that the project baseline change process includes required reviews by affected functional areas to ensure configuration of requirements.

Conclusion

The processes and mechanisms for work planning/prioritization at the MYWP-level and for production work control are used by ASP personnel. The processes and mechanisms described during interviews and observations indicate that planning and prioritization of work include required elements and are well executed by management. However, the processes in place for planning and prioritization of project work performed are not supported by documentation that provide detail or requirements to ensure current practices are consistently applied and will continue.

Work planning and prioritization at the task-level is supported by ASP-200, Section 3.1. However, the Plan of the Week and Plan of the Day meetings were informal, unstructured, and lacked clear prioritization and an adequate feedback component.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Manager, Scheduling
- Manager, Transition Office
- Manager, Operations
- Plant Manager.

Observations

- Plan of the Day meeting, June 26, 2000
- Weekly Work Planning meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Line management identifies and prioritizes mission-related tasks and processes, modifications, and work items are in place and used by personnel.*

FFTF identifies and prioritizes mission-related tasks and processes, modifications, and work items. Observations and interviews indicated evidence that the five Core Functions of ISMS are integrated into the project planning, prioritization, and execution of work at all levels within FFTF.

FFTF uses an integrated planning process to develop and maintain their MYWP. Identification of mission-related tasks is performed at the project-level by effectively integrating each of the project functional areas. The formulation of the MYWP begins with requirements directed by RL. Interviews with FH Long-Range Planning management indicated that FH “flows” the requirements, with guidance, based upon the DOE Budget Updating Guidance, to the project level. FFTF develops baseline elements within the given guidance including ES&H risk summaries. The project information then rolls back up to FH. FH factors work variables, including the ES&H risk, into work prioritization to establish the IPL. Interviews indicated that work planning in support of the MYWP is executed on continual bases.

The current mission of FFTF is maintenance of plant resources in anticipation of a start-up or shutdown directive. The process for work prioritization is detailed in facility administration procedures and was described during interviews with FFTF management. Work is prioritized, performed, or delayed based upon the facility mission. FFTF manages work, as identified in the MYWP, in a phased process. The process, as described during interviews, divides the FY work into three, 4-month, increments. Each increment is statused weekly. Emergent work, including work identified by the FFTF safety council, is documented, reviewed, and prioritized. Prioritization of work requires an initial screening by the operations organization and a “first cut” priority is established by the Shift Operations Manager. Work associated with safety of the

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personnel, environment, and plant is designated priority one. Lower priority work enters into a work planning and scheduling process that includes a Management Review Board. The Management Review Board makes the decision on the final disposition of the identified work. The Shift Operations Manager qualification, based upon operating engineer requirements and the facility prerequisite qualifications for key positions, supports this process.

A weekly work planning meeting was observed. The Plant Manager, Operations Manager, Planning and Scheduling Manager, Maintenance Manager, and Safety Lead attended this meeting. Subjects covered included the following:

- Plant Actions
- Current Work Phase Issues
- Corrective Action
- Management Assessment, S/RIDs, Price Anderson Amendments Act
- Training
- ISMS
- Recent events/lessons learned (although not on the agenda) were also discussed.

An interview with the Facility Transition Office manager indicated that actions identified in the weekly planning meeting are used to revise the work phase schedule.

The attributes associated with the high-level of qualifications, prerequisite qualification, and procedures combine into an effective process for work planning and prioritization.

Criterion 2: *Personnel define the roles and responsibilities for the identification and prioritization of mission-related tasks and processes, facility or process modification, and other related work items.*

Interviews with FFTF and FH management indicated a good understanding of ISMS principles and how those principles are incorporated into the overall work planning and prioritization processes. Roles and responsibilities for the multiple levels of planning are defined in process procedures. FFTF managers interviewed displayed knowledge and understanding of their respective roles and responsibilities associated with the identification and prioritization of mission-related tasks and processes and facility/process modifications.

Criterion 3: *Personnel ensure identified work (i.e., mission-related tasks and process, processes or facility modification, maintenance work, etc.) can be accomplished within the standards and requirements identified for the facility.*

The configuration control of requirements at FH and FFTF is controlled by various procedures. Management interviewed described a process that includes work scope review by appropriate organizations to ensure requirements are integrated into the work and changes in requirements are processed. This process is used for both FY baseline development and for change control.

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Conclusion

FFTF work planning process is an effective combination of a high-level of facility-specific qualification, prerequisite qualification requirements for key positions, and administrative procedures that is well implemented.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Acting Lead, Safety and Health Team
- Acting Manager, Environmental, Safety, Health, and Quality
- Acting Manager, Near-Term Planning Team
- Deputy Manager
- Director, PFP
- Electrician
- Environmental Engineer, Environmental Team
- Instrumentation Technician
- Insulator
- Lead, Financial Integration and Administration
- Lead, Project Scheduling Team
- Manager (Acting), Integrated Scheduling
- Manager, Infrastructure Services
- Manager, Operations
- Manager, Performance Improvement and Regulatory Services
- Manager, Solutions/Residues Stabilization Project
- Nuclear/Chemical Operator
- Pipefitter
- Radiological Control Technician
- Radiological Engineer
- Scheduler, Near-Term Planning
- Senior Scientist
- Technical Writer, AB Team
- Technical Writer, Technical Services Team
- Vice President, NMS Project
- Work Coordinator.

Observations

- Director's Brief meeting, June 14, 2000
- AJHA, ZZ-1423 meeting, June 14, 2000
- NMS Planning and Progress meeting, June 14, 2000
- Integrated Project Management Plan (IPMP) meeting, June 15, 2000
- Plutonium Metal Brushing meeting/video, June 15, 2000
- Plan of the Week meeting, June 19, 2000.

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Discussion of Results

Criterion 1: Line management identifies and prioritizes mission-related tasks and processes, modifications, and work items are in place and used by personnel.

The top five priorities at the NMS Project as described by the NMS Deputy Director are as follows:

- Solutions Construction and Startup
- Furnace Operations
- Residues
- Bagless Transfer in 234-5Z
- Solutions cost issues.

These five priorities were also discussed during the PFP Plan of the Week meeting with all NMS Project Managers.

The NMS Project uses an integrated planning process to identify and prioritize mission-related tasks. This planning process supports development of the MYWP. Details of this process are described in HNF-3617, *Integrated Project Management Plan for the PFP Stabilization and Deactivation Project*. All work for the NMS Project is planned and managed by Project Managers. The NMS Project work breakdown structure (WBS) divides the NMS Project scope into discrete manageable work packages. The WBS has a coding structure that permits tracking of progress, costs, work hours, and schedule.

The NMS Project program cost, scope, and schedule baseline is contained in the MYWP. In developing the integrated higher-level program and project schedules displayed in the MYWP, lower-level program and project schedules are used. A review of the NMS Project Level III Current Schedule revealed that subproject activities are scheduled down to level 4. For example, WBS number 1.04.05.01.13.01.03.02 is used for subprojects associated with the Transfer and Processing of Plutonium Oxides. Each WBS number and associated work scope item could be traced back to the originating ISB/IPL.

From the MYWP, the NMS Project completes a priority listing of work based on mission, compliance, cost, and risk-containment objectives. At NMS Project working levels, a risk-based prioritization process is used to establish a technically defensible logic for work planning and execution. This process is intended to balance priorities by using risk-based planning and resource allocation to meet regulatory requirements and control safety and environmental hazards during the execution of work. The risk-based prioritization of work ensures that the most significant hazards are identified and mitigated in the most cost-effective manner.

To validate the above description of the NMS Project process for identifying and prioritizing tasks, interviews were conducted with several NMS Project personnel and multiple work

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packages were reviewed. This bottom-up review was discussed with several NMS Project management and Near Term Planning Project personnel. These activities were easily mapped to the NMS Project P3 Scheduling Database.

The NMS Project was formally rebaselined in April 1999 with the approval of HNF-3671, *Integrated Project Management Plan for the PFP Stabilization and Deactivation Project* (IPMP). This IPMP was formally approved by FH, RL, and DOE-Headquarters. To support the IPMP, a 58 volume Basis of Estimate was also developed and formally approved by RL and FH. Both the IPMP and the formal Basis of Estimate were supported by a detailed, life-cycle, resource-loaded schedule. This P3 schedule, and the corresponding Basis of Estimate forms the basis for the NMS Project cost, scope, and schedule baseline, from which the current FY 2000 MYWP was created. Per the HNF-PROs, this baseline is formally maintained using the baseline change control process. All baseline change requests issued during the execution year are incorporated directly into the P3 schedule, maintaining the schedule and corresponding resource data and milestones current to all changes as approved by the change control process.

In order to make the P3 schedule, and all its associated data, assessable to more NMS Project staff, and to take full advantage of existing computer capabilities, the full resource-loading and code fields from the P3 schedule are imported into Dbase, manipulated as needed to create a database file, and then exported into Microsoft (MS) Excel as a database. Additional columns can be added to the MS Excel database using MS Excel formula features, such as V-lookup, providing additional narrative data. Once established as a database in MS Excel, a MS Excel feature called "Pivot Table" can be used to display the data in the desired format. Pivot Tables are extremely useful for summarizing data and automatically building a display chart. Using the Pivot Table capability, the entire life-cycle resource library, along with all scheduled activities over the life-cycle of the NMS Project, can be "tabulated" for review, analysis, and sorting as needed. For the NMS Project, a single MS Excel database, which represents the current life-cycle schedule for the NMS Project, is a 30 megabyte file, contains 63,933 resources and 7,759 unique tasks with resources. Since the P3 schedule contains the performing organization, the responsible organization, the cost account charge number, the Common Occupational Classification System resource code (labor, materials, contracts, etc.), for each resource entry, so does the MS Excel database. The following examples of data tables were described by the NMS Project Scheduling Team Lead and can be generated from the most current P3 schedule at any time:

- Staffing profiles by Unit of Analysis by year over project life-cycle
- Staffing profiles at any WBS level by year over project life-cycle
- Staffing profiles by year by performing or responsible organization
- IPL cost spreadsheets by year over project life-cycle
- IPL staffing spreadsheets by year over project life-cycle
- Contracts by Unit of Analysis by year over project life-cycle
- Contracts by performing/responsible organization by year over project life-cycle
- All tasks, by year, over the project life-cycle

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- All task costs, by year, over the project life-cycle
- All task labor and resource categories, by year, over the project life-cycle
- Task durations, start and stop dates, over life-cycle
- Number of active cost account charge numbers, by year, over life-cycle
- Number and total cost of materials, by year, over life-cycle
- Number and total cost of contracts, by year, over life-cycle
- Line Item tasks and costs
- Unit of Analysis outlay, as needed or requested by management
- All of the above by Unit of Analysis
- All of the above by any defined Building Block detail, by year, over life-cycle.

Information is provided to NMS Project senior management and project managers that enables a one-for-one alignment between the baseline work scope and the work performed at PFP. As was demonstrated during the interview, the WBS number for any maintenance work package could be traced directly to the task activity in the MS Excel database used, which is a one-for-one match with the baseline schedule (same data). In essence, information needed that resides in the P3 baseline schedule can be obtained from the MS Excel database using the sorting, graphic/charting, and/or Pivot Table capabilities and then provided to NMS Project management and staff as appropriate. This information can also be coupled with Hanford Data Integrator actual data to generate cost accrual data that is aligned with real-time budget data. The MYWP database used for the NMS Project can be modified and exported into their scheduling software P3 eliminating the need to change several thousand resources manually, saving time and resources. **(NMS MGO.1-1)**

Similarly, scheduling controls, such as daily backup of files and password protection, protect the P3 schedule from unauthorized use and enable restoration of original data in the event of a computer virus or other computing anomaly. Of course, all of the capabilities of the P3 software are also used to provide a quality and accurate schedule for the PFP staff as needed.

To support the higher-tier schedules, the NMS Project has several working group level work control procedures that control day-to-day scheduling, prioritization, and work performance. These working level procedures define the roles and responsibilities within each group for work planning and performance.

The processes and mechanisms for work at the MYWP level and the task execution levels are in place, understood, and used by personnel. The processes and mechanisms described during interviews and observations demonstrate that planning and prioritization of work include required elements and are being executed by PFP management.

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Criterion 2: *Personnel define the roles and responsibilities for the identification and prioritization of mission-related tasks and processes, facility or process modification, and other related work items.*

HNF-3671 establishes the execution philosophy and delineates the roles and responsibilities for management of the NMS Project, including the identification and prioritization of mission-related tasks. This is primarily accomplished within the Project Controls organization, which includes the definition of work priorities and funding requirements. In addition, the NMS Project Scheduling Practices Notebook delineates prioritization through the development of the Level 3 schedule logic as well as performance reporting. NMS Project personnel have position descriptions that describe their responsibilities and required qualifications. Job descriptions include a description of essential duties and responsibilities, qualifications, education and experience, language skills, reasoning ability, certificates, licenses and registrations, physical demands, and a description of the work environment. Job descriptions for personnel with strategic planning and work package planning responsibilities were reviewed and found to contain adequate descriptions of responsibilities. Personnel performing these duties were aware of their position description requirements and met the listed qualification requirements.

Criterion 3: *Personnel ensure identified work (i.e., mission-related tasks and process, processes or facility modification, maintenance work, etc.) can be accomplished within the standards and requirements identified for the facility.*

A review of several AJHAs and work packages revealed that standards and requirements are included as an integral part of the planning process. For example, an AJHA for electrical work associated with the quarterly preventive maintenance for emergency lights defined requirements contained in HNF-PRO-088, *Electrical Work Safety*, and 29 CFR 1910.333, Subpart S, "Electrical – Safety-Related Work Practices." As discussed with the NMS Project Technical Writer (S/RIDs Coordinator), the NMS Project has developed and is maintaining the S/RID that contains the DOE-approved subset of ES&H requirements selected from DOE Orders, state and federal laws, and other sources. However, HNF-SD-MP-SRID-003, *PFP Standards Requirements Identification Document*, has not been updated annually as required by HNF-PRO-265, Section 2.1.5, and as described in HNF-MP-003, Appendix E, Section 3.3. (NMS MGO.1-2)

FDH-9955657A, Contract No. DE-AC06-96RL13200 - *Issuance of the Plutonium Finishing Plant (PFP) Authorization Agreement (AA)*, August 12, 1999, Rev. 1, contains several terms and conditions that must be satisfied by the plant. Terms and Conditions 4.2 states in part: "Specifically, the S/RIDs shall be revised in a timely manner to reflect changes to applicable Federal, state, and local laws, regulations, and permit conditions. Such changes do not require RL approval prior to implementation. Any other changes to the S/RIDs must be resubmitted to RL for approval prior to implementation. The S/RIDs shall be resubmitted for RL review and approval at least annually. This submittal shall include a listing of changes made to or proposed for the S/RIDs and the supporting rationale. The annual submittal shall also include certification that the S/RIDs are current and appropriate for continued use." Therefore, Terms and Conditions

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4.2 of the PFP AA have not been met because the specific certification regarding S/RIDs was not done. Plant personnel were unaware of this specific term and condition. (NMS MGO.1-3)

Working level procedures control maintenance activities. These procedures implement standards and requirements in work instructions based upon an analysis of the risk and hazards associated with the planned work.

A NMS Project Plan of the Week meeting and a Progress Planning meeting was observed. These meetings set priorities and assign resources for the following week and several weeks, respectively. Personnel at these meetings understood their roles and responsibilities as defined in their position descriptions. They said that the AJHA process was used during the work planning process to ensure safety requirements were met. In general, through personnel interviews and observations of the AJHA and work activities, work activities were found to be accomplished within the standards and requirements identified for the facility.

Conclusion

All senior managers that were interviewed demonstrated an awareness and dedication to ISM. All understood that line management has responsibility for safety and that first line supervision and worker involvement supported the identification and development of safety controls. The processes and mechanisms for work at the MYWP-level and the task execution levels are in place, understood, and used by personnel. The processes and mechanisms described during interviews and observations demonstrate that planning and prioritization of work include required elements and are being executed by PFP management. However, the S/RIDs in use at PFP have not been updated annually as required and thus have led to one of the conditions within the PFP AA not being met.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Director, 324 Building Deactivation Project
- Director, 327 Building Deactivation Project
- Director, Business Management and Integration
- Director, Technical Support
- Environmental Compliance Officer, 310 Facility
- Field Work Supervisor, 310 Facility
- Human Resources Representative
- Industrial Safety/Industrial Hygiene, 310 Facility
- ISMS Coordinator
- Job Control Administrator
- Manager, Engineering Work Control and Procedures
- Manager, Project Control and Business Support
- Operation Manager, 310 Facility
- Pipefitter
- Planner/Scheduler
- Process Engineer, 310 Facility
- Process Operator, 310 Facility
- Quality Assurance Engineer
- Vice President
- Work Control Administrator
- Work Control Coordinator.

Observations

- 324 Building Requirements Based Surveillance and Maintenance meeting, June 14, 2000
- 310 Plan of the Week meeting, June 21, 2000
- Building 324 Plan of the Week meeting, June 22, 2000
- AJHA (3T/3D-116), June 21, 2000
- 324/327 Path Forward meeting, June 26, 2000
- RCP Vice President's Staff meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Line management identifies and prioritizes mission-related tasks and processes, modifications, and work items are in place and used by personnel.*

RCP uses an integrated planning process to identify and prioritize mission-related tasks. This planning process supports development of the MYWP. All work for the RCP is planned and

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managed by project line managers. The RCP WBS divides each subproject scope into discrete manageable work packages. The WBS has a coding structure that permits tracking of progress, costs, work hours, and schedule.

The RCP cost, scope, and schedule baseline is contained in the MYWP. In developing the integrated higher-level program and project schedules displayed in the MYWP, lower-level program and project schedules are used. A review of the RCP Level III Current Schedule (324/327 Buildings) revealed those subproject activities are scheduled down to level 7. For example, WBS number 1.04.10.02.07.07.02 is used for subprojects associated with the transition of the 327 Building (below grade structure). Each of the WBS numbers and associated work scope items could be traced back to the originating ISB/IPL.

From the MYWP, RCP completes a priority listing of work based on mission, compliance, cost, and risk-containment objectives. At RCP working levels, a risk-based prioritization process is used to establish a technically defensible logic for work planning and execution. This process is intended to balance priorities by using risk-based planning and resource allocation to meet regulatory requirements and control safety and environmental hazards during the execution of work. The risk-based prioritization of work ensures that the most significant hazards are identified and mitigated in the most cost-effective manner.

To validate the above description of the RCP process for identifying and prioritizing tasks, interviews were conducted with RCP personnel and the work packages were reviewed.

This bottom-up review was discussed with RCP management and planning personnel. These activities were easily mapped to the RCP P3 Scheduling Database.

The processes and mechanisms for work at the MYWP-level and the task execution levels are in place, understood, and used by personnel. The processes and mechanisms described during interviews and observations demonstrate that planning and prioritization of work include required elements and are being executed by RCP management.

Criterion 2: *Personnel define the roles and responsibilities for the identification and prioritization of mission-related tasks and processes, facility or process modification, and other related work items.*

RCP-MD-001, *RCP Roles, Responsibilities and Functions*, establishes the execution philosophy and delineates the roles and responsibilities for management of RCP, including the identification and prioritization of mission-related tasks. This is primarily accomplished within the Business Management and Integration organization, which includes the definition of work priorities and funding requirements. In addition, a Standing Instruction (SI-324-Bldg-015, *Prioritization and Scheduling of Operations/maintenance Work*) delineates prioritization through the development of the Level 3 schedule logic as well as performance reporting.

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RCP personnel have position descriptions that describe their responsibilities and required qualifications. Job descriptions include a description of essential duties and responsibilities, qualifications, education and experience, language skills, reasoning ability, certificates, licenses and registrations, physical demands, and a description of the work environment. Job descriptions for personnel with strategic planning and work package planning responsibilities were reviewed and found to contain adequate descriptions of responsibilities. Personnel performing these duties were aware of their position description requirements and met the listed qualification requirements.

Criterion 3: *Personnel ensure identified work (i.e., mission-related tasks and process, processes or facility modification, maintenance work, etc.) can be accomplished within the standards and requirements identified for the facility.*

A review of several AJHAs and work packages revealed that standards and requirements are included as an integral part of the planning process. For example, an AJHA for a pump replacement on the Serf Cell (Oxygen Sample) defined requirements contained in DOE-RL-92-36, *Hanford Site Hoisting and Rigging Manual*, and the applicable sections of 29 CFR 1910. As discussed with the RCP Quality Assurance engineer, RCP has developed and is maintaining the RCP S/RID that contain the DOE-approved subset of ES&H requirements selected from DOE Orders, state and federal laws, and other sources.

Working level procedures control maintenance activities. These procedures implement standards and requirements in work instructions based upon an analysis of the risk and hazards associated with the planned work.

Two RCP Plan of the Week meetings and a RCP Path Forward meeting was observed. These meetings set priorities and assigned resources for the following week and several weeks, respectively. Personnel at the meetings understood their roles and responsibilities as defined in their position descriptions. They said that the AJHA process was used during the work planning process to ensure safety requirements were met. In general, through personnel interviews and observations of the AJHA and work activities, work activities were found to be accomplished within the standards and requirements identified for the facility.

Conclusion

All senior managers that were interviewed demonstrated an awareness and dedication to ISM. All understood that line management has responsibility for safety and that first line supervision and worker involvement supported the identification and development of safety controls. The processes and mechanisms for work at the MYWP-level and the task execution levels are in place, understood, and used by personnel. The processes and mechanisms described during interviews and observations demonstrate that planning and prioritization of work include required elements and are being executed by RCP management.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Director, Administration/Business Systems
- Director, WMP Support
- Manager, FH Long-Range Planning
- Manager, Safety
- Manager, Solid Waste Storage and Disposal
- Manager, Solid Waste Treatment (SWT)
- Manager, SWT Operations
- Manager, SWT Project Support
- Manager, Systems Engineering/Site Planning and Integration
- Manager, Maintenance, Waste Receiving and Processing Facility
- Manager, WESF
- Manager, WESF Project Support
- Vice President, Waste Management.

Observations

- Liquid Waste Processing Facility Maintenance Work Planning meeting, June 16, 2000
- Waste Receiving and Processing Facility Priority meeting, June 19, 1000
- WMP Integration meeting, June 19, 2000.

Discussion of Results

Criterion 1: *Line management identifies and prioritizes mission-related tasks and processes, modifications, and work items are in place and used by personnel.*

WMP identifies and prioritizes mission-related tasks and processes, modifications, and work items. Observations and interviews indicated evidence that the five Core Functions of ISMS are integrated into the project planning, prioritization, and execution of work at all levels within each facility.

WMP uses an integrated planning process to develop and maintain their MYWP. Identification of mission-related tasks is performed at the project-level by effectively integrating each of the project functional areas. The formulation of the MYWP begins with requirements directed by RL. Interviews with the FH Long-Range Planning management indicated that FH “flows” the requirements, with guidance, based upon the DOE Budget Updating Guidance, to the project level. WMP develops baseline elements within the given guidance including ES&H risk summaries. The project information then rolls back up to FH. FH factors work variables, including the ES&H risk, into work prioritization to establish the IPL. Interview results showed that work planning in support of the MYWP is executed as a continual process throughout the

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FY. Facilities accomplish these planning steps in weekly, monthly, and quarterly planning sessions. An example described during interviews at SWT is the maintenance of a 90-day look-ahead schedule that is reviewed and updated weekly incorporating lessons learned and hazard identification/revision. **(WMP MGO.1-1)** Information recorded in the planning sessions includes the following:

- Activity definition
- Scope of work
- Schedule duration and resource allocation
- Assumptions
- Risks
- Deliverables.

HNF-PRO-522, *Multi-Year Work Planning*, provides direction to project organizations to incorporate the principles of ISMS into all levels of planning and baseline development. WMH-200, *Waste Management Project Procedures*, Section 3.1, "Work Management," incorporates the ISMS principles at the task execution level. Documentation that defines higher-level work planning and prioritization does not provide adequate details or requirements to ensure current practices are consistently applied and will continue. **(WMP MGO.1-3)**

Feedback in the planning process was well illustrated, during interviews, by SWT management through performance of a post-evolution analysis. The example evolution was the removal of a Plutonium-Uranium Extraction Tower (1 of 4) from the SWT Canyon. SWT's use of a post-evolution analysis that includes lessons learned and input from multi-facility interfaces provides an effective mechanism to improve facility performance. **(WMP MGO.1-2)**

Criterion 2: *Personnel define the roles and responsibilities for the identification and prioritization of mission-related tasks and processes, facility or process modification, and other related work items.*

Interviews with WMP and FH management showed a good understanding of ISMS principles and how those principles are incorporated into the overall work planning and prioritization processes. Roles and responsibilities for the multiple levels of planning are defined in existing process procedures. Facility managers interviewed displayed knowledge and understanding of their respective roles and responsibilities associated with the identification and prioritization of mission-related tasks and processes and facility/process modifications.

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Criterion 3: *Personnel ensure identified work (i.e., mission-related tasks and process, processes or facility modification, maintenance work, etc.) can be accomplished within the standards and requirements identified for the facility.*

The configuration control of requirements at the FH, WMP, and facility-level is controlled by various procedures and demonstrated through observation of work planning and interview. One example is a project effort to identify efficiencies in FY 2001/2002 operating budgets to free funds to support the receipt of K Basin Sludge at SWT and glovebox clean out at the 324 Building. The management team leading this effort ensured that key functional area management (i.e., training, radiological control, environmental, operations, maintenance, engineering, and occupational safety) were present to ensure continuity of requirements.

Interviews indicated that project baseline change process include required reviews by affected functional areas to ensure configuration of requirements.

Conclusion

The processes and mechanisms for work at the MYWP-level and the task execution levels are in place, understood, and used by personnel. The processes and mechanisms described during interviews and observations show that planning and prioritization of work include required elements and are well executed by facility management. However, the planning and prioritization of project work performed at levels above the actual task performance are not supported by documentation that provide detail or requirement to ensure current practices are consistently applied and will continue.

This objective has been met.

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Strengths:

- The Multi-Year Work Plan database used for the NMS Project can be modified and exported into their scheduling software (Primavera Project Planner) eliminating the need to change several thousand resources manually, saving time and resources. **(NMS MGO.1-1)**
- SWT maintains a 90-day look-ahead schedule that is reviewed and updated weekly, incorporating lessons learned and hazard identification/revision. **(WMP MGO.1-1)**
- SWT's use of a post-evolution analysis that includes lessons learned and input from multi-facility interfaces provides an effective mechanism to improve facility performance. **(WMP MGO.1-2)**

Concerns:

- The processes in place for planning and prioritization of project work performed are not supported by documentation that provide details or requirements to ensure current practices are consistently applied and will continue. **(ASP MGO.1-1)**
- Plan of the Day and Plan of the Week sessions were informal, unstructured, and lacked clear work prioritization and an adequate feedback component. **(ASP MGO.1-2)**
- No clear path forward has been established for addressing the accumulation of samples in the 222-S Laboratory Hot Cells. **(ASP MGO.1-3)**
- HNF-SD-MP-SRID-003, *PFP Standards Requirements Identification Document* has not been updated annually as required by HNF-PRO-265, *Standards/Requirements Identification Document Process*, Section 2.1.5, and as described in HNF-MP-003, Appendix E, Section 3.3. **(NMS MGO.1-2)**
- Terms and Conditions 4.2 of the PFP Authorization Agreement have not been met. **(NMS MGO.1-3)**
- Documentation that defines higher-level work planning and prioritization does not provide adequate details or requirements to ensure current practices are consistently applied and will continue. **(WMP MGO.1-3)**

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FUNCTIONAL AREA: **Management Oversight**

OBJECTIVE: **MGO.1**

DATE: July 10, 2000

Submitted: Mark R. Steelman

Mark R. Steelman, Team A

Team Member

Keith D. Bonser

Keith D. Bonser, Team B

Team Member

Approved: Joe (Ed) Parsons

Joe (Ed) Parsons

Team Leader

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OBJECTIVE

MGO.2 - Clear and unambiguous roles and responsibilities are defined and maintained at all levels within the facility or activity. Managers at all levels demonstrate a commitment to ISMS through policies, procedures, and their participation in the process. Facility or activity line managers are responsible and accountable for safety. Facility or activity personnel are competent commensurate with their responsibility for safety.

Criteria

1. Clear roles and responsibilities are defined within the facility or activity to ensure that safety is maintained at all levels.
2. Line management is responsible for safety.
3. Processes are implemented to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.

Approach

Record Review

- Review facility or activity manuals of practice that define roles and responsibilities of personnel responsible for safety.
- Review plans, procedures, position descriptions, and other documentation that describe roles and responsibilities related to ensuring safety is maintained. The review should consider personnel in line management and staff positions and should evaluate whether line managers are responsible for safety.
- Review the procedures established to select, train, and qualify managers and the work force to ensure they are competent to safely perform their assigned responsibilities/work. Review the records of qualification and certification as applicable.

Interviews

- Interview selected personnel at all levels of facility or activity management that are identified by the record review above and verify their understanding and commitment to ensuring that safety is maintained for all work at the facility or activity.
- Interview a selected number of supervisors and workers (see definition) to determine their understanding of competency requirements and their commitment to performing work safely.

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Observations

Observe scheduled activities that demonstrate 1) clear roles and responsibilities are established and understood; 2) line managers are actively involved with decisions affecting safety; and 3) managers and workers are competent to perform their duties. Activities, such as weekly planning meetings, plan of the day, event critiques, safety training, and safety meetings are typical events that may provide good examples of the safety training and decision-making process.

Record Review

- 1997 Labor Agreement Between Fluor Daniel Hanford, Inc. and Hanford Atomic Metal Trades Council, American Federation of Labor–Congress of Industrial Organizations
- 222-S Laboratory Plan of the Week Report, June 20, 2000
- Analytical Services Project (ASP) Organization Charts, May 25, 2000
- ASP-100, *Analytical Services Policies*
 - Section 1.0, “General Policy Statements,” Rev. 2, May 23, 2000
 - Section 2.10.1, “Accountability for Safety,” Rev. 2, May 19, 2000
 - Section 4.0, “Analytical Services Charter Description,” Rev. 0, April 20, 2000
 - Section 4.2, “Analytical Services Laboratory Charters,” Rev. 0, April 20, 2000
 - Section 4.3, “Analytical Services Programs and Functional Support Charters,” Rev. 0, April 21, 2000
 - Section 4.6, “AS Integrated Safety Roles and Responsibilities,” Rev. 0, May 23, 2000
- ASP-200, *Analytical Services Procedures*
 - Section 1.13, “Health and Safety Self-Inspection Program,” Rev. 3, January 20, 2000
 - Section 5.1, “Training Plan,” Rev. 5, May 31, 2000
 - Section 5.3, “Analytical Services Training Implementation Matrix,” Rev. 4, June 12, 2000
- Fast Flux Text Facility (FFTF) Administrative Procedure, A-3, *FFTF Operations Administrative Procedure*, Rev. 6A, April 29, 2000
- FFTF Plan of the Day Priority, June 26, 2000
- FFTF Performance Indicators, May 2000
- FFTF Operations Goals
 - 1999
 - 2000
- FFTF Various Shift Operating Crew Goals and Status Measurements, May and June 2000
- FFTF Operations Monthly Report, April 2000
- FFTF Organizational Charts, June 12, 2000
- FFTF Position Descriptions
- FSP-3647, *FASTER Facilities Administration*
 - Section MS-3, “200 Area Deactivation Project (ADP) Organization,” Rev. 3, April 3, 2000
- FSP-5761, *200 Area Deactivation Project Training Implementation Matrix*, Rev. 0, January 2000

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- FSP-FFTF-IP-0759, *FFTF Maintenance Administration Procedures Manual*
 - Section 2.1, "Maintenance Organization and Administration," Rev. 2, June 15, 2000
 - Section 2.2, "FFTF Maintenance Goals and Objectives," Rev. 1, June 15, 2000
 - Section 2.6, "Employee Orientation," Rev. 4, June 15, 2000
- FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual*
 - Section 2.0, "Organization, Responsibilities, and Authority," Rev. 4, May 17, 2000
 - Section 6.0, "Quality Assurance," Rev. 1, December 3, 1999
- FSP-FFTF-TRNG-0329, *400 Area Training Plan*
 - Section 1.0, "FFTF Training Group Administration Training Program," Rev. 1, January, 17, 2000
 - Section 8.0, "400 Area Maintenance Training Program," Rev. 0, June 1, 1998
- FSP-FSS-5-35, *FSS Project Control Manual*
 - Section 01-01, "Responsibility and Authority," Rev. 6, December 16, 1999
 - Section 05-02, "Training Plan," Rev. 3, May 31, 2000
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vols. 1 and 2
 - Section 1.1, "Safety Policy," Rev. 9, October 4, 1999
 - Section 3.1, "General Safety Rules," Rev. 7, October 4, 1999
 - Section 6.3, "Person-In-Charge (PIC)," Rev. 3, April 4, 2000
- FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*
- FSP-WESF-001, *WESF Project Administration*
 - Section MS-3, "WESF Integrated Safety Management Roles and Responsibilities," Rev. 4, June 6, 2000
- Facility Evaluation Board (FEB) Assessment, April 2000
- Fluor Hanford (FH) Issues for ISMS Phase II Verification Topic Briefing Sheets
- FH ISMS Phase I Corrective Action Closure Packages
- HNF-1184, *Training and Qualification*
- HNF-IP-1121, *Plutonium Finishing Plant Administration*
 - Chapter 1.0, "General Training Administration," Rev. 9, October 4, 1999
 - Chapter 6.0, "Facility Management Training Program," Rev. 2, October 4, 1999
 - Chapter 7.0, "Operations Training Program," Rev. 9, October 4, 1999
 - Chapter 11.0, "Person-In-Charge Training Program," Rev. 5, October 4, 1999
- HNF-IP-1264, *324/327 Facilities Stabilization Projects*
 - Section 2.15, "Training Development and Administration," Rev. 1, October 29, 1999
 - Section 2.16, "Facility Worker Training," Rev. 1, September 30, 1999
- HNF-IP-1281, *River Corridor Project Training Plan*, Rev. 2, February 29, 2000
- HNF-MD-6367, *Fluor Hanford Management Roles and Responsibilities*, Rev.0, May 16, 2000
- HNF-MD-6410, *Fluor Hanford Issue Management Systems*, Rev. 0, May 19, 2000
- HNF-MP-001, *Project Hanford Management Plan*, Rev. 2, March 10, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, "Waste Management Project ISMS Description"
 - Appendix E, "Nuclear Material Stabilization Project ISMS Description"

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- Appendix F, “River Corridor ISMS Description”
- Appendix G, “Fast Flux Test Facility ISMS Description”
- Appendix H, “Analytical Services ISMS Description”
- HNF-PRO-074, *Safety Responsibilities*, Rev. 1, July 1, 1997
- HNF-PRO-075, *Safety Communications*, Rev. 2, December 23, 1997
- *Hanford Analytical Services Program Plan*, Rev. 1, May 22, 2000
- Liquid Waste Processing Facility (LWPF) Qualified Watchstanders List, June 12, 2000
- Plutonium Finishing Plant (PFP) Personnel Position Descriptions
- PFP Project Team Charters
- Project Hanford Lessons Learned, *Reclosing Tripped Electrical Protective Devices*, May 25, 2000
- RCP-310, *300 LEF Project Administration Procedures*, Section 6.01, “Training Program Description,” Rev. 0, June 16, 2000
- RCP-5761, *200 Area Deactivation Project Administration*, Section TN-1, “200 Area Deactivation Project Training Implementation Matrix (200 ADP TIM),” Rev. 1, June 20, 2000
- RCP-MAP-003, *River Corridor Project – Management Assessment Program Procedure*, Rev. 0, November 1, 1999
- RCP-MD-001, *RCP Roles, Responsibilities and Functions*, Rev. 1, May 19, 2000
- RCP-PRO-002, *River Corridor Project Training Development and Administration*, Rev. 0, June 12, 2000
- River Corridor Project (RCP) Performance Assessment and Development Plans, selected
- RCP Personnel Exempt Job Descriptions, selected
- Various 222-S Laboratory Training Matrix (TMX) Reports, June 21, 2000
- Various Waste Management Project (WMP) Bargaining Unit Job/Position Descriptions
- Various WMP Exempt Job Requirement Documents
- WMP Organization Charts, May 30, 2000
- Waste Encapsulation and Storage Facility (WESF) Training Performance Indicators
- WMH-350, *Waste Receiving and Processing Facility*, Section 1.8, “Staffing Plan,” Rev. 1, January 10, 2000
- WMP Response Letter to HNF-MD-6367 – *Clarification of Roles and Responsibilities*, May 18, 2000
- WMP-100, *Waste Management Project Policies*
 - Section 1.0, “General Policy Statements,” Rev. 1, April 21, 2000
 - Section 2.10.1, “Accountability for Safety,” Rev. 1, September 10, 1999
 - Section 4.0, “WMP Charter Description,” Rev. 1, May 31, 2000
 - Section 4.1, “Waste Management Project Charter,” Rev. 0, April 21, 2000
 - Section 4.2, “WMP Projects Charters,” Rev. 1, May, 31, 2000
 - Section 4.3, “WMP Functional Charters,” Rev. 0, April 21, 2000
 - Section 4.6, “WMP Integrated Safety Roles and Responsibilities,” Rev. 0, May 23, 2000

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- WMP-200, *Waste Management Project Procedures*
 - Section 1.18, "Technical Procedure Process," Rev. 0, May 15, 2000
 - Section 5.01, "Training Plan," Rev. 5, June 6, 2000
 - Section 5.03, "Training Implementation Matrix," Rev. 4, June 5, 2000
- WMH-310, *Waste Management Laboratory Administration*, Section 5.1, "On-the-Job-Training," Rev. 2, January 07, 1999
- *WML Employee Safety Council Charter*, September 29, 1999
- WMP-370, *Waste Services Procedures*, Section 1.1, "Waste Services Project Staffing Plan," Rev. 1, May 31, 2000
- WMP-340, *Solid Waste Treatment Project Administrative Procedure*, Section 3.5, "Staffing Plan," Rev. 0, February 28, 2000
- WMP-342, *Solid Waste Storage and Disposal Procedures*, Section 1.4, "Staffing Plan," draft, June 6, 2000.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Facility Manager, 222-S Laboratory
- Laboratory Leader, 222-S Laboratory (2)
- Manager, Hanford Analytical Services Program
- Manager, Operations, 222-S Laboratory
- Manager, Training
- Manipulator Team Field Work Supervisor (FWS), 222-S Laboratory
- Operations Release Authority, 222-S Laboratory.

Observations

- 222-S Laboratory Plan of the Week meeting, June 22, 2000
- 222-S Laboratory Safety meeting, June 21, 2000.

Discussion of Results

Criterion 1: *Clear roles and responsibilities are defined within the facility or activity to ensure that safety is maintained at all levels.*

ASP and Functional Charters, ASP-100, *Analytical Services Policies*, Section 4.0, "Analytical Services Charter Description;" Section 4.2, "Analytical Services Laboratory Charters;" and Section 4.3, "Analytical Services Programs and Functional Support Charters;" assign organizational and mission-related responsibilities, and include providing safe and compliant stewardship of personnel, the environment, and facilities. FH and ASP administrative procedures clearly define roles and responsibilities for project- and facility-level management. Roles and responsibilities are communicated to the staff beginning with the hiring process and job descriptions, and continue to develop through annual reviews and training. Managers communicate specific roles and expectations and these are documented through annual performance reviews. Responsibilities are also defined in administrative and technical work documents, and discussed in pre-job reviews and turnover meetings. Interviews indicate that ASP management is enthusiastic concerning ISMS and generally knowledgeable of their roles and responsibilities, and are aware of formal processes to develop and communicate roles and responsibilities to ASP personnel.

Neither HNF-MP-003, *Integrated Environment, Safety and Health Management System Description* nor ASP ISM System Description (HNF-MP-003, Appendix H) addresses the flow down of roles and responsibilities to bargaining unit employees through contract mechanisms. The ASP ISM System Description (HNF-MP-003, Appendix H) identifies HNF-PRO-074, *Safety Responsibilities*, as one of the procedures that define roles and responsibilities; however, the HNF-PRO-074 requirement for managers/supervisors to "incorporate specific safety and health

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responsibilities and requirements into formal job descriptions” has not been implemented for bargaining unit personnel. **(ASP MGO.2-2)**

A notable exception to appropriate implementation of roles and responsibilities was observed within ASP where an overall lack of control and direction was observed within the Hazardous Materials Group. This organization was recently transferred to ASP from WMP. Observations indicated that procedures being used by the group have not been transitioned to the new organization and that other work is being performed without procedures. Worker interviews indicated a lack of field presence of supervision, multiple management turnovers, and management’s unwillingness or unavailability to hear and resolve issues contribute to the overall situation. The workers did not fully understand their roles and responsibilities especially as they relate to their role as a support organization. No transition planning was evident. A lack of management oversight, organizational structure, and defined roles and responsibilities is evidenced in the ASP Hazardous Materials Group. **(ASP MGO.2-4)**

Completed corrective actions, associated with DOE/RL-2000-30, *Fluor Hanford ISMS Phase I Verification*, adequately address the specific MGO.2 concerns relative to roles and responsibilities.

Criterion 2: *Line management is responsible for safety.*

FH and ASP procedures clearly assign responsibility for safety to line management. Management has developed and formalized a team approach to periodic Safety and Health Inspections. Procedure ASP-200, *Analytical Services Procedures*, Section 1.13, “Health and Safety Self-Inspection Program” guides the safety inspection process and promotes management and bargaining unit personnel teamwork and communication. ASP line management is engaged in ISMS implementation and is enthusiastic concerning participation in the process. Interviews and observations indicate that managers regularly tour the facility, attend safety meetings, participate in pre-job briefings, and perform management assessments. Management is active in the facility and project safety councils and aggressively promotes ISM in meetings and performance evaluations.

The 222-S Laboratory management successfully implemented ISMS tenets by assigning a 222-S Laboratory Chemical Technician the responsibility to lead a team of safety professionals, management, and workers to analyze and mitigate safety hazards brought before the Accident Prevention Council. The results of the team effort were formally discussed at the Accident Prevention Council meeting and corrective actions are being tracked in the ASP Commitment Tracking System. Bargaining unit personnel at the 222-S Laboratory are given the opportunity to participate as team leaders in the identification, analysis, and mitigation of work place hazards. **(ASP MGO.2-1)**

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Criterion 3: *Processes are implemented to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.*

Educational requirements are included in the hiring process and administrative procedures define position-specific training and qualification requirements. A systematic approach, described in ASP-200, Section 5.1 "Training Plan" has been used to determine the training required for specific positions, based on tasks performed by personnel. Training requirements and status are tracked using a formalized TMX that provides real-time qualification status. Reports identifying qualification status, training delinquencies, and upcoming training due dates are promulgated to management/supervisors weekly or monthly. Managers and FWSs interviewed were familiar with this training status tool and indicated that job performance is dependent on qualification status. Training and data tracking processes, defined in WMH-310, *Waste Management Laboratory Administration*, Section 5.1, "On-the-Job Training," ensure laboratory personnel who use operating or analytical procedures are qualified prior to performance of a particular task. The Automated Job Hazard Analysis (AJHA) and Job Safety Analysis (JSA) processes address training during job planning evolutions. Also, entry to potentially dangerous areas or job sites is controlled by a computer access system that flags safety and health training requirements prior to personnel admittance.

During interviews, the ASP Training Manager indicated the 222-S Laboratory Leader position had been cancelled and no longer existed. A review of TMX records and interviews with the 222-S Laboratory Operations Manager and two qualified 222-S Laboratory Leaders revealed that the 222-S Laboratory Leader is an existing position and manned on a daily basis. Additional responsibilities and training, including emergency response tasks, are assigned to the Laboratory Leader position. The training and roles and responsibilities associated with the 222-S Laboratory Leader position have not been formally defined or documented. **(ASP MGO.2-3)**

Conclusion

Facility management and personnel are knowledgeable and demonstrated enthusiasm and commitment to ISMS. Roles and responsibilities are effectively communicated and managers understand their responsibilities associated with safety. Bargaining unit personnel at the 222-S Laboratory are given the opportunity to participate as team leaders in the identification, analysis, and mitigation of workplace hazards. The HNF-PRO-074 requirement for managers/supervisors to "incorporate specific safety and health responsibilities and requirements into formal job descriptions" has not been implemented for bargaining unit personnel.

Managers and workers understand and comply with training requirements. However, the training and roles and responsibilities associated with the 222-S Laboratory Leader position have not been formally defined or documented.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Deputy Manager, Operations
- Hanford Atomic Metal Trades Council Bargaining Unit Safety Representatives (2)
- ISMS Coordinator
- Manager, Maintenance
- Manager, Operations
- Manager, Training
- Plant Manager.

Observations

- Plan of the Day meeting, June 26, 2000
- Safety Awareness Council meeting, June 27, 2000
- Weekly Planning meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Clear roles and responsibilities are defined within the facility or activity to ensure that safety is maintained at all levels.*

The FFTF ISM System Description (HNF-MP-003, Appendix G) provides an overview of facility roles and responsibilities relative to ISMS and initiates the flow down of specific roles and responsibilities at the facility and activity level. The FFTF ISM System Description (HNF-MP-003, Appendix G) addresses bargaining unit personnel and assigns their roles and responsibilities through contract mechanisms. The roles and responsibilities for each work group are defined in FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual*, and are further delineated through personnel position descriptions. Responsibilities are also defined in administrative and technical work documents, and discussed in pre-job reviews and turnover meetings.

Interviews indicated that FFTF senior and line management are enthusiastic concerning ISMS and very knowledgeable of their roles and responsibilities. Management is also familiar with and uses formal processes to develop and communicate roles and responsibilities to facility personnel. Senior and line management are actively engaged in safety and work planning meetings and aggressively address identified safety concerns. Workers demonstrate an understanding of their responsibilities by participating in work planning and package development, identifying work place hazards, and providing meaningful feedback to all levels of management and workers.

The FFTF operations group establishes annual goals and measures performance relative to those goals. Additionally, each operations shift has developed specific shift, and individual,

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performance goals that are measured and reported in a monthly operations report. The monthly report promotes personal accountability by identifying individual and shift accomplishments as well as outstanding issues.

Criterion 2: *Line management is responsible for safety.*

The FFTF ISM System Description (HNF-MP-003, Appendix G) and facility procedures specifically assign responsibility for safety to line management. Interviews indicated that line management clearly understands and embraces the commitment of responsibility for worker and public safety. Interviews and observations indicated that managers regularly tour the facility, attend safety meetings, participate in pre-job briefings and perform management assessments. Management is active in the plant Safety Awareness Council and aggressively promotes ISM in meetings and performance evaluations. Several line managers have previously qualified in an operations position. Completion of this rigorous training program enables management to better understand and address technical- and process-oriented issues as they relate to environmental and safety management.

Criterion 3: *Processes are implemented to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.*

FFTF enjoys a highly experienced and knowledgeable work force. Educational and experience requirements are formally included in FFTF hiring process. Rigorous training programs, required by DOE Order 5480.20A, *Personnel Selection, Qualification, Training Requirement for DOE Nuclear Facilities*, to operate a nuclear reactor facility, have been successfully implemented and maintained at FFTF. These programs are defined in administrative procedure FSP-FFTF-TRNG-0329, *400 Area Training Plans*. Training requirements and status are tracked using a formalized TMX that provides real-time qualification status. Reports identifying qualification status (currently at 100%), training delinquencies, and upcoming training due dates are promulgated to management/supervisors weekly or monthly. Additionally, the operations group formally tracks qualification and watchstanding proficiency to ensure qualified personnel perform work. Interviews indicated that managers were familiar with training status tools and indicated that job performance is dependent on qualification status. The AJHA and JSA processes address training during job planning evolutions. Also, entry to potentially dangerous areas or job sites is controlled by a computer access system that flags safety and health training requirements prior to personnel admittance.

Many FFTF managers, engineers, and technical support staff have served in operating positions, and therefore, completed a very rigorous qualification and/or certification program. Among the key plant staff, qualified and experienced in operations, are the Project Senior Director, Plant Manager, Operations Manager, Technical Support Manager, Maintenance Manager, Training Manager, training instructors, engineers, and work control personnel. The integration of plant knowledge and experience throughout the workforce is unique to FFTF and ensures a high level of competence is applied to implementation of ISMS Core Functions and Guiding Principles. (FFTF MGO.2-1)

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Conclusion

Facility management and personnel are very knowledgeable and demonstrated a sound commitment to the implementation of ISMS. Roles and responsibilities are adequately defined and effectively communicated to FFTF personnel. Managers understand and embrace their responsibilities associated with safety. FFTF possesses a highly experienced and knowledgeable workforce. The integration of operationally qualified personnel, who possess superior plant knowledge and experience, throughout the workforce is unique to FFTF, and enables management and support staff to better understand and address technical– and process–oriented issues as they relate to environmental and safety management.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Lead, PFP Authorization Basis Team
- Manager, PFP Plutonium Process Support Labs
- Manager, Technical Support
- Nuclear Process Operators
- Operations Specialist, PFP Authorization Basis Team
- PIC, PFP Solutions/Residues Stabilization Project
- PIC, PFP Thermal Stabilization and Polycubes Project
- PFP Project Director
- Pipefitter
- Project Manager, Solutions/Residues Stabilization Project
- Project Manager, Thermal Stabilization and Polycubes Project
- Radiological Control Technicians
- Training Manager, Specialist and Assistant Team Lead.

Observations

- AJHA for Operating Muffle Furnace HA-211, June 14, 2000
- PFP Zero Accident Council meeting, June 14, 2000
- Senior Supervisory Watch, June 15, 2000
- PFP Monthly Project Review, June 15, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms are in place that define clear roles and responsibilities within the facility or activity to ensure that safety is maintained at all levels.*

Based on document reviews and personnel interviews, the NMS Project demonstrated procedures and mechanisms are in place that define clear roles and responsibilities to ensure safety is maintained at all levels during the execution of work activities.

At the FH-level, HNF-MP-001, *Fluor Hanford Management Plan*, provides management framework for Project Hanford Management Contract work scope and guidance to FH managers, employees, and subcontractors in safe, efficient conduct of operations. HNF-MP-003, requires that project organizations (e.g., PFP) assign line managers and make them responsible for all aspects of project execution. During the FH Phase I ISMS Verification in April 2000 (DOE/RL-2000-30), it was identified that HNF-MP-001 included very broad statements of relative roles and responsibilities of projects and staff (i.e., support) organizations. To clarify roles and responsibilities described in HNF-MP-001, HNF-MD-6387, *Fluor Hanford Roles and Responsibilities*, further defines the PFP Project as a line organization and makes them

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responsible for safe, cost effective and compliance execution of work associated with the NMS Project. The subordinate documents to these FH-level documents are project-specific and further delineate the respective roles and responsibilities of the project organizations and relationship of various staff functions. Issuance of HNF-MD-6387 and associated plant-specific actions taken at PFP, including a letter to clarify functional organization and team charters, fully addressed the concern identified during the Phase I ISMS Verification (DOE/RL-2000-30) with regard to roles and responsibilities.

At facility and activity levels, FSP-PFP-5-8, Vols.1 and 2, *PFP Integrated Environment, Safety and Health Management System Description*, defines the overall NMS Project organization responsible for the execution of project activities. FSP-PFP-5-8 shows all project activities aligned under the direction of Vice President for the NMS Project. FSP-PFP-5-8 defines the roles and responsibilities of line and functional managers reporting to the Vice President. Roles and responsibilities are further defined for those managers reporting to the Vice President through approved exempt job descriptions and team charters.

Interviews with line and functional managers confirmed they have a clear understanding of their responsibilities for ensuring safety in the preparation and execution of assigned work activities. They also demonstrated proficiency in familiarity with those procedures and processes utilized directly at PFP to fulfill their roles and responsibilities. They demonstrated strong support and commitments in implementing ISMS and took their roles and responsibilities for safety very seriously. Workers also believed that they have been implementing the basic tenets of ISMS through participation in Enhanced Work Planning, AJHA, Pre-job Briefings, and Job Walkdowns. They demonstrated their roles and responsibilities for the job assigned and showed the attitude of not performing work activities if unsafe or if unresolved safety concerns exist.

FSP-PFP-5-8 identifies HNF-PRO-074 as one of the procedures delineating roles and responsibilities. However, the HNF-PRO-074 requirements for managers/supervisors to "incorporate specific safety and health responsibilities and requirements into formal job descriptions" has not been implemented for bargaining unit personnel. **(NMS MGO.2-1)**

The NMS Project has been successful in defining clear roles and responsibilities within the facility or activity to ensure that safety is maintained at all levels.

Criterion 2: *Facility or activity procedures specify that line management is responsible for safety.*

The NMS Project has procedures at both facility and activity levels that hold line management responsible for safety. FSP-PFP-5-8 holds the Vice President accountable for the safe, compliant, and successful execution of the project mission. FSP-PFP-5-8 specifies six line managers and nine functional managers. The six line managers also have subordinate line managers reporting to them including Team Leaders, Shift Managers, FWSs, and PIC. The PFP environmental, safety, and health policies, programs, and processes (Safety Policy, PIC, General Safety Rule, Work Management Process Description, and Job Controls System) described in

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FSP-PFP-5-8 clearly specify these line managers (at various levels) are responsible for safety at both facility and activity levels.

Interviews with line managers confirmed they have a clear understanding of their roles and responsibilities for ensuring safety in the preparation and execution of assigned work activities. PFP line managers emphasized the importance of worker safety and individual accountability. Interviews with the line managers demonstrated a strong commitment to implementation of ISMS. The majority of line managers believed ISMS promoted a clear relationship with workers and improved the process for integrating good ideas and worker experience into field work activities, thereby making performance of work activities more safe.

The NMS Project has been successful in specifying line management's responsibility for safety.

Criterion 3: *Processes are implemented to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.*

Document reviews and personnel interviews indicated that PFP has adequate processes and mechanisms to ensure their supervisors and workers are fully trained, qualified, and certified to fulfill their assigned responsibilities. FSP-PFP-5-8, Vol. 1, references FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*, that defines the elements of the training program, such as the processes for completing qualification and certification programs, conduct of oral and written examinations, and proficiency requirements. Managers, with the assistance of training personnel, are implementing FSP-PFP-1121 along with appropriate FH-level procedures for ensuring personnel who supervise and perform work have competence commensurate with their responsibilities.

Interviews with NMS personnel and observation of an AJHA indicated supervisors and workers possess appropriate job knowledge and skill proficiencies to fully execute their assigned job responsibilities. An observation of a Supervisory Watch Surveillance also indicated that the manager was very thorough and competent in his assessment of workers' understanding of job hazards, controls, and actions responding to abnormal events.

Managers are also implementing the following mechanisms to oversee their line operations and continuously evaluate their employees' competency to ensure safe performance of all work activities at PFP:

- Attend shift turnover meetings to begin day shift and turnover from dayshift to swing shift
- Review and approve the daily operating instructions to the rotating shift crews
- Review the rotating shift manager operations log daily
- Review shift manager turnover sheets daily
- Conduct Senior Supervisory Watches.

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Line managers and team leaders at PFP, with the assistance from training coordinators, are reviewing their employees TMX on a weekly basis to ensure employees are qualified and certified, and to identify any changes to the TMX. As noted in the Phase I ISMS Verification, they are also reviewing a monthly report showing the 90-day look-ahead for training to further ascertain that employee's training requirements are maintained current.

However, review of this procedure and subsequent interviews with the Training Manager, Assistant Team Leader, Training Specialist, and workers identified potential improvements to the training process. These areas of improvements have also been identified by a recent FEB assessment conducted in April 2000. The NMS Project was very receptive of FEB's findings and is proactive in addressing them by forming a Steering Committee for Training Improvement. These recent FEB findings have yet to be fully captured in FH Corrective Action Management Program. These areas for improvements are not currently impacting training and maintaining of competent supervisors and workforce.

However, with upcoming addition of significant workforce and various new work processes in support of Defense Nuclear Facility Safety Board 94-1 commitments, delays in addressing these areas may jeopardize PFP's efforts to train and retain competent workforce, thereby potentially compromising safe execution of the NMS Project's mission. Two items require special attention. First, as part of the redesign effort, some training specialists were going to be assigned with the project teams. Some positions have not been filled. Further, a line-training specialist is not performing functions as originally intended (trainer). Integration is also lacking between the line training function and the PFP core training organization. No formal process for sharing lessons learned or continuous improvements has been established to improve the overall quality of training. In addition, roles and responsibilities are not well understood and defined in FSP-PFP-1121.

Secondly, the PFP core training organization has not been fully integrated with work teams to effectively support their upcoming training needs. In some cases, the core training organization was given a very short turnaround time to prepare adequate training requirements for certain project teams' upcoming work evolutions. This has led the development of marginal training materials for workers. Also, no formal process for soliciting workers' feedback on training processes exists to improve the overall training quality. Feedback from workers was solicited by individual trainer's own initiative in an informal fashion.

The NMS Project has been successful in implementing processes to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.

Conclusion

Procedures and mechanisms are in place at PFP that define clear roles and responsibility for execution of the projects to ensure that safety is maintained at all levels. Based upon document reviews, personnel interviews, and attendance at meetings and observations, managers and workers clearly demonstrated their roles and responsibilities for safe execution of work

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activities. Review of procedures also demonstrated that line management is clearly responsible for safety by identifying and implementing controls to mitigate hazards prior to authorizing work to proceed. Procedures and mechanisms ensure that personnel who supervise and perform work have competence commensurate with responsibility. Actual training being administered to supervisors and workers is adequately determined although it is not well documented in the training procedure FSP-PFP-1121. Recent FEB findings have yet to be fully captured in the FH Corrective Action Management Program with specific due dates for completion.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Director, Technical Support
- Hot Cell Operations Manager, 324 Building Deactivation Project
- Hot Cell Technician, 324/327 Building Deactivation Projects
- Human Resource Representative
- ISMS Implementation Coordinator
- Management Assessment Program Coordinator
- Manager, 200 ADP
- Manager, Training and Emergency Preparedness
- Nuclear Chemical Operator, 300 Area Fuel Supply Shutdown (FSS) Project
- Nuclear Power Operator, 310 TEDF/340 Project
- PIC, 300 Area FSS Project
- Safety Documentation Engineer, 324 Building Deactivation Project
- Trainer, 300 Accelerated Deactivation Project
- Training Coordinators, Training and Emergency Preparedness
- Training Specialists, Training and Emergency Preparedness.

Observations

- AJHA for Removing the Pulsation Dampeners from the NaOH Skids, June 21, 2000
- 310/340 Facilities Zero Accident Council meeting, June 26, 2000
- Pre-Job Meeting for T-Hoppers Stabilization, June 26, 2000
- 327 Facility Monthly All Employees meeting, June 27, 2000.

Discussion of Results

Criteria 1: *Procedures and/or mechanisms are in place that define clear roles and responsibilities within the facility or activity to ensure that safety is maintained at all levels.*

The RCP ISM System Description (HNF-MP-003, Appendix F) states that RCP is organized into four line projects and six functional organizations. The RCP ISM System Description (HNF-MP-003, Appendix F) also states that RCP line projects maintain a detailed set of administrative procedures to provide additional guidance in administrative, operations, and maintenance activities unique to each project. It clearly defines roles and responsibilities of the RCP Vice President, project directors, functional organizations and RCP personnel to ensure safety is maintained at all levels during execution of work activities.

At the RCP-level, administrative procedures consisting of a combination of RCP-level and facility-level administration are being developed to effectively implement the ISMS. A total of eleven RCP-level administrative procedures have been developed to date to promote

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consistencies in four different projects with regards to the core management systems, thereby enhancing roles and responsibilities of project personnel and their associated training and qualification requirements. As specified in the RCP ISM System Description (HNF-MP-003, Appendix F), each line project uses its own administrative procedures and exempt job descriptions to further define the roles and responsibilities of line and functional managers.

Interviews with line and functional managers indicated they have a clear understanding of their responsibilities for ensuring safety in the preparation and execution of assigned work activities. They also demonstrated familiarity with those procedures and processes utilized directly at their project and activity levels to fulfill their roles and responsibilities. They demonstrated strong support and commitment in implementing ISMS and took their roles and responsibilities for safety very seriously.

Workers also believed that they have been implementing the basic tenets of ISMS through participation in AJHA, Plan-of-the-Day, Pre-job Briefings and Job Walkdowns. They demonstrated their roles and responsibilities for the job assigned, recognized hazards associated with the assignments, and were well equipped and trained to respond to abnormal and upset conditions.

RCP has been successful in defining clear roles and responsibilities within the facility or activities to ensure that safety is maintained at all levels.

Criteria 2: *Facility or activity procedures specify that line management is responsible for safety.*

RCP has procedures at both facility and activity levels that hold line management responsible for safety. The RCP ISM System Description (HNF-MP-003, Appendix F) specifies that RCP project directors (324, 327, Accelerated Deactivation Project, 310/340) are considered RCP line managers and responsible for safety and environmental protection. Due to the diverse nature of RCP, project directors use project-specific Administrative and Control Manuals/Procedures to further delineate line management safety responsibilities at both facility and activity levels.

Interviews with line managers indicated they have a clear understanding of their roles and responsibilities for ensuring safety in the preparation and execution of assigned work activities. RCP line managers emphasized the importance of worker safety, individual accountability, and procedure compliance.

Interviews with line managers also indicated they took their responsibility for safety seriously and demonstrated a strong commitment to implementation of the ISMS. They have reflected ISMS core principles in the development of procedures and proactively involved workers at all stages of work activities through AJHA and Post-job Reviews. They indicated ISMS has allowed them to establish a management system that involves workers and addresses safety issues from planning to execution, and that personnel involved at all levels of work activities have demonstrated clear understanding of roles and responsibilities.

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RCP has been successful in specifying line management's responsibilities for safety.

Criterion 3: *Processes are implemented to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.*

Document reviews and personnel interviews indicated that RCP has adequate processes and mechanisms to ensure their supervisors and workers are fully trained, qualified, and certified to fulfill their assigned responsibilities.

HNP-IP-1281, *River Corridor Project Training Plan*, is an RCP-level training policy that applies to all RCP facilities. It specifies the training requirements and responsibilities to ensure personnel are trained, qualified and/or certified, and have demonstrated the requisite level of knowledge and job skills to safely perform job duties. RCP-PRO-002, *River Corridor Project Training Development and Administration*, is an RCP-level training procedure that provides the training development and administration used by RCP personnel to create, implement, and maintain training.

HNF-IP-1264, *324/327 Facilities Stabilization Projects Administrative Manual*, Section 2.16, "Training Development and Administration," currently provides the detailed training descriptions for the 324/327 Facilities for individual functions that managers use to define their employee's training programs necessary for the employees to perform their jobs competently. HNF-IP-1264, Section 2.16, "Facility Worker Training," is being revised as RCP-PRO-013 and will contain the program descriptions for all RCP projects, except 300 Area FSS Project. For the 200 ADP facilities, FSP 3647, *FASTER Facilities Administration*, Section TN01, "Training Program," was used to develop RCP-5761, *200 Area Deactivation Project Administration*, Section TN-1, "200 Area Deactivation Project Training Implementation Matrix (200 ADP TIM)," in conjunction with HNF-IP-1264 to reflect additional requirements for supporting changes in programmatic activities under RCP. RCP-PRO-013 is under development to consolidate requirements for the 200 ADP in RCP-3647 and HNF-IP-1264. Training program descriptions for 310/340 Facilities are currently described in RCP-310, *300 LEF Project Administration Training Program*. RCP-310 will be cancelled when RCP-PRO-013 is issued in July 2000. As the nature of project activities significantly differs from the rest of the projects and has a waiver to the TIM, the 300 Area FSS uses its own training plan (FSP-FSS-5-53, *FSS Control Manual*, Section 05-02, "Training Plan") that follows training requirements described in HNF-1184, *Training and Qualification*.

Managers, with the assistance from training personnel, are implementing appropriate training plans for their respective facilities along with appropriate FH-level procedures for ensuring personnel who supervise and perform work have competence commensurate with their responsibilities.

Interviews with RCP personnel, and participation in an AJHA and a Pre-job meeting indicated supervisors and workers possess appropriate job knowledge and skill proficiencies to fully execute their assigned job responsibilities. Interviews with a Nuclear Power Operator and

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Nuclear Chemical Operators indicated their proficiency in procedures and understanding of job specific hazards. They indicated the quality of training they have been receiving is very conducive to keeping their knowledge and skills current.

Attendance at a Pre-job Briefing also revealed that a PIC was very thorough and competent in his review of an activity to be performed in the areas of hazards, controls, and actions responding to abnormal events.

RCP management has been very proactive and consistent in overseeing line operations to ensure employees are fulfilling their assigned jobs and to continuously evaluate adequacy of their training in support of safely performing all work activities. Management tour the facility daily, observe work in progress, and interact with employees constantly. They also routinely observe first hand the high- and medium-risk work and attend the pre-jobs and some post-jobs. Further, they have instituted a Safety Log System, regularly attend Zero Accident Council meetings, and perform formal management assessments to improve the overall safety of the workplace.

Line managers at RCP are reviewing their employees TMX on a regular basis to ensure their employees are qualified, and to identify any changes that need to be made to the TMX. Although significant progress has been achieved to date since the remapping of Waste Management and B&W Hanford Company employees to RCP in October 2000, their individual field training files have not been fully updated and approved. RCP management is committed to getting these files updated and approved by August 2000.

Review of procedures and interviews with the Training Manager and Training Specialists indicated that RCP has been implementing a systematic approach to determine the training required for specific positions, based on job tasks performed by personnel. Some projects are implementing a TIM in accordance with DOE Order 5480.21 while another project is exempt from this requirement. They all showed high level of proficiencies in training procedures and plans and associated requirements in their respective assigned areas. They are fully integrated with the projects to effectively support upcoming training needs and have a mechanism to share their lessons-learned.

Interviews with workers confirmed an effective feedback process is in place to solicit their input on training courses to continuously improve the quality of training.

RCP has been successful in implementing processes to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.

Conclusion

Procedures and mechanisms are in place at RCP that defines clear roles and responsibility for execution of the projects to ensure that safety is maintained at all levels. Based upon document reviews, personnel interviews, and attendance at meetings, managers and workers clearly demonstrated their roles and responsibilities for safe execution of work activities. Review of

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procedures also demonstrate that line management is clearly responsible for safety by identifying and implementing controls to mitigate hazards prior to authorizing work to commence. Procedures and mechanisms are in place to ensure that personnel who supervise and perform work have competence commensurate with responsibility. Actual training being administered to supervisors and workers is very effective in maintaining their knowledge and skills.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Acting Facility Manager, Solid Waste Treatment (SWT)
- Configuration Control Authority, WESF
- Disposal Manager, Solid Waste Storage and Disposal (SWSD)
- Duty Operations Supervisor, Waste Receiving and Processing (WRAP) Facility
- Engineer, WRAP Facility
- Engineering Manager, WESF
- Facility Manager, WRAP Facility
- Facility Operations/Maintenance Manager, WESF
- FWS, 200 Area LWPF
- FWS, SWSD
- Maintenance Manager, 200 Area LWPF
- Maintenance Manager, SWSD
- Maintenance Manager, WRAP Facility
- Manager, Training
- Manager, Transuranic Project
- Manager, Waste Services Generator Services
- Manager, Waste Services Technical Services
- Nuclear Plant Operator, SWSD
- Nuclear Process Operator, WRAP Facility
- Operations Manager, 200 Area LWPF
- Operations Manager, SWT
- Operations Manager, WRAP Facility
- Program Manager, Industrial Relations Field Activities, FH
- Project Manager, 200 Area LWPF
- Project Manager, SWSD
- Project Manager, Waste Services
- Project Manager, WESF
- Project Support Manager, SWT
- Project Support Manager, WESF
- Waste Operations Manager, SWSD.

Observations

- SWT Project Support Functional Interface meeting, June 16, 2000
- SWT Safety Functional Support Interface meeting, June 15, 2000
- SWT Senior Staff meeting, June 15, 2000
- WESF Plan of the Day meeting, June 14, 2000
- WRAP Facility Turnover/Status meeting, June 19, 2000

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- WRAP Facility Operations Staff meeting, June 19, 2000
- Waste Services Team Lead meeting, June 19, 2000.

Discussion of Results

Criterion 1: *Clear roles and responsibilities are defined within the facility or activity to ensure that safety is maintained at all levels.*

WMP and Functional Charters, WMP-100, *Waste Management Project Policies*, Section 4.1, "Waste Management Project Charter," Section 4.2, "WMP Projects Charter," and Section 4.3, "WMP Functional Charters," assign organizational and mission-related responsibilities, and include providing safe and compliant stewardship of personnel, the environment, and facilities. FH and WMP administrative procedures clearly define roles and responsibilities for project- and facility-level management. Roles and responsibilities are communicated to the staff beginning with the hiring process and job descriptions, and continue to develop through annual reviews and training. Managers communicate specific roles and expectations and these are documented through annual performance reviews. Responsibilities are also defined in administrative and technical work documents, and discussed in pre-job reviews and turnover meetings. WMP management is enthusiastic concerning ISMS and generally knowledgeable of their roles and responsibilities, and formal processes to develop and communicate roles and responsibilities to WMP personnel. Some projects, including WRAP Facility, SWT, and Waste Services have developed and promulgated detailed staffing plans that identify the general organizational structure and positions by title, responsibilities, and educational requirements. Some staffing plans do not include specific ISMS-related roles and responsibilities in the existing exempt and bargaining unit sections. Although staffing plans provide valuable information, the WMP plans are not consistent in level of detail and bargaining unit personnel are not always aware of the documented responsibilities. **(WMP MGO.2-3)**

Neither HNF-MP-003 nor the WMP ISM System Description (HNF-MP-003, Appendix D) addresses the flow down of roles and responsibilities to bargaining unit employees through contract mechanisms. The WMP ISMS System Description (HNF-MP-003, Appendix D) identifies HNF-PRO-074 as one of the procedures that define roles and responsibilities; however, the HNF-PRO-074 requirement for managers/supervisors to "incorporate specific safety and health responsibilities and requirements into formal job descriptions" has not been implemented for bargaining unit personnel. **(WMP MGO.2-2)**

Completed corrective actions, associated with the April 2000 FH ISMS Phase I Verification (DOE/RL-2000-30), adequately address the specific MGO.2 concerns relative to roles and responsibilities.

SWT functional interface meetings are an effective approach for communicating and managing services received from functional support groups. These meetings are held monthly or weekly as determined by SWT facility management and meeting minutes are documented in a monthly rollup. The WMP individual Central Support Group manager, SWT Functional Area Manager or

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point of contact, and the SWT Facility Manager meet and discuss schedule, resources, and commitments relative to central group support to facility activities. This method of functional group integration is unique to SWT and is described by facility and functional group personnel as a valuable project management tool. SWT functional interface meetings are an effective approach for communicating and managing services received from functional support groups. **(WMP MGO.2-1)**

A notable exception to the appropriate implementation of roles and responsibilities was observed within WMP Maintenance Project Support, Central Services. Within this organization, an overall lack of control and direction was observed. Workers cited examples such as a lack of sufficient detail in rigging preventive maintenance procedures; some Department of Transportation inspections on vehicles were not current, and safety issues identified on a specific tilt-bed trailer were unresolved. Through interviews and observations, it was noted that communication and feedback to the workers was not satisfactory. Many of the workers felt that safety issues were not being addressed and stated that Stop Work makes management "mad." This group is heavily matrixed to other organizations, which puts them in situations making it more difficult for management to hear issues. A lack of management oversight, organizational structure, and defined roles and responsibilities is evident in the WMP Maintenance Project Support group of Central Services. **(WMP MGO.2-4)**

Criterion 2: *Line management is responsible for safety.*

FH and WMP procedures clearly assign responsibility for safety to line management. WMP line management is engaged in ISMS implementation and is enthusiastic concerning participation in the process. Interviews and observations indicate that managers regularly attend pre-job briefings and participate in management assessments. Management is active in the facility and project safety councils and aggressively promotes the tenets of ISMS in meetings and performance evaluations. Line management at each facility and project demonstrated responsibility for and commitment to safety.

Criterion 3: *Processes are implemented to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.*

Educational requirements are included in the hiring process and administrative procedures define position-specific training and qualification requirements. The WMP training program is implemented through WMH-200, *Waste Management Project Procedures*, Section 5.01, "Training Plan" and Section 5.03, "Training Implementation Matrix," and the WESF training program is implemented through FSP-WESF-001, *WESF Project Administration*, Section TN-01. A systematic approach has been used to determine the training required for specific positions, based on tasks performed by personnel. A more rigorous approach to training is implemented at nuclear facilities in accordance with DOE Order 5480.20A. Training requirements and status are tracked using a formalized TMX that provides real-time qualification status. Reports identifying qualification status, training delinquencies, and upcoming training due dates are promulgated to management/supervision weekly or monthly.

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Managers and FWSs interviewed were familiar with this training status tool and indicated that job performance is dependent on qualification status. The AJHA and JSA processes include training considerations during job planning evolutions. Also, entry to potentially dangerous areas or job sites is controlled by a computer access system that flags safety and health training requirements prior to personnel admittance.

Conclusion

Facility management and personnel are knowledgeable and demonstrated enthusiasm and commitment to ISMS. Roles and responsibilities are effectively communicated and managers understand their responsibilities associated with safety. However, WMP facility staffing plans are not consistent in level of detail, and bargaining unit personnel are not familiar with the documented roles and responsibilities. Also, the HNF-PRO-074 requirement for managers/supervisors to “incorporate specific safety and health responsibilities and requirements into formal job descriptions” has not been implemented for bargaining unit personnel. Effective processes have been implemented to ensure that personnel who supervise and perform work have competence commensurate with responsibility. Managers and workers understand and comply with training requirements.

— This objective has been met.

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Strengths:

- Bargaining unit personnel at the 222-S Laboratory are given the opportunity to participate as team leaders in the identification, analysis, and mitigation of workplace hazards. **(ASP MGO.2-1)**
- The integration of operationally qualified and experienced personnel throughout the workforce is unique to FFTF and ensures a high level of competence is applied to the implementation of ISMS Core Functions and Guiding Principles. **(FFTF MGO.2-1)**
- SWT functional interface meetings are an effective approach for communicating and managing services received from functional support groups. **(WMP MGO.2-1)**

Concerns:

- The HNF-PRO-074, *Safety Responsibilities*, requirement for managers/supervisors to “incorporate specific safety and health responsibilities and requirements into formal job descriptions” has not been implemented for bargaining unit personnel. **(ASP MGO.2-2)**
- The training and roles and responsibilities associated with the 222-S Laboratory Leader position have not been formally defined or documented. **(ASP MGO.2-3)**
- A lack of management oversight, organizational structure, and defined roles and responsibilities is evidenced in the ASP Hazardous Materials Group. **(ASP MGO.2-4)**
- The HNF-PRO-074, *Safety Responsibilities*, requirement for managers/supervisors to “incorporate specific safety and health responsibilities and requirements into formal job descriptions” has not been implemented for bargaining unit personnel. **(NMS MGO.2-1)**
(WMP MGO.2-2)
- WMP staffing plans are not consistent in level of detail, and bargaining unit personnel are not aware of the documented roles and responsibilities. **(WMP MGO.2-3)**
- A lack of management oversight, organizational structure, and defined roles and responsibilities is evident in the WMP Maintenance Project Support group of Central Services. **(WMP MGO.2-4)**

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DATE: TBD

Submitted: Paul M. Pak

Paul Pak, Team A

Team Member
A. Benjamin Geppert

A. Benjamin Geppert, Team B

Team Member

Approved: Ed Parsons

Joe (Ed) Parsons

Team Leader

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OBJECTIVE

MGO.3 - An integrated process has been established that ensures mechanisms are in place to ensure continuous improvements are implemented through an assessment and feedback process, which functions at each level of work and at every stage in the work process.

Criteria

1. Personnel collect feedback information, such as self-assessments, monitoring against performance objectives, occurrence reporting, and routine observation. Personnel assigned these roles are competent to execute these responsibilities.
2. Feedback and improvement information opportunities are developed at the site and facility levels, as well as the individual maintenance or activity level. The information that is developed at the individual maintenance or activity level is used to provide feedback and improvement during future similar or related activities.
3. Managers identify improvement opportunities. Evaluation and analysis mechanisms should include processes for translating operational, oversight, and assessment information into improvement processes and appropriate lessons learned.
4. Managers consider and resolve recommendations for improvement, including worker suggestions.
5. A process for oversight has been implemented that ensures that regulatory compliance is maintained as required by rules, laws, and permits.

Approach

Record Review

- Review procedures to ensure that a process is established to ensure continuous improvements are implemented through an assessment and feedback process, which functions at each level of work and at every stage in the work process.
- Review the performance monitoring documentation for the feedback and continuous improvement process. This should include such documents as occurrence reports, shift orders, deficiency reports, post-job reviews, safety observer reports, employee concerns programs, and reports of self-assessments.
- Review procedures for work to determine that adequate feedback and improvement mechanisms are in place at the individual maintenance or activity level.

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- Review actual data from these processes to evaluate the effectiveness of the implementation of these mechanisms.
- Review the performance measures and performance indicators established to determine that these tools provide information that is truly a direct indicator of how safely the work is being planned.
- Review procedures/processes established to select, train, and qualify personnel responsible for the feedback and improvement programs.
- Review the performance measures and performance indicators established to determine that these tools provide infrastructure that is truly a direct indicator of how safely the work is being performed.

Interviews

Interview personnel responsible for administering the feedback and continuous improvement progress. This should include personnel such as those responsible for occurrence reporting, lessons-learned preparation, shift orders preparation, worker concerns program, self-assessment, and oversight. Interview personnel responsible for capturing and utilizing feedback and improvement information during individual maintenance or other work activities.

Observations

Observe development and utilization of feedback and continuous improvement activities. This should include such things as conducting post-job critiques, monitored evolutions, post-As Low as Reasonably Achievable reviews, conducting a self-assessment or independent assessments, etc.

Record Review

- 16000-99-BO-080, *Expectations for Corrective Action Management Process*, Fluor Hanford (FH) Interoffice Correspondence from B. Oldfield, Waste Encapsulation and Storage Facility (WESF), to Distribution, November 18, 1999
- 18100-LEH-00-011, FH Interoffice Correspondence, *Operations Housekeeping Tour and Operations Tickle File Activities*, March 20, 2000
- 222-S Laboratory, Waste Sampling and Characterization Facility, and Hanford Analytical Services Program Correction Action Status Summary Table, June 19, 2000
- 400 Area Safety Awareness Council Meeting Minutes
 - May 23, 2000
 - June 12, 2000
 - June 27, 2000

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- ASP-100, *Analytical Services Policies*
 - Section 2.10.1, “Accountability for Safety,” Rev. 2, May 19, 2000
 - Section 2.10.2, “Safety Councils,” Rev. 2, June 8, 2000
- ASP-200, *Analytical Services Procedures*
 - Section 1.2, “Assessment Program,” Rev. 2, June 6, 2000
 - Section 1.3, “Corrective Action Management,” Rev. 5, May 31, 2000
 - Section 1.9, “Trending Program,” Rev. 5, May 31, 2000
 - Section 1.10, “Safety Idea/Issue Program,” Rev. 2, May 23, 2000
 - Section 1.12, “Safety STARZ (Participation) Program,” Rev. 2, May 30, 2000
 - Section 1.13, “Self-Inspection Program,” Rev. 3, January 20, 2000
 - Section 1.18, “Technical Procedure Process,” Rev. 1, June 5, 2000
 - Section 2.1, “Organization and Administration,” Rev. 3, May 23, 2000
 - Section 2.6, “Abnormal Events, Investigation, Notification, and Occurrence Reporting,” Rev. 3, June 28, 1999
 - Section 2.14, “Required Reading,” Rev. 2, May 23, 2000
 - Section 3.1, “Work Management,” Rev. 5, June 8, 2000
- ASP-310, *Analytical Services Administration*, Section 3.9, “Management Field Assessment Program,” Rev. 2, June 6, 2000
- ASP00-SA-GA-MS-107, *CATRAX Assessment*, June 21, 2000
- *Assessment of Environmental Compliance Functional Area Standards/Requirements Identification Document Requirement (S/RID)*
 - 13.0, “Packaging and Transportation” and 16.9, “Hazardous Waste Management,” April 20, 2000
 - 20.2.4, 20.3.2.2, and 20.6, “Underground Storage Tanks,” June 27, 2000
- Fast Flux Test Facility (FFTF) Administrative Procedure
 - A-28, *Work Management Processes*, Rev. 13, December 31, 1997
 - A-37, *Corrective Action Management System*, Rev. 2A, July 7, 1999
 - A-40, *Operations Procedure*, Rev. 1-A, August 30, 1996
 - A-50, *Administration of the Facility Internal Assessment Program*, Rev. 0A, June 19, 2000
- FFTF Performance Indicators, May 2000
- FFTF Plant Operating System Priority, Work and Control Schedule, June 26, 2000
- FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual Organization, Responsibilities, and Authority*, Section 7.0, “FFTF Lessons Learned,” Rev. 0, October 30, 1998
- *Feedback and Continuous Improvement Desk Instruction*, Rev. 0, April 3, 2000
- DI-WMHQS-008-00, *Tracking 222-S Internal Commitments in CATRAX Desk Instruction*, May 17, 2000
- Desk Instructions for Environmental Actions Tracking System Database, May 17, 2000
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, January 5, 2000
 - Section 1.4, “Occurrence Reporting,” Rev. 9, October 4, 1999
 - Section 1.14, “Managing Lessons Learned,” Rev. 3, March 27, 2000
 - Section 13.1 “Preventative Maintenance and Surveillance Recall System,” Rev. 5, April 5, 2000

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- Section 13.4, “Work Management Process Description and Job Control System Process,” Rev. 21, April 16, 2000
- Section 2.23, “Identification and Resolution of Unreviewed Safety Questions,” Rev. 23, May 1, 2000
- Section 2.27, “Senior Supervisory Watch Program,” Rev. 9, April 3, 2000
- Section 2.36, “Management Assessment Program,” Rev. 5, November 5, 1999
- Section 2.42, “Corrective Action Management Program,” Rev. 0, November 15, 1999
- FSP-WESF-001, *WESF Project Administration*
 - Section CM-3, “Waste Management Process,” Rev. 6, May 31, 2000
 - Section P-4, “WESF Management Observation Program,” Rev. 3, January 25, 2000
- Fiscal Year (FY) 2000 Management Assessment Plan and Schedule for the Analytical Services Project, November 1, 2000
- FH Issues for ISMS Phase II Verification Topic Briefing Sheets, June 13, 2000
- FH ISMS Phase I Corrective Action Closure Packages, May 22, 2000
- HNF-IP-1264, *324/327 Facilities Stabilization Projects*
 - Section 2.4, “Technical Procedure Development and Control,” Rev. 6, June 14, 2000
 - Section 2.10, “Management Assessment Program,” Rev. 2, October 29, 1999
 - Section 4.1, “Job Control System Implementation,” Rev. 10, June 21, 2000
 - Section 4.5, “Tickle File,” Rev. 0, November 22, 1999
- HNF-MD-6367, *Fluor Hanford Management Roles and Responsibilities*, Rev. 0, May 16, 2000
- HNF-MD-6410, *Fluor Hanford Issue Management Systems*, Rev. 0, May 19, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor ISMS Description”
 - Appendix G, “Fast Flux Test Facility ISMS Description”
 - Appendix H, “Analytical Services ISMS Description”
- HNF-PRO-052, *Corrective Action Management*, Rev. 4, April 15, 2000
- HNF-PRO-067, *Managing Lessons Learned*, Rev. 1, November 24, 1998
- HNF-PRO-075, *Safety Communications*, Rev. 2, December, 23, 1997
- HNF-PRO-229, *Technical Procedure Standard*, Rev. 4, January 14, 2000
- HNF-PRO-246, *Management Assessment*, Rev. 2, October 25, 1999
- ISM Performance Indicators, June 6, 2000
- Internal Memo, *Corrective Action Management*, J. Geisbush, FH, to R. McQuinn, FH, 2000
- Occurrence Reporting and Processing System Manager Corrective Action Status Report, June 19, 2000
- Performance Indicator, DTS Actions, Percent Delinquent, May 2000
- Problem Identification Form, May 23, 2000
- RCP-PRO-015, *Feedback and Improvement Process*, draft, Rev. 0

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- RCP-OPS-CHK-19, *RCP Procedure Observation Checklist of Adequacy, Usability and Compliance*, Rev. 0, April 21, 2000
- WESF Training Performance Indicators, May 2000
- WESF FY 2000 Self-Assessment Schedule and Status, Rev. 11, March 28, 2000
- WESF Safety Council Charter
- WMP Response Letter to HNF-MD-6367 – *Clarification of Roles and Responsibilities*, May 18, 2000
- WMP-100, *Waste Management Project Policies*
 - Section 1.0, “General Policy Statements,” Rev. 1, April 21, 2000
 - Section 2.10.2, “Accountability for Safety,” Rev. 2, June 6, 2000
 - Section 4.0, “WMP Charter Description,” Rev. 1, May 31, 2000
 - Section 4.1, “Waste Management Project Charter,” Rev. 0, April 21, 2000
 - Section 4.2, “WMP Projects Charters,” Rev. 1, May, 31, 2000
 - Section 4.3, “WMP Functional Charters,” Rev. 0, April 21, 2000
 - Section 4.6, “WMP Integrated Safety Roles and Responsibilities,” Rev. 0, May 23, 2000
- WMP-200, *Waste Management Project Procedures*
 - Section 1.3, “Corrective Action Management,” Rev. 5, May 31, 2000
 - Section 1.9, “Trending Program,” Rev. 2, March 1, 1999
 - Section 1.10, “Safety Idea/Issue Program,” Rev. 2, June 6, 2000
 - Section 1.12, “Safety STARZ (Participation) Program,” Rev. 2, June 6, 2000
 - Section 1.13, “Self-Inspection Program,” Rev. 3, January 20, 2000
 - Section 1.18, “Technical Procedure Process,” Rev. 0, May 15, 2000
 - Section 2.1, “Organization and Administration,” Rev. 3, May 18, 2000
 - Section 2.6, “Notification, and Occurrence Reporting,” Rev. 4, May 18, 2000
 - Section 3.1, “Work Management,” Rev. 5, June 7, 2000
- WMP-370, *Generator Services Procedures*
 - Section 1.10, “Verification Program,” Rev. 0, January 29, 1999
 - Section 1.11, “Performance Evaluation System,” Rev. 1, April 5, 1999
- WMP-340, *Solid Waste Treatment Project Administrative Procedure*, Section 2.7, “Pre-Job Program,” May, 22, 2000
- WMP-342, *Solid Waste Storage and Disposal Procedures*, Section 1.5, “Management Overview Program,” May 25, 2000
- Waste Receiving and Processing (WRAP) Facility Safety Council Charter
- Waste Management Project Organization Charts, May 30, 2000.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Coordinator, Management Assessment
- Facility Manager
- Manager, Business Management
- Manager, Employee Concerns
- Manager, Engineering
- Manager, Health and Safety Program
- Manager, Operations
- Manager, Project Support
- Project Manager
- Vice President.

Observations

- 222-S Laboratory Safety Council meeting, June 21, 2000
- Corrective Action meeting, June 21, 2000.

Discussion of Results

Criterion 1: *Personnel collect feedback information, such as self-assessments, monitoring against performance objectives, occurrence reporting, and routine observation. Personnel assigned these roles are competent to execute these responsibilities.*

ASP management was knowledgeable concerning the various feedback processes available and demonstrated commitment to continuous improvement. Management described safety council meetings, post-job reviews, management assessments, management involvement, health and safety inspections, corrective action management (CAM), tracking/trending, and performance indicator reviews as effective feedback mechanisms.

Interviews indicated feedback information within ASP can be obtained through three types of assessments: Management, General, and Worker, as outlined in ASP-200, *Analytical Services Procedures*, Section 1.2, "Assessment Program." In addition to the results of both internal and independent assessments, ASP receives feedback regarding deficiencies in safety, environmental, and quality performance from various external oversight organizations. These include RL, DOE-Headquarters, Defense Nuclear Facilities Safety Board, U.S. Environmental Protection Agency, Washington State Department of Ecology, Washington State Department of Health, and *Price Anderson Amendment Act (PAAA)* reviews. Results are received and processed using the ASP CAM system.

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The ISMS team found that individual goals are established for employees and performance evaluations are conducted. The personnel appraisal process seeks to improve communication between management and personnel to foster high standards of performance in areas of safety, conduct of operations, environmental compliance, and housekeeping.

Criterion 2: *Feedback and improvement information opportunities are developed at the site and facility levels, as well as the individual maintenance or activity level. The information that is developed at the individual maintenance or activity level is used to provide feedback and improvement during future similar or related activities.*

Interviews and observations indicated that ASP implements the Hanford Site-wide Lessons Learned process as described in HNF-PRO-067, *Managing Lessons Learned*. Project-specific required reading includes applicable procedure changes, lessons learned, equipment design changes, etc. The responsible manager gathers and reviews this material, and forwards applicable materials to the Required Reading coordinator. Materials are distributed to appropriate personnel for required reading (ASP-200, Section 2.14, "Required Reading"). The ISMS team also found through interviews that the FH CAM system process inputs lessons learned as appropriate.

Criterion 3: *Managers identify improvement opportunities. Evaluation and analysis mechanisms should include processes for translating operational, oversight, and assessment information into improvement processes and appropriate lessons learned.*

Management Field Assessments (ASP-310, *Analytical Services Administration*, Section 3.9, "Management Field Assessment Program") provide for immediate feedback and improvement. **(ASP MGO-3.1)** This program is in addition to the normal management assessment described in ASP-200, Section 1.2 "Assessment Program." Management Field Assessments are conducted to monitor operating performance to improve operations at the 222-S Laboratory complex. The program provides direction for selected senior and first-line managers to perform oversight and in-field monitoring. Management presence in the facilities fosters communication between management and employees. Management indicated they believe their employees are comfortable with their presence in the facility and are not hesitant in expressing concerns.

The ISMS team found a disconnect in that the ASP ISM System Description (HNF-MP-003, *Integrated Environmental, Safety and Health Management System Description*, Appendix H, Section 3.6) takes credit for identifying, tracking and trending deficiencies and continuous improvement opportunities, but ASP-200, Section 1.3 does not address (nondeficiency) continuous improvement opportunities. ASP-200 states, "This procedure establishes the requirements and responsibilities for corrective action management associated with the identification and evaluation of conditions and correction of identified deficiencies." However, the 222-S Laboratory Commitment Action Tracking (CATRAX) system does track continuous improvement items. In this process, the 222-S Laboratory Business Management Commitment Assurance lead or delegate takes detailed notes to capture actions and commitments identified during the Deficiency Evaluation Group (DEG) meetings. Issues reviewed during the DEG

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meeting and identified as Risk Rank Value (RRV) 0, with identified actions, are noted in the DEG Agenda Notes. The CATRAX Coordinator reviews the notes with the identified point of contact to obtain the correct commitment wording, due dates, and actionees before entry into the system. The Deficiency Tracking System (DTS) remains the only tool used to assure actions associated with identified deficiencies (RRV 1 and above) are completed.

Criterion 4: *Managers consider and resolve recommendations for improvement, including worker suggestions.*

Observations and interviews indicated the ASP Employee Safety Council provides a mechanism for employee issues to be resolved. Safety councils are an integral part of ASP process improvement and oversight. These councils provide a venue for personnel to raise safety issues/ideas. Concerns are tracked by the council, given to facility management for remediation, and entered into the CAM system as necessary.

Interviews indicate that ASP senior management believe that ISM has increased worker involvement. Management and workers now sit down and discuss jobs. Through ISM, they realized there is an open door to communicate and bring up issues and have them resolved. The team found that both managers and workers have been educated relative to ISM and the level of commitment is high. Relative to ISM, feedback from employees has been positive.

Interviews indicated that the Safety Idea/Issue Program and Safety STARZ (Participation) Program are recognized by both managers and workers as programs that foster safety awareness. These programs are mechanisms used by management to encourage participation in continuous improvement. The Safety Idea/Issue Program establishes a process for ASP employees to document suggestions where the safety of employees, protection of the environment, or facility safety can be improved. The Safety STARZ (Participation) Program establishes a process for ASP to recognize and reward employees who have demonstrated a commitment of safety through participation in associated activities.

Criterion 5: *A process for oversight has been implemented that ensures that regulatory compliance is maintained as required by rules, laws, and permits.*

The ISMS team determined that ASP has fully implemented a process for regulatory oversight. The Environmental Compliance Officer (ECO) ensures that regulatory compliance is maintained at the project/facility level. Interviews indicated that the ECO is involved throughout the work planning process. The ECO is also involved in the Corrective Action process. In the field, daily and weekly operations surveillances are performed. Environmental problems are worked through the ECO and dispositioned. Problems that cannot be rapidly fixed go through the CAM system. ASP also ensures regulatory compliance is maintained through management assessments. The regulatory oversight process is also implemented by external oversight organizations. These include RL, DOE-Headquarters, Defense Nuclear Facilities Safety Board, U.S. Environmental Protection Agency, Washington State Department of Ecology, Washington State Department of Health, and PAAA reviews. ASP receives feedback regarding deficiencies

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in safety, environmental, and quality performance from these various external oversight organizations.

Conclusion

ASP has established an integrated process that provides mechanisms for continuous improvements that are implemented through the assessment and feedback process. The ISMS team observed several of these mechanisms such as the Safety Council meeting, management assessments, CAM meetings, and the CATRAX system.

The ISMS team found the Management Field Assessments is an excellent feedback improvement tool that fosters communication between management and the employee. It also encourages management field presence.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Acting Environmental Compliance Officer
- ISMS Coordinator
- Lead, Quality Assurance
- Lead, Safety
- Lessons Learned Coordinator
- Management Assessment Coordinator
- Manager, Corrective Action Management
- Manager, Work Control.

Observations

- Engineering Safety meeting, June 26, 2000
- Safety Awareness Council meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Personnel collect feedback information, such as self-assessments, monitoring against performance objectives, occurrence reporting, and routine observation. Personnel assigned these roles are competent to execute these responsibilities.*

FFTF management was knowledgeable concerning the various feedback processes available and demonstrated commitment to continuous improvement. Management described safety council meetings, post-job reviews, management assessments, corrective action management, and performance indicator reviews as effective feedback mechanisms.

Interviews indicated feedback within FFTF is also obtained through the *Feedback and Continuous Improvement Coordinator Desk Instruction*. The desk instruction provides a process for reviewing, screening, and analyzing input data to identify areas for improvement and Hanford Site initiatives, and to establish operational performance goals. The Feedback and Continuous Improvement Coordinator identifies, analyzes, and defines recommendations for presentation to the FFTF Management Team. This desk instruction implements FDH-5096, *Feedback and Improvement Process*, as well as 10 Code of Federal Regulation 830.120, "Quality Assurance Requirements." Specifically, FDH-5096 addresses the requirements for how FFTF performance is monitored, measured, and evaluated to identify and implement improvement items.

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Criterion 2: *Feedback and improvement information opportunities are developed at the site and facility levels, as well as the individual maintenance or activity level. The information that is developed at the individual maintenance or activity level is used to provide feedback and improvement during future similar or related activities.*

As defined in Administrative Procedure A-28, *Work Management Processes*, the ISMS team found that personnel participate in post-job review meetings to improve performance and efficiency. Interviews indicated that Field Change Notices and Work Control Notices are integral in identifying, processing, and communicating changes to work packages. Routine safety, quality, and management assessments are also performed, as described in Administrative Procedure A-50, *Administration of the Facility Internal Assessment Program*, to identify areas for improvements.

The FFTF CAM system verifies that actions recorded as complete are actually completed. Administrative Procedure A-37, *Corrective Action Management System* goes beyond the requirement of HNF-PRO-052, *Corrective Action Management*, in the verification of corrective action process. Procedure reviews and interviews indicated that the FFTF CAM system provides for 100% verification of corrective actions. **(FFTF MGO.3-1)**

Criterion 3: *Managers identify improvement opportunities. Evaluation and analysis mechanisms should include processes for translating operational, oversight, and assessment information into improvement processes and appropriate lessons learned.*

Performance indicators are used by management in conjunction with the results of management assessments and validation activities prior to initiating improvement programs. FFTF performance indicators reviewed by the ISMS team contained graphic displays of key performance indicators that portrayed a trend in several functional areas related to plant operations. These performance indicators reflect one mechanism for management monitoring and assessment of overall plant performance and facility activities, including ES&H.

Through interviews and observations, it was noted that FFTF implements the Hanford Site-wide lessons learned process described in HNF-PRO-067. Project-specific required reading includes applicable procedure changes, lessons learned, equipment design changes, etc. The Lessons Learned Coordinator receives and reviews lessons learned from the Hanford Site-wide Lessons Learned Coordinator and determines if it is applicable for the facility or an organization. Applicable lessons learned are distributed to the appropriate managers for promulgation. FFTF managers promulgate lessons learned via required reading, pre-shift briefings, staff meetings, pre-job briefings, crew training sessions, safety meetings, or other appropriate means. Interviews also indicated that lessons learned requiring actions, typically those related to an occurrence report action, shall be documented and tracked via the DTS. The organizational managers ensure that the required actions are completed by their organization. The FFTF Lessons Learned Coordinator also has a unique database. The event database contains information prior to the inception of the Occurrence Report Program and the Lessons Learned Program. The events

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database allows for a comprehensive historical query of lessons learned at FFTF and is very beneficial because of its longevity. **(FFTF MGO.3-2)**

Criterion 4: *Managers consider and resolve recommendations for improvement, including worker suggestions.*

Observations and interviews indicated the FFTF Safety Awareness Council provides a mechanism for employee issues to be resolved. Safety councils are an integral part of FFTF process improvement and oversight. These councils provide a venue for personnel to raise safety issues. Concerns are tracked by the council, and given to facility management for remediation. However, the ISMS team found the concern-tracking table provided in the meeting had not been updated relative to the resolution and completion of concerns. Some items dated back to 1997. However, the ISMS team was able to verify that some of these items were actually closed and not updated on the table. The team also found that concerns brought to the safety council are not going through the CAM process as described in Administrative Procedure A-37. **(FFTF MGO.3-3)**

Interviews indicated that FFTF senior management believes that ISM has increased worker involvement. Craft personnel participated in the FFTF ISM self-assessments. Their participation in this readiness assessment fostered worker ownership in the ISM process. Both managers and workers have been educated relative to ISM and the level of commitment to ISM is high. Some ISM training was performed by craft workers to other craft, allowing for a greater acceptance of ISM.

Interviews indicated that employees receive incentives for submitting safety ideas to the Safety Awareness Council. Employees that participate in the incentive program receive a certificate and a small monetary award. This safety incentive program is recognized by both managers and workers as a program that fosters safety awareness. The program is a mechanism used by management to encourage participation in continuous improvement.

Criterion 5: *A process for oversight has been implemented that ensures that regulatory compliance is maintained as required by rules, laws, and permits.*

FFTF has fully implemented a process for regulatory oversight. The ECO ensures that regulatory compliance is maintained at the project/facility level by performing S/RID assessments. The ISMS team reviewed documentation from three regulatory compliance S/RID assessments for fiscal year 2000. The scope of the S/RID assessments may include all or some of the applicable requirements from S/RID chapters 13, 16, and 20 as determined by the Regulatory Compliance Manager with the intent to fully assess the requirements of the S/RID chapters at least once every 3 years. S/RIDs contain the ES&H requirements to be implemented for a facility or activity. These requirements are to achieve an adequate level of protection for worker and public health and safety, and the environment.

The regulatory oversight process is also implemented by external oversight organizations.

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In addition to the results of both internal and independent assessments, FFTF receives feedback regarding deficiencies in safety, environmental, and quality performance from various external oversight organizations. These include RL, Washington State Department of Ecology, Washington Department of Health, and PAAA reviews. Results are received and processed using Administrative Procedure A-37. An interview with the PAAA Coordinator indicated constant communication between FFTF, RL, and FH PAAA Coordinators.

Conclusion

FFTF has established an integrated process that provides mechanisms for continuous improvements that are implemented through the assessment and feedback process. The ISMS team observed several of these mechanisms such as the Safety Awareness Council meeting, management assessments, lessons-learned program, engineering safety meeting, and the feedback and continuous improvement process procedure (FDH-5096).

However, all concerns brought to the Safety Awareness Council are not going through the CAM process as described in Administrative Procedure A-37. The ISMS team also found that FFTF personnel conduct 100% verification of completed corrective actions.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Chairman, DEG
- Deputy Facility Director
- Design Authority, HVAC Team
- Manager, Environmental, Safety, Health and Quality (acting)
- Manager, Near-Term Planning (acting)
- Manager, Solution Stabilization Project
- Person-In-Charge (PIC), High Efficiency Particulate Air Team
- Point of Contact, DEG
- Safety Representative, Hanford Atomic Metal Trades Council (HAMTC)
- Senior Project Manager
- Team Leader, QA (acting)
- Work Coordinator, High Efficiency Particulate Air Team
- Work Coordinator, Preventative Maintenance Team
- Work Planner, "WAVS" team.

Observations

- Zero Accident Council (ZAC), June 14, 2000
- Automated Job Hazards Analysis (AJHA), June 14 and 16, 2000
- DEG meeting, June 15, 2000
- Senior Supervisory Watch, June 16, 2000
- Director's Brief, June 14, 15, 16, 19, and 20, 2000.

Discussion of Results

Criterion 1: *Personnel collect feedback information, such as self-assessments, monitoring against performance objectives, occurrence reporting, and routine observation. Personnel assigned these roles are competent to execute these responsibilities.*

Several feedback processes were observed in use at the NMS Project. There are both formal and informal processes in use. The first process each weekday is the Director's Briefing scheduled at each weekday morning. This meeting is effectively used to understand facility operating status and the priority activities for each manager. This helps assure the entire management team understands the priority actions that are planned for the day, and if they have a role in completing those actions. (NMS MGO.3-1)

The CAM process at NMS is being administered as required in HNF-PRO-052, *Corrective Action Management*, the current FH procedure. The CAM process is an effective tool to drive improvements in work processes, for those input documents defined in HNF-PRO-052.

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The Employee Concerns Program is used as a feedback process at the NMS Project. Safety and environmental concerns raised through the Employee Concerns Program are acted upon, and feedback is provided to the employee if the identity of the specific person(s) raising the concern is known.

The NMS Project has adopted a graded approach for conducting post-job reviews. Based on a series of interviews, it appears that the results of post-job reviews are being fed back into the work process to improve future performance. Evidence exists showing that improvements to technical procedures have been made based on this feedback, as well as improved staging of materials to reduce the time needed to perform a routine activity.

The AJHA process also includes feedback from lessons learned on similar work activities, as well as from the post-job review process.

The NMS Project has a formal management assessment process addressing the requirements of HNF-PRO-246, *Management Assessment*. At this time, the NMS Project has only selected and scheduled approximately 12 assessments for this year. The breadth and depth of completed assessments do not give management much value. Currently, the NMS Project is aware of the issue, and is developing a set of management expectations, and a request for all managers to recommit to a set of assessments that could add value to the organization and project.
(NMS MGO.3-2)

Personnel effectively collect feedback information. Workers effectively enter concerns into the Safety Log system. The NMS Project Safety staff maintain and rapidly respond to the stated concerns. In every case for the past year, the concerns have been connected within a short (1-2 weeks) period of time. These people are competent to execute these responsibilities. The safety professionals and management team have demonstrated their competence through their use of the Safety Log and the Zero Accident Council.

Criterion 2: *Feedback and improvement information opportunities are developed at the site and facility levels, as well as the individual maintenance or activity level. The information that is developed at the individual maintenance or activity level is used to provide feedback and improvement during future similar or related activities.*

As stated under Criterion 1, the NMS Project has developed several effective feedback processes that are in use at this time. In addition, the required formal feedback processes, such as the CAM system and post-job reviews, are in place and operating at NMS Project. In addition, continuing training has been developed, based on feedback, to help maintenance teams better understand how the work control operation functions at the Plutonium Finishing Plant. The Work Control organization developed the training material and delivered the first training session. They have given the material to the facility's training organization who will provide this training to new employees as they enter the facility.

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Criterion 3: *Managers identify improvement opportunities. Evaluation and analysis mechanisms should include processes for translating operational, oversight, and assessment information into improvement processes and appropriate lessons learned.*

The feedback process has made it evident to the Facility Director that improvements are needed to make the CAM process more effective. Input to the Facility Director has come from both internal and independent sources. The Facility Director has scheduled all future DEG meetings immediately before senior staff meetings, and required that all his direct reports will take part in the DEG. This should cause all managers to be better prepared and in attendance at the DEG meeting.

Feedback processes led the Manager, Solutions Stabilization Project to develop an AJHA checklist for use during the Senior Supervisory Watchstander (SSW) program. The feedback was that senior management was not seen as involved in the AJHA process, and that senior management expectations were not understood. The new checklist was used as a draft during the evaluation of an AJHA on June 16, 2000, and the checklist was reviewed with the PIC and Work Package Planner involved in the AJHA. Feedback was provided to the PIC and Work Package Planner, and their recommendations were taken by the SSW for incorporation into the draft checklist. The checklist will be finalized and included in the set of checklists available for use by the SSW program. Managers have identified improvement opportunities and taken action to take advantage of these opportunities.

Criterion 4: *Managers consider and resolve recommendations for improvement, including worker suggestions.*

Improvements to the CAM program have been developed and are planned for implementation in the immediate future. The worker that raised issues regarding the CAM program is aware of the intended changes that will be implemented.

The ZAC is an effective mechanism for getting and responding to worker issues. An important feed to the ZAC is the Safety Log process. Safety Logs are maintained at five separate locations around the facility, and are reviewed by the Safety team and the HAMTC Safety Representative. The issues written in any of the logs are brought to the ZAC for status and feedback. The logs are also used to respond to concerns, and corrective actions are listed. This allows the concerned worker to read the log and understand the current status of the item. The ZAC took an action to improve and formalize the Safety Log process to make it more timely and complete. This "lack of timeliness" was feedback brought to the ZAC by the HAMTC Safety Representative, and was accepted by the ZAC members for action.

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Criterion 5: *A process for oversight has been implemented that ensures that regulatory compliance is maintained as required by rules, laws, and permits.*

The NMS Project's current Environmental Self-Assessment program has not been effectively implemented. Improvements to the program are in progress, and are scheduled to be completed by the end of June 2000. The requirements are contained in the technical and administrative procedures of the NMS Project, and are routinely used to control work. This assures that the regulatory requirements are met during completion of work at the facility. However, the oversight process should be strengthened, and the NMS Project has improvements in progress. This concern was raised during the recent Facility Evaluation Board assessment in April 2000. For additional information, see **SME.3, Criterion 5**.

Conclusion

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Administrator, Job Control System, 324 Building
- Coordinator, Lessons Learned/Required Reading, 310 Facility
- Coordinator, Management Assessment
- Coordinator, Management Assessment Program, FH
- Director, 324 Building
- Director, Environmental, Safety, Health, and Quality
- Manager, Engineering and Work Planning, 324 Building
- Planner, Work Control, 310 Facility
- Planner, Work Control, 324 Building (2)
- Project Manager, 310 Facility
- Team Leader, Technical Procedures Group, 324 Building.

Observations

- Post-job Review, 324 Facility, June 22, 2000
- Plan of the Day meeting, 324 Facility, June 22, 2000
- Daily Work Assignment meeting, Hot Cell Operations, 324 Facility, June 22, 2000
- Path Forward meeting, 324 Facility, June 26, 2000
- Morning meeting, 327 Facility, June 26, 2000.

Discussion of Results

Criterion 1: *Personnel collect feedback information, such as self-assessments, monitoring against performance objectives, occurrence reporting, and routine observation. Personnel assigned these roles are competent to execute these responsibilities.*

Formal systems, such as Management Assessment, CAM, and post-job reviews are used, and the information gleaned from these systems is driving improvement in work processes. The people responsible for implementing and maintaining these systems and processes are knowledgeable and qualified to perform their assigned tasks. Most have had these responsibilities for well over a year, and are quite competent.

The RCP is developing a project-wide procedure and process to evaluate, capture, and track to closure opportunities for improvement. The process is controlled by RCP-PRO-015, *Feedback and Improvement Process*. This procedure has been written, but is still in draft form. When issued, the procedure will gather potential issues from 16 separate originating sources/programs to help assure improvements are being captured, and feedback is being provided. The DTS and RCP Nondeficiency Tracking System will be used to track improvement actions to closure. The draft procedure and process (RCP-PRO-015) will use Hanford Site-wide sources for some of the

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16 input sources, such as Conduct of Operations Councils, Occurrence Reporting Process, etc. This broad range of input sources should help assure that improvement opportunities from outside RCP will be captured by the project. Based on discussions with the RCP Technical Support Director, RCP-PRO-015 is scheduled for release in late June 2000, but may be late because of higher priority work.

The RCP is effective in collecting information through feedback processes.

Criterion 2: *Feedback and improvement information opportunities are developed at the site and facility levels, as well as the individual maintenance or activity level. The information that is developed at the individual maintenance or activity level is used to provide feedback and improvement during future similar or related activities.*

The RCP has developed facility-specific feedback processes that are effective in driving process improvement. An example of the feedback process is the Tickle File system described in HNF-IP-1264, *324/327 Facilities Stabilization Projects*, Section 4.5, "Tickle File." This system is currently used at both the 324 and 327 Buildings, and is effective in tracking routine recurring activities that must be completed with some prescribed periodicity (e.g., monthly, quarterly, or annually) to help assure these activities are not missed. The administrators send the list of upcoming activities to the managers responsible for each task on a weekly basis. This provides a feedback process to keep the managers aware of these required activities before they are due.

The 310 Facility does not use the Job Control System process, as it is a non-nuclear facility. However, the facility does effectively manage their work control process, and feedback from previous work operations is effectively captured to improve future work activities. In addition, the 310 Facility effectively uses the required reading system to assure that all affected workers are aware of procedural changes or issues with the facility, or related operations in the DOE complex. This system is kept current by the Lessons Learned/Required Reading Coordinator, with no overdue reading assignments for anyone in the facility for many months.

The RCP has developed and proceduralized the Nondeficiency Tracking System to track and assure completion of needed actions that are outside the scope of the CAM system.

The 324 and 327 Buildings are effectively using a Safety Log process similar to the process of the same name at the NMS Project. At the 324 Building, the Facility Director reviews the entries in the log at least daily, and notes the date reviewed. Based on the dates of writing in a particular issue, and the date it was repaired or corrected, it appears that the facility management team is addressing issues in a very timely manner, and providing meaningful feedback to concerned employees. **(RCP MGO.3-1)**

Each facility within the RCP holds routine ZAC meetings. In addition, there are routine RCP ZAC meetings. These councils appear engaged and effective in driving safety improvement across the project.

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RCP has developed facility-specific feedback processes that are effective.

Criterion 3: *Managers identify improvement opportunities. Evaluation and analysis mechanisms should include processes for translating operational, oversight, and assessment information into improvement processes and appropriate lessons learned.*

Several feedback processes are used within the RCP to help assure technical procedures are accurate and useful. Key among these processes is the post-job review process used for preventative maintenance, modification work packages, and routine facility operations. Additionally, technical procedures are reviewed periodically, as required by procedure. These reviews are also a source of worker input to improve the quality of these procedures.

The RCP has developed a procedure observation process, with associated checklists. This process has been effective in getting management to overview and check procedural adequacy, procedural usability, and procedural compliance. The checklist is used to evaluate the effectiveness of these activities, and to provide a basis for immediate feedback to the person using the procedure. The RCP sends information about the effectiveness of the procedural system, as measured by this process, to the FH Conduct of Operations Council on a monthly basis.

Managers at all levels have identified improvement opportunities.

Criterion 4: *Managers consider and resolve recommendations for improvement, including worker suggestions.*

RCP managers consider and resolve worker concerns and recommendations. The Safety Log process in use at the 324 and 327 Buildings demonstrates that managers do consider and resolve worker recommendations for improvement. In addition, ZAC committees at each facility and at the RCP level further support this criterion.

The 327 Building Director implemented a work stand-down currently underway to assure worker concerns are addressed in the technical work procedures that govern work activities in the facility. Workers were concerned that too much latitude in procedural compliance was given to the PIC. The Building Director took action because of these concerns to assure that workers and facility management can agree with the level of controls that will be required by these technical procedures. Progress is being made to rewrite and reissue these important procedures.

Criterion 5: *A process for oversight has been implemented that ensures that regulatory compliance is maintained as required by rules, laws, and permits.*

The RCP has developed a procedural process to assure that regulatory requirements are implemented, and that there is an oversight process to monitor compliance. The Management Assessment program is used at the 324 and 327 Buildings to provide the necessary oversight. At

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this time, it does not appear that a similar approach (using the Management Assessment process) is being used for other RCP facilities (see **SME.3** for further details). (**RCP MGO.3-3**)

Conclusion

The RCP demonstrates strengths in some areas, and at least one area of concern at some of the project's facilities.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Acting Facility Manager, Solid Waste Treatment (SWT)
- Configuration Control Authority, WESF
- Facility Manager, WRAP Facility
- Facility Operations/Maintenance Manager, WESF
- Field Work Supervisor, 200 Area Liquid Waste Processing Facility (LWPF)
- Lessons Learned Coordinator
- Maintenance Manager, 200 Area LWPF
- Manager, Engineering, WESF
- Manager, Maintenance, WRAP
- Manager, Operations, WRAP
- Manager, Project Support, WESF
- Manager, Waste Services Generator Services
- Manager, Waste Services Project
- Manager, Waste Services Technical Services
- Operations Manager, 200 Area LWPF
- Operations Manager, SWT
- Performance Assurance Assessment Program Coordinator
- Performance Assurance Program Manager
- Preventive Maintenance Lead
- Project Management Support
- Project Manager, 200 Area LWPF
- Project Manager, Solid Waste Storage and Disposal
- Project Manager, WESF
- Vice President
- Waste Operations Manager, Solid Waste Storage and Disposal.

Observations

- 200 Area LWPF DEG meeting, June 14, 2000
- WESF Plan of the Day meeting, June 14, 2000
- Performance Evaluation Systems meeting, June 19, 2000
- WRAP Pre-job Brief, June 19, 2000.

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Discussion of Results

Criterion 1: *Personnel collect feedback information, such as self-assessments, monitoring against performance objectives, occurrence reporting, and routine observation. Personnel assigned these roles are competent to execute these responsibilities.*

Facility management was knowledgeable concerning the various feedback processes available and demonstrated commitment to continuous improvement. Management described post-job reviews, self-assessments, management involvement, employee interviews, CAM, tracking/trending, and performance indicator review as effective feedback mechanisms.

Interviews indicated that incomplete and inconsistent development of corrective actions may occur for ES&H issues affected by interpretation of procedure HNF-PRO-052, *Corrective Action Management*. **(WMP MGO.3-3)** In DOE/RL-2000-30, *FH ISMS Phase I Verification*, a concern was raised relative to the definition of a deficiency as applied to HNF-PRO-052 that affects the interpretation for risk-ranking identified issues. The term “deficiency” could inappropriately be applied to only two out of the seven risk ranking categories concerning noncompliances established in Table A-1 of HNF-PRO-052. Issues may not be considered deficiencies if the subject matter pertains to one of the remaining five categories. Consequently, these issues may not be receiving the level of priority given to those considered noncompliances. Despite the definition of the term “deficiency,” WMP does review all categories of HNF-PRO-052, Table A-1, for RRVs and the subsequent development of corrective actions.

Interviews and observations indicated that WMP personnel receive feedback information from the WMP Lessons Learned Coordinator. The Lessons Learned Coordinator distributes tailored information to each facility. The Lessons Learned Coordinator uses HNF-PRO-067 guidelines for processing incoming lessons-learned documents, including those from the Occurrence Reporting and Processing System from the CAM system and those received from other external sources. These guidelines are also used by the Lessons Learned Coordinator for generating lessons-learned documents about events and conditions at the Hanford Site so those documents can be used in the DOE and FH lessons-learned programs with minimal editing. The WMP Lessons Learned Coordinator works closely with the Hanford Site-wide Lessons Learned Coordinator to gain clarification and understanding of the overall process.

Feedback information within WMP can also be obtained through three types of assessments, Management, General, and Worker. Within each facility, more focused assessments may be conducted. For example, FSP-WESF-001, *WESF Project Administration*, Section P-4, “WESF Management Observation Program,” establishes responsibilities for routine management observations. These routine observations include housekeeping inspection, procedure use, and pre-job briefings.

Personnel are competent to execute their roles and responsibilities. The ISMS team found that training requirements are included in the hiring process and administrative procedures define position-specific training and qualification requirements. A systematic approach has been used

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to determine the training required for specific positions such as the WMP Lessons Learned Coordinator.

Criterion 2: *Feedback and improvement information opportunities are developed at the site and facility levels, as well as the individual maintenance or activity level. The information that is developed at the individual maintenance or activity level is used to provide feedback and improvement during future similar or related activities.*

Feedback and improvement opportunity mechanisms are implemented within WMP. Managers and employees indicated that one of the feedback mechanisms used is the Problem Identification Form, which is described in FSP-WESF-001. This form includes the description and location of the problem, request for feedback, and the originators name and phone number. Another feedback mechanism is the Post-job Binder. Planners use the binder to ensure inclusion of appropriate feedback into future jobs. Copies are made for the facilities, Operating Base, Planner's Office, and Lessons Learned Coordinator. However, interviews indicated that the WESF Configuration Control Authority was not aware of the Post-job Binder. Any action annotated in the post-job review is also entered into the non-CAM system database.

Criterion 3: *Managers identify improvement opportunities. Evaluation and analysis mechanisms should include processes for translating operational, oversight, and assessment information into improvement processes and appropriate lessons learned.*

Management of the CAM process at WESF proves to be very effective in reducing DEG meeting time and in research and identification of the deficiency. **(WMP MGO.3-2)** The CAM Board assigns a cognitive person/manager to research potential deficiencies and to provide a deliverable time for completion. Prior to the DEG, the issue receives a preliminary RRV and Root Cause. All personnel participating have been trained to Root Cause Analysis. Management has communicated their expectations for participation in the CAM process through Interoffice Correspondence.

The WMP ISM System Description (HNF-MP-003, Section 3.6, Appendix D-11) takes credit for identifying, tracking, and trending deficiencies and continuous improvement opportunities; however, HNF-PRO-052 and WMP-200, *Waste Management Project Procedures*, Section 1.3, "Corrective Action Management," do not address continuous improvement opportunities. **(WMP MGO.3-4)** WMP-200 states, "This procedure establishes the requirements and responsibilities for corrective action management associated with the identification and evaluation of conditions and correction of identified deficiencies." LWPF and WRAP do not have a formal process to track opportunities for improvement. HNF-MD-6410, *Fluor Hanford Issue Management Systems*, was written to address the concern identified in the Phase I Verification regarding multiple tracking systems. However, it does not address the absence of a system to track opportunities for improvement. In general, this Management Directive addresses existing and new issue management systems. HNF-MD-6410 does not address two of Waste Management's Issue Management Systems: the Waste Services Action Tracking System, and the WESF Non-CAM database. **(WMP MGO.3-5)**

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Criterion 4: *Managers consider and resolve recommendations for improvement, including worker suggestions.*

The WMP Employee Safety Council apparently is a solid mechanism for resolving issues. The council shares safety information and resources and provides a forum for addressing safety issues and activities at a company-wide level. The council ensures that communication regarding safety is promoted between all project and their organization's safety councils and aids in facilitating communication where needed. The Facility Safety Councils also provide advocacy for those employees who wish to raise safety issues.

A sound commitment to worker involvement and feedback was observed at the SWT. At the completion of each workday, workers assigned to each Operations Field-Work Supervisor will meet at a pre-designated destination to discuss the events of the day. The following items are discussed:

- Problems encountered during the day
- Good practices used during the day's activities
- Management expectations, policies, and information
- Following day's training
- Safety items.

Management expectations for this program were communicated to SWT by an interoffice correspondence titled "End of Day Worker." The End of Day Worker meeting is a positive and valuable feedback mechanism. **(WMP MGO.3-1)**

Interviews revealed that senior management believes that ISM has provided the momentum for increased worker involvement. Management and workers now sit down and jointly discuss jobs. Through ISM, there is an open door to communication and issues can be resolved. The ISMS team found that both managers and workers have been educated relative to ISM and the level of commitment is high. The feedback from employees has also been positive concerning ISM.

Interviews indicated that the Safety Idea/Issue Program and Safety STARZ (Participation) Program are recognized by both managers and workers as programs that foster safety awareness. The Safety Idea/Issue Program establishes a process for WMP employees to document situations where the safety of employees, the environment, or a facility can be improved. The Safety STARZ (Participation) Program establishes a process for WMP to recognize and reward employees who have demonstrated a commitment of safety through participation in associated activities.

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Criterion 5: *A process for oversight has been implemented that ensures that regulatory compliance is maintained as required by rules, laws, and permits.*

WMP has fully implemented a process for regulatory oversight. The ECO ensures that regulatory compliance is maintained at the project/facility level. The ECO is involved throughout the work planning process. The ECO is also involved in the corrective action process. In the field, there are daily and weekly operation surveillances performed. Environmental problems found are worked through the ECO and dispositioned. Problems that cannot be rapidly fixed go through the CAM process. The CAM process establishes the criteria for managing deficiencies. Projects have conducted 15 management/general assessments with four of the general assessments performed by the Environmental Services group (WRAP, SWT, Central Waste Complex, and Chemical Management). These assessments focused on all environmental areas. Individual facilities also perform environmental assessments per their own assessment schedule.

Personnel interviews indicated that the Environmental Actions Tracking System (EATS) is a mechanism that tracks regulatory compliance and is maintained as required by rules, laws, and permits. EATS is maintained by a single system administrator and is an information management tool that provides a consolidated data source used to track and status environmental compliance actions received from external regulatory agencies. The data is also used to generate various reports for both RL and contractor organizations. EATS satisfies the *Resource Conservation and Recovery Act of 1976* requirement to maintain a 10-year compliance history in accordance with provisions contained under the *Washington Administrative Code* 173-303-281. EATS tracks closure of actions as required to satisfy deficiencies indicated through Environmental Agency correspondence. Those actions that are determined to be deficiencies in accordance with HNF-PRO-052 are tracked in DTS. The EATS database is maintained by the FH ES&H. The ECO has read-only access to this database.

The ISMS team observed the Performance Evaluation System (PES) weekly meeting. The PES team is comprised of representatives from the following organizations to address activities/issues: Waste Services personnel representing Treatment, Storage, and Disposal; generators; verification and acceptance functions; and facility operations personnel, as needed. The PES team oversees and verifies waste generator's performance. The communication in this meeting was excellent in analyzing concerns related to the collection and control of Hanford Site wastes. Integration within the group was observed to be strong. All team representatives present assisted in determining the appropriate actions to take for resolution of the waste conformance issues discussed.

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Conclusion

Facility management was knowledgeable concerning the various feedback processes available and demonstrated commitment to continuous improvement. However, at WMP Central Services, a lack of response to worker concerns was noted. Personnel were found to be sufficiently competent to execute their roles and responsibilities. Managers have several mechanisms by which they identify improvement opportunities. The WESF CAM Board process is one of the effective mechanisms used. However, the ISMS team also found that the WMP CAM (HNF-PRO-052) procedure does not address continuous improvement as required by the WMP ISM System Description (HNF-MP-003, Appendix D). However, five of the seven WMP track continuous improvement items via informal databases.

This objective has been meet.

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Strengths:

- The Management Field Assessment program is a positive and valuable immediate feedback and improvement mechanism. **(ASP MGO.3.1)**
- FFTF conducts 100% verification of completed corrective actions. **(FFTF MGO.3-1)**
- The events database allows for a comprehensive historical query of lessons learned at FFTF and is very beneficial because of its longevity. **(FFTF MGO.3-2)**
- The daily Director's briefing effectively communicates the facility operating status and the priority activities for each manager. **(NMS MGO.3-1)**
- The 324 and 327 Buildings have implemented and are effectively using a Safety Log process that facilitates the facility management team in addressing issues in a very timely manner, and providing meaningful feedback to concerned employees. **(RCP MGO.3-1)**
- RCP has developed an effective procedure observation process to overview and check procedural adequacy, usability, and compliance. **(RCP MGO.3-2)**
- The "End of Day Worker" meeting is a positive and valuable feedback mechanism. **(WMP MGO.3-1)**
- Management of the Corrective Action Management process at WESF proves to be very effective in reducing Deficiency Evaluation Group meeting time and in the research and identification of the issue. **(WMP MGO.3-2)**

Concerns:

- Concerns brought to the safety council are not going through the Administrative Procedure A-37, *Corrective Action Management System* process. **(FFTF MGO.3-3)**
- The NMS Project has a formal management assessment process addressing the requirements of HNF-PRO-246, *Management Assessment*. At this time, the NMS Project has only selected and scheduled approximately 12 assessments for this year. The breadth and depth of those completed assessments do not give management much value. Currently, the NMS Project is aware of the issue, and is developing a set of management expectations, and a request for all managers to recommit to a set of assessments that could add value to the organization and project. **(NMS MGO.3-2)**

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- The RCP has developed a procedural process to assure that regulatory requirements are implemented, and that there is an oversight process to monitor compliance. The Management Assessment Program is used at the 324 and 327 Buildings to provide the necessary oversight. At this time, it does not appear that a similar approach (using the Management Assessment process) is being used for other RCP facilities. **(RCP MGO.3-3)**

- Incomplete and inconsistent development of corrective actions may occur for environmental, safety, and health issues affected by interpretation of the definition for deficiency use in HNF-PRO-052, *Corrective Action Management*. **(WMP MGO.3-3)**

- WMP-200, *Waste Management Project Procedures*, Section 1.3, "Corrective Action Management," does not address continuous improvement opportunities as stated in the WMP ISM System Description (HNF-MP-003, Appendix D). **(WMP MGO.3-4)**

- HNF-MD-6410, *Fluor Hanford Issue Management Systems*, does not address the Waste Services and the WESF action tracking systems. **(WMP MGO.3-5)**

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DATE: July 10, 2000

Submitted:

Larry Fitch, Team A

Team Member

Carrie Swafford-Chube, Team B

Team Member

Approved:

Joe (Ed) Parsons

Team Leader

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OBJECTIVE

OP.1 - An integrated process has been established and is used to effectively plan work for the facility or activity. Within work planning, clear roles and responsibilities have been established and there is a satisfactory level of competence.

Criteria

1. Work planning is integrated at the individual maintenance or activity level and fully analyzes hazards and develops appropriate controls.
2. Personnel involved in the work planning process understand their roles and responsibilities.
3. Personnel assigned to work planning have a satisfactory level of competence for the subject area assigned.
4. Safety requirements are integrated into work planning.
5. Lessons learned from work execution are incorporated into work planning.
6. Workers actively participate in the work planning process.

Approach

Record Review

- Review a sample of work packages in the planning, active, and completed stages.
- Review documents associated with work planning to gain an understanding of the process and the roles and responsibilities of personnel involved in work planning.
- Review a sample of maintenance and operation procedures to ensure that proper procedures were followed for preparation, review, and approval.

Interviews

- Interview personnel responsible for planning the performance of the work. This should include personnel such as those responsible for preparing and maintaining documents such as the Plan of the Day, Automatic Job Hazard Analysis, work packages, maintenance procedures, equipment status files, pre-job briefings, and the conduct of facility or activity operations.

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- Interview personnel responsible for development of maintenance or individual activity procedures and controls.
- Verify adequate worker involvement at each step of the process.

Observations

- Observe the actual work planning processes and activities supporting the work planning, i.e., resource availability, training and qualifications of resources, and Employee Job Task Analysis. This should include such items as pre-job briefings, Job Hazard Analysis pre-job walkdowns, work improvement team meetings, review of safety requirements, etc.
- Observe work hazard identification activities. This should include such things as validation of procedures, procedure tracking, compensatory measures determination, etc.

Record Review

- 3M-SOP-PTL-144, *Use of Laboratory Fume Hoods for Radiological Operations*, Rev. 02-A, April 25, 2000 (327)
- 3M-SOP-PTL-171, *Loading & Unloading PRTR Casks*, Rev. 1-0, March 27, 2000 (327)
- 3M-SOP-PTL-112, *Operate SERF Cell Air Lock and SERF Cell Glove-box Air Lock*, Rev. 5-0, draft procedure, June 22, 2000 (327)
- 400 Area Safety Awareness Council Meeting Minutes, June 26, 2000
- ASP-200, *Analytical Services Procedures*
 - Section 1.18, "Technical Procedure Process," Rev. 1, June 5, 2000
 - Section 3.1, "Work Management," Rev. 5, June 8, 2000
 - Section 3.5, "Subcontractor Project and Construction Work," Rev. 3, May 31, 2000
 - Section 3.8, "Enhanced Radiological Work Planning," Rev. 4, May 30, 2000
 - Section 5.1, "Training Plan," Rev. 5, May 31, 2000
- Active 2000 Tagout Authorization Forms
- Automated Job Hazard Analysis (AJHA) Report 2Z-586, *Testing of Criticality Alarm Detector Module Criticality Alarm Detector (CADM/CAD) Sets Installed in the PFP Criticality Alarm System (CAS) for CAP-Z7*, Rev. 0, December 13, 1999
- AJHA, *3C-18 for T-Hopper Apply Fixative*, June 8, 2000 (U-plant, 300 ADP)
- Construction Work Package, RCD-37, *"Inspect Repair and Re-Coat RCD Packages in Trench 94"*
- Course 071972, *Technical Support Staff Orientation Training*, January 2, 1998
- Course 0719782, *FFTF Procedure Process Training*, September 2, 1999
- Crew E Shift Summary, June 26, 2000
- Fast Flux Test Facility (FFTF) Administrative Procedure A-33, *Work Prioritization and Scheduling*, Rev. 4, December 13, 1997

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- FFTF Administrative Procedure
 - A-5, *AJHA Process for Controlled Procedures*, Rev. A1, draft, June 26, 2000
 - A-28, *FFTF Work Management Processes*, Rev. 13, March 24, 1998
- FFTF Plan of the Day schedule
 - June 26, 2000
 - June 27, 2000
- FFTF Turnover Summary, June 26, 2000
- FSP-3647, *200 Area Deactivation Project (ADP) Administration*, Section CM-3, “200 ADP,” Rev. 2, April 3, 2000
- FSP-FFTF-IP-0759, *FFTF Administration Procedures Manual*, Release 17, June 15, 2000
- FSP-FSS-5-35, *300 ADP Administration Procedures*
 - Section 02-02, “Supervision of Field Work Activities,” Rev. 1, July 8, 2000
 - Section 05-01, “Job Control System,” Rev. 3, February 29, 2000
 - Section 05-02, “Training Plan,” Rev. 3, May 31, 2000
- FSP-PFP-0821, *Conduct of Operations*, Chapter 9, “Lockouts and Tagouts,” Rev. 11, October 4, 1999
- FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*, Rev. 5, October 4, 1999
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Section 6.3, “Person-In-Charge (PIC),” Rev. 3, April 5, 2000
- FSP-WESF-001, *WESF Project Administration*, Section CM-3, “Work Management Process,” Rev. 7
- HNF-IP-1264, *324/327 Facilities Stabilization Projects Administration Manual*
 - Section 2.3, “Technical Procedure Development and Control,” Rev. 6, June 14, 2000
 - Section 2.4, “Technical Procedure Writers Guide,” Rev. 4, June 1, 2000
 - Section 2.15, “Training Development and Administration,” Rev. 1, October 29, 1999
 - Section 2.16, “Facility Worker Training,” Rev. 3, November 22, 1999
 - Section 4.1, “Job Control System Implementation,” Rev. 10, June 12, 2000
 - Section 4.2, “Preventive Maintenance,” Rev. 1, November 12, 1999
 - Section 4.3, “Person-in-Charge Program,” Rev. 2, October 29, 1999
 - Section 4.4, “Supervision of Field Work Activities,” Rev. 2, October 29, 1999
- HNF-IP-1277, *324/327 Facilities Radiological Control Manual*, Section 3.1.1, “RCP Enhanced Radiological Work Planning,” Rev. 7, March 24, 2000
- HNF-MD-4821, *Guidance for Flow Down of ISMS Requirements to Lower Tier Subcontracts*, Rev. 0, July 30, 1999
- HNF-MP-001, *Fluor Hanford Management Plan*, Rev. 2, February 25, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor ISMS Description”
 - Appendix G, “Fast Flux Test Facility ISMS Description”
 - Appendix H, “Analytical Services ISMS Description”

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- HNF-PRO-050, *Managing Employee Performance*, Rev. 1, August 25, 1999
- HNF-PRO-055, *Facilities Start-Up Readiness*, Rev. 2, December 16, 1999
- HNF-PRO-067, *Managing Lessons Learned*, Rev. 1, November 24, 1998
- HNF-PRO-079, *Job Hazard Analysis*, Rev. 5, May 5, 2000
- HNF-PRO-3468, *Stop Work Responsibility*, Rev. 0, October 22, 1999
- Individual Training Reports for Analytical Services Provider (ASP) Planners, June 21, 2000
- Job Safety Analysis Notebook, *Reactor Compartment Re-Coat*, no date
- LO-090-101-USQ, *222-S Laboratory Sample Receiving and Custodianship*, Rev. U-0
- LO-161-172, *Perform Complex IIA Hot Cell Operation*, Rev. K-4
- Material Safety Data Sheet Number 032197 *Polymeric Barrier System*
- PCP-310, *300 LEF Project Administration Procedures*
 - Section 4.07, "Planning, Scheduling & Coordination of Work Activities," Rev. 1, March 15, 2000
 - Section 4.15, "Management Involvement," Rev. 0, March 15, 2000
 - Section 4.18, "Modification Work," Rev. 0, March 15, 2000
 - Section 4.27, "Work Management," Rev. 0, March 15, 2000
 - Section 4.30, "Subcontractor Project & Construction Work," Rev. 0, March 15, 2000
 - Section 6.01, "Training Program Description," Rev. 0, June 16, 2000
- RCP-310, *300 LEF Project Administration Procedures*, Release 9, June 16, 2000
- SI-324Bldg-01, *Automated Job Hazards Analysis*, Rev. 1, June 5, 2000
- SI-324Bldg-015, *Prioritization and Scheduling of Operations/Maintenance Work*, Rev. 0, June 14, 2000
- SI-327-002, *Automated Job Hazards Analysis*, Rev. 1, June 5, 2000
- SC51-9, *Secondary Isolation Valve Compliance/SISI Test*, Rev. 1B, March 16, 1990
- SI51-2, *Normal Isolation and De-Isolation of a DHX Module*, Rev. 2B, January 25, 1993
- Solid Waste Storage and Disposal (SWSD) Daily Operating Schedule, June 14, 2000
- SWSD Safety Logbook (no date)
- SWSD Pre-Shift Briefing Checklist, (no date), Locally Generated
- SWSD Shipment Schedule, June 12, 2000
- Solid Waste Treatment (SWT) Daily Operating Schedule, June 15, 2000
- Surveillance Procedure DO-040-020, "*Perform Daily Surveillance of 2706-T*", Rev. D-1
- Training Plan Number 71940, *FFTF Design Authority Training Program*, no date
- Training Reports (3) for Cognizant Engineers, June 27, 2000
- Unreviewed Safety Question (USQ) Screening FSS-241, *Applying Fixative to T-Hoppers*, May 22, 2000
- USQ Screening FSS-245, *Full T-Hopper Storage*, June 14, 2000
- Various Waste Management Project (WMP) Position Training Reports, no date
- Waste Encapsulation and Storage Facility (WESF) Problem Identification Form, November 16, 1999
- WESF, 5-BC-001, *Yokagawa Micro R100 Series Recorder*, Rev 0-C

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- WESF, 5-BC-003, *Dwyer 605 Series Differential Pressure Indicating Transmitter*, Rev. 0-C
- WESF, 5-BC-010, *Foxboro E69 Series Current-to-Pneumatic Converters*, Rev. 0-C
- Waste Management Work-it-Now Ticket, Transportation Group, June 12, 2000
- Waste Receiving and Processing (WRAP) Facility Safety Logbook, no date
- WMP-100, *Waste Management Project Policies*
 - Section 2.10.1, “Accountability for Safety,” Rev. 1, September 10, 1999
 - Section 2.10.2, “Safety Councils,” Rev. 2, June 2, 2000
- WMP-200, *Waste Management Project Procedures*
 - Section 1.6, “Operational Readiness Activities,” Rev. 2, June 2, 2000
 - Section 1.10, “Safety Idea/Issue Program,” Rev. 2, May 22, 2000
 - Section 1.12, “Safety STARZ Program,” Rev. 2, June 6, 2000
 - Section 1.18, “Technical Procedure Process,” Rev. 1, June 30, 2000
 - Section 2.14, “Required Reading,” Rev. 2, May 18, 2000
 - Section 3.1, “Work Management,” Rev. 5, June 7, 2000
 - Section 3.5, “Subcontractor Project and Construction Work,” Rev. 3, May 15, 2000
 - Section 3.8, “Enhanced Radiological Work Planning,” Rev. 4, June 1, 2000
 - Section 5.1, “Training Plan,” Rev. 5, May 31, 2000
 - Section 5.3, “Training Implementation Matrix,” Rev. 4, June 5, 2000
- Work Packages
 - 2S-00-00282/W, *Install/Calibrate New Balances in 11A Hot Cells*
 - 2Z-99-00905/M, *Replace A/C for 2701-ZA Computer Room*
 - 2Z-00-00832/S, *Test the Criticality Alarm System*
 - 2Z-00-00833/S, *Test the Criticality Alarm System*
 - 3C-00-00017/W, *Fixative Application, U-Plant, (300 ADP)*
 - 3I-99-706, *In-Place & Shop Manipulator Repair (324)*
 - 3I-00-177, *Carbon Monoxide Monitor (324)*
 - 3I-00-182, *Wire Rope Inspection (324)*
 - 3I-00-187, *Weekly Effluent Monitor Diversion (324)*
 - 3M-99-00238, *HEPA Filter Aerosol Efficiency Testing (327)*
 - 3M-00-00037, *Install Jumper Across Iodine Alarm*
 - 3M-00-00038, *SERF Cell Monitor (327)*
 - 3M-00-00039, *Roll Up Door Annual (327)*
 - 3M-00-00041, *Repair Strainer in Penthouse (327)*
 - 3M-00-00043, *Install Air Gap Drain (327)*
 - 3M-00-00045, *Replace Light Ballast (327)*
 - 3M-00-00059, *Replace Lead Screw on A Cell Load-out Mechanism (324)*
 - 3M-00-00060, *Replace Rotor Shaft on A Cell Load-out Mechanism (324)*
 - 3M-00152, *Dry- Run Operate SERF Cell Air Lock (327)*
 - 4F-99-01132/W, *Joy Blower 480V Connection Plate Problems*
 - 4R-00-53494/C, *2706 Troubleshoot and Repair HVAC Unit #2*
 - EL-00-00272, *Repair/Replace Pump 60C-P-1A*

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- WRAP Facility Safety and Health Self-Inspection Checklist
 - April 7, 2000
 - May 5, 2000
- ZSP-002, *Moving Fissile Material*, Rev. B, March 27, 2000.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Chemical Technician (2)
- Chemist
- Cognizant Engineer
- Field Work Supervisor (FWS) (2)
- Health Physics Technician (2)
- Instrument Technician (2)
- Maintenance Manager
- Millwright (2)
- Operations Lead
- Operations Manager
- Pipefitter
- Planner (2)
- Safety Council Chairperson
- Stationary Operating Engineer (2)
- Work Control Expeditor.

Observations

- 222-S Laboratory Plan of the Day meeting, June 21, 2000
- 222-S Laboratory Maintenance Turnover meeting, June 21, 2000
- Pre-job Briefing for Work Package 2S-00-00282/W, June 21, 2000
- AJHA for procedures LO-090-101-USQ and LO-161-172, June 21, 2000
- Maintenance activity in the 222-S Laboratory Manipulator Repair Shop, June 21, 2000.

Discussion of Results

Criterion 1: *Work planning is integrated at the individual maintenance or activity level and fully analyzes hazards and develops appropriate controls.*

At ASP, facility-level work scope is evaluated using a risk and complexity decision matrix as identified in HNF-PRO-079, *Job Hazard Analysis*. The risk and complexity determines if an AJHA is required. If an AJHA is required, a multi-disciplined team is assembled to assess the hazards, environmental impacts, and establish controls. The necessary hazard and environmental impact controls are identified and developed as part of the work planning and AJHA process. Controls (Lock and Tag procedure, Radiological Work Permits [RWP], Confined Space Permit, etc.) address the specific hazards and environmental impacts of the work. It was observed throughout ASP that the AJHA process is used very consistently and effectively on all

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maintenance packages. The AJHA process facilitates a comprehensive analysis of the potential hazards associated with the evaluated work scope. **(ASP OP.1-1)**

The AJHA is being applied to all newly developed ASP operations and analytical procedures. ASP is also applying the AJHA in reviewing their existing higher-risk operations and analytical procedures to ensure there are no unanalyzed safety issues.

Criterion 2: *Personnel involved in the work planning understand their roles and responsibilities.*

ASP employees are responsible for applying the knowledge and skills obtained through training and qualification while conducting work in accordance with the safety and environmental requirements defined in the policies and procedures in use. Roles and responsibilities are clearly defined by employee position descriptions, listed in ASP 200, *Analytical Services Procedures*, Section 3.1, "Work Management," union jurisdictional assignments, plans, procedures, work instructions for discrete tasks, and through established work practices. Individual roles and responsibilities are specifically defined for each separate activity through the pre-job planning process and individual work assignments.

Interviews, work package reviews, and field observations indicated that personnel involved in the work planning process understood their roles and responsibilities very well.

Criterion 3: *Personnel assigned to work planning have a satisfactory level of competence for the subject area assigned.*

Personnel who are assigned the responsibility of work planning are selected by criteria listed in the job description. Each position has minimum training requirements that need to be met before they can assume the responsibilities. Qualification is then maintained through the Training Matrix (TMX) system and periodic performance evaluations. The planners were found to be competent and have years of experience.

The formal training and qualification process for work planners is not consistent at ASP. The separate Individual Training Reports for the four ASP planners indicate a wide variety of mandatory courses. There is not a consistent list of core functions and associated training programs that satisfy the requirements to perform work planning. One Planner was still listed on the training report as an Instrument Technician, but had been upgraded to a planner for approximately one year. Additionally, two of the Planners at ASP were listed as "in-training." The "lead" Planner stated he was a mentor assigned during the qualification process, but it was not clear which duties the Planners "in-training" could or could not perform. **(ASP OP.1-4)**

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Criterion 4: *Safety requirements are integrated into work planning.*

Evaluations are performed through the work planning process to ensure ASP-200, Section 1.18, "Technical Procedure Process" and Section 3.1 build requirements into the work planning documents as required. The AJHA process appropriately identifies hazards and the required controls. The controls for these hazards were appropriately placed into the work package instructions, work package attachments, or operational procedures reviewed.

Criterion 5: *Lessons learned from work execution are incorporated into planning.*

As required by the work management process, work planners incorporate lessons learned into work planning efforts. During work scope definition, the work planner searches the Job Control System (JCS) history and AJHAs for similar activities that have been performed. Feedback resulting from work execution is documented in the JCS Work Record (J-5). This information is reviewed as part of the work package closeout process. Action is taken on the issues recorded and feedback on actions taken is provided to the worker. After work package closeout, work packages are scanned into Records Management Information System for future planning reference. Post-job reviews are required for all jobs. Formal post-job reviews are required for the case of high-risk or complex jobs. Post-job review requirements are less rigorous for medium/low-risk or low complexity jobs. The post-job review process maturity level was observed to be very high at ASP. Interviews indicated that the lessons learned process is functioning well.

Criterion 6: *Workers actively participate in the work planning process.*

Integration was observed as workers participated as key members in the work planning process through various means including job site walkdowns, hazard analysis reviews, procedure validation, etc. Workers participate in hazard analysis as required by the risk/complexity determination. Observed implementation of ASP-200, Section 3.1 requires worker involvement in all phases of the work planning process. In addition, workers perform validation of procedures as required by ASP-200, Section 1.18. The AJHA process ensures, and has institutionalized, worker involvement in work planning. **(ASP OP.1-2)**

Worker involvement in planning stages has reduced frequency of job delays during the pre-jobs and during work execution. Interviews indicated that using the AJHA process takes longer to plan the work, but almost no jobs are stopped in the field because of planning problems. At an observed pre-job briefing, the people in attendance were the same people who performed the AJHA. Keeping the same people involved throughout a job increases the level of understanding. Early worker involvement has resulted in work being done quicker because it is planned better. **(ASP OP.1-3)**

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Conclusion

Interviewing 22 employees (exempt and non-exempt), reviewing numerous documents, and observing field activities sufficiently and effectively demonstrated that an integrated process has been established and is used to effectively plan work for the facility and activity. This process also sufficiently and effectively demonstrated that within work planning, clear roles and responsibilities have been established and there is a satisfactory level of competence.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Assistant Shift Operations Manager (2)
- Cognizant Engineer (2)
- Deputy Operations Manager
- Electrician (3)
- FWS (2)
- Hanford Atomic Metal Trades Council Safety Representative (2)
- Maintenance Manager
- Millwright
- Operations Lead
- Operations Manager
- Pipefitter (2)
- Planner(2)
- Radiation Control Lead
- Radiation Control Technician
- Reactor Operator (5)
- RL Facility Representative (2)
- Safety Council Chairperson
- Senior Technical Instructor
- Shift Operations Manager (3)
- Training Lead
- Work Control Expeditor
- Work Control Lead
- Work Control Manager.

Observations

- Plan of the Day meeting, June 26, 2000
- Operations Crew Turnover meeting, June 26, 2000
- Safety Awareness Council meeting, June 27, 2000
- Walkdown of heater inspection planning, June 26, 2000
- AJHA heater inspection, June 26, 2000
- Pre-job Briefing for SC51-9, *Annual DHX Isolation Valve Comp/ISI Test*, June 26, 2000
- Plan of the Day meeting, June 27, 2000
- Pre-job Briefing of 4F-99-1132, *Joy Blower 480V Connection Plate Problems*, June 27, 2000.

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Discussion of Results

Criterion 1: *Work planning is integrated at the individual maintenance or activity level and fully analyzes hazards and develops appropriate controls.*

At FFTF, the facility-level work scope is evaluated using a risk and complexity decision matrix identified in HNF-PRO-079. The risk and complexity will determine if an AJHA is required. If an AJHA is required, a multi-disciplined team is assembled to assess the hazards, environmental impacts, and establish controls. The necessary hazard and environmental impact controls are identified and developed as part of the work planning and AJHA process. Controls (Lock and Tag procedure, RWPs, Confined Space Permit, etc.) address the specific hazards and environmental impacts of the work. The AJHA process facilitates a comprehensive analysis of the potential hazards associated with the evaluated work scope.

Interviews confirmed that FFTF personnel have not used the AJHA tool to analyze hazards on approved procedures. Their procedures have gone through procedure reviews, validations, and approvals commensurate with rigor necessary at operating nuclear reactors. FFTF procedures are considered mature and have been used for many years. In response to recent clarification and guidance of the AJHA tool in HNF-PRO-079, the facility has developed a draft procedure, (Administrative Procedure A-5, *AJHA Process for Controlled Procedures*, Rev A1, Appendix A, June 26, 2000) to define the process for periodic hazard classification of approved procedures. The facility intends to complete their screening of approved operations procedures in 6 months, and to perform screening of approved maintenance procedures in 4-month blocks, as they come due for the next performance cycle. (See **HAZ.1** for further discussion.)

Criterion 2: *Personnel involved in the work planning understand their roles and responsibilities.*

FFTF employees are responsible for applying the knowledge and skills obtained through training and qualification while conducting work in accordance with the safety and environmental requirements defined in the policies and procedures in use. Roles and responsibilities are clearly defined by employee position descriptions, union jurisdictional assignments, plans, procedures, work instructions for discrete tasks, and through established work practices. Individual roles and responsibilities are specifically defined for each separate activity through the pre-job planning process and individual work assignments.

The interview process, work package reviews, and field observations verified that personnel involved in the work planning process understand their roles and responsibilities very well.

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Criterion 3: *Personnel assigned to work planning have a satisfactory level of competence for the subject area assigned.*

Interviews were conducted with FFTF training personnel and Cognizant Engineers. Cognizant engineering personnel are responsible for work package planning on equipment within their assigned systems. The Maintenance group did not have work planners. The Work Control group also had qualified Operation Engineers who were assigned on a rotational basis to perform final review and approval of the work packages. The formal training and qualification process for Cognizant Engineers was consistent at FFTF, and included specific information regarding work package development. The Cognizant Engineers were included in the Technical Staff Training Program at FFTF. Each engineer had a current qualification card, and received continuing training three times per year. A review of three individual training reports for the Cognizant Engineers that were interviewed indicate a consistent set of mandatory courses. Minor inconsistencies were noted in that two individuals were listed as Cognizant Engineer/DA/PIC and the third individual was listed as Engineer. None of the TMX records reviewed listed a course for AJHA user training. The Senior Training Instructor searched the training records and verified that all three had completed course 172702, *Using the AJHA Tool*. This course had not been added to the TMX, and the Training Lead said that was because the training program or other requirements documents did not require the course. At other facilities, this course was listed on TMX. Personnel who perform planning were included in the technical staff training and qualification programs. **(FFTF OP.1-1)**

Criterion 4: *Safety requirements are integrated into work planning.*

Evaluations are performed through the work planning process to ensure safety requirements are built into the work planning documents as required. The AJHA process appropriately identifies hazards and the required controls. The controls for these hazards are appropriately placed into the work package instructions, work package attachments, or operational procedures reviewed by the team.

Criterion 5: *Lessons learned from work execution are incorporated into planning.*

As required by the work management process, Cognizant Engineers incorporate lessons learned into work planning efforts. During work scope definition, the Cognizant Engineer searches work history and AJHAs for similar activities that have been performed. Feedback resulting from work execution is documented in the JCS Work Record (J-5). This information is reviewed as part of the work package closeout process. Action is taken on the issues recorded and feedback on actions taken is provided to the worker. After work package closeout, work packages are retained in the vault for future planning reference. Post-job reviews are required for all jobs. Formal post-job reviews are required for the case of high-risk or complex jobs. Post-job review requirements are less rigorous for medium/low-risk or low complexity jobs. The interview determined that the lessons learned process is functioning well.

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Criterion 6: *Workers actively participate in the work planning process.*

Integration was observed as workers participated, as key members, in the work planning process through various means including job site walkdowns, hazard analysis reviews, procedure validation, etc. Workers participate in hazard analysis as required by the risk/complexity determination. Observed implementation of AJHA process demonstrates worker involvement in all phases of the work planning process. The AJHA process ensures, and has institutionalized, worker involvement in work planning.

Conclusion

Interviewing 38 employees (exempt and non-exempt), reviewing numerous documents, and observing field activities sufficiently and effectively demonstrated that an integrated process has been established and is used to effectively plan work for the facility or activity. This process also sufficiently and effectively demonstrated that within work planning, clear roles and responsibilities have been established and there is a satisfactory level of competence.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Acting Manager, Near-Term Planning Team
- Deputy Manager
- Design Engineer
- Electrician
- Instrument Specialists
- Instrument Technician
- Insulator
- Manager, Infrastructure Services
- Manager, Nuclear Chemical Operator
- Manager, Plutonium Finishing Plant (PFP) Surveillance
- Millwright (2)
- Nuclear Chemical Operator (10)
- Nuclear Process Operator (2)
- Operations Specialist
- Painter
- PIC (5)
- PIC, CH2M Hill, Inc.
- Senior Radiological Control Technician (10)
- Solid Waste Operator
- Team Leader, Electrical Team
- Technical Writer.

Observations

- Plan of the Week meeting, June 8, 2000
- Work Activity - Work Package 2Z-99-00905/M, *Replace A/C for 2701-ZA Computer Room*, June 14, 2000
- Work Activity - Work Package 2Z-00-00832/S, *Test the Criticality Alarm System*, June 14, 2000
- Work Activity - Work Package 2Z-00-00833/S, *Test the Criticality Alarm System*, June 14, 2000
- Pre-job Briefing - Work Package 2Z-99-00905/M, *Replace A/C for 2701-ZA Computer Room*, June 14 and 15, 2000
- Pre-job Briefing - Work Package 2Z-00-00832/S, *Test the Criticality Alarm System*, June 14, 2000
- Pre-job Briefing - Work Package 2Z-00-00833/S, *Test the Criticality Alarm System*, June 14, 2000
- AJHA for replacement of steam valve in 291Z, June 14, 2000

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- AJHA for a steam valve replacement, June 15, 2000
- Plan of the Week meeting, June 15, 2000
- Plan of the Day meeting, June 15, 2000
- Heating, Ventilation, and Air Conditioning (HVAC) Team meeting, June 14, 15, and 16, 2000
- Pre-job Briefing - *Transfer LOI Samples to A Lab*, June 19, 2000
- Pre-job Briefing - *Transport ITC's and Stage in Room 166*, June 19, 2000.

Discussion of Results

Criterion 1: *Work planning is integrated at the individual maintenance or activity level and fully analyzes hazards and develops appropriate controls.*

Per FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Section 13.4, "Work Management Process Description and Job Control System Process," individual maintenance or activity items are reviewed for hazards. The AJHA is used to identify hazards and develop the associated controls. The work package preparer and the PIC ensures that the appropriate personnel are invited to participate in the work planning process. This group may visit the job site to aid in the identification, discussion, and analysis of job hazards. Then the group participates in the use of the AJHA computer driven checklist.

While the resulting work packages appear to identify the appropriate job hazards and controls, the AJHA tool could be used more efficiently. Interviews indicated a perception by the workers that AJHAs were conducted without the appropriate personnel (Subject Matter Experts [SME], Radiological Control personnel, craft personnel, engineering, operations, etc.) in attendance. Of the AJHAs observed by the ISMS Team, this did not occur. Other members of the ISMS Team (HAZ and SME) did observe cases of this occurring. But in those cases the AJHA was not closed out until the appropriate personnel were involved.

Because the AJHA is the main tool used for hazard recognition and control development, optimally the AJHA meetings should be held with the appropriate personnel present. This provides for the assurance of work planning integration. It is also important that the workers present provide input into the process. The facilitator of the AJHA should actively try to keep the process interactive, with a two-way flow of ideas. Some of the AJHAs attended by the ISMS team were meeting a checklist reading process.

For more discussion regarding the AJHA process see **HAZ.1**, **HAZ.2**, and **SME.2**.

The procedures and mechanisms, such as FSP-PFP-5-8, Section 13.4, established regarding working planning integration at the individual maintenance or activity level for hazard analysis and control development at PFP are understood and implemented.

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Criterion 2: *Personnel involved in the work planning process understand their roles and responsibilities.*

Through observing AJHAs, Pre-jobs, and employee interviews, the ISMS Team found that personnel involved in the work planning process understand their roles and responsibilities as described in various work planning procedures, such as FSP-PFP-5-8, Section 13.4.

Workers (SMEs, Nuclear Process Operators, craft personnel, etc.) participate in pre-job walkdowns, the AJHA process, and provide input into the job planning process. The PICs interviewed have a good understanding of their work planning roles and responsibilities and take ownership of the work package from initial development to closeout. Work package preparers, craft personnel, and engineering personnel interviewed clearly understand their roles and responsibilities in the work planning process as described in facility procedures, contained in FSP-PFP-5-8.

Personnel involved in the work planning process understand their roles and responsibilities as described in work planning procedures, such as FSP-PFP-5-8, Section 14.3.

Criterion 3: *Personnel assigned to work planning have a satisfactory level of competence for the subject area assigned.*

Qualification and training programs described in procedures such as FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*, have been established for personnel involved work planning such as the PIC. Work package preparers complete a required reading program, attend hazard associated training course as assigned in their TMX, complete a JCS overview, and receive AJHA training. Cognizant Engineers interviewed indicated a need for formal system-specific training in their area of assigned expertise. Craft personnel or field worker training programs is discipline-specific. Interviews indicated that facility personnel are competent for the subject area assigned.

Based on observations of AJHAs, pre-job briefings, work activities, and interviews of personnel involved in the work planning process, an adequate level of competence exists for the subject area assigned.

Criterion 4: *Safety requirements are integrated into work planning.*

The AJHA process facilitates a systematic review of the potential hazards and the related safety requirements. The AJHA process is the major player in the integration of safety requirements into the work planning process. Observations of AJHA meetings and interviews of personnel involved in the hazard recognition and control process showed that safety requirements are integrated into work planning. A small minority of personnel interviewed indicates that they have never been a part of this process. Management must ensure that all personnel involved in the work planning process have an opportunity to participate in that process.

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As required by procedures such as FSP-PFP-5-8, Section 13.4, and based on observations of AJHAs, pre-jobs, and personnel interviews, safety requirements are integrated into work planning.

For further discussion on this subject see **HAZ.1** and **HAZ.2**.

Criterion 5: *Lessons learned from work execution are incorporated into work planning.*

The ISMS Team observed active lessons learned discussion at an AJHA. A worker who had been involved in the last performance of the job was present, and was used as a resource for identifying hazards as well as methods to improve job performance. Lessons learned were discussed as part of the facility walkdown and during the AJHA checklist.

There is inconsistent use of the post-job review to feed lessons learned to the next job. Valuable information can be gathered at post-job reviews. Some jobs did have a post-job review, but it varies between work teams (as well as by work complexity, which is appropriate). In addition, the J-5 is not used as described by management interviews to provide the information needed to improve future work. Interviews revealed a consistent desire by the workers for more participation in post-job reviews.

Facility management is in the process of formalizing a mechanism to easily add lessons learned information to the PFP Lessons Learned WebPages. This link will be accessible from both the AJHA and PFP Lessons Learned WebPages.

Based on observations, reviews of work packages, and personnel interviews, lessons learned from work execution are incorporated into the work planning process.

Criterion 6: *Workers actively participate in the work planning process.*

The AJHA provides a setting and location for the craft personnel, engineers, and management to meet and discuss the job. Observations of AJHAs, Plan of the Day/Week meetings (Team Leaders), and Pre-job meetings, show that worker participation is part of the planning process. Much of the discussion and worker interaction took place before the computerized portion of the AJHA. The PIC discussed the planned job and there was some general discussion of ways to perform the job, as well as how it was done the last time. One of the operators involved in the last job (three years prior) was present at the AJHA. All of those present at the AJHA toured the work site, where additional discussion of the job took place. Upon return to the office, computerized AJHA began.

As noted in criterion 1, the computerized portion of the AJHA process would be improved with increased participation and interaction. A small percentage of workers interviewed indicated that they were not involved in the work planning process.

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Workers use the pre-job brief as an opportunity to provide last minute work planning feedback, if necessary. Especially, if the workers, for whatever reason, were not involved in the initial planning phase.

Based on observations and interviews, indications are that workers actively participate in the work planning process.

Conclusion

Observations of AJHAs, pre-jobs, pre-job walkdowns and interviews of facility personnel indicate that the integrated process described in facility procedures such as FSP-PFP-5-8, Section 13.4, have been implemented in the field. An integrated process has been established and is used to effectively plan work for the facility or activity. As noted in the discussions and in HAZ.2 and HAZ.1, an opportunity for improvement exists in the area of AJHA. The facility must strive for 100% attendance at the AJHA planning meetings, because at this meeting the best opportunity exists for integration of safety in the work planning process, hazard recognition, and hazard control development. All applicable personnel must be given an opportunity to participate in the planning process and management must ensure that this opportunity exists.

Within work planning, clear roles and responsibilities as described in procedures such as FSP-PFP-5-8, Section 13.4, have been established and there is a satisfactory level of competence.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- AJHA Administrator (2)
- Cognizant Engineer (2)
- Electrician (4)
- Job Control Administrator
- Lessons Learned Coordinator
- Millwright (6)
- Nuclear Process/Chemical Operator (4)
- PIC (9)
- Planner (3)
- Procedure Writer/Planner (3)
- Stationary Operating Engineer (2)
- Work Control Administrator (2)
- Work Release Agent (2).

Observations

- Application of Fixative to T-Hoppers at U-Plant, June 22, 2000 (300 ADP)
- Plan of the Week meeting, June 22, 2000 (324)
- Plan of the Day meeting, June 22, 2000 (324)
- AJHA Session, Fan Belt Adjustment, June 22, 2000 (327)
- Post-job Review, Cask Load Out and Transfer, June 22, 2000 (324)
- Pre-job Brief, T-Hopper Fixative Application, June 22, 2000 (300 ADP, U-Plant)
- Pre-job Brief, Manipulator Change Out, June 22, 2000
- Pre-job Brief, Monthly Crane Inspection, June 22, 2000 (324)
- Shipping Cask Transfer, June 22, 2000 (324)
- Plan of the Day meeting, June 26, 2000 (324)
- Plan of the Day meeting, June 26, 2000 (327)
- AJHA Session, Deactivation of 324 RPS & PS PH, Conductivity and Flow Meters, June 26, 2000 (324)
- Pre-job Brief, Dry-Run Operate SERF Cell Air Lock, June 26, 2000 (327)
- Pre-job Brief, Shipping Cask Prep, June 26, 2000 (324)
- Dry Run, SERF Cell Air Lock, June 26, 2000
- Pre-job Brief, Grout Container Load-out w/airlock entry, June 27, 2000 (324)
- Preplanning meeting, Solid Waste Disposal Box, June 27, 2000 (324)
- President's Zero Accident Council meeting, June 27, 2000 (327)
- Grout Container Load-out w/airlock entry, June 27, 2000 (324).

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Discussion of Results

Criterion 1: *Work planning is integrated at the individual maintenance or activity level and fully analyzes hazards and develops appropriate controls.*

For the RCP, the main tool for work planning integration, hazard analysis, and control development is the AJHA. The implementing document is HNF-PRO-079. RCP 324 and 327 Facilities further supplement HNF-PRO-079 through the use of standing instructions SI-324Bldg-01, *Automated Job Hazards Analysis* and SI-327-002, *Automated Job Hazards Analysis*. Both standing instructions provide examples of what jobs are high-, medium-, and low-risk and what jobs are complex.

Based on interviews, observations of AJHA sessions, and reviews of work packages for RCP, AJHAs are performed for all high- and medium-risk and complex jobs as required by HNF-PRO-079. Some facilities, such as 324 and 327, perform an AJHA for all planned (non-routine) maintenance activities.

Interviews with RCP personnel involved in the AJHA process and observations of actual AJHA sessions indicated an understanding of the AJHA requirements and process. Job site visits prior to, during, and after the sessions were conducted. In one case at the 327 Facility, a job site walkdown was conducted after the initial AJHA session to determine if the work would breach a contamination boundary requiring an RWP. During an AJHA session at the 324 Facility, the PIC questioned the necessity of performing the work in an energized panel. The subsequent job site walkdown by the PIC and craft personnel indicated that the panel could be de-energized without a detrimental effect on the facility. This teaming and personnel interaction ensured the controls required by HNF-PRO-088, *Electrical Work Safety*, for the identified electrical hazard were identified and incorporated into the work package. At the T-Hopper Fixative AJHA session, all hazards from heat stress to snakes were identified and controls established.

Through interviews and observations, implementation of the procedures and/or mechanisms were found to be in place to ensure integration of work planning, hazard analysis, and the development of the hazard controls.

For further discussion on AJHAs see **HAZ.1** and **SME.3**.

Criterion 2: *Personnel involved in the work planning process understand their roles and responsibilities.*

Facility administrative work control procedures such as HNF-IP-1264, *324/327 Facilities Stabilization Projects Administration Manual*, Section 4.1, "Job Control System Implementation;" FSP-3647, *200 Area Deactivation Project (ADP) Administration*, Section CM-3, "200 ADP;" and RCP-310, *300 LEF Project Procedure Administration* (for 310/340), are specific in addressing roles and responsibilities for personnel involved in work planning. Based on interviews of personnel involved in the work planning process and

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observations of AJHAs, Pre-job briefs, plan-of-the-day/week meetings, and post-job reviews, it was evident that roles and responsibilities as defined by the applicable RCP procedures were understood.

Criterion 3: *Personnel assigned to work planning have a satisfactory level of competence for the subject area assigned.*

Interviews of personnel involved in the work planning processes from the Cognizant Engineer to the Work Package Preparer/ Planner indicated that a satisfactory level of competence for the subject area assigned exist. Work control and planning personnel could describe, in detail, the work package preparation process from the initial work request through work package approval. All facility PICs interviewed adequately described their part of the work preparation and planning phase.

Observations of work planning activities from AJHAs, pre-job walk-downs, plan of the day meetings to the plan of the week meetings, at various RCP activities provided real-time evidence that a satisfactory level of competence for the subject area assigned does in fact exist. Below are examples of this.

- During an AJHA session at the 324 Facility, the attending PIC, understanding the requirements of HNF-PRO-088, raised a question regarding the initial decision of the Cognizant Engineer and Planner to work an electrical panel energized. The AJHA was put on hold so the PIC and Electrician could walkdown the panel. The walkdown resulted in the reversal of the initial decision and the correct hazard control (lockout/tagout) was incorporated into the work package. This was an example where the AJHA process ensured that the correct control for a given hazard was identified and implemented.
- During the conduct of a Plan of the Week meeting at the 324 Facility, it was evident by responses to questions from the Scheduler to specific attendees that all parties had a satisfactory level of competence of their subject area.
- During AJHA session regarding main exhaust fan belt tensioning at the 327 Facility, the AJHA session coordinator queried the attending millwright concerning any lockout/tagout requirements. The millwright's response clearly indicated that a lockout/tagout was required and there was a clear understanding of the hazards involved with this type of work.

Based on interviews of RCP personnel, responses by craft personnel and attending SMEs, to questions imposed during observations of work planning related meetings, such as AJHAs, post-job and pre-job meetings, etc., a satisfactory level of competence for the subject area assigned does exist at RCP.

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Criterion 4: *Safety requirements are integrated into work planning.*

As stated in the criterion 1 discussion, the AJHA is the main tool used by RCP to ensure the integration of safety requirements into the work planning process. Observations of AJHAs, reviews of work packages and maintenance procedures, and interviews of personnel involved in the work planning process, confirmed that safety requirements are integrated into the work planning process.

At the 324 and 327 Facilities, all work packages are screened by both the National Environmental Policy Act and USQ SMEs. Maintenance procedures are reviewed by the applicable SMEs, such as Safety, Quality Assurance, Radiological Control, etc. To ensure the integration of safety into maintenance procedures at RCP, an AJHA is performed for those procedures. In some cases the AJHA is kept as part of the documents. In other cases the hazards identified and applicable controls are incorporated into the document with the AJHA kept on file as a master record for the specific procedure. A review of RCP maintenance procedures and work packages substantiated this.

Interviews of AJHA session coordinators at the 324 and 327 Facilities indicated that if not all the required personnel were present or if a question came up at during the AJHA meeting they would personally contact the applicable individuals prior to finalizing the AJHA. A Planner/AJHA Session Coordinator at the 324 Facility stated that the AJHA and/or work package would be personally taken to the applicable SME, craft personnel, Cognizant Engineer, etc., as required to ensure the integration of the safety requirements in the work planning process.

Procedures establishing the process for safety requirement integration into work planning have been implemented.

Criterion 5: *Lessons learned from work execution are incorporated into work planning.*

Post-job reviews are the main vehicle to ensure lessons learned from work execution are incorporated into work planning. Post-job reviews are conducted for high-risk and some selected medium-risk jobs as required by HNF-PRO-079, applicable facility-specific special instructions (i.e., SI-327-002 for 327) and HNF-IP-1277, *RCP Enhanced Radiological Work Planning*. A post-job review at the 324 Facility for a cask load-out job, requiring an air lock entry was observed. All of the personnel involved in the job were present or represented. The lessons learned that were identified by the attendees were formally captured on the post-job review sheet by the PIC.

Another available tool used for work execution lesson learned incorporation is the Craft Resource Log and Maintenance Record (J-5) and the Procedure Action Authorization (P-2). For example, at the 324 Facility planners review the completed work packages' J-5 entries and ensure that those J-5s are processed and the resolution fed back to the initiator. At other RCP facilities and projects, reviews of completed work packages substantiated the utilization of the J-5. Additionally, PICs, Planners, and Cognizant Engineers review completed work packages to

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ensure any lessons learned are recognized and incorporated as required into the work planning process.

Based on interviews of personnel involved in work planning/execution, work package reviews, and observations of related activities such as post job reviews, evidence indicates that the process described in RCP work control procedures have been implemented in the field

Criterion 6: *Workers actively participate in the work planning process.*

Through interviews and observations there is sufficient evidence to indicate that, when given the opportunity, workers are involved in the work planning process. Of the AJHAs observed, worker involvement was very evident. At all of the AJHA sessions observed, the session coordinators ensured worker involvement by directing questions relating to a given hazard to the applicable or cognizant participant. At the 324 Facility, the Work Package Preparer or Planner ensures individuals filling out work package J-5s receive feedback on the resolution. At post-job reviews, all attending parties were given the opportunity to participate.

However, interviews of workers indicate that a perception exist that a select few are routinely involved in the planning process. Some workers responded that they were always involved, some responded that they were sometimes involved, and few responded that they were never involved. One worker responded that he realized that he was routinely given the opportunity to be involved in work planning, but recognized that some of his fellow workers were not. He brought this to the attention of his management who in turn took action to involve different personnel in the planning process. Maximizing personnel participation will drive continuous improvement and a better understanding of the principles of ISMS.

Workers actively participate in the work planning process.

Conclusion

An integrated process has been established and is used to effectively plan work for RCP. Within work planning, clear roles and responsibilities have been established and there is a satisfactory level of competence. Evidence provided by observations of work planning activities and interviews of personnel involved in work planning indicated that at RCP the procedures and mechanisms in place to effectively plan work indicates field implementation. Interviews and observations indicate that the roles and responsibilities identified in the work planning procedures are clearly understood by personnel involved in the work planning process and that there is a satisfactory level of competence.

This objective has been met.

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FUNCTIONAL AREA: Operations	OBJECTIVE: OP.1 DATE: July 10, 2000
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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Cognizant Engineer, Liquid Waste Processing Facility (LWPF)
- Cognizant Engineer, SWSD
- Cognizant Engineer, SWT
- Cognizant Engineer, WESF
- Cognizant Engineer, WRAP Facility
- Duty Operations Manager, SWT
- Duty Operations Supervisor, WRAP Facility
- Electrician, WESF
- Facility Manager, WESF
- FWS, LWPF
- FWS, SWSD (2)
- FWS, SWT
- FWS, WESF (2)
- FWS, WRAP Facility
- Health Physics Technician, LWPF (3)
- Instrument Technician, LWPF (2)
- Lead, Nuclear Chemical Operator, SWT (Canyon)
- Lead, Nuclear Chemical Operator/As Low As Reasonably Achievable Safety Council Member, WESF
- Lead, Radiological Control Technician/Safety Council Member, WESF
- Manager, Canyon Project, SWT
- Manager, Disposal Operations, SWSD
- Manager, Maintenance Work Control, WRAP Facility
- Manager, Operations, WRAP Facility
- Millwright, LWPF (2)
- Millwright, WRAP Facility (3)
- Nuclear Chemical Operator, Central Waste Complex (3)
- Nuclear Chemical Operator, Liquid Effluent Facility (LEF) (2)
- Nuclear Chemical Operator, WESF (2)
- Nuclear Chemical Operator, WRAP Facility (2)
- Nuclear Chemical Operator, Low-Level Burial Grounds
- Nuclear Chemical Operator, SWT
- Operations Lead, WESF
- Operations Shift Manager, LWPF (2)
- Operations Specialist (Scheduler), SWSD (2)
- Operator, LWPF
- Planner, LWPF

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- Planner, SWT (2)
- Planner, WRAP Facility (4)
- Refrigeration Environmental Services Electrician, DynCorp Tri-Cities Services, Inc.
- Safety and Health Representative, Fluor Federal Services
- Safety and Health Representative, FH
- Safety Council Chairperson, SWSD
- Scheduler, LWPF (2)
- Shift Manager, LWPF
- Transportation Carpenter
- Transportation Riggers (4)
- Transportation Sign Painter
- Transportation Teamster (4).

Observations

- SWSD Morning Briefing meeting, June 14, 2000
- SWSD Trench 94 Painting of Reactor Compartment, June 14, 2000
- Low-Level Burial Grounds Pre-shift Briefing, June 14, 2000
- Waste Management Transportation Pre-shift Brief, June 15, 2000
- SWT Surveillance and Compliance Morning Briefing, June 15, 2000
- SWT Daily Surveillance at 2706-T, June 15, 2000
- SWT Troubleshoot and Repair of 2706-T HVAC Unit #2, June 15, 2000
- WESF Plan of the Day meeting, June 16, 2000
- WESF Operations Shift Turnover, June 16, 2000
- WESF Pre-job Brief, June 16, 2000
- LWPF Plan of the Day meeting, June 19, 2000
- LWPF All Hands meeting, June 19, 2000
- LWPF Pump Rebuild in Hot-Shop, June 19, 2000
- LWPF Operations Shift Turnover, June 19, 2000
- WRAP Facility Morning Turnover meeting, June 20, 2000
- WRAP Facility Operating Area and Transuranic Overpacks on Trailer, June 20, 2000
- WESF AJHAs for instrument calibrations 5-BC-001, 5-BC-003 and 5-BC-010, June 20, 2000.

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Discussion of Results

Criterion 1: *Work planning is integrated at the individual maintenance or activity level and fully analyzes hazards and develops appropriate controls.*

At the facility-level, work scope is evaluated using a risk and complexity decision matrix identified in HNF-PRO-079. The risk and complexity will determine if an AJHA is required. If an AJHA is required, a multi-disciplined team is assembled to assess the hazards, environmental impacts, and establish controls. The necessary hazard and environmental impact controls are identified and developed as part of the work planning and AJHA process. Controls (Lock and Tag procedure, RWPs, Confined Space Permit, etc.) address the specific hazards and environmental impacts of the work. Throughout WMP, the AJHA process is used very consistently and effectively all maintenance packages. The AJHA process facilitates a comprehensive analysis of the potential hazards associated with the evaluated work scope.
(WMP OP.1-1)

The AJHA is being applied to all newly developed operations procedures and some facilities are also applying the AJHA in reviewing their existing operations procedures to ensure there are no unanalyzed safety issues.

At the subcontractor-level, after work scope is defined within the contract Statement of Work, the flow down of ISMS is determined as outlined in HNF-MD-4821, *Guidance for Flow Down of ISMS Requirements to Lower Tier Subcontracts*. Job Hazard Analysis documentation for this work scope is reviewed by the facility. In some cases, based on risk and complexity of the task, an AJHA may be required. If an AJHA is required, a multi-disciplined team of facility and subcontractor (if required) personnel is assembled to assess the hazards, environmental impacts, and to establish controls. Work is released and controlled in accordance with WMP-200, *Waste Management Project Procedures*, Section 3.1, "Work Management." In addition, facility personnel are performing oversight of subcontracted activities as required by WMP-200, Section 3.5, "Subcontractor Project and Construction Work." Implementation of HNF-MD-4821 is appropriate.

Criterion 2: *Personnel involved in the work planning understand their roles and responsibilities.*

WMP employees are responsible for applying the knowledge and skills obtained through training and qualification while conducting work in accordance with the safety and environmental requirements defined in the policies and procedures in use. Roles and responsibilities are clearly defined by employee position descriptions, union jurisdictional assignments, procedures, work instructions for discrete tasks, and through established work practices. Individual roles and responsibilities are specifically defined for each separate activity through the pre-job planning process and individual work assignments.

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The interview process and work package reviews verified that personnel involved in the work planning process understand and their roles and responsibilities very well.

Criterion 3: *Personnel assigned to work planning have a satisfactory level of competence for the subject area assigned.*

Personnel who are assigned the responsibility of work planning are selected by criteria listed in the job description. Each position has minimum training requirements, which need to be met before they can assume the responsibilities. Qualification is then maintained through TMX and periodic performance evaluations. The planners were found to be competent and have years of experience.

The formal training and qualification process for work planners is not consistent throughout WMP. The various Position Training Reports for WMP planners indicate a wide variety of mandatory courses. There is not a consistent list of core functions and associated training programs that satisfy the requirements to perform work planning. Additionally, the planners at LWPF and WRAP Facility were all listed as “in-training.” There was no indication of a mentor assigned during the qualification process and it was not clear which duties the planner “in-training” could or could not perform. **(WMP OP.1-5)**

Criterion 4: *Safety requirements are integrated into work planning.*

WMP adequately establishes and implements controls for safe facility operations through the Authorization Basis. Evaluations are performed through the work planning process to ensure that Authorization Basis requirements are built into the work planning documents as required by WMP-200, Sections 1.18, “Technical Procedure Process,” Section 3.1, and for WESF, FSP-WESF-001, *WESF Project Administration*, Section CM-03, “Work Management Process.” The AJHA process appropriately identifies hazards and the required controls. The controls for these hazards are then placed into the work instructions or operational procedures.

Criterion 5: *Lessons learned from work execution are incorporated into planning.*

As required by the work management process, work planners incorporate lessons learned into work planning efforts. Feedback resulting from work execution is documented in the JCS Work Record (J-5). This information is reviewed as part of the work package closeout process. Action is taken on the issues recorded and feedback on actions taken is provided to the worker. After work package closeout, work packages are scanned into Records Management Information System for future planning reference. Post-job reviews are required for all jobs. Formal post-job reviews are required for the case of high-risk or complex jobs. Post-job review requirements are less rigorous for medium/low-risk or low complexity jobs. The post-job review process maturity level was observed to be at various stages at WMP.

Safety issues are effectively being addressed at WMP. This is accomplished by feedback to the employee’s immediate supervisor or a safety issues program. In most cases, the supervisor

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resolves the issue. Some workers indicated that the safety issues program was an unneeded program because issues are resolved at their level. The safety issues are raised through a formal program when the supervisor cannot resolve the issue. This process is working well with the following examples:

- At SWT, feedback from items tracked in the safety logbook are provided to the originators in a timely manner.
- At WESF, the Problem Identification Form is used to identify issues and provide immediate response to the originator on planned actions. **(WMP OP.1-4)**

Criterion 6: Workers actively participate in the work planning process.

Integration is demonstrated as workers participate, as key members, in the work planning process through various means including job site walkdowns, hazard analysis reviews, procedure validation, etc. Workers participate in hazard analysis as required by the risk/complexity determination. Observed implementation of WMP-200, Section 3.1 demonstrated worker involvement in all phases of the work planning process. In addition, workers perform validation of procedures as required by WMP-200, Section 1.18.

The AJHA process ensures, and has institutionalized, worker involvement in work planning. **(WMP OP.1-2)**

Worker involvement in planning stages has reduced frequency of job delays during the pre-jobs and during work execution. Interviews indicated that using the AJHA process takes longer to plan the work, but almost no jobs are stopped in the field because of planning problems. This has resulted in work being done quicker because it is planned better. **(WMP OP.1-3)**

Conclusion

Interviewing 90 employees (exempt and non-exempt), reviewing numerous documents, and observing field activities sufficiently and effectively demonstrated that an integrated process has been established and is used to effectively plan work for WMP. This process also sufficiently and effectively demonstrated that within work planning, clear roles and responsibilities have been established and there is a satisfactory level of competence.

The objective has been met.

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Strengths:

- The Automated Job Hazard Analysis process facilitates a comprehensive analysis of the potential hazards associated with the evaluated work scope. **(ASP OP.1-1) (WMP OP.1-1)**
- The Automated Job Hazard Analysis process ensures, and has institutionalized, worker involvement in work planning. **(ASP OP.1-2) (WMP OP.1-2)**
- Worker involvement in planning stages has reduced frequency of job delays during the pre-jobs and during work execution. **(ASP OP.1-3) (WMP OP.1-3)**
- Personnel who perform planning were included in the technical staff training and qualification programs. **(FFTF OP.1-1)**
- Safety issues are effectively being addressed at WMP. **(WMP OP.1-4)**

Concerns:

- The formal training and qualification process for work planners is not consistent at ASP and throughout the WMP. **(ASP OP.1-4) (WMP OP.1-5)**

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FUNCTIONAL AREA: **Operations**

OBJECTIVE: **OP.1**

DATE: July 10, 2000

Submitted: *Dennis Humphreys*

Dennis Humphreys, Team A

Team Member

Jack George

Jack George, Team B

Team Member

Glyn Trenchard

Glyn Trenchard, Team A

Team Member

William Barker

William Barker, Team B

Team Member

Approved: *Ed Parsons*

Joe (Ed) Parsons

Team Leader

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FUNCTIONAL AREA: Operations	OBJECTIVE: OP.2 DATE: July 10, 2000
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OBJECTIVE

OP.2 - An integrated process has been established and is used to authorize and execute the identified work for the facility or activity.

Criteria

1. An adequate state of readiness of the facility or activity and operational work force is confirmed prior to authorizing the performance of work.
2. Processes used to gain authorization to conduct operations are implemented.
3. Hazards are appropriately controlled and integrated into work performance.
4. Workers have adequate competence for their duties.
5. Feedback from work planning and execution and lessons learned are integrated into work processes.
6. A safety-conscious work force environment exists.

Approach

Record Review

- Review post-job critiques, Job Hazard Analysis, and other records to determine if lessons learned and feedback are effectively integrated into the work processes.
- Review selection, training, and qualification training requirements and records to ensure that maintenance and operations personnel are competent for work being performed.
- Review documents associated with work execution to gain an understanding of the process and the roles and responsibilities of personnel involved in work execution.

Interviews

- Interview personnel responsible for authorizing and performing work. This should include personnel such as those responsible for preparing and maintaining documents such as the Plan of the Day, equipment status files, pre-job briefings, and the conduct of facility or activity operations.

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- Interview personnel responsible for approval and execution of individual activity procedures and controls.
- Interview operations, maintenance, and safety personnel and verify adequate worker involvement at each step of the process.
- Interview personnel responsible and involved in the work feedback process.

Observations

- Observe the actual authorization and performance of work activities. This should include such items as pre-job briefings, authorization by managers to proceed, command and control of the work, review of safety requirements, etc.
- Observe work hazard identification activities. This should include such things as validation of procedures, procedure tracking, compensatory measures determination, etc.
- Observe post-job reviews and other methods used to provide feedback for continuous improvement.

Record Review

- 3M-SOP-PTL-144, *Use of Laboratory Fume Hoods for Radiological Operations*, Rev. 02-A, April 25, 2000
- 3M-SOP-PTL-171, *Loading & Unloading PRTR Casks*, Rev. 1-0, March 27, 2000
- 3M-SOP-PTL-112, *Operate SERF Cell Air Lock and SERF Cell Glovebox Air Lock*, Rev. 5-0, draft procedure, June 22, 2000
- 400 Area Safety Awareness Council meeting minutes, June 26, 2000
- ASP-200, *Analytical Services Procedures*
 - Section 1.18, "Technical Procedure Process," Rev. 1, June 5, 2000
 - Section 3.1, "Work Management," Rev. 5, June 8, 2000
 - Section 3.5, "Subcontractor Project and Construction Work," Rev. 3, May 31, 2000
 - Section 3.8, "Enhanced Radiological Work Planning," Rev. 4, May 30, 2000
 - Section 5.1, "Training Plan," Rev. 5, May 31, 2000
- Building Emergency Director (BED) Daily Release Sheet Book, June 15, 16, and 19, 2000
- BED Turnover Book, June 15, 2000
- Construction Work Package, RCD-37, *Inspect Repair and Re-Coat RCD Packages in Trench 94*
- Course 071972, *Technical Support Staff Orientation Training*, January 2, 1998
- Course 0719782, *FFTF Procedure Process Training*, September 2, 1999
- Crew E Shift Summary, June 26, 2000

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- Fast Flux Test Facility (FFTF) Administrative Procedure
 - A-5, *AJHA Process for Controlled Procedures*, Rev. A1, Appendix A, draft, June 26, 2000
 - A-33, *Work Prioritization and Scheduling*, Rev. 4, December 31, 1997
 - A-28, *FFTF Work Management Processes*, Rev. 13, March 24, 1998
- FFTF Plan of the Day schedule
 - June 26, 2000
 - June 27, 2000
- FFTF Turnover Summary, June 26, 2000
- FSP-FFTF-IP-0759, *FFTF Administration Procedures Manual*, Release 17, June 15, 2000
- FSP-FSS-5-35, *Fuel Supply Shutdown Project Control Manual*
 - Section 02-01, "Job Control System," Rev. 3, February 29, 2000
 - Section 02-02, "Supervision of Field Work Activities," Rev. 1, July 8, 2000
 - Section 05-02, "Training Plan," Rev. 3, May 31, 2000
- FSP-PFP-0821, *Conduct of Operations*, Chapter 12, "Operations Turnover," Rev. 6, October 4, 1999
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vols. 1 and 2
 - Section A, "Organization Charts," Rev. 16, March 23, 2000
 - Section B, "Nuclear Material Stabilization Project – Key Functions and Responsibilities," Rev. 8, May 23, 2000
 - Section 1.14, "Managing Lessons Learned," Rev. 3, March 24, 2000
 - Section 6.1, "PFP Maintenance Scheduling," Rev. 3, January 31, 2000
 - Section 6.3, "Person-In-Charge (PIC)," Rev. 3, April 5, 2000
 - Section 13.4, "Work Management Process Description and Job Control System Process," Rev. 21, April 6, 2000
 - Section 13.5, "Processing PFP Documents," Rev. 15, May 25, 2000
 - Section 13.6, "Technical Document Control System," Rev. 5, February 1, 2000
- FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*
 - Section 7, "Operations Training Program," Rev. 9, October 4, 1999
 - Section 10, "Maintenance Training Program," Rev. 3, October 4, 1999
 - Section 11, "PIC Training Program," Rev. 5, October 4, 1999
- FSP-WESF-001, *WESF Project Administration*
 - Section CM-3, "Work Management Process," Rev. 7
 - Section TN-1, "WESF Training Program"
- HNF-IP-1264, *324/327 Facilities Stabilization Project Administrative Manual*
 - Section 2.4, "Technical Procedure Writers Guide," Rev. 4, June 14, 2000
 - Section 2.14, "Lessons Learned," Rev. 1, November 12, 1999
 - Section 2.15, "Training Development and Administration," Rev. 1, October 29, 1999
 - Section 4.1, "Job Control System Implementation," Rev. 10, June 21, 2000
 - Section 2.3, "Technical Procedure Development and Control," Rev. 6, June 14, 2000
 - Section 4.2, "Preventive Maintenance," Rev. 1, November 12, 1999
 - Section 4.3, "Person-in-Charge (PIC)," Rev. 4, June 21, 2000
 - Section 4.4, "Field Work Supervision," Rev. 2, October 29, 1999

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- HNF-MD-4821, *Guidance for Flow Down of ISMS Requirements to Lower Tier Subcontracts*, Rev. 0, July 30, 1999
- HNF-MP-001, *Fluor Hanford Management Plan*, Rev. 2, February 25, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor ISMS Description”
 - Appendix G, “Fast Flux Test Facility ISMS Description”
 - Appendix H, “Analytical Services ISMS Description”
- HNF-PRO-050, *Managing Employee Performance*, Rev. 1, August 25, 1999
- HNF-PRO-055, *Facilities Start-Up Readiness*, Rev. 2, December 16, 1999
- HNF-PRO-067, *Managing Lessons Learned*, Rev. 1, November 24, 1998
- HNF-PRO-079, *Job Hazard Analysis*, Rev. 5, May 5, 2000
- HNF-PRO-3468, *Stop Work Responsibility*, Rev. 0, October 22, 1999
- Individual Training Reports for the Analytical Service Provider (ASP) Planners, June 21, 2000
- Job Safety Analysis (JSA) Notebook, *Reactor Compartment Re-Coat*, no date
- LO-090-101-USQ, *222-S Laboratory Sample Receiving and Custodianship*, Rev. U-0
- LO-161-172, *Perform Complex 11A Hot Cell Operation*, Rev. K-4
- Liquid Waste Processing Facility (LWPF) Work Package EL-00-00272, *Repair/Replace Pump 60C-P-1A*
- PFP-LL-00-07, *Work Package 2Z-00-546/P Verify Furnace Parameters*, May 1, 2000
- PFP-LL-00-08, *Durometer Verification Not Performed on HEPA Filters*, May 8, 2000
- PFP-LL-00-09, *Work Sequence Plan Not Properly Incorporated Into Work Package*, June 2, 2000
- RCP-310, 300 LEF Project Administration Procedures
 - Section 4.07, “Planning, Scheduling, & Coordination of Work Activities”, Rev. 1, March 15, 2000
 - Section 4.15, “Management Involvement,” Rev. 0, March 15, 2000
 - Section 4.18, “Modification Work,” Rev. 0, March 15, 2000
 - Section 4.27, “Work Management,” Rev. 0, March 15, 2000
 - Section 4.30, Subcontractor Project & Construction Work,” Rev. 0, March 15, 2000
 - Section 6.01, “Training Program Description,” Rev. 0, June 16, 2000
- SC51-9, *Secondary Isolation Valve Compliance/SISI Test*, Rev. 1B, March 16, 1990
- SI51-2, *Normal Isolation and De-Isolation of a DHX Module*, Rev. 2B, January 25, 1993
- SI-324Bldg-01, *Automated Job Hazards Analysis*, Rev. 1, June 5, 2000
- SI-324Bldg-015, *Prioritization and Scheduling of Operations/Maintenance Work at the 324 Building*, Rev. 0, June 14, 2000
- SI-324Bldg-014, *Control of Equipment and System Status*, Rev. 1, May 24, 2000
- SI-FSS-006, *Define Personnel Authorized to Perform Fuel Supply Shutdown Project Work Control Functions*, Rev. 9, February 9, 2000

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OBJECTIVE: **OP.2**

DATE: July 10, 2000

- Solid Waste Storage and Disposal (SWSD) Daily Operating Schedule, June 14, 2000
- Solid Waste Treatment (SWT) Daily Operating Schedule, June 15, 2000
- Surveillance Procedure DO-040-020, *Perform Daily Surveillance of 2706-T*, Rev. D-1
- Training Plan 71940, *FFTF Design Authority Training Program*
- Training Reports (3) for Cognizant Engineers, June 27, 2000
- Waste Encapsulation and Storage Facility (WESF), 5-BC-001, *Yokagawa Micro R100 Series Recorder*, Rev. 0-C
- WESF, 5-BC-003, *Dwyer 605 series Differential Pressure Indicating Transmitter*, Rev. 0-C
- WESF, 5-BC-010, *Foxboro E69 Series Current-to-Pneumatic Converters*, Rev. 0-C
- WMP-200, *Waste Management Procedures*
 - Section 2.16, “Technical Procedures,” Rev. 9, June 1, 2000
 - Section 3.1, “Work Management,” Rev. 5, June 7, 2000
 - Section 5.1, “Training Plan,” Rev. 5, May 31, 2000
 - Section 5.3, “Training Implementation Plan,” Rev. 4, June 5, 2000
- Work Packages
 - 2S-00-00282/W, *Install/Calibrate New Balances in 11A Hot Cells*
 - 2Z-00-209, *Replace Motor/ASV Pump 31/291-Z*
 - 2Z-00-257, *Replace #2 AC Solenoid Valve/291-Z*
 - 2Z-00-302, *Install Structural Components for Magnesium Hydroxide Project*
 - 2Z-00-473, *D-4 drain tie-in*
 - 2Z-00-647, *2M Cathodic System Rectified Check*
 - 2Z-00-672, *Clean and Test BFP-28*
 - 2Z-00-723, *Tighten/Repair Nitric Acid Flange VG1-10*
 - 2Z-00-802, *Calibrate Fixed Head Air Samplers*
 - 2Z-00-815, *PM Hoist/Wire Rope Inspection H085, 241-Z*
 - 2Z-97-2326, *Install new Hot Water Source for 234-5Z*
 - 2Z-97-2643, *Repair Drive Sprocket on Robot Gate*
 - 2Z-98-1674, *Repair/Adjust Dampers EF-3/4*
 - 2Z-99-557, *Replace Isolation Valves at Trap 114/High Tank*
 - 2Z-99-596, *SRV and PI Calibrations 50#/30# Steam*
 - 2Z-99-643, *PM/S 101/102 Level Transmit 243-Z May*
 - 2Z-99-688, *Repair 17" Vacuum/PRF, Low Flow Alarm*
 - 2Z-99-818, *Add water to Secondary Cooling Loop*
 - 2Z-99-1022, *Decon HC-1 West End Conveyer*
 - 2Z-99-1763, *Replace CAP Z-7 Batteries*
 - 2Z-99-1896, *Replace Actuators on Generators ½*
 - 2Z-99-1906, *Replace HS02I0A*
 - 2Z-99-1930, *Elevator Repair*
 - 2Z-99-2045, *Troubleshoot & Repair Dry Air Compressors ½*
 - 3I-00-177, *Carbon Monoxide Monitor*
 - 3I-00-182, *Wire Rope Inspection*
 - 3I-00-187, *Weekly Effluent Monitor Diversion*
 - 3I-99-706, *In-Place & Shop Manipulator Repair*

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FUNCTIONAL AREA: Operations	OBJECTIVE: OP.2 DATE: July 10, 2000
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- 3M-00-0037, *Install Jumper Across Iodine Alarm*
- 3M-00-0038, *SERF Cell Monitor*
- 3M-00-0039, *Roll Up Door Annual*
- 3M-00-0041, *Repair Strainer in Penthouse*
- 3M-00-0043, *Install Air Gap Drain at SSEW at RPBA*
- 3M-00-0045, *Replace Light Ballast*
- 3M-00-0059, *Replace Lead Screw on A Cell Loadout*
- 3M-00-0060, *Replace Rotor Shaft on A Cell Loadout Mech.*
- 3M-00-0095, *PM/S HEPA Filter D/P*
- 3M-00-0152, *SERF Cell Dry Run*
- 4F-99-01132/W, *Joy Blower 480V Connection Plate Problems*
- 4R-00-53494/C, *2706 Troubleshoot and Repair HVAC Unit #2*
- ZAP-000-004, *Preparing One Time Use Procedures (Work Plans) at the PFP, Rev. A-2, November 4, 1999.*

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Chemical Technician (2)
- Chemist
- Cognizant Engineer
- Field Work Supervisor (FWS) (2)
- Health Physics Technician (2)
- Instrument Technician (2)
- Maintenance Manager
- Millwright (2)
- Operations Lead
- Operations Manager
- Pipefitter
- Planner (2)
- Safety Council Chairperson
- Stationary Operating Engineer (2)
- Work Control Expeditor.

Observations

- 222-S Laboratory Plan of the Day meeting, June 21, 2000
- 222-S Laboratory Maintenance Turnover meeting, June 21, 2000
- Pre-job Briefing for Work Package 2S-00-00282/W, June 21, 2000
- Automated Job Hazard Analysis (AJHA) for procedures LO-090-101-USQ and LO-161-172, June 21, 2000
- Maintenance activity in 222-S Laboratory Manipulator Repair Shop, June 21, 2000.

Discussion of Results

Criterion 1: *An adequate state of readiness of the facility or activity and operational work force is confirmed prior to authorizing the performance of work.*

Startup, restart, or modification activities are evaluated to determine if a readiness assessment (RA), operational readiness review (ORR) process, or internal startup review can be conducted in a safe and responsible manner. These reviews were found to ensure that the operational programs are adequate to support the work scope and personnel are trained to ensure competence commensurate with the assigned responsibilities.

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Readiness is further confirmed through weekly and daily planning meetings to ensure availability of staff and resources. Observation of these meetings verified that prior to work release for maintenance or operations activities the facility condition is confirmed to be in alignment for that activity. The facility personnel were also shown to ensure job hazard analysis had been performed, appropriate organizations notified, resources verified, work packages completed, and pre-jobs conducted.

Recently, ASP began making preparations for receiving a new test capsule of californium. Management insisted that ASP go through a readiness check (not a formal ORR/RA as one was not required) to ensure all aspects of receiving and handling this test source were evaluated and understood. This included hazard analysis, mock-ups, and contingency planning. This type of review involving potentially hazardous and sensitive activities demonstrated ASP's commitment to ISM. Interviews and document reviews indicated that prior to ISM this readiness check would likely not have taken place. This further demonstrates that the facility is on a path to continuous improvement and readiness prior to activities being authorized for performance. **(ASP OP.2-1)**

Criterion 2: *Processes used to gain authorization to conduct operations are implemented.*

Formal work planning meetings were observed for review of work scope and available resources necessary to perform the work. Scheduled work is reviewed against current plant conditions, ensuring plant status supports the work activity and that applicable controls are in place prior to formal work release. Through interviews it was determined that the Operation Lead, Shift Manager, or Operation Engineer has authority to sign off the formal work release. ASP also uses the Job Control System (JCS) daily release sheet to identify and track work that has been released. This demonstrates ASP has implemented a conduct of operations process to authorize work.

Criterion 3: *Hazards are appropriately controlled and integrated into work performance.*

As observed, the necessary hazard and environmental impact controls were identified and developed as part of the work planning and AJHA process. This process ensured that controls are appropriate for the hazards identified. Further observation and interviews indicated that through the use of pre-job briefings, readiness is confirmed before the start of work activities. Procedure compliance expectations, as outlined ASP-200, *Analytical Services Procedures*, Section 2.16, "Technical Procedures" were observed to ensure work is performed within the specified controls. It was also observed that the pre-job briefs clearly identify the controls used to mitigate the various hazards for the planned work. The operators and workers understood the selected personnel protective equipment (PPE) and other barriers to hazards that are identified.

However, the facility has implemented a generic caveat into many of their technical procedures that may desensitize the workers on the importance of procedural adherence. The following statement was placed at the beginning of many reference use procedures, "Sections, or steps within sections, of this procedure may be performed out of sequence, as required." Contrary to this statement, many steps within the body of the procedure need to be worked in the specified

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order. Failure to perform these steps in the prescribed order would result in non-compliance with quality and operational requirements, or potential environmental, safety, and health issues. A procedure that covers many evolutions and allows a wide flexibility and interpretation by the workers frequently leads to a casual and informal approach in following the procedure. **(ASP OP.2-4)**

Criterion 4: *Workers have adequate competence for their duties.*

Interviews and record reviews indicated personnel performing work are competent commensurate with responsibilities. Training is provided through ASP-200, Section 5.1, "Training Plan," and Section 5.3, "Training Implementation Matrix." ASP personnel demonstrated use of these documents to define the elements of the training program, such as the processes for completing qualification programs, conduct of oral and written examinations, and proficiency requirements. Individual training requirements are tracked in the Training Matrix (TMX) system. Line managers are responsible for the training of personnel and the TMX provides the tools to forecast training needs over the course of the year. This process is institutionalized and appears to be working well. Additionally, the work supervisors and the individuals themselves are very concerned about the status of training and ensure they do not engage in work that they are not currently trained to perform.

Criterion 5: *Feedback from work planning and execution and lessons learned are integrated into work.*

Interviews indicated that ASP management has reinforced the expectation that worker feedback and resolution of the concerns is very important, on all evolutions. FWSs and workers indicated that feedback is provided on all completed work. The FWSs use a graded approach to collect and document worker feedback on simple routine tasks as well as the more complex activities where formal post-jobs are required. Post-job reviews are conducted immediately upon completion of the task. The worker feedback is solicited and then documented on the JCS Work Record (J-5) with an entry prefaced by "Post-job Lessons Learned." If no specific lessons were learned or problems were encountered, it is so stated. The completed work package is then forwarded to the Work Control Expeditor. The Work Control Expeditor then forwards the work packages with actions needed to the appropriate individual for resolution (Cognizant Engineer, FWS, Procedure Writer, etc.). Interviews indicated that the problem resolver normally contacts the originator to discuss the problem in more detail. The problem resolver then documents the actual problem resolution on the work record. This process has been recently implemented on operations activities, with the JCS work record being used and stapled to the completed operational work tickets and procedures. Post-job feedback on every maintenance activity was found to be exemplary. **(ASP OP.2-2)**

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Criterion 6: *A safety conscious workforce environment exists*

A safety conscious workforce environment has been communicated by management and institutionalized by the workforce. Interviews of ASP personnel indicated that safety is believed by all employees to be their responsibility.

Previous surveys and interviews and observations conducted by this ISMS Team provide evidence that workers feel free to exercise Stop Work authority. The employees work together as a team and will correct each other if they see something they consider unsafe. Employees of all disciplines routinely participate in safety walk-downs of all work areas with management and safety professionals. Safety councils are an integral part of the improvement and oversight process. These councils provide one of several venues for personnel to raise safety ideas/issues.

Of the 22 people interviewed (both exempt and non-exempt) all firmly believed that an employee can bring a reasonably difficult safety issue to the attention of management without fear of reprisal, harassment, or intimidation. Additionally, they believe that their employer has provided them with periodic reinforcement of safety requirements and safe practices (primarily through meaningful safety meetings).

The advent of the AJHA has caused a significant increase in worker involvement at all levels of planning. This increase in involvement has significantly increased ownership by the worker in the planning processes and in the development of hazard identification and resulting hazard mitigations (PPE, etc.). The understanding and ownership of the work procedures and packages result in significantly fewer problems at the work site in regard to wearing PPE and fully respecting engineered and administrative barriers. Stop Work due to improperly prepared work packages and operating procedures has significantly decreased. Most of those interviewed indicated that when the AJHA and pre-job briefing are held, stop works do not happen. Morale of the workforce has improved as they see themselves as important, respected, valuable players in a safety conscious workforce.

ASP has a balanced and effective Stop Work culture. ASP has the normal Hanford Site-wide Stop Work program that anyone can use when they feel something is unsafe. When this is used, specific requirements are performed to resolve the issue. Because of the formality of this process the tendency is to use Stop Work for only serious issues. ASP has a culture in place where anyone can say "Stop, I don't think this is safe." Everyone involved in the job then stops and addresses the issue. If it is resolved then work starts again with little delay. The difference at ASP is that they have found a way to address issues without jumping into the full-blown Stop Work program until it is appropriate.

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ASP has a balanced and effective safety-conscious workforce environment. **(ASP OP.2-3)**
During interviews, the workforce gave many examples of how the AJHA has improved efficiency, safety and teamwork. These are some of the quotes:

- “AJHA is the best tool I have. It is better than my hammer.”
- “Doing a job we are all on the same page, and we understand why the Health Physics Technician tells us it is time to go on mask. Before we just thought he was being a jerk.”
- “Jobs that use an AJHA go much smoother and even though the planning takes longer, we complete the job quicker.”
- “There is no animosity performing work because we all know what the requirements are.”
- “Less jobs are being stopped because of poor planning.”

Conclusion

Interviewing 22 employees (both exempt and non-exempt), reviewing numerous documents, and observing field activities sufficiently and effectively demonstrated that an integrated process has been established and is used to authorize and execute the identified work for the facility and activity.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Assistant Shift Operations Manager (2)
- Cognizant Engineer (2)
- Deputy Operations Manager
- Electrician (3)
- FWS (2)
- Hanford Atomic Metal Trades Council (HAMTC) Safety Representative (2)
- Maintenance Manager
- Millwright
- Operations Lead
- Operations Manager
- Pipefitter (2)
- Planner(2)
- Radiation Control Lead
- Radiation Control Technician
- Reactor Operator (5)
- RL Facility Representative (2)
- Safety Council Chairperson
- Senior Technical Instructor
- Shift Operations Manager (3)
- Training Lead
- Work Control Expeditor
- Work Control Lead
- Work Control Manager.

Observations

- Plan of the Day meeting, June 26, 2000
- Operations Crew Turnover meeting, June 26, 2000
- Walkdown of heater inspection planning, June 26, 2000
- AJHA heater inspection, June 26, 2000
- Safety Awareness Council meeting, June 27, 2000
- Pre-job Briefing for SC51-9, *Annual DHX Isolation Valve Comp/ISI Test*, June 26, 2000
- Plan of the Day meeting, June 27, 2000
- Pre-job Briefing of 4F-99-1132, *Joy Blower 480V Connection Plate Problems*, June 27, 2000.

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Discussion of Results

Criterion 1: *An adequate state of readiness of the facility or activity and operational work force is confirmed prior to authorizing the performance of work.*

Readiness is confirmed through weekly and daily planning meetings to ensure availability of staff and resources. Observation of these meetings verified that prior to work release for maintenance or operations activities FFTF condition is confirmed to be in alignment for that activity. FFTF personnel were also shown to ensure job hazard analysis had been performed, appropriate organizations notified, resources verified, work packages were complete, and pre-jobs conducted.

Two pre-job briefings were observed. Both were thorough and provided clear identification of hazards, roles and responsibilities, and work activity definition. The first pre-job briefing was for an operations evolution for SC51-9, *Annual DHX Isolation Valve Comp/ISI Test*. The Shift Operations Manager and assistant led the briefing. The second briefing was conducted by the FWS for 4F-99-1132, *Joy Blower 480V Connection Plate Problems*. This work was ongoing and 7 of the 24 connector plates had been removed and replaced. The FWS reviewed the work package and rosters from previous pre-job briefings and verified that all assigned workers had previously participated. During the pre-briefing, the Radiological Control Technician stated that he had previously participated in only a portion of the work, and was not familiar with the specific work scope for the day. The FWS stopped and reviewed the applicable work steps with the Radiological Control Technician. Completion of the pre-job brief was delayed to allow the worker to read the entire work package, while the other workers gathered necessary materials.

Some simple prearranged work can be issued to the Fix It Now (FIN) Team, which was observed to be noteworthy in that they are a multi-disciplined group whose purpose is to walkdown, troubleshoot, and repair identified system/equipment problems in a timely manner. The FIN Team prevent many of the jobs from having to go through a full planning process, thus saving resources for many of the more complex problems. Additionally, the engineers can use the FIN Team to walkdown other proposed work for planning purposes. The process is well liked by both workers and supervisors, and does appear to promote good maintenance "health" of the facility.

Criterion 2: *Processes used to gain authorization to conduct operations are implemented.*

Formal work planning meetings were observed for review of work scope and available resources necessary prior to performance of the work. Planned work was then reviewed against current plant conditions. Operations ensured plant status supported the work activity and that the applicable the controls were in place prior to formal work release. The Operations Engineer signed off the formal work release for the packages. The processes used to gain authorization to conduct operations are institutionalized and very mature.

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Criterion 3: *Hazards are appropriately controlled and integrated into work performance.*

As observed, the necessary hazard and environmental impact controls are identified and developed as part of the work planning and AJHA process. This process ensured that controls are appropriate for the hazards identified. Further observation and interviews indicated that through the use of pre-job briefings, readiness is confirmed before the start of work activities. Procedure compliance expectations were observed to ensure work is performed within the specified controls. It was also observed that the pre-job briefs very clearly identify the controls used to mitigate the various hazards for the planned work. The operators and workers understand the selected PPE and other barriers to hazards that are identified.

Criterion 4: *Workers have adequate competence for their duties.*

Interviews and record reviews indicated that personnel performing work are competent commensurate with responsibilities. FFTF personnel demonstrated they use the defined elements of the training program, such as the processes for completing qualification programs, conduct of oral and written examinations, and proficiency requirements. Individual training requirements are tracked in the TMX. Line managers are responsible for the training of personnel and the TMX provides the tools to forecast training needs over the course of the year. In addition management issues a letter to the employee when a qualification has expired. This entire process is institutionalized and appears to be working well.

Criterion 5: *Feedback from work planning and execution and lessons learned are integrated into work.*

Work records, pre- and post-job reviews, and the procedure change process were observed to provide an opportunity for worker feedback before, during, and after work activities. A consistent implementation of the approach to obtaining and responding to feedback was observed. Feedback comes through the normal channels and is integrated back in the work process. Recent changes in the Administrative Procedure A-28, *FFTF Work Management Processes*, have strengthened the feedback loop for corrective maintenance work packages. Feedback was observed to be institutionalized and working well. In addition to the structured processes, the engineers and workers spend a lot of time together giving direct verbal feedback, which is also integrated in the work process.

Criterion 6: *A safety conscious workforce environment exists.*

A safety conscious workforce environment has been communicated by management and institutionalized by the workforce. As indicated through interviews, safety is believed by the employees to be their responsibility. Interviews and observations provide evidence that workers feel free to exercise Stop Work Authority.

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The employees work together as a team and will correct each other if they see something they consider unsafe. Employees of all disciplines participate in the "Safety First Program" where they get to observe work other than what they normally perform, and make comments. Safety walkdowns of work areas are performed with management and safety professionals; however, the workers do not routinely participate. This is recognized by management as an area for improvement. The Safety Awareness Council is an integral part of the improvement and oversight process. These councils provide one of several venues for personnel to raise safety ideas/issues.

Of the 38 people interviewed (both exempt and non-exempt), all firmly believe that an employee can bring a reasonably difficult safety issue to the attention of management without fear of reprisal, harassment, or intimidation. Additionally, they believe that their employer has provided them with periodic reinforcement of safety requirements and safe practices (primarily through meaningful safety meetings).

The workers interviewed accepted and understood the Stop Work Authority. Some of the discussions indicated there were various interpretations of what Stop Work was, a graded approach to the various degrees of stop work, and how they would determine it was safe to resume work. The FFTF ISMS survey indicated room for improvement in definition and closure of Stop Work Authority. Two specific issues from the survey were defined as "Stop Work resolution needs to address the worker's concern rather than a work around," and "Reaffirm to crafts the Stop Work Authority." The facility is planning to develop an administrative procedure to provide definition and clarification for workers on how to document the stop work issue, determine the issue resolution, how the decision to restart work is made, and to provide feedback to the workers.

The following issue is identified here as part of the FFTF effort, but represents a wider FH issue, and is written to that higher level:

Management and workers have implemented a graded approach to various Stop Work situations. However, HNF-PRO-3468, *Stop Work Authority* does not address varying degrees or a graded approach for Stop Work resolution. Some of the discussions at WMP also indicated there were various interpretations of what Stop Work was, a graded approach to the various degrees of Stop Work, and how they would determine it was safe to resume work.

HNF-PRO-3468 was reviewed for comparison with information gathered during the interview process, and was found to have additional inconsistencies. HNF-PRO-3468, Section 3.4 states "Even before issue resolution, it is strongly recommended that employees contact their HAMTC Safety representative so they can be actively involved in resolution." HNF-PRO-3468, Appendix states "If you have a stop work issue that has not been resolved through appropriate channels, contact the appropriate Safety Representative or HAMTC Safety Representative."

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HNF-PRO-3468, Section 3.6 includes a note stating “it is strongly recommended that each area develop a system to document completion.” This statement indicates the need for a facility specific guidance document or process.

HNF-PRO-3468, Appendix only appears to address the identification of a Stop Work issue and does not address the problem resolution process. HNF-PRO-3468 addresses the manager responsibilities in Section 3.5 through Section 3.8 for problem resolution and feedback process.

Neither HNF-PRO-3468 nor its appendix gives guidance on varying levels of Stop Work issues. Examples given by workers were issues that are quickly resolved by the individual and the manager, those that require a formal change in procedures, and more complicated issues that may be more of a programmatic nature and may take meetings, critiques, or formal analysis to resolve.

This inconsistency and lack of process definition in HNF-PRO-3468 has resulted in facilities developing their own process definition or protocol. However, the HAMTC Safety Representatives that were interviewed said that HNF-PRO-3468 was intended to be a stand-alone document. As each facility develops facility-specific guidance, it can cause confusion for workers who perform work at multiple locations across the Hanford Site. **(FFTF OP.2-1)**

The following is an additional FH-level concern observed during the verification:

Recent changes to HNF-PRO-079, *Job Hazard Analysis*, require screening for risk potential. The facilities had not developed schedules or plans for implementation of the new requirements. For example, FFTF is making plans to screen all pre-existing operations and maintenance procedures while believing there is very little value in doing this at a nuclear reactor facility. In contrast at ASP and WMP, as noted in **HAZ.1**, some pre-existing procedures exist that have the potential for the discovery of problems. Personnel interviewed at ASP and WMP facilities described various approaches (or the lack of any approach) to screen existing procedures and did not have an estimated completion date. There is an inconsistent use of, or plans to use the AJHA for reviewing and revising pre-existing procedures in the FH facilities. **(FFTF OP.2-2)**

Conclusion:

Interviews with employees (both exempt and non-exempt), reviewing numerous documents, and observing field activities has sufficiently and effectively demonstrated that an integrated process has been established and is used to authorize and execute the identified work for the facility or activity.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- BED (2)
- Deputy Director
- Director
- Electrician
- Instrument Specialists
- Instrument Technician
- Insulator
- MgOH Construction Foreman
- Millwright (2)
- Near-Term Planning Manager
- Nuclear Chemical Operator (10)
- Nuclear Process Operator (2)
- Operations Specialist
- Painter
- PIC (5)
- Infrastructure Services Manager
- Radiological Control Technician (10)
- Solid Waste Operator
- Solutions Team Lead
- Stationary Operating Engineer (2)
- Thermal Stabilization Project Manager
- Thermal Stabilization Team Lead.

Observations

- Plan of the Week meeting, June 8 and 15, 2000
- Thermal Stabilization Team Operations Turnover and Activities, June 14, 2000
- Post-job Brief for 2Z-00-631, *PM for modulating dampers*, June 14, 2000
- Post-job Brief for two preventive maintenance and work package for Diesel Generator and 2400V, June 14, 2000
- Pre-job Briefing – Work Package 2Z-00-00832/S, *Test the Criticality Alarm System*, June 14, 2000
- Pre-job Briefing – Work Package 2Z-00-00833/S, *Test the Criticality Alarm System*, June 14, 2000
- AJHA for replacement of steam valve in 291Z, June 14, 2000
- Director's Brief, June 14 and 15, 2000
- Pre-job Briefing – Work Package 2Z-99-00905/M, *Replace A/C for 2701-ZA Computer Room*, June 14 and 15, 2000

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- BED turnover and release of work, June 15, 2000
- Essential Inoperable Equipment meeting, June 15, 2000
- NMS Program Review, June 15, 2000
- Plan of the Day meeting, June 14, 15, and 16, 2000
- Solutions Team Turnover and Activities, June 16, 2000
- Construction Turnover for MgOH, June 16, 2000
- Heating, Ventilation, and Air Conditioning (HVAC) Team meeting, June 14, 15, and 16, 2000
- Pre-job Briefing – *Transfer LOI Samples to A Lab*, June 19, 2000
- Pre-job Briefing – *Transport ITC's and stage in Room 166*, June 19, 2000.

Discussion of Results

Criterion 1: *An adequate state of readiness of the facility or activity and operational work force is confirmed prior to authorizing the performance of work.*

For NMS operations, the BED and facility process area managers have specific responsibilities concerning turnover and confirmation of readiness prior to the initial performance of work each shift as described in FSP-PFP-0821, *Conduct of Operations*, Chapter 12, "Operations Turnover." The BED receives status of plant conditions, restrictions, and other necessary information in accordance with an established checklist and associated documentation. Based upon observations and documentation review, this process is implemented.

For individual activities (both construction and plant work), the BED (for work requiring formal release) is responsible for ensuring that required plant condition (associated lock and tag, and compatibility with current plant conditions), are established and confirmed in accordance with FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Section 13.4, "Work Management Process Description and Job Control System Process." Subsequent to initial release, the PIC/FWS is responsible and accountable for ensuring safe and successful performance of the work activities, per FSP-PFP-5-8 Section 13.4 and Section 6.3, "Person-In-Charge (PIC)." The PIC performs the pre-job briefing, when required, using an established checklist and ensures that the necessary hazard controls are implemented to support the scope of work. Furthermore, the PIC is responsible for compliance with associated procedures, confirmation of personnel training and qualification, ensuring engineered controls and permits are established, interfacing with the assigned scheduler to ensure work is released on subsequent days, and ensuring work is released daily. The PIC is further responsible for communicating with the BED when required (for lock and tag authorization, permit approvals, etc.) and obtaining approval for changes in work scope.

Operational activities in the facility process areas involve similar responsibilities for released work; however, the FWS/PIC may also direct operational related work activities that do not require formal release. The FWS/PIC performs a turnover briefing at the beginning of the shift and facilitates turnover to commence the shift. The FWS/PIC is also responsible for communicating with the BED to receive authorization for specific plant-related changes

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including mode changes, fissile moves, and establishment of airborne radiation areas. The FWS/PIC also interfaces with other process areas and security when necessary during the performance of work.

For startup of new facilities or significant new operations, NMS implements the ORR process to verify readiness and authorize startup. This process is described in HNF-PRO-055, *Facilities Start-Up Readiness*, and implemented as evidenced by readiness planning activities and correspondence with RL in the form of Startup Notification Reports and subsequent planning documentation.

Based upon the evidence described above, an adequate state of readiness is confirmed at NMS prior to authorizing the performance of work.

Criterion 2: *Processes used to gain authorization to conduct operations are implemented.*

As discussed in criterion 1, the BED, through the daily release sheet and package release, provides authorization to conduct operations for activities that require formal release, and the FWS/PIC authorizes non-release required work and operational related work activities. Field observations indicate that personnel implement and understand their roles and responsibilities associated with the release process. Furthermore, through observation of release activities and data obtained from the JCS, work that is not actively pursued is suspended and released again when the work team is ready to continue work. The suspension process provides mechanisms to confirm implementation of controls and gain authorization to conduct operations.

For changes in work scope during the performance of work, FSP-PFP-5-8, Section 13.4, Appendix C, provides a process to develop and authorize the change. For packages that are ready to work or released for work, the BED is required to approve the change. The BED is also responsible for reevaluating the release requirements and work release in accordance with the requirements for initial work release.

One potential weakness of the NMS release process is that subsequent to initial release there are no formal mechanisms that ensure that the BED is aware of the ongoing status of work that spans multiple days or weeks. Discussions at the Plan of the Day meeting and Director's Brief do provide some discussion on work progress, but normally this focuses on the high level, mission related priorities. Awareness of permits to be processed during the day or status of a particular job are not routinely identified. No evidence was witnessed where this has lead to inadequate controls applied, moreover continued maturity of the planning and scheduling prioritization should provide additional information to the BED regarding individual work activity progress. Integration of work team awareness priorities could also be enhanced by communicating the top daily priorities in conjunction with the team daily release sheets.

Observations and personnel interviews identified that higher awareness by the work teams regarding the priority work and necessary resources could allow for increased efficiency in work team performance. For example, in multiple instances resources were pulled away for higher

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priority jobs after the team was assembled and preparing to perform work. All activities observed were consistent with the goal to perform work safely, but opportunities to maximize performance exist.

Management of the work released packages has markedly improved from the observations witnessed during the PFP ISMS Phase I Verification (DOE/RL-99-86). The process used to gain authorization to conduct operations is adequate.

Criterion 3: *Hazards are appropriately controlled and integrated into work performance.*

During observations and review of work packages it is evident that hazard controls are integrated into work performance and appropriately controlled. Hazards and associated controls are identified using the AJHA tool during work package and procedure development in accordance with FSP-PFP-5-8, Sections 13.4 and Section 13.5, "Processing PFP Documents." Controls are instituted by the AJHA and pre-job directly, or integrated within the work documents, or through associated permits. The BED is responsible for instituting controls related to plant configuration and authorization of specific mode/status/permit changes associated with work activities. The PIC/FWS is responsible for the pre-job, and implementation of all hazard controls associated with the work activity. In general, work performance observations indicated that hazards are appropriately controlled and integrated into work performance.

A number of examples were noteworthy regarding hazard controls integrated into work performance. First, observations of the periodic criticality alarm testing indicated good use of an administrative barrier in the main PFP hall, which was respected by all personnel passing by during performance of the test. Furthermore, the conduct of operations and communication during this test were appropriate for the potential hazards involved (inadvertent activation of the criticality alarm system). As a second example, the Lockout Tagout Program administration is very good and the Nuclear Chemical Operator responsible demonstrated a high level of competence. (NMS OP-2.1) Records are up-to-date, including tagouts, tagout index, and monthly audit log. A separate tracking system is used to provide quick status of all open tagouts. Documents are typed, and records are well controlled and organized. Although the ISMS Team's evaluation of the technical aspects of the program did not identify any deficiencies, it was a limited sampling and cannot be used to provide a comprehensive evaluation. The final example is described in greater detail in Criterion 4 regarding a job that allowed inadvertent over-pressurization of 2736-ZB.

The Stop Work Authority is the final barrier to ensure hazard controls are integrated into work performance. Personnel interviewed indicated they expect and accept the responsibility to Stop Work if an unsafe or perceived unsafe condition is observed (see Criterion 6 for additional discussion). Stop Work Authority was illustrated by the actions taken during the core drilling activities to support MgOH construction on June 15, 2000. During core drilling activities, the ground-fault circuit interrupter metal sensing unit on the drill identified the presence of metal and the core drilling was stopped. The Cognizant Engineer was contacted and after analysis of the drilling location determined that the metal was probably rebar (a number of previous drilling

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operations had encountered rebar). The work was authorized to recommence. The sensing unit was disabled and the craft personnel slowly continued drilling, stopping periodically to observe the hole for indication of rebar. When the craft personnel identified the presence of copper filings, an electrician checked the hole for voltage and found that a circuit had been compromised. Work was stopped and a critique was held to evaluate the activity. The critique determined that actions taken by the workers in the field were appropriate and one opportunity for improvement was identified to utilize insulated gloves in the future if the ground-fault circuit interrupter sensor is disabled. This example demonstrates that the stop work responsibility is invoked. In addition, interviews of management personnel identified examples of recognition and positive reinforcement of personnel who take action to Stop Work to demonstrate management commitment to stop work responsibility and minimize any reluctance by personnel to invoke this authority.

For construction-related work, Fluor Federal Services personnel analyze hazards utilizing JSA that are task-specific. Individual construction tasks are assembled in PFP JCS work packages and receive hazard analysis for the full scope of work utilizing the AJHA and worker involvement requirements of FSP-PFP-5-8, Section 13.4. The JSA and AJHA are evaluated for consistency, but they are not necessarily integrated. In no instance during this review was a hazard identified by one system and not the other, although the task-specific JSAs are used by Fluor Federal Services for daily pre-job briefings and implementation of controls. There may be an opportunity for improved efficiency if the AJHA and JSA activities are integrated.

Observations, interviews and document review indicate that hazards are routinely controlled and integrated into work performance.

Criterion 4: *Workers have adequate competence for their duties.*

NMS training and qualification programs are defined in FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*. Specific training and qualification requirements are identified for the PIC, BED, and various disciplines involved in the planning and execution of work (i.e. Operators, Design Authorities). Observations of plant activities demonstrated an adequate competence for the personnel observed. Interviews identified that personnel believe there are opportunities for continuous improvement in the area of system specific training (i.e. AJHA software capabilities, Micon training, HVAC system).

This potential need was illustrated by temporary pressurization of 2736-ZB after repair of a sensing line leak and restoration of the system to auto operation as directed by the work package and PIC. Due to manual damper throttling during the extended manual operation of the system, restoration to auto without resetting of the manual dampers caused an increase in supply flow and inability of the system to adequately compensate with exhaust flow. As a result, 2736-ZB experienced a positive pressure until the system could be adjusted to compensate for the restricted exhaust flow. Increased personnel knowledge of the operation of the control system and impacts of manual adjustments could have averted this pressurization. Poor planning could

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also have been a contributor, but due to the small window of time for field observations, the ISMS Team was unable to participate in the analysis and determination of root cause.

It should also be noted that a positive example of system-specific training was also witnessed regarding the bagless transfer welding training and familiarization that was planned for personnel involved in this activity. It is clear that system-specific training exists, but additional opportunities to provide this type of focused training should be pursued to maximize personnel competency.

Based upon the observations and interviews, personnel have adequate competence commensurate with responsibilities.

Criterion 5: *Feedback from work planning and execution and lessons learned are integrated into work processes.*

During work package and AJHA initial development, the preparer reviews the available Hanford Site and NMS lessons learned web pages for applicable lessons learned to integrate into work processes in accordance with FSP-PFP-5-8, Section 13.4, Appendix K. This information is integrated into the work package and AJHA, as appropriate, and is utilized during the team planning meetings where hazards and associated controls are identified. The team approach to work planning provides an additional opportunity for feedback by assembling the experienced work team and drawing from their knowledge of task-specific and facility-specific feedback regarding the specific work activity planning. Finally, for high-risk work and some low-risk/complex work, a formal post-job review is performed per FSP-PFP-5-8, Section 13.4, Table 8, to provide feedback and lessons learned for future execution of related work.

Two Post-job Reviews were observed and worthwhile feedback was discussed in both instances. There was some confusion between the PICs and the work control individuals regarding the responsibility for follow-up on identified corrective actions. The PICs believe that when they forward the completed work package and associated recommendations that work control will then interface with other organizations for follow-up actions (i.e., training, projects). Work Control personnel indicated that they would forward any open actions back to the associated work team for follow-up. Both groups agreed that for items within the control of the work team (i.e., procedure changes, resource needs, communication improvements), the work team would take the necessary actions, and for items that flag a lessons learned, the post-job would be forwarded from the Work Control personnel to the Lessons Learned Coordinator. Based upon completed work package review and interviews, it is evident that recent focus had lead to additional post-job reviews, but additional improvements in the area of consistency and subsequent actions to incorporate post-job recommendations are warranted. Some facility personnel indicated that the post-job review is the largest positive contribution resulting from ISMS implementation, but that its full value has yet to be realized.

Field observations indicated that feedback and lessons learned are integrated into the work process. In one instance, a lessons learned on working in the duct level at PFP was integrated

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into the AJHA for a job. In another instance, a worker who had performed a similar valve replacement a few years ago provided feedback to the planning for an upcoming job.

Based upon this data, there are indications that feedback from work planning and execution and lessons learned are integrated into the work processes.

Criterion 6: *A safety-conscious workforce environment exists.*

Forty personnel (both supervisory and non-supervisory) were interviewed regarding this criterion. A series of safety-conscious workforce environment-related questions were asked of each interviewee. The topics ranged from management communication of "do work safely," Stop Work Authority, to safety walkdowns. Tallying just the "yes" and "no" responses and digesting the various explanations indicate that a safety-conscious workforce environment exists at NMS. However, this may not provide the entire picture as it relates to the safety-conscious workforce environment that does exist.

A small minority of personnel reported that training has been lacking towards special systems or equipment. In some cases, action is being taken. For example the Electrical Team Leader has ensured that the electricians are receiving on-the-job training for the new Bagless Transfer welding equipment. (See Criterion 4)

One safety-conscious workforce environment-related question had to do with periodic reinforcement of safety requirements and safe practices. The response was consistent regarding the perception that safety meetings are meaningful. But in the area of employee recognition for safety, some individuals feel that the back shifts do not receive their fair share of recognition for noteworthy performance.

Safety walkdowns are being conducted, but a small minority indicated that they had not been asked to participate. Of those, further responses indicated that safety walkdowns were being conducted by a select few.

All personnel interviewed understand their Stop Work Authority and responded that if invoked they had no fear of reprisal, harassment, or retaliation from management. However, a small minority indicated that there could be reprisal, harassment, or retaliation at the peer level. When asked about stopping a co-worker from doing an unsafe or perceived unsafe act, all personnel interviewed, indicated they would stop the worker.

Interviewees were asked how their job had changed with the implementation of ISMS. The majority responded that no major changes had taken place because they were already performing work in an ISM fashion. One common comment among a majority of the interviewees indicated that ISMS has provided more formality and focus into the work planning process. The AJHA tool and process was recognized as one of the most significant improvements in the work planning process.

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A safety-conscious workforce environment exists at NMS. In the context of continuous improvement, NMS personnel indicate that opportunities exist in the areas of participation and performance of safety walkdowns, system-specific training, and equitable employee recognition.

Conclusion

A number of members of the ISMS Team were also involved in the Phase I verification at PFP, and marked improvement was witnessed during this Phase II verification. Integrated prioritization of work and the rigor displayed during routine planning and scheduling meetings is readily evident. Improved control of released work packages and implementation of the suspension process was witnessed. Revisions to key work planning and execution procedures to reflect the current organization has improved understanding of roles and responsibilities. Correction of these issues has allowed for a more representative verification of the actual implementation of the ISMS core functions in field practices. Evidence indicates that in general, NMS has instituted an integrated process to authorize and execute work.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Electrician (4)
- Hot Cell Technician (9)
- JCS Administrator, Building 327
- Lessons Learned Coordinator
- Millwright (6)
- Nuclear Process/Chemical Operators (4)
- PIC (4)
- Planner (3)
- Project Management and Integration Manager, Building 324
- Radiological Control Technicians (13)
- Scheduler, Building 324
- Stationary Operations Engineer
- Surveillance Operations Manager, Building 324
- Work Release Agents, Buildings 324 and 327.

Observations

- Building 324 Plan of the Day meeting, June 22, 2000
- Building 324 Plan of the Week meeting, June 22, 2000
- Building 324 Daily Release of Work meeting, June 22, 2000
- Building 324 Post-job Brief for Airlock Entry for Cask Loadout, June 22, 2000
- Building 324 Pre-job Brief for 3I-99-707, *Manipulator Changeout*, June 22, 2000
- 300 Area Deactivating Project (ADP) Pre-job Brief and Application, *T-Hopper Apply Fixative*, 3C-00-00017/W, June 22, 2000
- Building 327 Plan of the Day meeting, June 26, 2000
- Building 327 Daily Release of Work meeting, June 26, 2000
- Building 327 Work Package, 3M-00-0152, *SERF Cell Air Lock Dry Run Pre-job Brief*, June 26, 2000
- Building 327 Dry-Run to Operate Special Environmental Radiometallurgy Facility
- Cell Air Lock, June 26, 2000
- Building 327 President's Zero Accident Council meeting, June 27, 2000
- Building 324 Solid Waste Disposal Box Preplanning meeting, June 27, 2000
- Building 324 Pre-job and work performance for Air lock Entry and Cask Load-Out Preparations, June 27, 2000
- Building 324 Pre-job Brief, *Monthly Crane Inspection*, June 22, 2000.

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Discussion of Results

Criterion 1: *An adequate state of readiness of the facility or activity and operational work force is confirmed prior to authorizing the performance of work.*

Work release was observed at Buildings 324 and 327 and it was evident that the work release agent (WRA) verifies that the facility conditions and package are prepared and authorized on the daily release sheet prior to release each morning. This process is described in the work control procedure (HNF-IP-1264, *324/327 Facilities Stabilization Project Administration Manual*, Section 4.1, "Job Control System Implementation") and Special Instruction SI-324Bldg-014, *Control of Equipment and System Status*. The WRA further verifies and updates status on the JCS, monitors released packages to ensure they are adequately controlled and released, and demonstrates adequate organization and awareness of work. The practice of having PICs sign on the daily release for custody of the work package on a daily basis is considered to be a good practice because it enhances communication and awareness of package location. Furthermore, effective interaction between Building 324 Scheduler, WRA, PICs and other Building 324 personnel provided for a schedule and daily release sheet that maximizes the opportunity for success on any given day. RCP personnel are actively engaged at both the Plan of the Day and Plan of the Week meetings to determine priorities, identify resource needs and capabilities, and maximize efficiency. The scheduling and prioritization of activities and resources at the Plan of the Day and Plan of the Week meetings are excellent at Building 324. **(RCP OP.2-1)**

Subsequent to release of work, the PIC is responsible (per HNF-IP-1264, Section 4.3, "Person-In-Charge [PIC]") for ensuring all prerequisites and hazard controls are in place prior to performance of work. The PIC is further responsible for performing the pre-job brief, when required, ensuring tools and equipment are inspected to verify operability, and ensuring everyone associated with the performance of the work evolution is present and prepared to perform their assigned piece of the work scope. Active management of these responsibilities for a PIC was witnessed during all activities observed. Although not identical, Building 310, 300 ADP, and 200 ADP have similar mechanisms institutionalized for the work release and control of hazards.

Based upon the interviews and observations, RCP adequately confirms readiness prior to authorizing the performance of work.

Criterion 2: *Processes used to gain authorization to conduct operations are implemented.*

In addition to the discussion for Criterion 1 for authorization of facility related activities, RCP processes are implemented to gain authorization to conduct operations. The process begins with the definition of facility work scope that is then developed in the form of the Multi-Year Work Plan to integrate resources, work scope, and schedule. The ORR process provides the authorization requirements to startup or restart facility systems, structures, and components or processes in accordance with the risk associated with the activity. These high level elements of the authorization process appear to be integrated with the activity level authorization discussed in Criterion 1. There may be an opportunity to further integrate activities with the mission

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objectives, milestones, and deliverables defined at the project-level which could enhance efficiency, although current practices are adequate to support ISMS implementation.

From a conduct of operations standpoint, there is unclear understanding of what is expected from the Building 327 Hot Cell Technicians (HCT). In the past, they were allowed to perform many operations without a written procedure. Now, many work items require the use of procedures. Observation of work activities and discussions with workers and management revealed that the line between what can be operated using skill of the craft and what must be directed, step-by-step, from a procedure is unclear. In all cases observed, when the work teams were not certain (or not in agreement) that a procedure was not required, they took the safest path and required a procedure to perform the work activity.

An example of this, and a good illustration of the complications and complexities of doing work in these facilities, is the operation of the Special Environmental Radiometallurgy Facility (SERF) cell air lock inner door at Building 327. A work package was created to open and close the air lock door in manual and automatic modes. The work package was performed to verify equipment operation, provide training to workers, and help validate the procedure that was used to generate the work package. The procedure allowed workers to vary the differential pressure across the door to help facilitate the door opening. The first step was to open and close the door in manual mode. The door did not open in manual mode, even when the differential pressure was adjusted throughout the allowable range. At this point, some of the work team members recommended that they try to operate the door in automatic. The PIC did not authorize this because the work package was sequenced to allow operation in automatic after operation in manual (and operation in manual had not been achieved). The workers exited the area and discussed the situation. There was some discussion of the possibility of an interlock that prevents opening in manual mode. The work package was revised to allow work on the next section (automatic operation) to proceed. The door also did not open in automatic mode. The workers (HCTs, PIC, and a manager) thoroughly inspected the components of the cell, trying to figure out why the door was not operating. One of the components they evaluated was the pneumatic cylinders that lift the door. There were four cylinders, each with two gas lines. There were isolation valves in each gas line and some of these valves were closed. It was not obvious why this was desired, but each of the eight isolation valves had a vinyl label next to it indicating the desired position. Some labels indicated that the valve should be kept closed and some open, while one said something like "open to shut" and another said something like "close to open." There was some discussion about the use of these valves and one thought was that perhaps the valves were not all left open because some of the cylinders had internal leaks. One of the HCTs said he remembered that the last time they operated the cell door, he had manipulated some of the isolation valves. The work team recommended operation the valves to support opening the door in automatic. Again the PIC indicated that they had to operate within the procedure. After evaluating the situation, the work team decided to use an existing valve line-up procedure. They received the proper approvals and added the procedure to the daily release sheet. An initial line-up of the cylinder isolation valves was performed, placing them all in the open position. An attempt was made to open the door, but it did not open. The isolation valves were then positioned to the positions indicated on the vinyl labels. This time, when they positioned the

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door switch to open, it opened. They completed the automatic operation and returned all components to the original position.

This evolution demonstrates the complexities of operating an aging facility that, in the past, was operated using worker expertise rather than detailed procedures. In this case, the valve line-up was not intuitive and the informal operator aids and HCT experience were all that was available to operate the airlock door. This also reinforces the importance of the current campaign to carefully validate each procedure so that formal conduct of operations can be implemented.

RCP has implemented a process to gain authorization to conduct operations.

Criterion 3: *Hazards are appropriately controlled and integrated into work performance.*

Observations indicate that hazard controls are integrated into work performance. Work documents and the AJHA identify hazards in accordance with facility procedures and the associated controls are implemented during work performance. Personnel interviewed identified that the AJHA is an effective tool that has fostered worker involvement and increased the percentage of jobs that are completed without the need for revisions to the work documents.

Pre-job briefings are performed in a consistent manner and hazard mitigation is appropriately addressed. PICs demonstrate adequate ownership and understanding of their roles and responsibilities and communicate effectively with the workforce. A number of examples are discussed which illustrate the integration of controls into work performance.

T-Hopper Fixative Application work was performed on a pad near U-Plant. Hazards were identified during the pre-job that included no shade in the work area and heat stress as a potential hazard. Per the work instruction, drinking water was available for the workers. During performance workers were observed looking out for each others' safety, pointing out potential hazards.

The Pre-job for Building 324 manipulator change-out (31-97-707) job was performed in a professional manner using the AJHA and work documents to identify all of the hazards and associated controls throughout the job. All participants were actively involved in discussing the hazards and logistics associated with controls and job performance. Radiological Control personnel specifically addressed the radiological hazards, associated controls, possible contingencies (i.e., high radiation area) and radiological roles and responsibilities during the performance of the work.

The Pre-job Brief for Building 324 air lock entry was performed in a professional manner using the AJHA and work documents. Hazards and controls were effectively addressed including the radiological zones with specific emphasis on ALARA. During work performance, the formality of operations and communications were performed in a professional, effective manner. Personnel clearly understood their roles and responsibilities and the job was well performed.

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During the operation of the SERF Cell Door at Building 327 hazards were appropriately controlled. Workers and observers wore the same level of anti-contamination clothing and entered under the same Radiological Work Procedure. The work instruction was used and when it could not be followed, workers exited the contamination area and discussed the appropriate changes to procedure steps.

Based upon document reviews, interviews, and observations, hazards are appropriately controlled and integrated into RCP work performance.

Criterion 4: *Workers have adequate competence for their duties.*

Interviews and observations indicate that RCP workers have adequate competence for their duties. Most workers clearly understand their roles and responsibilities and how they interface with other organizations within RCP. RCP and facility administrative procedures identify the training and qualification requirements for all personnel as well as formal training plans instituted for key personnel including BED, PIC, and operations. All personnel are evaluated by their immediate supervisor to define necessary training and qualification which is then documented in their TMX.

During work performance, the PIC is responsible for confirming that the personnel involved are competent to perform their assigned duties for a particular job. Field observations indicate that this practice does occur. For example, during the 300 ADP T-Hopper Fixative Application several operators were trained and qualified to operate the large forklift used to lift the T-Hoppers. This qualification was done specifically for this job. Interviews indicated that training and qualification for resources that are brought in to support Buildings 324 and 327 are checked for each job and mechanisms are in place to facilitate this review.

Throughout this verification the RCP workforce demonstrated competence commensurate with assigned responsibilities.

Criterion 5: *Feedback from work planning and execution and lessons learned are integrated into work processes.*

A Building 324 post-job review for the airlock entry for cask load-out was observed. The meeting illustrated good communication and interaction between all participants and a number of good practices and opportunities for improvement were identified. Discussion of radio needs and the fact that new radios were being ordered, as well as other minor improvements that were discussed indicated that feedback was being integrated into the work process. During observation of the air lock entry, it was evident that a number of lessons learned from prior performance had been incorporated into the work process.

Interviews of JCS, planning, and the work release administrator, as well as review of work packages, indicate that the Craft Resource Log and Maintenance Record (J-5) forms are being used to provide feedback from work performance into future planning and lessons learned. The

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Building 324 JCS Administrator has recently instituted a practice to forward a copy of JCS comments and the response back to the original person who provided the comment. This action closes the loop and ensures that personnel are aware that the feedback is received and considered. The packages reviewed indicate that this practice is institutionalized and does provide some level of feedback into future work planning and performance. Workforce interviews with Building 324 personnel indicate improvement in the feedback response from J-5 comments and generally feel that this feedback mechanism is driving continuous improvement.

The work procedure used to operate the SERF Cell Door on June 26, 2000, was reviewed in advance by all craft personnel and managers involved in the job. Prior to the pre-job brief, copies of the document were distributed to the involved employees. The work instructions were adequately briefed during the pre-job brief. During the work evolution, the equipment did not function as described by the procedure. As part of the troubleshooting, the system was further walked down to determine why the door did not operate. At this time, one of the HCTs remembered that during the last similar evolution, he had to manipulate two valves to get the equipment to operate. This information had not been recorded, and as such, was not available when creating the new work instruction. Also, there had been indication that the equipment might not work in the manual mode. The work instruction was not written with sufficient flexibility to allow continuing on to automatic mode if manual mode did not work. As a result, the workers had to exit the contamination area, regroup, get the procedure changed, and then redress and reenter the contamination area. This example illustrates the value of integrating lessons learned and past practices into system operating procedures and the risk of dependence upon tribal knowledge. It is recognized that this cell is not operated frequently, and it is clear that the lessons learned from this dry-run need to be captured to support future operation of the cell. As demonstrated, opportunities for continuous improvement remain in the area of incorporating feedback and lessons learned into work processes.

From interviews and document reviews, it is apparent that RCP has focused on improvement in the area of feedback, and in general this improvement is recognized. With continued focus, additional improvement will be realized. Regardless, it is evident that feedback mechanisms from work planning and execution are integrated into RCP work processes.

Criterion 6: *A safety-conscious work force environment exists.*

Interviews of over 50 RCP personnel indicate that in general a safety-conscious workforce environment exists. Most people believe that safety expectations are communicated and that periodic training and reinforcement of safety requirements are provided in a meaningful way. Stop Work Authority is accepted by all personnel, although some personnel felt that peer pressure and potential retaliation could occur when Stop Work is invoked. Employee participation in safety walkdowns does not occur for all personnel; however, some personnel indicated that this may be due to the natural resistance to change and that greater involvement has been fostered and improved involvement has been witnessed in the recent past.

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There are some exceptions to the characterization above witnessed throughout RCP, and a number of exceptions appear to be related to Building 327. Interviews indicate a high level of stress and frustration predominantly in Building 327 workforce. Personnel indicate that communications are strained and that some personnel are not comfortable raising issues and concerns. Safety issue documentation (i.e., safety log, concerns, Zero Accident Council meetings) do not indicate serious unsafe conditions or practices in the facility, and this team did not observe any specific unsafe conditions; however, there is a perception by personnel that communication and feedback mechanisms are not effective at receiving and implementing worker input. Observations of the limited work activities (i.e., meetings, AJHA, Plan of the Day, SERF Dry Run) available to the ISMS Team did not indicate severe communication challenges, although the ISMS Team was only able to observe one field work activity which is described in greater detail in Criterion 3. The ISMS Team was not able to accumulate enough data to establish significant conclusions beyond the concern that strained communications and a work environment that is not conducive to ISMS implementation currently exists at Building 327. This condition is recognized by facility personnel and actions are underway intended to improve the situation. **(RCP OP.2-2)**

It should be noted that during the ISMS Team in-brief, RCP management discussed that production work had been stopped to allow for procedure revisions to address personnel concerns regarding procedure compliance and the authority of PICs during work performance. Procedure depth and breadth for the Building 327 hot cells has been a challenge since RCP was transitioned from Battelle responsibility to FH. RCP is pursuing a number of corrective actions intended to improve the Building 327 work environment. It is evident that continued focus on open, meaningful communication is necessary between all Building 327 personnel and should be fostered across RCP.

Field observations across RCP indicate that workers are concerned about safety and actively engaged in protecting one another. During the air lock entry at Building 324, it was evident to observers that all personnel were concerned with the safety of their coworkers. In one instance, an individual in the air lock had unknowingly entangled their air line with an extension cord. This was communicated to the individual and corrected before it impaired the individual's ability to perform their role safely. Another example was witnessed during the 300 ADP T-Hopper job where a painter was extending a hose from the compressor to the job site. An operator was standing between the hose and an obstacle so that his boots, rather than the obstacle, would guide the hose. A third worker saw this, and not realizing that the painter and operator were working in cooperation, warned the operator that the hose was behind him and it was a potential tripping hazard. Finally, during the operation of the SERF Cell Door Air Lock at Building 327 some talcum powder (used to detect air flow) spilled on the floor. The Radiological Control Technician immediately recognized this as a slipping hazard and warned the workers in the immediate area, letting them know that the powder makes the floor very slippery when wearing anti-contamination shoe covers. The Radiological Control Technician guarded the area and wiped up the spill.

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In general, a safety-conscious workforce exists within RCP. Interviews indicate that the communication and feedback loops within Building 327 are strained at best and not conducive to ISMS implementation. This has the potential to jeopardize the long-term safe operation of Building 327.

Conclusion

During this verification, RCP has demonstrated implementation of an integrated process to authorize and execute work. Readiness of the facility and workforce is confirmed prior to authorization to conduct operations. Hazards are appropriately controlled and integrated into work performance, and feedback mechanisms have been institutionalized. A safety-conscious workforce environment exists throughout RCP; however, the strained communications and work environment at Building 327 must be addressed to support effective ISMS implementation. This concern was not well quantified due to the suspension of Building 327 operations immediately prior to this verification. The timing of this action was less than ideal for the ISMS Team since the ability of the ISMS Team to quantify conclusions was hampered.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Cognizant Engineer, LWPF
- Cognizant Engineer, SWSD
- Cognizant Engineer, SWT
- Cognizant Engineer, Waste Receiving and Processing (WRAP) Facility
- Cognizant Engineer, WESF
- Duty Operations Manager, SWT
- Duty Operations Supervisor, WRAP Facility
- Facility Manager, WESF
- FWS, LWPF
- FWS, SWSD (2)
- FWS, SWT
- FWS, WESF (2)
- FWS, WRAP Facility
- Manager, Disposal Operations, SWSD
- Manager, Maintenance Work Control, WRAP Facility
- Millwright, LWPF (2)
- Nuclear Chemical Operator, SWT
- Operations Lead, WESF
- Operations Manager, WRAP Facility
- Operations Specialist (Scheduler), SWSD (2)
- Operator, LWPF
- Planner, LWPF
- Planner, SWT (2)
- Planner, WRAP Facility
- Planner, WRAP Facility (3)
- Radiation Control Technician, LWPF
- Refrigeration Environmental Services Electrician, DynCorp
- Safety and Health representative, FH
- Safety and Health representative, Fluor Federal Services
- Scheduler, LWPF (2)
- Shift Manager, LWPF.

Observations

- SWSD Morning Briefing meeting, June 14, 2000
- SWSD Trench 94 Painting of Reactor Compartment, June 14, 2000
- SWT Surveillance and Compliance Morning Briefing, June 15, 2000
- SWT Daily Surveillance at 2706-T, June 15, 2000

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- SWT Troubleshoot and Repair of 2706-T HVAC Unit #2, June 15, 2000
- WESF Plan of the Day meeting, June 16, 2000
- WESF Pre-job Brief, June 16, 2000
- LWPF Plan of the Day meeting, June 19, 2000
- LWPF All Hands meeting, June 19, 2000
- LWPF Pump Rebuild in Hot-Shop, June 19, 2000
- WRAP Facility Morning Turnover meeting, June 20, 2000
- WRAP Facility Operating Area and Transuranic Overpacks on Trailer, June 20, 2000
- WESF AJHAs for instrument calibrations 5-BC-001, 5-BC-003 and 5-BC-010, June 20, 2000.

Discussion of Results

Criterion 1: *An adequate state of readiness of the facility or activity and operational work force is confirmed prior to authorizing the performance of work.*

Startup, restart, or modification activities are evaluated to determine if a readiness assessment, ORR process, or internal startup review can be conducted in a safe and responsible manner. These reviews ensure the operational programs are adequate to support the work scope and personnel are trained to ensure competence commensurate with the responsibilities.

Readiness is further confirmed through weekly and daily planning meetings to ensure availability of staff and resources. Prior to work release for maintenance or operations activities the facility condition is confirmed to be in alignment for that activity. The facility personnel also ensure job hazard analysis has been performed, appropriate organizations notified, resources verified, work package is complete, and pre-jobs conducted.

Work-It-Now (WIN) tickets are used by WMP as a way to track low risk routine work. They appear to work very well when used as designed; they track work, and hours. However, Maintenance Project Support, Central Services, uses the WIN tickets but supplemental information would make this process more efficient. Generally, they are not filled out to include points of contact which makes delivering or picking up material difficult. Central Services requires more coordination and scheduling which specifies times and points of contact, the requester/supervisor are not providing this supplemental information. **(WMP OP.2-2)**

Criterion 2: *Process used to gain authorization to conduct operations are implemented.*

Formal work planning meetings are held to review work scope and available resources necessary to perform. Work is then reviewed to current plant conditions, ensuring plant status supports the work activity and that applicable controls are in place prior to formal work release. The Operations Manager, or equivalent, signs off the formal work release. Facilities also use the JCS daily release sheet to identify work that has been released.

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Criterion 3: *Hazards are appropriately controlled and integrated into work performance.*

The necessary hazard and environmental impact controls are identified and developed as part of the work planning and AJHA process. This process ensures the controls are appropriate for the hazards identified. Through the use of pre-job briefings, readiness is confirmed before the start of work activities. Procedure compliance expectations, as outlined WMP-200, *Waste Management Project Procedures*, Section 2.16, "Technical Procedures," are established and ensure work is performed within the specified controls.

The pre-job briefs make it very clear what the mitigation is for the various hazards. The operators and workers are willing to use the PPE or other barriers to hazards that are called out.

FWSs and workers expressed concerns that some requested procedure revisions took longer than desired to be incorporated. The administrative manual defines the procedure redline process that allows the facilities to incorporate necessary changes in a relatively fast manner. However, incorporation of the redline changes into the controlled procedure has not been completed in time to be available for the next performance. This lag time has led to outdated information in the controlled procedures attached to work packages, additional work delays to redline the procedure again, and frustration of the workers. **(WMP OP.2-3)**

Discussions with the WMP Preventive Maintenance and Administration Team Lead indicated the actual turnaround time for procedure changes has been improved to 1-2 months. They recognized the need for further improvement and are developing a process to ensure that redline changes are quickly identified, and the outdated controlled copies are not used until the changes are fully incorporated. This initiative has been considered as a process improvement by WMP and has not been formally tracked by the Corrective Action Management process or other lower-level tracking system.

Criterion 4: *Workers have adequate competence for their duties.*

Training is provided through WMP-200, Section 5.1, "Training Plan," and Section 5.3, "Training Implementation Matrix," to ensure personnel performing work are competent commensurate with responsibilities. The training program at WESF is implemented through FSP-WESF-001, *WESF Project Administration*, Section TN-1, "WESF Training Program." These documents define the elements of the training program, such as the processes for completing qualification programs, conduct of oral and written examinations, and proficiency requirements. This process is institutionalized and appears to be working well. Individual training requirements are tracked in the TMX. Line managers are responsible for the training of personnel and the TMX provides the tools to forecast training needs over the course of the year. Additionally, the work supervisors and the individuals themselves are very concerned about the status of training and ensure they do not engage in work they are not currently trained to perform.

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Criterion 5: *Feedback from work planning and execution and lessons learned are integrated into work.*

WMP implements the Hanford Site-wide Lessons Learned process. Project-specific required reading includes applicable procedure changes, lessons learned, equipment design changes, safety basis information, etc. Materials are distributed to appropriate personnel for required reading. Work records, pre- and post-job reviews, and the procedure change process provide an opportunity for worker feedback before, during, and after work activities.

There is a consistent approach to obtaining and responding to feedback from medium-risk and higher-hazard work activities. However, feedback from activities of less than medium-risk is inconsistent. The following two examples are at WESF where more than three changes to a package require the post-job briefing:

- A work complete package (Motor Control Center grounding upgrade) containing 12 changes has been in signature process for 2 weeks or more without a post-job briefing.
- A work complete package (acceptance test on capsules) with many changes (> 3) has been in the signature process for 2 weeks or more without a post-job briefing.

There is a tremendous amount of valuable feedback received at all of the facilities, above the minimum required. The expectation for required feedback and the use of this "other" feedback is inconsistent within WMP. This has been self-identified as a weakness prior to being identified by the ISMS Team.

An initiative to put lessons learned into the AJHA tool earlier this year was delayed until next year due to funding constraints. The FH Corrective Action Management manager has this initiative currently proposed funding for FY 2001. FH intends to develop a system that links feedback input, lessons learned, and Post-job information back into the planning process. Requirements of the proposed system include the following:

- Need a screening process to categorize the various categories of feedback
- Feedback should be accessible within and across WMP lines (use the Hanford Local Area Network)
- Need an attribute where like-type activities can be linked or sorted (AJHA)
- Need the ability to get metrics and performance indicators should be designed into the system
- Need the system to have search capability flexibility

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FUNCTIONAL AREA: Operations	OBJECTIVE: OP.2 DATE: July 10, 2000
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- Need established search parameters identified to facilitate finding stuff
 - Project Hanford Management Contract common conventions established
 - Easy search processes established
- Need a screening process to identify which hard copy items get entered into the system.

Due to this extensive plan that provides a path forward by FH, the above findings will not become concerns.

Criterion 6: *A safety conscious workforce environment exists.*

Safety is believed to be the responsibility of all employees. Early ISMS surveys and the ISMS Team's interviews indicate evidence that workers feel free to exercise Stop Work Authority. *The workers tend to work together as a team and will correct each other if they see something they consider unsafe.* The advent of the AJHA has caused a significant increase in worker involvement at all levels. **(WMP OP.2-1)**

Safety councils are an integral part of process improvement and oversight. These councils provide a venue for personnel to raise safety ideas/issues.

Safety Logbooks are used very well at several facilities. At others, there are some inconsistencies in the implementation that makes the book a detriment. Some items at SWSD and WRAP Facility have remained in the logbook for over a year keeping the items in front of the craft personnel such that it appears that the safety concern is not important. These items that remain are not really immediate safety concerns, but fall into areas of nice to have. It may be more appropriate to have these in an employee concern log rather than a "safety" log. **(WMP OP.2-4)**

Conclusion

The objective has been met.

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Strengths:

- Readiness preparation for the californium capsule actively supported ISM. (**ASP OP.2-1**)
- Post-job feedback on every maintenance activities observed was exemplary. (**ASP OP.2-2**)
- ASP has a balanced and effective safety-conscious workforce environment. (**ASP OP.2-3**)
- The Lockout/Tagout Program administration is very good and the responsible Nuclear Chemical Operator demonstrated a high level of competency. (**NMS OP.2.1**)
- The scheduling and prioritization of activities and resources at the Plan of the Day and Plan of the Week meetings are excellent at Building 324. (**RCP OP.2-1**)
- The advent of the Automated Job Hazard Analysis has caused a significant increase in worker involvement at all levels. (**WMP OP.2-1**)

Concerns:

- A generic caveat in many of technical procedures, "Sections, or steps within sections, of this procedure may be performed out of sequence, as required" may desensitize workers on the importance of procedural adherence. Contrary to this statement, many steps within the body of the procedure need to be worked in the specified order. (**ASP OP.2-4**)
- Inconsistency and lack of process definition in HNF-PRO-3468, *Stop Work Responsibility*, has resulted in FH facilities developing their own process definition or protocol, causing confusion for workers. (**FFTF OP.2-1**)
- There is an inconsistent use of, or plans to use the Automated Job Hazard Analysis in respect to pre-existing procedures in the FH facilities. (**FFTF OP.2-2**)
- A concern that strained communications and a work environment that is not conducive to ISMS implementation currently exists at Building 327. This condition is recognized by facility personnel and actions are underway intended to improve the situation. (**RCP OP.2-2**)
- Supplemental information is needed on Work-It-Now tickets for WMP Maintenance Project Support, Central Services. (**WMP OP.2-2**)
- Timely incorporation of redline technical procedure changes is needed. (**WMP OP.2-3**)

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- Items in the Safety Log Book at the SWSD and WRAP Facility that are not immediate safety concerns are allowed to linger and are not removed when routed through other channels for resolution. **(WMP OP.2-4)**

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FUNCTIONAL AREA: **Operations**

OBJECTIVE: **OP.2**

DATE: July 10, 2000

Submitted:

Mat Irwin, Team A

Team Member

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Team Member

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Team Member

Approved:

Joe (Ed) Parsons

Team Leader

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FUNCTIONAL AREA: Radiation Controls and Protection	OBJECTIVE: SME.1 DATE: July 10, 2000
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OBJECTIVE

SME.1 - Radiological Controls and Protection. Within the Radiological Controls and Protection area, the planning of work includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within the Radiological Controls and Protection area, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. Procedures and/or mechanisms for Radiological Controls and Protection are implemented and provide adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.
2. Procedures and/or mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection is effectively integrated with line and support managers to ensure that line managers are responsible for safety.
3. Procedures and/or mechanisms for Radiological Controls and Protection require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. Procedures and/or mechanisms for Radiological Controls and Protection ensure that personnel who are assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms for Radiological Controls and Protection implement (within the subject area) feedback and continuous improvement.

Approach

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for Radiological Controls and Protection at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that Radiological Controls and Protection are effectively integrated into the facility or activity procedures.
- Review selected lessons learned to assess that lessons learned have been effectively used within the Radiological Controls and Protection area.

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FUNCTIONAL AREA: Radiation Controls and Protection	OBJECTIVE: SME.1 DATE: July 10, 2000
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- Review selection, training, and qualification records of personnel in Radiological Controls and Protection area to determine if they meet competency standards.

Interviews

- Interview personnel and responsible managers assigned to Radiological Controls and Protection area.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to the Radiological Controls and Protection area to assess the level of competence.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as a Radiological Work Permit (RWP), Job Hazards Analysis, or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

Record Review

- 1999 River Corridor Project (RCP) Contamination Statistics
- 1A100-00-022, *PFP CY 2000 Goal Revision and First Quarter ALARA Goal Status*, June 15, 2000
- 1ABOO-00-020, *Wearing of Dosimetry With Lead Vests*, June 5, 2000
- 2Z-1370, *AJHA Report for Filter Box 25*, May 28, 2000
- 4F-98-2196/W, *E-230-R Bearing Repair*, May 1999 - January 2000
- ASP-200, *Analytical Services Procedures*
 - Section 2.16, "Technical Procedures," Rev. 9, May 31, 2000
 - Section 3.2, "ALARA Program," Rev. 4, March 21, 2000
 - Section 3.3, "Radiological High-Risk Review," Rev. 3, June 28, 1999
 - Section 3.8, "Enhanced Radiological Work Planning," Rev. 4, June 1, 2000
- As Low As Reasonably Achievable (ALARA) Management Worksheets (11)
- Completed Work Packages (8)
- Enhanced ALARA Committee Meeting Minutes (2)
- Enhanced ALARA Committee Meeting Minutes for Filter Box 25
- Enhanced ALARA Committee Meeting Minutes for Thermal Stabilization of Metals

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- Fast Flux Test Facility (FFTF) Administrative Procedure
 - A-5, *AJHA Process for Controlled Procedures*, Rev. A1, June 26, 2000
 - A-28, *FFTF Work management Processes*, Rev. 13, March 24, 1998
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vol. 2
 - Section 14.3, "Radiological Work Planning and ALARA Program," Rev. 9, June 6, 2000
 - Section 14.6, "Access Control Entry System," Rev. 5, October 4, 1999
 - Section 14.7, "Control of Temporary Radiological Shielding," Rev. 4, October 4, 1999
 - Section 14.10, "Area Radiation Monitoring Program at PFP," Rev. 3, April 7, 2000
 - Section 14.13, "High Radiation Area Control," Rev. 1, October 4, 1999
- Nuclear Material Stabilization (NMS) Filter Box 25 ALARA Review
- HNF-5173, *Project Hanford Radiological Control Manual*, Rev. 0, April 15, 2000
- HNF-5242, *Technical Basis for Work Place Air Monitoring for the Plutonium Finishing Plant*, Rev. 0, October 5, 1999
- HNF-5584, *Technical Basis Document for Internal Dosimetry at the Plutonium Finishing Plant*, Rev. 0, March 9, 2000
- HNF-6087, *Technical Basis Document for PFP Area Monitoring Dosimetry Program*, Rev. 0, April 14, 2000
- HNF-IP-1277, *300 Area Radiological Procedures*, Release 27, April 15, 2000
 - Section 1.2.4, "Radiological Protection Lessons Learned Program," Rev. 1, June 30, 1998
 - Section 1.3.8, "300 Area ALARA Program," Rev. 4, December 1, 1999
 - Section 3.1.1, "RCP Enhanced Radiological Work Planning," Rev. 6, March 24, 2000
 - Section 3.2.1, "Radiological Work Permits," Rev. 1, December 3, 1999
 - Section 3.3.1, "Radiological Access Control," Rev. 0, December 12, 1997
 - Section 3.3.2, "Control of High Radiation Areas and Very High Radiation Areas," Rev. 2, March 10, 2000
 - Section 5.3.1, "Respiratory Protection Equipment," Rev. 0, September 30, 1997
 - Section 5.5.11, "Use of Lapel Air Samplers During 324 Facility REC Airlock Entries," Rev. 0, January 31, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, "Waste Management Project ISMS Description"
 - Appendix E, "Nuclear Material Stabilization Project ISMS Description"
 - Appendix F, "River Corridor ISMS Description"
 - Appendix G, "Fast Flux Test Facility ISMS Description"
 - Appendix H, "Analytical Services ISMS Description"
- HNF-PRO-319, *Radiation Protection Self-Assessments*, Rev. 1, February 24, 1999
- HNF-PRO-343, *Selection of Radiological Controls Technicians*, Rev. 0, September 8, 1997
- HNF-PRO-364, *Selection of Senior Radiological Controls Technician Lead Assignments*, Rev. 1, April 28, 1999
- HNF-PRO-388, *Radiological Problem Reports*, Rev. 1, December 3, 1998
- HNF-PRO-423, *Radiological Work Permits*, Rev. 0, September 8, 1997
- HNF-PRO-435, *Required Radiological Surveillances*, Rev. 3, April 15, 2000

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- HNF-PRO-1526, *Implementing Radiation Protection Technical Procedures*, Rev. 0, November 15, 1998
- HNF-PRO-1619, *ALARA Organization and Responsibilities*, Rev. 0, September 1, 1998
- HNF-PRO-1620, *ALARA Program Scope*, Rev. 0, September 1, 1998
- HNF-PRO-1621, *ALARA Decision Making Methods*, Rev. 0, August 17, 1998
- HNF-PRO-1623, *Radiological Work Planning Process*, Rev. 2, April 15, 2000
- HNF-PRO-1630, *Radiological Performance and ALARA Goals*, Rev. 0, September 1, 1998
- HNF-PRO-1892, *Documentation of Radiological Surveys*, Rev. 2, April 15, 2000
- HNF-SD-WM-SARR-028, *Solid Waste Burial Grounds Interim Safety Analysis*, Rev. 3A, September 28, 1998
- In Process Work Packages (8)
- LO-150-150, *Neutron Source Transfers for the Californium Activation Analysis Facility*, Rev. C-0, June 15, 2000
- LO-161-172, *Perform Complex 11A Hot Cell Operation*, Rev. K-4, April 3, 2000
- Occurrence Reports (7)
- Organizational Charts for the following:
 - ALARA Committee (2)
 - Enhanced ALARA Committee (2)
 - Radiological Control Organization (2)
- Post-Job ALARA Reviews (12)
- RP-01, *Management and Disposition of 400 Area Radiation Work Permits (RWP) and ALARA Management Worksheets (AMW)*, Rev. 0, February 8, 1996
- RP-02, *400 Area Radiological Control Organization Administrative Procedure RP-02, Issue and Return of Respiratory Equipment*, Rev. 0, December 15, 1995
- RP-03, *400 Area Radiological Control Organization Administrative Procedure RP-03, Control of Air Samples*, Rev. 0 FC, September 3, 1998
- RP-04, *400 Area Radiological Control Organization Administrative Procedure RP-04, Facility Tours*, Rev. 0 FC, June 27, 2000
- RWPs (15)
- RWP S-404, Rev. 015, February 8, 2000
- Radiological Assessments (4)
- Radiological Control Organization Education and Experience Summary (2)
- Radiological Dose Data (2)
- Radiological Problem Reports (RPR) (20)
- Radiological Survey Reports (35)
- SWP-103, *Radiation Work Permit*, Rev. 013, April 18, 2000
- *Thermal Stabilization ALARA Initiatives*, June 7, 2000
- WMP-200, *Waste Management Project Procedures*, Section 3.8, "Enhanced Radiological Work Planning," Rev. 4, June 1, 2000
- WMP-300, *Solid Waste Treatment Project Administrative Procedures*, Section 3.5, "Staffing Plan," Rev. 1, February 28, 2000
- ZAP-000-006, *Control of Airborne Radioactivity Area Posting*, Rev. C, February 29, 2000

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- ZAP-000-020, *Implementation of Radiological Control Procedures*, Rev. A, May 4, 1998
- ZRC-100-001, *Personnel Decontamination*, Rev. C, June 2, 2000
- ZRC-100-008, *RCT Radioactive Spill Response*, Rev. C, June 2, 2000
- ZRC-100-011, *RCT Criticality Response*, Rev. A, June 2, 2000
- ZRC-100-014, *Release Surveys for Material and Equipment*, Rev. A, June 2, 2000

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- ALARA Chairman
- DynCorp crane operator
- Manager, Radiological Controls
- Scientist
- Supervisor, First Line Radiological Controls.

Observations

- Critique of incident, June 21, 2000
- AJHA Team review, June 21, 2000
- Walkdown of mockup of Cf-252 irradiator source installation, June 22, 2000
- ALARA Awareness meeting, June 22, 2000
- Health Physics Technician's (HPT) morning meeting, June 22, 2000
- ALARA Committee meeting, June 22, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for Radiological Control and Protection are implemented and provide adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.*

The ISMS core functions for defining the scope of work and identifying hazards are implemented by extensive use of procedure ASP-200, *Analytical Services Procedures*, Section 3.8, "Enhanced Radiological Work Planning." This procedure specifies the involvement of the radiological controls personnel in the definition of the scope of work and identification of the hazards associated with a given work package.

Interviews with the Radiological Controls Manager and the ALARA Chairman described a noteworthy method for identifying hazards (ISMS core function). ASP uses digital color cameras for capturing color-printed pictures of the work environment. These pictures are attached to the work package to facilitate understanding of the potential hazards and interferences. This is a strength because the use of color pictures provides a new method of analyzing the hazards. Because digital cameras are used, the production of pictures is essentially immediate. Changing conditions can also be readily captured. This process permits better management oversight of the process and allows them to have a more comprehensive picture of the potential safety hazards. The introduction and use of the digital camera is a significant improvement over past practices. (ASP SME.1-1)

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The core functions of identifying, analyzing and controlling the hazards were implemented through the AJHA system, which allowed personnel to identify and analyze the hazards. ASP has incorporated the use of the AJHA, which provides a significant upgrade over the previous methods that depended on the experience level of the individual managers. Observation of the AJHA for a sampling job showed that Radiological Controls personnel have adequate participation on the AJHA teams. The AJHA system was regarded favorably by personnel as an important improvement that has been needed for a long time. The ISMS Verification Team found that ASP personnel have modified the generic AJHA appropriately to fit specific situations at the 222-S Laboratory. FH has approved of all changes to the generic AJHAs. As the work packages were developed, Radiological Controls personnel provided the required review, development of RWPs, and approval of work packages.

The ISMS Verification Team observed during a job review that the AJHA is conveniently linked to the RWPs that identify the radiological hazards (ISMS core function) to facilitate their writeup. Hazards were identified during the AJHA team analyses and incorporated into the RWPs.

Interviews and walkdowns by the ISMS Verification Team indicated that tabletop exercises and mockups were used when confronting new, complex jobs. This showed that personnel were aware of the importance of the core function of ISMS to identify the hazards and gave it appropriate consideration.

Two strong examples in identification, analysis, and control of hazards were observed; the outstanding ALARA Committee work and the exceptional work done on the Cf-252 neutron activation analysis irradiator source job. **(ASP SME.1-1)**

The ALARA Committee work was outstanding because it received buy-in from the facility personnel. ASP personnel from multiple disciplines were participants on the committee. The committee was split into two groups that toured the 222-S Laboratory and the ancillary facilities looking for potential ALARA situations. Then, personnel conferred as to the potential solutions to particular situations. In the group environment, ideas fostered by one person were discussed and improved upon by the group of concerned and knowledgeable employees. This resulted in quicker and better solutions to potential problems. Interviews indicated that personnel frequently fill out ALARA forms and place them in ALARA suggestion boxes. These ALARA suggestion forms include a discussion of the concern and possible solutions. The ALARA Committee considers the suggestion and frequently appoints the person making the suggestion to lead the effort in fixing the problem. This empowers ASP employees. Interviews indicated that employees feel a greater sense of ownership of what is going on at the laboratory so they take pride in what accomplishments are occurring. **(ASP SME.1-1)**

The exceptional ALARA work done on the Cf-252 neutron activation analysis irradiator source job is a prime example of the methodology that other facilities should emulate on complex, potentially high-dose jobs. The Cf-252 irradiator neutron source involved taking an old, decayed source out of the irradiation chamber and installing a new one. Interviews and walkdowns by the

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ISMS Verification Team indicated that this job involved several disciplines and required considerable coordination. The deficiencies noted in the videotape of the original placement effort were studied and a new design program was instituted. Shielding and dose calculations were performed to determine the best method. In this process, the facility developed a new shield plug for the top of the Oak Ridge cask that would provide shielding but still allow access by the source-retrieval cable to remove the source from the cask entirely by remote control. An electronic portable area radiation monitoring system was borrowed from another facility to monitor the movement of the source by remote means. The devices were tested about 30 times on a cold mockup setup to ensure that everything worked properly. Then, the old source was moved to the storage tube using the new procedures and equipment. This constituted a hot mockup of the actual transfer since the old source had decayed to about one-hundredth of what the new source dose rate would be. Measurements were taken to ensure that the shielding and remote monitoring would be adequate. Procedures were checked out to ensure there were no snags. A full "dress rehearsal" was performed using cranes and riggers as if it were the real cask to ensure 1) that all personnel understand the sequence of operations and 2) that potential problems were identified and corrected. The magnitude of the ALARA work during the course of the job is exemplary and indicates that an outstanding ALARA program is in place at the 222-S Laboratory. The ISMS core functions of identifying, analyzing, and controlling hazards are definitely being implemented. (ASP SME.1-1)

Team members observed a critique that was held to discuss an incident where the HPT forgot to take an air sample as required by the RWP. The failure to follow the procedure was identified by the HPT and was recognized by all personnel. Management took the proper corrective actions to prevent recurrence. The critique was conducted in the proper manner, emphasizing the need to identify the problem and resolve it rather than to "point fingers" that could potentially discourage future employee cooperation.

Criterion 2: *Procedures and/or mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection is effectively integrated with line and support managers to ensure that line managers are responsible for safety.*

Documents reviewed indicated that job descriptions for the exempt staff members in the area of Radiological Controls define the roles and responsibilities of the organization. Interviews indicated that personnel were aware of these roles and responsibilities and fulfilled the requirements.

In line with the ISMS core function to control the hazards, interviews indicated that the Radiological Control Manager and the ALARA Chairman enter the radiological areas on a frequent basis to provide management oversight. Line managers have policies on radiological work and are actively involved with ALARA as members of the ALARA Committee. Facility personnel frequently consult with the ALARA Center of Technology to provide additional input on methods to control the hazards.

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Criterion 3: *Procedures and/or mechanisms for Radiological Controls and Protection require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Review of RWP's determined that identified controls for radiological hazards were implemented by means of the RWP. It was observed at an AJHA meeting that the RWP was integrated with the AJHA by a programming link. The controls are identified in the AJHA and are implemented in the RWP and in the work packages prior to sign-off by management. Hold points are listed in the procedures and are rigorously adhered to by personnel as evidenced by the HPT's control of the installation procedure and mockup training for the Cf-252 source. Readiness to perform the work was confirmed at the mockup tests, job rehearsals and pre-job briefings by asking for and resolving personnel concerns. Evidence of this was observed at the AJHA team meeting and the mockup training. Qualifications and training requirements were determined to be up-to-date by reviewing information available through the Access Entry Control System (ACES).

RWP's were attached to the work packages to ensure that radiological requirements would be included during the review.

Work is stopped if the RWP limiting conditions are exceeded as was observed in the revision to the source installation procedure and mockup.

Criterion 4: *Procedures and/or mechanisms for Radiological Controls and Protection ensure that personnel who are assigned to the subject area have a satisfactory level of competence.*

To ensure personnel are able to adequately identify and control hazards, all Radiological Controls personnel are required to complete appropriate training. The Training Matrix lists the required initial and refresher training. A review of training records indicated that all HPT's were up-to-date on their cyclic HPT requalifications. Oral boards were given and training courses were taken for the required training for the HPT's. Specialized Radiological Control worker training was provided as needed in accordance with ASP-200, Section 3.8, Attachment 1. Mockup training was provided for high dose or complex jobs. All radiological work planners took the Article 652 course for radiological controls work planners (refers to the *Hanford Site Radiological Controls Manual* [HSRCM] training).

Criterion 5: *Procedures and/or mechanisms for Radiological Controls and Protection implement (within the subject area) feedback and continuous improvement.*

The feedback mechanism required as an ISMS core function was implemented as evidenced by the following data points. Post-job reviews, required by the HSRCM and HNF-PRO-1623, *Radiological Work Planning Process*, were observed for the Cf-252 irradiation source job. This consisted of a review of the videotape of the first time the job was performed to improve the process. The post-job review included suggestions by involved personnel. The lessons learned from the past were incorporated into the AJHA and the RWP's. There is an active ALARA committee at the facility that conducts reviews of previous jobs and reviews of incorporation of

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ALARA concepts into upcoming work packages. This was observed in the use of digital cameras for work package documentation of conditions and for the Cf-252 job. Routine surveillances and tri-annual assessments of the radiological controls program, as required by 10 *Code of Federal Regulations* 835, were performed and used to ensure continuous improvement. Interviews indicated that RPRs are discussed at the Deficiency Evaluation Group (DEG) meeting and tracked in the Deficiency Tracking System (DTS).

The ALARA feedback loop is quite good. The following data show that the ALARA program is really having an effect. The whole body dose for the facility decreased from 19 person-rem in 1997 to 9.5 in 1999. Similarly, the extremity dose decreased from 121 person-rem to 51. The work load remained essentially constant so that the program effectiveness is clearly demonstrated. This shows dedication to reduction of the hazards in the workplace.

Conclusion

Procedures and mechanisms for Radiological Controls and Protection are being implemented to identify, analyze and control hazards; accomplish work safely; and provide feedback and continuous improvement.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Health Physicist
- Radiological Controls Technician (RCT), Lead Technician
- Team Lead, Radiological Controls.

Observations

- Plan of Day meeting, June 26, 2000
- Tour of FFTF and Maintenance and Storage Facility, June 26, 2000
- Safety Awareness Council meeting, June 27, 2000
- ALARA and Pollution Prevention Council meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for Radiological Control and Protection are implemented and provide adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.*

The ISMS core functions for defining the scope of work and identifying the hazards were implemented by extensive use of Administrative Procedure A-28, *FFTF Work management Processes*, Appendix R, "Work Package Preparation and Approval." This procedure specifies the involvement of the Radiological Controls personnel in the definition of the scope of work and identification of the hazards associated with a given work package. Evidence of implementation of this procedure included the following data. Interviews and reviews of work packages indicated there was appropriate input from the Radiological Controls group, starting in the beginning of the process as work packages were being developed and routed through the facilities for review. Interviews and review of work packages also showed that FFTF Radiological Controls personnel participated appropriately in the management decisions related to work package development. Reviews of FFTF procedures indicate that FFTF has sufficient specific procedures for work planning. Radiological Control personnel appropriately took part in initial walkdowns and conceptual planning as necessary for development of work packages as exemplified by 4F-98-2196/W, E-230-R, Bearing Repair. In assisting this process of identifying the hazards (ISMS core function), interviews with the Radiological Controls Team Lead and the Health Physicist indicated that the facility used digital color cameras for capturing color-printed pictures of the work environment. These pictures were attached to the recent work packages to facilitate understanding of the potential hazards and interferences. This is a strength because the use of color pictures provides a new method of analyzing the hazards. Because digital cameras are used, the production of pictures is essentially immediate. Changing conditions can also be readily captured. This process permits better management oversight of the process and allows

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them to have a more comprehensive picture of the potential safety hazards. The introduction and use of the digital camera is a significant improvement over past practices. **(FFTF SME.1-1)**

The core functions of identifying, analyzing, and controlling hazards were implemented through the AJHA system that allowed personnel to identify and analyze the hazards. FFTF has incorporated the use of the AJHA, which provides a significant upgrade over the previous methods that depended on the experience level of the individual managers. The AJHA system was regarded favorably by personnel as an important improvement that has been needed for a long time. The ISMS Verification Team found that FFTF personnel have modified the generic AJHA appropriately to fit specific situations at FFTF. FH has approved facility-specific changes to the generic AJHAs. As the work packages were developed, Radiological Controls personnel provided the required review, development of RWPs, and approval of the work packages.

Interviews with the Radiological Controls Team Lead provided evidence that the AJHA conveniently links to the RWPs that identify the radiological hazards (ISMS core function) so as to facilitate their writeup. Hazards identified during the AJHA team analyses are incorporated into the RWPs.

Interviews indicated that tabletop exercises and mockups were utilized when confronting complex jobs. This again demonstrated that personnel were aware of the importance of the ISM core function to identify hazards and gave it appropriate consideration.

A strong example in the area of identification, analysis and control of hazards was discovered by interview, observation of the job location, and review of the completed work package; i.e., the repair of the air blower. **(FFTF SME.1-1)**

A tour of the FFTF containment showed that the area of the job was virtually inaccessible. The interviews and review of the work package showed that personnel had coped exceptionally well with the situation and had successfully minimized the dose. The pre-job and post-job reviews were extensive. The pre-job review looked first at the work package from the first time that the repair was made several years before. Plastic walls and flooring was provided to control the spread of contamination. Personnel wore long, changeable sleeves that were frequently changed along with their gloves to keep the spread of contamination to a minimum. Bubble hoods were worn to prevent grease from dropping in the faces of personnel working under the motor. The bubble hoods also provided cooling to personnel in the cramped quarters. Experienced personnel were able to train new personnel so that time in the dose rate area was minimized. Fire department personnel were familiarized with the area in case of an emergency. The only injury was a pinched finger. There were no personnel clothing or skin contaminations. The ALARA study and calculation of doses had indicated that the dose to be expected would be 270 person-mrem. When it was found that most of the dose rate came from highly contaminated grease that was subsequently removed, the total dose resulting from the job was only 89 person-mrem, one of the major jobs in 1999. The magnitude of the ALARA work during the course of this job was exemplary and indicates that an excellent ALARA program is in place at FFTF.

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The total exposure for this year so far is only 7 person-mrem by pocket dosimeter as compared to 327 person-mrem for 1999. However, the radiological workload at FFTF for this year has been reduced compared to last year so that doses would be expected to be lower. The ISMS core functions of identifying, analyzing and controlling the hazard are definitely being implemented. (FFTF SME.1-1)

Criterion 2: *Procedures and/or mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection is effectively integrated with line and support managers to ensure that line managers are responsible for safety.*

FFTF Administrative Procedure A-5, *AJHA Process for Controlled Procedures* indicated that job descriptions for the exempt staff members in the area of Radiological Controls define the roles and responsibilities of the organization. Interviews indicated that personnel were aware of these roles and responsibilities and fulfilled the requirements.

In line with the ISMS core function to control hazards, interviews indicated that the Radiological Control Team Lead and the Health Physicist enter the radiological areas daily to provide oversight. Line managers have policies on radiological work and they are actively involved with ALARA as members of the ALARA Committee. Facility personnel frequently consult with the ALARA Center of Technology to provide additional input on methods to control the hazards.

Criterion 3: *Procedures and/or mechanisms for Radiological Controls and Protection require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Review of RWPs included in the work packages determined that identified controls for radiological hazards were implemented by means of the RWP. It was identified during interviews that the RWP was integrated with the AJHA by a programming link. The controls are identified in the AJHA and are implemented in the RWP and in the work packages prior to sign-off by management. Hold points are listed in the procedures and are rigorously adhered to by personnel. Interviews indicated that readiness to perform the work was confirmed by FFTF personnel at job rehearsals and pre-job briefings by asking for and resolving personnel concerns. Evidence of this was also observed from review of the work packages.

The ISMS team observed that RWPs were attached to the work packages to ensure that radiological requirements would be included during the review.

Work is stopped if the RWP limiting conditions are exceeded, as observed in the review of the work packages; e.g., the air blower work package when bubble hoods were introduced to stop the grease from falling in the repair personnel's faces. In this case, airborne radioactivity was not present. The bubble hoods also provided cooling to personnel.

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Criterion 4: *Procedures and/or mechanisms for Radiological Controls and Protection ensure that personnel who are assigned to the subject area have a satisfactory level of competence.*

All Radiological Controls personnel are required to take appropriate training to adequately identify and control hazards. The ISMS team observed that qualifications and training requirements were up-to-date by reviewing information available through ACES. From interviews, it was determined that the Training Matrix listed the required initial and refresher training. A review of training records indicated that all HPTs were up-to-date on their cyclic HPT requalifications. Oral boards were given and training courses were taken for the required training for the HPTs. Mockup training was provided for high dose or complex jobs. All but one of the radiological work planners at FFTF took the Article 652 course for radiological controls work planners (refers to the HSRCM training). The last radiological work planner at FFTF is scheduled to take the course next month (July 2000).

Criterion 5: *Procedures and/or mechanisms for Radiological Controls and Protection implement (within the subject area) feedback and continuous improvement.*

The feedback mechanism required as an ISMS core function was implemented as evidenced by the following data points. Post-job reviews, required by the HSRCM and HNF-PRO-1623, *Radiological Work Planning Process*, were observed by review of the FFTF work package for the air blower bearing repair. This consisted of a review of the work package for the first time the job was performed to improve the process. The post-job review in the FFTF work package included suggestions by involved personnel as to how the job could be improved in the future. The lessons learned from the previous air blower repair at FFTF were incorporated into the job planning and the RWP. The ISMS team observed the active ALARA committee at the facility that conducts reviews of previous jobs and reviews of incorporation of ALARA concepts into upcoming work packages. This was also observed by the ISMS team at FFTF in review of the various files generated by the use of digital cameras for work package documentation of conditions. ISMS team interviews and observation of RCTs making routine surveillances showed that these are also utilized to ensure continuous improvement. Interviews indicated that RPRs are discussed at the DEG meeting and are tracked in the DTS.

Conclusion

Procedures and mechanisms for Radiological Controls and Protection are being implemented to identify, analyze and control hazards; to accomplish work safely; and to provide feedback and continuous improvement.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Deputy Director
- Duty Manager, Radiological Control (2)
- Health Physics Analyst
- Manager, Radiological Control (Acting)
- Nuclear Chemical Operator (4)
- RCT (6)
- Radiological Engineer (5)
- Radiological Engineering Lead.

Observations

- Zero Accident Council Meeting, June 14, 2000
- AJHA Meeting, June 14, 2000
- Residue Project, Pipe and Go Planning Meeting, June 14, 2000
- Vault Project Toolbox Meeting, June 15, 2000
- Thermal Stabilization ALARA Walk Down, June 15, 2000
- DEG Meeting, June 15, 2000
- ALARA Committee Meeting, June 19, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for Radiological Control and Protection are implemented and provide adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.*

NMS has implemented use of the AJHA for all but routine work to ensure that hazards are analyzed. The AJHA reports were observed thorough and covered all associated hazards. Additionally, medium- and high-risk work have ALARA reviews performed by the Radiological Control organization. The Enhanced ALARA Committee, a group of NMS senior management, reviews all high-risk work. Meeting minutes from the Enhanced ALARA Committee indicated that it was thorough in its review. The work packages reviewed indicated that the ALARA review process ensured that controls are identified and integrated into work packages. All work planning involving radioactive materials or work in radiological areas is routed through the Radiological Control organization for risk screening in the early planning phase of the activity.

The Enhanced ALARA Committee process at NMS is very good for high-risk activities. Senior management has taken an active role in providing clear expectations to ensure that work packages are carefully planned so that dose to the worker is addressed and maintained ALARA.

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The input for job planning is very good from RCTs and Radiological Engineers for moderate- and high-risk radiological work. **(NMS SME.1-2)** The technical competence of the teams and the teaming atmosphere allows for the hazards to be identified and mitigated with minimal delay. PFP has planned and executed multiple high-risk jobs in the past year with minimal delays and no internal uptakes.

During a planning meeting observed for the Residue Pipe and Go Project, a fast-tracked work effort, it was noted that the Radiological Engineering staff was brought into the planning efforts late. Project management had already made decisions on containment, ventilation, and air monitoring prior to Radiological Engineering's involvement. The Radiological Engineering staff was brought into the planning efforts late in the Residue Pipe and Go Project. **(NMS SME.1-4)**

The NMS Project has been successful at implementing a process to plan individual work items that ensures hazards are identified and controls are implemented.

Criterion 2: *Procedures and/or mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection is effectively integrated with line and support managers to ensure that line managers are responsible for safety.*

Clear roles and responsibilities were observed in the planning and performance of work activities. Individual steps in work documents and procedures are performed by the job classification assigned. Interviews conducted indicated that clear roles and responsibilities were understood throughout the organization. Line management readily supports the Zero Accident Council by attending the meetings and quickly resolving identified concerns.

Senior management's review and approval of all Administrative Control Level dose extensions before being submitted to FH Radiological Control and Pacific Northwest National Laboratory for processing is very good. The senior management review ensures the request for extension is justified and the additional dose meets the intent of ALARA.

(NMS SME.1-3)

A concern with line management's implementation of the radiological safety responsibilities was observed. In February 2000, the absence of an ALARA Committee was identified. An ALARA Committee was recently established and the first meeting was not until June 19, 2000 to review the overall conduct of the Radiological Control Program. **(NMS SME.1-5)**

Formal job descriptions have not been developed for the Radiological Control organization. **(NMS SME.1-6)** While interviews indicated that individuals within the project understood their roles and responsibilities, it was not clear to the ISMS Verification Team. Two positions, the Duty Radiological Controls Manager and the Radiological Engineering Lead, are unique to NMS.

Line and support managers are effectively integrated with the Radiological Control organization and have demonstrated their responsibilities for safety.

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Criterion 3: *Procedures and/or mechanisms for Radiological Controls and Protection require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

AMWs and the AJHA process are used in the work activity planning stages to identify what controls are to be implemented. RWP's were reviewed against the planning documentation and had incorporated the identified controls. A review of work packages showed that controls identified in the planning stage had also been integrated into the work packages. Pre-job briefings are used for nonroutine work, covering the RWP, actions to be taken if unexpected conditions were found, and the status of the work area prior to performance of the task. Walkdowns of the work area by craft and supervisory personnel ensure readiness prior to performing work.

NMS has successfully integrated a process that causes controls to be implemented for hazards. These controls were demonstrated to be effectively integrated into the work activities and readiness is confirmed prior to performing work.

Criterion 4: *Procedures and/or mechanisms for Radiological Controls and Protection ensure that personnel who are assigned to the subject area have a satisfactory level of competence.*

The Radiological Control exempt staff has eight individuals with college degrees. Seven of the exempt staff are certified by the National Registry of Radiation Protection Technologists. Interviews with staff members and RCTs also demonstrated a high level of competence.

NMS has satisfactorily ensured that personnel who are assigned to this subject area have a satisfactory level of competence.

Criterion 5: *Procedures and/or mechanisms for Radiological Controls and Protection implement (within the subject area) feedback and continuous improvement.*

All RPRs are reviewed in the DEG meetings. At one meeting that was observed, the DEG assigned the proper risk ranking to the RPRs that were reviewed. RPRs with a risk ranking of 1 - 5 are tracked in the DTS until corrective actions are completed. The Radiological Control Organization also categorizes the RPRs to look for developing trends. Post-job ALARA reviews and Post-job Reviews are used to document both strengths and weaknesses from work activities. Feedback from the workers was routinely observed and all issues were addressed and most resolved.

There is no formal method to identify, track, or provide feedback for ALARA suggestions or improvements that are made by the work force. **(NMS SME.1-7)** Feedback on radiological issues is readily provided to management by the work force. However, some frustration exists due to a perceived lack of action on this feedback. The lack of an active ALARA Committee for the past 9 months has contributed to this problem.

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Conclusion

The integration of radiological control considerations is sufficiently incorporated within the NMS policies and procedures. Radiological control mechanisms are institutionalized and are effective throughout NMS. However, an active ALARA Committee needs to be developed and the feedback process could be improved.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Health Physics Analyst (2)
- Hot Cell Technician (4)
- Manager, Radiological Control (Acting)
- RCT (6)
- Radiological Engineer (2).

Observations

- Pre-job briefing for repair of 10-ton crane, June 19, 2000
- Remote engineering cell airlock entry to repair 10-ton crane, June 19, 2000
- Daily Planning meeting, June 20, 2000
- Radiological Control Morning Planning meeting, June 20, 2000
- Post-job meeting on repair of 10-ton crane, June 20, 2000
- Pre-job briefing for repair of 10-ton crane, June 20, 2000
- Remote engineering cell airlock entry to repair 10-ton crane, June 20, 2000
- 200 Area Accelerated Deactivation Project Surveillance of 224-T, June 22, 2000
- 200 Area Accelerated Deactivation Project Surveillance of 231-Z, June 22, 2000
- AJHA on repair exhaust fan, June 22, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for Radiological Control and Protection are implemented and provide adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.*

RCP has implemented the use of the AJHA for all nonroutine work to ensure hazards are analyzed. AJHA reports reviewed were thorough and covered all associated hazards. Additionally, medium- and high-risk work have AMWs performed by the Radiological Control organization. The Enhanced ALARA Committee, a group of RCP senior management, reviews all high-risk work activities. Meeting minutes from the Enhanced ALARA Committee indicated that it was thorough in its review. The work packages reviewed indicated that the ALARA work planning process ensured that controls are identified and integrated into the work packages. All work planning involving radioactive materials or work in radiological areas is routed through the Radiological Control organization for risk screening in the early planning phase of the activity.

The RCP has been successful at establishing a process to plan individual work items that ensures that hazards are identified and that controls are effectively implemented.

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Criterion 2: *Procedures and/or mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection is effectively integrated with line and support managers to ensure that line managers are responsible for safety.*

Clear roles and responsibilities were observed in the planning and performance of work activities. Individual steps in work documents and procedures are performed by the job classification assigned. Interviews conducted indicated that clear roles and responsibilities are understood throughout the organization. Line management readily supports the ALARA Committee by attending meetings.

Although formal job descriptions have been developed for the Radiological Control organization, interviews with Radiological Control exempt staff indicated that most individuals were unaware their roles and responsibilities were listed on a formal job description. **(RCP SME.1-2)**

The roles and responsibilities at RCP are adequately clear. Line and support managers are effectively integrated with the Radiological Control organization and have demonstrated their responsibilities for safety.

Criterion 3: *Procedures and/or mechanisms for Radiological Controls and Protection require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

AMWs and the AJHA process are used in the planning stages to identify what controls are to be implemented. RWPs for work activities were reviewed against the planning documentation and had incorporated the identified controls. A review of work packages showed that controls identified in the planning stage had also been integrated into the work packages. Pre-job briefings, which are used for nonroutine work tasks, discuss the RWP, actions to be taken if unexpected conditions are found, and the status of the work area prior to performance of the task. Craft and supervisory personnel walkdowns of the work area ensures readiness prior to performing work.

RCP has successfully developed a process that requires controls to be implemented for hazards. These controls are effectively integrated into work activities and readiness is confirmed prior to performing work.

Criterion 4: *Procedures and/or mechanisms for Radiological Controls and Protection ensure that personnel who are assigned to the subject area have a satisfactory level of competence.*

The Radiological Control exempt staff has three certified Health Physicists with advanced degrees and two other individuals with college degrees. Four of the exempt staff members are certified by the National Registry of Radiation Protection Technologists. Interviews with staff members and RCTs demonstrated a high level of competence.

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RCP has satisfactorily ensured that personnel assigned to this subject area have a sufficient level of competence.

Criterion 5: *Procedures and/or mechanisms for Radiological Controls and Protection implement (within the subject area) feedback and continuous improvement.*

All RPRs are reviewed in the DEG meetings. RPRs with a risk ranking of 1 - 5 are tracked in DTS until corrective actions are completed. Post-Job ALARA Reviews and Post-Job Reviews are used to document both strengths and weaknesses from work activities. Feedback from the workers was routinely observed and all issues were addressed and resolved.

The 324 Facility performs Post-Job ALARA Reviews that are thorough, complete, and include active participation from each craft that performed the work activity. **(RCP SME.1-1)** This was demonstrated by the improvements made in the work process of routinely entering the Remote Engineering Cell Airlock for clean-out activities.

RCP has developed an adequate process to implement feedback and improvement in the area of Radiological Protection.

Conclusion

The integration of radiological control considerations is adequately established within the RCP policies and procedures. Radiological control mechanisms are institutionalized and were verified to be to be effective throughout RCP.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Facility Manager, Solid Waste Storage and Disposal (SWSD)
- Field Work Supervisor, Waste Encapsulation and Storage Facility (WESF)
- HPT, Solid Waste Treatment (SWT)
- HPT, SWSD (2)
- HPT, WESF
- Lead HPT, Liquid Waste Processing Facility (LWPF)
- Manager Radiological Controls, LWPF
- Manager, Radiological Controls
- Manager, Radiological Controls, SWT
- Manager, Radiological Controls, SWSD
- Radiation Engineer/ALARA Planner
- Radiation Engineer/ALARA Planner (2), Waste Receiving and Processing (WRAP) Facility
- Radiation Engineer/ALARA Planner, SWSD
- Radiation Engineer/ALARA Planner, SWT
- Senior Health Physicist, WESF.

Observations

- Pre-job briefing on pool water level sensor checkout, T Plant, June 14, 2000
- Biotransported contamination on scissors lift removed and post-job review of decontamination of scissors lift, WESF, June 15, 2000
- Liquid filter replacement and post-job review, LWPF, June 16, 2000
- Morning meeting, SWSD, June 16 and 17, 2000
- Pre-job briefing, placement of high-dose rate liner into high-integrity container in burial trench, and post-job review, SWSD, June 17, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for Radiological Control and Protection are implemented and provide adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.*

The ISMS core functions for defining the scope of work and identifying the hazards were implemented by extensive use of WMP-200, *Waste Management Project Procedures*, Section 3.8, "Enhanced Radiological Work Planning." This procedure specifies the involvement of the radiological controls personnel in the definition of the scope of work and identification of the hazards associated with a work package. Evidence of implementation of this procedure included the following data. All facilities visited had the appropriate input from the radiological

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controls group starting from the beginning of the process as work packages are being developed and routed through the facilities for review. Radiological controls personnel participated appropriately in the Management Review Board and in the management decisions on work package development. Individual facilities have sufficient specific procedures for work planning. Radiological Control personnel appropriately took part in initial walkdowns and conceptual planning as necessary for development of the work packages. In assisting this process of identifying the hazards (ISMS core function), the WMP facilities all utilized digital color cameras for capturing color printed pictures of the work environment. These pictures were attached to the work package to facilitate understanding of the potential hazards and interferences. *This is a strength since the use of color pictures provides a new method of analyzing the hazards. Since the digital cameras are used, the production of pictures essentially immediate. Changing conditions can also be readily captured. This process permits better management oversight of the process and allows them a more comprehensive picture of the potential safety hazards. The introduction of the digital camera is a significant improvement over past practices. (WMP SME.1-1)*

The ISMS core function to identify hazards is also satisfied since all work packages meet the standards for detail so unforeseen hazards are minimized. Biohazards were recognized as well as other types; e.g., potential Hanta virus contamination on the mouse nest to be removed from the scissors lift at WESF. In this case, the decon procedures were modified to accommodate the additional hazard by preventing the use of vacuum cleaners and requiring the use of chlorox spray followed by a manual wipedown with a damp cloth. These changes, as implemented in the decontamination activity witnessed by the ISMS team, showed an appropriate understanding of the situation and the potential hazards in accordance with the ISMS core functions of identifying the hazards, analyzing the hazards, and controlling the hazards.

The core functions of identifying the hazards, analyzing the hazards, and controlling the hazards were implemented through the AJHA system that allowed personnel to identify and analyze the hazards. All WMP facilities have incorporated the use of the AJHA, which provides a significant upgrade over the previous methods that depended on the experience level of the individual managers. Radiological Controls personnel had adequate participation on the AJHA team. The AJHA system was regarded favorably by personnel as an important improvement needed for a long time. Personnel at the facilities have modified the generic AJHA appropriately to fit the specific situations at that facility. FH has approved of all changes to the generic AJHAs. As the work packages were developed, Radiological Controls personnel provided the required review, development of RWPs, and approval of work packages.

The AJHA conveniently links to the RWPs, which identify the radiological hazards (ISMS core function) to facilitate the write-up. RWPs were attached to the work packages with the exception of the ones at WRAP Facility. Editorial changes to the RWPs, not affecting the work packages, were frequent at WRAP Facility so the RWP was referenced in their work packages. Hazards were identified during the AJHA analyses and incorporated into the RWPs.

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Tabletop exercises and mockups were used when confronting new, complex jobs. This showed that personnel were aware of the importance of the core function of ISMS to identify the hazards and gave it appropriate consideration.

Procedures and mechanisms for Radiological Control and Protection are being implemented and provide adequate planning of individual work items to ensure that hazards have been analyzed and controls have been identified.

Criterion 2: *Procedures and/or mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection is effectively integrated with line and support managers to ensure that line managers are responsible for safety.*

Job descriptions and roles and responsibilities for the exempt staff members in the Radiological Controls organization are provided in WMP-300, *Solid Waste Treatment Project Administrative Procedures*, Section 3.5, "Staffing Plan." Personnel were aware of these roles and responsibilities and fulfilled the requirements.

In line with the ISMS core function to control hazards (with the exception of T-Plant and Solid Waste), the Radiological Controls Managers enter the radiological areas on a frequent basis to provide management oversight. At T-Plant and Solid Waste, the lead HPTs and the first line supervisors enter those areas frequently (usually daily) and, in many cases, for the entire shift. Line managers have policies on radiological work and are actively involved with ALARA as members of the ALARA Committee. The facilities frequently consult with the ALARA Center of Technology to provide additional input on methods to control the hazards.

Procedures and mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection has been effectively integrated with line and support managers to ensure that line managers are responsible for safety.

Criterion 3: *Procedures and/or mechanisms for Radiological Controls and Protection require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Identified controls were implemented through the RWP, which was integrated with the AJHA by a programming link. The controls are identified in the AJHA and are implemented in the RWP and work packages prior to sign-off by management. Hold points are listed in the procedures and are rigorously adhered to by personnel as evidenced by the HPTs control of the decontamination of the scissors lift at WESF and the disposal of a high-dose rate container at the burial trench. Readiness to perform the work was confirmed at the pre-job briefings by asking for and resolving personnel concerns. Evidence of this was observed at the several pre-job briefings held during the course of the ISMS Phase II review. Qualifications and training requirements are determined to be up-to-date by checking on ACES. This requirement was adhered to even for the ISMS observer.

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RWPs were attached to the work packages with the exception of the ones at WRAP Facility. Editorial changes to the RWPs not affecting the work packages were frequent at WRAP Facility so the RWP was referenced in their work packages.

Work is stopped if the RWP limiting conditions are exceeded as was experienced in the delay of placement of a high-dose rate container in the burial trench. Personnel were required to leave the area, the situation was assessed, and the issues were resolved by necessary radiological control and line management review before work was allowed to resume on the following day. The changes were communicated to personnel in the pre-job briefings as was observed by the ISMS team.

There was a very extensive decontamination and surface sealing effort at WESF to minimize the spread of contamination. The facility was extremely clean as compared to other facilities of a similar vintage. This was a notable strength since the personnel took extraordinary efforts to minimize the spread of contamination. **(WMP SME.1-1)**

Personnel actions in placing the high-dose rate liner in the high-integrity container in the burial trench was so well choreographed through extensive practice that the dose to personnel was minimized extremely well. This was a strength due to the exceptional effort to ensure that the container transfer would go quickly and smoothly. **(WMP SME.1-1)**

Procedures and mechanisms for Radiological Controls and Protection require controls to be implemented. These controls were effectively implemented, integrated, and readiness was confirmed prior to performing work.

Criterion 4: *Procedures and/or mechanisms for Radiological Controls and Protection ensure that personnel who are assigned to the subject area have a satisfactory level of competence.*

All Radiological Control personnel are required to take appropriate training in order that personnel were able to adequately identify and control hazards (ISMS core functions). The Training Matrix listed the required initial and refresher training which personnel have. All HPTs at WMP facilities were up-to-date on their cyclic HPT requalifications. Oral boards were given and training courses were taken for the required training for the HPTs. Specialized radiological control worker training was provided as needed in accordance with WMP-200, Section 3.8, Attachment 1. Mockup training was provided for high dose or complex jobs. All Radiological Controls Work Planners took the Article 652 course for Radiological Controls Work Planners (refers to the HSRCM training).

Procedures and mechanisms for Radiological Controls and Protection were in place and are being implemented to ensure that personnel who have been assigned to the subject area have a satisfactory level of competence.

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Criterion 5: *Procedures and/or mechanisms for Radiological Controls and Protection implement (within the subject area) feedback and continuous improvement.*

The feedback mechanism, required as an ISMS core function, was implemented by the following data points. Post-job reviews, required by the HSRCM and HNF-PRO-1623, *Radiological Work Planning Process*, were observed for the high-dose container disposal in the burial trench, the scissors lift decontamination, and the liquid filter replacement. Post-job reviews included suggestions by all personnel. Lessons learned from the past were incorporated into the AJHA and the RWP. For continuing or repetitive jobs, the post-job review was included into the following pre-job briefing as was observed in the morning meeting attended by the ISMS observer. There are active ALARA committees at each facility for reviews of previous jobs and for reviews of incorporation of ALARA concepts into upcoming work packages. This was seen in the use of digital cameras for work package documentation of conditions and for the practice-to-perfection of crane handling of the high-dose rate container at the burial trench. Routine surveillances and tri-annual assessments of the Radiological Controls program (as required by Title 10 *Code of Federal Regulations*, Part 835, "Occupational Radiation Protection") were performed and utilized to ensure continuous improvement. RPRs are discussed at the DEG and are tracked in the DTS.

Procedures and mechanisms for Radiological Controls and Protection are being implemented (within the subject area) to provide feedback and continuous improvement.

Conclusion

Procedures and mechanisms for Radiological Controls and Protection are being implemented (within the subject area) to provide feedback and continuous improvement.

This objective has been met.

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Strengths:

- Extensive measures are being taken to identify, analyze and control radiological hazards. (ASP SME.1-1) (FFTF SME.1-1) (WMP SME.1-1)
- Senior management has taken an active role in providing clear expectations to ensure that work packages are planned so that dose to the worker is addressed and all reasonable steps are taken to keep the dose as low as reasonably achievable. (NMS SME.1-1)
- The input for job planning from Radiological Controls Technicians and Radiological Engineers for moderate- and high-risk radiological work is very good. (NMS SME.1-2)
- Senior management's review and approval of all Administrative Control Level dose extensions before being submitted to FH Radiological Control and Pacific Northwest National Laboratory for processing is very good. This senior management review ensures that the request for extension is justified and the additional dose meets the intent of as low as reasonably achievable. (NMS SME.1-3)
- Building 324 performs Post-Job As Low As Reasonably Achievable reviews that are thorough, complete, and include active participation from each craft that performed the work activity. (RCP SME.1-1)

Concerns:

- The Radiological Engineering staff was brought into the planning efforts late in the Residue Pipe and Go Project. (NMS SME.1-4)
- An As Low As Reasonably Achievable Committee was recently established and the first meeting was not until June 19, 2000 to review the overall conduct of the Radiological Control Program. (NMS SME.1-5)
- Formal job descriptions have not been developed for the Radiological Control organization. (NMS SME.1-6)
- There is no formal method to identify, track, or provide feedback for As Low As Reasonably Achievable suggestions or improvements made by the workforce. (NMS SME.1-7)
- Interviews with Radiological Control exempt staff indicated that most individuals were unaware their roles and responsibilities were listed on a formal job description. (RCP SME.1-2)

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Section 2 of 2

Document Information			
Document #	DOE-RL-2000-47		REV 0
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OBJECTIVE

SME.2 - Occupational Safety and Health (OS&H). Within the OS&H areas, the planning of work includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within the Industrial Hygiene and Safety areas, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. Procedures and/or mechanisms for OS&H areas require adequate planning of individual work items to ensure that hazards are analyzed and controls are implemented.
2. Procedures and/or mechanisms for OS&H areas contain clear roles and responsibilities. OS&H is effectively integrated with line-support managers to ensure that line managers are responsible for safety.
3. Procedures and/or mechanisms for OS&H require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. Procedures and/or mechanisms for OS&H require that personnel who are assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms for OS&H require that within the subject area, feedback and continuous improvement occur.

Approach

- Review the applicable Fluor Hanford (FH) procedures and selected records that define the activities and interactions for these activities.
- Assess the adequacy of the process to meet the criteria and determine that the individual subject areas are effectively integrated into the facility or activity procedures.
- Review any lessons learned that provide an opportunity to assess that lessons learned have been effectively used within the subject areas.
- Review personnel training records in the subject area to determine that they meet competency.

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- Interview personnel and responsible managers in the subject areas assigned. Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to the subject areas to assess the level of competence.
- Observe events such as the development of procedures, development of hazards analyses (e.g., Radiological Work Permit or Job Hazard Analysis) or the approval process for individual work items, which includes interactions with personnel of the subject areas, and the conduct of work.

Record Review

- Review the manuals of practice and selected records that define and implement the procedures and interactions required for OS&H at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that the OS&H are effectively integrated into facility and activity-level procedures.
- Review selected lessons learned to assess that lessons learned have been effectively used within the OS&H areas.
- Review training records of selected personnel to determine if they meet competency standards to perform work safely.

Interviews

- Interview personnel and responsible managers assigned to the OS&H areas to assess their level of competence.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview workers to assess their involvement in the analysis of hazards development and specification of necessary controls, and ability to provide feedback.

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Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as an Automated Job Hazard Analysis (AJHA), or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

Record Review

- 2C-00-00114/7, *Change/Repair Manipulator #4137*, March 15, 2000
- 2C-23050, *Manipulator Repair*, Rev. 0-B, April 26, 1999
- 2S-99-00650/W, *Prepare CF Transfer Tubing and Perform Mock-ups*, May 1, 2000
- 2S-99-00650/W, J-7, *Prepare CF Transfer Tubing and Perform Mock-ups*, June 8, 2000
- 2S-99-00650/W, *Pre-Job Safety Meeting Check Sheet*, June 9, 2000
- 2S-99-00650/W, *Post-Job ALARA Review*, June 9, 2000
- 310/340 Facilities Zero Accident Council (ZAC) meeting minutes, May 18, 2000
- 3L000-RBB-00-015.5, *Job Requirements for Project Safety Manager*, Correspondence from R. B. Barmettlor, FH, to B. G. Baker, FH, February 17, 2000
- 45-96-01352/W, *451A Outage for PMP's and Corrective Maintenance*, June 6, 2000
- 4F-98-02383/W, *Evaluate Potential Oil Leaks on E-20, E-22, and E-23*, June 20, 2000
- 4F-99-01093/W, *P-235 Glycol Seal Leaking (E-345)*, October 22, 1999
- 4F-99-02230/W, J-3, *PA-106 In Cell 242 Painfully Loud, Adjust*, December 1, 1999
- 4F-00-00372/W, *Special PCB Transformer Oil Testing and 3 Non-PCB*, June 20, 2000
- 4M-00-00015/P, *Elevator Third Party Inspection (6 Month)*, May 15, 2000
- 400 Area Training, *Technical Staff Training Plan # 071946*
- AJHA
 - 2C-103, *Decon Manipulators Supports*, Rev. 0, March 22, 1999
 - 2C-298, *Remove and Install Manipulators*, Rev. 0, December 17, 1999
 - 2S-137 *Trouble Shoot and Repair 222-SA Lift Station Pump*, Rev. 0, July 15, 1999
 - 2S-192, *Routine Gas Bottle Changeouts in the 222-S Complex*, November 30, 1999
 - 2S-284, *Receipt of AW-101 Grab Samples*, Rev. 0, June 21, 2000
 - 2T-87, *Size Reduction of Waste Using Power Tools in 221-T*, Rev. 0, February 25, 2000
 - 2T-101, *PUREX Tower T-C3-1 Disposal*, Rev. 0, April 26, 2000
 - 2T-102, *PUREX Tower T-G2 Disposal*, Rev. 0, May 2, 2000
 - 2T-111, *Verify and Repackage Sample Returns at Treatment*, Rev. 0, June 14, 2000
 - 2T-87, *Size Reduction of Waste Using Power Tools in 221T*, Rev. 0, February 25, 2000
 - 31-55, *Deactivate PS & RPS PH, Conductivity & Flow Monit*, January 12, 2000
 - 4F-252, *451A Outage for PMP's and Corrective Maintenance*, March 27, 2000

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- 4F-326, *Freight Elevator Safety Shoe Not Working*, Rev. 0, June 7, 2000
- 4F-330, *Special Transformer Oil Testing*, June 8, 2000
- 4F-98-2383/W (pre-screen), *Evaluate Potential Oil Leaks on E-20, E-22, and E-23* (not dated)
- AJHA Historical Record Review
- AJHA Report, AJHA ID: 2Z1362, Facility 2Z, May 25, 2000
- AJHA Team meeting minutes, June 14, 2000
- ASP-100, *Analytical Services Policies*
 - Section 4.6, “AS Integrated Safety and Management Roles, Responsibilities, and Functions,” Rev. 0, May 23, 2000
 - Section 6.3, “Safety and Health,” Rev. 0, May 23, 2000
 - Section 1.13, “Health and Safety Self-Inspection,” Rev. 3, January 20, 2000
- ASP-200, *Analytical Services Procedures*
 - Section 3.1, “Work Management,” Rev. 5, June 8, 2000
 - Section 4.10, “Occupational Medical Qualification and Monitoring,” Rev. 1, June 20, 2000
- Analytical Services Discipline Lead Roles and Responsibilities, Functional Area: Fire Protection, May 17, 2000
- Analytical Services Discipline Lead Roles and Responsibilities, Functional Area: OS&H, May 17, 2000
- *Automated Job Hazard Analysis Configuration Management Plan*, Rev. 2, April 26, 2000
- Annual Facility Safety Inspection Checklist for Building 327, November 30, 1999
- Brochure, *Employee Concerns Program*, April 2000
- DO-020-016, *Treatment Facility Laundry Handling*, Rev. E-4, August 26, 1999
- DO-020-040, *Enter and Exit 221-T Canyon*, Rev. F-6, August 26, 1999
- DO-020-047, *Treatment Facility Respirator Control*, Rev. B-1, September 9, 1999
- DO-020-050, *Removal of Rodent and Bird Excrement*, Rev. A-3, April 10, 2000
- DO-020-063, *PUREX Tower T-G2 Disposal*, Rev. A-0, May 9, 2000
- DO-021-030, *Operate Portable Exhauster*, Rev. C-2, October 27, 1999
- DO-100-022, *Package Low-Level Waste at Treatment Facility*, Rev. E-2, April 5, 2000
- DO-100-035, *Verify and Repackage Waste at Treatment Facility*, Rev. B-6, September 15, 1999
- *Drill Scenario*, Drill Number EP19B, no date
- EL-18011, *Leeds and Northrup Model 7082 pH Analyzer/Controller*, Rev. 3
- Employee Job Task Analysis (EJTA) records (25)
- EO-020-001, *WESF Hot Cell Combustible Material Inventory*, Rev. A, Mod. 0, February 17, 2000
- EO-100-003, *Perform Process Cell Transfers*, Rev. E-0, November 9, 1999
- EO-908-002, *Remove and Install Manipulators*, Rev. E-0, April 25, 2000
- EO-908-003, *Decontaminate Manipulator*, Rev. E-0, March 22, 1999
- Electronic Message PFP-LL-00-007, *Work Package 2Z-00-546/P Verify Furnace Parameters*, from D. G. Tucker, FH, to W. J. Leonard, FH, May 1, 2000

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- Electronic Message, *Minutes of AJHA Team Meeting*, from G. J. Gottfried, FH to AJHA POC/Administrators, June 15, 2000
- Electronic Message, *Wellness Assessment Report*, from G. A. Aldridge, FH, to A. B. Gibson, FH, April 14, 2000
- Electronic Message, *PFP Drill Critique Report EP 16F, 05/30/00*, from J. E. Loran, FH, to W. J. Leonard, FH, June 8, 2000
- Electronic Message, *Release of 4.0.13 on 5/3/2000*, from M. B. Jaeger, FH, to A. W. Lilly, FH, May 2, 2000
- EJTA (26)
- Engineering Change Notices (ECN)
 - ECN 643470, *NaOH PD/CACN 101720 COA AJ60*, October 19, 1999
 - ECN 656290, *324 Project/101022/AJ60/HMK40011 Deact PS & RPS Effluent Mon System*, June 13, 2000
- EP-FIRE-002, *300 LEF Drill Evaluation Critique, Fire at 310*, May 22, 2000
- Fast Flux Test Facility (FFTF) Administrative Procedure
 - A-28, *FFTF Work Management Process*, Rev. 13, June 15, 2000
 - Appendix A, "Approval Designators, Additional Approvals, Essential Systems"
 - Appendix B, "Work Package Preparation (missing?)"
 - Appendix E, "Approved Justifications For Working On or Near Energized Parts"
 - Appendix F, "Fix It Now Team"
 - Appendix I, "AJHA Process and Safety Information"
 - Appendix Z, "Fire Zone Isolation and Hotwork Permits"
 - A-47, "FFTF Hazard Communication and Chemical Management," Rev. 1, December 2, 1999
- *FFTF Procedure Administration*, Rev. 10D, January 26, 1998
- FFTF Safety Assignments, Letter of January 3, 2000
- FO-100-001, *Clean-Up of Biologically Contaminated Areas, 200 Area Deactivation Project*, June 2000
- FSP-FFTF-IP-0759, *FFTF Maintenance Administration Procedures Manual*, Section 14.1, "FFTF/FMEF Maintenance Facility Condition Inspection," Rev. 2, Release 17, June 15, 2000
- FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual*
 - Section 2.2.10, "FFTF Safety Manager," Rev. 2, November 20, 1998
 - Section 4.0, "Safety Administration," Rev. 3, February 5, 1999
 - Section 18.0, "Qualification Requirements for FFTF Project Personnel," Rev. 3, April 15, 2000
- FSP-FFTF-TRNG-0329, *400 Area Training Plan*, Section 9.0, "Technical Support Staff Training Program," Rev. 0, December 1, 1997
- FSP-FSS-5-35, *Fuel Supply Shutdown Project Control Manual*, Release 56, June 14, 2000
- FSP-PFP-0821, *Conduct of Operations*, Chapter 2, "Shift Routines and Operating Practices," Rev. 8, June 7, 2000

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- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vol. 1
 - “Building Emergency Plan for Plutonium Finishing Plant Complex,” Rev. 11, June 6, 2000
 - Introduction, “PFP Integrated Environment, Safety and Health Management System Description,” Rev. 4, April 17, 2000
 - Section B, “Nuclear Materials Stabilization Project-Key Functions and Responsibilities,” Rev. 8, Chapter 1, May 23, 2000
 - Section 2.27, “Senior Supervisory Watch Program,” Rev. 9, April 3, 2000
 - Section 3.7, “Fire Protection System,” Rev. 10, March 24, 2000
 - Section 3.13, “Written Hazard Communication Program,” Rev. 9, February 22, 2000
 - Section 3.23, “Injury, Illness, and Accident Notifications/Followup,” Rev. 3, April 25, 2000
 - Section 3.25, “PFP BloodBorne Pathogens Exposure Control Plan,” Rev. 0, April 7, 2000
 - Section 6.3, “Person-In-Charge (PIC),” Rev. 3, April 5, 2000
- FH Voluntary Protection Program Strategic Path Forward, Action Plan, and Schedule
- HNF-4361, *PHMC Expectations for Worker Involvement*, Rev. 0, April 28, 1999
- HNF-5053, *Policy for Environment, Safety, and Health*, Rev. 2, October 18, 1999
- HNF-MD-6410, *Fluor Hanford Issue Management Systems*, Rev. 0, May 19, 2000
- HNF-MP-001, *Fluor Hanford Management Plan*, Rev. 2, February 25, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor ISMS Description”
 - Appendix G, “Fast Flux Test Facility ISMS Description”
 - Appendix H, “Analytical Services ISMS Description”
- HNF-POL-EMPLOY, *Employee Training Policy*, May 16, 1997
- HNF-POL-OPEN, *Open Door Policy*, May 16, 1997
- HNF-POL-ZERO, *Zero Tolerance for Retaliation Policy*, Rev. 0, May 16, 1997
- HNF-PRO-052, *Corrective Action Management*, Rev. 4, April 15, 2000
- HNF-PRO-079, *Job Hazard Analysis*, Rev. 5, May 5, 2000
- HNF-PRO-080, *Worksite First Aid*, Rev. 2, May 22, 2000
- HNF-PRO-103, *Control of Working Hours and Working Alone*, Rev. 1, April 31, 1999
- HNF-PRO-111, *Occupational Medical Qualification and Monitoring*, Rev. 0, July 1, 1997
- HNF-PRO-4616, *Supervision of Field Work Activities*, Rev. 3, January 27, 2000
- HNF-SD-PRP-HA-002, *PFP Hazards Assessment*, Rev. 4, May 18, 2000
- Hanford Site Occurrence Notification Center, Daily Activity Report, June 15-16, 2000
- Health and Safety Self-Inspection Report (for May inspection)
- History Report, Summary of Training (7)
- LO-090-101, *222-S Laboratory Sample Receiving and Custodianship*, Rev. U-0, November 5, 1999

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- LO-150-150, *Neutron Source Transfers for the Californium Activation Analysis Facility*, Rev. B-0, June 8, 2000
- LO-161-172, *Perform Complex 11A Hot Cell Operation*, Rev. K-4, April 3, 2000
- PACR-00-0061, 340-SV-002, *Performance 340 Facility Surveillance*, Rev. A-9, May 31, 2000
- PACR-00-0061, 340-SV-004, *Facility Hazardous Mixed Waste Storage and Construction and Diverted Inspection*, Rev. A-4, May 31, 2000
- PFP-LL-00-002, *Work Controls for Duct Level Scaffolding Work*, February 11, 2000
- PFP-LL-00-009, *Work Sequence Plan Not Properly Incorporated Into Work Package*, June 2, 2000
- PFP-LL-00-010, *DRAFT, UPS Short Circuits During Routine Maintenance Work*, June 13, 2000
- PMP-11A-E01, *Inspection and Test of Substation 451A (Deenergized)*, April 18, 1983
- *Plutonium Finishing Plant, 234-2Z Work Plan, 2Z-00-00474/M, Perform Process Water Tie-In In Support of Mg(OH)₂ Project*, June 15, 2000
- Policy on Environment, Safety, Health, and Quality
- Position Training Plan Position Descriptions (6)
- Position Training Reports (8)
- RCP-MD-001, *River Corridor Project (RCP) Roles, Responsibilities and Functions*, Rev. 1, May 19, 2000
- RCP-MD-002, *Establishment of the River Corridor Project Champions Program for Conduct of Operations*, Rev. 0, May 22, 2000
- RCP-MD-004, *Personnel Authorized to Lead Critiques at River Corridor Project Facilities*, Rev. 0, May 22, 2000
- RCP-MD-007, *River Corridor Project Administrative Procedure Transition Plan*, Rev. 0, April 21, 2000
- RCP-PRO-002, *Training Development and Administration*, Rev. 0, June 12, 2000
- RCP-PRO-004, *Emergency Preparedness Program*, Rev. 0, May 25, 2000
- RCP-PRO-005, *Occurrence/Emergency Notification*, Rev. 0, May 22, 2000
- RCP-PRO-006, *Notification, Investigation and Case Management*, Rev. 0, May 22, 2000
- RCP-PRO-007, *Enhanced ALARA Committee/Subcommittee*, Rev. 0, May 22, 2000
- RCP-PRO-017, *Subcontractor Safety and Health Oversight*, Rev. 0, June 12, 2000
- RCP ZAC meeting minutes
 - May 25, 2000
 - June 22, 2000
- SHN-00-008, *Expectations for 327 Deactivation Project*, Fluor Global Services, April 10, 2000
- Training Plan Number 071946, *Safety Engineer Training Program*
- Video, *All Employee Meeting, 324 Building Deactivation Project*
 - May 11, 2000
 - June, 8, 2000
- W1-00-00125/M, *Remove Master and Slave Arms for GB 201/401*, June 16, 2000

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- WMP-200, *Waste Management Project Procedures*
 - Section 1.13, “Health and Safety Self-Inspection Program,” Rev. 3, January 20, 2000
 - Section 3.5, “Subcontractor Project and Construction Work,” Rev. 2, October 28, 1999
 - Section 3.6, “Hoist and Rigging Program,” Rev. 1, March 26, 1998
 - Section 3.9, “Bloodborne Pathogens Exposure Control Plan,” Rev. 0, April 3, 1998
 - Section 4.1, “Hazard Communication and Carcinogen Control Program,” Rev. 0, June 30, 1998
 - Section 4.2, “Investigation of Abnormal Findings from Medical Surveillance Examinations,” Rev. 0, October 12, 1999
 - Section 4.8, “Chemical Management,” Rev. 0, October 28, 1999
- WMP 342, *Solid Waste Storage and Disposal Procedures*, Section 2.2, “Construction Project Safety Oversight,” Rev. 0, February 17, 2000
- WMP-390, *WMH Occupational Health and Safety Training Program Description*, Section 1.4, “Training Procedures,” Rev. 1, November 18, 1999
- Waste Management Federal Services of Hanford Inc., Job Requirements for Safety Engineer, September 20, 1999
- Waste Management Training Program, *Waste Management Project Safety Engineer Qualification Card #300511*, Rev. 1, February 2000
- Work Document, *31-99-00651/M Modification, Deactivate PS & RPS PH & Conductivity Monitors*, June 20, 2000
- ZAC meeting minutes, May 31, 2000.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Chemist
- Field Work Supervisor (FWS) (2)
- Fire Protection Engineer
- Health and Safety Engineer
- Health Physics Technician
- Hot Cell Operator
- Instrument Specialist
- Lead Planner
- Lead, Operations
- Manager, Operations
- Manager, Project Support
- Millwright
- Pipefitter (2)
- Safety Discipline Lead.

Observations

- 222-S Laboratory Maintenance Turnover Meeting, June 21, 2000
- 222-S Laboratory Safety Council Meeting, June 21, 2000
- EJTA reviews/updates, June 21, 2000
- Pre-job for 2S-00-00282/W, Install/Calibrate New Balances in 11A Hot Cells, June 21, 2000
- AJHA Session for AJHA ID: 2S-284, *Receipt of AW-101 Grab Sample*, June 21, 2000
- Morning Plan of the Day meeting, June 22, 2000
- Routine Gas Bottle Changeout, 2S-00-00026/4, June 22, 2000
- Field walkdown to resolve outstanding fire protection issues, June 22, 2000
- Install/Calibrate New Balances in 11A Hot Cells, 2S-00-00282/W, June 22, 2000
- Routine Hot Cell Clean-out, June 22, 2000
- Field walkdown for identifying work scope, June 22, 2000
- EJTA reviews/updates, June 22, 2000
- Recovery/lessons learned for "Install/Calibrate New Balances in 11A Hot Cells," June 22, 2000.

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Discussion of Results

Criterion 1: *Procedures and/or mechanisms for OS&H areas require adequate planning of individual work items to ensure that hazards are analyzed and controls are implemented.*

ASP uses a number of procedures and mechanisms to ensure that occupational safety and health hazards are analyzed and controls are implemented. The AJHA is the primary tool used to evaluate hazards and develop controls before performing work. Although designed for medium- and high-risk/complexity work, ASP uses the AJHA process for nearly all work activities. Even when the pre-screening process indicates that a "full blown" AJHA is not needed, the AJHA is still used as a tool for identifying hazards and developing controls. ASP-200, *Analytical Services Procedures*, Section 3.1, "Work Management," implements the ISM guiding principle of worker involvement by directing the involvement of the appropriate workers in preparing for work including planning, hazards identification, and implementation of controls to ensure readiness to perform work. Extensive employee involvement in hazard identification and corrective actions is evident. "Teams" composed of the planner, Subject Matter Experts (SME), and craft routinely walkdown proposed work scopes to evaluate potential hazards and appropriate controls. Several examples were observed or provided in interviews where workers were responsible for identifying safety and health concerns and then following the process through by proposing appropriate controls, designing and constructing engineered controls, helping to develop administrative controls, etc. **(ASP SME.2-1)**

Other tools used for identifying hazards and implementing controls include the EJTA program. In implementing this Hanford Site-wide tool, ASP further stipulates that the EJTA is to be reviewed whenever an employee receives notification that they are scheduled by the Hanford Environmental Health Foundation (HEHF) for a physical. This review ensures the EJTA is updated and that the information upon which medical decisions are made is appropriate. Observation of actual updates and review of additional EJTA's verified effectiveness of implementation. Another tool used extensively at ASP to identify and analyze hazards is the extensive use of digital photographs to record and communicate hazards. These photos allow additional persons to observe conditions without unnecessary personal exposure. ASP is in the process of developing a shared drive so that all digital photos are stored and accessible from a common area.

FH and ASP procedures and mechanisms for OS&H are adequate for planning individual work activities and for ensuring hazards are analyzed and controls are implemented.

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Criterion 2: *Procedures and/or mechanisms for OS&H areas contain clear roles and responsibilities. OS&H is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

Procedures and mechanisms for implementation of the guiding principles of "Line management is responsible for safety," and "Clear roles and responsibilities are defined" are documented in the HNF-MP-003, *Integrated Environment, Safety, and Health Management System Description*, including the ASP ISM System Description (Appendix H). The ASP "Policy on Environment, Safety, Health, and Quality (ESH&Q)" was posted on Safety Information bulletin boards. Specific roles and responsibilities for safety and health are developed and individuals are aware of them. All interviewees (workers and management) indicated they were aware of the role of safety and health professionals. They also indicated that safety (in reality) started with them, that they were responsible for identifying and communicating hazards, stopping work when they felt it was unsafe, and providing feedback concerning the adequacy of controls. Safety and health roles for individuals were observed being communicated and reinforced through a number of mechanisms such as morning work group meetings, AJHA development sessions, and pre-jobs. It was clear from interviews and observations that management was actively involved and responsible for maintaining safety. Resource support is provided for activities such as AJHA development and work planning activities. Management ownership is also demonstrated by its participation in activities such as the Employee Safety Council and safety and health self-assessments.

Safety and health is effectively integrated with line-support managers to ensure that line managers are responsible for safety. FH procedures and mechanisms, along with ASP procedures and mechanisms, adequately define roles and responsibilities for OS&H areas.

Criterion 3: *Procedures and/or mechanisms for OS&H require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

The predominant means of developing hazard controls is through worker involvement in AJHA development sessions. Other mechanisms include employee involvement in walking down/validating proposed procedures or work packages, surveys, and mock-up training. Controls are then written into the work procedures. This appears to be successful in prescribing and implementing appropriate controls. Pre-job briefings are used not only as the means to communicate hazards and controls prior to conducting an activity, but also as an additional opportunity to validate that workers understand the hazards and controls. ASP-200, Section 3.1 directs the PIC/FWS to ensure that the controls identified through the hazard analysis are in place prior to initiation of work activities. During observed pre-jobs, this was accomplished. An excellent example of using mock-up training to validate that controls are effectively integrated and readiness is confirmed prior to performing work was recently demonstrated in preparing for "Neutron Source Transfers for the Californium Activation Analysis Facility." As a result of the mock-up, not only were a number of improvements made in the procedure, but valuable experience was gained (the procedure had not been performed in 13 years) and it became apparent that further mock-up training involving the crane crew was needed.

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Controls are integrated into the work review process, following the process outlined by the FH System Description (HNF-MP-003). This guidance includes using a graded approach based upon level of risk and complexity, and includes a signature approval process. Field observation showed personnel properly using Personal Protective Equipment and following procedures or other work guidelines. During work involving "Install/Calibrate New Balances in 11A Hot Cells," work was stopped when radiological conditions exceeded expected levels listed in the Radiological Work Permit. This was recognized by the work team, conditions were stabilized, the team regrouped, and appropriate steps were taken to modify the work package so that recovery and continued work could be accomplished.

A sampling of records and observations show that procedures and/or mechanisms for OS&H are being implemented and these controls are effectively incorporated prior to performing any work. The execution of the procedures and mechanisms allows several opportunities for workers and SMEs to be involved in work planning.

Criterion 4: *Procedures and/or mechanisms for OS&H require that personnel who are assigned to the subject area have a satisfactory level of competence.*

Several procedures and mechanisms are used to ensure that personnel assigned roles and responsibilities for OS&H have a satisfactory level of competence. For Safety and Health professionals, this starts with the hiring process where minimum expectations concerning education, training, and experience are included. Competency is also evaluated on a continual basis based upon close observation of performance. Although Waste Management Project (WMP) procedure WMP-390 (adopted by ASP) outlines an OS&H training/qualification program, this program description has not been fully implemented. **(ASP SME.2-2)** A process for establishing Qualification Cards has not been formalized and Safety and Health personnel are unaware of the existence of any documentation of equivalency. However, based upon observations, procedure reviews, and interviews, this is not a performance issue. OS&H professionals are competent and aware of their knowledge strengths and weaknesses. Safety and Health resources are shared to compensate for lack of specific area expertise.

Concerning competency of the workers to perform activities, training requirements/qualifications are incorporated into the work planning process and implemented through mechanisms such as permits, AJHAs, Job Safety Analyses, lockouts/tagouts, and Radiological Work Permits. ASP-200, Section 3.1 directs the PIC/ FWS to ensure workers are knowledgeable of work instructions and that competence is commensurate with responsibilities. This was observed during all the pre-jobs and work activities observed. Competency was observed during field observations and interviews. Interviews indicated that subcontractors were held to the same requirements.

A combination of procedures and mechanisms are implemented to ensure personnel who are assigned OS&H responsibilities have a satisfactory level of competence.

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Criterion 5: *Procedures and/or mechanisms for OS&H require that within the subject area, feedback and continuous improvement occur.*

Feedback mechanisms listed in the FH ISM System Description (HNF-MP-003) that lead to continuous improvement were found implemented. Informally, workers were routinely observed discussing among themselves what worked and what didn't on previous attempts at the same work. Feedback is formalized by providing written comments for procedures and work packages so that information is fed back to the planner who then ensures that the appropriate persons receive feedback. Interviews with workers revealed numerous examples of hazards they had identified and of resulting improvements. Examples included modification of equipment used during manipulator repair work to improve stability of the platform; procurement of a better-designed compressed gas bottle moving equipment; installation of rubber mats at compressed gas bottle storage locations to eliminate the problem of sitting in standing water; erection of temporary sun screens to keep compressed gas bottles out of direct sunlight until a permanent wall can be erected; and installation of permanently installed railing, ladders, work platforms and moving access points for fall protection. **(ASP SME.2-1)** Additionally, the health and safety self-inspection program is used to identify needed safety improvements. That process is established and well implemented.

FH and ASP procedures and mechanisms for feedback and continuous improvement are effectively implemented.

Conclusion

Based upon record reviews, interviews, and work observations, the implementation of the criterion is sufficient and this objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Crane and Rigging Team Lead
- Electrical Team Lead
- Electricians (3)
- Persons in Charge/FWSs (3)
- Health Physics Technician
- Industrial Hygienist
- Ironworker
- Maintenance Manager
- Maintenance Support Manager
- Mechanical Crafts Manager
- Pipefitter
- Power Operator Team Lead
- Quality Control
- Safety Engineer
- Safety Lead
- Vendor (Montgomery Kone Elevator Service).

Observations

- Plan of the Day meeting, June 26, 2000
- Field Walk Down for Heater Electrical Inspection (4F-00876/W), June 26, 2000
- AJHA Development (AJHA ID: 4F-342) for J-3 Building Scaffolding for heat, ventilation, and air conditioning (HVAC) Inspection, June 26, 2000
- Field Work, 4F-99-00471, *Evaluate and Install Emergency Lighting ICCW*, June 26, 2000
- Field Walkdown for J-3, *PA-106 In Cell 242 Painfully Loud, Adjust*, June 26, 2000
- Field Work, *Perform PMP-23J-R02 On R-1 At 8,000*, June 26, 2000
- Field Work, 4F-SC-051-9, *Annual DHX Isolation Valve Comp/SISI Test*, June 26, 2000
- Plan of the Day meeting, June 27, 2000
- Employee Safety meeting, June 27, 2000
- Pre-job, 4F-99-01132/W, *Joy Blower 480V Connection Plate Problems*, June 27, 2000
- Pre-job and field work, 4M-99-0061/W, *Freight Elevator Safety Shoe Not Working*, June 27, 2000
- Pre-job and field work, 4M-00-00015/P, *Elevator Third Party Inspection (6 Month)*, June 27, 2000.

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Discussion of Results

Criterion 1: *Procedures and/or mechanisms for OS&H areas require adequate planning of individual work items to ensure that hazards are analyzed and controls are implemented.*

FFTF uses a number of procedures and other mechanisms to ensure that OS&H hazards are analyzed and controls are implemented. The primary tool used for performing work is the AJHA process. The AJHA process is defined as the overall process of screening and then if required, the use of the AJHA software tool to identify hazards and develop controls. Based upon observations, reviews, and interviews, FFTF has implemented the HNF-PRO-079, *Job Hazard Analysis*, and recently modified their facility-specific guidance to provide additional guidance on use of a pre-screening form that helps determine the level of risk and complexity to facilitate making a determination on whether or not an AJHA is needed. The AJHA process is used for all FFTF work packages. Exceptions are procedures in administrative work packages that have their own review process. Other work activities, as determined by the FFTF Work Control Scheduling Manager, may be required to have an AJHA performed. Also, workers may request an AJHA if they believe it is warranted. In support of the AJHA process, individuals or work teams often perform field walkdowns to gain familiarity with the actual conditions prior to continuing with the work planning process. Employee involvement was observed for both field walkdowns and the AJHA process, with numerous positive inputs. For example, during a field walkdown and subsequent AJHA development session for scaffold erection, ironworkers queried the scope of work to be performed so that scaffolding would be sufficient to support the planned activities. Also discussed were potential concerns such as scaffold access requirements, fall protection, etc. At FFTF, interviews and observations indicated a concerted effort to have employees that will be performing the work to be involved starting with the planning process. A "safety matrix" in Appendix I of Administrative Procedure A-28, *FFTF Work Management Process*, implements a process that helps people communicate with the correct safety people while preparing their documents.

Reviews showed that OS&H hazards were being analyzed through the development and maintenance of baselines for the major facilities. Another tool for identifying, analyzing, and implementing controls is the EJTA program. EJTA's are initially developed for new employees by the Industrial Hygienist based upon existing EJTA's for personnel with similar exposures. The Industrial Hygienist indicated these "drafts" are then provided to the employee's manager who sits down with the employee to discuss it and propose any changes. Corrections are then provided back to IH for incorporation. Through a review of EJTA's and interviews, this process was verified.

Another mechanism observed for communicating and implementing hazard controls is the use of safety signage. An example of this is where noise dosimetry (both area and personnel) has shown areas to pose a noise hazard, these areas have been posted to reflect this and the appropriate stay times without the use of hearing protection. Observations supported worker adherence and sensitivity to safety signs. An example of this was demonstrated during a field walkdown to support an AJHA development, when the participants read a posted sign prior to

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entry that the existing oxygen monitor was inoperative and recognized the need to have oxygen monitoring provided.

FH, with FFTF procedures and mechanisms for OS&H areas, are adequate for planning individual work activities and for ensuring hazards are analyzed and controls are implemented.

Criterion 2: *Procedures and/or mechanisms for OS&H areas contain clear roles and responsibilities. OS&H is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

The FFTF ISM System Description (HNF-MP-003, Appendix G) clearly communicates the expectation that line management is responsible for ensuring work is planned and executed in a safe manner and in accordance with applicable requirements within their respective areas of operation. Implementation of this expectation was apparent with interviews and observations supporting the concept of management taking ownership for safety with a strong reliance on safety professionals as SMEs. All interviewees were aware of roles and responsibilities detailed in HNF-PROs, facility procedures, and job descriptions. Additionally, the Safety Team Lead has developed and distributed a list that outlines assigned responsibilities to the safety professionals (includes occupational safety, industrial hygiene, fire protection, and nuclear safety).

Safety and Health personnel are effectively integrated with line-support managers to ensure that line managers are responsible for safety. FH and FFTF policies, plans, procedures, and other mechanisms collectively ensure that roles and responsibilities are adequately defined and implemented for OS&H areas.

Criterion 3: *Procedures and/or mechanisms for OS&H require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Reviews indicated that FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual*, Section 4.0, "Safety Administration," implements Hanford Site procedural requirements and other government regulations. Per Administrative Procedure A-28, the formality and rigor of ensuring readiness and the level of operations authorization needed is based on the hazard and complexity of the work being performed. Controls are specified through the use of approval designators and the minimum approvals for work documents. A-28, Appendix I formalizes the review process and directs needed involvement of safety professionals in the review of activities and documents.

The pre-job briefing is touted in procedures and in interviews as the last confirmation of readiness before performing work activities and provides the work team with a collective understanding of the task to be completed, requirements for performing the task, identified hazards and environmental impacts, and necessary controls. A sampling of pre-jobs generally supported this belief. A positive example of this concept being implemented was observed during one pre-job when an employee who had not participated in the previous field walkdowns, AJHA, and work package development/review was not completely comfortable with their grasp of the workscope. After efforts by the team failed to resolve these concerns, the PIC elected to

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delay work until the employee had time to review the package and address/resolve any concerns or questions.

Another example is not positive. Members of the ISMS Verification Team observed one incident where a Quality Control Inspector apparently did not recognize a potential fall hazard even though fall hazards had been discussed as part of the pre-job. Although this potentially unsafe act was discussed with the individual following its taking place, evidence (footprints in the dust on top of dented stainless sheathing around sodium transfer piping) indicated that this was a recurring practice until curtailed later in the day.

The workscope of subcontractors was also found to receive the same level of scrutiny. In the observed activities with one vendor (Montgomery Kone Elevator Service), the employee participated in the pre-job and reviewed the facility work package and AJHA. The vendor's qualifications for authorized worker lock and tag had been verified the day before, and he was current with applicable Hanford Site requirements.

A sampling of records and observations show that procedures and mechanisms for implementing OS&H are indeed implemented and these controls are effectively incorporated prior to performing any work. The execution of the procedures and mechanisms allows several opportunities for workers and SMEs to be involved in work planning.

Criterion 4: *Procedures and/or mechanisms for OS&H require that personnel who are assigned to the subject area have a satisfactory level of competence.*

A number of procedures and other mechanisms observed are used for ensuring a satisfactory level of competence is established and maintained for OS&H professionals and others performing work or making decisions in this arena. Starting with the hiring process, minimum expectations concerning education, training, and experience are included. Competency is also evaluated on a continual basis based upon close observation of performance. Training requirements for Safety and Health personnel have been established and consistently implemented. **(FFTF SME.2-1)** FFTF has a formalized training program (Training Plan Number 071946, *Safety Engineer Training Program*) that includes extensive required reading. The Training Matrix (TMX) is consistent with these requirements and personnel are qualified and current. OS&H professionals are very competent. The current FFTF Safety staff is experienced both in their areas of expertise (industrial safety, industrial hygiene, fire protection, and nuclear safety) and the facility. The staff includes three certified safety professionals, a certified Industrial Hygienist, and a certified Health Physicist. Under the previous contractor, obtaining and maintaining professional certifications was encouraged through financial reimbursement for training and activities required for certification. This is not the policy of FH.

Based upon observation, interviews and document reviews, competency of the workers to perform activities, and training requirements/qualifications is adequately addressed and incorporated into work planning activities via prescribed mechanisms such as permits, AJHAs, Job Safety Analyses, and procedures. Reviews substantiated that FFTF has proceduralized

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training requirements at all levels, with training requirements reviewed annually. When a worker's qualification or training lapses, a letter is prepared that is signed by both the employee and manager that delineates any job tasks the individual cannot perform until the training is complete. Lack of competency was not observed during field observations and interviews. Most of the work force at FFTF has been there for 20 years, performing the same type of work. Supervisors also use daily interface and observations to validate competency that goes beyond mental competency and includes physical abilities. As noted earlier, the training of vendors or subcontractors is also verified prior to conduct of work.

A combination of procedures and mechanisms are implemented to ensure personnel assigned OS&H responsibilities have a satisfactory level of competence.

Criterion 5: *Procedures and/or mechanisms for OS&H require that within the subject area, feedback and continuous improvement occur.*

Mechanisms for feedback and continuous improvement listed in HNF-MP-003, FH ISM System Description are implemented. Walkdowns were observed as a tool to provide feedback into work package development. The Monthly Safety and Housekeeping Checklist is used to conduct facility OS&H self-assessments. Issues identified are tracked to completion with deficiencies tracked in DTS. An excellent example of feedback being used for continuous improvement was demonstrated when based upon feedback from problems encountered with the HVAC system, the HVAC Systems Engineer elected to be pro-active and go out and see if the same problems existed with similar systems. Subsequently, a team was put together to walkdown the HVAC systems to determine how scaffolding could be erected to support the work scope. Post-jobs and J-5s are also used to provide feedback. The Employee ZAC is used to promulgate lessons learned, the status of employee safety concerns, and to highlight recent changes to Safety and Health procedures.

FH and FFTF procedures and mechanisms for feedback and continuous improvement are effectively implemented.

Conclusion

Based upon records reviewed, interviews, and observations, procedures and mechanisms for OS&H areas are in place and implementation is sufficient to meet the outlined criteria.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Acting Lead, Health and Safety
- Acting Manager, Near-Term Planning
- Cognizant Engineer
- Design Engineer
- Fire Safety Engineer
- Hanford Atomic Metal Trades Council Safety Representative
- Industrial Hygienist
- Industrial Safety Engineer (2)
- Instrumentation Technician
- Laboratory Lead
- Laboratory Worker (2)
- Manager, Plutonium Finishing Plant (PFP) Infrastructure Services
- Manager, Plutonium Process Support Labs
- Operator, Solid Waste
- Pipefitter
- Q-Shift Lead
- Q-Shift Nuclear Control Operator (2)
- Radiological Control Technician
- Team Lead, PFP Technical Services
- Work Planner/PIC.

Observations

- PFP ZAC meeting, June 14, 2000
- AJHA User Group meeting, June 14, 2000
- PIC Training, June 14, 2000
- AJHA Planning Meeting for 234-2Z Work Plan, 2Z-00-0047 4/M, *Perform Process Water Tie-In in Support of Mg(OH)₂ Project*, June 14, 2000
- AJHA of 291-Z, 2Z-1424, Room 506, June 14, 2000
- Safety Walkthrough, June 14, 2000.

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Discussion of Results

Criterion 1: *Procedures and/or mechanisms for OS&H areas require adequate planning of individual work items to ensure that hazards are analyzed and controls are implemented.*
(SME-2)

The FH and PFP procedures, policies, and plans collectively provide sufficient methods for ensuring that hazards are analyzed and controls are effectively implemented into the planning of work.

The AJHA software program (implemented in accordance with HNF-PRO-079) is the primary tool used to identify hazards and implement controls. Observations of AJHAs reveal that the application of the tool varies within the facility. However, interviews with SMEs, managers, workers, and review of AJHA reports indicate that despite the variation in the application of the tool, hazards analyzed and controls implemented are adequate.

An observation of an AJHA planning meeting demonstrated that the appropriate SMEs (i.e., Environmental, Safety and Health [ES&H] and Quality Assurance) are consulted prior to any work being performed. In addition, interviews with SMEs confirm that they are included and involved in the Job Hazard Analysis process. AJHA activities evaluated and interviews indicated there is a potential for misinterpretation of a hazard. For example, facilitators of the AJHA read only the hazard-tree statement and not the questions associated with the statement. This can cause a misinterpretation of the hazard. Therefore, sole reliance on the AJHA could result in missing and/or misidentifying hazards and inadequate controls. AJHA along with procedures, pre- and post-job reviews, walk downs, supervision, and teamwork assures that work is well planned and safely performed. However, continual AJHA education/training, periodic monitoring of AJHAs, and wide dissemination of AJHA changes/improvements will provide greater assurance that the process is efficient and effective. Sampling of the AJHA and efforts by the AJHA User Group indicate that the program is continuously developing and improving. Thus, there is room to improve the identification of hazards and the application of the process.
(NMS SME.2-4)

Workers that were interviewed stressed that through use of the various mechanisms to identify hazards, they are confident that adequate controls are identified and in place prior to work being performed. However, shift workers interviewed were concerned that the hazards associated with rotational shift work are not adequately addressed. A review of FH and PFP procedures and mechanisms used to identify hazards revealed that issues relevant to rotational shift work are not addressed. Therefore, as a best management practice, risks concerning rotating shift work (i.e., health hazards, safety hazards, family and social issues) should be acknowledged and appropriately addressed. In addition, shift workers should be represented at various forums that discuss safety and health issues. (NMS SME.2-5)

Interviews with workers and observations of meetings indicate strong teamwork. Personnel clearly understood the importance of doing the job safely and working together as a team.

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Management and work commitment is also strong. Team approach for work planning and identification and evaluation of risks is evident and admirable. (NMS SME.2-3)

Interviews and observations show that operational controls are well implemented in accordance with established procedures and/or mechanisms. There is evidence that safety and health considerations are a priority whenever work activities are being planned or performed and that controls are tailored to the work.

FH and PFP procedures and mechanisms for occupational safety and health areas are adequate for planning individual work items and for ensuring hazards are analyzed and controls are implemented.

Criterion 2: *Procedures and/or mechanisms for OS&H areas contain clear roles and responsibilities. OS&H is effectively integrated with line-support managers to ensure that line managers are responsible for safety.* (SME-2)

Roles and responsibilities for occupational safety and health are addressed in various FH and PFP procedures, policies, and plans. Roles and responsibilities in FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, coupled with HNF-MP-003, adequately describe safety and health roles and responsibilities. Discussions with workers and managers signify that they understand and implement these procedures.

Discussions with safety and health staff confirm that line managers demonstrate responsibility and accountability for the safe performance of work. For example, through the Senior Supervisory Watch, the Senior Director for the NMS Project and other managers perform regularly scheduled walk-throughs of the PFP. This program demonstrates top management's commitment to accepting their role and responsibility for safety.

Management and workers have good knowledge and understanding of the ISM guiding principles. Personnel effectively reference the implementation of the ISM as fundamental in the performance of work and in the operation of the facility. Thus, implementation of ISM at the activity level is reflected in the culture of the facility. This widespread awareness and acceptance of ISM is noticeable throughout the facility. (NMS SME.2-1)

Interviews with line-support managers indicate that they understand their roles and responsibilities pertaining to safety and the roles and responsibilities of the occupational safety and health support staff. This awareness ensures that line managers execute these functions when planning work.

Overall, personal accountability and willingness to assume responsibility for individual safety and the safety of others is exemplary and noteworthy. (NMS SME.2-2)

Safety and health is effectively integrated with line-support managers to ensure that line managers are responsible for safety. FH procedures and mechanisms, along with PFP

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procedures and mechanisms, adequately define roles and responsibilities for occupational safety and health areas.

Criterion 3: *Procedures and/or mechanisms for OS&H require controls to be implemented that these controls are effectively integrated, and readiness is confirmed prior to performing work. (SME-2)*

FH and PFP planned implemented in accordance with FSP-PFP-0821, *PFP Conduct of Operations* and FSP-PFP-5-8 apply a graded approach to planning work. In addition, there are numerous FH and PFP procedures and mechanisms for occupational safety and health that are being applied to ensure controls to mitigate hazards are identified and effectively integrated prior to work being performed. Workers and managers interviewed are familiar with the various procedures and mechanisms required and available to identify and mitigate hazards.

A sampling of records and observations show that procedures and mechanisms for occupational safety and health are being implemented and these controls are effectively incorporated prior to performing any work. The execution of the procedures and/mechanisms allows several opportunities for workers and SMEs to be involved in work planning.

Criterion 4: *Procedures and/or mechanisms for OS&H require that personnel who are assigned to the subject area have a satisfactory level of competence. (SME-2)*

HNF-MP-011, *Qualification and Training Plan* and HNF-POL-EMPLOY, *Employee Training Policy* are the procedures that ensure personnel have the qualifications and training required to perform their jobs.

The Safety and Health staff is competent by reason of education, professional certifications, experience, and in the execution of their roles and responsibilities. The workers and managers have confidence in the competency of the safety and health staff and often seek their advice and assistance. This statement is supported by several remarks made by workers and managers during interviews. The SMEs for industrial hygiene and safety and fire protection maintain familiarity with all operations at the PFP by conducting and/or participating in walk-throughs, assessments, AJHAs, etc. This was also observed during walk-throughs of the facility with Safety and Health staff. Workers frequently approach safety and health staff and request assistance. Also, safety and health staff knowledge was noted during the industrial hygiene and safety presentations they conducted for PIC training. It is worth mentioning that one of the Safety and Health staff was nominated for employee of the month. These observations reveal employees trust the competency of the Safety and Health staff.

Procedures and/or mechanisms have been implemented to ensure personnel who are assigned occupational safety and health responsibilities have a satisfactory level of competence.

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Criterion 5: *Procedures and/or mechanisms for OS&H require that within the subject area, feedback and continuous improvement occur. (SME-2)*

There are informal and formal methods available to provide feedback and continuous improvement. These procedures and mechanisms are available to report any safety and health issue. Formal methods for lessons learned and feedback are addressed in several sections of FSP-PFP-5-8 and in HNF-PRO-052, *Corrective Action Management*. An example of an informal method is the Safety Logbooks that are strategically located in the PFP facility. Employees may enter any item in the logbook. A member of the safety and health staff frequently checks the logbooks for entries and later annotates the status of the item in the logbook. Also, entries from the logbooks are discussed at the ZAC meetings. In addition, the facility uses internal and external mechanisms for lessons learned and improvement. Feedback and continuous improvement is encouraged and used throughout the facility.

Review of a draft assessment report and a draft drill critique report show that personnel take a critical look at activities to develop lessons learned and areas for improvement. Interviews with workers show that managers willingly implement HNF-POL-OPEN, *Open Door Policy*. Workers feel comfortable that they can approach any level of management and candidly discuss safety and health issues without fear of reprisal.

PFP workers have clear authority to enforce Stop Work Authority. Based on interviews with workers and managers, staff have the authority to stop work as outlined in FSP-PFP-5-8 and HNF-PRO-4616, *Supervision of Field Work Activities*. Workers revealed that the Stop Work Authority is a strong, effective, and enforced program at PFP. This demonstrates management's commitment for employee empowerment and responsibility for safety and health. This authority is frequently communicated to workers and is effectively practiced.

The ZAC meetings are held regularly. Issues concerning workers on-the-job and off-the-job are discussed in ZAC meetings. ZAC meetings are also used as an avenue for workers to provide and obtain feedback and continuous improvement.

FH and PFP procedures and mechanisms for feedback and continuous improvement are effectively implemented. These procedures and mechanisms are utilized for reporting of safety and health issues.

Conclusion

Record reviews, interviews, and observations indicated the criteria have been implemented.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Electrician
- Engineer
- Exercise Specialist, HEHF
- Industrial Hygienist (2)
- Instrumentation Technician
- Manager, Area Deactivation Project/Fuel Supply Shutdown Project
- Manager, ES&H
- Manager/PIC
- Manipulator Operator
- Nuclear Control Operator (3)
- Operations Manager/PIC
- Operations Specialist
- Physician (D. O.), HEHF
- PIC/FWS
- Safety Specialist/Case Manager
- Services Team Manager, Building 327
- Waste Management Specialist.

Observations

- AJHA, *NaOH Dampeners*, June 21, 2000
- Cask Shipment, June 22, 2000
- HEHF Ergonomic Evaluation of Building 324, June 22, 2000
- AJHA Preplanning meeting, June 22, 2000
- AJHA, *242B Entry for Biohazard Cleanup*, June 22, 2000
- AJHA, *Deactivate PS/RPS Effluent Monitoring System*, June 26, 2000
- 310/340 ZAC meeting, June 26, 2000
- Building 327 All-Employee meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for OS&H areas require adequate planning of individual work items to ensure that hazards are analyzed and controls are implemented. (SME-2)*

RCP, project-specific, and FH procedures and mechanisms for OS&H areas are adequate for planning individual work items and for ensuring hazards are analyzed and controls are implemented.

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The AJHA software program, in accordance with HNF-PRO-079, is the primary tool used to identify hazards and implement controls. Observations of AJHAs and interviews with AJHA users reveal that the application of the tool varies within the RCP.

An observation of an AJHA Planning Meeting demonstrated that the appropriate SMEs, i.e., ES&H, waste management, are consulted prior to any work being performed. PICs interviewed mentioned that due to conflicts in scheduling, the appropriate persons required at an AJHA are not always available. Also, AJHAs observed were performed in areas with limited space, i.e., small offices. Therefore, not all attendees have an opportunity to view the AJHA screen on the computer monitor. At one AJHA meeting, copies of the AJHA report were provided to the participants. However, the participants, as a group, did not go through AJHA hazard identification.

At another AJHA meeting, a specific hazard, i.e., biohazard, was not included in the AJHA hazard tree. This hazard could have been entered in the "other" category; however, this was not done during the AJHA. Therefore, the identification of a biohazard would not show in the AJHA report. A procedure, specifically written to address the biohazard associated with the AJHA was provided to all participants at the AJHA preplanning meeting. However, in the AJHA there was no reference made to the new procedure.

AJHA activities evaluated and interviews indicate there is a potential for hazards to be omitted in the AJHA. Therefore, sole reliance on the AJHA could result in missing and/or misidentifying hazards and inadequate controls. AJHA along with procedures, pre- and post-job reviews, walkdowns, supervision, and teamwork assures that work is well planned and can be performed safely. However, continual AJHA education/training, periodic monitoring of AJHAs, and project-specific AJHA changes/improvements will provide greater assurance that the process is efficient and effective. Sampling of the AJHA and interviews conducted show that the program is continually developing and improving. There is still room for improvement in the identification of hazards and in the application of the process. **(RCP SME.2-1)**

FH, RCP, and project-specific procedures and mechanisms for OS&H areas are adequate for planning individual work items and for ensuring hazards are analyzed and controls are implemented.

Criterion 2: *Procedures and/or mechanisms for OS&H areas contain clear roles and responsibilities. OS&H is effectively integrated with line-support managers to ensure that line managers are responsible for safety. (SME-2)*

Roles and responsibilities for OS&H are addressed in various FH, RCP, and project-specific procedures, policies, and plans. Roles and responsibilities in RCP-MD-007, *River Corridor Project Administrative Procedure Transition Plan* coupled with HNF-MP-003, adequately describe Safety and Health roles and responsibilities. Discussions with workers and managers indicate they understand and implement these procedures.

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Discussions with various RCP staff reveal that line managers demonstrate responsibility and accountability for the safe performance of work. Managers frequently visit work sites to ensure the job is being safely performed. Also, interviews with managers and workers indicate satisfactory knowledge and understanding of the ISM guiding principles.

Interviews with line-support managers indicate they understand their roles and responsibilities pertaining to safety and the roles and responsibilities of the OS&H support staff. This awareness ensures that line managers execute these functions when planning work.

Safety and health is effectively integrated with line-support managers to ensure that line managers are responsible for safety. FH and RCP procedures/mechanisms, along with facility specific procedures/mechanisms roles and responsibilities for OS&H areas, are adequately defined.

Criterion 3: *Procedures and/or mechanisms for OS&H require controls to be implemented that these controls are effectively integrated, and readiness is confirmed prior to performing work. (SME-2)*

FH, RCP, and project-specific procedures and/or mechanisms are collectively being applied to ensure controls to mitigate hazards are identified and are effectively integrated prior to work being performed. Workers and managers interviewed are familiar with the various procedures and mechanisms required and available to identify and mitigate hazards.

A sampling of records and observations show that procedures and mechanisms for OS&H are being implemented and these controls are effectively incorporated prior to performing any work. The execution of the procedures and mechanisms allows several opportunities for workers and SMEs to be involved in work planning.

Controls required by FH, RCP, and individual projects are effectively integrated and readiness is confirmed prior to performing work.

Criterion 4: *Procedures and/or mechanisms for OS&H require that personnel who are assigned to the subject area have a satisfactory level of competence. (SME-2)*

The Safety and Health staff is competent by reason of education, professional certifications, experience, and in the execution of their roles and responsibilities. In general, the workers and managers interviewed stated they have confidence in the competency of the Safety and Health staff and seek their advice and assistance when needed. Conversations with Safety and Health staff and observations of their job performance support this conclusion.

FH and RCP procedures and/or mechanisms are implemented to ensure personnel assigned OS&H responsibilities have a satisfactory level of competence.

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Criterion 5: *Procedures and/or mechanisms for OS&H require that within the subject area, feedback and continuous improvement occur. (SME-2)*

FH, RCP, and facility-specific procedures and mechanisms for feedback and continuous improvement are effectively implemented at RCP. These procedures and mechanisms are utilized for reporting of Safety and Health issues.

There are informal and formal methods available to provide feedback and continuous improvement. These procedures and mechanisms are available to report any Safety and Health issues. Formal methods for lessons learned and feedback is addressed in several sections of RCP-MD-007 and in HNF-PRO-052, *Corrective Action Management*, and in project-specific procedures.

An example of an informal method is the Project Safety Logbooks that are strategically located within RCP facilities. Employees may enter any item in the logbook. A member of management and/or a safety logbook coordinator frequently check the logbooks for entries and later annotates the status of the item in the logbook.

Another example of a method for feedback is the All Employee Meetings for Building 324, Deactivation Project are videotaped. The purpose of videotaping the meetings is so that shift personnel and personnel who could not attend the meeting may view it at a later time. Safety and health topics, along with other pertinent information, are discussed at the All Employee Meetings. Videotaping pertinent meetings, particularly those addressing safety and health issues, is a strength and should be encouraged at other facilities. **(RCP SME.2-2)**

Conclusion

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Carpenter
- Electrician
- EJTA SME, FH
- FWS (2)
- Industrial Hygienist (3)
- Industrial Safety Professional (3)
- Instrument Technician
- Instrument/Electrical Team Lead
- Lead Millwright
- Lead, Central Waste Complex
- Manager, Safety
- Nuclear Control Operator (6)
- Operations Lead, Solid Waste Treatment (SWT)
- Operations Working Lead
- Planner
- Project Manager, Waste Encapsulation and Storage Facility (WESF)
- Radiological Control Technician (3)
- Truck Driver.

Observations

- Morning Turnover meeting, SWT, June 14, 2000
- Canyon Crew Morning meeting, SWT, June 14, 2000
- SWT Pre-job, sealing up low level waste box, June 14, 2000
- Routine work, loading waste drums for shipment (214-T), June 14, 2000
- AJHA development session for Verify and Repackage Sample Returns, *AJHA-2T-111*, June 14, 2000
- Hanford Fire Marshall Advisory Board meeting, June 14, 2000
- SWT Functional Review meeting, Safety, June 14, 2000
- SWT Pre-job, prepping low-level waste liner/tower, June 15, 2000
- Liquid Waste Processing Facility 14-day pH calibration, June 15, 2000
- Solid Waste Storage and Disposal Trench 29, movement of Transuranic drums to Central Waste Complex, June 15, 2000
- Waste Receiving and Processing (WRAP) Facility, Transuranic Package II post-job review, June 15, 2000
- Plan of the Day meeting, WESF, June 16, 2000
- Operations Morning meeting, WESF, June 16, 2000
- Clean-up of process cells, WESF, June 16, 2000

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- On-the-job training/on-the-job evaluation of forklift operator, June 16, 2000
- Morning Turnover meeting, WRAP Facility, June 19, 2000
- WRAP Facility Operations Staff meeting, June 19, 2000
- WRAP Facility Monthly Safety Self-Inspection Pre-job, June 19, 2000
- WRAP Facility Monthly Safety Self-Inspection, June 19, 2000
- AJHA WT-142 Session, *Remove Master/Slave Arms for GB-210/401*, June 19, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for OS&H areas require adequate planning of individual work items to ensure that hazards are analyzed and controls are implemented.*

Within WMP, a number of mechanisms were observed that are used to implement processes which identify, analyze, and control potential hazards. The predominant mechanism used is the AJHA. The AJHA process drives users to both identify and prescribe appropriate controls for identified, existing, or potential hazards. Although the process relies on the planner or someone else making the initial decision to invoke the use of the AJHA (and to determine participants), once initiated, the process has a built-in decision matrix that triggers the involvement and approval of appropriate SMEs. An example of this was witnessed at the WRAP Facility where the planner prescreened the activity to determine if an AJHA was needed. As part of this screen, input from SMEs such as Safety and Health, FWS, and craft personnel that would be involved was requested. Most facilities have elected to use the AJHA process for nearly all activities, even though it is only required by procedure at the site level for activities of high and medium risk or complexity. Across the board, employees are familiar not only with the use of AJHAs for identifying hazards and controls, but are also actively involved in the development of AJHAs. **(WMP SME.2-1)** The use of "standing AJHAs" for routine work is not as well institutionalized, but its use as a tool for ensuring hazards are analyzed and appropriately controlled is increasing. Although the AJHA process may require more resources up front, the predominant employee view (including management) is that to error on the side of safety. Use of the AJHA has also resulted in a much higher success rate in activities working the first time. This belief was supported by the practice of hard scheduling resources to participate in the evaluation. Additional efforts are often made to have the individual that will be performing the work be involved in the AJHA session.

Other positive mechanisms observed for hazard identification include establishment of safety and health baselines, field walkdowns, and self-assessments. These all incorporate employee involvement to some degree based upon the perceived level of risk and complexity.

(WMP SME.2-1) Particularly at SWD and SWT, aggressive sampling and monitoring programs have been initiated not only to develop baselines, but also to validate the effectiveness of hazard controls. Employee surveys have been conducted to obtain inputs from personnel concerning their perceived exposure to hazards and the effectiveness of controls. **(WMP SME.2-1)** Additional sampling and monitoring plans are being developed to address issues that are identified. The EJTA program provides another source of hazard identification. Based upon

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these reviews, appropriate hazard controls, sampling, and medical monitoring programs are established. Monitoring results are reviewed with the appropriate individuals. At SWT, a hard copy of what an employee indicated as "past exposures" is attached to file copies of the electronic EJTA so that past historical data (although not quantified) is not lost.

As part of the work planning process, a review of implementing procedures and work planning revealed appropriate addressal of potential hazards and prescribed controls. Material Safety Data Sheets were incorporated into work activities as appropriate. At Liquid Effluent Facility (LEF) and WRAP Facility, job walkdowns are performed before doing the AJHA. The use of a digital camera to record conditions is also useful in that it provides a means for others not able to participate to visualize the conditions without incurring additional exposure.

FH with WMP procedures and mechanisms for OS&H areas are adequate for planning individual work activities and for ensuring hazards are analyzed and controls are implemented.

Criterion 2: *Procedures and/or mechanisms for OS&H areas contain clear roles and responsibilities. OS&H is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

Within WMP, the role of the safety and health professional is to act as a resource with specific expertise for both management and the workers, identifying hazards, providing mentoring in hazard recognition, work planning, and developing hazard controls. Safety roles and responsibilities for all personnel are communicated using a number of mechanisms. Administratively, expectations concerning safety roles and responsibilities were observed to flow down from the FH-level of policies, directives, and procedures, through project and facility implementing procedures, and individual position descriptions. The WMP "Policy on Environment, Safety, Health, and Quality (ESH&Q)" was posted in its facilities. All interviewees indicated that safety started with each of them, that they were responsible for identifying and communicating hazards, stopping work when they felt it was unsafe, and providing feedback concerning the adequacy of controls. They were aware of both their roles and responsibilities, and those of the Safety and Health professionals. Other mechanisms used to convey roles and responsibilities include various morning work group meetings, pre-jobs, safety meetings, safety stand-downs, and required reading. The observed Morning Turnover Meetings demonstrated the incorporation of ISMS guiding principles. Management ownership for safety was reinforced, balancing of priorities, operations authorization, and worker assignments were discussed, and workers were actively involved and consulted for input to perform work safely.

Safety ownership by line management and the integration of OS&H, was demonstrated at all levels. Of particular note was the SWT Functional Review Meeting for Safety. Management involvement, support for, and grasp of safety concepts and issues was evident. This meeting was used to discuss safety-related issues, to status ongoing activities such as monitoring efforts or corrective actions, to determine sufficiency/allocation of resources, to make informed decisions, and to hold personnel accountable.

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Although the Safety and Health professionals are heavily relied upon for identifying hazards and requirements, analyzing hazards and implementing controls, and providing feedback and continuous improvement, the expectation is clear that all personnel are involved to some degree in this process and that management needs to be kept informed. Whether an activity is planned or considered routine, employees are expected to provide input that is tailored based upon the level of expertise or involvement in the activity. This expectation is actively demonstrated by the involvement of personnel in work planning and the conduct of self-assessments.

(WMP SME.2-1)

Safety and health is effectively integrated with line-support managers to ensure that line managers are responsible for safety. FH procedures and mechanisms, along with WMP procedures and mechanisms, adequately define roles and responsibilities for OS&H areas.

Criterion 3: *Procedures and/or mechanisms for OS&H require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work..*

The predominant means of developing hazard controls is through worker involvement in AJHA development sessions, employee involvement in walking down/validating proposed procedures or work packages, surveys, and mock-up training. This appears to be successful in prescribing and implementing appropriate controls. Pre-job briefings are used not only as the means to communicate hazards and controls prior to conducting an activity, but also as an additional opportunity to validate that workers understand the hazards and controls. During observed pre-jobs, worker involvement was apparent, and numerous beneficial discussions provided additional information concerning hazards and means of control based upon experience. Workers discussed issues such as hazards encountered during past performance of the activity or new hazards associated with changes in external conditions (warmer weather, snakes, insects) and necessary precautions. These discussions not only helped to elevate worker ownership and knowledge, but in isolated instances, this feedback resulted in a change of controls or conduct of work. **(WMP SME.2-1)** Field observations showed personnel properly using personal protective equipment and following procedures or other work guidelines. Monitoring is conducted to validate the effectiveness of controls.

Controls are integrated into the work review process, following the process outlined by the FH ISM System Description (HNF-MP-003). This guidance includes using a graded approach based upon risk and complexity, and includes a signature approval process. Safety and Health SMEs are required to review and concur with work planning efforts. The need for Safety and Health SMEs is automatic when using the AJHA process. Use of a permitting system also involves Safety and Health personnel as appropriate. In the past, mock-ups have been used to evaluate ability to conduct work as prescribed for high-risk type activities. This has proven to be very beneficial, resulting in changes that prevented unnecessary exposure and allowed the task to work the first time.

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The work scope of subcontractors also received this same level of scrutiny. Subcontractor task package documentation is reviewed to verify it provides adequate project controls in the areas of Safety and Health. Subcontractor Job Safety Analyses are reviewed/approved by WMP safety as part of this process. Prior to execution of subcontractor work, the subcontractor must go through the same work release procedures as the facility. Subcontractor work is evaluated and overseen by the facility and weekly joint walkdowns involving Safety and Health personnel from both sides are conducted for subcontractor construction work.

A sampling of records and observations show that procedures and/or mechanisms for OS&H are being implemented and these controls are effectively incorporated prior to performing any work. The execution of the procedures and mechanisms allows several opportunities for workers and SMEs to be involved in work planning.

Criterion 4: *Procedures and/or mechanisms for OS&H require that personnel who are assigned to the subject area have a satisfactory level of competence.*

A number of mechanisms reviewed are used for ensuring a satisfactory level of competence is established and maintained for OS&H professionals and others performing work or making decisions in this arena. Starting with the hiring process, minimum expectations concerning education, training, and experience are included. Competency is also evaluated on a continual basis based upon close observation of performance.

WMP procedure WMP-390, *WMH Occupational Health and Safety Training Program Description*, was reviewed and outlines a training/qualification program for its personnel. Section 1.4 addresses the OS&H Training Program and directs that "Candidates shall complete the mandatory training requirements listed in Table 1" and that "Candidates shall complete the additional training requirements as selected by their manager(s) from the list in Table 2. The selection will be documented in the Qualification Card."

Five of eleven TMXs for Safety and Health professionals reviewed did not incorporate all of the requirements listed by WMP-390, Section 1.4. Only one of seven TMXs for Safety Engineers listed the WMH Safety Engineer Qualification Card (Course 300511) as a training requirement, and the TMX showed the course as not complete. In the case of Fire Protection Engineers, WMH Fire Protection Engineer, (Course 300513) was listed as a required course, but was not shown as completed. None of the TMXs for health professionals listed Course 300513 as a requirement.

A review of TMXs for Safety and Health personnel with similar responsibilities showed an inconsistency as far as core requirements between facilities. Additionally, Table 2 in WMP-390, Section 1.4 appears to be missing standard type training such as asbestos awareness, electrical safety, and lock and tag. Based on this, it appears the establishment and implementation of training requirements for Safety and Health personnel is inconsistent. **(WMP SME.2-2)** However, based upon observations, procedure reviews, and interviews, there is no performance issue. OS&H professionals appear to be very competent and several maintain professional certifications. All are aware of any potential areas where they lack sufficient experience and

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would need assistance. Safety and Health resources are shared to compensate for lack of expertise. It was also noted that maintenance of Safety and Health professional certifications is at the individual's personal time and expense.

Based upon observations, interviews, and document reviews, competency of the workers to perform activities, training requirements/qualifications is adequately addressed and incorporated into work planning activities via prescribed mechanisms such as permits, AJHAs, Job Safety Analyses, and Radiological Work Permits. Heavy reliance is placed upon the PIC/FWS to make the decision if a worker is qualified. Sometimes this is done by verification of training records, yet normally it is based upon a close working relationship and reliance upon the employee to inform them if qualifications have lapsed. For those activities where failure to maintain qualifications could have serious consequences (such as respiratory protection) strict processes exist to verify training/qualifications prior to issuance of respiratory protection. Certain training requirements/qualifications are also tracked by the Access Control Entry System. Lack of competency was not observed during field observations and interviews. Interviews indicated that subcontractors were held to the same stringent requirements.

A combination of procedures and/or mechanisms are implemented to ensure personnel assigned OS&H responsibilities have a satisfactory level of competence.

Criterion 5: *Procedures and/or mechanisms for OS&H require that within the subject area, feedback and continuous improvement occur.*

Feedback mechanisms far exceeded what was described in the FH ISM System Description (HNF-MP-003). Numerous effective feedback mechanisms were observed that resulted in continuous improvement. Work planning for routine tasks has been written to allow workers to use skill of craft to make decisions on how best to proceed. Craft were observed discussing among themselves previous successes and failures prior to executing work activities and then applying lessons learned. Pre-jobs are used as an effective tool for identifying and analyzing hazards and requirements. Again, workers routinely discuss what worked and what didn't on previous attempts at the same work. During several pre-jobs, craft personnel made suggestions that improved the safety, efficiency, and quality of work. In one case, feedback was provided on the use of metal-backed paper to control contamination. While very effective indoors, during outside work the paper is very reflective and resulted in an unanticipated hazard, a sunburn. Post-jobs are being similarly used.

Self-assessments are used extensively to identify needed safety improvements. The process is well established and implemented. Based upon assessments, ladders were replaced at LEF and SWT. At SWT, replacement of caged ladders with stairs is being evaluated. At WESF, the facility has brought in outside resources, such as a team to evaluate National Electrical Code compliance and an Assist Visit from the Facility Evaluation Board, to evaluate OS&H compliance.

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The "Focus on Safety" survey is a successful tool not described in the FH ISM System Description (lower-level process). These surveys have been used effectively to gather input from employees regarding their perception of the state of the Safety and Health program. Employee-led safety councils are then tasked with evaluating these surveys and making recommendations to management for improvements. Other employee surveys have also been used to obtain feedback from workers regarding the types of hazard exposures they believe they are exposed to. Based on this information, additional avenues of communication are opened to discuss/resolve concerns. In some cases, this involves nothing more than providing additional information so that employees recognize there really is no hazard. In other cases, previously unrecognized hazards are identified or the determination is made that a need exists for additional monitoring or sampling so that the magnitude of the issue can be evaluated. Another tool not described in their system description is "Pre-job Folders." FWSs at SWT are developing these folders to include lessons learned and material from previous similar activities.

The WMP Monthly Safety Self-Inspection Program implements the FH expectation for safety inspections. It directs establishment of a schedule that ensures the entire facility is inspected on a quarterly basis, with a portion of the facility inspected each month. The inspection team consists of personnel representing management, bargaining unit, nonexempt, and exempt. Safety and Health professionals participate in these inspections and are assigned to mentor the participants in conducting the inspections. Observations/ discrepancies are then evaluated for corrective action or means of improvement. For example, at the WRAP Facility during the latest inspection, an employee identified the need to provide a designated storage area for a removable platform used to guard against pinch hazards. The current storage practice poses hazards in and of itself.

At LEF, feedback from an accident (acid spill) resulted in a number of improvement changes. For example, the location of safety shower was changed to facilitate access. An ECN/work package was written to provide heated water to the shower to minimize the potential for hypothermia and to encourage a chemically exposed person to remain in the shower. Changes were also made to improve lighting throughout the process area and piping locations were modified. Although not all recommendations from the accident review have been implemented, workers had to be satisfied that work was safe before operations resumed at LEF.

Another source of feedback and continuous improvement has been worker involvement in the employee-led safety councils. These are used to evaluate and prioritize safety concerns and communicate actions to the workers. Through interview and document review, a number of success stories were noted, such as obtaining mechanical devices to mitigate various ergonomic hazards (drum handling, etc.).

FH and WMP procedures and mechanisms for feedback and continuous improvement are effectively implemented.

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Conclusion

Based upon records reviewed, interviews, and observations, the implementation of the criterion is sufficient, and the objective has been met.

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Strengths:

- Extensive employee involvement in hazard identification and corrective actions is evident. **(ASP SME.2-1)**
- Training requirements for Safety and Health personnel have been established and consistently implemented. **(FFTF SME.2-1)**
- Widespread awareness and acceptance of ISM is noticeable throughout the facility. **(NMS SME.2-1)**
- Personal accountability and willingness to assume responsibility for their safety and the safety of others is exemplary and noteworthy. **(NMS SME.2-2)**
- Team approach for work planning and identification and evaluation of risks is evident and admirable. **(NMS SME.2-3)**
- Videotaping pertinent meetings, particularly those addressing safety and health issues, is a strength and should be encouraged at other facilities. **(RCP SME.2-2).**
- Strong employee involvement in hazard identification and development of controls was evident at WMP. **(WMP SME.2-1)**

Concerns:

- The Occupational Safety and Health Training Program Description has not been fully implemented. **(ASP SME.2-2)**
- Sampling of the Automated Job Hazard Analysis and efforts by the Automated Job Hazard Analysis User Group indicate that the program is continually developing and improving. Thus, there is room to improve the identification of hazards and the application of the process. **(NMS SME.2-4) (RCP SME.2-1)**
- As a best management practice, risks concerning rotating shift work (i.e., health hazards, safety hazards, family and social issues) should be acknowledged and appropriately addressed. In addition, shift workers should be represented at various forums that discuss safety and health issues. **(NMS SME.2-5)**
- Establishment and implementation of training requirements for Safety and Health personnel is inconsistent. **(WMP SME.2-2)**

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OBJECTIVE: **SME.2**
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Submitted:

Joyce Beck, Team A

Team Member

John Held, Team B

Team Member

Approved:

Joe (Ed) Parsons

Team Leader

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FUNCTIONAL AREA: Environmental Protection/Chemical Management	OBJECTIVE: SME.3 DATE: July 10, 2000
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OBJECTIVE

SME.3 - Environmental protection/chemical management. Within environmental protection/chemical management, work planning includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within environmental protection/chemical management, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. Environmental protection/chemical management are integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified. (HAZ)
2. Environmental protection/chemical management contains clear roles and responsibilities. The individual subject area is effectively integrated with line support managers to ensure that line managers are responsible for environmental protection requirements. (MGO.2, OP.1)
3. Environmental protection/chemical management requires controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work. (OP.1, OP.2)
4. Environmental protection/chemical management requires that personnel who are assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms are implemented to ensure environmental protection/chemical management requires that within the subject area, feedback and continuous improvement occurs, including subcontractor oversight.

Approach

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for environmental protection/chemical management at the facility or activity.
- Review any lessons learned that provide an opportunity to assess that lessons learned have been effectively used or implemented within environmental protection/chemical management.

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- Review the Chemical Management Implementation Plan and determine if the above criteria are being satisfied as a result of the implementation plan.
- Review personnel training records to determine if they meet competency standards.

Interviews

- Interview personnel and managers responsible for implementation of environmental protection/chemical management.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to environmental protection/chemical management to assess the level of competence.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis (such as a Radiological Work Permit or Job Hazard Analysis), or the approval process for an individual work item, which includes interactions with personnel of the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements.

Record Review

- 3M200-00-DLF-008, *Chemical Management Program at LWPF*, from D. L. Flyckt, WMH, to Distribution, WMH, February 24, 2000
- 3S200-00-RRC-006, *Fluor Hanford Project Interface Description for Waste Management Services Provided by the WS Program to the Solid Waste Treatment Project, Revision 0*, May 5, 2000, from R. R. Connolly, WMH, to Distribution, May 31, 2000
- ASP-GD-001, *Analytical Services Desk Instructions for Environmental Reviews*, Rev. 0, April 20, 2000
- ASP-100, *Analytical Services Policies*
 - Section 4.0, "Analytical Services Charter Description," Rev. 1, draft
 - Section 4.1, "Analytical Services Charters," Rev. 1, draft
 - Section 4.2, "Analytical Services Laboratory Charters," Rev. 1, draft
 - Section 4.3, "Analytical Services Programs and Functional Support Charters," Rev. 1, draft
 - Section 4.6, "Analytical Services (AS) Integrated Safety Management Roles and Responsibilities and Functions," Rev. 0, May 23, 2000

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- ASP-200, *Analytical Services Procedures*
 - Section 1.16, “Document Review and Approval,” Rev. 0, March 30, 2000
 - Section 3.1, “Work Management,” Rev. 5, June 8, 2000
 - Section 4.1, “Hazard Communication and Carcinogen Control Program,” Rev. 1, May 23, 2000
 - Section 6.1, “Waste Acceptance Program,” Rev. 1, June 12, 2000
- ASP-310, *Analytical Services Procedure Manual*
 - Section 1.16, “Resource Integration,” Rev. 1, January 14, 2000
 - Section 1.8, “Laboratory Procedures,” Rev. 2, January 14, 2000
 - Section 4.5, “The 222-S Chemical Hygiene Plan,” Rev. 0, May 4, 1998
- Automated Job Hazard Analysis (AJHA) Report 2Z-284, Rev.0, *PFP-97-RA-015, Sample Sump in 291-Z for Sludge*, December 30, 1998
- Chemical Management Inventory Log, Waste Encapsulation and Storage Facility (WESF)
- DI-PFP-ENV-002-01, *Nuclear Material Stabilization Environmental Desk Instruction*, Environmental Review Process, May 15, 2000
- Environmental Services Action Tracking Log, June 13, 2000, originator J. M. Stitt
- Fast Flux Test Facility (FFTF) Administrative Procedure
 - A-28, “FFTF Work Management Process,” Rev. 13, June 26, 2000
 - A-47, “FFTF Hazard Communication and Chemical Management,” Rev. 1
- FO-100-001, *Clean-Up of Biologically Contaminated Areas*, Rev. A, June 22, 2000
- FSP-3647, *200 Area Deactivation Project Administration*, Section WM-3, “Waste Information Data Systems (WIDS) Sites Management,” Rev. 0, June 2, 2000
- FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual Organization, Responsibilities, and Authority*
 - Section 2, “Organization, Responsibilities, and Authority,” Rev. 4, May 17, 2000
 - Section 7, “FFTF Lessons Learned”, Rev. 0, October 30, 1998
- FSP-PFP-5-8, *Plutonium Finishing Plant Administrative*, Vol. 2
 - Section 7.1, “Hazardous Material Management Plan/EPCRA 312 and 313,” Rev. 8, May 1, 2000
 - Section 13.4, “Work Management Process Description and Job Control System Process,” Rev. 21, March 6, 2000
- FSP-WESF-001, *WESF Project Administration*
 - Section MN-1, “Materials Management for Maintenance Activities,” Rev. 4, February 23, 2000
 - Section OH-3, “Controlling Procurement of Hazardous Material,” Rev. 2, June 02, 2000
- G011, *400 Area Data Collection and Reporting for SARA and EPCRA*, Rev. 0B, February 24, 2000
- G015, *400 Limited Area Hazardous Material/Waste Training Plan*, Rev. 1A
- HNF-IP-1264, *324/327 Facilities Stabilization Projects*
 - Section 6.1, “Waste Generation Management Plan,” Rev. 2, November 12, 1999
 - Section 4.1, “Job Control System Implementation,” Rev. 10, June 21, 2000

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- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor ISMS Description”
 - Appendix G, “Fast Flux Test Facility ISMS Description”
 - Appendix H, “Analytical Services ISMS Description”
- HNF-PRO-079, *Job Hazard Analysis*, Rev. 5, May 5, 2000
- HNF-PRO-233, *Review and Approval of Documents*, Rev. 0, September 30, 1999
- HNF-PRO-335, *Use and Control of Purchasing Card (P-Card)*, Rev. 4, July 29, 1999
- LA-325-106, *Mercury Analysis by Cold Vapor Atomic Absorption Using the FIAS-400*, Rev. A, Mod. 4, May 24, 2000
- LA-523-138, *Solvent Extraction of Solid Samples for Semi-Volatile and/or Pesticide and/or PCB Analysis*, Rev. B, Mod. 3, April 18, 2000
- LA-533-107, *Ion Chromatographic Analysis of Anion on DIONEX Model DX-500*, Rev/Mod. Rev. A, Mod. 0, April 20, 2000
- LO-100-166, *Manage Satellite Accumulation Area, 90 Day Accumulation Area, and Treatment, Storage and Disposal*, Rev. 3, June 13, 2000
- LO-100-169, *Management of Waste Scintillation Vials*, Rev. D-0, April 21, 2000
- LO-110-129, *Waste Collection and Disposal in 222-SA*, Rev. B-3, April 24, 2000
- LO-120-050, *Receiving and Documentation for the Standards Laboratory*, Rev. A-1, April 5, 2000
- Materials Request Form, BC-7400-310 (August 1999), April 27, 2000, originator P. A. Thompson
- RCP-310, *300 LEF Project Administration Procedures*, Section 4.27, “Work Management,” Rev. 0, March 15, 2000
- Reviewed Operations Lead, Solid Waste Treatment (SWT) Pre-Job Folder
- ST 4502 Compliance Matrix1, June 7, 2000, prepared at Liquid Waste Processing Facility (LWPF) by Environmental Compliance Officer (ECO)
- WESF EO-902-003, *Plant Operating Procedure, Prepare and Package A-Cell Waste*, Rev. G, Mod. 0, February 22, 2000
- WMP-200, *Fluor Hanford Waste Management Project Procedures*
 - Section 4.1, “Hazard Communication and Carcinogen Control Program,” Rev. 1, May 22, 2000
 - Section 4.8, “Chemical Management,” Rev. 1, June 7, 2000
- WMP-340, *Solid Waste Treatment Project Administrative Procedure*
 - Section 3.3, “Treatment Facility AJHA Implementation,” Rev. 0, April 7, 2000
 - Section 3.5, “Staffing Plan,” Rev. 0, February 28, 2000
- Waste Management Project (WMP) Training Program SWT ECO Qualification Card 450320, Rev. 1, February 2000
- Waste Planning Checklist, form A-6002-827 (January 2000) for Work Package EI-00-00189/P

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- Work Packages:
 - 2Z-00-000286/W, *Asbestos Clean Up in Room 113*
 - 2Z-00-00563/W, *Replace Ball Valve V-35 in Room 227*
 - 2Z-00-00179/W, *Asbestos Removal in 321*
 - 2Z-00-00154, *2736-ZB EF-1 Belts*
 - 2Z-00-00776/P, *Maximo Riser/RFAR 243-Z, June 2000*
 - 2Z-00-00773/P, *Maximo Riser 1-1A-2-3-4-9-11-57, June 2000*
 - 2Z-00-700/P, *HVAC PM-Filter Recurring 2701-ZA, June 2000*
 - 2Z-99-01310/W, *241-Z-361, Remove Liquid From Dry Well*
 - 2Z-99-01217/M, *Calciner Equipment Investigation Repair*
 - 2Z-99-01195/W, *Inspect Cas Horn Fuses CAP Z-2*
 - 2Z-99-01155/W, *Accelerometer Battery Check*
 - 2Z-99-01121/W, *Sample Transformer Oil 291-Z Building*
 - 3C-99-00039/M, *309 Tank Ion Exchange Removal*
 - 3C-99-000023/M, *377 Disconnect and Remove Emergency Generator*
 - 3D-00-00008/W, *340 Vault Characterization*
 - 3I-00-00215/W, *Replace 10 Ton Trolley Hoist*
 - 3I-00-00249, *Inspect/Clean/Verify G Containers*
 - 3I-00-252, *10 Ton Trolley West Motor*
 - 3I-00-245/WO, *Repackage Material in Corrosive Cabinet*
 - 3T-00-00026/M, *Modify H2O2 Flowmeter Installation*
 - 3T-00-00016/W, *Clean IX Column Window*
 - 3T-00-00021/M, *Modify Biocide/Enzyme Supply System*
 - 4F-98-02383/W, *Evaluate Potential Oil Leaks on E-20, E-22, and E-23*
 - 4F-99-01093/W, *P-235 Glycol Seal Leaking*
 - 4F-00-0372/W, *Special PCB Transformer Oil Testing and 3 Non-PCB*
 - 4F-96-01352/W, *451A Outage for PMPS and Corrective Maintenance*
- ZO-200-022, *Tie Down and Ship TRU and LLW/Non-TRU Drums, Rev. G, October 4, 1999.*

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Chemical Hygiene Officer/Chemical Management Point of Contact (POC)
- Chemical Technician
- Environmental Lead (ECO)
- Environmental staff (2)
- Manager, Environmental Program
- Manager, Shift Operations
- Planner/Instrument Technician
- Waste Minimization/Pollution Prevention Coordinator.

Observations

- Ecology Tour of 219-S and 222-S Laboratory, June 22, 2000
- Plan of the Week meeting, June 22, 2000
- Development of Work Package with Planner, June 22, 2000.

Discussion of Results

Criterion 1: *Environmental protection/chemical management are integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified. (HAZ)*

The AJHA planning process, which uses input from all the workers, is an excellent tool for identifying hazards. A good practice was observed involving the integration of Waste Minimization/Pollution Prevention (WM/P2) into ASP work planning by the WM/P2 POC. A WM/P2 Project Team was assembled to help communicate WM/P2 requirements. The intent of this team is to integrate WM/P2 at all levels. This team also uses the resources of the Hanford Site-wide WM/P2 Central Group. Interviews indicated that ASP management strongly supports the WM/P2 Project Team's efforts.

ASP uses a process called S Lab Inventory Control for chemical management; this process was reviewed and found to be one of the better chemical management systems currently on the Hanford Site.

Reviews of Waste Planning Checklists are required for any job that may use/encounter chemicals, hazardous waste, or products. The work package preparer and the hazardous material specialist fill out this checklist. The work management procedure (ASP-200, *Analytical Services Procedures*, Section 3.1, "Work Management") requires the ECO/designee to "Provide direction on compliant management of waste by completing Section B of the Waste Planning Checklist (site form A-6002-827) for all activities that generate waste." However, observations, interviews

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and document reviews indicate that the ECO is not providing input to the Waste Planning Checklist as required by the procedure. **(ASP SME.3-2)**

A review of the implementing mechanisms for the facility work planning process was conducted. Subject Matter Experts involvement covered the required areas except environmental protection. Procedure ASP-310, *Analytical Services Procedure Manual*, Section 1.16, "Resource Integration," does not specify the utilization of environmental resources for work planning. **(ASP.SME.3-3)**

The facility procedure LO-120-050, *Receiving and Documentation for the Standards Laboratory*, has listed in the regulatory requirements section references to the *Washington State Administrative Code*; however, this procedure was not reviewed or tracked by the environmental organization. HNF-PRO-233, *Review and Approval of Documents* requires an E designator when regulatory requirements are to be implemented. However, LO-120-050 does not include these designators. **(ASP SME.3-4)**

The facility does not consistently ensure that environmental protection is integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified.

Criterion 2: *Environmental protection/chemical management contains clear roles and responsibilities. The individual subject area is effectively integrated with line support managers to ensure that line managers are responsible for environmental protection requirements. (MGO.2, OP.1)*

Review of ASP documents identified ASP-GD-001, *Desk Instruction for Environmental Review*, which was developed to help ensure environmental requirements are integrated into ASP procedures. This is an excellent tool to determine and track procedure or permit changes. An appendix to this desk instruction, "Analytical Services Permit Implementation Matrix," provides a useful tool for the line manager to ensure that environmental requirements are implemented. **(ASP SME.3-1)**

An adequate environmental perspective is lacking based on observations and document review of implementing mechanisms. The concept prescribed by procedure ASP-200, Appendix I, "Material Control," requires the ECO to review acquisition of chemicals not previously approved. In addition, the Material Coordinator is required to notify the ECO upon receipt of hazardous material. Observations and document reviews confirmed that this has not been implemented in accordance with the procedure. The facility has not consistently and appropriately implemented the requirements as defined under the roles and responsibilities, for the ECO review, but has allowed the Chemical Management POC to perform these ECO functions. **(ASP SME.3-5)**

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In a similar area, the ECO responsibility for environmental review and approval (approvals/signatures, evaluations, Material Safety Data Sheet [MSDS] transmittal, work package input) is required by ASP-200, Section 4.1, "Hazard Communication and Carcinogen Control Program." Personnel interviews indicated that the Chemical Management POC is performing these functions and not the ECO as required by the procedure. The facilities chemical management implementing responsibilities involving integration between environmental, operations, chemical management, and safety are not implemented as described in facility procedures. **(ASP SME.3-6)**

The Environmental Management System requires clarification and improvement in the understanding, integration and personnel definitions of roles and responsibilities between the environmental protection and chemical management organizations.

Criterion 3: *Environmental protection/chemical management requires controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work. (OP.1, OP.2)*

Procedure ASP-200, Section 3.1 describes work process and responsibilities, which include responsibilities for the ECO. However, interviews and document reviews (work packages and Waste Planning Checklist) indicated that ECOs were not integrated completely within the process. Work package review of operations involving the management of waste from a treatment, storage, and disposal unit with a potential for airborne emissions had no environmental approval as required by the procedure. HNF-PRO-233 states: "Review and approve work packages when work has the potential to impact the environment to ensure existing permits adequately cover the work."

Although the ECO participated in the AJHA process, which was good, the procedure requires ECO approval of the work package, which did not occur. The ECO is not implementing the mechanisms listed in the system description by not formally approving all ASP work packages that have the potential to impact the environment (ASP-200 and HNF-PRO-233). **(ASP SME.3-7)**

Implementation by ASP of the mechanisms listed in the integrated management system description require improvements that will ensure environmental protection/chemical management required controls are implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.

Criterion 4: *Environmental protection/chemical management requires that personnel who are assigned to the subject area have a satisfactory level of competence.*

The Project and Facility Line Manager use the Hanford Site training matrix to manage and ensure that personnel are trained for the responsibilities and tasks they are involved with at the project or facility. Environmental leads are required to complete a training program for ECOs

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and then receive a qualification card. The program requires the ECO to complete required reading and training. Review of the qualification card and interviews demonstrated the competency of the ECO.

The observations discussed in Criteria 1 and 2 relating to the Waste Planning Checklist and chemical management acquisition reviews are two examples that demonstrate the implementation of an ECO designee by the facility. ECOs are required to go through a qualification program and are aware of the changing regulations and permit requirements. However, it was not evident that formal designation from the ECO to any designee was in place, and qualification requirements of the designee to perform these activities were not documented. There was no documentation of the implementing mechanisms to assign an ECO designee, and the qualification requirements are not defined for the ECO Designee as prescribed in ASP-200, Section 3.1. **(ASP SME.3-8)**

The ASP process for delegating ECO responsibilities does not formally document decisions or ensure that personnel assigned to the subject area have a satisfactory level of competence prior to performing work.

Criterion 5: *Procedures and/or mechanisms are implemented to ensure environmental protection/chemical management requires that within the subject area, feedback and continuous improvement occurs, including subcontractor oversight.*

Interviews indicated that the ASP Environmental Program Manager coordinates environmental-related lessons learned and issues, and disseminates this information to the ASP ECO, management, and staff, as appropriate.

The Plan of the Week meeting is a good mechanism for providing feedback and continuous improvement and identifying environmental controls.

The facility's feedback and continuous improvement process is adequately implemented for environmental protection/chemical management.

Conclusion

ASP has satisfactorily met three of the five criteria. Two of the three criteria met contain concerns that are significant and improvement is needed to ensure that environmental protection/chemical management under ISMS is fully implemented. The inconsistent implementation and integration of environmental protection with chemical management and work planning is one of the significant areas of concern. The other is the active participation of the ECO in the approval of work packages to ensure that the controls have been identified and readiness is confirmed prior to performing work. Weaknesses were also identified associated with roles and responsibility and qualifications for the ECO, ECO designee, and Chemical Management POC.

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Work practices in the field do not follow the documented processes as described by the ASP ISM System Description (HNF-MP-003, *Integrated Environment, Safety, and Health Management System Description*, Appendix H) and applicable implementing mechanisms. Although no adverse environmental issues were encountered, the overall integration of environmental protection within ASP is lacking. Environmental resources within ASP are not being adequately utilized.

This objective has not been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Chemical Management POC
- ECO
- Materials Coordinator
- Nuclear Safety Criticality Engineer
- Operations Specialist
- Tool Crib Attendant
- Waste Minimization/Pollution Prevention POC.

Observations

- Plan of the Day meeting, June 27, 2000
- Safety Awareness Council Bi-Weekly meeting, June 27, 2000
- As Low as Reasonably Achievable (ALARA)/P2 Subteam Monthly meeting, June 27, 2000
- Chemical Management POC Site-wide meeting, June 27, 2000.

Discussion of Results

Criterion 1: *Environmental protection/chemical management are integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified. (HAZ)*

Document reviews and personnel interviews clearly indicated that environmental protection is integrated into the FFTF work planning process. An environmental representative attends the FFTF Weekly Planning meetings to help identify any required environmental controls in the early planning of individual work activities. Administrative Procedure A-28, *Work Management Process*, also integrates environmental controls into the work process. This procedure requires ECOs to review work packages that have any environmental concerns, as defined in A-28, Appendix A, "Approval Designators, Additional Approvals, Essential Systems." All work packages reviewed demonstrated environmental involvement from the start and throughout the planning process.

Criterion 2: *Environmental protection/chemical management contains clear roles and responsibilities. The individual subject area is effectively integrated with line support managers to ensure that line managers are responsible for environmental protection requirements (MGO.2, OP.1)*

All FFTF procedures reviewed had defined roles and responsibilities. Administrative Procedure A-47, *FFTF Hazard Communication and Chemical Management* is a good example of identifying that the regulatory compliance organization has responsibility for managing the

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HazCom program, but the line manager is responsible for the implementation of the overall program. Review of this procedure and personnel interviews confirmed the understanding that line managers are responsible for implementation of environmental protection/chemical management requirements.

Criterion 3: *Environmental protection/chemical management requires controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work. (OP.1, OP.2)*

Administrative Procedure A-28 requires that environmental review and approval is required for work packages. Additionally, there is a very good understanding of the need to include environmental personnel in all aspects of the job. Management demonstrates a strong trust in the ECO and environmental staff at FFTF.

During a walkthrough of the maintenance shop supply room (tool crib), chemical products were observed to be stored in a controlled location, where workers are required to check chemicals out for use. The tool crib attendant immediately updates the database inventory on the computer at the time chemicals are checked out. On the front of the cabinets, there is a posting of the inventory, along with the appropriate Material Safety Data Sheets. Every 6 months, the cabinets are physically inventoried to verify that the database inventory is correct. The FFTF maintenance shop has a structured and controlled chemical management system. (FFTF SME.3-1)

Criterion 4: *Environmental protection/chemical management requires that personnel who are assigned to the subject area have a satisfactory level of competence.*

Facility line management uses the site-training matrix to manage and ensure that personnel are trained for the responsibilities and tasks they are assigned. FFTF has a Guide GO15 that meets the regulatory training requirements for personnel in positions related to dangerous waste management. Personnel interviews and reviews of training records indicated that the ECO has a level of competence; however, they do not have a formal ECO qualification program. This practice is inconsistent with other FH projects. (FFTF SME.3-3)

Criterion 5: *Procedures and/or mechanisms are implemented to ensure environmental protection/chemical management requires that within the subject area, feedback and continuous improvement occurs, including subcontractor oversight.*

Several FFTF mechanisms were reviewed that demonstrated feedback occurring in the areas of environmental protection and chemical management. FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual Organization, Responsibilities, and Authority* contains a defined lessons learned program, described in Section 7. This procedure describes the process for lessons learned for events that occur at FFTF, and for reviewing and distributing lessons learned that occur external to FFTF.

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A bi-monthly FFTF Safety Council meeting was observed and attended by all levels of management and crafts. The ECO is a member of this council and is included on the agenda to provide an environmental status. This meeting was found to be an excellent mechanism to identify lessons learned, feedback, and opportunities for continuous improvement. Actions from this meeting are tracked for closure. Following this meeting, a monthly ALARA/P2 subteam meeting was observed that dealt with WM/P2 and chemical management issues. This meeting was attended by multi-disciplined representatives and provided an excellent mechanism to maintain environmental awareness. **(FFTF SME.3-2)** A Hanford Site-wide Chemical Management System meeting was observed that demonstrated site-level integration and feedback on environmental issues supporting opportunities for continuous improvement. This meeting was well represented by the FFTF and FH project Chemical Management System POCs.

Conclusion

The work process involves the ECO/environmental staff from the planning stage to the work package review. There is a strong reliance and trust in the ECO to assure that environmental protection/chemical management is integrated. The monthly ALARA/P2 meeting that is attended by multi-discipline representatives is an excellent mechanism to communicate waste minimization/pollution prevention concepts.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Chemical Engineer (2)
- Chemical Technician
- Environmental Engineer
- Environmental Team Lead
- Infrastructure Services, Manager
- Manager, Environmental, Safety, Health, and Quality
- Operations Specialist (CMS)
- Science Technician (2)
- Shift Team Lead
- Solid Waste Operations Team Lead
- Work Coordinator (2).

Observations

- Pre-job Briefing for shipping 21 drums of low-level waste, June 14, 2000
- Walkdown of three chemical storage locations, June 14, 2000
- AJHA meeting for routine maintenance of the HA-21 I Glovebox, June 14, 2000
- AJHA for the replacement of the steam valve in Building 291, June 15, 2000
- Central Environmental Committee meeting, June 15, 2000
- AJHA for the replacement of the process water line in Building 291, June 16, 2000
- Walkdown of facility laboratories chemical storage/management, June 19, 2000
- Environmental Center of Excellence bi-weekly meeting, June 20, 1000.

Discussion of Results

Criterion 1: *Environmental protection/chemical management are integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified. (HAZ)*

The facility work planning process integrates environmental protection/chemical management into individual work items. The process involves multiple steps with the AJHA used as the focus for ensuring the proper Subject Matter Experts (SME) for waste management, environmental protection, and chemical management are involved in maintenance and operation activities at the worker level.

A concern with the AJHA process was observed at three AJHA meetings: one for operations at elevated temperatures in the HA-21I muffle furnace and the other two for repairs of the steam and process water lines in Building 291. During all three meetings, there was no discussion of

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pollution prevention or waste minimization. Follow-up interviews with work coordinators and SMEs indicate that the facility goals, objectives, and pollution prevention program is a consideration when planning work.

Because of the multiple steps involved from early planning to pre-job and post-job reviews, the ISMS Verification Team was not able to see all elements. However, interviews, observations, and review of work packages indicate there is room for improvement. The facility needs to facilitate the AJHA process during meetings and summarize earlier planning sessions so that pollution prevention and waste minimization is integrated more at the worker level.

(NMS SME.3-2)

The Plutonium Finishing Plant (PFP) has recently assigned responsibility to the Chemical Management System staff to track and maintain process information on chemical process lines, vessels, and tanks. This information was developed from historical documentation and process knowledge under the facility vulnerability study as part of corrective actions from the 1997 accident involving an idle process tank. The staff planned the integration of historic process information with the new site chemical inventory database so that a single Chemical Management System can be used by PFP for identifying hazards and controls when performing work on chemical process systems. **(NMS SME.3-1)** While PFP waits for the site to issue and develop the new site chemical inventory, they are maintaining this information on a spreadsheet with hyperlinks to PFP documents that describe the process lines, vessels, and tank used at PFP.

PFP has adequately integrated environmental protection/chemical management into the work planning to ensure that hazards are analyzed and environmental controls are identified.

Criterion 2: *Environmental protection/chemical management contains clear roles and responsibilities. The individual subject area is effectively integrated with line support managers to ensure that line managers are responsible for environmental protection requirements.*
(MGO.2, OP.1)

Mechanisms used by PFP to implement environmental protection/chemical management contain roles and responsibilities that are understood by all personnel interviewed. However, there are still some questions that matrix personnel have regarding interfacing with environmental organizations from their new jobs with the new work team, maintenance, and engineering organizations. Interviews clearly indicated that these questions are understood by line management and workers and that some may have to be worked out over time while others may have to be resolved by adding additional clarification to workers and manager's roles and responsibilities.

The desk instruction developed under the corrective actions to clarify roles and responsibilities for processing documents and material through the environmental organization is in place and being used by the ECO.

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The Central Environmental Committee and FH Environmental Center of Excellence meetings are good tools for involving line management and workers not only under FH, but for integrating environmental issues across the Hanford Site. Both meetings discussed topics that crosscut contractor boundaries, site environmental issues, along with project and facility impacts at the Hanford Site.

The facility has adequate roles and responsibilities for environmental protection/chemical management and SMEs are integrated with line support managers to ensure that line managers are responsible for environmental protection requirements.

Criterion 3: *Environmental protection/chemical management requires controls to be implemented that these controls are effectively integrated, and readiness is confirmed prior to performing work. (OP.1, OP.2)*

The work control process is one of the tools to ensure that readiness is confirmed prior to performing work. Three AJHA meetings were observed where the work coordinator and the Person-in-Charge performed a walkdown of the job and identified the hazard and necessary controls with the workers as part of the readiness process. Interviews and job package review indicate that all hazards and controls discussed in the AJHA are reviewed as part of the pre-job meeting for most work, while routine work is discussed as part of team meetings.

One concern identified in a recent external assessment by the FH independent assessment team indicated that some work packages did not contain required documentation for environmental protection review and approval. Approximately 12 work packages reviewed during this ISMS Verification revealed that approximately 25% of completed work packages may not have been reviewed in accordance with the National Environmental Policy Act. The facility has not fully implemented the review and approval process for National Environmental Policy Act in accordance with the site and facility implementing mechanisms listed in the FH ISMS description. **(NMS SME.3-3)** These mechanisms include the use of the AJHA process and procedures, which requires that all jobs be reviewed or a categorical exclusion be approved by trained and qualified personnel before work is performed.

The facility has adequately integrated the implementation of environmental protection/chemical management controls into facility operations and work process and confirms readiness using the work planning process and other mechanism.

Criterion 4: *Environmental protection/chemical management requires that personnel who are assigned to the subject area have a satisfactory level of competence.*

Observations and interviews indicate that the facility personnel have sufficient skills, experience, and knowledge to perform their assigned duties. Interviews also indicated that line management ensures that workers are qualified for each job they are involved in by reviewing the Training Matrix, and discussions at pre-jobs/team meetings.

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Criterion 5: *Procedures and/or mechanisms are implemented to ensure environmental protection/chemical management requires that within the subject area, feedback and continuous improvement occurs, including subcontractor oversight.*

PFP has adequately implemented mechanisms and processes for environmental protection/chemical management. Facility personnel oversee compliance with the Chemical Management System at the subcontractor level. Subcontractor chemical storage locations and compliance with ordering and receiving hazardous material at the facility is part of the normal Chemical Management System. The facility utilizes their work planning process to oversee subcontractor work for environmental impacts.

As discussed in Criterion 1, the integration of pollution prevention and waste minimization could be improved at PFP. The review of pre-job forms and completed work packages indicates the process to document waste minimization discussion as part of the planning process is not implemented as discussed in **NMS SME.3-1**. Approximately 12 work packages were reviewed, and observations by other ISMS Verification Team members attending pre-jobs indicate that some discussions of waste minimization are taking place; however, not one Post-Job ALARA Review form contained any waste minimization information or was not conducted for the job. In addition, the Post-Job ALARA Review form has no place for documenting discussions or references to waste minimization. This is one of the methods that PFP uses to provide feedback to the pollution prevention waste minimization program on how this program is implemented, and to track the effectiveness of some of the techniques and methods utilized by workers on meeting facility goals and objectives.

The facility has not completed the corrective actions from the Phase I report for having an environmental protection/chemical management self-assessment program. The scheduled completion date for the program is June 30, 2000 with implementation following review and approval. Specific concerns of the facility management assessment program are discussed in the MGO Assessment Forms.

The feedback and continuous improvement process for PFP is adequately implemented for environmental protection/chemical management.

Conclusion

PFP has implemented the mechanisms and process described in the DOE/RL-2000-30, *Fluor Hanford Integrated Safety Management System Phase I Verification*. Several concerns need to be addressed to assist PFP in integrating pollution prevention and waste minimization into the work planning process at all levels. The feedback and continuous improvement area is still in development. PFP should review any corrective actions for management assessments and self-assessments under other criteria in this report as they proceed with the environmental protection/chemical management self-assessment program.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Deactivation Project Manager, 200 Area
- Engineer
- Environmental Compliance Officer (2)
- Hazardous Material Specialist
- Hot Cell Technician (2)
- Manager, Environmental Program
- Planner (4).

Observations

- AJHA meeting for 310 H2O2 dampner replacement, June 21, 2000
- AJHA meeting for 327 exhauster belt adjustment, June 22, 2000
- AJHA meeting for 324 deactivation of RPS and PS monitors, June 26, 2000
- Pre-job meeting for entry into 242 BBL, 200 Deactivation Project, June 26, 2000
- Plan of the Day meeting for 324 Building, June 21, 2000
- Post-job review for cask loadout at 324 Building, June 21, 2000
- Walkdown of the 310 Chemical Storage Areas, June 22, 2000
- Plan of the Day meeting for 200 Area Deactivation Project, June 26, 2000
- Plan of the Day meeting for 300 Deactivation Project, June 27, 2000
- Walkdown of the 300 Deactivation Project *Resource Conservation and Recovery Act of 1976* waste sites and Satellite Accumulation Areas and Less Than 90-Day Storage Area, June 27, 2000.

Discussion of Results

Criterion 1: *Environmental protection/chemical management are integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified. (HAZ)*

The facility work planning process does integrate environmental protection/chemical management into individual work items. The process involves multiple steps with the AJHA used as the focus for ensuring the proper SMEs for waste management, environmental protection, and chemical management are involved in maintenance and operation activities at the worker level.

RCP facilitates good AJHA meetings with attendance of environmental protection/chemical management SMEs. The planners interviewed described the process and help facilitate the meetings to encourage discussions of the hazards. During the observed 310 Facility equipment replacement meeting, the planning process identified potential waste generation. The AJHA

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team discussed techniques for decontamination and excessing the equipment that would avoid waste generation. This discussion led the team to conclude that under the AJHA process for waste generation, the job would not generate any waste. This was an acceptable answer; however, because the AJHA was flagged as "No" for waste generation, the waste minimization techniques discussed were not documented in the AJHA. The AJHA process needs to integrate, document, and communicate waste minimization techniques, processes, and goals as a part of work planning, a key element of ISM. **(RCP SME.3-2)**

The work management process implemented at the 310 Facility requires the use of a Waste Planning Checklist for all work that generates waste. This checklist was identified in the Waste Management Project Assessment Form as a strength and should be considered by RCP as a tool for all facilities and projects. The checklist not only helps with the planning of waste management objectives, it also requires consideration of waste minimization techniques to be considered and documented.

The recent issuance of FSP-3647, *200 Area Deactivation Project Administration*, Section WM-3, "Waste Information Data Systems (WIDS) Sites Management" provides an excellent tool to ensure that inactive waste sites are monitored for impacts to the environment. **(RCP SME.3-1)** Although the site procedures direct facility management to conduct annual reviews, this procedure extracts and clarifies roles, responsibilities, and requirements to ensure these inactive waste sites are properly managed under ISM at the facility and activity level.

RCP has adequately integrated environmental protection/chemical management into the work planning to ensure that hazards are analyzed and environmental controls are identified.

Criterion 2: *Environmental protection/chemical management contains clear roles and responsibilities. The individual subject area is effectively integrated with line support managers to ensure that line managers are responsible for environmental protection requirements. (MGO.2, OP.1)*

RCP has adequately implemented roles and responsibilities for environmental protection/chemical management. In addition, SMEs are integrated with line support managers to ensure that line managers are responsible for environmental protection requirements.

Criterion 3: *Environmental protection/chemical management requires controls to be implemented that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

The work control process is one of the tools to ensure that readiness is confirmed prior to performing work. Three AJHA meetings were observed where the planner and Person-in-Charge performed a walkdown of the job and identified the hazards and necessary controls with the workers as part of the readiness process. Interviews and job package reviews indicate that all hazards and controls discussed in the AJHA are reviewed as part of the Pre-job Briefing.

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RCP has adequately integrated the implementation of environmental protection/chemical management controls into facility operations and work processes, and confirms readiness using the work planning process and other mechanisms.

Criterion 4: *Environmental protection/chemical management requires that personnel who are assigned to the subject area have a satisfactory level of competence.*

Observations and interviews indicate that facility personnel have sufficient skills, experience, and knowledge to perform their assigned duties. It was also noted during interviews that line management ensures that workers are qualified for each job they are involved in by reviewing the TMX. Line management also was observed, during Plan of the Day meetings, discussing the staff training schedule to ensure qualifications were current for job-related duties.

Criterion 5: *Procedures and/or mechanisms are implemented to ensure environmental protection/chemical management requires that within the subject area, feedback and continuous improvement occurs, including subcontractor oversight.*

RCP has adequately implemented mechanisms and process for environmental protection/chemical management. Facility personnel oversee compliance with the Chemical Management System through monthly inspections and inventory programs. Facility personnel use their work planning process to oversee subcontractor work for environmental impacts. Review of work packages and observations at post-jobs indicate that post-job reviews are conducted and documented as part of the work management process.

RCP-310, *300 LEF Project Administration Procedures*, Section 4.27, "Work Management," requires the incorporation and use of a waste planning checklist. This checklist is used and includes waste minimization discussions and methods used for each job. The checklist should be considered as a potential solution and incorporated into other RCP facilities as a method to help integrate waste minimization with work planning and the AJHA.

The RCP has not fully integrated environmental protection into the management and self-assessment programs. The Management Assessment Program for the 324 and 327 Facilities is under consideration for expansion to other RCP facilities. Interviews with the RCP environmental staff clearly communicated the gap within RCP for environmental oversight in facility assessments. The oversight of environmental compliance has not been fully implemented into the management or self-assessment programs at RCP. **(RCP SME.3-3)**

The RCP has had several other internal and external assessments and audits of the environmental protection/chemical management program. The observations and findings of these assessments are used by the facility for feedback and continuous improvement. Specific concerns of the facility management assessment program are discussed in the MGO Assessment Forms.

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The feedback and continuous improvement process for RCP is not completely implemented for environmental protection/chemical management in the area of compliance oversight for environmental protection.

Conclusion

RCP has implemented the mechanisms and process described in DOE/RL-2000-30, *FH ISMS Phase I Verification Report*. Several concerns need to be addressed to assist in integrating pollution prevention and waste minimization into the work planning process at all levels. The feedback and continuous improvement area is not fully implemented for environmental protection. RCP personnel are encouraged to review any corrective actions for management assessments and self-assessments under other criteria in this report as they proceed with the environmental protection/chemical management self-assessment program.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- AJHA Coordinator, SWT
- Chemical Inventory Coordinator, LWPF
- Chemical Management Inventory Coordinator, SWT
- Duty Operations Supervisor, SWT
- Environmental Compliance Officer, LWPF
- Environmental Compliance Officer, Solid Waste Storage and Disposal
- Environmental Compliance Officer, SWT
- Instrument Technician, WESF
- Lead Millwright, WESF
- Manager, Chemical Management Inventory, WESF
- Manager, Waste Management Environmental Program
- Material Coordinator, WESF
- Operations Lead, SWT
- Operations Manager, LWPF
- Waste Compliance and Surveillance Team Lead, SWT.

Observations

- Morning Turnover meeting, SWT, June 14, 2000
- Daily Surveillance and Waste Compliance, Plan of the Day meeting, SWT, June 14, 2000
- SWT Canyon Cleanup Operations, Pre-job meeting, June 14, 2000
- AJHA meeting, SWT exhaust filter change out, June 15, 2000
- Plan of the Day meeting, Solid Waste Storage and Disposal, June 15, 2000
- Waste Services and SWT Interface meeting, June 15, 2000
- WESF Plan of the Day meeting, June 16, 2000
- WESF Operations meeting, June 16, 2000
- Functional test on stack monitor, June 16, 2000
- WMP Functional Manager Review, June 16, 2000
- LWPF Plan of the Day meeting, June 19, 2000
- LWPF All-Hands meeting, June 19, 2000
- LWPF reviewed chemical storage cabinets, inventory lists, and MSDSs, June 19, 2000.

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Discussion of Results

Criterion 1: *Environmental protection/chemical management are integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified. (HAZ)*

There is a weekly integrated schedule meeting that reviews the schedule of planned activities with all disciplines. Participation of Environmental Compliance personnel in this meeting allows for identification of needed controls prior to the AJHA.

The AJHA planning meeting is an excellent tool to identify hazards with input from all workers. Environmental controls are identified with ECO input and approval. For a particular AJHA meeting that was attended, the AJHA Coordinator was well prepared (i.e., showed pictures of the equipment, had radiation surveys completed, list of lessons learned for a similar job, etc.). This made for a timely and efficient meeting. The job was determined to be a low-risk job, where an AJHA would not be required. HNF-PRO-079, *Job Hazard Analysis*, Appendix B states the following:

“While low risk tasks do not require completion of a formal job hazards analysis to perform the work, the potential for hazard exposure must still be evaluated and addressed accordingly. At a minimum, a Supervisor-Worker turnover is performed as a means of exchanging hazard information to ensure that a clear understanding of the work and its hazards exists.”

In accordance with HNF-PRO-079, not all jobs require an AJHA based on risk and complexity. Within the WMP, there is no mechanism in place to further define risk and complexity in terms of environmental protection; as such, environmental hazards and controls could be overlooked. **(WMP SME.3-2)**

A Waste Planning Checklist is required for any job planning to use chemicals or products. The work package preparer and the hazardous waste coordinator fill out this checklist. It was encouraging to see a disposition pathway for the waste, the satellite accumulation area locations identified, and suggested waste minimization techniques.

Criterion 2: *Environmental protection/chemical management contains clear roles and responsibilities. The individual subject area is effectively integrated with line support managers to ensure that line managers are responsible for environmental protection requirements (MGO.2, OP.1)*

The WMP procedures reviewed contained roles and responsibilities, with the exception of waste minimization/pollution prevention (WM/P2) as discussed below.

ISMS requires WM/P2 to be implemented. HNF-PRO-0462, *Pollution Prevention*, is the facility implementing procedure. The level of recognition of the involvement of each facility in implementation varies. This is evidenced by not including WM/P2 in the staffing plan

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responsibilities or seeking craft involvement on WM/P2 in pre-jobs. Though each facility has a WM/P2 POC, there is a central WM/P2 service organization (identified in the WM charter) that is available to provide assistance. HNF-EP-0496, *PHMC Pollution Prevention Program Implementation Plan* describes invaluable services and incentives that are being underutilized. These services are available from the central WM/P2 organization for the facilities:

- Employee involvement
- Training
- Technical assistance
- Assessments
- Seminars
- Workshops.

Facilities and central support could improve the achievement of WM/P2 objectives through better communication as part of pre-job activities and through active involvement of central WM/P2 services in facility activities. **(WMP SME.3-3)**

There was a similar observation with chemical management, where each facility had a different system, separate inventory database, different procurement controls, varying inspection time frames, etc. WMH-200, *Waste Management Project Procedures*, Section 4.08, "Chemical Management," requires sole use of the software program Passport (master catalog module) for chemical procurement. There is an approval requirement regardless of previously ordered chemicals or new chemicals. Most facilities now use the P-Card to procure previously ordered materials/chemicals and only get approval on new chemicals. The concern is loss of control of the inventory. The procedure also requires the Chemical Inventory Coordination to perform the following steps:

- Physically verify inventory of order upon receipt of order at facility receiving station.
- Identify catalog ID in Passport and prepare appropriate labels (labels must include appropriate identifiers, such as catalog ID, product name and manufacturer, storage location, associated hazards, MSDS, etc.).
- Place appropriate labels on containers.
- Physically place containers in appropriate storage locations.

These steps are carried out by the Chemical Procurement Coordinator (P-Card user), and the Inventory Coordinator does not realize what is in stock until inspection. **(WMP SME.3-4)** Environmental Services is coordinating with the facilities to develop a new FH site-wide Chemical Management System to be put into place by October 2000. The old system needs to be maintained in accordance with procedures until the new system is implemented. Procedures and/or implementation plans of the new system still need to be developed.

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The ECO at LWPF has developed a compliance matrix that crosses procedures with environmental permits for configuration control. Whenever a permit or procedure is changed, there is an easy crosswalk to determine the affected document. This is an excellent tool for the line manager to ensure that environmental requirements are implemented. This, or a similar mechanism, would be a good practice for all facilities. **(WMP SME.3-1)**

Criterion 3: *Environmental protection/chemical management requires controls to be implemented that these controls are effectively integrated, and readiness is confirmed prior to performing work. (OP.1, OP.2)*

The AJHA does an excellent job of integrating the hazards and controls associated with the job. Having the ECOs review and approve the AJHA prior to work being performed is a good practice. One ECO has an effective way of approving AJHAs by not putting the electronic approval on his computer. Instead, he sits down with the planner and walks through the job to get a better understanding of the job scope before he signs off.

The Waste Planning Checklist, AJHA, and pre-job meeting observed confirmed that the required controls were in place prior to performing work.

Criterion 4: *Environmental protection/chemical management requires that personnel who are assigned to the subject area have a satisfactory level of competence.*

Project and facility line management use the Hanford Site TMX to manage and ensure that personnel are appropriately trained for the responsibilities and tasks assigned to them at the project or facility. ECOs for each facility are required to complete a training program for ECOs and then receive a qualification card. The program requires the ECO to complete required reading and training. Review of the qualification card for ECOs and interviews confirmed a level of competence.

Criterion 5: *Procedures and/or mechanisms are implemented to ensure environmental protection/chemical management requires that within the subject area, feedback and continuous improvement occurs, including subcontractor oversight.*

WMP assessment programs and requirements are managed through facility-level procedures for self-assessment programs, along with specific requirements for inventory, inspections and surveillance. Documents reviewed include sufficient language to ensure that issues, concerns, findings, etc. are evaluated against the Corrective Action Management Program for determining deficiencies and tracking actions until closure.

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Several interface meetings between WMP were observed. These meetings provided a good forum for feedback, lessons learned, and communication (see also **MGO.2**). Examples include the following:

- The Environmental Functional Manager has weekly meetings with the ECOs. This is a good mechanism for providing feedback and continuous improvement on developing procedures, new regulatory requirements, and implementation.
- Environmental Services holds a weekly Chemical Management meeting that involves a representative from each of the facilities, a WM/P2 representative, and materials coordinators in developing a new Chemical Management System.
- Waste Services holds a weekly interface meeting with SWT to status activities, discuss concerns, lessons learned, etc.

Conclusion

The work process involves the ECO from the planning stage to the work package review. There is a strong reliance on the ECO to assure that environmental protection/ chemical management is integrated. The development of the new Chemical Management System may provide for enhanced chemical tracking and inventory. WM needs to strengthen the implementation of WM/P2 at facilities.

This objective has been met.

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Strengths:

- “Analytical Services Permit Implementation Matrix” provides a useful tool for the line manager to ensure that environmental requirements are implemented. **(ASP SME.3-1)**
- The FFTF Maintenance Shop Supply has a structured and controlled chemical management system. **(FFTF SME.3-1)**
- The FFTF monthly As Low As Reasonably Achievable/Pollution Prevention meetings provide an excellent mechanism to maintain environmental awareness. **(FFTF SME.3-2)**
- PFP staff has planned the integration of historic process information with the new Hanford Site chemical inventory database so that a single Chemical Management System can be used by PFP for identifying hazards and controls when performing work on chemical process systems. **(NMS SME.3-1)**
- The recent issuance of FSP-3647, *200 Area Deactivation Project Administration*, Section WM-3, “Waste Information Data Systems (WIDS) Sites Management” procedure is an excellent tool to ensure that inactive waste sites are monitored for impacts to the environment. **(RCP SME.3-1)**
- The LWPF environmental compliance matrix is an excellent tool for the line manager to ensure that environmental requirements are implemented. **(WMP SME.3-1)**

Concerns:

- Observations, interviews, and document reviews indicate that the Environmental Compliance Officer is not providing input to the Waste Planning Checklist as required per the procedure. **(ASP SME.3-2)**
- Procedure ASP-310, *Analytical Services Procedure Manual*, Section 1.16, “Resource Integration,” does not specify the utilization of environmental resources for work planning. **(ASP.SME.3-3)**
- HNF-PRO-233, *Review and Approval of Documents* requires an E designator when regulatory requirements are to be implemented. However, LO-120-050, *Receiving and Documentation for the Standards Laboratory* does not include this designator. **(ASP SME.3-4)**

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- The facility has not consistently and appropriately implemented the requirements as defined under the roles and responsibilities, for the Environmental Compliance Officer review, but has allowed the Chemical Management point of contact to perform these Environmental Compliance Officer functions. **(ASP SME.3-5)**
- The facilities chemical management implementing responsibilities involving integration between environmental, operations, chemical management and safety are not implemented as described in facility procedures. **(ASP SME.3-6)**
- The Environmental Compliance Officer is not implementing the mechanisms listed in the ISM System Description by not formally approving all ASP work packages that have the potential to impact the environment (ASP-200, *Analytical Services Procedures* and HNF-PRO-233, *Review and Approval of Documents*). **(ASP SME.3-7)**
- There is no documentation of the implementing mechanisms to assign an Environmental Compliance Officer designee and qualification requirements are not defined for the Environmental Compliance Officer designee as prescribed in ASP-200, *Analytical Services Procedures*, Section 3.1, "Work Management." **(ASP SME.3-8)**
- FFTF does not have an Environmental Compliance Officer qualification program. This is inconsistent with other FH projects. **(FFTF SME.3-3)**
- PFP needs to facilitate the Automated Job Hazard Analysis process during meetings and summarize earlier planning sessions so that pollution prevention and waste minimization is integrated more at the worker level. **(NMS SME.3-2)**
- PFP has not fully implemented the review and approval process for National Environmental Policy Act in accordance with the site and facility implementing mechanisms listed in HNF-MP-003, *Integrated Environment, Safety, and Health Management System Description*. **(NMS SME.3-3)**
- The Automated Job Hazard Analysis process needs to integrate, document, and communicate waste minimization techniques, processes, and goals as a part of work planning. **(RCP SME.3-2)**
- Oversight of environmental compliance has not been fully implemented into the management or self-assessment programs at the RCP. **(RCP SME.3-3)**
- In accordance with HNF-PRO-079, *Job Hazard Analysis*, not all jobs require an Automated Job Hazard Analysis based on risk and complexity. Within the WMP, there is no mechanism in place to further define risk and complexity in terms of environmental protection; as such, environmental hazards and controls could be overlooked. **(WMP SME.3-2)**

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- Facilities and central support could improve the achievement of Waste Minimization/ Pollution Prevention objectives through better communication as part of pre-job activities and through active involvement of central Waste Minimization/Pollution Prevention services in facility activities. **(WMP SME.3-3)**
- Roles and responsibilities of the Chemical Inventory Coordinator are not being followed as described in the Chemical Management procedure (WMP-200, *Waste Management Project Procedures*, Section 4.08). **(WMP SME.3-4)**

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OBJECTIVE

SME.4 - Quality Assurance. Quality Assurance (QA) policies, plans, procedures, and programs for FH and subcontractor personnel are in place to ensure 1) competence is commensurate with responsibilities; 2) a practice of continuous performance improvement is implemented; and 3) the responsibility for ownership of quality and verification of qualification prior to work assignment lies with line management.

Criteria

1. Procedures and/or mechanisms for QA are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level.
2. Procedures and/or mechanisms for QA areas contain clear roles and responsibilities. QA is effectively integrated with line-support managers to ensure that line managers are responsible for safety.
3. Procedures and/or mechanisms for QA require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. Procedures and/or mechanisms for QA are implemented to ensure that personnel assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms for QA are implemented to ensure that within the subject area, feedback and continuous improvement occur.

Approach

- Review the applicable FH procedures and selected records that define the activities and interactions for these activities.
- Assess the adequacy of the documents to meet the criteria and determine that the individual subject areas are effectively integrated into the facility or activity procedures.
- Review any self-assessments and lessons learned that provide an opportunity to assess that Opportunities for Improvement have been effectively used within the subject area.
- Review personnel training records in the subject area to determine that they meet competency.
- Interview personnel and responsible managers in the subject areas assigned. Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.

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- Interview personnel assigned to the subject area to assess the level of competence.
- Observe events such as the development of procedures, development of hazards analyses (e.g., Radiological Work Permit [RWP] or Job Hazard Analysis) or the approval process for individual work items, which includes interactions with personnel of the subject area.

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for QA at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that QA is effectively integrated into facility and activity-level procedures.
- Review selected self-assessments and lessons learned to assess that Opportunities for Improvement have been effectively used within the QA area.
- Review training records of personnel in the QA area to determine if they meet competency standards.

Interviews

- Interview personnel and responsible managers assigned to the QA area to assess their level of competence.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as an Automated Job Hazard Analysis, or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

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Record Review

- ASP-100, *Analytical Services Policies*, Release 37, June 16, 2000
- ASP-200, *Analytical Services Procedures*, Release 115, June 21, 2000
- ASP-MD-002, *Analytical Services Implementation of HNF-SD-WM-QAPP-036, Quality Assurance Program Plan, During Organizational Realignment*, Rev. 0, October 21, 1999
- Analytical Services Project (ASP) Fiscal Year 2000 Management Assessment Plan and Schedule, November 1, 1999
- Critique Notes for Waste Sampling and Characterization Facility (WSCF) Off-Normal Occurrence, June 22, 2000
- DI-PFPQ-001, *Preparation and Control of PFPQ Desk Instructions*, Rev. 5, October 4, 1999
- DI-PFPQ-003, *JCS Work Package Post Completion Review*, Rev. 5, December 16, 1999
- DI-PFPQ-007, *PFP/Q PFP Work Plan/Pre-Approved Procedure*, Rev. 8, December 20, 1999
- DI-PFPQ-010, *Nonconformance Reports and Status Tags*, Rev. 12, January 11, 2000
- DI-PFPQ-011, *PFP Quality Records Management*, Rev. 6, December 16, 1999
- DI-PFPQ-012, *Required Reading Program*, Rev. 3, January 11, 2000
- DI-PFPQ-013, *PFP Inspections for Operations, Maintenance, and Modifications*, Rev. 4, January 27, 2000
- DI-PFPQ-015, *PFP/Q Surveillance Program*, Rev. 1, January 11, 2000
- DI-PFPQ-016, *PFP Action Tracking System (PATs) Guide*, Rev. 0, May 22, 2000
- DI-WMHQS-008-00, *Tracking 222-S Internal Commitments in CATRAX*, Rev. 0, May 17, 2000
- FDH-QA-DI-001, *Operating Instructions for Adminstrating the FDH QA Level III Inspection Coordinator's Activities*, Rev. 0, July 8, 1999
- FEB-97-0007-222S/WSCF, *Facility Evaluation Report 222-S Analytical Laboratory/Waste Sampling Characterization Facilities*, December 10, 1997
- FEB-FY00-01, *Facility Evaluation Report Analytical Services Project*, February 25, 2000
- FEB-FY99-02-222S/WSCF, *Facility Evaluation Report 222-S Analytical Laboratory/Waste Sampling Characterization Facilities*, August 2, 1999
- Fast Flux Test Facility (FFTF) Administrative Procedure
 - A-3, *Operations Organization and Responsibilities*, Rev. 6A, April 29, 1996
 - A-5, *Procedure Administration*, Rev. 10D, January 26, 1998
 - A-10, *Watchstander Practices*, Rev. 8G, August 2, 1999
 - A-28, *FFTF Work Management Processes*, Rev. 13, December 31, 1997
 - A-37, *Corrective Action Management System*, Rev. 2A, July 7, 1999
 - A-40, *Plant Review Committee Administration*, Rev. 1A, August 30, 1996
 - A-50, *Administration of the Facility Internal Assessment Program*, Rev. 0A, June 19, 2000
- *FFTF Final Safety Analysis Report*, Chapter 16, "Quality Assurance Program Plan," Rev. 1, June 29, 1998
- FSP-FFTF-EI-86, *Material Control for Items Used in Safety-Related Applications*, Rev. 01, June 30, 1999

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- FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual*
 - Section 1.0, "Introduction," Rev. 2, April 15, 2000
 - Section 2.0, "Organization, Responsibilities, and Authority," Rev. 4, May 17, 2000
 - Section 3.0, "Policy Guidelines," Rev. 3, April 15, 2000
 - Section 4.0, "Safety Administration," Rev. 4, April 15, 2000
 - Section 5.0, "Facility Internal Assessment," Rev. 4, May 17, 2000
 - Section 6.0, "Quality Assurance," Rev. 1, December 3, 1999
 - Section 7.0, "FFTF Lessons Learned," Rev. 0, October 30, 1998
 - Section 8.0, "Emergency Management," Rev. 5, April 15, 2000
 - Section 9.0, "Documentation and Control," Rev. 2, April 15, 2000
 - Section 10.0, "Security," Rev. 7, April 15, 2000
 - Section 14.0, "Administrative Guidelines," Rev. 6, April 15, 2000
 - Section 15.0, "Project Staff Representation," Rev. 2, April 15, 2000
 - Section 17.0, "FFTF Readiness Review," Rev. 2, April 15, 2000
 - Section 18.0, "Qualification Requirements for FFTF Project Personnel," Rev. 3, April 15, 2000
- FSP-FFTF-TRNG-0392, *400 Area Training Plans*
 - Section 1.0, "FFTF Training Group Administration Training Program," Rev. 1, January 17, 2000
 - Section 2.0, "FFTF Operation Training Program," Rev. 1, December 18, 1999
 - Section 5.0, "400 Area Stationary Operating Engineer Training Program," Rev. 1, July 1, 1998
 - Section 9.0, "Technical Support Staff and Manager/Supervisor Training Program," Rev. 0, December 15, 1997
- FSP-FSS-5-35, *Fuel Supply Shutdown Project Control Manual*, Section 05-02, "Training Plan," Rev. 3, May 31, 2000
- FSP-MP-004, *B&W Hanford Company Facility Stabilization Project Quality Assurance Program Plan (QAPP)*, Rev. 1, September 1, 1999
- FSP-PFP-5-8 *Plutonium Finishing Plant Administration*, Vol. 1
 - Section B, "Nuclear Materials Stabilization Project-Key Functions & Responsibilities," Rev. 8, May 23, 2000
 - Section 1.14, "Managing Lessons Learned," Rev. 3, March 24, 2000
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vol. 2
 - Section 13.4, "Work Management Process Description and Job Control System Process," Rev. 21, April 6, 2000
 - Section 13.5, "Processing PFP Documents," Rev. 15, May 25, 2000
 - Section 13.7, "PFP Technical Procedure Use Policy," Rev. 4, April 11, 2000
 - Section 15.1, "Quality Assurance Program Plan," Rev. 3, October 4, 1999
 - Section 15.2, "Nonconforming Item Reporting and Control," Rev. 2, October 4, 1999
- FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*
 - Section 6, "Facility Management Training Program," Rev. 2, October 4, 1999
 - Section 9, "Engineer Training Program," Rev. 7, October 4, 1999
 - Section 11, "Person-In-Charge Training Program," Rev. 5, October 4, 1999

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- Section 15, “Quality Assurance Training, Qualification, and Certification Program,” Rev. 4, October 4, 1999
- FSP-WESF-001, *WESF Project Administration*, June 20, 2000
- Fluor Hanford (FH) Active QA Inspector Personnel Record, June 2000
- HNF-2330, *Quality Assurance Program Plan for Fuel Supply Shutdown Project*, Rev. 0, September 21, 1998
- HNF-4069, *Facility Stabilization and Environmental Restoration (FASTER) Quality Assurance Program Plan (QAPP)*, Rev. 0, April 29, 1999
- HNF-4361, *PHMC Expectations for Worker Involvement*, Rev. 0, April 28, 1999
- HNF-4467, *Feedback and Improvement Policy*, Rev. 0, May 7, 1999
- HNF-5053, *Policy for Environment, Safety, and Health*, Rev. 2, October 18, 1999
- HNF-5256, *Critical Characteristics of Commercial Grade Items for Building 324*, Rev. 1, March 13, 2000
- HNF-5364, *Critical Characteristics of Commercial Grade Items for Building 327*, Rev. 0, November 15, 1999
- HNF-5599, *Quality Assurance Policy*, Rev. 1, January 10, 2000
- HNF-IP-1232, *PHMC Performance Objectives and Criteria, Quality Assurance*, Release 2, December 31, 1997
- HNF-IP-1264, *324/327 Facilities Stabilization Projects*
 - Section 2.3, “Technical Procedure Development and Control,” Rev. 5, November 22, 1999
 - Section 2.10, “Management Assessment,” Rev. 2, October 29, 1999
 - Section 2.14, “Lessons Learned,” Rev. 1, November 12, 1999
 - Section 2.16, “Facility Worker Training,” Rev. 1, September 30, 1999
 - Section 2.16-G, “Facility Worker Training,” Rev. 2, October 29, 1999
 - Section 4.1, “Job Control System Implementation,” Rev. 9, November 22, 1999
 - Section 8.1, “Quality Assurance Program Plan,” Rev. 0, October 29, 1998
 - Section 8.2, “Quality Process Planning,” Rev. 0, May 22, 1998
- HNF-IP-1281, *River Corridor Training Plan*, Rev. 2, February 29, 2000
- HNF-MD-4635, *Pre-Acquisition Review/Approval of Items and Services*, Rev. 3, April 13, 2000
- HNF-MD-4821, *Guidance for Flow Down of ISMS Requirements to Lower Tier Subcontracts*, Rev. 0, July 30, 1999
- HNF-MD-5195, *Corrective Action Management Process for Deficiencies Documented Prior To July 12, 1999*, Rev. 1, December 29, 1999
- HNF-MD-5260, *Use of the Project Hanford Management System in the Streamlined Project Hanford Organization*, Rev. 0, October 8, 1999
- HNF-MD-6367, *Fluor Hanford Management Roles and Responsibilities*, Rev. 0, May 16, 2000
- HNF-MD-6410, *Fluor Hanford Issues Management Systems*, Rev. 0, May 19, 2000
- HNF-MP-001, *Fluor Hanford Management Plan*, Rev. 2, March 10, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix D, “Waste Management Project ISMS Description”

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- Appendix E, "Nuclear Material Stabilization Project ISMS Description"
- Appendix F, "River Corridor ISMS Description"
- Appendix G, "Fast Flux Test Facility ISMS Description"
- Appendix H, "Analytical Services ISMS Description"
- HNF-MP-005, *Hanford Risk Management Plan*, Rev. 0, February 26, 1998
- HNF-MP-011, *Site-wide Qualification and Training Plan*, Rev. 2, May 8, 2000
- HNF-MP-599, *Quality Assurance Program Description*, Rev. 4, January 14, 2000
- HNF-POL-EMPLOY, *Employee Training Policy*, Rev. 0, May 16, 1997
- HNF-POL-INTEG, *Integration Policy*, Rev. 0, May 16, 1997
- HNF-POL-PROCEDURE, *Procedure Compliance Expectation*, Rev. 0, February 24, 1999
- HNF-PRO-052, *Corrective Action Management*, Rev. 4, April 15, 2000
- HNF-PRO-055, *Facilities Start-Up Readiness*, Rev. 2, December 16, 1999
- HNF-PRO-123, *The Material Request/Purchase Requisition/Contract Requisition Process*, Rev. 6, July 22, 1999
- HNF-PRO-183, *Preacquisition Planning Process*, Rev. 3, June 18, 1999
- HNF-PRO-186, *Preparing a Statement of Work for Services*, Rev. 2, September 8, 1999
- HNF-PRO-192, *Buyers Technical Representative Assignment and Duties*, Rev. 1, September 24, 1999
- HNF-PRO-210, *Records Management Standards*, Rev. 2, March 26, 1999
- HNF-PRO-222, *Quality Assurance Records Standards*, Rev. 1, April 12, 1999
- HNF-PRO-224, *Document Control Program Standards*, Rev. 2, June 7, 1999
- HNF-PRO-233, *Review and Approval of Documents*, Rev. 0, September 30, 2000
- HNF-PRO-246, *Management Assessment*, Rev. 2, October 25, 1999
- HNF-PRO-259, *Graded Approach*, Rev. 1, June 8, 2000
- HNF-PRO-261, *Quality Assurance Program Plans*, Rev. 2, April 4, 2000
- HNF-PRO-263, *Qualification and Certification of Inspection and Test Personnel*, Rev. 3, December 21, 1999
- HNF-PRO-268, *Control of Purchased Items and Services*, Rev. 6, February 23, 2000
- HNF-PRO-283, *Control of Inspections*, Rev. 3, January 13, 2000
- HNF-PRO-286, *Test Control*, Rev. 2, January 28, 2000
- HNF-PRO-297, *Inspection, Test, and Operating, Status*, Rev. 1, October 14, 1999
- HNF-PRO-298, *Nonconforming Item Reporting and Control*, Rev. 2, October 6, 1999
- HNF-PRO-301, *Control of Suspect/Counterfeit Items*, Rev. 4, March 6, 2000
- HNF-PRO-309, *Computer Software Quality Assurance Requirements*, Rev. 1, April 10, 2000
- HNF-PRO-335, *Use and Control of Purchasing Card (P-Card)*, Rev. 4, July 29, 1999
- HNF-PRO-440, *Engineering Document Change Control Requirements*, Rev. 3, August 23, 1999
- HNF-PRO-490, *Control of Measuring and Test Equipment*, Rev. 2, September 3, 1999
- HNF-PRO-589, *Processing Project Hanford Procedures*, Rev. 2, December 1, 1999
- HNF-PRO-653, *Deficiency Tracking System*, Rev. 2, February 3, 2000
- HNF-PRO-1819, *PHMC Engineering Requirements*, Rev. 4, January 24, 2000
- HNF-PRO-2243, *Nuclear Safety Requirement Noncompliances*, Rev. 0, March 1, 1998

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- HNF-PRO-3144, *Supplier Quality Assurance Program Evaluation*, Rev. 2, February 22, 2000
- HNF-PRO-4294, *Performance Indicator Process*, Rev. 2, May 18, 2000
- HNF-PRO-5432, *Hold Point Application in Technical Documents*, Rev. 0, January 13, 2000
- HNF-SD-WM-QAPP-036, *Waste Management Federal Services of Hanford, Inc. Quality Assurance Program Plan*, Rev. 3, September 15, 1999
- HNF-SD-WM-QAPP-037, *Quality Assurance Program Plan Waste Encapsulation and Storage Facility*, Rev. 0, November 6, 1998
- Hanford RWP S-404, *Routine Work within Contamination Areas in Posted Radiological Buffer Areas*, Rev. 15, February 8, 2000
- January 2000 Facility Evaluation Board (FEB) Assessment (222-S Laboratory/WSCF) Deficiency Evaluation Group (DEG) Results, April 13, 2000 and June 12, 2000
- LO-161-172, *Perform Complex 11A Hot Cell Operations*, Rev. K-4, April 3, 2000
- RCP-MD-001, *River Corridor Project (RCP) Roles, Responsibilities and Functions*, Rev. 1, May 19, 2000
- RCP-MD-007, *River Corridor Project Administrative Procedure Transition Plan*, Rev. 0, April 21, 2000
- RCP-PLN-002, *River Corridor Project Quality Assurance Program Plan (QAPP)*, draft
- RCP-PRO-001, *Policies and Procedures System Management Directives, Management Plans and Procedures*, Rev. 0, June 16, 2000
- RCP-PRO-002, *Training Development and Administration*, Rev. 0, June 12, 2000
- RCP-PRO-012, *Authorization Envelope and Authorization Agreement Requirements for Industrial, Radiological, Non-Nuclear and Nuclear Facilities*, Rev. 1, June 13, 2000
- RCP-PRO-017, *Subcontractor Safety and Health Oversight*, Rev. 0, June 12, 2000
- RCP-SI-002, *River Corridor Project Design Authorities*, Rev. 1, March 20, 2000
- RCP-310, *300 LEF Project Administration Procedures*, Section 6.01, "Training Program Description," Rev. 0, June 16, 2000
- SI-300 Area-007, *Management and Control of Procurements*, Rev. 0, November 11, 1999
- SI-300 Area-010, *Approval Designators and Safety Classification*, Rev. 1, March 15, 1999
- SI-300 Area-010, *Triggers for Determining Need for PAAA Reviews*, Rev. 1, November 17, 1998
- SI-324 Bldg-012, *Measuring and Test Equipment Assignments*, Rev. 1, January 7, 2000
- WMH-MD-045, *Supervision of Field Work Activities*, Rev. 0, July 9, 1999
- WMP-100, *Waste Management Project Policies*, Release 36, June 16, 2000
- WMP-200, *Waste Management Project Procedures*, Release 117, June 19, 2000
- WMP-MD-048, *Waste Management Project Implementation of HNF-SD-WM-QAPP-036, Quality Assurance Program Plan, During Organizational Realignment*, Rev. 0, June 6, 2000
- WRP1-OP-052, *Receive and Load TRUPACT-II Containers*, Rev. C1, May 11, 2000
- Waste Management Federal Services of Hanford, Inc. Internal Memo, *Approval of Design Authorities for 222-S and WSCF Laboratories*, from S. L. Brey, WMH, to D. B. Powell, Jr., April 28, 1998.

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ANALYTICAL SERVICES PROVIDER (ASP)

Interviews Conducted

- Cognizant Engineer, 222-S Laboratory
- Design Authority, 222-S Facility
- Engineer, QA
- Manager, Maintenance, 222-S Laboratory
- Manager, Operations, 222-S Laboratory
- Manager, Project Support
- Manager, QA
- Manager, Radiological Control, 222-S Laboratory
- Manager, Business Management, 222-S Laboratory
- Operations Lead, 222-S Laboratory
- QA Engineer/Occurrence Report Coordinator, 222-S Laboratory
- Secretary, 222-S Laboratory
- Shift Lead Chemical Technologist, 222-S Laboratory
- Shift Manager, 222-S Laboratory
- Shift Operations Supply Room Custodian/Operator, 222-S Laboratory
- Staff member, Business Management, 222-S Laboratory.

Observations

- Development and Review of Facility Modification Engineering Change Notice (ECN) by Design Authority, June 21, 2000
- Critique of 222-S Laboratory Off-Normal Occurrence of June 20, 2000, June 21, 2000
- Review of 222-S Laboratory/WSCF Performance Measures/Indicators sorted by ISMS Core Function, June 21, 2000
- Management Assessment report development, June 22, 2000
- 222-S Laboratory Shift Operations Office, June 22, 2000
- Material issue from 222-S Laboratory Shift Operations Supply Room, June 22, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for QA are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level.*

HNF-MP-003, *Integrated Environment, Safety, and Health Management System Description*, and supporting documents require that adequate procedures and mechanisms are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level. QA controls are defined and implemented through a multi-tiered

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system of policies, plans, procedures, and management directives. HNF-PRO-599, *Project Hanford Quality Assurance Program Description (QAPD)*, supported by Hanford Site-wide procedures, defines FH's QA program requirements and expectations. HNF-SD-WM-QAPP-036, *Waste Management Federal Services of Hanford, Inc. Quality Assurance Program Plan (QAPP)*, is used to implement the requirements of the QAPD for ASP, formerly a component of Waste Management Federal Services of Hanford, Inc. ASP has issued a management directive (ASP-MD-002, *Analytical Services Implementation of HNF-SD-WM-QAPP-036, Quality Assurance Program Plan, During Organizational Realignment*), which provides an organizational structure matrix to the new structure as defined in HNF-MP-003 and ASP-100, *Analytical Services Policies*. An update to the QAPP is in development with a projected completion date of August 17, 2000.

Implementing procedures exist at the FH, ASP, and facility level (222-S Laboratory and WSCF). Engineering and QA personnel interviewed demonstrated satisfactory knowledge of the requirements and the mechanisms by which these requirements are met. Observations, other than the critique attended that is discussed below, indicated that work is performed in accordance with procedural requirements.

Criterion 2: *Procedures and/or mechanisms for QA areas contain clear roles and responsibilities. QA is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

As discussed under Criterion 1 above, the current QAPP does not reflect the current structure as described in the ASP ISM System Description (HNF-MP-003, Appendix D). However, ASP-100 provides a clear description of roles and responsibilities in support of HNF-MP-003. ASP-100, *Analytical Services Policies*, Section 1.0, "General Policy Statements," establishes the commitment to implement the ISMS and assigns line management full ownership of the quality system. This procedure also sets the expectation that all employees perform work safely, comply with the Master Safety Rules, and invoke Stop Work Authority. WMP 100, Section 4.0, "Fluor Hanford Analytical Services Charter Description," assigns subordinate managers responsibility for establishing clear roles, responsibilities, and expectations for their assigned personnel.

Interviews of personnel at all levels from senior facility management, through lead positions, bargaining unit, and secretarial staff, indicated a clear understanding of the individual's role and responsibilities, as well as the principles of the ISMS. Each worker interviewed was able to describe or show where their roles and responsibilities (or assigned duties) could be found, how they were qualified to performed these duties, and how they discharged them on a daily basis. There was strong and sincere acceptance of personal responsibility for the safety and quality aspects of their own work and that of personnel that they supervise. In general, there was little doubt that line management has responsibility for safety and that functional groups and Subject Matter Experts serve as advisors to line management to assist them in discharging their duties. The single notable exception is the impression given by comments from lead personnel and managers in the critique observed.

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Processes and procedures are in place that integrate quality, as well as environmental and safety considerations, into the work processes and products. Worker feedback is a significant positive contributor in key engineering, procurement, and quality processes examined. Line managers recognize and embrace their responsibility for safety.

Criterion 3: *Procedures and/or mechanisms for QA require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Procedures are in place to describe required QA controls and mechanisms. In addition to Hanford procedures (HNF-PROs), the following sections of ASP-200, *Analytical Services Procedures*, detail these requirements:

- Section 1.01, "Procedure Control"
- Section, 1.02, "Assessment Program"
- Section 2.08, "Control of Equipment and System Status"
- Section 2.16, "Technical Procedures"
- Section 3.01, "Work Management"
- Section 3.5, "Subcontractor Project and Construction Work"
- Section 3.12, "Chain of Custody for Environmental Media and Waste Samples"
- Section 3.18, "Instrument Calibration"
- Section 7.2, "Engineering Practices."

Readiness review requirements are specified in HNF-PRO-055, *Facilities Start-Up Readiness*, and ASP-200, Section 1.6, "Operational Readiness Activities." HNF-PRO-309, *Computer Software Quality Assurance Requirements*, establishes the QA requirements for computer software. Interviews and observations confirmed that, in most areas of ASP, required controls are implemented and verified as part of the work process or in review prior to approving documents or performing work. However, document reviews, observations, and interviews led to concerns in the areas of understanding and enforcement of procedure compliance expectations and understanding and application of computer software QA. **(ASP SME.4-1) (ASP SME.4-2)**

An "Off-Normal" Occurrence was declared at the 222-S Laboratory on June 20, 2000. On Tuesday, June 20, 2000, a load-in of water, acids, and reagents to the 11A hot cell was performed at the 222-S Laboratory. Upon completion of the task, the Health Physics Technician (HPT) assigned for coverage realized noncompliance with special instruction #6 of RWP S-404. The special instruction stated that a grab air sample and alpha continuous air monitor are required for load-in and load-out operations. The HPT immediately reported the incident to the supervisor. A critique of this event was observed on June 21, 2000. Based on a review of the RWP, the procedure governing the task, and ASP-200, Section 2.16, Rev. 9 of May 31, 2000, there is concern that the procedure is inappropriately designated as "Routine" vice "Continuous Use" (Paragraph 3.3.2 of ASP-200, Section 2.16). The RWP was not followed and was overly conservative/restrictive for the task. The Occurrence Report and information provided during

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the critique indicated that the missed activity had been placed in the RWP for earlier work on samples from the Plutonium Finishing Plant (PFP) and was not really required for this task.

During the course of the critique, statements were made by laboratory personnel that indicated a formal pre-job was not required nor was review of the procedure required because this procedure had been accomplished "hundreds of times." The HPT clearly took responsibility for the lapse in not completing all of the steps required by the RWP. Management attempted to downplay the significance of this because the "checks were not really required." It was noted in the critique that a replacement for this RWP had already been completed and would be issued. This could have been identified during a pre-job or in a review of the routine procedure before starting the job. Workers performing the task did not conduct an effective pre-job, or effectively communicate during the task to ensure that all requirements were completed. There appeared to be no recognition, other than by the critique leader and the HPT involved, that there had indeed been a breakdown in multiple Core Functions of the ISMS (Define Scope of Work, Analyze Hazards, Establish Controls, and Perform Work within Controls). Statements by the workers involved in the critique clearly indicated that their understanding of procedure compliance was different than what management had indicated and the expectations were not challenged by their supervisors, who were also present. Again, the critique leader is the exception. **(ASP SME.4-1)** This is not ASP's first indication that procedure compliance and inadequate procedure review are of concern. This was identified in the FEB assessment conducted in January 2000. **(ASP SME.4-3)**

An "Off-Normal" Occurrence was declared at WSCF on June 20, 2000. On Tuesday, June 20, 2000, WSCF management discovered that the computer program that tracks sample contribution to the facility total radionuclide inventory was in error. The computer program was not adding sample group numbers with 2000-NNN designators. The error was attributed to not maintaining configuration control of the computer program and subsequent Y2K compliance testing. Immediate actions were taken to temporarily suspended sample receipt pending completion of a physical inventory of sample volumes and perform a User Acceptance Test on the computer program in question. The physical inventory indicated that the total was well below facility limits. The report of the critique, which was conducted on June 20, 2000, was reviewed. The Occurrence Report Coordinator, who also recorded the minutes of the critique, was interviewed.

The critique identified that, although the program in question provided input to the Laboratory Inventory Management System, it was not designated as quality-affecting software when developed and no subsequent configuration control was applied. HNF-PRO-309 specifies that computer software QA requirements "apply to software used in areas significant to occupational, environmental, on-site or off-site safety, and quality affecting functions." The decision to not place this program under configuration control and impose appropriate QA requirements is questionable. WSCF and ASP had several opportunities to recover from this decision. The FH Y2K Project communicated extensively with all projects and facilities to identify computer hardware and software applications that needed to be evaluated for Y2K compliance. The January 2000 FEB Assessment also identified that "Software configuration management

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requirements were not fully implemented for some commercial off-the shelf software products. This is a repeat issue with improvement noted." The October 1999 FEB assessment noted "Software quality assurance and life cycle requirements are not fully implemented for software at the Waste Management Laboratory. This is a repeat issue with minimal improvement noted." Finally, the September 1997 FEB assessment noted "Configuration of analytical equipment software is not controlled to prevent loss of data." (**ASP SME.4-2**) (**ASP SME.4-3**)

Another issue documented in the most recent FEB assessment of the ASP was implementation of the Corrective Action Management System. The lack of effective action to address and correct the underlying software QA issues indicates that this is still a problem. The most recent action on the FEB identified repeat issue of January 2000 was to table discussion, for the second time, on June 12, 2000 to "verify if the SLIC (one of the specific software products identified under the FEB issue statement) is required to be under QA control." (**ASP SME.4-3**)

Criterion 4: *Procedures and/or mechanisms for QA are implemented to ensure that personnel assigned to the subject area have a satisfactory level of competence.*

Training and qualification requirements are established in accordance with HNF-PROs and ASP-200, Section 5.01, "Training Plan" and Section 5.3, "Analytical Services Training Implementation Matrix." Individual training/qualification plans or qualification cards are established for engineering staff. Qualification summaries, individual qualification sheets, and formal written assignment documents were reviewed. The QA Manager is in the process of developing a qualification card for quality engineers. Interviews, and review of qualification cards for engineering staff, indicated that personnel assigned to quality-affecting positions have training and qualification requirements established and that these requirements are met before they are assigned unsupervised duties. The level of competence demonstrated in activities observed was commensurate with the responsibilities assigned.

Criterion 5: *Procedures and/or mechanisms for QA are implemented to ensure that within the subject area, feedback and continuous improvement occur.*

Feedback and improvement processes and mechanisms are implemented through HNF-PROs and ASP-200, Section 1.02; Section 1.03, "Corrective Action Management," Section 1.05, "Price Anderson Amendments Act Review and Reporting Process;" Section 1.9, "Trending Program;" and DI-WMHQS-008-00, *Tracking 222-S Internal Commitments in CATRAX*. Peer and worker review and input are significant elements of the process to ensure that quality requirements are included in work packages, designs, and procurement documents. Performance indicators are established and monitored to identify performance trends and take action, as appropriate. Additional performance metrics have been developed to display FEB DEG results, Occurrence Reports, and Weekly DEG Meeting results by ISMS Core Function. Interviews and observations indicated that ASP personnel are very proactive in identifying opportunities for improvement from analysis of their own performance, assessments, and lessons learned. Facility engineers meet each day to receive information regarding potential conflicts or support requirements from the Engineering Manager who attends the 222-S Laboratory Operations Turnover. This allows

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the engineers to be proactive by reviewing appropriate reference material and contacting Field Work Supervisors to support ongoing work or operations.

ASP worked with the Waste Management Project (WMP) on the issues raised at the Nuclear Material Stabilization (NMS) Project related to calibration of radiation monitoring instruments. Although the specific concern was not applicable to ASP, they did find general applicability in the way quality requirements are specified in statements of work for environmental-related tasks. It is evident that there is still a weakness in Corrective Action Management (see Criterion 3).

Conclusion

Plans, policies, and procedures are in place to ensure that roles and responsibilities for quality are defined, competence is commensurate with responsibilities, a process of continuous improvement is implemented, and line management is responsible for quality.

This objective has been met.

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FAST FLUX TEST FACILITY (FFTF)

Interviews Conducted

- Cognizant Engineer (3)
- Deputy Manager, Operations
- Deputy Manager, Shift Operations (3)
- Design Authorities (2)
- Engineer, QA (2)
- Engineering Lead
- Instrument Technician
- Lead, QA
- Lead, Training
- Manager, Engineering
- Manager, Operations
- Manager, Shift Operations (3)
- Technician, Quality Control.

Observations

- Shift Operations Turnover meeting, June 27, 2000
- Shift Operations Team meeting, June 27, 2000
- Plan of the Day meeting, June 27, 2000
- Post-functional check of field calibration gage for work procedure ICP-PV-030, Rev. OA, June 27, 2000
- Operations Shift B Team meeting and analysis of Monthly Team Performance Indicators, June 27, 2000
- QA review of material requisition, June 27, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for QA are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level.*

HNF-MP-003 and supporting documents require that adequate procedures and mechanisms are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility- and activity-level. As noted at other FH projects, QA controls are defined and implemented through a multi-tiered system of policies, plans, procedures, and management directives. HNF-PRO-599, supported by Hanford Site-wide procedures, defines FH's QA Program requirements and expectations. The *FFTF Final Safety Analysis Report*, Chapter 16, "Quality Assurance Program Plan," establishes the QA Program for FFTF and

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implements the requirements of the QAPD. FSP-FFTF-POL-6-14, *FFTF Plant Policy Manual*, Section 6.0, "Quality Assurance," presents an overview of the QA Program.

Implementing procedures exist at the FH- and facility-level. Engineering, Operations, and QA personnel interviewed demonstrated excellent knowledge of the requirements and the mechanisms by which these requirements are met. Observations indicated that work is performed in accordance with procedural requirements.

Criterion 2: *Procedures and/or mechanisms for QA areas contain clear roles and responsibilities. QA is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

The QAPP refers the reader to FSP-FFTF-POL-6-14, Section 2.0, "Organization, Responsibilities, and Authority," that reflects the current organization structure, roles, and responsibilities. FSP-FFTF-POL-6-14 assigns the FFTF Project Director responsibility to ensure that a commitment to the ISMS is demonstrated and assigns line management full ownership of the quality system. FSP-FFTF-POL-6-14, Section 4.0, "Safety Administration," sets the expectation that all employees perform work safely, comply with procedural requirements, and invoke Stop Work Authority.

Interviews of personnel at all levels from senior facility management, through lead positions and bargaining unit indicated a clear understanding of their roles and responsibilities, as well as the principles of the ISMS. There was a strong commitment to and sense of personal responsibility for the safety and quality aspects of their own work and that of personnel that they supervise demonstrated. **(FFTF SME.4-1)**

Processes and procedures are in place that integrate quality, as well as environmental and safety considerations, into the work process and products. Procedure verification and validation practices involve field walkdown of the documents with craft personnel participation. **(FFTF SME.4-2)**

Criterion 3: *Procedures and/or mechanisms for QA require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Procedures are in place to describe required QA controls and mechanisms. In addition to the HNF-PROs, subordinate FFTF procedures detail these requirements. A post-maintenance functional test of a field calibration gauge was observed, with no variances noted. Both the instrument technician and the quality control technician were knowledgeable of procedural requirements and the technical basis for the task they were performing. A QA review of a procurement document was observed. The QA engineer was extremely knowledgeable of the PASSPORT procurement system and associated systems such as the Job Control System. The review was thorough and encompassed much more than the minimum requirements to ensure that there were no inconsistencies in any parts of the document or in the required review and approval chain. Interviews and observations indicated that required controls are implemented

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and verified as part of the work process or in review prior to approving documents or performing work. Observations of the post-maintenance gauge functional check, procurement document review, and procedure/document verification and validation process indicated a strong commitment to the principles of the ISMS. (FFTF SME.4-1)
(FFTF SME.4-2)

Criterion 4: *Procedures and/or mechanisms for QA are implemented to ensure that personnel assigned to the subject area have a satisfactory level of competence.*

Training and qualification requirements are established in accordance with FH procedures and FFTF implementing procedures. Individual training/qualification plans or qualification cards are established for technical support staff, which includes Cognizant, QA, and Safety Engineers. Qualification summaries, individual qualification sheets, and formal written assignment documents were reviewed. Interviews, and review of qualification cards for engineering, operations, and QA staff, indicated that personnel assigned to these quality-affecting positions have training and qualification requirements established and that these requirements are met before they are assigned unsupervised duties. QA Inspectors are fully qualified and certified in accordance with HNF-PRO-263, *Qualification and Certification of Inspection and Test Personnel*. A very high level of competence was demonstrated in activities observed and is more than commensurate with the responsibilities assigned.

Criterion 5: *Procedures and/or mechanisms for QA are implemented to ensure that within the subject area, feedback and continuous improvement occur.*

Feedback and improvement processes and mechanisms are implemented through HNF-PROs and FSP-FFTF-POL-6-14, Section 5.0, "Facility Internal Assessment Program;" Section 7.0, "FFTF Lessons Learned" and Administrative Procedure A-3, *Corrective Action Management System*. A meeting of an Operations Shift Team was observed in which the team performance indicators used to monitor their own performance were reviewed. Individual team members were involved and focused on identifying both positive aspects of individual performance that could be shared within the team and opportunities for improvement. The team as a whole clearly understands the purpose of performance indicators and their use in driving continuous improvement.

Analysis of the review process for engineering products indicated that peer and worker review and input are significant elements of the process to ensure that quality requirements are included in work packages, designs, and procurement documents. Results from the facility designed and administered ISMS Survey were analyzed to identify primary focus areas to enhance implementation and understanding of the ISMS throughout FFTF. Interviews and observations indicated that FFTF personnel are very proactive in identifying opportunities for improvement from analysis of their own performance, assessments, and lessons learned. (FFTF SME.4-2)

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Conclusion

Plans, policies, and procedures are in place to ensure that roles and responsibilities for quality are defined, competence is commensurate with responsibilities, a process of continuous improvement is implemented, and line management is responsible for quality.

This objective has been met.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Chief Engineer
- Engineer, QA (2)
- Instructor (2)
- Level III Inspector Coordinator, FH
- Manager, Acquisition Verification Services, FH
- Manager, Engineering
- Manager, Environment, Safety, Health, and Quality
- Manager, Procedures
- Material Coordinator (3)
- Team Lead, QA
- Technician, QA (2)
- Vice President, Performance Assurance, FH.

Observations

- Evaluation of procedure changes for required reading by QA Level III Inspectors, June 14, 2000
- QA Engineer review of an ECN to modify the muffle furnace off-gas system, June 15, 2000
- Development and approval of two QA Inspection Plans, June 15, 2000
- Review and approval of a Bill of Material for Quality Level 1 work, June 15, 2000
- Technical resolution meeting on 10-liter drum potential hydrogen build-up, June 16, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for QA are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level.*

QA controls are defined and implemented through a multi-tiered system of procedures. HNF-MP-599, supported by Hanford Site-wide procedures, defines FH's QA program requirements and expectations. The specific QA program employed at the NMS Project is defined by FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vol. 2, Section 15.1, "Quality Assurance Program Plan."

Project-specific procedures and desk instructions support the QAPP. Engineering staff incorporates QA program requirements and controls into work activities, operations, and procurements during initial planning. The QA organization provides oversight via document reviews, surveillances, assessments, and inspections. Although not current, the NMS QAPP and FSP-PFP-5-8, Vol. 1, Section B, "Nuclear Materials Stabilization Project-Key Functions &

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Responsibilities,” levies the responsibility for implementation of the QA program on the PFP line management team. Engineering and QA evaluate all changes and modifications to the NMS Project’s mission or operations for potential QA program impacts.

Though this is an area that should continuously improve, QA procedures and/or mechanisms are in place and in use.

Criterion 2: *Procedures and/or mechanisms for QA areas contain clear roles and responsibilities. QA is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

FH has developed and issued documents and procedures to define Hanford Site-wide QA roles and responsibilities. Client goals, expectations, and regulations are captured in HNF-MP-599. Multiple Hanford Site-wide procedures and senior management directives support HNF-MP-599. The FH Performance Assurance fulfills the role of interpretive authority for all matters dealing with QA and is responsible for any issue resolution.

NMS QA roles and responsibilities are not clear. FSP-PFP-5-8, Vol. 2, Section 15.1, is outdated and does not recognize current corporate or project structure. **(NMS SME.4-2)** This weakness is partially mitigated by the guidance contained in FSP-PFP-5-8, Vol. 1, Section B and other facility-specific procedures and desk instructions.

Though a concern in this area exists, roles and responsibilities of line management have been defined.

Criterion 3: *Procedures and/or mechanisms for QA require controls to be implemented that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

The primary site documents that trigger the implementation of QA requirements application to specific work activities are HNF-PRO-259, *Graded Approach*; HNF-PRO-1819, *PHMC Engineering Requirements*; HNF-PRO-233, *Review and Approval of Documents*; and HNF-PRO-5432, *Hold Point Application in Technical Documents*. These documents define the QA level of rigor and oversight that must be provided depending on the potential risk of a respective activity.

At the NMS Project, further clarification and direct application of these requirements are provided through various facility-specific procedures, including FSP-PFP-5-8, Vol. 2, Section 13.4, “Work Management Process Description and Job Control System Process” and Section 13.5, “Processing PFP Documents.” Performance of key NMS QA oversight efforts are accomplished through the use of desk instructions such as DI-PFPQ-007, *PFP/Q PFP Work Plan/Pre-Approved Procedure*; DI-PFPQ-013, *PFP Inspections for Operations, Maintenance, and Modifications*; and FDH-QA-DI-001, *Operating Instructions for Administrating the FDH QA Level III Inspection Coordinator’s Activities*. Interviews and observation of QA engineers

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and technicians as well as engineers and material coordinators indicated that controls are in place and being used, but integration could be improved.

QA procedures and mechanisms are in-place and readiness is confirmed prior to performing work.

Criterion 4: *Procedures and/or mechanisms for QA are implemented to ensure that personnel assigned to the subject area have a satisfactory level of competence.*

Hanford Site-wide expectations for competence are set by HNF-MP-599, HNF-POL-EMPLOY, *Employee Training Policy*, and HNF-MP-011, *Site-wide Qualification and Training Plan*. The FH Level III Inspector Training Program provides a high level of confidence, excellent records, and has had multiple previous reviews with outstanding results. Both certified inspectors and their management recognize this program as superior. (NMS SME.4-1)

The ISMS review indicated that QA Inspection Plans are seldom attached to their associated PASSPORT purchase requisition and transmitted to Acquisition Verification Services. Because several purchase requisitions are divided into individual orders, it is extremely difficult to track inspection requirements to individual items. This necessitates the expenditure of significant effort and time to ensure proper definition of requirements prior to the performance of receipt inspections.

NMS Project uses FSP-PFP-1121, *Plutonium Finishing Plant Training Administration*, to define training and competence requirements. Sections that have the greatest impact on QA include Section 6, "Facility Management Training Program;" Section 9, "Engineer Training Program;" Section 11, "Person-In-Charge Training Program;" and Section 15, "Quality Assurance Training, Qualification, and Certification Program."

Personnel interviews did not indicate a serious weakness in the area of QA competency. However, QA required reading is not being accomplished by Engineering and QA personnel. (NMS SME.4-3)

FSP-PFP-1121, Section 9, requires QA training for engineering staff; however, the Engineering required reading list, which is the foundation for this program, contains no QA requirement documents. Some demonstrated performance weakness include the following:

- A QA Engineer developed an informal procurement training session for engineering staff because there was a poor understanding of requirements.
- Observation of a QA Engineer's review of an ECN that resulted in it being rejected due to it not being complete. The Unreviewed Safety Question Evaluation had not been accomplished.
- Multiple post-work review surveillances indicate a weakness in QA compliance.

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FSP-PFP-1121, Section 15, and DI-PFPQ-012, *Required Reading Program*, requires that the QA Manager, engineers, and technicians complete required reading lists and maintain them current to changing procedure requirements. These lists are significantly (~2 years) outdated. Procedure changes are not being identified, read, and appropriately recorded. It was indicated that a new QA Technician (~2 months) had never been provided a copy of required reading to complete. Though this concern has not appeared to impact the current staff (most have several years of PFP experience), it may adversely impact new personnel.

Though a significant concern exists in this area, overall, procedures are implemented to ensure QA personnel are competent.

Criterion 5: *Procedures and/or mechanisms for QA are implemented to ensure that within the subject area, feedback and continuous improvement occur.*

In addition to FH-mandated systems, the NMS Project provides additional mechanisms to help foster continuous improvement. Key processes include DI-PFPQ-015, *PFP/Q Surveillance Program*; DI-PFPQ-003, *JCS Work Package Post Completion Review*; and DI-PFPQ-016, *PFP Action Tracking System (PATs) Guide*. Further clarity of FH programs is provided by FSP-PFP-5-8, Vols. 1 and 2, Section 1.14, "Managing Lessons Learned," and Section 15.2, "Nonconforming Item Reporting and Control." All of these mechanisms are used to gather information on engineering, maintenance, and operation activities and evolutions. Information is tracked and used to help foster improvement.

QA procedures are implemented to ensure feedback and continuous improvement occurs.

Conclusion

Plans, policies, and procedures are in place to ensure that roles and responsibilities for quality are defined, competence is commensurate with responsibilities, a process of continuous improvement is implemented, and line management is responsible for quality.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Chief Engineer
- Chief Engineer, 327 Building
- Contracts and Procurement Lead
- Director, Environmental, Safety, Health, and Quality
- Engineer, QA (3)
- Instructor
- Manager, Engineering, 324 Building
- Manager, Training
- Technician, QA.

Observations

- Six post review of QA Inspection Plan results, June 22, 2000
- Two review and approval of Bill of Material for Quality Level 3 work, June 22, 2000
- Meeting resolving QA problems with Round Grout Waste Containers prior to shipment from manufacturer, June 22, 2000
- QA Center of Excellence meeting, June 22, 2000
- Resolution of initial comments on RCP QAPP, June 22, 2000
- Waste Management Northwest inspection of Round Grout Waste Containers after delivery and prior to FH receipt inspection, June 26, 2000.

Discussion of Results

Criterion 1: *Procedures and/or mechanisms for QA are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level.*

The RCP was created in October of 1999, by reorganizing discrete scopes of work from across the PHMC. As such, the QA Program at the River Protection Project is a composite of multiple documents. At the 324 and 327 facilities, HNF-IP-1264, *324/327 Facilities Stabilization Projects*, Section 8.1, "Quality Assurance Program Plan," is used. Within FASTER, HNF-4069, *Facility Stabilization and Environmental Restoration (FASTER) Quality Assurance Program Plan (QAPP)*, documents the program employed. The Fuel Supply Shutdown (FSS) Project uses, HNF-2330, *Quality Assurance Program Plan for Fuel Supply Shutdown Project*, to define their program. All three of these documents trace their QA requirements flow down from the HNF-MP-599, through FSP-MP-004, *B & W Hanford Company Facility Stabilization Project Quality Assurance Program Plan (QAPP)*.

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Prior to the reorganization, the 310 and 340 Facilities were under the responsibility of Waste Management Hanford and still use the Waste Management Hanford QA Program defined HNF-SD-WM-QAPP-036.

Various project-specific procedures, standing instructions, and management directives support all of these QAPPs. Engineering staff incorporates QA Program requirements and controls into work activities, operations, and procurements during initial planning using HNF-PRO-233 and HNF-IP-1264, Section 8.2, "Quality Process Planning." The QA organization provides adequate oversight through document reviews, assessments, and inspections.

Though not currently up-to-date, the multiple RCP QAPPs, as well as RCP-MD-001, *River Corridor Project Roles, Responsibilities and Functions* do assign responsibility for implementation of the QA Program on the RCP line management team. As explained below, RCP is in the process of consolidating these multiple documents.

Engineering and QA evaluates all changes and modifications to the RCP's mission or operations for potential QA Program impacts. All critical characteristics used in procurement of Commercial Grade Items, in the 324 and 327 Buildings are recorded in an engineering document for each facility. These documents are updated by ECN, thus placing this data under configuration control and ensuring the information is available for future reference.
(RCP SME.4-1)

Though room for improvement exists, QA procedures and/or mechanisms are in place and in use.

Criterion 2: *Procedures and/or mechanisms for QA areas contain clear roles and responsibilities. QA is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

The RCP management team has recognized QA roles and responsibilities are not clear. All RCP QAPPs are outdated and do not recognize the current corporate or project structure.

(RCP SME.4-2) RCP is in the process of correcting this self-identified weakness. A combined document, RDP-PLN-002, *River Corridor Project Quality Assurance Program Plan (QAPP)* has been drafted and is presently in management review.

Interviews indicate that the QA organization is very active in supporting the needs of management, facilities, and individuals, and is effectively integrated into the day-to-day activities of RCP.

Though a concern in this area exists, roles and responsibilities of line management have been sufficiently defined.

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Criterion 3: *Procedures and/or mechanisms for QA require controls to be implemented that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

RCP uses Hanford Site-wide documents to trigger the implementation of QA requirement application to specific work activities. These include the following:

- HNF-PRO-259
- HNF-PRO-1819
- HNF-PRO-233
- HNF-PRO-5432, *Hold Point Application in Technical Documents*.

These documents adequately define the QA level of rigor and oversight that must be provided depending on the potential risk of a respective activity.

Further clarification and direct application is provided through various facility-specific procedures including the following:

- RCP-PRO-012, *Authorization Envelope and Authorization Agreement Requirements for Industrial, Radiological, Non-Nuclear and Nuclear Facilities*
- SI-300 Area-007, *Management and Control of Procurements*
- SI-300 Area-010, *Approval Designators and Safety Classification*
- HNF-IP-1264
 - Section 2.3, “Technical Procedure Development and Control”
 - Section 4.1, “Job Control System Implementation”
 - Section 8.2.

Performance of key RCP QA oversight efforts are accomplished through the use of HNF-IP-1264, Section 2.10, “Management Assessment.” Interviews with QA Engineers and Technicians, as well as the Engineering staff indicated that controls are in-place and being used. Integration is satisfactory.

QA procedures and mechanisms are in-place and readiness is confirmed prior to performing work.

Criterion 4: *Procedures and/or mechanisms for QA are implemented to ensure that personnel assigned to the subject area have a satisfactory level of competence.*

RCP uses HNF-IP-1281, *River Corridor Training Plan*, to define overall training and competence requirements. At the 324/327 Facilities, this document is supported by HNF-IP-1264, Section 2.16, “Facility Worker Training” and RCP-PRO-002. At FSS Facilities, FSP-FSS-5-35, *Fuel Supply Shutdown Project Control Manual*, Section 05-02, “Training Plan,” is the controlling document. The 310 and 340 Facilities operate to RCP-310, *300 LEF Project Administration Procedures*, Section 6.01, “Training Program Description.”

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Interviews with RCP QA personnel indicate a highly experienced, knowledgeable, and very competent staff. But, QA personnel have not completed required individual training plans in accordance with HNF-IP-1281 and HNF-IP-1264, Section 2.16, Attachment E.

(RCP SME.4-3) RCP personnel identified this concern several months ago. Training plans are presently being approved for QA staff to complete.

Procedures are adequately implemented to ensure QA personnel are competent though weakness in documentation was identified.

Criterion 5: *Procedures and/or mechanisms for QA are implemented to ensure that within the subject area, feedback and continuous improvement occur.*

RCP uses an integrated Management Assessment Program defined by HNF-IP-1264, Section 2.10, to help foster continuous improvement. All QA surveillances and audits are completed under the auspice of this program. HNF-IP-1264, Section 2.14, "Lessons Learned." provides further clarity to the FH program. These mechanisms are used to gather information on engineering, maintenance, and operation activities and evolutions. Information is tracked and used to help foster improvement.

QA procedures are adequately implemented to ensure feedback and continuous improvement occurs.

Conclusion

Plans, policies, and procedures are in place to ensure that roles and responsibilities for quality are defined, competence is commensurate with responsibilities, a process of continuous improvement is implemented, and line management is responsible for quality.

This objective has been met.

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WASTE MANAGEMENT PROJECT (WMP)

Interviews Conducted

- Coordinator, PAAA
- Design Authority and Cognizant Engineer (5)
- Engineer, Planning and Performance Quality Engineer, FH
- Lead, QA
- Manager, Acquisition Verification Services, FH
- Manager, Engineering
- Manager, Facility Engineering (4)
- Manager, FEB, FH
- Manager, Performance Assurance Program
- Manager, PAAA, FH
- Manager, Project Integration and Compliance Technical Support, FH
- Manager, Project Integration and Compliance, FH
- Manager/Lead, Facility/Program QA (6)
- Nuclear Waste Process Operator, Waste Receiving and Processing Facility
- QA Technician, ASP
- Vice President, Performance Assurance, FH.

Observations

- Waste Services Issues meeting, June 14, 2000
- Performance Indicator Report process of FH Project Integration and Compliance group (Central Corrective Action Management), June 15, 2000
- QA review of WMP procedures, June 16, 2000
- Development and approval of QA Inspection Plan, June 16, 2000
- Conduct of QA Worker Assessment, June 16, 2000
- QA review and approval of PASSPORT System material requisition, June 16, 2000
- Monthly meeting of FH Performance Indicator Forum, June 19, 2000
- Analysis of FH Voluntary Protection Program Perception Survey data associated with annual Hanford General Employee Training, June 19, 2000
- Receipt inspection of Waste Isolation Pilot Plant Transuranic Program spare parts at Waste Receiving and Processing Facility, June 20, 2000.

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Discussion of Results

Criterion 1: *Procedures and/or mechanisms for QA are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level.*

HNF-MP-003 and supporting documents require that adequate procedures and mechanisms are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility- and activity-level. QA controls are defined and implemented through a multi-tiered system of policies, plans, procedures, and management directives. HNF-PRO-599, supported by Hanford Site-wide procedures, defines FH's QA Program requirements and expectations. HNF-SD-WM-QAPP-036 and HNF-SD-WM-QAPP-037, *Quality Assurance Program Plan Waste Encapsulation and Storage Facility*, implement the requirements of the QAPD. Although these documents do not reflect the current structure as described in WMP ISM System Description (HNF-MP-003, Appendix D), WMP has issued a management directive (WMP-MD-048, *Waste Management Project Implementation of HNF-SD-WM-QAPP-036, Quality Assurance Program Plan, During Organizational Realignment*) that provides an organizational structure matrix to the new structure as defined in HNF-MP-003 and WMP-100. An update to the WMP QAPPs is in development with a projected completion date of October 1, 2000. The revised document will integrate Waste Encapsulation and Storage Facility into the WMP QAPP.

Implementing procedures exist at the FH-, WMP-, and facility-level, as well as for special programs such as the Waste Isolation Pilot Plant Transuranic Program. Engineering and QA personnel interviewed demonstrated satisfactory knowledge of the requirements and the mechanisms by which these requirements are met. Observations indicated that work is performed in accordance with procedural requirements.

Criterion 2: *Procedures and/or mechanisms for QA areas contain clear roles and responsibilities. QA is effectively integrated with line-support managers to ensure that line managers are responsible for safety.*

As discussed under WMP Criterion 1, the WMP QAPPs do not reflect the current structure as described in the WMP ISM System Description (HNF-MP-003, Appendix D). However, WMP-100 provides a clear description of roles and responsibilities in support of HNF-MP-003. WMP-100, Section 1.0 establishes the commitment to implement the ISMS and assigns line management full ownership of the quality system. WMP-100, Section 4.0 assigns subordinate managers responsibility for establishing clear roles, responsibilities, and expectations for their assigned personnel. The operation of most of the facilities and programs assigned to WMP were not significantly changed in the FH reorganization of October 1999. Consequently, subordinate documents adequately describe the roles and responsibilities of individuals in the associated facilities and programs. Interviews conducted indicated that QA, and other personnel in quality-affecting positions, clearly understand their roles and responsibilities. Processes and procedures are in place that integrate quality, as well as environmental and safety considerations, into the

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work process and products. Worker feedback is a significant positive contributor in key engineering, procurement, and quality processes examined. **(WMP SME.4-1)** Line managers recognize and embrace their responsibility for safety.

Criterion 3: *Procedures and/or mechanisms for QA require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Procedures are in place to describe required QA controls and mechanisms. In addition to the HNF-PROs, the following Sections of WMP-200, *Waste Management Project Procedures*, detail these requirements:

- Section 1.1, "Procedure Control"
- Section 1.2, "Assessment Program"
- Section 2.8, "Control of Equipment and System Status"
- Section 3.1, "Maintenance Work Management"
- Section 3.5, "Subcontractor Project and Construction Work"
- Section 3.12, "Chain of Custody for Environmental Samples"
- Section 3.18, "Calibration Management."

Readiness review requirements are specified in HNF-PRO-055 and WMH-200, Section 1.6. Interviews and observations indicated that required controls are implemented and verified as part of the work process or in review prior to approving documents or performing work. An excellent exchange between representatives from various areas of the Waste Services Program was observed at the weekly Waste Services Issues meeting of information related to ongoing and upcoming workload, expected issues, personnel absences, and alternates assigned to perform those tasks demonstrated this integration of efforts. **(WMP SME.4-1)**

Criterion 4: *Procedures and/or mechanisms for QA are implemented to ensure that personnel assigned to the subject area have a satisfactory level of competence.*

Training and qualification requirements are established in accordance with HNF-PROs and WMH-200, Section 5.1, "Training Plan" and Section 5.3, "Training Implementation Matrix." Individual training/qualification plans or qualification cards are established for QA and Engineering staff. Interviews and review of qualification cards indicated that personnel assigned to quality-affecting positions have training and qualification requirements established and that these requirements are met before they are assigned unsupervised duties. The level of competence demonstrated in activities observed was commensurate with the responsibilities assigned.

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Criterion 5: *Procedures and/or mechanisms for QA are implemented to ensure that within the subject area, feedback and continuous improvement occur.*

Feedback and improvement processes and mechanisms are implemented through HNF-PROs and WMH-200, Section 1.2; Section 1.3, "Corrective Action Management," Section 1.5, "Price Anderson Amendments Act Review and Reporting Process;" and Section 1.9, "Trending Program." Peer and worker review and input are significant elements of the process to ensure that quality requirements are included in work packages, designs, and procurement documents. Performance indicators are established and monitored to identify performance trends and take action, as appropriate. Interviews and observations indicated that WMP personnel are very proactive in identifying opportunities for improvement from analysis of their own performance and lessons learned. **(WMP SME.4-1)** As an example, an issued raised at the NMS Project related to calibration of radiation monitoring instruments was examined for applicability to the project. Instruments were identified at Waste Encapsulation and Storage Facility that were affected by this issue. Immediate remedial action was taken and a plan developed to modify future procurement of calibration services to prevent recurrence. In another instance, a review of all WMP-110, WMP-200, and WMP-300 level procedures, and the QAPP, was initiated to ensure that there are no conflicts with the DOE Office of Enforcement (EH-10) letter of July 1, 1999, which extended enforcement of the QA Rule to nonnuclear, radiological facilities.

Conclusion

Plans, policies, and procedures are in place to ensure that roles and responsibilities for quality are defined, competence is commensurate with responsibilities, a process of continuous improvement is implemented, and line management is responsible for quality.

This objective has been met.

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FUNCTIONAL AREA: **Quality Assurance**

OBJECTIVE: **SME.4**

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Strengths:

- A strong ISMS culture exists at FFTF. **(FFTF SME.4-1)**
- An active feedback and improvement culture and effective communications of information within and between various parts of FFTF supports the ISMS process. **(FFTF SME.4-2)**
- The FH Level III Inspector Training Program provides a high level of confidence, excellent records, and has had multiple previous reviews with outstanding results. Both certified inspectors and their management recognize this program as superior. **(NMS SME.4-1)**
- All critical characteristics used in procurement of Commercial Grade Items in the 324 and 327 Buildings are recorded in an engineering document for each facility. These documents are updated by Engineering Change Notice, thus placing this data under configuration control and ensuring the information is available for future reference. **(RCP SME.4-1)**
- An active feedback and improvement culture and effective communications of information within and between various parts of the WMP supports the ISMS process. Quality Assurance personnel, and other personnel who perform quality-affecting work, are aggressive in identifying opportunities for improvement and implementing appropriate actions. **(WMP SME.4-1)**

Concerns:

- ASP/222-S Laboratory management is not consistently enforcing the expectations for procedure use and review established in ASP-200, *Analytical Services Procedures*, Section 2.16, "Technical Procedures." **(ASP SME.4-1)**
- Software quality control requirements are not well understood nor effectively implemented at ASP. **(ASP SME.4-2)**
- The Corrective Action Management System has not effectively addressed issues identified in external assessments. **(ASP SME.4-3)**
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Vol. 2, Section 15.1, "Quality Assurance Program Plan," is outdated and does not recognize current corporate or project structure. **(NMS SME.4-2)**
- Quality Assurance required reading is not being accomplished by Engineering and Quality Assurance personnel. **(NMS SME.4-3)**
- All RCP Quality Assurance Program Plans are outdated and do not recognize the current corporate or project structure. **(RCP SME.4-2)**

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- Quality Assurance personnel have not completed required individual training plans in accordance with HNF-IP-1281, *River Corridor Training Plan*, and HNF-IP-1264, *324/327 Facilities Stabilization Projects*, Section 2.16, Facility Worker Training,” Attachment E. **(RCP SME.4-3)**

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Submitted: Rick Warriner, Team A <i>Team Member</i> Ed Schwier, Team B <i>Team Member</i>	Approved: Joe (Ed) Parsons <i>Team Leader</i>
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FUNCTIONAL AREA: Criticality Safety	OBJECTIVE: SME.5 DATE: July 10, 2000
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OBJECTIVE

SME.5 - Criticality Safety. Within the Criticality Safety area, the planning of work includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within the Criticality Safety area, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. The Criticality Safety Program requires adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.
2. The Criticality Safety Program contains clear roles and responsibilities. Criticality Safety is effectively integrated with line and support managers to ensure that line managers are responsible for safety.
3. The Criticality Safety Program requires controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. The Criticality Safety Program requires that personnel who are assigned to the subject area have a satisfactory level of competence.
5. The Criticality Safety Program requires that within the subject area, feedback and continuous improvement occur.

Approach

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for Criticality Safety at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that Criticality Safety is effectively integrated into the facility or activity procedures.
- Review selected lessons learned to assess that lessons learned have been effectively used within the Criticality Safety area.
- Review selection, training, and qualification records of personnel in Criticality Safety area to determine if they meet competency standards.

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Interviews

- Interview personnel and responsible managers assigned to Criticality Safety area.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to the Criticality Safety area to assess the level of competence.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as a Criticality Prevention Specification or Job Hazards Analysis, or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

Record Review

- 200 Area Deactivation Project (200 ADP), *Criticality Safety Training*, June 2000
- 200ADP-00-GBC-003, *200 Area Deactivation Project Facilities Criticality Safety Inspection Plan*, January 19, 2000
- 3M-SOP-PTL-118, *Sample Material Transfers and Inventory Postings*, Rev. 8-C, February 15, 2000
- 3M-TWP-98-017, Technical Work Plan, *Ship Legacy Fuel Pins and Pieces from 327 Facility*, Rev. 0-O (not released)
- Criticality Prevention Specifications
 - 324N-1, *General Criticality Prevention Specification*, Rev. A-0, September 30, 1997
 - 327-1, *General Criticality Prevention Specification – 327 Building*, Rev. A-3, January 10, 2000
 - 327-3, *Storage in the Dry Storage Cell*, Rev. A-1, February 18, 1999
- FH-9958802A R1, *Fluor Hanford Nuclear Criticality Safety Self-Assessment Report*, Correspondence from G. R. Franz, Fluor Hanford (FH) to L. T. Nirider, U.S. Department of Energy Richland Operations Office, March 2, 2000
- FS-NOP-13-004, *Fissile Material Handling Procedure – 300 Area Fuel Supply Operating Procedure*, Rev. 0, December 31, 1998
- FSP-FSS-5-35, *FSS Project Control Manual*, Section 13-01, “Criticality Prevention Specification – General,” Rev. 4, December 31, 1998
- FSP-PFP-5-8, *Plutonium Finishing Plant Administration*, Section 3.3, “Criticality Safety,” Rev. 13, May 16, 2000

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- HNF-IP-1264, *324/327 Facilities Stabilization Projects*
 - Section 1.1, “Nuclear and Criticality Safety Program,” Rev. 2, January 28, 2000
 - Section 1.3, “Criticality Safety,” Rev. 5, January 28, 2000
- HNF-MP-003, *Integrated Environment, Safety and Health Management System Description*, Rev. 3, April 12, 2000
 - Appendix E, “Nuclear Material Stabilization Project ISMS Description”
 - Appendix F, “River Corridor ISMS Description”
- HNF-PRO-334, *Criticality Safety General Requirements*, Rev. 1, January 7, 2000
- HNF-PRO-537, *Criticality Safety Control of Fissionable Material*, Rev. 0, August 1, 1997
- HNF-PRO-538, *Criticality Safety Training*, Rev. 1, December 31, 1999
- HNF-PRO-539, *Criticality Safety Evaluations*, Rev. 0, August 1, 1997
- HNF-PRO-540, *Criticality Prevention Specifications*, Rev. 0, August 1, 1997
- HNF-PRO-541, *Criticality Safety Postings*, Rev. 0, August 1, 1997
- HNF-PRO-542, *Fissionable Material Labeling*, Rev. 0, August 1, 1997
- HNF-PRO-543, *Fissionable Material Storage*, Rev. 0, August 1, 1997
- HNF-PRO-544, *Criticality Plant Configuration Control*, Rev. 0, August 1, 1997
- HNF-PRO-545, *Fissionable Material Packaging and Transportation*, Rev. 0, August 1, 1997
- HNF-PRO-546, *Criticality Alarm System*, Rev. 0, January 7, 2000
- HNF-PRO-547, *Criticality Safety for Fire-Fighting*, Rev. 0, August 1, 1997
- HNF-PRO-548, *Criticality Safety Inspections and Assessments*, Rev. 2, August 20, 1999
- HNF-PRO-549, *Criticality Safety Nonconformance Response*, Rev. 0, August 1, 1997
- HNF-PRO-550, *Criticality or Potential Criticality Accident*, Rev. 0, August 1, 1997
- HNF-SD-MP-SRID-003, *Plutonium Finishing Plant Standards/Requirements Identification Document, Nuclear Safety Functional Area*, Rev. 1
- HNF-SD-MP-SRID-003, *Plutonium Finishing Plant Standards/Requirements Identification Document, Nuclear Safety Functional Area, Phase I Assessment*, Rev. 1
- HNF-SD-MP-SRID-003, *Plutonium Finishing Plant Standards/Requirements Identification Document, Nuclear Safety Functional Area, Phase II Assessment*, Rev. 1
- PFP-LL-00-003, *Criticality Infracore Room 139, 234-5Z Building, Lessons Learned*
- PFP-LL-00-004, *Criticality Safety Internal Inspection, Lessons Learned*
- PFP-LL-98-012, *Fissile Material Handling Problem, Lessons Learned*
- PFP-LL-99-016, *Fissile Material Moved While CAP is Inoperable*
- PFP-LL-99-024, *Fissile Material Movement Exceeds Unit Mass Limit, Lessons Learned*
- Plutonium Finishing Plant (PFP) Criticality Safety Inspection Report
 - February, 2000
 - March, 2000
 - April, 2000
- PFP, Plant Objectives and Performance Indicators, May 2000
- Work Packages:
 - 2Z-00-00090/S, ZSE-99A-005, *Replace CAP-Z6 Batteries*
 - 2Z-00-00547/S, ZSE-99A-001, *3M CAS Horn Alarm Test*
 - 2Z-00-00785/W, *Replace Filter/FB-25/RM308/17" Vac*

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- ZAP-000-008, *Criticality Safety Internal Inspection*, Data Sheets and Checklists
 - March 2000
 - April 2000
 - May 2000
- ZO-160-035, *Furnace Charge Preparation*, Rev. F-1
- ZO-160-039, *Furnace Charge Preparation for Pu Metal*, Rev. B-0
- ZSP-002, *Moving Fissile Material*, Rev. B-0
- ZSR-99A-002, *Criticality Alarm System Sound Level Test System 99A*
- ZSR-99A-012, *Transportable Criticality Alarm System Calibration and Functional Test*.

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NUCLEAR MATERIAL STABILIZATION (NMS)

Interviews Conducted

- Coordinator, Standards/Requirements Identification Documents
- Coordinator, Training
- Criticality Safety Engineer (CSE) (5 total, 2 assigned and 3 not assigned to PFP)
- Criticality Safety Representative (CSR)
- Facility Representative (3)
- Lead Operator
- Manager, Operations
- Process Engineers
- Project Manager (2)
- Supervisor, Operations
- Team Lead, Technical Services
- Team Leader, Authorization Basis.

Observations

- Automated Job Hazard Analysis (AJHA) Planning meeting, June 14, 2000
- Thermal Stabilization of Plutonium, June 15, 2000
- MgOH Equipment Installation, June 16, 2000.

Discussion of Results

Criterion 1: *The Criticality Safety Program requires adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.*

Operating procedures reviewed indicated that criticality controls are adequately incorporated and are clear, concise, understandable, and free of unnecessary technical jargon. Criticality controls are placed in operating procedures within a black bordered box in bold text to make them readily identifiable. Planning of individual work items is adequately integrated with the Criticality Safety Program; however, proceduralizing the involvement of the Criticality Safety staff in AJHAs and pre-job briefs would strengthen the program. Facility administrative procedures appear to adequately require the review/approval of individual work package items by the criticality safety staff.

CSEs and the CSR are not required to attend AJHA meetings unless operations involve the handling of greater than 15 grams of fissile material. However, both the CSEs and the CSR report having regular interaction with the planners on work document content. Observations of the AJHA process indicated that appropriate screening questions may exist to adequately cover those job processes requiring criticality safety control/overview. However, due to the relatively

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small sample of AJHA activities observed, adequacy of the AJHA process in screening work activities for criticality hazards could not be determined.

Three work package documents implementing procedures or processes that impose criticality safety controls were reviewed. Of the three, only one had been approved by the CSR as indicated by signature. The two work documents that did not have prior CSR approval were associated with the Criticality Alarm System. This indicates that the Criticality Safety staff at PFP may not be aware of operations and/or maintenance activities affecting the criticality alarm systems.

Interviews with CSEs indicated that their workload precludes their involvement in more than the minimum required AJHA meetings and pre-job briefs. Presently, one of the CSEs is fulfilling a CSR role on a temporary basis.

Criterion 2: *The Criticality Safety Program contains clear roles and responsibilities. Criticality Safety is effectively integrated with line and support managers to ensure that line managers are responsible for safety.*

Site and facility-specific procedures adequately describe the responsibilities of operations organizations and managers, facility managers, and Criticality Safety staff. Interviews with operations personnel indicate that the CSR is engaging himself adequately in operations, interacts well with operations personnel, and is available to answer questions and respond to occurrences. Criticality Safety staff clearly understood their responsibilities and performed them in an exemplary manner.

The CSEs and CSRs do not interact on any regular basis with PFP senior management. Senior management should encourage and accommodate on a regular basis a formal exchange of information with the Criticality Safety staff.

PFP operations personnel understand the Criticality Safety-related limits and controls (including criticality safety postings) and have an appropriate level of understanding of the basis behind the imposed controls. Line managers accept responsibility for Criticality Safety and understand their role in ensuring that jobs are performed to the controls specified in criticality prevention specifications.

Criticality Safety integration with line management is excellent. PFP Line managers accept responsibility for Criticality Safety and Criticality Safety staff roles and responsibilities are clearly established.

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Criterion 3: *The Criticality Safety Program requires controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Criticality Safety technical staff do not appear to be adequately involved in the S/RIDs process for nuclear safety. **(NMS SME.5-3)** During interviews, the Criticality Safety staff could not provide a clear, concise answer about how specific requirements contained within DOE O 5480.24 and the associated American National Standards Institute/American Nuclear Society (ANSI/ANS) standards are implemented at the facility. No mention was made during the interviews of the existence or use of the S/RIDs to ensure compliance with DOE Orders and associated requirements through facility-specific procedures. Although the Criticality Safety staff knew of the existence of the S/RIDs, their level of understanding of the process was clearly lacking. Participation of the Criticality Safety staff in the S/RIDs implementation assessment activities would enhance their knowledge of the PFP S/RID and the S/RID process. A subsequent review of the Nuclear Safety S/RID and associated implementation assessments revealed that the current S/RID is outdated. Refer to **NMS MGO.1-2** for further discussion and identified concern.

ANSI/ANS requirements for nuclear criticality safety programs, as incorporated by reference in DOE O 5480.24, are not explicitly mentioned in site-level or project-level administrative procedures. Translation of requirements from DOE Orders and ANSI standards by incorporating them into specific program elements would help to strengthen the ability to confirm compliance with specific requirements from the standards.

Criticality safety controls at PFP are adequately implemented, and the necessary controls are well integrated into work documents and procedures.

Criterion 4: *The Criticality Safety Program requires that personnel who are assigned to the subject area have a satisfactory level of competence.*

The Criticality Safety staff at PFP consists of both CSEs and CSRs. Each of these positions have an independent qualification/certification requirement that includes the following: facility-specific knowledge, process knowledge, nuclear physics knowledge, and knowledge of procedures and requirements. Each is required to pass a stringent oral board examination prior to certification to perform criticality safety functions for the facility. Criticality safety staff at PFP benefit from continuous training in the form of annual meetings, offsite conferences, visits by nationally-recognized criticality safety experts, etc. The Criticality Safety staff training program is exemplary, and as a result, the PFP facility has a number of well-qualified and well-trained staff members. **(NMS SME.5-1)**

The CSEs assigned to the PFP facility are not directly involved in providing training to operations personnel in criticality safety. CSE participation in this activity should be increased as the CSE brings a level of specialized knowledge to the training process, enhancing their interaction with operations personnel and expanding their knowledge of the problems and processes at the facility.

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Criterion 5: *The Criticality Safety Program requires that within the subject area, feedback and continuous improvement occur.*

It appears that the present formal assessment requirements as described in the HNF-PRO series of site-level procedures is not driving a continuous improvement process at the programmatic level. HNF-PRO-548, *Criticality Safety Inspections and Assessments* contains a site-level requirement to perform only an annual assessment of criticality safety programs at the project level. Historically, the NMS Project has taken credit for assessment activities performed by the Facility Evaluation Board or outside agencies to fulfill this annual requirement. These assessment activities frequently lack the depth and breadth of application to verify compliance with national standards. Additionally, HNF-PRO-548 requires only verification of compliance with the other FH Criticality Safety procedures and not national standards requirements. Thus, it is difficult to determine how the facilities are complying with the DOE Order 5480.24.

As required by HNF-PRO-548, comprehensive assessments are performed only on an annual basis at the NMS Project. While the NMS Project is meeting the minimum requirements specified in the HNF-PRO-548, annual assessments typically lack the depth, frequency, and appropriate lines of inquiry necessary to verify compliance with ANSI/ANS Standards. The FH Criticality Safety Manager should develop and include as a requirement in HNF-PRO-548, the performance at the project level of (perhaps quarterly) Management Self Assessment activities aimed specifically at verifying compliance with ANSI/ANS Standard 8.19.

Failure to verify compliance with the ANSI/ANS standards potentially leaves gaps in the management systems affected by criticality safety and effectively prevents the development of proactive corrective measures aimed at strengthening the existing program. Thus, at the NMS Project, it appears that existing formal assessment processes are not adequately driving continuous improvement in criticality safety at the programmatic level. **(NMS SME.5-5)**

Additionally, both the CSR and the CSE stated that they relied exclusively upon external audits including those conducted by DOE, Richland Operations Office and DOE-Headquarters to ensure compliance with high-level programmatic requirements. Reliance upon external audits and assessments to ensure compliance also serve to indicate a lack of adequate self-assessment or management assessment activities necessary to affect positive change at the programmatic level.

However, the facility does perform excellent assessment and feedback processes at the activity level through such vehicles as the ZAP-000-008, *Criticality Safety Internal Inspection*. This procedure requires a monthly walkdown inspection of all essential operating areas of the facility and provides a method for identification of best practices and deficiencies while providing a clear and concise process for correcting those deficiencies. Additionally, this process encourages interaction between the CSEs/CSRs and the operators and operations supervisors who are responsible for the performance of work.

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One drawback of the ZAP-000-008 procedure is that the procedure in its present form is simply a complex checklist. While a checklist may be appropriate as a “placeholder” to ensure that complete inspections are performed, their use as the sole assessment tool may not be desirable. For example, glovebox locations where it is either exceedingly difficult or impossible to visually verify the inventory or contents due to visibility problems or inability to operate conveyors during the inspection activities (HA-23S) are simply marked off on the inspection sheets as “in compliance.”

During interviews, operations personnel expressed a high level of confidence in the capabilities of the Criticality Safety technical staff. Operators felt that the CSR was approachable, listened to their concerns and suggestions, and worked to implement requested changes where possible. However, operators did express frustration with the significant delays common in implementing small changes to the Criticality Safety documents.

Facility lessons learned may be accessed by visiting the “PFP Home Page” located on the Hanford Intranet. A review of several recent lessons learned revealed that PFP has a mature, well-organized, and expertly managed and presented lessons learned program. The criticality safety related lessons learned were well written, concise, and conveyed the essential information adequately. **(NMS SME.5-2)**

The facility has recently initiated quarterly “procedure emphasis sessions” that address procedure compliance issues. This type of continuous training is essential to maintaining the principles of ISMS.

PFP benefits from the existence of a well-developed, yet informal, process for stimulating continuous improvement at the activity level. The CSR and CSEs are particularly sensitive to issues directly affecting operations (human factors, ease of use, operator “friendly” postings, etc.) and work diligently to make needed changes. This process works very well and the present Criticality Safety staff at PFP is to be commended on their exemplary performance in this essential aspect of ISMS. The facility should consider institutionalizing this important aspect of the Criticality Safety program at PFP as it is currently largely driven by personality and not by policy or procedure. At PFP, an extremely effective, yet informal, process of continuous improvement and feedback exists within the Criticality Safety Program at the activity level. **(NMS SME.5-3)**

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Conclusion:

PFP has an effective and well-implemented Criticality Safety Program that functions well at the activity level. While feedback and continuous improvement processes were observed to be working well at the activity level, they are somewhat less effective in initiating needed changes at the programmatic level. Some programmatic level requirements are not clearly defined, and the nuclear safety S/RID is outdated. Formal assessment processes are not occurring with the necessary frequency to drive a continuous improvement process in Criticality Safety at the programmatic level. Strong training and qualification programs, a mature lessons learned program, and effective informal feedback processes are strengths of the PFP program.

This objective has been met.

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RIVER CORRIDOR PROJECT (RCP)

Interviews Conducted

- Alternate CSR
- CSE (3)
- CSR, 200 ADP
- CSR, 324 Facility
- CSR, 327 Facility
- CSR, Fuel Supply Shutdown (FSS) Facilities
- Facility Manager (2)
- Facility Representative
- Hot Cell Technician (5)
- Manager, Nuclear Safety
- Nuclear Process Operator (4)
- Operations Manager
- Operations Supervisor – (Person-In-Charge) (3)
- Project Manager
- Radiological Control Technician (3).

Observations

- Fissionable Material Transfer Operations, Hot Cell Facilities, 327 Building (walkdown), June 21, 2000
- Hot Cell Waste Removal Operations, 324 Building, June 26, 2000
- Reactor Fuel Surveillance Activities, FSS Facilities, June 26, 2000.

Discussion of Results

Criterion 1: *The Criticality Safety Program requires adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.*

At RCP, work involving the handling and movement of fissionable materials is controlled through operating procedures. RCP operating procedures show that criticality controls are adequately incorporated and are generally clear, concise, understandable, and free of unnecessary technical jargon. However, criticality controls would be more readily identifiable in the text of procedures if they appeared in special type fonts, bold type, etc.

The CSRs are not required to attend AJHA meetings unless operations involve the handling of greater than 15 grams fissile material. However, CSRs have regular interaction with operations personnel, know what work is being performed in the facility, and engage themselves properly in the conduct of that work. The CSRs at the 324 and 327 Facilities regularly observe work activities involving the handling or movement of significant quantities of fissionable material.

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The CSR at the 324 Facility reported that he observes all such movements providing real-time oversight and ownership of the process. **(RCP SME.5-1)**

The Criticality Safety staff is adequately engaged in the planning of individual work items; however, the involvement of the Criticality Safety staff in AJHAs, pre-job briefs, and review of work package documents are not listed as formal responsibilities of the CSR in HNF-IP-1264, , *324/327 Facilities Stabilization Projects*, Section 1.3., "Criticality Safety." Addition of these responsibilities to the procedure would strengthen the program.

Facility Managers interviewed believed that the AJHA process, which is 8 to 10 months old at the RCP, has enhanced the safety of operations in the 300 Area. However, as no AJHA activities were observed, adequacy of the AJHA process in screening work activities for criticality hazards could not be determined.

The RCP Criticality Safety staff are adequately involved in the identification and control of criticality safety hazards associated with the handling and movement of fissionable materials.

Criterion 2: *The Criticality Safety Program contains clear roles and responsibilities. Criticality Safety is effectively integrated with line and support managers to ensure that line managers are responsible for safety.*

Interviews with staff and management indicate that a strong sense of ownership and responsibility for criticality safety resides with the Operations Supervisor. A review of the associated site and facility-specific procedures revealed they adequately describe the responsibilities of operations organizations and managers, facility managers, and Criticality Safety staff. Operations personnel indicate that the CSRs engage themselves frequently and appropriately in operations.

Interviews with operators indicated that the CSRs interact well with operations personnel and are available to answer questions when needed. The operations staff interviewed knew the CSRs by name and it was clear they have regular interaction on criticality safety matters. In general, the Criticality Safety staff have a good understanding of their responsibilities and perform in an exemplary manner.

Operations personnel (hot cell technicians) understand very well the criticality safety-related limits and controls imposed on the processes in which they are engaged (including criticality safety postings). It was apparent they feel a strong sense of ownership for criticality safety in the operations they perform. This ownership and responsibility was well demonstrated at the 327 Facility, indicating operations staff understood their roles and responsibilities.

Operation Supervisors additionally accept responsibility for criticality safety and understand their role in ensuring that jobs are performed to the controls specified in criticality prevention specifications.

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Criticality safety is effectively integrated with line management through the actions of the CSRs. Line managers at RCP accept responsibility for criticality safety and the criticality safety staff roles and responsibilities are clearly established.

Criterion 3: *The Criticality Safety Program requires controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.*

Criticality safety controls at the 324 Building, 327 Building, 340 Facility, 200 ADP, and FSS Facility are adequately implemented, and the necessary controls are well-integrated into work documents and procedures. The generally well-defined criticality safety programmatic requirements are implemented through HNF-PRO procedures, the criticality prevention specifications, operating procedures, and criticality safety postings. The Facility Manager for the 200 ADP is directly involved in the hazard identification process and actively participates in the feedback and improvement process with operations personnel.

The part-time CSR for the 200 ADP has anticipated the programmatic and practical issues associated with various abandoned facilities, many of which contain uncharacterized inventories of fissionable materials. An inspection plan and checklist has been developed for these facilities, and the CSR provides timely training to operations personnel on facility status and controls. At the 200 ADP, recent improvements have resulted in a significantly enhanced Criticality Safety Program. **(RCP SME.5-2)**

The RCP CSRs engage themselves actively in the review and approval of work processes at their respective facilities. In the 327 and 324 Facilities, CSRs are clearly directly involved in the day-to-day activities involving the handling and movement of fissionable materials. The CSRs are very familiar with the individual processes and their associated controls and limits. Additionally, the CSRs perform regular reviews of operating procedures and work control documents containing criticality safety related controls.

This level of involvement by the Criticality Safety staff is essential to success in cleanup of RCP facilities, and demonstrates a commitment to the essential principles of ISMS particularly in the areas of hazard identification and analysis, implementation of controls, and conduct of work within controls.

Operations personnel expressed a high degree of confidence in their CSRs, are involved in the hazard identification process through the AJHA, and participate actively in the review cycle for procedures involving the handling and movement of fissionable materials.

Criticality safety controls at RCP are adequately implemented, and those controls are well integrated into work documents, procedures, and practices.

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Criterion 4: *The Criticality Safety Program requires that personnel who are assigned to the subject area have a satisfactory level of competence.*

The RCP Criticality Safety staff consists primarily of CSRs, several alternate CSRs, and a single senior level Nuclear Engineer who also acts as a CSR lead. RCP does not retain the services of a CSE, as does the NMS Project. However, absence of direct CSE support is probably appropriate given the reduced inventories and relatively low level of risk of a criticality event in RCP facilities.

CSRs complete a self-directed qualification/certification requirement which includes facility-specific knowledge, process knowledge, nuclear physics knowledge, and knowledge of procedures and requirements. As is the standard for CSR qualifications at FH facilities, each CSR is required to pass a stringent oral board examination prior to certification to perform criticality safety functions for the facility. These training requirements appear to be adequate. However, although there is some cross-facility training occurring, it is not apparent that RCP takes full advantage of the talents of their several CSRs in cross-training them to other RCP facilities.

The RCP Criticality Safety staff do not, in general, get the benefit of any continuous training in the form of offsite conferences or visits by nationally-recognized criticality safety experts, etc. **(RCP SME.5-4)** The Criticality Safety Program at RCP could be significantly enhanced by providing the Criticality Safety staff with additional cross-training opportunities and encouraging attendance at national conferences and meetings offsite.

The CSRs assigned to RCP facilities are directly involved in providing training to operations personnel in criticality safety. Participation of the CSRs in these types of activities shows a commitment on the part of the Criticality Safety staff to ensuring that lines of communication are open, and that they remain actively involved in feedback and process improvement.

The Criticality Safety staff at RCP is adequately trained and has a sufficient level of knowledge both of the facilities under their purview and the physics of nuclear criticality. However, the criticality safety program at RCP would be significantly enhanced if the staff participated actively in national conferences and continuous training opportunities offsite and received additional cross-training opportunities within RCP.

Criterion 5: *The Criticality Safety Program requires that within the subject area, feedback and continuous improvement occur.*

As is the case for the NMS Project, it appears that the present formal assessment requirements, as described by the HNF-PRO series of site-level procedures, is not driving a continuous improvement process at the programmatic level. HNF-PRO-548, *Criticality Safety Inspections and Assessments* contains a site-level requirement to perform only an annual assessment of Criticality Safety Programs at the project level. Historically, the projects have taken credit for assessment activities performed by the Facility Evaluation Board or other outside agencies to

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fulfill this annual requirement. These assessment activities frequently lack the depth and breadth of application to verify compliance with national standards. Additionally, HNF-PRO-548 requires only verification of compliance with the other FH criticality safety procedures and not national standards requirements. Thus, it is difficult to determine how facilities are complying with the DOE Order 5480.24.

As required by HNF-PRO-548, comprehensive assessments are performed only on an annual basis at RCP. While RCP is meeting the minimum requirements specified in the HNF-PRO-548, annual assessments typically lack the depth, frequency, and appropriate lines of inquiry necessary to verify compliance with ANSI/ANS standards. The FH Criticality Safety Manager should develop and include as a requirement in HNF-PRO-548, the performance at the project level of (perhaps quarterly) management self-assessment activities aimed specifically at verifying compliance with ANSI/ANS Standard 8.19.

Failure to verify compliance with the ANSI/ANS standards potentially leaves gaps in the management systems affected by criticality safety and effectively prevents the development of proactive corrective measures aimed at strengthening the existing program. Thus, at RCP, it appears that existing formal assessment processes are not adequately driving continuous improvement in criticality safety at the programmatic level. **(RCP SME.5-3)**

The CSRs for RCP perform monthly walkthrough inspections and prepare reports. The resulting reports differ for each facility, but adequately cover the venue of activity-level criticality safety controls, which should be validated by cognizant personnel on a periodic basis. As these reports consist largely of a simple checklist, the inspection process could be enhanced by incorporating a method for identification of best practices and deficiencies while providing a clear and concise process for correcting those deficiencies. It is not clear that CSRs involve themselves adequately in developing solutions to deficiencies; however, a CSR monthly checklist tracks outstanding deficiencies. A refined monthly inspection process would encourage interaction between the CSEs/CSR and the operators and operations supervisors who are responsible for the performance of work as well as providing a communication channel to Facility Senior Management.

Operations personnel, when interviewed, expressed a high level of confidence in the capabilities of the criticality safety technical staff. Operators felt that the CSR was approachable, listened to their concerns and suggestions, and worked to implement requested changes where possible. Operators showed excellent ownership of the criticality safety process indicating that the CSRs are working closely and effectively with Operations personnel.

At RCP, feedback and improvement processes in criticality safety are largely informal, and personality-driven. This process, an essential aspect of ISMS, appears to work well for RCP. However, the RCP should consider institutionalizing this important aspect of the criticality safety program in policy and procedure.

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It is evident that, within the RCP Criticality Safety Program, feedback and continuous improvement do occur. Increasing the frequency of programmatic assessments, involving the CSRs in identifying corrective actions, and enhancing monthly walkthrough inspections would benefit the program.

Conclusion

The RCP Criticality Safety Program is generally effective and well implemented. The program functions very well at the activity level. Evidence of this is that the CSRs for the 324 and 327 Facilities are actively involved in the day-to-day performance of activities involving movement and handling of fissionable materials. Feedback and continuous improvement processes were observed to be working well at the activity level at RCP. While RCP is meeting the minimum requirements specified in the HNF-PRO-548, annual assessments typically lack the depth, frequency, and appropriate lines of inquiry necessary to verify compliance with ANSI/ANS Standards. Thus, at RCP, it appears that existing formal assessment processes are not adequately driving continuous improvement in criticality safety at the programmatic level.

Strengths of the RCP program include excellent CSR involvement in day-to-day activities and a recently enhanced 200 ADP Criticality Safety Program.

This objective has been met.

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Strengths:

- The Criticality Safety staff training program is exemplary, and as a result, PFP has a number of well-qualified and well-trained staff members. **(NMS SME.5-1)**
- PFP has a mature, well-organized, and expertly managed and presented lessons learned program. The criticality safety related lessons learned were well written, concise, and conveyed the essential information adequately. **(NMS SME.5-2)**
- At PFP, an extremely effective, yet informal, process of continuous improvement and feedback exists within the Criticality Safety Program at the activity level. **(NMS SME.5-3)**
- The Criticality Safety Representatives at the 324 and 327 Buildings regularly observe work activities involving the handling or movement of significant quantities of fissionable material. The Criticality Safety Representative at the 324 Building reports that he observes all such movements providing real-time oversight and ownership of the process. **(RCP SME.5-1)**
- At the 200 Area Deactivation Project, recent improvements have resulted in a significantly enhanced Criticality Safety Program. **(RCP SME.5-2)**

Concerns:

- Criticality Safety technical staff do not appear to be adequately involved in the Standard/Requirements Identification Documents process for nuclear safety. **(NMS SME.5-4)**
- Failure to verify compliance with the American National Standards Institute/American Nuclear Society standards potentially leaves gaps in the management systems affected by criticality safety and effectively prevents the development of proactive corrective measures aimed at strengthening the existing program. Thus, at the NMS Project and RCP, it appears that existing formal assessment processes are not adequately driving continuous improvement in criticality safety at the programmatic level. **(NMS SME.5-5)**
(RCP SME.5-3)
- The Criticality Safety staff at RCP do not, in general, get the benefit of any continuous training in the form of offsite conferences or visits by nationally-recognized criticality safety experts, etc. **(RCP SME.5-4)**

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Submitted: <u>L.P. Lih</u> Laurren (Tom) Nirider, Team A <i>Team Member</i>	Approved: <u>Ed Parsons</u> Joe (Ed) Parsons <i>Team Leader</i>
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OBJECTIVE

DOE.1 - DOE processes and procedures ensure that missions are translated into work, work is formally authorized, expectations are set, tasks are identified, priorities are balanced, and resources are allocated. Contracts include ISMS requirements.

Criteria

1. RL guidance for translating mission into work includes delineating its plan of work. This means the scope, schedule, and funding allocations for each fiscal year (FY).
2. RL guidance for setting expectations for the contractor is established through contracts and regulations. These contracts and regulations provide guidance on expected performance, set goals and priorities, and allocate resources.
3. RL roles and responsibilities are clearly delineated to ensure a satisfactory level of safety, accountability, and authority to define the scope of work.
4. RL procedures ensure that the contractor adequately prioritizes work so that, when the ISMS is implemented, mission and safety expectations are met within available budget and resources. RL procedures require that performance objectives, including environmental, safety, and health (ES&H) performance objectives, and related goals and priorities are reviewed and approved.
5. RL procedures provide for RL approval of proposed tasks and prioritization. Work planning procedures provide for feedback and continuous improvement.
6. RL procedures provide for change control of approved tasks, prioritization, and identification of resources.
7. RL contracts incorporate DEAR 970.5204-2, "Integration of Environment, Safety, and Health Into Work Planning and Execution," and DEAR 970.5204-78, "Laws, Regulations, and DOE Directives" and require flowdown into subcontracts involving complex or hazardous work. A process is in place for modifying contracts based on new or revised regulations or requirements.
8. The prioritization and allocation process clearly addresses both ES&H and programmatic needs. The process involves line management input and approval of the results.
9. Priorities include commitments and agreements to RL as well as stakeholders.
10. Resource allocations reflect the tailored hazard controls.

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11. The incentive and performance fee structure promotes balanced priorities.

12. RL procedures for defining the scope of work ensure balanced priorities.

Approach

Record Review

- Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); and Functions, Responsibilities, and Authorities and RL implementing procedures.
- Determine if there is adequate guidance for RL involvement in the clear definition and authorization of the scope of work.
- Determine if the mechanisms for translation of the missions and policies from higher authority are appropriate, if a mechanism for assigning and balancing priorities has been established, and if performance objectives are reviewed and approved.
- Determine if the roles and responsibilities for RL personnel are adequate to support the corporate/site mission.
- Verify that RL line management and staff personnel roles, responsibilities, and authorities are appropriate to support ISMS.
- Review personnel position descriptions, selection criteria, training programs, and training records to determine if staff competency is adequate.
- Review mission prioritization procedures to determine if tailoring of resources is appropriate.
- Verify that the budget process allows adequate resources for standards selection, hazard controls, and work authorization processes to support work planning and scope definition.
- Review corporate/site manuals of practice that describe the budget and planning process and those documents that identify mission requirements, the approval of contractor plans, and those that address the assignment of budget priorities.
- Review corporate/site procedures for formally documenting change control procedures.
- Review how safety requirements are included in subcontracts, as well as the flowdown of the DEAR clause into subcontracts for hazardous work.

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- Select several mission tasks from the RL programs and planning documents and track the tasks through the process to evaluate how the above criteria are met.
- Review future year planning and current year authorized work. Select several current year authorizations and track change control.
- Select several RL and contractor subcontracts and review for incorporation of the ISM DEAR clauses.

Interviews

- Interview RL and contractor personnel responsible for management of the budget process.
- Discuss work authorization and performance activities with RL and contractor personnel and determine whether there are adequate mechanisms to ensure that work is properly authorized at all levels.
- Determine whether work safety is perceived as an integral part of work authorization methods and issue resolution.
- Interview line managers responsible for DOE-Headquarters-directed mission accomplishment.
- Interview the ES&H manager to determine how the process for integration of safety into mission tasks is accomplished.
- Interview RL and contractor line managers to determine their understanding and implementation of the process for translation of mission into work and formal work authorization.
- Interview selected ES&H professionals and line managers to determine how safety is incorporated into the budget plans and authorization.
- Interview RL and contractor procurement personnel regarding subcontract flowdown requirements.

Observations

If possible, observe actual budgetary discussions (including meetings involving the development of the out-year planning documents) within and between RL and the contractor.

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Record Review

Documents/Procedures:

- 00-MPD-016, Contract No. DE-AC06-96RL13200 – *Hanford Mission Planning Guidance for Fiscal Year 2002*, Correspondence from K. A. Klein, RL, to R. D. Hanson, FH, January 24, 2000
- 00-MPD-036, Contract No. DE-AC06-96RL13200 – *Hanford Mission Planning Guidance for Fiscal Year 2002, Amendment 1*, Correspondence from S. A. Sieracki, RL, to R. D. Hanson, FH, February 17, 2000
- 00-MPD-050, Contract No. DE-AC06-96RL13200 – *Hanford Mission Planning Guidance for Fiscal Year 2002, Amendment 2*, April 21, 2000
- 99-PID-054, Contract No. DE-AC06-96RL13200 – *Fiscal Year 2000 Baseline Updating Guidance*, Correspondence from J. C. Hall, RL, to President, FDH, April 7, 1999
- 99-PID-105, Contract No. DE-AC06-96RL13200 – *Fiscal Year 2000 Baseline Updating Guidance for Multi-Year Work Plans*, Correspondence from K. A. Klein, RL and R. T. French, ORP, to President, FDH, June 21, 1999
- BCP-20182, *Defer SAC Rev. 1 Requirements*, Rev. 0, April 10, 2000
- BCP-20229, *Initiate Expanded Health Effects Assessment Baseline Change Proposal*, Rev. 0, June 8, 2000
- DOE Richland Operations Office, *ISM Readiness Review Results*, May 22, 2000
- DOE-RL-2000-28, *Richland Operations Environment, Safety and Health Fiscal Year 2002 Budget & Risk Management Summary*, Rev. 0-B, May 1, 2000
- DOE-RL-2000-44, *U.S. Department of Energy, Richland Operations Office Integrated Management System Program Description*, Rev. 0, June 2000
- DOE/RL-97-44, Vol. 1, *Richland Environmental Restoration Project Fiscal Year 2000-2002 Detailed Work Plan (DWP) Summary*, Rev. 2, September 21, 1999
- HNF-SP-1169-98, *FY 2000 Annual Work Plan Activity Detail 6.2.1.6.3 300 Area Sanitary Water/Sewer*, Rev. 2
- RL Integrated Management System (RIMS)
 - ms01a013, *Acquisition Management*, April 2000
 - ms05a013, *Financial Management*, June 2000
 - ms09a013, *Integrated Planning*, June 2000
 - ms12a013, *RL Integrated Management System*, May 2000
 - ms14a013, *Safety and Health Management*, June 2000
- RIMS Crosscutting Processes
 - 01-00-t01, *“Crosscutting Process Development,”* May 2000
 - 02-00-t01, *“Acquisition Planning,”* June 2000
 - 03-00-t01, *“Solicitation and Award,”* April 2000
 - 04-00-t01, *“Contract Management,”* June 2000
 - 05-00-t01, *“Requirements Management,”* May 2000
 - 18-00-t01, *“Acquire Funds,”* May 2000
 - 19-00-t01, *“Stakeholder Participation and Involvement,”* June 2000

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- 27-00-t01, “Decisions on Allocation and Adjustment of Funds,” May 2000
- 42-00-t01, “Maintain Site Baselines,” May 2000
- 43-00-t01, “Strategic Planning,” June 2000
- 44-00-t01, “Baseline Performance Objectives, Measures, and Expectations,” June 2000
- 45-00-t01, “Review and Approve Contractor Work Plans,” June 2000
- 46-00-t01, “Baseline Change Control,” May 2000
- RIMS Procedures
 - 04-03-t01, *Contract Performance Agreements and Fee Incentives*, June, 2000
 - 18-01-t01, *Acquire EM Funding*, May 2000
 - 45-01-t01, *Review and Approve Contractor Annual and Multi-Year Work Plans*, June 2000.

Interviews Conducted

- Budget Analyst, Environmental Management Programs Team Lead, Budget Division, Office of Financial Services
- Contract Specialist, Contracting Officer (2)
- Contract Specialist, Policy
- Contract Specialist, Team Lead
- Director, Mission Planning Division
- Director, Office of Procurement Services
- Environmental Compliance Auditor of Confederated Tribes
- Financial Manager (Performance Objectives, Measures, Expectations, and Incentives)
- General Engineer, Analysis and Evaluation
- Lead Contract Price/Cost Analyst
- Lead General Engineer, Authorization Basis Division
- Management Analyst, Mission Planning Team
- Program Analyst, Management System Division
- Project Execution Team Lead.

Observations

- Procurement Staff Meeting, June 21, 2000
- FY 2001 Performance Measures Kick Off Meeting, RL/Pacific Northwest National Laboratory, June 22, 2000.

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Discussion of Results

Criterion 1: *RL guidance for translating mission into work includes delineating its plan of work. This means the scope, schedule, and funding allocations for each FY.*

The RIMS Integrated Planning and Financial Management systems describe RL's high-level processes for defining the scope of work, translating mission into work, and allocating resources. RL uses Mission Planning Guidance for budget formulation to translate mission into definable Management work scope.

RL's Mission Planning Guidance to contractors for FY 2000 and FY 2002 were reviewed to verify implementation. These guidelines state, as required, that each Project Specific Priority List include funding requirements for each Unit of Analysis. The Baseline Updating Guidance is the primary document at RL driving development of the annual update of the Multi-Year Work Plans (MYWP) and Annual Work Plans. The MYWPs define technical, schedule, and performance measures for the FY as required by the system process. The Mission Planning Guidance included emphasis on interaction and dialogue between the contractors and RL counterparts, alignment with DOE and RL strategic outcomes, and adherence to ISMS. Activity detail of a Work Breakdown Structure for the FY 2000 Annual Work Plan was reviewed for implementation and verified that it contained work scope narrative, schedule, and funding allocations. The update of the Detailed Work Plan for the RL Environmental Restoration Project was reviewed and provides funding, scope, and schedule for the FY 2000 through FY 2002 activities required to support cleanup within the directed funding guidance.

In summary, RL guidance for translating its mission into its plan of work includes scope, schedule, and funding for each FY.

Criterion 2: *RL guidance for setting expectations for the contractor is established through contracts and regulations. These contracts and regulations provide guidance on expected performance, set goals and priorities, and allocate resources.*

The RIMS Integrated Planning and Acquisition Management systems describe the establishment of "Baseline Performance Objectives, Measures, and Expectations (POME)" crosscutting process. The Integrated Planning management system *Establish Baseline POME* procedure designates Mission Element Managers, with support from Performance Measures and Performance Evaluation Subject Matter Experts (SME) to establish POMEs for each project baseline summary (PBS) with Baseline Updating Guidance designating contractor input. These POMEs are incorporated into the work plans submitted to RL and in the PBS. The RIMS Acquisition Management system "Contract Management" (*Contract Performance Agreements and Fee Incentives*) process describes the team development (see Criterion 11) and contract modification process.

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RL's Baseline Updating Guidance to contractors addresses cost estimating as part of its general Hanford Site-wide guidelines for updating work plans. This guidance states that projects are responsible for establishing accurate, complete, and well-documented cost estimates. RL has cost/price analysts/estimators in the Planning, Analysis and Evaluation, and Procurement Divisions.

Implementation interviews confirmed that the interdisciplinary Contract Performance Agreement and Fee Incentive Team develop contract incentives. Contract modifications containing POMEs were also reviewed for implementation of this criterion. In conclusion, RL has guidance for setting contractor performance expectations, priorities and allocating resources, and has implemented the processes.

Criterion 3: *RL roles and responsibilities are clearly delineated to ensure a satisfactory level of safety, accountability, and authority to define the scope of work.*

RL general roles and responsibilities are defined in the RL interim Functions, Responsibilities, and Authorities document. As indicated in the interim FRAM, RIMS will eventually replace the FRAM. RIMS guidance in crosscutting procedures for identification and prioritization of tasks and allocation of resources is very general although the crosscutting procedures do contain roles and responsibilities (see **DOE.4**).

Interviews indicated that several desk procedures are being drafted to further define crosscutting processes, roles, and responsibilities. It was observed that staff position descriptions also contain only broad major duties and responsibilities. Roles and responsibilities for crosscutting processes are only broadly described in RIMS and position descriptions, and may affect effective ISMS implementation. (**DOE.1-4**) This is a repeat concern from the RL ISM Readiness Review of May 2000 that was closed.

RL ensures for this objective that personnel possess the experience, knowledge, skills, and abilities necessary to perform their roles and responsibilities with the following functional area certificate programs. RL Office of Financial Services participates in the DOE-wide Financial Management Career Council and has approximately 50% of the staff meeting the Voluntary Certificate Program. RL Office of Procurement Services has only approximately 67% of the required staff certificates for the Energy Acquisition Career Development Program. RL is aware of this issue and has submitted a waiver request to DOE Headquarters.

Integrated planning, acquisition, and financial management are important in RL's implementation of ISM. Interviews confirmed that both Financial Services and Procurement Services have several staff located onsite with the programs and contractors providing presence and support in the field. Staff have regularly scheduled meetings interfacing with their counterparts in other RL divisions and with contractors. Several RL division representatives and the contractor attended the FY 2001 Performance Measures Kick-Off Meeting. Interviews also verified the existence of multi-discipline team participation in the areas of crosscutting incentives development, Standards/Requirements Identification Documents (S/RID) Council,

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and directives management. RL's presence as part of multi-discipline integrated teams within RL and with contractors is viewed as a strength and demonstrates general top-level implementation of this criterion to the new RL culture as more of a site integrator role.

(DOE.1-1) Financial Services and Procurement Services staff located onsite with the programs and contractors and regularly scheduled interface meetings is viewed as a strength and demonstrates implementation of roles and responsibilities, accountability, and authority to the new RL work culture. **(DOE.1-2)**

Criterion 4: *RL procedures ensure that the contractor adequately prioritizes work so that, when the ISMS is implemented, mission and safety expectations are met within available budget and resources. RL procedures require that performance objectives, including ES&H performance objectives, and related goals and priorities are reviewed and approved.*

The RIMS Financial Management, Acquisition Management, and Integrated Planning systems address, at a very high level, the processes for preparing Mission Planning Guidance, Project Priority Lists, and performance objectives and incentives. The Mission Planning Guidance for FY 2002 contains the budget formulation prioritization approach. The prioritization process for FY 2002 was changed to include prime contractor project managers, RL counterparts, and the Project Execution Team to work with regulators to prepare FY 2002 Project Priority Lists. RL's guidance listed work priorities as Base Operation activities that include Essential Safety Activities and Essential Services, and Cleanup Progress Activities. Essential Safety Activities and Essential Services contain over 50% of the FY 2000 Site budget. The prioritization category is identified where each Unit of Analysis resides.

The prioritization process considers an analysis of target case versus decrement case scenario on a major impact basis. The prioritization process also considers the compliance scenario that addresses, in detail, the impacts if adequate funding is not received to meet compliance requirements. These scenarios are also addressed in the RL Budget and Risk Management Summary.

Guidance related to updating performance measures is also contained in the Mission Planning Guidance. Performance measures are required in the MYWPs, PBSs, Integrated Planning Accountability and Budgeting System database, and other products. Hanford Site-specific performance measures are also listed to monitor progress in achieving the Site's key outcomes and associated objectives. RIMS Acquisition Management system "Contract Management" (*Contract Performance Agreements and Fee Incentives*) crosscutting process requires approval of contract performance agreements and fee incentives by the RL Manager.

In conclusion, RL's procedures and implementation of prioritizing work and performance objectives includes ES&H, with RL review and approval.

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Criterion 5: *RL procedures provide for RL approval of proposed tasks and prioritization. Work planning procedures provide for feedback and continuous improvement.*

Several RIMS processes provide for RL approval of proposed tasks and prioritization. For example, Integrated Planning system “Review and Approval of Contractor Work Plans” (*Review and Approve Contractor Annual and MYWPs*) crosscutting process provides for contracting officer approval of MYWP (Phase 1) and work authorizations; and mission planning subject expert approval of MYWP (Phase 2). The Acquisition Management system “Contract Management” (*Contract Performance Agreements and Fee Incentives*) crosscutting process provides for the RL Manager approval of contractor performance agreements and fee incentives. The Financial Management system “Acquire Funds” (*Acquire EM Funding*) crosscutting process provides for the RL Site Management Board, consisting of RL senior management, approval of the Integrated Priority List.

Several RIMS crosscutting processes provide for lessons learned, feedback, and continuous improvement by RL employees and contractors. These include the “Acquire Funds,” “Performance Improvement,” and “Establish Baseline POMEs.” Although procedures provide for feedback and continuous improvement, interviews confirmed the process was informal. The process does not define how feedback from work planning and execution is documented, the level of detail of the documentation, and how information is retained and made available for future work (see **DOE.3**).

Criterion 6: *RL procedures provide for change control of approved tasks, prioritization, and identification of resources.*

The RIMS Integrated Planning management system “Baseline Change Control” crosscutting process describes the formal process for changing project baselines. The RIMS Acquisition Management system describes the process for contract impacts and contract modifications. The Financial Management system “Acquire Funds” (*Acquire EM Funding*) crosscutting process provides for the RL Site Management Board approval of change control of prioritization.

Interviews confirmed implementation of Baseline Change Proposals originating from both RL and contractors. Both types of Baseline Change Proposals had tracking numbers, analysis of change-to-cost baseline, and RL approvals.

In summary, RL procedures and implementation provide a formal process for change control of work, priorities, and resources.

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Criterion 7: *RL contracts incorporate DEAR 970.5204-2, "Integration of Environment, Safety, and Health Into Work Planning and Execution," and DEAR 970.5204-78, "Laws, Regulations, and DOE Directives" and require flow down into subcontracts involving complex or hazardous work. A process is in place for modifying contracts based on new or revised regulations or requirements.*

RL's process for managing new or revised regulations or directives is through the RIMS "Requirements Management" crosscutting process. RL contracts incorporate applicable ISM contract clauses as follows and require flow down into applicable subcontracts. The Bechtel Hanford, Inc. contract incorporates DEAR 970.5204-2, DEAR 970.5204-78, and a tailored DEAR 970.5204-86 clause as B-6 Payment of Basic Fee and Performance Based Fee. The Fluor Hanford contract incorporates tailored H.5 Environment, Safety, and Health; H.14 Laws, Regulations, and DOE Directives; and H.47 Conditional Payment of Fee or Incentives (Exclusive of Base Fee) clauses. The Pacific Northwest National Laboratory contract incorporates DEAR 970.5204-2, DEAR 970.5204-78, and a tailored DEAR 970.5204-86 clause as H-33 Conditional Payment of Fee. Interviews verified that applicable prime contracts contain recent modifications with at least an annual updated list of revised regulations or requirements. An interview also confirmed that RIMS will have a database that will list all applicable regulations or requirements, sorted by contractor.

Interviews indicated the RIMS "Requirements Management" crosscutting process is implemented for new or revised regulations or requirements. Requirements Management staff notifies management system stewards to verify involvement for evaluation, contractors involved, and determine the appropriate implementation. The Contractor Requirements Document is prepared and provided to contractors to assess impact. If cost and schedule impacts are identified by contractors, other crosscutting processes such as Integrated Planning "Baseline Change Control" and "Contract Management" will apply. It was also confirmed in an interview that a SME handbook will be written for this directives process. In addition to the "Requirements Management" crosscutting process, facility-specific requirements are determined through the Safety and Health Management system. DOE-RL-2000-44, *U.S. Department of Energy, Richland Operations Office Integrated Management System Program Description* states under Principle 5 the RIMS Safety and Health Management system process contains procedures for S/RIDs, Work Smart, and Standards Based Management System processes. Those facility-specific processes are not all addressed in the Safety and Health Management system. Neither the RL ISMS Program Description nor the Safety and Health Management system process addresses the RL roles and responsibilities for systematically evaluating requirements relevant to work activities for the contractors' annual update requirement. An interview confirmed that in some instances S/RIDs updates exceeded the 12-month requirement. The mechanisms used to formally update contract requirements (List B) and facility-specific requirements, on at least an annual basis as current and relevant to work activities, should be improved. **(DOE.1-5)** This is a repeat concern from the RL ISM Readiness Assessment of May 2000 that was closed.

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Criterion 8: *The prioritization and allocation process clearly addresses both ES&H and programmatic needs. The process involves line management input and approval of the results.*

RIMS Integrated Planning management system process includes guidance on contractor work plans and Baseline Updating Guidance and coordination review with regulators and stakeholders. The RIMS Financial Management system addresses the Project and Integrated Priority List processes. The process requires the Site Management Board, consisting of RL senior management, to review and approve the Integrated Priority List and provide appropriate actions for baseline changes. The Mission Planning Guidance lists work priorities as Base Operation activities including Essential Safety Activities and Essential Services, and Cleanup Progress Activities. Interviews confirmed that budget, programs, stakeholders, and contractors were involved in determining the prioritization criteria this year.

DOE-RL-2000-28, *Richland Operations Environment, Safety and Health Fiscal Year 2002 Budget & Risk Management Summary* report provides crosscutting information related to ES&H activities and resources that support these activities at "Target," "Decrement," and "Critical Needs" levels of funding. The primary objective of this report is to identify ES&H vulnerabilities early in the FY 2002 planning process to allow the DOE and contractor managers to examine the potential ES&H vulnerabilities and risks associated with RL mission activities at anticipated funding levels. If necessary, priorities and resources can be rebalanced to effectively allocate resources to address ES&H, programmatic, and operational considerations in advance of work execution.

In summary, the RL prioritization and allocation process addresses both ES&H and programmatic needs and involves RL line management input and approval of results.

Criterion 9: *Priorities include commitments and agreements to RL as well as stakeholders.*

Stakeholder and Tribal Nations involvement is coordinated through RL via the Office of Intergovernmental, Public, and Institutional Affairs as described within the RIMS Communications management system. The RIMS "Acquire Funds" crosscutting process also addresses working with regulators, the Hanford Advisory Board (HAB), and conducting public meetings on the proposed Environmental Management Integrated Priority List.

Interviews indicated that RL has been more open the last few years, making more detailed information available for analysis and review by stakeholders. For example, this year stakeholders were given the opportunity early in the process to comment on criteria for RL decisions on budget priorities. RL conducts regional and local public meetings on the budget. The Mission Planning Guidance lists Tribal and other public meetings held on prioritization criteria. RL also attends monthly committee meetings with the HAB and has used HAB comments in developing the Integrated Priority List. RL interviews indicated they took another look at the Integrated Priority List and made revisions after regulator and stakeholder comments were received. Another interview confirmed that stakeholder input had been forwarded for use in planning.

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Interviews also confirmed that more positive feedback from regulators and stakeholders was received on the RL process this year, even though the time schedule had been changed to accommodate earlier involvement of stakeholders. **(DOE.1-3)** It is viewed as a strength that RL provided detailed budget information for analysis and review by stakeholders and tribes, including input on criteria for decisions on budget priorities.

Criterion 10: *Resource allocations reflect the tailored hazard controls.*

The RL ISMS Program Description (DOE-RL-2000-44) describes tailored hazard controls as one of its seven guiding principles. RL facilities are categorized by hazard in a graded approach to ensure that as hazards increase, increasing controls are established to prevent and mitigate activity-specific hazards. The RL ISMS Program Description also states that responsibility for hazard analysis rests with the operating contractor, with periodic oversight by RL personnel. The RIMS Acquisition Management system "Acquisition Planning" crosscutting process provides an integrated plan for fulfilling a mission need through contracting. The requirer identifies essential requirements and standards including addressing safety and health considerations, nuclear quality assurance, and environmental considerations with guidance from SMEs.

Interviews indicated risk criteria address the cleanup process and hazard-reduction controls.

Criterion 11: *The incentive and performance fee structure promotes balanced priorities.*

The RIMS Integrated Planning management system includes processes for preparing performance measures and incentives that includes factoring in balancing DOE Headquarters guidance, the Hanford Strategic Plan, contractor input, integration issues, and life-cycle performance expectations to balance priorities.

Interviews confirmed implementation. Baseline performance measures are developed by the Project Execution Team as lead and as conduits to the programs. The Contract Performance Agreements and Fee Incentive Team is an integrated team that includes representatives from Procurement, Legal Counsel, Project Execution, Planning and Integration, Mission Element Managers, Mission Support Managers, Support Service Managers, Performance Evaluation, and SMEs.

In conclusion, the RL processes and implementation for incentive and performance fee expect to balance priorities.

Criterion 12: *RL procedures for defining the scope of work ensure balanced priorities.*

RIMS Financial Management system procedures describe the Mission Planning Guidance that includes information on funding targets, programmatic guidance, performance objectives, and prioritization criteria. The general Hanford Site-wide guidelines for updating work plans addresses risk management as an aide in establishing priorities and risk-benefit performance. It

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recommends a systematic approach to help ensure a proper balance of worker and public safety, ecological protection, socioeconomic impacts, and hazard reduction during the performance of cleanup work. The "Acquire Funds" crosscutting process includes approving final budget documents based on internal RL review, as well as regulator, stakeholder, tribal, and public comments.

The RL Budget and Risk Management Summary describes a key tool in the RL budget planning process used in developing the FY 2002 priorities list to balance priorities so that resources are effectively allocated to address safety, programmatic, and operational considerations.

Conclusion

RL has a clear commitment to ISMS implementation for the Business, Budgets, and Contracts objective.

This objective has been met.

Strengths:

- RL's presence as part of multi-discipline integrated teams within RL and with contractors is viewed as a strength and demonstrates general top-level implementation of this criterion to the new RL culture as more of a site integrator role. **(DOE.1-1)**
- Financial Services and Procurement Services staff located onsite with the programs and contractors and regularly scheduled interface meetings is viewed as a strength and demonstrates implementation of roles and responsibilities, accountability, and authority to the new RL culture. **(DOE.1-2)**
- RL provided detailed budget information for analysis and review by stakeholders and tribes, including input on criteria for decisions on budget priorities. **(DOE.1-3)**

Concerns:

- Roles and responsibilities for crosscutting processes are only broadly described in RIMS and position descriptions, and may affect effective ISMS implementation. **(DOE.1-4)**
- The mechanisms used to formally update contract and facility-specific requirements, on at least an annual basis as current and relevant to work activities, should be improved. **(DOE.1-5)**

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Submitted: <u><i>Donette Cappello</i></u> Donette Cappello, Team C <i>Team Member</i>	Approved: <u><i>Joe Parsons</i></u> Joe (Ed) Parsons <i>Team Leader</i>
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OBJECTIVE

DOE.2 - DOE has established processes and formal procedures that interface efficiently and effectively with the contractor's organization for ensuring that work is performed safely.

Criteria

1. RL line management responsibility for safety includes RL processes and procedures for ensuring effective contractor operations oversight, the review and approval of the analysis of hazards and controls and for ensuring that all work is performed within controls.
2. RL has established clear roles and responsibilities to ensure that work is performed safely and within controls.
3. RL procedures ensure that personnel who review or oversee the safe performance of work and those responsible for approving hazard analyses and controls have competence commensurate with the responsibilities to which they are assigned.
4. RL procedures require readiness be properly verified and authorized before commencing operations.
5. RL 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 List A/List B.

Approach

Record Review

- Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); and Functions, Responsibilities, and Authorities documents and RL implementing procedures for effective interface with the contractor.
- Determine if there is adequate guidance for the authorization and oversight of work by RL. Verify that personnel authorized to perform these functions have clear roles and responsibilities.
- Determine if the chain-of-command is clearly described.
- Verify that the Facility Representative (FR) program is tailored to match the work.
- Determine if oversight is balanced with risk and the priority of the mission being performed.

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Interviews

- Discuss the systematic oversight of work with RL and contractor personnel.
- Determine whether oversight is adequate or excessive. Discuss the safety oversight programs with FRs, Subject Matter Experts, and contractor personnel to determine if it is effective.

Observations

None.

Record Review

- *Authorization Basis Review and Approval Procedure*, June 2000
- DOE/RL-2000-44, *RL Integrated Safety Management System Program Description*, Rev. 0, June 2000
- *DOE Richland Operations Office, Review of ISMS Implementation*, May 22, 2000
- Facility Representative Instructions (FRI)
 - FRI-001, *Implementation of the Facility Representative Program*, May 31, 2000
 - FRI-003, *Conduct of Surveillances*, June 22, 2000
- RL Integrated Management System (RIMS)
 - ms08a013, *Integrated Performance Evaluation*, June 2000
 - ms12-013, *RL Integrated Management System*, May 2000
 - ms14a013, *Safety and Health Management*, June 2000
- RIMS Crosscutting Processes
 - 05-00-t01, *"Requirements Management,"* May 2000
 - 59-00-t01, *"Engineering, Safety, and Health,"* June 2000
 - 61-00-t01, *"Review and Approval of Nuclear Safety Documents,"* June 2000
- RIMS Procedures
 - 59-11-t01, *Startup and Restart of Facilities*, June 2000
 - 61-02-t01, *Review of the Annual Update to the Authorization Basis*, June 2000
 - 61-03-t01, *Unreviewed Safety Questions*, June 2000.
 - 61-04-t01, *Review and Approval of Authorization Agreements and Standards/Requirements Identification Documents*, June 2000
 - 61-05-t01, *Review and Approval of Safety Analysis Report for Packaging*, June 2000

Interviews Conducted

- Administrator, Office of Performance Evaluation (OPE)
- Deputy Administrator, OPE
- Director, Authorization Basis Division (ABD)

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- Director, Engineering, Safety and Standards Division (ESD)
- Director, Environmental Restoration Division
- Director, Materials Disposition Division (MDD)
- Director, Operations Oversight Division (ODD)
- Director, Science and Technology Operations Division
- FR Team Leader, ODD
- FR, ODD
- General Engineer, MDD (2)
- Mechanical Engineer, ABD
- Nuclear Engineer, ABD
- Physical Scientist, Office of Spent Nuclear Fuels
- Team Leader, ABD.

Observations

None.

Discussion of Results

Criterion 1: *RL line management responsibility for safety includes RL processes and procedures for ensuring effective contractor operations oversight, the review and approval of the analysis of hazards and controls and for ensuring that all work is performed within controls.*

The Integrated Performance Evaluation management system in RIMS provides a general reference to the FR Program, but does not describe the program. The RL process and procedures for contractor operations oversight and for ensuring that work is performed within controls are provided in the FRIs. FRI-001, *Implementation of the Facility Representative Program*, clearly defines the FRs as having primary responsibility for day-to-day oversight of contractor operations. FRI-003, *Conduct of Surveillances*, provides guidance to the FRs in conduct of surveillances to ensure a meaningful evaluation of contractor operational and safety performance, and to verify that work activities are performed within controls. Although well documented, the FR procedures are critical to ISMS, but have not been incorporated in RIMS. **(DOE.2-6)**

There is a clear understanding of the FRs oversight responsibilities and a good day-to-day working relationship between the FRs and the mission element (program) personnel. Based on the FRIs reviewed and personnel interviewed, the FR program is well developed, documented, and understood by the FRs and mission element personnel. **(DOE.2-1)** Consolidation of the FRs under one organization has provided a more consistent Hanford Site-wide implementation of this critical role.

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The process and procedures for RL review and approval of hazard analysis and controls are incorporated in RIMS under the Safety and Health Management system. Under this management system, there is a crosscutting process for "Review and Approval of Nuclear Safety Documents." Within this process, there are specific procedures: *Authorization Basis Review and Approval*; *Review of the Update to the Authorization Basis*; *Unreviewed Safety Questions*; *Review and Approval of Authorization Agreements and S/RIDS*; and *Review and Approval of SARP*. These procedures provide step-by-step instructions for the members of ABD, program offices, FRs, and any other organization participating in the review and approval of nuclear safety documents. These procedures are well defined and provide RL personnel with a uniform process for the review and approval of hazard analysis and controls. **(DOE.2-2)** However, this process has not been effectively coordinated with and communicated to all relevant RL staff. **(DOE.2-7)**

Criterion 2: *RL has established clear roles and responsibilities to ensure that work is performed safely and within controls.*

RIMS briefly defines the RL Manager as line management. Clarification of the RL concept of line management has been recently provided to the staff through briefings and written materials to varying degrees. The Assistant Manager for Nuclear Materials and Facility Stabilization issued a welcome memo to the staff in October 1999 expounding on line management and "managing the contract, not the contractor," and in June 2000 issued Nuclear Materials and Facility Stabilization policy documents further clarifying these concepts. Based on these briefings and written materials, the RL concept of line management appears to be understood by mission support and mission element personnel that have safety responsibilities. Personnel recognize that line management responsibility for safety resides with the RL Manager and all staff support the RL Manager in carrying out line management authorities in their respective functions. There are different interpretations among mission element personnel on their role of "managing the contract," which the RIMS Phase II development of the "Project Nurturing and Expediting" crosscutting process intends to address by providing guidance for consistent implementation.

The interim FRAM has been approved by the RL Manager and identifies the safety functional areas, along with the lead and support organization(s) responsible for each function. However, reportedly a revision to the interim FRAM has been incorporated in RIMS without RL Manager approval. In RIMS, core roles, responsibilities, accountabilities, and authorities have been generically identified for RL personnel from the RL Manager down to the staff. Some of the crosscutting processes under RIMS, as well as some organizations' internal procedures, further define safety roles and responsibilities for specific personnel and interactions among mission support and mission element personnel. The RIMS yellow pages (on the RIMS web site) also identify RL personnel responsible for specific safety functions and activities.

With the RL reorganization, personnel with mission safety support functions were pulled out of the former line program organizations and placed in ABD and ESD. Where personnel continued to perform the same safety support function, a working relationship has been maintained with the

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mission element personnel. However, where there have been changes in personnel performing safety functions, there was a break in continuity that took some time to reestablish a working relationship.

Mission element personnel and Safety and Engineering personnel have a general understanding of each other's roles and responsibilities, and interact with each other to varying degrees. MDD has implemented a weekly Plutonium Finishing Plant team meeting that includes MDD, ESD, FRs, as well as other mission support and support service staff to improve teaming, communication, and interdependency. **(DOE.2-3)**

A recent process change by OPE on the issuance of surveillance reports to the contractors has raised some questions on OPE and program offices responsibilities. The process is reportedly being revised by OPE to clarify that Program Assistant Managers will issue facility-specific surveillance reports and the OPE Administrator will issue crosscutting surveillance reports.

The roles and responsibilities between mission element and mission support personnel should be clarified and clearly communicated to staff to ensure there are no uncertainties in safety expectations. **(DOE.2-8)**

Criterion 3: *RL procedures ensure that personnel who review or oversee the safe performance of work and those responsible for approving hazard analyses and controls have competence commensurate with the responsibilities to which they are assigned.*

Technical personnel are required to meet the DOE Technical Qualification Program developed in response to the Defense Nuclear Facilities Safety Board Recommendation 93-3. Based on personnel interviewed and review of qualification records, RL mission element and mission support personnel with responsibilities for reviewing and approving hazard analyses and controls are technically competent and well qualified for the functions they perform. **(DOE.2-4)** The majority of technical personnel are fully qualified under the Technical Qualification Program, and requirements are documented. Limited personnel that are not qualified are aware of their training and qualification requirements. Necessary training is available for personnel to fulfill their qualification requirements, as well as to enhance performance. All personnel interviewed indicated they are qualified to perform their functions. In several cases Individual Development Plans have not been developed or implemented. (See **DOE.3**, Criterion 1 for additional discussion regarding the process to ensure technical competence.)

Criterion 4: *RL procedures require readiness be properly verified and authorized before commencing operations.*

The RL process and procedures for verifying and authorizing readiness is incorporated in RIMS under the Safety and Health Management system. Under this management system, the *Startup and Restart of Facilities* procedure contains specific components for startup notification reports, operational readiness review processes, readiness assessment guidelines, team leader and team

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selection processes, determination of pre-start and post-start findings, and validation review plans. These components provide step-by-step instructions and responsibilities for ESD, OPE, program offices, and other RL personnel starting with the contractor providing RL a quarterly Startup Notification Report identifying all known planned facility startups and restarts through the conductance of the appropriate level readiness review, verification, and approval. This procedure is well defined and provides RL personnel with a uniform process for reviewing and verifying operational readiness. **(DOE.2-5)** However, this procedure has not been effectively coordinated with and communicated to all relevant RL staff. **(DOE.2-7)** In the process of incorporating this procedure into RIMS, the numbering system was eliminated and made it difficult to crosswalk to referenced sections that are no longer numbered. (Development and implementation of RIMS is further addressed in **DOE.4**, Criterion 5.)

This procedure, in conjunction with the Authorization Basis procedure, also under the Safety and Health Management system, provide the process and procedures for verifying and authorizing readiness prior to the RL Manager or delegated approval authority approving the commencement of operations.

Criterion 5: *RL 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 List A/List B.*

RL has incorporated ISMS requirements in the RL prime contracts, which include the requirement for the contractors to identify, analyze, and categorize hazards. RL procedures for overseeing the contractors' identification, analysis, and categorization of hazards are incorporated in RIMS primarily in the Safety and Health Management system crosscutting process for "Review and Approval of Nuclear Safety Documents." (See **DOE.1**, Criterion 7 and **DOE.5**, Criteria 1 and 2 for further discussion.)

Conclusion

RL has established procedures in RIMS for the review and approval of hazards analysis and controls, and for reviewing, verifying, and authorizing readiness. Procedures for contractor operations oversight and for ensuring that work is performed within controls are provided in the FRIs, and there is a good working relationship between the FRs and mission element personnel. Clarification of the RL concept of line management has been recently provided to the staff and is recognized. RL management and staff are well qualified for the safety functions they perform. The FR procedures have not been incorporated into RIMS. Key safety procedures, which include roles and responsibilities, have not been effectively communicated to all relevant staff. The roles and responsibilities between mission element and mission support personnel should be clarified and clearly communicated to the staff.

This objective has been met.

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Strengths:

- The Facility Representative Program is well developed, documented, and understood by the Facility Representatives and mission element personnel. **(DOE.2-1)**
- The RIMS Safety and Health Management system procedures for the "Review and Approval of Nuclear Safety Documents" crosscutting process are well defined and provide RL personnel with a uniform process for the review and approval of hazard analysis and controls. **(DOE.2-2)**
- Materials Disposition Division has implemented a weekly Plutonium Finishing Plant team meeting that includes Materials Disposition Division, Engineering, Safety and Standards Division, Facility Representatives, and other mission support and support service staff to improve teaming, communication, and interdependency. **(DOE.2-3)**
- RL mission element and mission support personnel responsible for reviewing and approving hazard analysis and controls are technically competent and well qualified for the functions they perform. **(DOE.2-4)**
- The RIMS Safety and Health Management system *Startup and Restart of Facilities* procedure is well defined and provides RL personnel with a uniform process for reviewing and verifying operational readiness. **(DOE.2-5)**

Concerns:

- Although well documented, the Facility Representative procedures are critical to ISMS, but have not been incorporated in RIMS. **(DOE.2-6)**
- The "Review and Approval of Nuclear Safety Documents" crosscutting process and *Startup and Restart of Facilities* procedure have not been effectively coordinated with and communicated to all relevant RL staff. **(DOE.2-7)**
- The roles and responsibilities between mission element and mission support personnel should be clarified and clearly communicated to staff to ensure there are no uncertainties in safety expectations. **(DOE.2-8)**

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Submitted: <u><i>Randall Kaltreider</i></u> Randall Kaltreider, Team C <i>Team Member</i>	Approved: <u><i>Ed Parsons</i></u> Joe (Ed) Parsons <i>Team Leader</i>
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OBJECTIVE

DOE.3 - DOE has implemented processes that interface efficiently and effectively with the contractor's organization to provide the contractor with feedback for continuous improvement. Feedback information to the contractor on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, contractor line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur. RL has implemented internal processes for feedback and continuous improvement.

Criteria

1. RL procedures ensure that RL competence is commensurate with responsibilities for providing feedback for continuous improvement.
2. Documented RL processes are implemented for defining personnel performance expectations, evaluating performance, and providing feedback to employees. Performance is linked to training plans.
3. RL procedures ensure that feedback is provided for continuous improvement in the identification of safety standards and requirements.
4. RL procedures ensure that feedback is provided for continuous improvement in the tailored hazard controls of the work being performed.
5. RL procedures promote continuous improvement and efficiency of RL activities. RL has implemented internal self-assessment and lessons-learned programs; and corrective actions are developed, implemented, and tracked.
6. RL has implemented processes to establish performance measures or metrics for the performance of work, including safety performance, with the objective of continuous improvement. Measures include RL as well as contractor's performance.
7. RL procedures and/or mechanisms require that contractors develop a lessons-learned program and that RL monitors its implementation. A process is established for reviewing occurrence reports and approving proposed corrective action reports.
8. RL corrective actions are developed, implemented, and tracked to profit from prior experience and lessons learned. RL provides effective line oversight of the contractor's self-assessment and lessons-learned programs.
9. RL's *Implementation Plan in response to Defense Nuclear Facilities Safety Board Recommendation 98-1*, and processes for addressing and resolving safety issues raised by EH-2, have been effectively implemented at RL.

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Approach

Record Review

- Review the Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual*, Functions, Responsibilities, and Authorities documents; and RL implementing procedures to determine how the feedback program functions. Verify that there is RL line management involvement. Determine that the roles and responsibilities for these programs are clear.
- Review RL training requirements and records to ensure that personnel are appropriately trained to perform their responsibilities.
- Review personnel position descriptions, selected criteria, training programs, and training records to determine if staff competency is adequate.
- Verify that balanced priorities and tailored approaches are used to conserve and maximize use of resources.
- Review the procedures for issue management and determine if this system enhances the improvement process.
- Review the RL process established to provide line oversight of the contractor's self-assessment programs.
- Review RL internal processes and guidance to the contractor concerning expectations for, and oversight of, a lessons-learned program.
- Review the effectiveness of the RL and contractor lessons-learned programs and procedures.
- Determine if the lessons learned between federal safety offices and offices of similar functions are appropriately integrated and shared.
- Evaluate the RL issues management and tracking system to ensure that there is an adequate system in place.

Interviews

- Discuss the feedback and continuous improvement process with RL personnel. Verify that safety is integrated into this process and that RL efforts in this area are important to safety.

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- Determine if process improvement includes efforts to reduce unnecessary safety requirements and improve efficiency.
- Discuss the status of establishing line oversight of the contractor's self-assessment and lessons-learned programs.
- Discuss the effectiveness of the RL self-assessment and lessons-learned programs.
- Determine if personnel believe that safety activities are tailored to the risk and the priority of the work being performed.
- Discuss the effectiveness of issues and corrective action tracking systems.

Observations

None.

Record Review

- Authorization Basis Division Experience and Training Chart, June 2000
- DOE O 210, *Performance Indicators and Analysis of Operations*, September 21, 1997
- DOE O 232.1A, *Occurrence Reporting and Processing of Operations Information*, July 21, 1997
- DOE O 414.1A, *Quality Assurance*, September 29, 1999
- DOE P 450.5, *Line Management ES&H Oversight*, June 26, 1997
- DOE-STD-7501-99, *The DOE Corporate Lessons Learned Program*, 1999
- DOE-STD-1063-2000, *Facility Representatives*, March 2000
- Facility Representative Instructions (FRI)
 - FRI-008, *RL Facility Representative Program Event Response and Follow-up*, June 14, 2000
 - FRI-014, *RL Facility Representative Program, Facility Representative Qualification*, July 1, 1999
- Human Resources Files, Individual Performance Plans (IPP), April 2000
- Review of the effectiveness of the RL Office and the Hanford Contractors' Occurrence Reporting and Lessons Learned Programs, February 1998
- RL Integrated Management System (RIMS)
 - ms03a13, Communications, June 2000
 - ms06a013, Human Resources, June 2000
 - ms07a013, Information Management, June 2000
 - ms08a013, Integrated Performance Evaluation, June 2000
 - ms10a013, Performance Improvement, June 2000

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- ms11a013, Regulatory Inspection and Enforcement, June 2000
- ms12a013, RL Integrated Management System, May 2000
- ms13a013, Security and Emergency Services, April 2000
- ms14a013, Safety and Health Management, June 2000
- RIMS Crosscutting Processes
 - 01-00-t01, “Crosscutting Process Development,” May 2000
 - 05-00-t01, “Requirements Management,” May 2000
 - 07-00-t01, “Workforce Management,” June 2000
 - 19-00-t01, “Stakeholder Participation and Involvement,” June 2000
 - 36-00-t01, “Training and Employee Development,” June 2000
 - 38-00-t01, “Employee/Labor Relations Management,” June 2000
 - 41-00-t01, “Document Control,” June 2000
 - 44-00-t01, “Baseline Performance Objectives, Measures and Expectations,” June 2000
 - 48-00-t01, “Management Assessment Guidelines,” June 2000
 - 49-00-t01, “Coordinate and Disseminate Evaluation Information,” June 2000
 - 53-00-t01, “Improvement Action Management System,” June 2000
 - 54-00-t01, “Lessons Learned,” June 2000
 - 58-00-t01, “Employee Concerns Program,” June 2000
- RIMS Procedures
 - 07-02-t01, *Filling Vacant Positions*, May 2000
 - 61-01-t01, *Authorization Basis Review and Approval*, June 2000
 - 61-04-t01, *Review and Approval of Authorization Agreements and Standards/Requirements Identification Documents*, June 2000
- RIMS Yellow Pages Service Directory, June 2000
- Richland Operations Office/Office of River Protection (RL/ORP) Performance Management Plan, February 2000
- DOE/RL-2000-44, *U.S. Department of Energy, Richland Operations Office Integrated Safety Management System Program Description*, Rev. 0, June 2000
- RL-96-01, *Quality Assurance Program Description*, Rev. 1, June 8, 2000
- RLP 1000.1, *RL Corrective Action Management System*, July 11, 1996
- Surveillance Guide MSS1.1, *Corrective Action/Issue Management & Continuous Improvement*, Rev. 1, April 13, 2000.

Interviews Conducted

- Deputy Administrator, Office of Performance Evaluation
- Director, Analysis and Evaluation Division
- Director, Employee Concerns
- Director, Engineering, Safety and Standards Division
- Director, Environmental Restoration Division
- Director, Operation Oversight Division
- General Engineer, Analysis and Liaison Support

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- General Engineer, Management Systems Division
- General Engineer, Training and Employee Development Team
- Industrial Hygienist, Field Assessment and Surveillance Team
- Management Analyst, Office of Human Resource Management Service
- Manager, Hanford Public Involvement
- Project Hanford Management Contract (PHMC) Lessons Learned Coordinator
- Team Leader, Analysis and Liaison Support
- Team Leader, Field Assessment and Surveillance Team
- Team Leader, Performance Evaluation Team
- Team Leader, Training and Education Development.

Observations

President's Zero Accident Council, June 22, 2000.

Discussion of Results

Criterion 1: *RL procedures ensure that RL competence is commensurate with responsibilities for providing feedback for continuous improvement.*

The "Workforce Management" crosscutting process within the RIMS Human Resources management system provides the mechanism by which RL hires, allocates, and maintains competent, qualified staff. In accordance with the *Filling Vacant Positions* procedure, the selecting official determines the minimum qualification requirements and major duties and responsibilities for the position. Selected applicants that meet these requirements are involved in a further review of their submitted application materials by a diverse panel of Subject Matter Experts to further assess the technical competency of the individual. Candidates considered best qualified are further interviewed by the selecting official.

The "Training and Employee Development" crosscutting process within the Human Resources management system provides the mechanism by which personnel maintain the necessary knowledge, skills, and abilities to effectively perform their job function. Specific implementing mechanisms include the following:

- Individual Development Plan (IDP) preparation
- Training registration
- External Development Programs participation
- Qualification Program participation.

The IDP process requires the manager and employee to develop an initial IDP and to update the IDP on an annual basis or within 60 days of a job change. Knowledge, skills, and abilities needed to perform the tasks as delineated in the employee's IPP (see "Employee/Labor

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Management Relations” crosscutting process, *Performance Management*) are a key input into the IDP. Interviews and record reviews indicate that the newly approved (effective June 2000) IDP process is not yet fully implemented. **(DOE.3-3)** Lack of implementation of the IDP process is reportedly due to the inability to provide training on the process and the related database. Despite the lack of the implementation of the IDP process, RL personnel experience, certification, and training assessed indicated a high degree of competency for assigned responsibilities.

FRI-14, *Facility Representative Qualification Program*, based on DOE-STD-1063-2000, *Facilities Representatives*, has been developed and implemented by RL. The Facility Representative Program serves to qualify Facility Representatives through training and examinations and requires an initial qualification followed by re-qualification every 3 years. The Facility Representative Qualification Program appears to be comprehensive in nature and well implemented.

In response to Defense Nuclear Facilities Safety Board Recommendation 93-3, RL has developed and implemented a Technical Qualification Program. Based on record reviews and interviews, it appears that the majority of the necessary RL staff have received the appropriate qualifications under this program. However, some staff has not yet been fully qualified due to the recent RL reorganization and new assignment of responsibilities.

Criterion 2: *Documented RL processes are implemented for defining personnel performance expectations, evaluating performance, and providing feedback to employees. Performance is linked to training plans.*

The “Employee/Labor Management Relations” crosscutting process, *Performance Management* procedure within the RIMS Human Resources management system provides the mechanism by which personnel performance expectations, performance evaluation, and performance feedback is provided to RL employees. In accordance with the *RL/ORP Performance Management Plan* (a key component of the *Performance Management* procedure), managers must develop IPPs annually for all employees. The IPP serves as the basis for establishing individual performance expectations and providing feedback to employees on an annual basis. The IPP further defines specific roles and responsibilities for RL personnel. Interviews and record reviews indicate that IPPs have been developed for essentially all RL personnel. A shortcoming of the IPP process is that the process does not specifically address performance expectations relative to safety. **(DOE.3-2)** In accordance with the *Performance Management* procedure and the *RL/ORP Performance Management Plan*, performance evaluations are to be linked to IDPs. Since the IDP process has not yet been implemented, this linkage could not be assessed.

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Criterion 3: *RL procedures ensure that feedback is provided for continuous improvement in the identification of safety standards and requirements.*

The “Requirements Management” and the “Review and Approval of Nuclear Safety Documents” crosscutting processes (*Review and Approval of Authorization Agreements* and *Standards/Requirements Identification Documents*) support continuous improvement in the identification of safety standards and requirements. (See **DOE.2** and **DOE.5** for additional discussion regarding these processes.)

Criterion 4: *RL procedures ensure that feedback is provided for continuous improvement in the tailored hazard controls of the work being performed.*

The “Acquisition Planning” crosscutting process provides the contractual mechanism to identify requirements and standards with the assistance of appropriate Subject Matter Experts, and appropriate hazard control standards and requirements can then be tailored to the work being performed. The “Review and Approval of Nuclear Safety Documents” crosscutting process (Authorization Basis Review and Approval, Review and Approval of Authorization Agreements, and Standards/Requirements Identification Documents) provides the basis for continuous improvement of hazard controls at the facility level. (See **DOE.1** and **DOE.5** for additional discussion regarding these processes.) At the activity level, Facility Representatives maintain operational awareness of contractor work activities and provide feedback relative to the adequacy of hazard controls.

Criterion 5: *RL procedures promote continuous improvement and efficiency of RL activities. RL has implemented internal self-assessment and lessons-learned programs; and corrective actions are developed, implemented, and tracked.*

The RIMS Integrated Performance Evaluation management system provides a framework to RL for planning and conducting assessments; monitoring, evaluating, and reporting performance; and recommending improvement actions. This management system states the primary driver within RL for performance improvement is management (self) assessment and evaluation. It further states that managers at every level should periodically evaluate the performance of their organization’s functions and activities to determine how well it meets requirements, expectations, and mission objectives so that improvements can be made. Based on interviews and review of documents, it does not appear that RL has put into place a self-assessment process, including management expectations for scope, frequency, reporting, and tracking. Some self-assessments do occur, but not as a result of a managed RL process. The lack of a defined self-assessment process within RL is a concern. (**DOE.3-5**)

The RL Lessons Learned Program is described in a crosscutting process within RIMS. The purpose of the process and procedure is to document an integrated lessons learned plan at RL that will help prevent recurrences of negative experiences and to highlight best practices to create innovative ways to solve problems or perform work safely, efficiently, and cost effectively. This

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process is intended to be a primary mechanism for feedback and improvement. Interviews and document reviews of the RL program described a relatively immature process recently implemented within RL. (See Criterion 7 for additional details on the RL Lessons Learned Program.)

Corrective Action Management within RL is described in the RIMS Improvement Action Management System crosscutting process. This crosscutting process is used for tracking and verifying the improvement actions performed by contractors and RL, and tracking the status of actions taken by RL to implement improvement actions internal to RL. This crosscutting process includes six procedures that segregate issues by organization (e.g., PHMC issues, Pacific Northwest National Laboratory [PNNL] issues, RL issues [RL or externally identified], etc.). Use of the RIMS Improvement Action Management System crosscutting process in a consistent manner by RL was not evident, as two most recent self-assessments have not been incorporated into the management system (Internal Readiness Review, May 2000, and Seeded CRAD Assessments).

In March 1996, EH-HQ identified an issue with RL's Corrective Action Management process. This issue still remains open in the Corrective Action Tracking System (CATS) after 4.5 years.

Criterion 6: *RL has implemented processes to establish performance measures or metrics for the performance of work, including safety performance, with the objective of continuous improvement. Measures include RL as well as contractor's performance.*

The RIMS Performance Improvement management system states that continuous, deliberate improvement plays a vital role in accomplishing the three RL mission outcomes. One key output of this management system is the implementation of metrics by RL and contractors. Also, the "Baseline Performance Objectives, Measures, and Expectations" crosscutting process states that performance measures are an important tool for improving performance and communication. A performance measure is defined as a quantitative or qualitative method or characteristic for ascertaining the degree of performance and typically includes a counting method and units to be counted.

RL and Fluor Hanford have identified a minimum set of shared environmental, safety, health, (ES&H) and quality performance indicators. RL relies upon contractor organizations to track, trend, and evaluate ES&H performance data. ES&H performance indicators are reported monthly to the Engineering, Safety, and Standards Division. These Fluor Hanford indicators include the following:

- Occupational Safety and Health Administration recordable case rate
- Lost-away workday case rate
- Reportable skin and personal clothing contamination
- Reportable radiation safety-related occurrences

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- Accidents by cause
- Recordable case rate by project team
- Employee safety concerns
- RL-PHMC occurrence reports
- Voluntary Protection Program Hanford General-Employee Training survey.

It is not clear how these indicators are used to improve ES&H performance. Annual goals or anticipated units of improvement are typically not indicated in performance measures or metrics. The lack of effective use of these tools for improving ES&H performance is a concern. **(DOE.3-7)** The Engineering, Safety, and Standards Division indicated that no formal ES&H performance measures were in place for RL. The Procurement Office has some performance goals. The Office of Performance Evaluation has no performance indicators.

It appears that RL could improve performance through an expanded performance measurement program consistent with DOE guidance.

Criterion 7: *RL procedures and/or mechanisms require that contractors develop a lessons-learned program and that RL monitors its implementation. A process is established for reviewing occurrence reports and approving proposed corrective action reports.*

See Criterion 5 for comments on RL's Lessons Learned Program.

RL has not provided formal oversight of contractor Lessons Learned Programs since October 1999. However, RL does chair a user group of contractor Lessons Learned Coordinators and points of contact bimonthly. **(DOE.3-1)** This group shares information and ideas for the purpose of improving performance and the Lessons Learned process. Contractors at the Hanford Site appear to have sound programs.

The RIMS Integrated Performance Evaluation management system provides a framework to RL for evaluating performance and recommending improvement actions. One input into this management system is contractor occurrence reports. Pertinent information is to be analyzed, documented, and reported. The Analysis and Evaluation Division has the responsibility for performing this function, and although Facility Representatives monitor occurrence reports per FRI-008, *RL Facility Representative Program Event Response and Follow-up*, analysis, trending, and reporting is not taking place.

Criterion 8: *RL corrective actions are developed, implemented, and tracked to profit from prior experience and lessons learned. RL provides effective line oversight of the contractor's self-assessment and lessons-learned programs.*

The RIMS Integrated Performance Evaluation management system provides a framework for planning and conducting assessments; monitoring, evaluating and reporting performance; and

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recommending improvement actions. The "Coordinate and Disseminate Evaluation Information" crosscutting process within this management system establishes the RL approach for conducting assessments and evaluations. However, these documents do not provide sufficient description of a process and/or requirements for implementation of DOE P 450.5, *Line Management ES&H Oversight*. For example, planning and determining the number of assessments; technical basis or criteria for determining the scope, schedule, and priority for assessments; and roles and responsibilities for these functions are not identified. Furthermore, no requirements or processes for conduct of management walk-throughs are identified and few management walk-throughs are conducted.

On June 1, 2000, RL issued a procedure titled *A&E Oversight of Contractor Management Assessment Programs*. This procedure is not intended for inclusion in RIMS and does not identify requirements, periodicity, or sufficient level of detail for RL assessment of contractor self-assessments to support implementation of DOE P 450.5. Overall, documents governing the assessment program do not delineate a requirement or a systematic process for conducting assessments or oversight of the contractors' self-assessment program as required by DOE P 450.5. **(DOE.3-4)**

Review of the assessment schedule for the past year and interviews with assessment staff indicate that since August 1999, only a few assessments of Hanford Site contractors, each with limited scope, were scheduled. These assessments appear to have been reactive in nature, not based on a pre-planned process, and the majority of the assessments were not conducted. Also, it is not evident that oversight of contractors' self-assessments has been performed. **(DOE.3-6)** While this appears to be due to lack of assessment staff and competing priorities, implementation of DOE P 450.5 is a concern.

Criterion 9: *RL's Implementation Plan in response to Defense Nuclear Facilities Safety Board Recommendation 98-1, and processes for addressing and resolving safety issues raised by EH-2, have been effectively implemented at RL.*

RL submitted a Corrective Action Report to HQ closing out all but one legacy issue. A Corrective Action Plan (CAP) was prepared for that issue and the action is being tracked in CATS. EH identified this issue in April 1996. The completion date for this action has been formally extended until September 2000, which is the full implementation date for RIMS. This action calls for revising RLP 1000.1, *RL Corrective Action System*, for the purpose of strengthening RL's involvement in, and oversight of, the contractor in Corrective Action Management. The time period to complete this action item (4.5 years) appears excessive. The rationale for this lengthy period could not be clearly discerned from discussions with RL staff. The root cause associated with the initial issue may be a factor in understanding this lengthy delay in implementing closure action. The PNNL CAP, which is based on a November 1998 EH follow-up review and subsequent Defense Nuclear Facilities Safety Board 98-1 review, is also being tracked in CATS. The PNNL CAP included one issue related to the RL Office of Assistant Manager for Technical Support, which involved a weakness in RL monitoring of

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PNNL activities. The planned corrective action included filling six Office of Assistant Manager for Technical Support oversight positions, which included four Facility Representatives. This action has been completed.

Conclusion

While RL has developed and implemented several processes to interface with Hanford Site contractors, of notable concern is the lack of a formal documented assessment program consistent with DOE P 450.5. Other than the Facility Representatives Program, RL is not regularly conducting assessments of the contractors and is not providing effective oversight of the contractors' self-assessment program. Overall, RL processes for continuous improvement are not fully developed and implemented.

Based on the aforementioned concerns, this objective has not been met.

Strengths:

RL Lessons Learned Coordinator chairs a user group of contractor Lesson Learned Coordinators and points of contact. **(DOE.3-1)**

Concerns:

- The Individual Performance Plans process does not specifically address performance expectations relative to safety. **(DOE.3-2)**
- The Individual Development Plan process is not yet fully implemented. **(DOE.3-3)**
- Overall, documents governing the assessment program do not delineate a requirement or a systematic process for conducting assessments or oversight of the contractors' self-assessment program as required by DOE P 450.5. **(DOE.3-4)**
- There is lack of a defined self-assessment process within RL. **(DOE.3-5)**
- There is no evidence that oversight of contractors' self-assessments has been performed. **(DOE.3-6)**
- The lack of effective use of these tools for improving environmental, safety, and health performance is a concern. **(DOE.3-7)**

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Submitted: Dan Marsick, Team C <i>Team Member</i>	Approved: Joe (Ed) Parsons <i>Team Leader</i>
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OBJECTIVE

DOE.4 - RL procedures and mechanisms are effectively implemented to ensure that operations are formally and appropriately authorized and performed safely. RL line managers effectively review safety issues and concerns and have an active role in authorizing operations.

Criteria:

1. RL has effectively implemented procedures and/or mechanisms for confirming readiness and authorizing operations.
2. RL processes and procedures are implemented to ensure that the contractor's safety management system is properly implemented and that RL line management oversight of the contractor's worker, public, environment, and facility protection programs is performed effectively.
3. RL processes and procedures requiring day-to-day operational oversight of contractor activities through Facility Representatives (FR) and Subject Matter Experts (SME) are effectively implemented.
4. RL procedures and/or mechanisms ensure the implementation of quality assurance programs and ensure that contractors implement quality assurance programs.
5. RL procedures clearly define and establish line management control and responsibility for safety and for all aspects of work identification, planning and execution. Support organizations have clearly defined roles and responsibilities.

Approach:

Record Review

- Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); Functions, Responsibilities, and Authorities documents; and RL implementing guidance to determine that the process for the authorization and oversight of operations is adequate.
- Review completed documentation for a representative operational authorization. Verify that those RL personnel assigned to perform these functions have clear roles and responsibilities.
- Determine if the oversight policy is balanced with risk and priority of mission.
- Review the quality assurance program established by RL and the interactions of that program with the contractor's quality assurance program.

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- Review documentation of a completed QA activity.
- Verify RL programs hold line management responsible for safety and contain clear roles and responsibilities.

Interviews

- Discuss work authorization and performance activities with RL and contractor personnel to determine if there are adequate mechanisms to ensure that work is properly authorized at all levels.
- Determine if worker safety is perceived as an integral part of the work authorization process and that workers are involved in issue resolution, if appropriate.
- Discuss the RL oversight programs with RL and contractor personnel.
- Discuss the FR programs with FR and SME programs with SMEs and both with contractor personnel to determine if these programs are effective.
- Discuss oversight programs with RL staff who perform environmental, safety, and health management and supervision assignments.
- During interviews, verify understanding of line management responsibility for safety and understanding of clear roles and responsibilities.

Observations

Observe selected facility representative, SME and RL staff oversight activities.

Record Review

- 00D-001, *Operations Oversight Division Program Description, The Facility Representative Program*, June 8, 2000
- 00-ABD-034, *Approval of Safety Analysis Report for Packaging (SARP) (Onsite) Multi-Canister Overpack (MCO) Cask*, Memorandum from S. L. Johnson, RL to R. D. Hanson, Fluor Hanford, April 18, 2000
- 00-ABD-039, *Justification for Continued Operation (JCO) for Hanford Underground Storage Tank 241-Z-361*, Memorandum from K. A. Klein, RL to R. D. Hanson, Fluor Hanford, June 16, 2000
- 00-SFO-060, *Approval of Revision 1 to the Spent Nuclear Fuel Project Basins Authorization Agreement*, Memorandum from K. A. Klein, RL, to R. D. Hanson, Fluor Hanford, Inc., December 19, 1999

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- 99-TPD-129, *Waste Encapsulation and Storage Facility (WESF) Authorization Agreement Transmittal*, Memorandum from P. M. Knollmeyer, RL, to R. D. Hanson, Fluor Daniel Hanford, March 25, 1999
- 99-TPD-321, *Issuance of the Plutonium Finishing Plant (PFP) Authorization Agreement (AA)*, Memorandum from K. A. Klein, RL, to R. D. Hanson, Fluor Daniel Hanford, August 12, 1999
- Approval Form, *Preparation and Risk Approval Form* (used at Pacific Northwest National Laboratory [PNNL] prior to initiation of work)
- Assessment of the Hanford Site Startup Readiness Verification Process, November 1999
- Assessment of Project Hanford Management Contract and River Protection Project Nuclear Welding Quality Assurance, April 2000
- DOE M 411.1-1A, *Safety Management Functions, Responsibilities, and Authorities Manual*, October 18, 1999
- DOE O 414.1, *Quality Assurance*, November 24, 1998
- DOE Richland Operations Office, Review of ISMS Implementation, May 22, 2000
- DOE/RL-2000-03, *Science and Technology Operations Division Annual Evaluation of PNNL Performance FY 1999*, Rev. 0, January 2000
- DOE/RL-2000-44, *Integrated Safety Management System Program Description*, Rev. 0, June 2000
- FR Qualification Cards (an example for B Plant and WESF)
- FR Instruction, FRI-005, *RL Facility Representative Program Master Surveillance Plans*, May 12, 2000
- Hanford Authorization Bases for Fluor Hanford, Bechtel Hanford Inc., and PNNL facilities, June 20, 2000 (a nine page summary table of Authorization Bases)
- Impregnation of QA Requirements into Contractor Organizations (an undated flow chart)
- Impregnation of QA Requirements into RIMS (for Federal Employees Only) (an undated flow chart)
- MAS 10.1, *RL Facility Representative Program Surveillance Guide, Implementation of the Integrated Safety Management System (ISMS) Process in Maintenance Activities*, February 14, 2000
- Management System Steward Requirements Record of Decision
- Office of Assistant Manager for Science and Technology/Office of Performance Evaluation (OPE) Memorandum of Agreement (MOA), draft, June 19, 2000
- PAD-AUD-99-021, *Audit of Fluor Daniel Hanford, Inc. Computer Software Quality Assurance*, July 1999
- RL-96-01, *Quality Assurance Program Description*, Rev. 1, June 8, 2000
- RL Integrated Management System (RIMS)
 - ms04a013, Environmental Management System, June 2000
 - ms08a013, Integrated Performance Evaluation, June 2000
 - ms12a013, RL Integrated Management System, May 2000
 - ms14a013, Safety and Health Management, June 2000

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- RIMS Crosscutting Processes
 - 53-00-t01, "Improvement Action Management System, June 2000
- RIMS Procedures
 - 01-03-e01, *Crosscutting Process Approval Form*, "Interim Management Systems Functions and Responsibility Matrix," Rev. 0, May 2000
 - 59-11-t01, *Startup and Restart of Facilities*, June 2000
 - 61-04-t01, *Review and Approve Authorization Agreement and Standards/Requirements Identification Documents*, June 2000
- Roles, Responsibilities, Accountabilities, and Authorities (an undated draft process under development by the Office of the Assistant Manager for Science and Technology)
- Seeded Criteria and Review Approach Documents prepared by RL for the ISMS Verification Team
- S-00-OOD-233S-003, *Surveillance Report: OPS 9.16 Procedure Content and Use*, June 1, 2000 (an associated electronic mail message between B. A. Biro, J. W. Todd, and R. D. Lichfield, June 7, 2000).

Interviews Conducted

- Acting Team Leader, Project Execution
- Deputy Director, OPE
- Director, Analysis and Evaluation Division
- Director, Engineering, Safety, and Standards Division
- Director, Materials Disposition Division
- Director, Operations Oversight Division
- FR Program Manager
- Licensing Manager, Spent Nuclear Fuel and Solid Waste
- Manager, Transuranic Waste Program
- RIMS Development Point-of-Contact
- Safety Management System Contractor Oversight (for PNNL)
- Team Leader, FRs
- Team Leader, Life-Cycle Asset Management
- Technical Oversight Program Manager (for PNNL).

Observations

None.

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Discussion of Results

Criterion 1: *RL has effectively implemented procedures and/or mechanisms for confirming readiness and authorizing operations.*

The current RIMS procedure, *Startup and Restart of Facilities*, became effective June 2000 and as such no facility to date has undergone a readiness review or operational readiness review using the current RIMS procedure. Prior to RIMS, RL followed a revised, but unapproved, procedure for facility start-up (RLID procedure—based upon DOE Order 425.1A), then reorganized before the procedure was approved. The review at the 233-S Facility was reportedly conducted using the unapproved procedure. It should be noted that the current RIMS procedure consists of the same processes that were in the old RLID procedure. Based on this, a seamless transition to the new RIMS procedure would be expected for the next readiness review or assessment.

The Safety and Health management system in RIMS states that the function of safety and health management is executed through the Authorization Basis Division and the Engineering, Safety, and Standards Division. Depending on the facility and the operation, these two Divisions interface with other RL offices including mission element staff, FRs and SMEs to confirm readiness prior to authorizing operations at a facility. Once the necessary prerequisites have been completed (i.e., Operational Readiness Review, Technical Safety Requirements, Safety Analysis Report) the Authorization Basis Division prepares the Safety Evaluation Report. Usually the mission element staff and SMEs serve on the review team and concur on the Authorization Basis. In accordance with the RIMS *Review and Approve Authorization Agreement (AA) and SRID* procedure the RL Manager can then enter into an AA with the contractor so the operation can be initiated. This is an indication that RL management and staff clearly understand the flow of line management responsibility from the Secretary to the Cognizant Secretarial Officer to the Field Element Manager then to the contractor. Based on record reviews and interviews, AAs have been developed for all Category 2 nuclear facilities.

Criterion 2: *RL processes and procedures are implemented to ensure that the contractor's safety management system is properly implemented and that RL line management oversight of the contractor's worker, public, environment, and facility protection programs is performed effectively.*

New RIMS procedures on safety management and contractor oversight became effective only within the past several weeks (Safety and Health Management system and Integrated Performance Evaluation management system). This contributes to an incomplete understanding of roles, responsibilities, ISMS and RIMS. **(DOE.4-5)** As a result, there is some level of uncertainty among RL staff regarding the responsibility for safety management and contractor oversight. For example, one RL staff member stated that subcontractors and not the prime contractor perform most of the actual work, and RL should not oversee this work since this is the responsibility of the prime contractor. In another example, an individual thought he was responsible for evaluation of the contractor and did not realize the OPE performed this function.

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The exception is the roles and responsibilities of the FRs and their interfaces with the mission elements and contractors appears to be well understood. **(DOE.4-1)**

There is also a range in the level of mission element involvement in contractor oversight. At some facilities, mission element staff are often at the facility and work closely with the FR, and in other cases mission element staff rely more heavily on the FR for contractor oversight. At the PFP, mission element staff from the Materials Disposition Division are routinely involved with the contractor and work closely with the FR to ensure that the contractor's activities are conducted safely and efficiently and that proper controls are in place. The Assistant Manager for Nuclear Materials and Facility Stabilization is reportedly at PFP at least once a week. This is one example that RL senior management is committed to a sound safety culture. **(DOE.4-2)**

Criterion 3: *RL processes and procedures requiring day-to-day operational oversight of contractor activities through FRs and SMEs are effectively implemented.*

In the recent reorganization of the RL office, and the initiation of the RIMS, the FR process changed very little. The procedures used by the FRs were well established and existed prior to the reorganization. This may contribute to the FR's ability to provide very effective oversight of contractor activities. Additionally, FRs coordinate with mission element staff on a routine basis. Depending on the facility, the FR meets with the mission element staff and the contractor weekly or more often. FRs are supported by SMEs (as needed) to address contractor issues that are then tracked to resolution via the Deficiency Tracking System as specified in the RIMS "Improvement Action Management System" crosscutting process effective June 2000. FRs and mission element staffs agree that the mission element is responsible for having the contractor correct safety deficiencies; however, several staff did not realize this process is documented in RIMS. The mission element Assistant Managers have been delegated contracting authority from the RL Manager that enables them to direct the contractor to correct the finding.

General procedures and FR Instructions provide guidance regarding the level of oversight a contractor should have, and for ensuring that work is performed within controls. The FR, based upon experience and the risk and complexity of the task, determines the level of contractor oversight. FRs, with support from SMEs and concurrence from the mission element Program Manager, prepare surveillance reports that are provided to the contractor. The FRs also prepare weekly and monthly letters of surveillance. The Administrator for the OPE transmits these letters, once concurred by the responsible mission element Assistant Manager, to the contractor.

At the PNNL facilities, the FRs inform the contractor and mission element staff of concerns; however, the contractor initiates corrective actions without mission element direction. It should be noted that a MOA between the Office of the Assistant Manager for Science and Technology and the OPE has been drafted and once issued, should clarify these roles for the contractor and mission element programs. Additionally, the OPE will be preparing guidance/direction on this topic for other RL offices. Since RIMS should capture all the necessary procedures, the need for this MOA and additional guidance from the OPE is questioned unless RL believes this process is not sufficiently described in RIMS.

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Criterion 4: *RL procedures and/or mechanisms ensure the implementation of quality assurance programs and ensure that contractors implement quality assurance programs.*

RL issued a revised *Quality Assurance Program Description* (QAPD) approximately 2 weeks prior to this ISMS verification. Two flow charts have also been developed; one for RL and one for the contractor (Impregnation of QA Requirements into RIMS) that show the flow of responsibility. This documentation clearly demonstrates how the QA program flows down from the DOE order and policies through the QAPD to the RL Manager and contractors. It appears that QA programs are being implemented at RL based on a limited sampling of QA audits and assessments conducted under the old procedure. Even though the procedures and processes exist, it is premature to determine if the QA programs are being effectively implemented under the revised QAPD. Future QA assessments will need to verify the effectiveness and implementation of the QA programs under the new QAPD.

Criterion 5: *RL procedures clearly define and establish line management control and responsibility for safety and for all aspects of work identification, planning and execution. Support organizations have clearly defined roles and responsibilities.*

RIMS is RL's electronic institutionalization of all of its processes and procedures. Overall, RL has made a significant investment in its future with the development and implementation of RIMS. **(DOE.4-3)** RIMS development and implementation process is divided into two phases. Phase I, which RL declares complete, consists of 27 critical crosscutting processes that are purported to contain all tenets of ISMS. Phase II consists of the remaining processes that complete this new web-based management system. However, Phase I of RIMS development does not capture all tenets of ISMS. **(DOE.4-6)** A review of the total listing of all processes from both phases identified ISMS-related processes that were not included in Phase I and are not complete. Examples include "Continuous Improvement," "Performance Tracking and Trending," and "Waste Minimization and Pollution Prevention." In addition, the "Waste Minimization and Pollution Prevention" process was not classified as crosscutting, although it appears to meet several of the criteria for it to be classified as crosscutting. Also, the RIMS Environmental Management System Description introductory wording appears to emphasize environmental compliance over environmental protection.

RL management and staff understand that line management responsibility flows from the Secretary to the Cognizant Secretarial Officer to the RL Manager then to the contractor as described in the RL interim FRAM and RIMS. The various RL organizations support the RL Manager in carrying out his functions, responsibilities, and authority. In some instances, the responsibility for safety, planning, directing, and conducting work is well understood. However, written documentation describing this "understood" division of responsibilities among the FRs, mission element program managers, and the contractor is absent. Also, as discussed in Criterion 2, there is an incomplete understanding of roles, responsibilities, ISMS, and RIMS. **(DOE.4-5)** Additionally, the process of transitioning to RIMS is not well understood by some staff. **(DOE.4-7)** Several staff did not clearly understand their roles and responsibilities, and were not

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sufficiently cognizant of the ISMS, RIMS, or the responsibilities and interfaces they have with other RL offices.

RIMS Phase I was just implemented at RL and a combined RIMS/ISMS training presentation was provided to about 60% of RL staff based upon a review of training records. As a result, several employees lack the necessary understanding of RIMS and ISMS. The Training and Education Development Team is currently not planning any more training at this time. However, the RIMS website does include a feedback button on each management system or crosscutting process, and links to the web master and help desk. The recent introduction of RIMS, coupled with the recent reorganization of RL, leads to a wide range in the level of understanding of both RIMS and ISMS by some personnel. The general consensus is RIMS has a lot of potential and will greatly benefit RL, but the system was rolled out too quickly leading to confusion and frustration. However, nothing led to unsafe conditions.

The RIMS development and implementation process lacks rigor and discipline. **(DOE.4-8)** For example, configuration control during transition from RL's old procedural system to RIMS needs to be strengthened. The RIMS process for canceling RL directives is not well understood. Another example is the process for maintaining continuity of direction to the contractor while canceling RLIDs needs to be strengthened. As a third example, some crosscutting processes were issued without steward approval. The fourth and fifth examples involve transitioning roles and responsibilities from the interim FRAM to RIMS. As RIMS processes and procedures are approved, a process is in place (*Crosscutting Process Approval Form*) to disposition the elements of the interim FRAM, which has been approved by the RL Manager. However, the RIMS process establishes a new approval authority for new processes and therefore, roles and responsibilities at the System Steward level. The RL Manager has not formally delegated this new control level for roles and responsibilities. **(DOE.4-9)** With the full phase-out of the FRAM, there will be no assurance that RIMS will reflect the expectations of senior management or the RL Manager with respect to roles, responsibilities, and authorities. The other roles and responsibilities transitioning issue involves the assumption that the interim FRAM is complete and contains all appropriate Field Element Manager responsibilities that should flow down from the DOE FRAM (DOE M 411.1-1A, *Safety Management Functions, Responsibilities, and Authorities Manual*). It does not appear that a systematic process was used to ensure that all appropriate DOE FRAM Field Element Manager responsibilities were incorporated. An example is Section 9.6, "Collect Feedback and Improvement."

Section 7.0 of the RIMS Management System requires that the System Steward "ensures that outputs of their systems are responsive to mission element and other customer needs." As a fifth example of lack of configuration control, the RL process allowed several new critical crosscutting processes to be approved without customer concurrence. In addition, several new processes were approved without conducting the dispositioning process of roles and responsibilities in the interim FRAM. As a result, two different mechanisms were in effect at the same time identifying roles and responsibilities.

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RL management conducted two significant self-assessments to identify issues and gaps associated with the implementation of ISMS and RIMS (**DOE.4-4**). The first one was conducted by an independent group and resulted in a report, dated May 2000, to the RL Manager. RL identified 13 of the 16 Opportunities for Improvement as closed on June 20, 2000. During the conduct of this verification, it was determined that the RL closure process was informal and that several of the closure actions did not meet the intent of the Opportunities for Improvement. The second self-assessment by RL was the development of the seeded Criteria and Review Approach Documents as a tool for the ISMS Verification Team. This process identified several gaps that needed to be corrected.

RL has made a significant investment in the future with the development and implementation of RIMS. (**DOE.4-3**) RIMS Phases I and II are scheduled for completion in this fiscal year. New organization-specific procedures, which flow down from RIMS processes, are not identified or tracked as part of the RIMS development process.

Conclusion

RL has made a significant investment in RIMS, the electronic web-based system for capturing all procedures and mechanism. RIMS has tremendous potential once it is institutionalized and understood and fully utilized by all RL staff. However, RIMS has just recently been brought online and effective implementation cannot be verified.

Therefore, based on the incomplete implementation of RIMS, this objective has not been met.

Strengths:

- The roles and responsibilities of the Facility Representatives and their interfaces with the mission elements and contractors appear to be well understood. (**DOE.4-1**)
- RL senior management is committed to a sound safety culture. (**DOE.4-2**)
- RL has made a significant investment in its future with the development and implementation of RIMS. (**DOE.4-3**)
- RL management conducted two significant self-assessments to identify issues and gaps associated with the implementation of ISMS and RIMS. (**DOE.4-4**)

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Concerns:

- There is an incomplete understanding of roles, responsibilities, ISMS, and RIMS. **(DOE.4-5)**
- Phase I of the RIMS development does not capture all tenets of ISMS. **(DOE.4-6)**
- The process of transitioning to RIMS is not well understood by some staff. **(DOE.4-7)**
- The RIMS development and implementation process lacks rigor and discipline. **(DOE.4-8)**
- A new approval authority for roles and responsibilities has been established, but the RL Manager has not formally delegated this authority. **(DOE.4-9)**

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Submitted:

Scott Van Camp, Team C

Team Member

Approved:

Joe (Ed) Parsons

Team Leader

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OBJECTIVE

DOE.5 - DOE procedures and mechanisms are effectively implemented to ensure that hazards are analyzed, controls are developed, standards are appropriately selected and managed, authorization basis documents are developed and implemented, and that Authorization Agreements meet DOE requirements. Verify that RL line managers are using these processes effectively, consistent with DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); and Functions, Responsibilities, and Authorities (FRA) requirements.

Criteria:

1. RL processes and/or mechanisms are in place to ensure that the contractor's hazard analysis covers the hazards associated with the work.
2. RL procedures and/or mechanisms are in place in which RL directs the contractor to establish a process and propose facility or activity-specific standards tailored to the work and the hazards. RL procedures require that appropriate safety requirements in necessary functional areas are included in contracts.
3. RL procedures and/or mechanisms are in place that direct contractor preparation of the authorization basis documentation and oversee the implementation by the contractor. Procedures for development, review, approval, maintenance, and utilization of Authorization Agreements are implemented.
4. Contractor procedures and/or mechanisms are in place to effectively and accurately implement all aspects of the Authorization Basis.

Approach:

Record Review

- Review RL procedures for ensuring that adequate provisions are included for verification that hazards are properly identified, analyzed, and categorized.
- Review the approved and in-process hazard analysis documentation to verify that contractor procedures and mechanisms have been properly reviewed and approved.
- Review RL procedures that specify the process to be followed for the review and approval of standards and hazard controls. Ascertain that RL has approved the process used by the contractor to tailor the selection of standards and requirements.

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- Review the process used for the review, approval, and implementation of Authorization Basis documentation, including authorization protocols and agreements.
- Review the RL 98-1 site report and a sampling of RL legacy issues.

Interviews

- Interview selected RL personnel responsible for the review and approval of the results of the contractor's identification, analysis, and categorization of hazards to assess their understanding of the procedures and the underlying principles and requirements.
- Interview RL personnel responsible for the review and approval of the standard selection process including the approval of the authorization protocols and agreements.
- Interview RL personnel responsible for administering the issues management program and those RL line managers who provide oversight of the contractor's self-assessment programs.
- Interview selected RL line managers and safety personnel to discuss how particular issues were handled and whether any problems were identified in the process. If problems were identified, how were they addressed, and are there any recommendations for improvement in the process. Also, the process for reviewing and applying lessons learned at other sites will be discussed.

Observations

Observe the programs, processes, and mechanisms identified in practice.

Record Review

Documents/Procedures:

- 00-ABD-034, DE-AC06-96RL13200, *Approval of Safety Analysis Report for Packaging (SARP) (ONSITE) Multi-Canister Overpack (MCO) Cask*, Correspondence from S. L. Johnson, RL, to R. D. Hanson, Fluor Hanford (FH), April 18, 2000
- 00-ABD-039, DE-AC06-96RL13200, *Justification for Continues Operation (JCO) for Hanford Underground Storage Tank 241-Z-361*, Correspondence from K. A. Klein, RL, to R. D. Hanson, FH, June 16, 2000
- 00-FTD-061, DE-AC06-96RL13200, *Approval of the 300 Area Fuel Supply Shutdown Facility Authorization Safety Basis*, Correspondence from K. A. Klein, RL, to R. D. Hanson, FH, May 31, 2000

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- 00-SFO-060, DE-AC06-96RL13200, *Approval of Revision 1 to the Spent Nuclear Fuel Project K Basins Authorization Agreement (HNF-5356)*, Correspondence from K. A. Klein, RL, to R. D. Hanson, Fluor Hanford, Inc., December 29, 1999
- 72-Hour Hanford Weather Forecast, June 22, 2000
- 99-TPD-129, DE-AC06-96RL13200, *Waste Encapsulation and Storage Facility (WESF) Authorization Agreement Transmittal*, Correspondence from P. M. Knollmeyer, RL, to President, Fluor Daniel Hanford (FDH), March 25, 1999
- 99-TPD-321, DE-AC06-96RL13200, *Issuance of the Plutonium Finishing Plant (PFP) Authorization Agreement (AA)*, Correspondence from K. A. Klein, RL, to President, FDH, August 12, 1999
- Authorization Basis Division (ABD) Staff-prepared ABD Matrix with Facility, Project, Site Representative, Contractor, and Safety Basis Data
- Concept of the DOE Regulatory Process for Radiological, Nuclear, and Process Safety for Privatization Contractors
- DOE/RL-2000-44, *U.S. Department of Energy, Richland Operations Office Integrated Management System Program Description*, Rev. 0, June 2000
- DOE/RL-94-02, *Hanford Emergency Management Plan*, October 1999
- FDH-9954260, DE-AC06-96RL13200, *Maintenance Implementation Plan for the Fast Flux Test Facility*
- FH-0002860, DE-AC06-96RL13200, *Request Approval of Maintenance Implementation Plan – Accelerated Deactivation Project*
- Facility Representative Instruction, FRI-005, *RL Facility Representative Program Master Surveillance Plans*, May 12, 2000
- GANTT Chart with Safety Analysis Review and other Authorization Safety Documents Schedule
- Hanford Authorization Bases (Master Matrix for Authorization Activities), June 20, 2000
- *Hanford Environmental Foundation Monthly Performance Report*, May 2000
- HSRM-1, *Hanford Site Radiological Control Manual*, Rev. 2
- Internal Staff Memo, Informal, *Engineering, Safety, and Standards Division (ESD) Split of Responsibilities for Radiological Control*, June 2000
- *May 2000 Environmental, Safety, and Health Performance Indicator Report*, Executive Summary
- Overall Integrated Safety Management Process for River Protection Project–Waste Treatment Plant (RPP-WTP) Project
- *PFP Master Surveillance Plan (MSP)*, April 17, 2000
- RL Integrated Management System (RIMS), ms12a013, RL Integrated Management System, May 2000
- RIMS Crosscutting Processes
 - 01-00-t01, “Crosscutting Process Development,” May 2000
 - 22-00-t01, “Environmental Compliance and Permits Management,” May 2000
 - 24-00-t01, “Managing NEPA at Hanford,” June 2000

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- 25-00-t01, “Radiation Protection of the Public and the Environment,” May 2000
- 61-00-t01, “Review and Approval of Nuclear Safety Documents,” June 2000
- RIMS Procedures
 - 01-03-e01, *Crosscutting Process Approval Form*, May 2000
 - 24-01-t01, *Identifying NEPA Action*, June 2000
 - 24-02-t01, *Categorical Exclusions*, June 2000
 - 24-03-t01, *Environmental Assessment and Finding of No Significant Impact*, June 2000
 - 24-04-t01, *Environmental Impact*, June 2000
 - 25-01-t01, *Release of Radioactively Contaminated Material from Hanford*, May 2000
 - 61-01-t01, *Authorization Basis Review and Approval*, June 2000
 - 61-02-t01, *Review of the Annual Update to the Authorization Basis*, June 2000
 - 61-03-t01, *Unreviewed Safety Questions*, June 2000
 - 61-04-t01, *Review and Approval of Authorization Agreements and Standards/Requirements Identification Documents*, June 2000
 - 61-05-t01, *Review and Approval of Safety Analysis Requests for Packaging*, June 2000
- River Corridor Project, MSP April 24, 2000
- RLP 1380.1, *RL Qualification and Orientation for S/RID Activities*, August 21, 1995
- RLP 1380.4, *Review and Approval of Contractor S/RIDs and CSA Requests*, August 21, 1995
- RLP 1380.5, *Validation of Contractor S/RID Assessments*, May 28, 1997
- Regulatory Unit Position on Selected Control Strategy Issues
- Regulatory Unit Position on Implementing and Assuring Compliance with Integrated Safety Management
- S-00-OOD-200ADP-005, *WESF and Area Accelerated Deactivation Projects, Surveillance Report*, June 27, 2000
- S-00-OOD-SNFP-02, *Spent Nuclear Fuel Project, Surveillance Report*, November 29, 1999
- Spent Nuclear Fuel (SNF) Project, Facility Representative MSP, April 13, 2000
- Staff Matrix of Hanford Authorization Basis Fluor Hanford Facilities, June 2000
- Submittal Letter, *Field Office Quality Assurance Program*, from RL to EM-10, June 15, 2000
- Unreviewed Safety Question (USQ) Evaluation Form.

Interviews Conducted

- ABD Staff Lead, Environmental Restoration Facilities
- ABD Staff Lead, Office of Spent Fuel
- Director, ABD
- Director, ESD
- Director, Safety Regulation of the River Protection Project-WTP Project
- Emergency Management Program Manager
- Facility Representative, Fast Flux Test Facility

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- Project Manager, Office of Site Services, Site Meteorological, Ecological, and Cultural Resources
- Project Manager, Fast Flux Test Facility Project Office
- RIMS Engineer Lead Crosscutting Process Development
- RIMS Requirements Management Lead
- Safety Review Official, Safety Regulation of the RPP-WTP Project
- Senior Technical Advisor, Start-Up Operations Office of Spent Fuel
- Senior Technical Regulatory Advisor, Safety Regulation of the RPP-WTP Project
- Team Lead, Authorization Agreements, ABD
- Team Lead, Life Cycle Asset Management Team, ESD
- Team Lead, Occupational Health and Safety Team, ESD
- Team Leader, National Environmental Policy Administration (NEPA) Compliance and Cultural Resource.

Observations

President's Zero Accident Council meeting, June 22, 2000.

Discussion of Results

Criterion 1: *RL processes and/or mechanisms are in place to ensure that the contractor's hazard analysis covers the hazards associated with the work.*

The RIMS; DOE/RL-2000-44, *U. S. Department of Energy, Richland Operations Office Integrated Safety Management System Program Description*; and the Safety and Health management system description are the primary and top-level documents that describe the RL process for review and approval of contractor hazard analysis.

Staff-level processes are described in step-by-step fashion in the crosscutting process, "Review and Approval of Nuclear Safety Documents" procedures *Authorization Basis Review and Approval*; *Review of the Annual Update to the Authorization Basis*; *Unreviewed Safety Questions*; *Review and Approval of Authorization Agreements and S/RIDS*; and *Review and Approval of Safety Analysis Reports for Packaging*. These procedures provide the mechanism to ensure that the contractor's hazard analysis covers the hazards associated with the work. These procedures were only recently approved, and were not approved in accordance with the defined RIMS process. However, as discussed in **DOE.2**, Criterion 4, these processes have not been effectively coordinated with and communicated to all relevant RL staff.

With the extensive step-by-step description of process and clearly defined responsibilities, the verification effort focused on staff knowledge of process, implementation of process, and integration of efforts with other organizational elements. Functional areas critical to this criterion include the ABD and ESD, the mission elements (program), and the Facility

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Representatives. The ABD and ESD, while functionally distinct, use matrix management and share resources so that the proper mix of staff skills are assigned on Authorization Basis efforts. Interviews with ABD and ESD staff indicated that staff are knowledgeable concerning their roles and responsibilities and actively follow established requirement guidance, and are technically qualified through both education and experience and can summon outside expertise for assistance on unique safety and technical issues.

Interviews with mission element staff and Facility Representatives indicated that Facility Representatives are technically proficient and knowledgeable of hazard analysis requirements and process and their respective responsibilities are integrated with other RL elements.

Document reviews and interviews indicated that the NEPA process and the Authorization Basis functions are directly linked. The *Authorization Basis Review and Approval*, Section 1.3, "Suggested Guidelines" describes including or using reviewers familiar with NEPA when needed. A review of the applicable RIMS NEPA requirements included *Managing NEPA at Hanford*, *Identifying NEPA Action*, *Categorical Exclusions*, and *Environmental Assessment and Finding of No Significant Impact*.

Interviews with staff and document reviews indicated that the Emergency Management function located in Security and Emergency Services (SES) is involved with Authorization Basis activities and hazard analysis. A review of the SES procedure and DOE/RL-94-02, *Hanford Emergency Management Plan* clarifies that the Authorization Basis function must be integrated with hazard analysis. Interviews indicated this integration is taking place and that the functions related to ABD fire protection and SES fire fighting are integrated and that the respective players understand their roles and responsibilities.

Criterion 2: *RL procedures and/or mechanisms are in place in which RL directs the contractor to establish a process and propose facility or activity-specific standards tailored to the work and the hazards. RL procedures require that appropriate safety requirements in necessary functional areas are included in contracts.*

A review of the Project Hanford Management Contract (PHMC), Environmental Restoration Contract, and the Pacific Northwest National Laboratory Contract indicate that a list of applicable DOE directives (List B) have been appended to each of the contracts. As indicated in the PHMC, the environmental, safety, and health standards and requirements described in Part III Section J, Appendix C (DOE Directives) may be superseded, in whole or in part, by an alternate set of requirements developed through a DOE-approved process such as the Nuclear Facilities Standards/Requirements Identification Documents (S/RIDs). The "Requirements Management" crosscutting process describes the procedures and guidelines to:

- Comment on draft requirements
- Analyze new or revised requirements and prepare for implementation

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- Develop contractor requirements documents
- Request exemptions to requirements.

Following this process, “new” DOE directives (as well as other requirements) are contractually imposed on the Hanford contractors. However, these “new” requirements, which may be time urgent, may not be incorporated into S/RIDs for Hazard Category 1 and 2 nuclear facilities until the annual update of the S/RIDs (see below). **(DOE.5-2)**

Within RIMS, the Safety and Health Management system describes the process for the review and approval for Hazard Category 1 and 2 nuclear facilities and activities in the procedure *Review and Approval of Authorization Agreements and S/RIDs*. Prior to the development of RIMS, the review and approval of S/RIDs was conducted in accordance with RLP 1380.1, *RL Qualification and Orientation for S/RID Activities*, and 1380.4, *Review and Approval of Contractor S/RIDs and CSA Requests*. As specified by RL, and as is included in the contractor’s S/RID procedure (HNF-PRO-265, *Standards/Requirements Identification Document Process*), the contractor is required to annually update the S/RIDs for the RL Manager’s approval. At present, all S/RIDs for Hazard Category 1 and 2 nuclear facilities have been updated annually with the exception of the PFP (see **MGO.1** Assessment Form). Interviews and review of past records indicate that S/RIDs for several other Hazard Category 2 nuclear facilities were not updated on an annual basis as required. Based on current RIMS documentation and interviews, roles and responsibilities to ensure that the contractor annually updates the S/RIDs are not clear. **(DOE.5-3)**

As indicated in the *Review and Approval of Authorization Agreements and S/RIDs* procedure, the S/RIDs process includes the performance of a Phase 1 (Administrative Assessment) and Phase 2 (Adherence Assessment). The purpose of the Phase 1 assessment is to verify that the standards/requirements contained in the approved S/RIDs are adequately implemented by site/facility implementing documents such as policies or procedures. The purpose of the Phase 2 assessment is to verify adherence to the documents that implement the standards/requirements in an approved S/RID. Specifics regarding RL oversight of the Phase 1 and 2 assessments are contained in RLP 1380.5, *Validation of Contractor S/RID Assessments*, which has not been updated to reflect the reorganization and is apparently not being utilized. Despite the fact that the RIMS crosscutting process indicates that RLPs, etc. will be integrated into RIMS, at present it is not apparent how RLP 1380.5 will be incorporated into RIMS and how oversight of Phase 1 and 2 of the S/RIDs process will be conducted. **(DOE.5-4)**

This RIMS “Requirements Management” crosscutting process describes the procedures and guidelines to:

- Comment on draft requirements
- Analyze new or revised requirements and prepare for implementation
- Develop contractor requirements documents

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- Request exemption to requirements.

Following this process, “new” DOE directives (as well as other requirements) are contractually imposed on contractors.

Management and staff of the Office of Safety Regulation of the RPP-WTP Project were interviewed and documents associated with the functions and responsibilities of this office were reviewed. This office is an independent Regulatory Unit (RU) for oversight of the RPP-WTP Project and reports directly to the RL Manager. The Program Management Plan presents how the work of the RU will be accomplished and what resources are necessary. RU’s process for establishing a set of Radiological, Nuclear, and Process Safety standards and requirements for the RPP-WTP Project is imposed on the contractor as a requirement by reference in the contract. The RU also has issued several papers describing its positions on implementing ISMS, selected hazard control strategy issues, and selection of standards. As a result, the contractor has developed a process for incorporating ISM into the RPP-WTP Project design process. A review of this process indicates that ISMS is being effectively applied in implementation of this project. Of particular note are the standards identification and control strategy development processes, which are based on the results of the hazards analysis. The standards identification process for the RPP-WTP Project is a strength. **(DOE.5-1)**

Criterion 3: *RL procedures and/or mechanisms are in place that direct contractor preparation of the authorization basis documentation and oversee the implementation by the contractor. Procedures for development, review, approval, maintenance, and utilization of Authorization Agreements are implemented.*

Hanford contractors are contractually required via DOE orders to develop Authorization Basis documents for nuclear facilities. RL has also required Hanford contractors to develop Authorization Agreements for all Hazard Category 1 and 2 nuclear facilities. Record reviews and interviews indicate that the Authorization Basis documents are in place for the applicable facilities. Record reviews and interviews also indicate that the Authorization Agreements are in place for the applicable facilities. Record reviews and interviews also indicate that the Authorization Agreements are in place for all Hazard Category 1 and 2 nuclear facilities. The RIMS Safety and Health Management system “Review and Approval of Nuclear Safety Documents” crosscutting process (*Authorization Basis Review and Approval, Review of the Annual Update to the Authorization Basis, and Review and Approval of Authorization Agreements and S/RIDS*) provides the necessary mechanisms to ensure Authorization Basis documents and Authorization Agreements are appropriately developed and maintained.

Authorization Basis documents reviewed and discussed in interviews included; DE-AC06-96RL13200 – *Approval of Revision 1 to the Spent Nuclear Fuel Project K Basins Authorization Agreement (HNF-5356)*, DE-AC06-96RL13200 – *Justification for Continues Operation (JCO) for Hanford Underground Storage Tank 241-Z-361*; DE-AC06-96RL13200 – *Waste Encapsulation and Storage Facility (WESF) Authorization Agreement Transmittal*;

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DE-AC06-96RL13200 – *Issuance of the Plutonium Finishing Plant (PFP) Authorization Agreement (AA)*; and DE-AC06-96RL13200 – *Approval of the 300 Area Fuel Supply Shutdown Facility Authorization Safety Basis*.

Facility Representatives provide oversight of contractor's implementation of Authorization Basis documents and Authorization Agreements. Documents reviewed indicated that this implementation include FRI 005, *RL Facility Representative Program Master Surveillance Plans*; River Corridor Project MSP; SNF Project, Facility Representative MSP; PFP MSP; S-00-ODD-200ADP-005, *WESF and Area Accelerated Deactivation Projects, Surveillance Report*; and S-00-ODD-SNFP-02, *Spent Nuclear Fuel Project, Surveillance Report*.

Criterion 4: *Contractor procedures and/or mechanisms are in place to effectively and accurately implement all aspects of the Authorization Basis.*

While it is expected that procedures are in place to effectively implement all aspects of the Authorization Basis, this verification did not directly address this criterion. The scope of this verification centered on procedures and mechanisms for hazard identification and Authorization Basis efforts and only indirectly considered contractor implementation issues. However, based on a review of RIMS, and interviews with RL staff, it is clear that authorization activities do include limited interaction with contractor staff. The points of interaction of RL ABD include the early interaction in authorization and are defined in the RIMS "Review and Approval of Nuclear Safety Documents" crosscutting process and the lower-tier documents.

The roles and responsibilities defined through the RIMS "Review and Approval of Nuclear Safety Documents" crosscutting process are for RL staff.

Safety requirements, prior to incorporation into contracts, are evaluated for applicability and impact. This safety requirements evaluation, completed through a crosscutting process, will involve the contractor input and is described in RIMS "Requirements Management" crosscutting process. This coordinated approach allows for planning and implementation considerations at an early stage and helps focus the contractor on anticipated and proposed changes.

Conclusion

Interviews with RL staff and review of RL procedures as described through the RIMS provide confidence that RL procedures and mechanisms are effectively implemented to ensure that hazards are analyzed, controls are developed, standards are appropriately selected and managed, Authorization Basis documents are developed and implemented, and Authorization Agreements meet DOE requirements.

This objective has been met.

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Strengths:

The standards identification process for the River Protection Project–Waste Treatment Plant Project is a strength. **(DOE.5-1)**

Concerns:

- “New” requirements, which may be time urgent, may not be incorporated into the Standards/Requirements Identification Documents for Hazard Category 1 and 2 nuclear facilities until the annual update of the Standards/Requirements Identification Documents. **(DOE.5-2)**
- Based on current RIMS documentation and interviews, roles and responsibilities to ensure that the contractor annually updates the Standards/Requirements Identification Documents are not clear. **(DOE.5-3)**
- Although the RIMS crosscutting process indicates that RLPs, etc. will be integrated into RIMS, at present it is not apparent how RLP 1380.5 will be incorporated into RIMS and how oversight of Phase 1 and 2 of the Standards/Requirements Identification Documents process will be conducted. **(DOE.5-4)**

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Fluor Hanford Integrated Safety Management System Phase II Verification Review Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

**United States
Department of Energy**
P.O. Box 550
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RELEASE AUTHORIZATION

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U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

Fluor Hanford

**Integrated Safety Management System
Phase II Verification**

Review Plan

Richland, Washington
June 12 - July 15, 2000

Joe (Ed) Parsons
Integrated Safety Management System
Verification Team Leader

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ACRONYMS

AA	Authorization Agreements
ASP	Analytical Services Provider
CAP	Corrective Action Plan
CRAD	Criteria and Review Approach Document
DEAR	Department of Energy Acquisition Regulations
DOE	U. S. Department of Energy
ES&H	Environment, Safety and Health
FFTF	Fast Flux Test Facility
FH	Fluor Hanford
FRA	Functions, Responsibilities, and Authorities
FRAM	Functions, Responsibilities, and Authorities Manual
HAZ	Hazards Identification and Standard Selection
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
MGO	Management Oversight
NMS	Nuclear Material Stabilization
PFP	Plutonium Finishing Plant
PHMC	Project Hanford Management Contract
POC	Point of Contact
RC	River Corridor Project
RL	DOE, Richland Operations Office
SNF	Spent Nuclear Fuels
SME	Subject Matter Expert
WM	Waste Management Project

1.0 INTRODUCTION/BACKGROUND

The U. S. Department of Energy (DOE) is committed to conducting work efficiently and in a manner that ensures protection of workers, the public, and the environment. DOE policy mandates that safety management systems be used to systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment.

DOE P 450.4, *Safety Management System Policy* and Department of Energy Acquisition Regulation (DEAR) 970.5204-2 (b) requires safety be institutionalized and integrated into all aspects of the management and operation of its facilities. The goal of an Integrated Safety Management System (ISMS) is to integrate ES&H requirements in the work planning and execution processes to ensure the protection of the worker, public, environment, and federal property while accomplishing mission goals in an effective and efficient manner. In simple terms, DOE will "Do work safely."

DOE P 450.4 requires DOE contractors and subcontractors to perform work safely and in a manner that ensures adequate protection for employees, the public, and the environment and establishes line management responsibility for safety. DOE P 450.4 requires the following:

- Clear and unambiguous lines of authority and responsibility
- Knowledgeable and competent personnel
- Effectively balanced prioritization of Environmental, Safety, and Health (ES&H), programmatic, and operational considerations
- Protection of employees, the public, and the environment as a priority when work is planned
- Evaluation of hazards before work is conducted using an agreed-upon set of standards and requirements
- Implementation of engineered and administrative controls tailored to the work being performed
- Conditions and requirements for operations to be initiated and conducted as agreed upon by DOE and the contractor
- Management and performance of work in accordance with a documented safety management system.

This ISMS Review Plan covers the Phase II verification of Hanford Site project areas that are under the scope of the Project Hanford Management Contract (PHMC) DE-AC06-96RL13200, which is managed by Fluor Hanford (FH). The PHMC includes the 48 CFR 970.5204-2 clause. In addition, this plan guides the review of ISMS development implementation at the DOE, Richland Operations Office (RL).

FH has structured their assigned mission into the following five project management areas:

- Spent Nuclear Fuels (SNF) – The mission of the SNF Project is to support Hanford Site clean up by providing safe, economical, and environmentally sound management of SNF in a manner that stages it to final disposition as well as deactivation of the associated facilities.

NOTE: SNF will not be evaluated in this verification. The SNF Project ISMS was reviewed and verified for both Phase I and Phase II as documented in DOE/RL-99-73, *Spent Nuclear Fuel Project Integrated Safety Management System Phase I/II Verification* (DOE/RL 1999a).

- Nuclear Material Stabilization (NMS) – The mission of the NMS project is to provide for the safe stabilization, storage, repackaging, and shipment of the Plutonium Finishing Plant inventory of plutonium-bearing materials and other nuclear materials to other locations for reuse, long-term storage, and/or final disposition.
- Waste Management (WM) Project – The mission of WM is to provide safe, compliant, and cost-effective waste management services for the Hanford Site and the DOE complex. These services include solid waste storage, treatment, disposal, and management of liquid effluents.
- River Corridor (RC) Project – The mission of the RC Project is to deactivate contaminated facilities in preparation for decontamination and decommissioning.
- Fast Flux Test Facility (FFTF) – The FFTF and affiliated 400 Area buildings are to be maintained in a safe and compliant standby condition.

In support of the project management organizations, FH has established a series of functional area support organizations, as well as service provider organizations. Each functional area organization is responsible for monitoring, interpreting, and communicating requirements and standards to the projects and other organizations. Additionally, functional area support organizations assure consistency of application of cross-cutting issues. Service provider organizations support each project by providing site infrastructure and specialty services support.

The Analytical Services Provider (ASP) is one of the primary service providers to FH Projects. The mission of the ASP is to provide high-quality analytical services in support of the Hanford Site cleanup and environmental restoration mission.

A Phase I ISMS verification of the FH ISM System Description (FH 2000) and commitment by management to ISMS was conducted in April 2000. The results of that effort are documented in DOE/RL-2000-30, Vol. 1, *Fluor Hanford Integrated Safety Management System Phase I Verification* (DOE/RL 2000).

The ISMS verification Phase I report concluded that the FH ISM System Description (FH 2000) is responsive to the DEAR clauses and to DOE management direction; however, specific identified weaknesses had to be corrected prior to considering the system description to be complete. Identified weaknesses included less-than-adequate definition of FH roles and responsibilities at the project/facility level; inadequate institutionalization of issues management systems that are independent of the corrective action management system; and inadequate

resolution of two corrective actions from the previous ISMS Phase I verifications (DOE/RL 1999b).

2.0 PURPOSE

The purpose of this ISMS verification is to determine whether ISM system and processes are sufficiently implemented to accomplish the goal of "Do work safely." The ISMS is comprised of the following:

- A formal, organized process whereby people plan, perform, assess, and improve the safe conduct of work
- A competent workforce with clear roles and responsibilities to manage all aspects of work performance.

This verification review will establish the following:

- Assess the implementation of the FH ISM System Description (FH 2000) for the project and facilities managed and operated by FH under the PHMC.
- Verify processes related to maintaining the Authorization Agreement documents current and accurately implemented.
- Ascertain whether, within the activities and operations under the provisions of the PHMC, the work planning and execution processes are in place and functioning to effectively protect the health and safety of workers, the public, environment, and federal property at the current facility life cycle stages.
- Verify the existence of a safety conscious work environment.
- Assess the adequacy of the RL Integrated Management System.

The guidance and direction provided for this Review Plan has been adapted from the following:

- DOE P 450.4, *Safety Management System Policy*
- DOE G 450.4, *Integrated Safety Management System Guide*
- DOE P 450.5, *Line Environment, Safety, and Health Oversight*
- DOE P 450.6, *Secretarial Policy Statement Environment, Safety and Health Purpose and Scope*
- *Integrated Safety Management Systems (ISMS) Verification Team Leader's Handbook* (DOE 1999).

3.0 SCOPE

The scope of this ISMS verification review is associated with FH and FH interfaces with its subcontractors. This verification will also review the status of ISMS at RL. Because of previous verifications performed on the SNF Project, no verification activities for this project are anticipated as part of this verification.

The objectives of this ISMS verification are to provide the following:

- Verify that the FH ISM System Description and associated plans, manuals of practice, and procedures are adequately implemented at the institutional, project, and activity level.
- Verify that RL has adequately described and implemented an ISMS consistent with the objectives and criteria specified in the *Integrated Safety Management Systems (ISMS) Verification Team Leader's Handbook* (DOE 1999).

4.0 PREREQUISITES

The decision by RL to proceed with the ISMS verification review is based on the following:

- A declaration by FH management of readiness for a Phase II verification.
- Confirmation that the two critical opportunities for improvement and two outstanding corrective actions have been adequately addressed by FH.
- An assumption that correction of previously identified deficiencies will not require or result in changes to the ISM System Description and related policies, plans, procedures, and products to the extent that significant reexamination of a sizeable portion of the ISM System Description or implementation would be required.

5.0 OVERALL APPROACH

The ISMS Verification Team will evaluate the implementation of the FH ISM System Description (FH 2000), including the following: system descriptions; supporting procedures, manuals of practice, and processes; and implementation plans against the guiding principles and core functions defined in DOE P 450.4. Based on this assessment, the Verification Team will draw conclusions and make recommendations to the Approval Authority as to whether current implementation of the ISMS will achieve the overall objective of ISM, which is defined as follows:

The Department and contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment.

Due to the broad scope of FH facilities and activities included in this verification and the inclusion of a review of the RL ISMS, a relatively large number of people will be involved. The Review Team will consist of three subteams: A, B, and C. Team structures are further described in Section 7.0.

- Subteam A will focus on NMS and RC
- Subteam B will focus on WM, FFTF, and ASP
- Subteam C will focus on the review of RL.

The subteams will review the following areas:

- Management Oversight (MGO) Subteams A and B
- Hazards Identification and Standards Selection (HAZ) Subteams A and B
- Operations (OP) Subteams A and B
- Subject Matter Expert (SME) areas Subteams A and B
 - SME.1 Radiation Controls and Protection
 - SME.2 Occupational Safety and Health
 - SME.3 Environmental Protection/Chemical Management
 - SME.4 Quality Assurance
 - SME.5 Criticality Safety Primarily Subteam A
- DOE, Richland Operations Office Subteam C

The Verification Team organizational structure, members, and professional biographies are provided in Appendix B. The team will conduct the review using the Criteria and Review Approach Documents (CRAD) provided in Appendices C and D.

5.1 SEQUENCE OF ACTIVITIES

Most of the ISMS Verification Team members have previous ISMS verification experience and are therefore well versed in the specifics of ISMS, DEAR clauses 970.5204-2, *Integration of Environment, Safety, and Health into Work Planning and Execution*, and 970.5204-78, *Laws, Regulations, and DOE Directives*. The verification effort will commence with approximately 2 days of team orientation as well as introductory briefings by RL and FH personnel.

RL will present an overview of RL's role in ISM, including specific information on contractor interfaces, hazards analyses and controls, work authorization and performance, roles and responsibilities, authorities and accountabilities, feedback and continuous improvement.

The FH presentation will include briefings by FH personnel focused on the processes that govern work, identify hazards, management of those hazards, and feedback systems for continuous improvement. Work is defined as all activities that relate to the safe, efficient operation of the plant or facility and includes pertinent elements of administration, contract, and fiduciary control.

A conclusion as to the maturity and adequacy of the ISMS at facilities and for work activities under the scope of the PHMC will result from evaluation of information provided by the FH staff presentations coupled with the results of the verification activities (e.g., document reviews, personnel interviews, and work activity observations) conducted during the review period. A conclusion as to the status of ISM development and implementation at RL will be concluded from information provided during the RL presentations, a review of pertinent RL document systems, and interviews of selected personnel.

The CRADs provide focus and guidance for the conduct of the ISMS verification review and activities. The CRADs focus efforts for evaluation of the maturity and adequacy of the implementation of ISMS (see Appendices C and D of this plan).

Documentation of ISMS verification activities and subsequent recommendations will be derived using the following approach:

- Verification Team members will record their evaluation on individual Assessment Forms (i.e., Form 1's). Detailed instructions and guidance for completing the Assessment Form will be provided to the Verification Team prior to and during the review.
- An Assessment Form (Form 1) will be prepared for each CRAD and will document the basis for the conclusions reached concerning each objective.
- Each Assessment Form (Form 1) will conclude with a set of alphanumeric issues or observations that will be rolled up in both the Conclusions section in the Executive Summary and in Section 7.0 of the final report (DOE/RL-2000-47, Volume 1). DOE/RL-2000-47, Volume 2 will contain all completed Assessment Forms and this Review Plan.
- Issues identified during the review of an individual CRAD that warrant the attention of senior FH management and/or the RL Manager will be clearly identified within the Assessment Form. In addition, good work practices and strengths of the ISMS will be identified as Noteworthy Practices.

The final report (Volume 1) will describe the results of the ISMS verification. The report will review the status of ISM at RL and verify implementation of the FH ISM System Description (FH 2000). In addition, the report will delineate areas (if any) in which the ISMS has Opportunities for Improvement and will identify Noteworthy Practices that were observed. The final report will also provide the conclusions reached by the Verification Team pertaining to the

objectives identified in Section 3.0 of this Review Plan. The format and contents of the final report are described in Section 9.0.

6.0 PREPARATIONS

Preparations for this verification will focus on two areas. The first effort is to prepare the Verification Team to conduct the verification and finalize the Review Plan that will guide the conduct of the review. The second effort is to assist FH and RL in gaining an understanding of the review process to most effectively present their ISMS to the Verification Team.

6.1 TEAM PREPARATIONS

Efforts to prepare the Verification Team to conduct the RL ISM review and the FH ISMS Phase II verification review will include *team orientation and training, required reading of key documents (such as the FH ISM System Description [FH 2000]), and presentations by RL and FH to the team.* The RL presentation will describe the RL ISMS and how it is implemented. The FH presentation will address implementation of their ISMS.

Team members will, as much as possible, complete all required reading prior to assembling for the verification review. The ISMS Verification Team Leader will present a discussion on the strategy and methodology for the review; the strategy and logic by which the CRADs and subject areas should be applied; and how Form 1's should be completed. Verification Team members will be provided with relevant documents (e.g., ISM System Description [FH 2000]) to be read prior to the start of the verification.

6.2 DOE, RICHLAND OPERATIONS OFFICE AND FLUOR HANFORD PREPARATIONS

RL presentations will contain a detailed discussion of the ISMS for RL as it relates to the pertinent topics described in Section 2.0 of this Review Plan and will provide a discussion of the status of implementation of this system.

The responsible FH managers will describe how the implementation of the processes and mechanisms described in the FH ISM System Description fulfill the principles and objectives of ISMS. These presentations, interviews, and observations are also expected to demonstrate the existence of a safety-conscious work environment. The presentations should also describe and *demonstrate the integration of safety management between FH, subcontractors, and RL.*

Observations scheduled during the period of review must include active work or operations that are in process so that the Verification Team can fully understand the processes and mechanisms described in the ISM System Description and their application.

FH should also provide ISMS verification-knowledgeable points-of-contact (POC) for Subteams A, B, and C. POCs should also be assigned for the following areas: logistics (general team

assistance), MGO, HAZ, and OP. Additionally, Project POCs are also recommended to assure effective utilization of personnel resources. Information gathered from the POCs will be used to develop specific documentation reading lists, identify personnel for interviews, and identify work activities for observations. It is also expected that the POCs will be available for the team orientation and during the period allotted for interviews, observations, field work, daily briefings, Form 1 factual accuracy review, and for consultation during the preparation of the final report.

7.0 PROCESS FOR INTEGRATED SAFETY MANAGEMENT SYSTEM REVIEW

The nature of this review is relatively broad and diverse. The review team will consist of three subteams: A, B and C. Subteams A and B share the responsibility for the FH ISMS Phase II verification and Subteam C is responsible for the RL ISMS review. Subteam A will focus on the verification of the NMS and RC Projects and Subteam B will focus on WM, FFTF, and ASP. Subteam C will focus on reviewing RL.

As discussed in Section 5.0, the verification review will be conducted using the CRADs provided in Appendices C and D. The CRADs to be used for the FH verification are grouped into three broad functional areas and five SME areas:

- Management Oversight (MGO)
- Hazards Identification and Standards Selection (HAZ)
- Operations (OP)
- Subject Matter Expert (SME) areas:
 - SME.1 Radiation Controls and Protection
 - SME.2 Occupational Safety and Health
 - SME.3 Environmental Protection/Chemical Management
 - SME.4 Quality Assurance
 - SME.5 Criticality Safety

A separate set of CRADs (provided in Appendix D) will be used for the RL review.

8.0 ADMINISTRATION

8.1 MEETINGS AND PRESENTATIONS

The verification will include presentations by FH and RL management to the ISMS Verification Team. The purpose of the FH portion of these presentations is to provide an opportunity for the Verification Team to understand the approaches used to implement the FH ISM System Description (FH 2000). Presentations by RL management should focus on how ISM is implemented within RL.

Presentations will provide an opportunity for the presenters to describe the mechanisms and procedures in which the elements of ISM are integrated. These presentations should demonstrate an ISMS that fulfills the expectations of DOE P 450.4, 450.5, 450.6, and the DEAR clause requirements. The ISMS Verification Team will use the information provided during the presentations as a part of the verification that the criteria and the objectives in the individual CRADs are met. Additional record reviews, interviews, observations, and other activities will clarify and validate the information provided in the briefings.

The verification review will be an open process with the goal of maximizing the opportunity for the team to achieve a full understanding of both FH and RL's institutionalization of ISMS. To achieve the level of openness and coordination that is desired, the ISMS Verification Team will have daily meetings to discuss observations and issues. Subteam C, which will review RL, will meet in the morning prior to commencing review efforts. The subteam verifying FH will meet in the afternoon following their daily verification efforts. RL personnel are invited to attend the morning briefings as observers. FH personnel will be invited to attend the afternoon briefings as observers. The Team Leader, Advisors, and Subteam Leaders will meet as necessary with senior RL and FH management to ensure they are fully informed of the progress and emerging issues during the verification review.

Following the ISMS verification review, the Team Leader will conduct a briefing with senior RL and FH managers. The briefing will include the results of the review, the basis for the Opportunities for Improvement, and Noteworthy Practices observed during the review.

8.2 DOCUMENTATION OF THE INTEGRATED SAFETY MANAGEMENT VERIFICATION

The ISMS verification process will be guided by the objectives and associated criteria in the CRADs (Appendices C and D). The documentation will be structured and completed to demonstrate that each element of the CRAD was evaluated, that the objectives were met, or what aspects of the objectives were found to be deficient. The purpose of the documentation is to provide information concerning details of the review to individuals who were not present.

To maintain the verification schedule, each ISMS Verification Team member will be required to document his/her work as it is conducted. Each team member will be provided with a preliminary Assessment Form containing the objective and criteria for each CRAD. Noteworthy or questionable work practices identified by the team members will be documented within the

Assessment Form. If the final report to the Approval Authority recommends corrective actions for FH, those actions should be supported by detailed information on the Assessment Forms. Verification Team members are responsible for ensuring that the Assessment Forms do not contain classified or Unclassified Controlled Nuclear Information.

8.3 TEAM COMPOSITION AND ORGANIZATION

The ISMS Verification Team will be organized into three subteams (as shown in the organization chart in Appendix B), each lead by a Deputy Team Leader. Subteams A and B will use an integrated set of CRADs specifically tailored to evaluation of the FH implementation of their ISM System Description (FH 2000). Subteam C, which will review RL, will use a separate set of CRADs to focus on DOE expectations. Deputy Team Leaders are responsible for ensuring that all CRADs assigned to them are fully evaluated and that the appropriate documentation is prepared. Professional biographies for each Verification Team member are provided in Appendix B.

9.0 FINAL REPORT FORMAT

At the completion of the review, the Verification Team will prepare a final report (Volume 1). The report will include a discussion of ISMS at RL and a judgement as to the status of implementation of the FH ISM System Description (FH 2000) for the PHMC. In addition, the report will identify any areas where implementation does not conform to DOE P 450.4, 450.5, and/or 450.6, the ISMS DEAR clauses, and the AA requirements. The report will also address all of the objectives identified in the CRADs and include any recommended actions that the verification team considers necessary or desirable to ensure work is performed safely in a safety conscious work environment.

The final verification report will consist of the following sections that fully describe the review, provide corrective action recommendations, and information necessary to support the recommendations. The Team Leader will ensure that the final report is appropriately controlled and reviewed for classified information or Unclassified Controlled Nuclear information prior to issuance.

A. VOLUME 1

1. Title Page - States the site location and the dates of the verification review.
2. Signature Page - Contains the signatures of the Verification Team members approving the final version of the report.
3. Table of Contents - Identifies all sections of the report, tables, figures, and appendices.
4. Executive Summary - Provides an overview of the results of the verification/review, including a summary of the corrective action recommendations that result from the review. The Executive Summary will identify Opportunities for Improvement (issues) as well as

Noteworthy Practices (strengths).

5. **Introduction-** Provides the overall objectives of the evaluation, the review process, and methodologies used in the review, and team composition.
6. **Purpose –** Provides the purpose of the verification review.
7. **Background –** Provides a general discussion of the facility (or program in the case of DOE-RL) and the state of maturity of the safety management programs.
8. **Scope -** Provides the scope of the verification review.
9. **Overall Approach -** Restates (with any necessary modifications) the approach followed during the verification review and delineated in the review plan.
10. **Assessment of Documentation of the ISMS -** Provides a summary discussion of the overall results of the evaluation. The section will include a summary for each functional area and issues prepared by the functional area group. The section will also provide details of the review, which are necessary to support the report on the status of implementation to the Approval Authority. This section will also provide support for any recommendations or observations associated with the RL reviews. The report will also discuss the observations and conclusions of the team regarding the strengths and weaknesses of the ISMS and its implementation. Finally, any deviations from this review plan will be discussed in the report.
11. **Conclusions and Recommendation -** Addresses the status of implementation of the FH/RL ISMS at the Hanford Site. This section will further provide information about the adequacy of supporting program and process documents and the planned ISMS improvement plans.
12. **Lessons Learned (Optional)-** Discusses lessons learned associated with the verification process as well as with the development and implementation of an ISMS.

- B. VOLUME 2** - Contains the review plan which includes a copy of the Team Leader Letter of Appointment, Team Member Biographical sketches and the Assessment Forms (CRADs).

10.0 SCHEDULE

For planning purposes, the projected schedule for the DOE-RL ISMS review and the FH ISMS Phase II verification is shown in Table 10-1.

**Table 10-1. Projected ISMS Verification
Review Schedule. (2 sheets)**

Date	Activity
Pre-Start (All Subteams)	<ul style="list-style-type: none"> • Required reading completed • Bios completed • Draft CRAD packages reviewed • Travel to site
June 12 A and B Subteams	<ul style="list-style-type: none"> • Introduction/team logistics • Orientation
June 13	<ul style="list-style-type: none"> • Review plan approved • Lines of Inquiry developed • Training (as needed) • Orientation • FH presentations
June 14-16 (300 Area drill June 15)	<ul style="list-style-type: none"> • Begin team review WM, NMS • Documentation review • Conduct interviews • Observe work activities • Daily briefing
June 17/18 Weekend	
June 19	<ul style="list-style-type: none"> • Orientation/team logistics for RL subteam • Continue WM/NMS
June 20	<ul style="list-style-type: none"> • Form 1's (WM/NMS) write-ups/ factual accuracy check (WM/NMS) • RL presentations • Daily briefing
June 21	<ul style="list-style-type: none"> • Begin RL/ASP/RC • Daily briefing
June 22	<ul style="list-style-type: none"> • Continue RL/ASP/RC • Daily briefing

**Table 10-1. Projected ISMS Verification
Review Schedule. (2 sheets)**

June 23 AWS	<ul style="list-style-type: none"> • ASP Form 1 write-ups/ factual accuracy review • Continue RL/RC review • Daily briefing
June 24/25 Weekend	
June 26	<ul style="list-style-type: none"> • Begin FFTF • Continue RL/RC review • Daily briefing
June 27	<ul style="list-style-type: none"> • FFTF/RC Form 1 write-ups/ factual accuracy review
June 28	<ul style="list-style-type: none"> • Form 1 summary development • Begin Form 1 reviews • Begin functional area summaries • RL Form 1 write-ups/ factual accuracy check
June 29	<ul style="list-style-type: none"> • Complete Functional Area Summaries • Form 1 reviews • OFI/NP development
June 30	<ul style="list-style-type: none"> • OFI/NP roll-ups • Finalize functional area summaries • Thank you/team departure
July 1/2 Weekend	
July 3	<ul style="list-style-type: none"> • Write report (as available)
July 4 Holiday	
July 5	<ul style="list-style-type: none"> • Write report (as available)
July 6	<ul style="list-style-type: none"> • Write report (as available)
July 7 AWS Friday off	
July 8/9 Weekend	
July 10-15	<ul style="list-style-type: none"> • Finalize report • Distribute report • RL/contractor management outbriefing

AWS = Alternative Work Schedule

NP = Noteworthy Practices

OFI = Opportunities for Improvement

11.0 REFERENCES

- 48 CFR 970.5204-78, "Laws, Regulations, and DOE Directives," Title 48, *Code of Federal Regulations*, (DEAR) Section 970.5204-78, as amended, U.S. Department of Energy, Washington, D.C.
- 48 CFR 970.5204-2, "Integration of Environment, Safety, and Health Into Work Planning and Execution," Title 48, *Code of Federal Regulations*, (DEAR) Section 970.5204-2, as amended, U.S. Department of Energy, Washington, D.C.
- DOE, 1999, *Integrated Safety Management Systems (ISMS) Verification DOE Team Leader's Handbook*, DOE-HDBK-3027-99, U. S. Department of Energy, Washington, D.C.
- DOE G 450.4-1A, *Integrated Safety Management System Guide*, DOE G 450.4-1A, Volume 1, "Guidance," and Volume 2, "Appendixes," U. S. Department of Energy, Washington, D.C.
- DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual*, U. S. Department of Energy, Washington, D.C.
- DOE P 450.4, *Safety Management System Policy*, U. S. Department of Energy, Washington, D.C., as amended.
- DOE P 450.5, *Line Environment, Safety, and Health Oversight*, U. S. Department of Energy, Washington, D.C., as amended.
- DOE P 450.6, *Secretarial Policy Statement Environment, Safety and Health Purpose and Scope*, U. S. Department of Energy, Washington, D.C., as amended.
- DOE-RL, 1996, *Hanford Strategic Plan*, DOE/RL-96-92, U. S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 1999a, *Spent Nuclear Fuel Project Integrated Safety Management System Phase I Verification*, DOE/RL-99-73, 2 Vols., U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 1999b, *Fluor Daniel Hanford, Inc. Integrated Safety Management System Phase I/II Verification Final Report*, DOE-RL-99-72, 2 Vols., U. S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 2000, *Fluor Hanford Integrated Safety Management System Phase I Verification*, DOE/RL-2000-30, 2 Vols., U. S. Department of Energy, Richland Operations Office, Richland, Washington.
- FH, 2000, *Project Hanford Management Contract Integrated Environment, Safety, and Health Management System Plan*, HNF-MP-003, Rev. 3, Fluor Hanford, Richland, Washington.

APPENDIX A
TEAM LEADER LETTER OF APPOINTMENT

United States Government

Department of Energy

Richland Operations Office

memorandum

DATE: MAY 15 2000
REPLY TO
ATTN OF: AMSE:DSS/00-AMSE-014

SUBJECT: APPOINTMENT AS TEAM LEADER FOR THE INTEGRATED ENVIRONMENT,
SAFETY AND HEALTH MANAGEMENT SYSTEM (ISMS) PHASE II
VERIFICATION OF FLUOR HANFORD, INC. (FHI)

TO: J. E. Parsons, Senior Technical Advisor
Office of the Assistant Manager
for Safety and Engineering

In accordance with the U.S. Department of Energy (DOE) Functions, Responsibilities, and Authorities Manual, DOE M 411.1-1A, Section 9.2.2.6 (Approval of Safety Management System Documentation), you are selected to be the Team Leader for the ISMS Phase II Verification of FHI, as discussed in the attachment.

Thank you for your willingness to assist in the conduct of this verification. If you have any questions regarding this matter, please contact me, or you may contact Doug Shoop, Senior Technical Advisor of the Office of the Assistant Manager for Safety and Engineering, on (509) 376-0108, or Sandra Johnson, Assistant Manager for Safety and Engineering, on (509) 376-7387.

Keith A. Klein
Manager

Attachment

cc w/attach:
B. A. Austin, FHI
R. D. Hanson, FHI
L. J. Olguin, FHI
C. L. Huntoon, EM-1
D. M. Michaels, EH-2
J. M. Owendoff, EM-2
T. A. Wyka, EH-9

RECEIVED

MAY 16 2000

PRESIDENT'S
OFFICE

Fluor Hanford Inc. (FHI) Integrated Environment, Safety, and Health Management (ISM) System Phase II Verification (ISMSV-II)

1.0 Description of Activity

This review will verify the status of the Integrated Environment, Safety and Health Management System (ISMS) implementation for Fluor Hanford Inc. (FHI) and the Richland Operations Office (RL).

2.0 Background and History

In response to the need to streamline site activities and to better focus the Project Hanford Management Contract (PHMC) on the site mission, FHI (previously Fluor Daniel Hanford Inc. [FDH]) has instituted a major re-structuring of the fundamental approach to their conduct of business. In October 1999, FHI shifted from an integrator role to a role that emphasizes project management. Concurrent with the October 1999 re-structuring by FHI, an initial verification of the FDH ISM System Description was conducted. The *Project Hanford Management Contract Integrated Environment, Safety, and Health Management System Plan*, HNF-MP-003, Rev. 2 (FDH ISMS Plan), was reviewed relative to the safety management system documentation required by DOE Acquisition Regulation (DEAR) Clause 970.5204-2.

FHI plans, manuals of practice, and procedures at the "institutional" level were verified through the initial FDH ISM Phase I verification, however, the mechanisms to do work safely at the project and activity level could not be confirmed. FHI had previously required each project to develop an ISM System Description which would augment the institutional level ISM System Description and which would describe how work is done safely at the project and activity level. ISM System Descriptions were subsequently developed for the Spent Nuclear Fuel (SNF) and Nuclear Material Stabilization (NMS) Projects and ISM Phase I verifications were performed. FHI subsequently modified the aforementioned multiple ISM System Description strategy in favor of a single FHI ISM System Description which describes the mechanisms used to do work safely at the institutional, project and activity level. A Phase I verification of the FHI ISM System Description (HNF-MP-003, Rev. 3) was conducted during April 2000.

3.0 ISM Phase II Verification

Mr. Ed Parsons is appointed as the FHI Team Leader for the Phase II ISMS verification.

4.0 Scope and Special Considerations for the ISMSV-II

4.1 Scope

- 4.1.1 Verify that the FHI ISM System Description and associated plans, manuals of practice, and procedures are adequately implemented at the institutional, project and activity level.
- 4.1.2 Verify that RL has adequately described and implemented an ISMS consistent with the objectives and criteria specified in the "Integrated Safety Management System Verification Team Leader's Handbook," DOE-HDBK-3027-99, dated June 1999.

4.2 Special Considerations

- 4.2.1 The FH Phase I ISMS verification identified two opportunities for improvement and two outstanding corrective actions from previously conducted Phase I verifications that should be corrected prior to approval of the FH ISM System Description. The FH Phase II ISMS verification should not be conducted until such time that RL has confirmed that the aforementioned issues have adequately been addressed.
- 4.2.2 During November 1999, an ISMS Phase I and II verification was conducted at the SNF project. Based on the outcome of this verification, a re-verification at the SNF project is not deemed necessary.

5.0 Stakeholder Observation of ISMSV-II

The RL has invited Mr. Joseph Richards of the Confederated Tribes of the Umatilla Indian Reservation and ISMS Issues Manager for the Health, Safety, and Waste Management Committee of the Hanford Advisory Board to participate as an observer on the ISMSV-II.

Additionally, RL would like to invite a worker representative to participate as an observer on the ISMSV-II. The specific worker representative to participate in the ISMSV-II should be coordinated with Mr. Doug Shoop.

6.0 Phase II ISMS Verification Letter of Appointment

You should prepare an ISMSV-II review plan, select and train the team, and confirm the team's readiness to conduct the verification. RL has a good cadre of staff experienced in ISMS, and will be available to provide onsite support in this effort.

7.0 Desired Deliverables from the Review

The ISMSV-II Team should document the review with a report written in accordance with the guidance given Appendix 7 to the "Integrated Safety Management System Verification Team Leader's Handbook," DOE-HDBK-3027-99, dated June 1999. The report should address all of the objectives identified above, and include any recommended actions, which the ISMSV-II Team considers necessary or desirable to ensure work is done safely.

8.0 Information for the Cognizant Secretarial Officer (CSO)

A copy of this Memorandum of Appointment is forwarded to the responsible CSO, C. L. Huntoon, EM-1, DOE Headquarters for information. Please provide her copies of both the Review Plan and the final report of the FHI ISMSV-II.

9.0 ISMSV-II Point-of-Contact (POC)

The POC for the FHI ISMSV-II is Doug Shoop. Mr. Shoop can be reached at (509) 376-0108, or by electronic mail, doug_s_shoop@rl.gov.

APPENDIX B
TEAM MEMBERS AND BIOGRAPHIES

VERIFICATION TEAM ORGANIZATION

Ed Parsons, ISMS Verification Team Leader

Mr. Parsons is currently serving as the Senior Technical Advisor for Radiological Controls, Office of Engineering and Safety, Richland Operations Office, U. S. Department of Energy. He has 25 years of diversified experience in the nuclear industry including commercial nuclear power operations, industrial and commercial power decommissioning, the national weapons program, project and departmental management, medical health physics and technical consultation. Mr. Parsons has been involved in a variety of activities in the nuclear industry such as the accelerated high yield nuclear weapon test program, various nuclear power operational radiation protection and waste management programs, medical health physics consulting and data management system development for both radiation protection and security information management.

In addition, Mr. Parsons's experience includes numerous decommissioning activities including several industrial sites, a Thorium storage facility, a Uranium mill site, nuclear aircraft propulsion systems dismantlement, a Plutonium facility, and a commercial nuclear power plant decommissioning. Mr. Parsons has also served as technical expert to the International Labor Organization during the ratification of the International Atomic Energy Agency's *International Basic Radiation Safety Standards* and member of the technical council for the development of IAEA's safety guide *Occupational Radiation Protection in the Decommissioning of Nuclear Facilities*.

Mr. Parsons is certified by the American Board of Health Physics in comprehensive health physics and holds a bachelor's degree in Health Physics from Oklahoma State University.

Mr. Parsons serves as a member of the Richland Operations Office ISMS Development Team and is also qualified as ISMS verification Team Leader.

Robert Baeder

Robert Baeder is the Senior Nuclear Engineer and the Director of Energy Services with XL Associates, Inc. supporting the U. S. Department of Energy (DOE) for Defense Programs (DP) and Environmental Management (EM). He has a B. S. in Naval Engineering from the United States Naval Academy (USNA) and Masters' Degrees in Naval Architecture and Marine Engineering from the Massachusetts Institute of Technology (MIT). He also has a Naval War College Graduate Degree in International Relations and Foreign Policy. Additionally, Mr. Baeder is pursuing his Ph.D. in Management.

Mr. Baeder has more than 24 years of naval experience as a nuclear submarine officer, earning qualification as Engineer and for Command. His experience in the Navy Nuclear Power Program includes tours as the Engineer Officer for a submarine completing overhaul, as the Executive Officer during a reactor refueling submarine overhaul, and selection for Nuclear Submarine Command. He also served as the Associate and Acting Chairman of Mechanical Engineering at the USNA and taught thermodynamics, fluid mechanics, and nuclear engineering. He also served for the Chief of Naval Operations in Program Management for the Navy's Ashore/Afloat Command, Control and Communications Systems (C3). As a result of his significant military experience in nuclear power and solid academic background, Mr. Baeder brings extensive expertise in nuclear and reactor operations and management, thermodynamic/fluid mechanics engineering, maintenance, material management, leadership, training and education, and engineering design.

Mr. Baeder retired from the Navy in 1994 and immediately joined XL Associates, Inc. He has gained more than five and one-half years of direct experience in DOE operations by serving for Operational Readiness Reviews (ORRs), Readiness Assessments (RAs), Standards and Requirements Implementation, Performance Assessments and Self-Assessments. He was directly involved in the development and implementation and training for the DOE Defense Program Core Technical Group, in DOE program response to Defense Nuclear Facility Safety Board recommendations, and in Integrated Safety Management System (ISMS) implementation and Verification (ISMSV). He was a Senior Mentor for Operations/Environment/Safety/Health for Resumption of Plutonium Facility Operations at the Lawrence Livermore National Laboratory (LLNL) for 18 months in 1998-1999, and is now assisting the Oak Ridge Y-12 Enriched Uranium Operations (EUO) Resumption effort. He has now completed more than 40 major DOE assessments and other taskings since 1994.

In these capacities Mr. Baeder has also served on, or is now preparing for, more than 30 major ORRs/RAs and other Assessments. These taskings included the startup of new facilities and processes (such as the SRS ITP, SRS DWPF, YMP, and NTS DAF), the resumption of activities (such as the OR Y-12, SRS H and F Canyon Operations, and Pantex), and the completion and decommissioning of operations (such as the OR K-12 DRP, the RFETS Building 371 Operation, and the ORNL Uranium Storage Facility Operations). For example, these taskings include among many others: the Savannah River Site (SRS) Replacement Tritium Facility (RTF) Validation and Verification, the SRS In-Tank Precipitation (ITP) ORR, the Oak Ridge Y-12 Receipt, Storage, and Shipment Restart (RSS) Readiness Assessment, the SRS F-Canyon Phase II Restart ORR, the SRS Defense Waste Processing Facility (DWPF) ORR, the Oak Ridge K-25 Deposit Removal Project (DRP) ORR, the SRS Consolidated Incineration Facility (CIF) ORR,

the Rocky Flats Building 371 ORR, the SRS H-Canyon ORR, the SRS ISMS Verification, the SRS HB-Line ORR, the Oak Ridge Y-12 Disassembly Assembly and Storage (DAS) ORR, the Nevada Test Site Combined Device Assembly Facility (CDAF) ORR, the SRS HB Line ORR, the Oak Ridge Y-12 EUO Phase A1 and A2 ORRs, the Pantex Building 12-116 ORR, the Y-12 Plant ISMSV, the Hanford W-320 Tank Sluicing Project ORR, the Hanford Plutonium Finishing Plant (PFP) ORR, the Idaho National Engineering and Environmental Laboratory (INEEL) ISMSV Phase I (ISMSV-I) and ISMSV Phase II (ISMSV-II), and the SRS K-Area Material Storage (KAMS) ORR. He is currently also serving on the teams for the Oak Ridge National Laboratory (ORNL) Uranium Storage Facility (Building 3019) ORR, all three parts of the INEEL ISMSV Phase II (ISMSV-II), and the Yucca Mountain ISMSV-I and II. Additionally, he was recently selected to be the Senior Advisor for the Yucca Mountain Project (YMP) ISMSV-I and II and Team Advisor for the completion of the Hanford Site ISMSV-II.

Usually, Mr. Baeder has evaluated the areas of Operations, Management, or DOE Federal Management, but he has also reviewed Configuration Management, Engineering Support, Maintenance, Procedures, Quality Assurance, Safety, Safety Envelope, Qualification and Training, Waste Management, and has assisted Team Leaders and Senior Advisors in these capacities. He has also assisted facilities in their preparation for operations including at the Oak Ridge National Laboratory (ORNL) site. Mr. Baeder was one of the Senior Mentors, from the start to the completion, for the LLNL Building 332 Plutonium Facility Activity Resumption Process (ARP). He continued his efforts as a senior Mentor for the B332 ISMS Implementation and their ISMSV-I and II in 1999. He was also a Senior Advisor for the recently completed Oak Ridge Y-12 EUO Phase A partial restart and resumption. Additionally, he was selected to be the Senior Independent Consultant for the recent DOE Federal Technical Capability Panel (FTCP) Assessment Team, to assess the status of the implementation of this program for technical qualification within the DOE leadership. In that capacity he completed Assessments at the DOE Oak Ridge Operations Office (ORO), the Albuquerque Operations Office (ALO), a modified review at Idaho Operations Office (DOE-ID), and of the DOE Headquarters DP and EM Offices. Mr. Baeder is currently preparing for other DOE tasking in ORRs/RAs, ISMS, Management Support, and Mentoring.

William C. Barker

Mr. Barker is a senior consultant for Duke Engineering and Services, Inc. and has been assigned to the Fluor Hanford Facility Evaluation Board since March 1999. He has over 20 years of combined experience in the commercial nuclear industry and U. S. Department of Energy (DOE). He participated in the EH10 Extent of Conditions Review and the subsequent EH10 Effectiveness Review in 1999. He has participated in five Facility Evaluation Board performance based assessments. He has four years of DOE experience, including assignment on the Facility Evaluation Board and as Manager of Maintenance & Work Control at the Spent Nuclear Fuel Project, Hanford.

Mr. Barker earned a Bachelor of Science degree in Mechanical Engineering from North Carolina State University in 1982. Prior to his DOE experience, he had 16 years of commercial nuclear industry experience including assignments as Scheduling Manager, Work Control, Catawba Nuclear Station; Engineering Supervisor, Maintenance Engineering Services, Catawba Nuclear Station; Nuclear Production Engineer, Maintenance Engineering Services, Catawba Nuclear Station; Production Engineer, General Office, Duke Power Company and Cooperative Engineering Student, Brunswick Steam Electric Plant. He also worked on a special project—process reengineering for the work control process used at all three operating Duke Power nuclear sites. Duties included detailed current state analyses, benchmarking, work process redesign, process implementation and creation of performance measures.

Nelda J. (Joyce) Beck

Joyce participated as a team member in the Fluor Daniel Hanford ISMS Phase I Verification as Subject Matter Expert (SME) for fire protection, industrial safety and health, for the Plutonium Finishing Plant Phase I Verification. Currently Ms. Beck is pursuing a masters degree in Management and Organization from the University of Phoenix. Ms. Beck acquired a Bachelor of Science degree in 1997 Liberal Arts from the University of the State of New York. She also has an Associate of Arts degree in Psychology from El Paso Community College. Ms. Beck spent 18 years with the U. S. Army, Department of Defense; 10 years in safety and occupational health; and 7 years with the DOE Golden Field Office as a Safety and Occupational Health Manager.

From 1982 to 1986, Ms. Beck was employed as a Safety and Occupational Health Specialist at White Sands Missile Range, New Mexico. She was one of the first women to be accepted into the Department of Army's safety intern program. Her education and experience was in safety program elements, which included safety management, motor vehicle safety, missile/rocket safety, ammunition/explosive safety, radiation safety, industrial hygiene, fire protection, laser safety, industrial safety, child care safety, food safety, occupational medicine, accident investigation, aviation safety, and construction safety.

From 1986 to 1989, she served as the Safety and Occupational Health Manager at the 54th Area Support Group in Rheinberg, Germany. Her expertise included the safety program elements listed above, including war safety. From 1989 to 1991, she served as the Safety and Occupational Health Manager at Rocky Mountain Arsenal, an EPA Superfund Site, located in Commerce City, Colorado. Her expertise included the safety program elements listed above, plus laboratory safety, hazardous waste operations, and decommissioning and demolition.

Since 1991, she has worked as the Safety and Occupational Health Manager at the DOE Golden Field Office in Golden, Colorado. Her expertise includes safety program elements, plus M&O oversight, wellness program, Federal Employee's Compensation Act program, and quality assurance.

Steven L. Bertness

Mr. Bertness is an occupational safety and health specialist for the Assistant Manager of Engineering and Standards at the Hanford Site with special emphasis on nuclear safety for environmental restoration projects. He participated as a team member in the Fluor Daniel Hanford ISMS Phase I Verification, as a subteam lead for the Spent Nuclear Fuels Project Phase I/II Verification, a subteam lead for the Plutonium Finishing Plant Phase I Verification and a subteam lead for the second Fluor Hanford Phase I Verification. Mr. Bertness also served as the Assistant Team Lead for the Environmental Restoration Contractor ISMS Phase I/II Verification. He also served as DOE oversight for the Facility Evaluation Board, ISMS Phase I/II validation of DynCorp.

Mr. Bertness earned a Bachelor of Science degree in Safety Engineering from Indiana University of Pennsylvania, whose Safety Science Department holds an accreditation from the American Society of Safety Engineers, in 1989. Mr. Bertness has served in his current position for the past 3 years. Previously, he was a safety and health manager at DOE Headquarters for the Deputy Assistant Secretary for Environmental Restoration, with primary areas of involvement being nuclear safety, Integrated Safety Management, HAZWOPER, Occupational Safety and Health Administration (OSHA) compliance, the OSHA Voluntary Protection Program, safety and health training and safety and health program development. Before accepting a position with DOE, Mr. Bertness was an Industrial Hygiene compliance officer for the Virginia Department of Labor, Occupational Safety and Health Administration, with inspection responsibilities in the Northern Virginia District. Previously, Mr. Bertness served as an industrial hygiene consultant for APEX Environmental in Rockville, Maryland.

Keith D. Bonser

Mr. Bonser is an Executive Consultant for Com-Eng and is currently serving as an assessor for the Fluor Hanford Facility Evaluation Board. Mr. Bonser holds a Bachelors of Science degree in Business and has held Senior Reactor Operator (SRO) certifications for both Boiling Water and Pressurized Water Reactors.

Mr. Bonser has 30 years experience in Naval Nuclear, commercial reactor and government activities. He has developed, implemented, and managed technical programs for the Washington Public Power Supply System, United Nuclear Corporation, Westinghouse Hanford Company, and EG&G Idaho. Mr. Bonser participated in the successful Phase 2 ISMS implementation for the Hanford River Protection Project by providing the leadership and oversight as a member of the Fluor Project Office for Tank Waste Remediation Systems. Mr. Bonser, as a team member of the Fluor Project Office, successfully managed the startup readiness activities for the 702AZ ventilation System, the Cross-site Transfer system, and the C-106 Sluicing Project. Mr. Bonser has served as operations management for commercial and DOE reactors. Mr. Bonser also has held senior level management positions responsible for all aspects of technical training for both reactor and DOE nuclear facilities. Mr. Bonser served as a Conduct of Operations Mentor and Training Program Accreditation Mentor assigned to a variety of DOE nuclear facilities.

A broad range of experience in the conduct of assessments backs Mr. Bonser's assignment with the Fluor Hanford Facility Evaluation Board. Mr. Bonser has participated in DOE Operational Readiness Reviews (ORR), independent technical assessments, ISMS Phase II assessments, and S/RID Phase 1 and 2 assessments. Mr. Bonser has taught assessment methodology and report writing for the DOE facility representative program and has served a team member for an Institute of Nuclear Power Operations (INPO) visit to the Comanche Peak Nuclear Station.

Donette Cappello

Donette Cappello's main objective in DOE's Contract Reform and Privatization Project Office (PC-1) as the principal advisory role to the Office of the Deputy Secretary is to assist in the coordination and development of the Department's overall business strategy and champion integrative management. She identifies and initiates new initiatives and pilots in partnership with programs, field, and contractor organizations. These aim to foster more integrated contract, financial, and project management within the Department with proper allocation of risk in business and management strategies. Ms. Cappello is currently lead for the Contract Transition Study at Selected DOE Sites and a team member of the Transportation Integration Strategy for low level waste and low level mixed waste.

Until January 2000, Ms. Cappello was a Procurement Analyst in DOE's Office of Contract and Resource Management (MA-53) focusing on site management contract administration issues. Other related work responsibilities include:

- 1999 interdisciplinary chapter drafting team member for the DOE Reference Book for Contract Administrators
- Lead redrafting, coordinating, rulemaking, and overview training of DOE's fee policy to reflect performance-based contracting in 1999 which contains the DEAR 970.2104-86 Conditional Payment of Fee, Profit, or Incentives clause
- Project Manager for a DOE/contractor 1996 Hammer Award team for reengineering contractor purchasing system oversight
- Member of Performance Measurement Guidelines 1995 Hammer Award Team that developed DOE's first guidelines to performance measurement
- Member of DOE's Procurement Management and Assistance Review and Contractor Purchasing System Review teams 1991 - 1995.

She started her acquisition career at the Naval Weapons Center China Lake in 1976, was a Navy procurement intern at Puget Sound Naval Shipyard, and procurement policy/training analyst at Naval Supply Systems Command before transferring to the DOE in 1991. Donette Cappello has a Bachelor of Science in Business Administration and Masters in Public Administration from California State University Bakersfield, Level III Certification - Contracting in the Energy Acquisition Career Development Program, and is a Certified Professional Contracts Manager from the National Contract Management Association.

Robert (Paul) Carter

Mr. Carter is a qualified ISMS Verification Team Leader. He served as Team Leader for the ISMS Verification Phase I/II of the Environmental Restoration Contractor. He is also a full-time member of the ISMS Core Team at the Hanford Site charged with overall implementation of ISMS by September 2000.

Mr. Carter has over 20 years experience in the nuclear industry in the areas of operations, engineering, safety, and program management. He has both lead or participated on multiple readiness reviews, appraisals, and assessments.

Mr. Carter previously served as the Team Lead for Facilities and Safety Management within the RL Waste Programs Division. He was responsible for safe, environmental compliant and efficient operation of multiple nuclear and non-nuclear facilities including analytical laboratories, liquid waste processing facilities, and solid waste storage facilities.

Prior to that position, Mr. Carter managed the program responsible for providing integrated analytical services to all program/projects at the Hanford Site through a combination of onsite laboratories, field analytical operations, and commercial laboratories.

Additional experience has included positions as Lead Engineer for FFTF operations, maintenance, work control and training, and as a nuclear safety engineer providing independent overview of reactor and nonreactor facilities.

Mr. Carter received his B. S. in Nuclear Engineering from Oregon State University in 1976.

Diane L. Clark

Ms. Clark has been with the DOE for 13 years. Ms. Clark is currently the Safety and Health Team Lead for the DOE Office of River Protection (ORP) at the Hanford Site. She is responsible for overseeing the occupational health and safety, radiological control, fire protection, emergency management, requirements management, and integrated safety management programs for ORP. She currently represents ORP in the DOE Safety Management Integration Team. Ms. Clark has coordinated ORP's implementation in preparation for the ISMS Phase I and II verifications for the Hanford High Level Waste Tank Farms. She has participated in numerous ISMS verifications, including the Pacific Northwest National Laboratory (PNNL) ISMS Phase I/II Verification and the Fluor Daniel Hanford ISMS Phase I Verification. Additionally, she co-authored the ORP ISMS System Description and continues to manage ORP ISMS implementation.

Ms. Clark holds a B. S. in Environmental Health and a M. S. in Radiology and Radiation Biology, both from Colorado State University.

Kimberly (Kim) A. Davis

Kim A. Davis has served as an environmental engineer in the Engineering and Analysis Division at the U.S. Department of Energy's (DOE) Savannah River Operations Office (SR) since July 1995. She is currently the Life Cycle Asset Program Manager for DOE-Savannah River and assists other divisions in technical support for operations and DOE readiness validations, such as F-Canyon operations and K-Area Materials Storage, respectively. Kim is currently working on the nuclear facility startup program and will coordinate the draft DOE Order 425.1A and 3006 standard reviews, as well as revise internal implementing procedures. During this timeframe, she was previously involved in National Environmental Policy Act (NEPA) activities of several federal actions involving the Savannah River Site (SRS).

Prior to this assignment, Kim spent three years as a technical support, nuclear engineer to the Savannah River Site's tritium and fuel/target manufacturing areas. She participated in several nuclear facility startups during this period, in addition to working on environmental, safety, and health issues. She was a team leader for the startup of the Function Test Facility for deuterium and tritium introduction, and a team member on the startups for the 232-H Extraction Facility, Hydride Transport Vessels, and the Replacement Tritium Facility. Her environmental background involved ensuring routine compliance of the facilities, as well as with special agreements with the regulators such as the Federal Facilities Compliance Agreements for mixed waste and radioactive air emissions. She also has a working knowledge of safety documentation, as she helped develop a consolidated safety documentation strategy for the tritium facilities while she served as a member on the Basis of Interim Operations review team for the tritium facilities.

Before this assignment, Ms. Davis spent three years on the new production reactor project in project engineering and management as a general engineer. This project looked at the design and construction of a multi-billion dollar tritium reactor at SRS.

Ms. Davis has 11 years of government service and 2.5 years with private industry. She also completed a year assignment as a technical advisor to a member of the U.S. Congress in Washington, DC.

Ms. Davis received a Master of Science degree in Environmental Systems Engineering from Clemson University, a Bachelor of Science degree in Mechanical Engineering from West Virginia University and is a Certified Engineer Intern (EIT).

Mosi Dayani

Mr. Dayani has over 20 years of experience in defense and civilian nuclear industry in the areas of systems engineering and project and program management.

Mosi Dayani is currently the senior technical advisor on Standards and Regulatory Programs at the U.S. Department of Energy, Savannah River Operations Office. He is also program manager for the development and implementation of the site-wide Integrated Safety Management System (ISMS). His responsibilities include the site's Standards/Requirements Identification Document and implementation of Environment, Safety, and Health Standards, Regulations, and DOE Directives, including the Price-Anderson Nuclear Safety Rules. He is also the DOE-SR representative member of Safety Management Implementation Team (SMIT) and Technical Standards Managers Committee.

Mr. Dayani started his professional career as an intern engineer with an Architect Engineering Firm and a Reactor Vendor. He continued as a Project Engineer with the Clinch River Breeder Reactor Plant Project Office as systems engineer for the Steam Generator and Heat Transport Systems of the plant.

Mr. Dayani joined federal service at the DOE, Richland Operations Office in 1983 as a program engineer in nuclear waste management. He oversaw the tank farms operations and managed both civilian and defense R&D programs in waste vitrification and disposal. He then worked as a system engineer for the Tennessee Valley Authority at the Brown's Ferry Nuclear Power Plant. He developed and revised the SAR, Technical Specifications, operating and test procedures, and provided technical support to operations and maintenance departments on several of the nuclear safety related systems. Mr. Dayani also worked at the DOE Special Project Office for K-production Reactor Restart at SRS as a systems engineer and reactor power limits program manager. Mr. Dayani has led or participated in several nuclear facilities and activities Operational Readiness Reviews and ISMS verification assessments.

Mr. Dayani received his B. S. in Nuclear Engineering from Kansas State University in 1978.

Margaret M. Droddy

Mrs. Droddy is an Associate with EnergX and is currently on contract as a Technical Editor and Specialist for the Facility Evaluation Board, Fluor Hanford. Mrs. Droddy has 18 years administrative and executive expertise. Her experience includes technical editing, preparation and coordination of multi-million dollar grants, and providing technical assistance with facility-specific performance reports. Mrs. Droddy supported the Fluor Hanford Critical Self-Assessment Team providing technical editing, report preparation, and graphics support. She provided technical support and report preparation and coordination of the EA-1999-04 Effectiveness Review ordered by the DOE Office of Enforcement and Investigation (EH-10) conducted by the Facility Evaluation Board. Most recently, Mrs. Droddy has provided technical support and report preparation and coordination in multiple DOE Integrated Safety Management System reviews (the River Protection Program, the Fluor Daniel Hanford, Inc. Phase I, the Spent Nuclear Fuel Project Phase I/II, the Plutonium Finishing Plant Phase I, and the Fluor Hanford Phase I) and an FEB Integrated Safety Management System validation (DynCorp Tri-Cities Services, Inc.) at the Hanford Site.

Lawrence R. Fitch

Mr. Fitch has been an assessor on the Fluor Hanford Facility Evaluation Board for the past 20 months. During that time he has assessed several Hanford facilities in the functional areas of Management Systems, Engineering, Nuclear Safety, and Criticality Safety.

Mr. Fitch has been in senior management positions for over 20 years, both at Hanford and at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico. At Hanford, Mr. Fitch held several management positions in the Basalt Waste Isolation Project including the position of Project Director. At WIPP, Mr. Fitch was the Assistant General Manager for Environment, Safety, Health and Quality, when WIPP was successful in earning the first DOE VPP STAR award ever presented. In addition, under his leadership, WIPP earned the first DOELAP accredited dosimetry program in the DOE Complex.

Mr. Fitch earned Bachelor of Science degree in Mechanical Engineering from the University of Idaho in 1974. In addition, he was a member of the U.S. Navy Nuclear Power program for 6 years, where he was an instructor in the subjects of Radiochemistry, and Radiation Protection and Control for four years.

Jack B. George

Mr. George is an industrial specialist for the Assistant Manager of Engineering and Standards at the Hanford Site with the duties of the Hanford Site Lock & Tag Program Manager and the Hanford Site Electrical Safety Program Manager. He participated as a team member in the National Renewable Energy Laboratory ISMS Phase I/II Verification, as a team member in the Argonne West National Laboratory ISMS Phase I/II Verification, and as a team member in the Brookhaven National Laboratory ISMS Phase I/II Verification.

Mr. George passed Engineer in Training (EIT) exam for the state of Washington, in 1998. Mr. George has served in his current position for the past 5 years. Before accepting a position with DOE, he was a startup engineer for Adtechs constructing the 200 East Effluent Test Facility, with primary areas of involvement being performance of acceptance testing and electrical equipment initial set up. Previously, Mr. George served as an electrician for the U.S. Navy for 15 years, there he graduated nuclear power training, qualified as engineering watch supervisor, served on squadron staff and many other duties.

A. Benjamin (Ben) Geppert

Ben Geppert is an Executive Consultant for EnergX and is currently on contract to Fluor Hanford as an Assessor for the Facility Evaluation Board (FEB). He has a B. S. degree from the University of the State of New York, holds a Senior Reactor Operator Certification from a Commercial Westinghouse PWR, and was in the U.S. Navy Nuclear Power Program. Mr. Geppert has over 20 years experience that includes operations, emergency preparedness, and training management at naval, commercial, and DOE nuclear facilities. He has participated in 13 Facility Evaluation Board assessments, the DynCorp ISMS Validation, and the EA-1999-04 Effectiveness Review ordered by the DOE Office of Enforcement and Investigation (EH-10) at the Hanford Site. He was also a Facility Representative mentor at the Savannah River Site. Mr. Geppert has also participated in Nuclear Regulatory Training Audit Examinations at commercial nuclear power plants.

Bruce A. Gradisher

Bruce is an Ironworker at the Hanford Project. He came to the Hanford site in 1980. Bruce has worked at 234-5, east and west tank farms (1980-1986). In 1987, he transferred to FFTF and is currently assigned to Crane & Rigging. Bruce is a Field Work Supervisor for Maintenance at FFTF. He is also a lead HAZMAT and Respiratory instructor at the Hammer Training Facility. Bruce is currently working on a degree in Occupational Safety and Health through the George Meany Center for Labor. Bruce has been an instructor for the International Ironworkers for the last 6 years. He was the labor instructor for ISMS training at FFTF and was on their Phase I team.

Richard P. Grill

Mr. Grill has been involved in various aspects of the analysis of nuclear facility safety for over 38 years.

He began his nuclear career at the Lawrence Berkeley Laboratory as a radiation monitor and eventually headed the Department responsible for nuclear and conventional safety of experimental programs for accelerators, nuclear physics, nuclear chemistry, and weapons. Later, he served on the staff of the Atomic Energy Commission where he headed the Branch, within the Division of Reactor Licensing, responsible for reviewing and approving Safety Analysis Reports as well as developing regulatory guidance for commercial nuclear power plants.

Still later, Mr. Grill worked in the private sector in Europe and the Middle-East developing siting criteria for nuclear power plants.

He also served a number of tours as a "Visiting Expert" with the International Atomic Energy Agency (I.A.E.A.) in Vienna, Egypt, Mexico and Korea.

After returning to the U.S., Mr. Grill served as a Senior Policy Analyst for the Nuclear Regulatory Commission, Office of Research, directing research projects and developing regulations for nuclear waste management.

Later, he joined the staff of the Department of Energy, where he served as Compliance Program Manager for the Savannah River Site for EH. He then assisted the Office of Nuclear Energy in writing the earlier versions of the Nuclear Safety Rules, and later transferred to EM-30 where he acted as the Chief, of the Safety and Health section, Division of Regulatory Compliance.

Mr. Grill retired from Federal service in late 1993 and periodically consulted for DOE until January of 1997 when he accepted the post of Senior Technical Advisor for Nuclear Safety for the Assistant Manager for Environmental Restoration (AME.).

Since that time, Mr. Grill has participated in the Integrated Safety Management System (ISMS) Verification of the Plutonium Finishing Plant (PFP), and the Bechtel Hanford, Inc. ISM Verification, as well as many other audits and inspections and reviews of RL facilities..

John M. Held

John Held is currently employed as an Independent Technical Assessor for the Fluor Hanford Inc., Facility Evaluation Board in the functional areas of Occupational Safety and Health and Fire Protection. He holds a B. S. degree in Geology from Oregon State University and a M. S. degree in Management from Salve Regina University. Mr. Held has nearly 20 years experience in the industrial hygiene, safety, and fire protection arenas ranging from direct field experience to managing programs at the facility and project level. He was a member on the DOE-HQ ISMS Verification Team for the River Protection Project and the Spent Nuclear Fuels Project, as well as the Fluor Hanford Team that validated the ISMS for DynCorp Tri-Cities Services, Inc. In his current position, he has acted as the lead assessor for Occupational Safety and Health and Fire Protection for 11 facility assessment.

Mr. Held began his career at the Hanford Site in 1992 where he was responsible for setting up the dedicated safety support group for Tank Waste Remediation Systems (TWRS). This included development of procedures for project and work package review in the disciplines of industrial safety, hygiene, and fire protection. Additionally, he was extensively involved with the planning and initial installation of a mixer pump to mitigate hydrogen build-up in tank 101-SY; responsible for the development and implementation of the first Health and Safety Plan for TWRS; oversaw the successful program to relax and remove supplied air requirements for entry into the tank farms; and piloted development and implementation of a behavior-based safety training program. While at Hanford, Mr. Held has been the manager for TWRS Safety Support; TWRS Safety Leadership; Westinghouse Hanford Company Safety Awareness and Performance; Transition Projects Safety Integration; Transition Projects Safety; and the Plutonium Finishing Plant Safety.

Prior to working at the Hanford Site, Mr. Held spent 22 years in the U.S. Navy. Safety-related assignments included four tours as a safety officer, the last being Safety Officer for a nuclear powered aircraft carrier, USS NIMITZ. Efforts were rewarded with the Secretary of the Navy Environmental Quality Award for environmental protection and the Chief of Naval Operations Safety Award for mishap prevention. Experiences also involved being a flight and standardization instructor, teaching at the Naval War College, and one tour performing command inspections for the Commander Fleet Air Western Pacific.

Burton E. Hill

Mr. Hill attended the University of Idaho for 2 years working towards a B. S. in Civil Engineering. He then worked for 24 years in the Naval Nuclear Propulsion Program. He completed the Navy's year-long Nuclear Training Program in the upper half. Mr. Hill served aboard three submarines as a Nuclear Mechanical Operator and Engineering Duty Petty Officer. He was aboard the USS Bremerton for 4 years as the Engineering Department's leading Petty Officer in charge of 60 people who operated and maintained a S6G Nuclear Power Plant. He developed the requirements for refit coordinator used in both Sub Pac and Sub Lant. He spent 7 years at two different Navy Nuclear Training Prototypes teaching engineering and science. At both prototypes, he qualified and performed as Engineering Officer of the Watch. Mr. Hill spent 3 years at S8G, the Trident Submarine reactor prototype in upstate New York where 2 years were spent as the Mechanical Materials Engineer during testing and start up.

Mr. Hill spent 2 years as the assistant Materials Officer and the Command Senior Chief for Sub Group Seven Representative Guam. He reviewed and approved all nuclear repair work on ships West of the International Date Line. He planned nuclear ship arrivals and miscellaneous repairs in many foreign ports of the Western Pacific. He performed Sub Pac's weekly requirement for a nuclear surveillance on each nuclear ship in port. This was independent duty.

For 3 years he was the Assistant Team Leader of the Trident Squadron 17 Performance Monitoring Team. The Team acted as Field Engineers for NAVSEA Code 390 with the goal of increasing reliability and reducing costs of our Submarine Fleet. Additionally, he stood watch as the Squadron Duty Officer and served as part of Squadron's monitor and drill Team during the annual preparation of eight Trident Submarines for the Tactical Readiness and the Operational Reactor Safeguards Examinations. This was also independent duty.

He has been with the DOE for the past 9 years as the Hanford Maintenance Manager. His responsibilities include leading and performing Conduct of Operations and Maintenance inspections on all of the Hanford Site contractors. He has the responsibility for the Lock and Tag, and Hoisting and Rigging programs. He successfully put together the Hanford Facility Representative program. He oversaw the implementation of the Occurrence Report Processing System by all of the Hanford Site contractors. Most recently, he has been gathering information and developing a new process and procedure by which Operational Readiness Reviews will be conducted by DOE at the Hanford Site.

Mr. Hill participated as a team member in the Fluor Daniel Hanford, Inc. ISMS Phase I Verification, TWRS ISMS Phase I Verification, and BHI Phase I/II Verification.

Dennis Humphreys

Mr. Humphreys is a graduate of the Navy's Nuclear Power Training Program. In 1995, he successfully passed the Washington State Engineer in Training examination. Mr. Humphreys, through New York Regents College, received credit for his Navy technical and engineering education towards a Bachelor of Science degree in Engineering. He has successfully passed several college-level courses in Hazardous Waste/Material Management, Nuclear Chemistry (masters level), and Engineering Technology Management (masters level). At both the Navy and the Navy Yard level, ISMS principles had been practiced for some time.

Mr. Humphreys has over 29 years (8 years with the Nuclear Navy, 17 years with the Nuclear Shipyard, and 4+ years at the Hanford Site) experience in the repair, maintenance, operation, testing, startup, restart, and decommissioning of navy nuclear power plants and related nuclear facilities. Mr. Humphreys was a certified Nuclear Shift Test Engineer at a Nuclear Navy Yard. He also spent 4 years as a Nuclear Chief Test Engineer. Mr. Humphreys has been with the DOE for approximately 4.5 years. He has been a member of several full and partial Conduct of Ops and Maintenance Assessments at the Hanford Site, including the team leader for the Maintenance Team for the Characterization Project Assessment. Mr. Humphreys has completed EM-25 Operations Assessment Training. He has participated as a team member on several Operational Readiness Reviews (ORR) and Readiness Assessment (RA). Mr. Humphreys also participated as a team member in a current contractor/DOE Automated Job Hazard Analysis (AJHA) implementation assessment.

Mr. Humphreys was a Maintenance and Work Control Subject Matter Expert for the Spent Nuclear Fuel ISMS Phase I/II Verification. He also participated as an Operations Planning/Work Planning assessor in the Plutonium Finishing Plant ISMS Phase I Verification, Environmental Restoration Contractor ISMS Phase I/II Verification, and the Fluor Hanford Phase I Verification.

Mr. Humphreys is also a qualified Facility Maintenance Manager and as such, has participated in assessments of various contractors Maintenance Programs. This includes being the lead auditor for the maintenance portion of a CPO Conduct of Operations assessment. He is also a member of the Enhanced Work Planning Site Core Team. Mr. Humphreys reviews both the Maintenance Implementation Plans and Conduct of Operations Matrices. He is a Subject Matter Expert on Hoisting and Rigging, Maintenance, and Conduct of Operations. Earlier at the Hanford Site, Mr. Humphreys was also responsible for the Configuration Management Program. Mr. Humphreys has also completed the DOE Accident Investigator Training Program.

Mr. Humphreys is also a qualified Facility Maintenance Manager and in that function, is involved in all aspects of maintenance management, including MIP reviews, Enhanced Work Planning Site Wide Core Team, Automated Job Hazard Analysis implementation assessment, ISMS implementation, etc. Mr. Humphreys participated in two ISMS workshops at the Hanford Site from planning through execution.

In the area of ORRs and RAs, Mr. Humphreys has taken the lead and revised the existing ORR/RA RLID to improve the process, incorporate the new DOE Order 425.1A, incorporate past lessons learned, and input from a Quality Improvement Plan ORR/RA Team. The draft revision is pending the recent reorganization.

David S. Hyder

David Hyder is a Radiological Control Assessor for the Fluor Hanford Facility Evaluation Board (FEB). Mr. Hyder has over 18 years of experience in Radiological Safety at U. S. Department of Energy, commercial, and U.S. Navy nuclear facilities. He received a B. S. degree in Nuclear Technology/Health Physics from the University of the State of New York. He has participated as a Team Member in seven Facility Evaluation Board assessments for Fluor Hanford, he participated in one Assist/Mentor visit to Hanford's Plutonium Finishing Plant and he has participated in three ISMS Verifications for Major Subcontractors.

Previously, Mr. Hyder was a Team Member in the initial 10 CFR 835 Verification Audit at Rocky Flats. He has been a Team Member for two Price-Anderson Amendments Act, root cause investigations at the Rocky Flats Environmental Technology Site. As a Manager in Radiological Engineering at Rocky Flats, he was responsible for the Radiological Control Management Assessment and Lessons Learned Programs. Additionally, he supervised the complete rewrite of all radiological control procedures at Rocky Flats to insure compliance with 10 CFR 835 and the DOE Radiological Control Manual.

Mr. Hyder has also worked as a Health Physics consultant at several environmental restoration sites. He obtained NRC agreement state licenses for two radiochemistry laboratories and served as the Radiation Safety Officer and as a radiochemist at one of them. Mr. Hyder was in the U.S. Naval Nuclear Power Program and served on submarines and as a staff instructor at a Navy prototype facility. His Navy qualifications included Engineering Watch Supervisor, Engineering Duty Petty Officer, Leading Engineering Laboratory Technician, Master Training Specialist, and Quality Assurance Inspector.

Robert M. (Matt) Irwin

Mr. Irwin is a nuclear engineer responsible for Hanford site configuration management for the Assistant Manager for Engineering and Standards. Mr. Irwin has held his current position as the DOE-RL configuration manager for the two years. His primary responsibilities include oversight of the configuration management program, policy and assessment support to the program offices. He has been a member of three ISMS verifications and several Operational Readiness Reviews at Hanford. The three ISMS team responsibilities include participating as a member of the Hazards sub-team for the TWRS Phase I ISMS verification, and as the operations sub-team lead for the SNF Phase I/II ISMS verification and the PFP Phase I verification.

Mr. Irwin earned a B. S. in Nuclear Engineering from Arizona State University in 1989 and has over 10 years of experience in the nuclear field. He spent his first 5 years as a nuclear test engineer at Mare Island Naval Shipyard. In that capacity he qualified as a nuclear test engineer for two naval nuclear propulsion plants. As a test engineer he was responsible for reactor plant conditions and testing during refueling, overhaul and maintenance activities performed by the shipyard. He spent the next 4 years as a Hanford contractor cognizant engineer and engineering manager for Solid Waste Management (SWM). As the engineering manager for three RCRA SWM facilities, Mr. Irwin was responsible for development and implementation of facility safety analysis reports, USQs, permits, engineering drawings and documents, configuration control of plant modifications, the criticality safety program, and all other technical aspects of facility operation.

Randall Kaltreider

Mr. Kaltreider is currently employed as the EM Team Leader for Richland Spent Nuclear Fuel Project and Nuclear Material Stabilization activities. Mr. Kaltreider earned his M. S. degree in Environmental Engineering from Pennsylvania State University in 1979, and his B. S. degree in Wood Products Engineering, from the State University of New York, College of Environmental Science and Forestry. He is a registered Professional Engineer.

Mr. Kaltreider has over 10 years engineering and program management experience at DOE. During that period, he served as EM Office Director/Team Leader for Richland and Idaho spent nuclear fuel, nuclear material stabilization, and facility deactivation activities. He also served as EM Deputy Office Director for complex-wide programmatic policy and integration of nuclear material and facility stabilization activities. Mr. Kaltreider also served as EH Division Director/staff engineer and provided environmental compliance assistance and oversight for Headquarters and Field Offices.

Mr. Kaltreider has 7 years environmental engineering experience with the U. S. Environmental Protection Agency. He served as Section Chief and supported remedial investigation/feasibility study projects at Superfund sites in all Regional Offices, and in an earlier assignment as staff environmental engineer that provided support for remedial planning, engineering design, and remedial action projects at Superfund sites.

Mr. Kaltreider also has 4 years environmental engineering experience with the Department of the Army. He served as staff environmental engineer and provided technical support for operations and maintenance of water/wastewater treatment facilities and conducting environmental surveys.

Michael P. Keane

Michael P. Keane, PE is with the Office of Safety Health and Security EM-5. He is a Senior Engineering Manager with over 25 years in Environmental Engineering Design and Safety. Mr. Keane obtained his B. S. in Physical Science from the University of Maryland (1975) and a Master of Engineering Management from the Catholic University (1984). He is a registered Professional Engineer in Maryland and the District of Columbia.

Mr. Keane has worked the last 18 years with the U. S. Department of Energy. His current duties include work on DNFSB issues and with the National Center of Risk Excellence. Prior to this he worked for EM in transportation and packaging, specializing in the safety and design of systems for the transport of radioactive materials. Mr. Keane was technical staff for the Heavy Water Reactor of the New Production Reactor Program. Mr. Keane spent several years at the Federal Energy Regulatory Commission working on technical issues of Dam Construction, Operation and Emergency Management and Safety.

Mr. Keane, prior to his Federal Service, worked over 7 years for the Bechtel Corporation on the Washington D.C. Subway. Responsibilities included Radiation Protection for Industrial Device, Materials Approval (Soil, Concrete and Steel), and several contract management and site engineer functions for various projects including tunnels, underground and above ground industrial facilities and aerial structures.

Carter K. Kirk

Mr. Kirk is a Government Services Support Contractor to the U.S. Department of Energy, Richland Operations Office. Mr. Kirk holds a health sciences degree from the George Washington University, School of Medicine, Washington, D.C. and has completed coursework towards a PharmD. in Pharmaceutical Engineering from Butler and Purdue Universities. Mr. Kirk has 16 years of nuclear and environmental engineering and project consultant support combined with a total of 23 years of Occupational Health, Safety, and Environmental support to the construction, manufacturing, and maritime industries. Mr. Kirk has been supporting the RL Spent Fuels Division in the technical review and approval of authorization basis documentation for the SNF Project facilities, as well as supporting the RL with Integrated Safety Management System implementation activities for the SNF Project - K Basins.

Mr. Kirk most recently provided environmental consultant services support to the United States Postal Service Western Area, assisting with Clean Air Act, NESHAPS, Clean Water Act (UST's/AST's), Power Marketing/Energy Conservation-Deregulation, and Alternative Fuels and Clean Cities' activities. Mr. Kirk has been a Safety Engineer/Health Scientist/Safety Analyst assigned as a U.S. Government Support Services Contractor to the DOE-RL and Oak Ridge Operations. Duties include the utilization of his expertise in Health Systems and Health Physics with the technical management and oversight support to a multi-contractor Occupational Medical, Health, and Safety Program. Mr. Kirk has also provided health physics and nuclear safety hazards analyses support to the Tank Waste Remediation Systems, Spent Nuclear Fuels, and the Plutonium Finishing Plant Stabilization Environmental Impact Statement projects. Expertise as an engineer in direct project support and oversight to the safety analysis, licensing, and regulatory policy group at the U.S. Department of Energy, Hanford Site. Mr. Kirk was the adjunct contractor Health Physics Department Manager at the Paducah Gaseous Diffusion Plant. Experience in project and work control, as low as reasonably achievable (ALARA) reviews, implementation of technical specifications and technical safety requirements, upgrading radiological instrumentation and control systems at several reactor and non-reactor nuclear facilities. Commercial reactors supported included Arkansas Nuclear One, Nine Mile Units One and Two, R.E. Ginna Plant, and Calvert Cliffs. Supported many operational and programmatic analyses, latest being the analyses of the Chemical Manufacturer's Association (CMA) Responsible Care (RC) Initiative for DOE applications.

Daniel J. Marsick

Dr. Marsick is an industrial hygienist for the Office of Worker Safety (EH-52) at the Germantown Headquarters with special emphasis on chemical safety, safety and health training, and respiratory protection. He participated as a team member for the initial ISO 14001 evaluation of Brookhaven National Laboratory and for the Voluntary Protection Program evaluation of the Savannah River Site. From 1994 to 1996, he frequently visited the Hanford Site, Pacific Northwest National Laboratory, and the Richland Office in conjunction with a HAZWOPER training pilot.

Dr. Marsick has served with DOE for over 9 years with Voluntary Protection Programs, respiratory protection, HAZWOPER training, chemical safety, safety and health training, Integrated Safety Management System training, field communications and coordination, the OSH Technical Reference project, laboratory safety and standards interpretation. He has consulted with the U.S. Navy and the Occupational Safety and Health Administration (OSHA) on federal employee occupational safety and health, safety and health management systems and respiratory protection.

Previously, he worked with OSHA on Hazard Communication, health and safety standards and technical support. Early in his career, he helped the National Institute for Occupational Safety and Health (NIOSH) put together the Registry of Toxic Effects and Chemical Substances (RTECS). He is also a veteran of the Naval Medical Technology program.

Dr. Marsick earned a Bachelor of Arts degree in Chemistry from Case Western Reserve University, Cleveland, Ohio in 1969 and a Ph.D. in Chemistry from The American University, Washington, D.C. in 1985. He is a Certified Industrial Hygienist, a Certified Safety Professional, and in the registry of environmental professionals. For over 5 years, he taught industrial hygiene at the University of Maryland. He also has been an active manager in the local industrial hygiene section and co-founded their Industrial Hygiene Review Course. For the Review Course, he regularly teaches safety and health management and regulations to potential examinees. His prior publications include works on Hazard Communication resources and laboratory safety. He is a member of and spoken before the American Industrial Hygiene Association and the Division of Chemical Health and Safety, American Chemical Society.

Hope E. Matthews

Ms. Matthews is currently employed with Critique, Inc. as a Senior Technical Writer/Editor with the Office of Intergovernmental, Public & Institutional Affairs at the DOE, Richland Operations Office. Ms. Matthews has nearly 10 years of experience as a Technical Writer/Editor at the Hanford Site.

Her current responsibilities include providing technical writing/editing support and coordinating all aspects of document preparation (editing, word processing, clearance, printing, and distribution) for the RL ISMS Project Team. In 1999 and 2000, Ms. Matthews served as the Senior Technical Editor/Writer for the following ISMS Verifications:

- Fluor Daniel Hanford, Inc. Phase I Verification
- Spent Nuclear Fuels Project Phase I/II Verification
- Plutonium Finishing Plant Phase I Verification
- Bechtel Hanford, Inc. Phase I/II Verification
- Fluor Hanford Phase I Verification.

Ms. Matthews earned her Bachelor of Arts degree in English in 1991 from Seattle University in Washington State. Her technical expertise includes SGML and HTML programming languages and numerous software applications.

From 1994-1999, she worked at Bechtel Hanford, Inc. as a Senior Technical Writer/Editor. She served on the Hanford Technical Council as Bechtel's site representative and participated in monthly meetings/technical discussions with other Hanford Site contractors. She was the Project Lead for preparing and transmitting SGML-encoded metadata records to the Office of Scientific and Technical Information in Oakridge, Tennessee. Ms. Matthews also served on the Bechtel Internet Task Team and helped establish guidelines/policies for company web sites. She also helped design/write/and maintain company web sites.

From 1991 to 1994, Ms. Matthews worked at Westinghouse Hanford Company as an Engineering Writer. In that assignment, she was responsible for providing editorial support to the Safety and Analysis Division. She was also involved in beta testing of software for the environmental division. Ms. Matthews also prepared a summary of publication standards for use by authors and subcontractors. She trained the H&R Technical Associates publication group in Hanford Site-specific publication standards. She worked as a summer intern in 1990 for Westinghouse Hanford Company.

Ellen M. Mattlin

Ms. Mattlin has worked for the government in different capacities for 16 years. Ms. Mattlin holds a B. S. Degree in Mechanical Engineering from Oregon State University and has completed some course work for a M. S. degree in Environmental Engineering at Washington State University. Ms. Mattlin has worked at the Hanford Site for the DOE, Richland Operations Office since 1991. The first 3 years were at Tank Farms in the Characterization Division working with the contractor design team for the development of the Rotary Mode Core Sampling Truck. She has participated in two Operational Readiness Reviews, one for core sampling in the tanks with the Rotary Mode Core Sampling Truck, and the other for placing a pump in the SY-101 Tank to relieve the hydrogen gas. Since 1994, she has been with the Environmental Assurance, Permits and Policy Division where she has been the site point of contact for portions of the Hanford Facility *Resource Conservation and Recovery Act of 1976* (RCRA) Permit, RCRA Closures, and the Toxic Substance Control Act, Polychlorinated Biphenyls. She is also the point of contact for the site on rule making for these regulations. She participated as the Environmental Subject Matter Expert for the Readiness Assessment for the Environmental and Molecular Sciences Laboratory, the Phase I ISMS Verification for Fluor Daniel Hanford, and the Phase I/II ISMS Verification for BHI.

Jill M. Molnaa

Ms. Molnaa has worked at the Hanford site for 17 years as a truck driver and as a Hanford Atomic Metal Trades (HAMTC) council member. Ms. Molnaa is currently The HAMTC ISMS Representative for Fluor Hanford. She has been involved in the planning and participation of the ISMS workshops that have been held for Hanford site employees. Ms. Molnaa is actively involved in fieldwork for the implementation of ISMS.

Ms. Molnaa was also an observer on the BHI ISMS Phase I/II Verification team and the Fluor Hanford ISMS Phase I Verification. She will continue to be involved as a observer for the remainder of the projects going threw ISMS verifications.

Laurren T. (Tom) Nirider

Mr. Nirider is Nuclear Criticality Safety Program Manager for the Assistant Manager of Engineering and Standards at the Hanford Site. He has over 6 years of specialized experience in establishing, managing, and implementing nuclear criticality safety programs both in operating fissile facilities and within DOE. Mr. Nirider is a trained and experienced DOE Facility Representative, is Lead Auditor trained, and has participated in numerous site assessments, surveillances, and investigations, many involving nuclear criticality safety. Mr. Nirider also has experience as a nuclear facility Shift Operations Manager and was trained as a Building Emergency Director at the Plutonium Finishing Plant.

Mr. Nirider holds a Bachelor of Science degree (Cum Laude) in Physics from Eastern Washington University, and a Master of Science degree in Physics from the University of Washington. Mr. Nirider has served in his current position for the past year. Previously, he was a Facility Representative at DOE-RL assigned to Pacific Northwest National Laboratories' Environmental Molecular Sciences Laboratory. In addition to the nuclear experience listed above, Mr. Nirider has 7 years experience in operations, maintenance, design and construction of linear particle accelerators (LINACs). He is an experienced laboratory dosimetrist; has performed research in and published papers on the effects of natural space radiation upon spacecraft materials and space power systems, and nuclear weapon effects upon materials and semiconductor devices. He has significant laboratory experience in space and nuclear environment simulation. While employed as a Staff Scientist at the University of Washington Nuclear Physics Laboratory, he performed detailed computer analyses of magnetic spectrographs as well as ion and electron LINAC performance utilizing particle beam transport codes and conducted research in charged particle detector development.

Additionally, Mr. Nirider has completed many credits of graduate coursework at the University of Washington in Aeronautics and Astronautics as well as Astronomy and Astrophysics although no specific degrees were attained.

Paul M. Pak

Mr. Pak has about 14 years of nuclear experience. He is a Team Lead within the Assistant Manager for Environmental Restoration and Waste Management at DOE, Richland Operations Office. In this capacity, he is responsible for providing leadership and management for the Surveillance/Maintenance Project as well as the Hanford Decontamination and Decommissioning Project. He is also responsible for providing management control of assigned projects to assure compliance with environmental, occupational/radiological safety and health, and quality assurance requirements. He also served as a Team Lead for N Reactor Deactivation Project and successfully placed the facility and associated complex in a condition that enhanced long-term worker safety, environmental protection, and reduced the costs of surveillance and maintenance. Mr. Pak has experience in project management including the technical, administrative, and business aspect (e.g., project planning and control, budgeting, scheduling, cost-estimating, and financial management). For the past four years, he was a Contracting Officer Representative for the Richland Environmental Restoration and Decontamination & Decommissioning Project. He has extensive knowledge of and experience in work planning and execution as well as the VPP.

He has participated in and performed numerous operational assessments and safety documentation varying in complexity.

Mr. Pak holds a B. S. in Metallurgical Engineering and a M. S. in Metallurgical Engineering, both from University of Washington in Seattle, Washington.

Joseph Henry Richards

Mr. Richards is in his twelfth year with the Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Department of Natural Resources. Mr. Richards' responsibilities are to assist the CTUIR in the protection of natural resources impacted by Federal Facilities located within the tribe's ceded area (Hanford Nuclear Site, Umatilla Army Chemical Weapons Depot, and Boardman Bombing Range). Currently, his primary activities are performed at the Hanford Site. Mr. Richards focuses on environmental compliance activities and the ISMS.

Mr. Richards' academic preparation includes a M. S. in Business Information Systems from Utah State University. He specialized in auditing, auditing research, and accounting information systems courses via the Master of Accountancy Program at Washington State University. Mr. Richards also received a Distinguished Associate Diploma in Environment, Safety & Health from the Government Institutes. Mr. Richards' prior professional experience includes senior level accounting positions in private industry and the instruction of accounting (cost accounting, accounting information systems, fund accounting), auditing, and economic courses at the 4-year collegiate level.

Mr. Richards is a Certified Professional Environmental Auditor, a Certified Environmental Inspector, and a Certified Environmental Specialist. Mr. Richards has also completed training as a Lead Auditor for ISO 14001.

Mr. Richards participates as a member of DOE-Headquarter's Environmental Management System (EMS) Topical Committee (Technical Standards Program). As the ISMS Issues Manager for the Health, Safety & Waste Management Committee, Hanford Advisory Board, Mr. Richards participates in a variety of RL and contractor ISMS activities, including participation as a member of RL's ISMS Development Team. Mr. Richards also participates, by invitation of the National Co-Chair, in the National Steering Committee of the Enhanced Work Planning organization, and is an active participant in DOE's ISM Lessons Learned Workshops.

Mr. Richards has participated in several ISMS verifications at the Hanford Site (Office of River Protection/River Protection Project, Fluor Daniel Hanford, Spent Nuclear Fuels Project, DynCorp, and the Plutonium Finishing Plant).

Mr. Richards is currently active in several professional organizations, including the Environmental Auditing Roundtable, the Institute of Internal Auditors, the Environmental Assessment Association, the Air & Waste Management Association, Sigma Xi (Scientific Research Society), and the Board of Environmental Auditor Certifications.

Mr. Richards is also the owner/operator of "Mother Earth Consulting."

Craig R. Richins

Mr. Richins is a qualified ISMS Verification Team Leader and as such managed the reviews of the National Renewable Energy Laboratory and the Plutonium Finishing Plant Project. Mr. Richins also participated in six other efforts nationally including The Princeton Plasma Physics Laboratory, both Fluor Hanford ISMS Phase I Verifications, and the Environmental Restoration Contractor ISMS Phase I/II Verification. Mr. Richins is also a standing member of the ISM Core Team at the Hanford Site charged with overall implementation of ISMS at the Hanford Site. His experience includes strategic planning, formulation and implementation of ISM at the Pacific Northwest National Laboratory. Mr. Richins led the National Renewable Energy Laboratory ISM Verification and has participated in

Mr. Richins has over 12 years experience in the field of nuclear safety, operations and programs within the DOE. Mr. Richins holds a B. S. in Chemical Engineering from Brigham Young University. Mr. Richins has over 8 years experience as a Facility Representative at both Richland and Savannah River and as such, has had extensive training and experience in all aspects of safety and operations within the DOE nuclear complex. His feild and program assignments have included a wide variety of nuclear chemical processing, fuel fabrication, isotopic production, reactor programs, and nuclear laboratory facilities. Mr. Richins has also functioned as the program manager for a variety of DOE projects and programs for over 12 years. He has led various Operational Readiness Reviews, as well as numerous audits and assessments. Mr. Richins currently functions as a team lead within the Office of Science and Technology at RL. His assignments with that office have included management of the ES&H and facility operations of the Pacific Northwest National Laboratory and management of Site Technology services. Mr. Richins also led development of the national laboratory's ES&H and Operational Performance Measures and Indicators process. Mr. Richins also functioned as the Authorization Basis manager overseeing the national laboratory program at RL and the H-Area programs at Savannah River.

Frank Roddy

Mr. Roddy has more than 34 years of experience in the design, construction, operation, management, repair, and regulation of nuclear facilities including U. S. Navy nuclear propulsion plants, commercial nuclear power reactors, spent fuel storage facilities, radiological waste storage facilities, radiological waste burial sites, and DOE facilities.

Mr. Roddy's experience in radiological controls began in the U. S. Navy and included establishment of the Reactor Laboratory Division (radiological control and radiochemistry), the formation of the radiation protection plan for nuclear surface ships to comply with the Navy Radiological Control Manual when it was first published and instruction of personnel in radiological controls. While working for an architect/engineer/constructor, he was the resident health physicist, performing shielding and accident dose calculations, radiation monitoring system designs, teaching classes in radiological controls, making radiological assessments, writing radiation protection sections of SARs, designing ALARA programs for normal operations, for repairs such as steam generator replacements, and for additions such as spent fuel storage and radiological waste storage installations. As a contractor to DOE, Mr. Roddy participated as the radiological control section leader for ORRs/RAs at a number of DOE facilities, including Rocky Flats, Fernald, Grand Junction and Savannah River. He reviewed the radiation protection plans for all DOE facilities for compliance with 10 CFR 835. While working for DOE, he has reviewed safety analyses documents for 15 DOE facilities, taught radiological control classes and performed radiological control inspections on additional ORRs/RAs at Hanford including PFP, WRAP, and CWC. Mr. Roddy has performed audits of hazardous waste disposal, external dosimetry and HEPA filters at Hanford.

He has had ISMS training at Hanford when ISMS was first introduced into DOE. He received additional ISMS training from a course administered by DOE HQ at Hanford. Mr. Roddy has performed a review of the Fluor Hanford ISMS Implementation Plan when it was first submitted to DOE and was on the joint revision team effort among DOE, Fluor Hanford and its subcontractors. He participated in the DOE Phase I review of ISMS for the K Basins.

Mr. Roddy has been associated with the K Basins for 3 1/2 years while serving as a Senior Technical Advisor for Radiological Controls. He is currently assigned to AMNM and is associated with PFP, 324, 327, and 233S as well as the K Basins. He has reviewed the Safety Analysis documents for the WRAP, K Basins, MCO Topical Report, MCO cask SARP, CSB, MHM, and for the CVDF as well as the CSERs for these facilities. Mr. Roddy makes periodic radiological control assessments of the various Hanford facilities.

Edward G. Schwier

Mr. Schwier is a quality control engineer for the Fluor Hanford Facility Evaluation Board, which has been established to perform all Fluor Hanford independent oversight of operating facilities. He participated as the team lead or as a team member in 14 performance-based independent assessments or assist visits, including at least one at every Fluor Hanford facility.

Mr. Schwier earned a Bachelor of Science degree in Aeronautical Engineering from the United States Naval Academy in Annapolis, Maryland in 1969. He earned a Master of Science degree in Systems Technology from the Naval Postgraduate School in Monterey, California in 1980. Mr. Schwier has served in various positions with the Fluor Hanford contract team for the past 4 years, including acting Director of Quality Assurance. Prior to joining the Fluor Hanford team, he served for over 26 years as an active duty Surface Warfare Officer in the United States Navy. He retired in late 1995 as a Captain having had command of several warships and a Navy laboratory in Norco, California.

Mr. Schwier achieved certification as a Quality Engineer in 1995 and as a Professional Manager in 1998. He is also trained in Conduct of Operations and as an ISO 9000 and ISO 14000 Auditor.

Shivaji S. Seth

Dr. Seth is Senior Technical Advisor for Nuclear Safety at the DOE, Richland Operations Office. His primary responsibility is safety review and oversight of operations at several nuclear facilities under deactivation and decommissioning at the Hanford Site. Additionally, he has site-wide responsibilities in specific areas related to nuclear criticality safety, chemical safety, and the implementation of the ISMS. During 1998-1999, he also served as RL's Senior Liaison to the Defense Nuclear Facilities Safety Board (DNFSB).

Dr. Seth has led the RL guidance and coordination effort to implement ISMS at the nuclear facilities in transition, and is an active member of RL's ISMS core team for implementing ISMS throughout the Hanford Site. Dr. Seth served as the Team Advisor for the Plutonium Finishing Plant ISMS Phase I verification in January 2000. He was a subteam leader for DOE's ISMS verification at the radioactive waste storage tank (Tank Farms) nuclear facilities in 1998. Dr. Seth was also a member of DOE's ISMS Phase I verification for Fluor Hanford in April 2000.

From 1985 to 1996, Dr. Seth was at the MITRE Corporation, where he was responsible for guiding and managing numerous projects in support of the DNFSB, the U.S. Nuclear Regulatory Commission (USNRC), and the U.S. Army's program for demilitarization of chemical weapons. For the DNFSB, Dr. Seth conducted assessments of DOE requirements and implementation of safety standards at various defense nuclear facilities, and contributed to the development of an integrated safety management systems approach and standards review guides. For the USNRC, he analyzed safety issues and assisted development of regulatory requirements and guidance for nuclear power plants. For the Army, he contributed to several safety and risk assessments of chemical weapon disposal facilities and operations. Currently, he is a member of an expert panel to review probabilistic safety (risk) assessments for two chemical demilitarization facilities.

From 1983 to 1985, Dr. Seth served as Senior Fellow to the USNRC's Advisory Committee on Reactor Safeguards (ACRS). He provided consultations and recommendations to the ACRS on a range of safety and regulatory issues associated with the design and operation of nuclear power plants. At the General Atomic Company, as staff engineer from 1978 to 1983, Dr. Seth's work included nuclear design, fuel cycle optimization, and safety and risk analyses. From 1970 to 1978, Dr. Seth was responsible for the planning and analysis of critical experiments in support of physics and safety investigations of fast and thermal reactor cores at the Swiss Federal Institute for Reactor Research. There he was also licensed to supervise operations at the nuclear reactor and fuel handling facilities. As a graduate research assistant at the MIT Reactor, from 1965 to 1970, Dr. Seth performed experimental and theoretical studies of nuclear reactor cores.

Dr. Seth holds Masters and Doctors degrees in Nuclear Engineering from the Massachusetts Institute of Technology, and has authored over 75 technical publications.

Doug S. Shoop

Mr. Shoop is employed by RL as a Senior Technical Advisor for Integrated Safety Management (ISM) and Occupational Safety and Health. Mr. Shoop holds a Bachelors of Science degree in Medical Microbiology and a Masters of Science degree in Environmental Health/Industrial Hygiene. He is a Certified Industrial Hygienist and has worked in the nuclear industry for over 11 years. Mr. Shoop has primary responsibility for the planning, coordination, and conduct of ISMS verifications for RL and is the primary interface with RL senior management and staff, DOE-Headquarters, Defense Nuclear Facilities Safety Board, and Hanford Site stakeholders on ISM matters. Mr. Shoop has planned, coordinated, and assisted in the conduct of five additional ISMS verifications.

Prior to his employment with RL, Mr. Shoop was employed by Fluor Hanford and Westinghouse Hanford Company as an Occupational Health manager. In addition to his normal responsibilities as the Occupational Health Manager, Mr. Shoop served as a team leader for the development of the initial PHMC Integrated Environment, Safety and Health Management System; initiated and led the Hanford Enhanced Work Planning effort; managed the development of the Automated Job Hazard Analysis; and served as the Interpretative Authority for the PHMC Occupational Safety and Health Standards/Requirements Identification Documents. Mr. Shoop also led the development and implementation of the Hanford Occupational Health Process for FH and coordinated the Hanford Chemical Safety Vulnerability Study. In collaboration with personnel from RL, Mr. Shoop led the investigation of the Emergency Response to the May 14, 1997 explosion at the Plutonium Reclamation Facility (PRF) and served as the PRF Incident Response Occupational Health/Medicine Team Leader.

Prior to his employment at the Hanford Site, Mr. Shoop was employed at the Idaho National Environmental Engineering Laboratory (INEEL) where he provided technical management of the Industrial Hygiene staff and programs associated with the characterization and remediation of hazardous waste sites, facility decontamination and decommissioning, and *Resource Conservation and Recovery Act of 1976* treatment, storage, and disposal operations. Prior to his employment at INEEL, Mr. Shoop spent approximately 8 years conducting clinical research in collaboration with various universities and hospitals throughout the United States. He has authored 23 professional publications in internationally recognized scientific journals and has had numerous abstracts accepted for presentation at national scientific meetings.

Michael J. Silvia

Mr. Silvia is an Executive Consultant for EnergX and is currently on contract to Fluor Hanford as an Assessor for the Facility Evaluation Board (FEB). Mr. Silvia is qualified as a FEB Team Lead and Environmental Program Assessor. Mr. Silvia has been with the Facility Evaluation Board approximately 3 years and qualified as a Team Lead for the Waste Encapsulation and Storage Facility assessment in April 1999. Mr. Silvia served on the Office of River Protection (ORP) ISMS Phase II Verification of the River Protection Project (RPP), Spent Nuclear Fuel Project ISMS Phase I/II Verification, and DynCorp ISMS Phase I/II Validation, Nuclear material Stabilization Project Phase I Verifications, Fluor Hanford Phase I Verification. Mr. Silvia was a Subject Matter Expert assessor for the area of Work Planning as it related to Environmental/Chemical Management for the ORP verification, and as a Subject Matter Expert for Environmental Compliance/Chemical Management for the Spent Nuclear Fuel Project verification, Nuclear Material Stabilization Project verification, Fluor Hanford Phase I verification and DynCorp validation. Mr. Silvia holds a Masters of Management, Information Systems degree from West Coast University, California, and a B. S. in Environmental Technology of Engineering degree from Norwich University, Vermont. Mr. Silvia has over 14 years of professional experience with environmental assessments, air quality management, regulatory permitting and analysis, policy and procedure development, information systems, and data evaluation.

Mr. Silvia worked as a Senior Scientist for Duke Engineering Services at the Hanford Site as an Assessor for the FEB. In 1999, Mr. Silvia was part of a team contracted to develop regulatory analysis and waste incidental to reprocessing reports to support the Idaho National Engineering and Environmental Laboratories (INEEL) Tank Farm Closure. Mr. Silvia was the Regulatory/Administrative Support Manager for International Technology (IT) Corporation's offices in Richland and Tacoma, Washington. Mr. Silvia was part of an IT team responsible for developing the Environmental Sites Database Procedures for the Hanford Environmental Restoration Contract. Mr. Silvia served as lead on the initial DOE Hanford Site Title V permitting effort and was integral in the development of the air emission inventory and database management system for the entire Hanford Site air emission program. Mr. Silvia served in the U.S. Air Force and was responsible for managing over 100 air operating permits, overseeing air quality source testing plans including field sampling and analysis, and test. Mr. Silvia supervised the staff responsible for regulatory inspections, and negotiating operating permits, source test plans, and Notice of Construction permits.

Leonard C. Sjostrom

Leonard C. Sjostrom is currently a Senior Management Consultant for government and commercial nuclear operations.

Beginning in March 1997, and until his retirement in September 1999, Mr. Sjostrom was Assistant Manager for Health, Safety and Technical Support at the DOE's Savannah River Operations Office. In this capacity he was responsible for directing and overseeing Savannah River Site programs and activities related to radiological protection; emergency management; occupational medicine; industrial safety and hygiene; fire protection; integrated safety management; engineering; construction; project controls; nuclear safety; and laboratory operation.

Previously, Mr. Sjostrom was the Assistant Manager for Material and Facility Stabilization at the Site. He was responsible for operations, maintenance and project upgrade of nuclear materials processing and stabilization facilities, including spent fuel management. He was also responsible for nuclear facilities deactivation and leading site activities associated with nuclear materials planning and management.

He also served as the Assistant Manager for Defense Programs, where he was the overall manager for Site nuclear operations, including nuclear weapons stockpile tritium support, materials stabilization and spent fuel management. He has also served as the Assistant Manager for Environmental Restoration and Waste Management.

Prior to joining the Savannah River Site in August 1978, Mr. Sjostrom served as a Senior Reactor Inspector for the Nuclear Regulatory Commission in the northeastern United States, beginning in September 1975. He was an officer in the Navy's nuclear program for 7 years and served on two nuclear submarines. He qualified as engineer of a nuclear propulsion plant in 1974. Mr. Sjostrom retired from the Naval Reserves in October 1995 at the rank of Captain.

Mr. Sjostrom graduated from the United States Naval Academy in June 1968, with a Bachelor of Science Degree in Naval Engineering.

Mark R. Steelman

Mr. Steelman is presently the Senior Advisor for the Fluor Hanford Facility Evaluation Board. Mr. Steelman holds a Bachelor of Science degree in aeronautical engineering, a Bachelor of Arts degree in Economics from the University of Washington, has completed an MBA from LaSalle University.

Mr. Steelman has more than 25 years of commercial nuclear plant experience in Engineering/Configuration Management, Operations and Maintenance Advisor, Reactor Operator Training/Training Advisor, Root Cause Analysis, Licensing/Nuclear Safety, ESH&Q, and Consultant to Nuclear Regulatory Commission. His DOE experience consists of managing the Fluor Hanford Facility Evaluation Board, Regulatory Integration Manager at the Rocky Flats Environmental Technology Site, and consultant in areas of Authorization Basis, Engineering, Integrated Safety Management, and independent oversight and operational readiness.

His assessment/Operational Readiness Review (ORR)/inspection qualifications include the participation in several safety system functional inspections and ORRs at commercial nuclear facilities and participation in the ISMS reviews at Rocky Flats. He has also participated in multiple DOE ISMS reviews (the River Protection Program, the Fluor Daniel Hanford, Inc. Phase I, the Spent Nuclear Fuel Project Phase I/II, the Plutonium Finishing Plant Phase I, Fluor Hanford Phase I) and a FEB ISMS validation (DynCorp Tri-Cities Services, Inc.) at the Hanford Site. He was a member of the SRT for the restart and ORR of Buildings 559 and 707 at Rocky Flats and participated in the management self-assessment of Building 779 Glove Box Removal. Mr. Steelman served as a consultant and led the PNNL self-assessment of Building 325 Processing Laboratory Unreviewed Safety Question process. He participated in facility evaluations of the Plutonium Finishing Plant, Spent Nuclear Fuel Project, Fast Flux Test Facility, and single-shell tanks in the functional areas of Engineering/Nuclear Safety. He also participated in the contractor ORR for the Light Duty Utility Arm and contractor ORR for the Project W-320 Tank 241-C106 Sluicing for Fluor Hanford.

George C. Strickland

Mr. Strickland is currently employed as a Senior Nuclear Engineer by Professional Analysis, Incorporated working under contract to RL. He holds a Bachelor of Science degree from Washington State University in General Biological Studies specializing in National Environmental Policy Act (NEPA) documentation. Mr. Strickland has more than 30 years professional and managerial experience in the nuclear field encompassing the broad areas of health physics, NEPA documentation, emergency preparedness, design review, independent safety oversight, and safety analysis. In his current position, he is providing assistance to RL in the areas of ISMS and Safety Basis.

Mr. Strickland began his career at the Hanford Site in 1963 in health physics at the then operating plutonium production reactors. In 1967, he transferred to the research and engineering arena in the 300 Area where he developed health physics procedures for handling such unique materials as ^{210}Po , ^{237}Np , ^{244}Cm , and ^{249}Bk . He moved over to the Fast Flux Test Facility project in 1970 where he assumed functional responsibility for the health physics program at the Plutonium Fuels Laboratory and the Post Irradiation Testing Laboratory.

In 1974, Mr. Strickland was granted an education leave of absence to complete his post-secondary education and he returned in 1976 to assume responsibility for health physics program audits and appraisals, and for preparation of NEPA documentation.

Following the nuclear accident at Three Mile Island in 1979, Mr. Strickland was employed as a consultant to assist commercial nuclear power plants in the preparation of emergency plans. He prepared the emergency plans for San Onofre Nuclear Generating Station Units 1, 2, and 3.

Mr. Strickland returned to the Hanford Site in late 1980 and was responsible for developing and implementing both the independent safety review program and the As Low as Reasonably Achievable program.

He subsequently established and managed the General Plant Projects Safety Analysis Group, participated in the PFP Plutonium Reclamation Facility Restart Operational Readiness Review, and assisted in preparation of responses to questions arising from the DOE-HQ Safety Evaluation Report on the draft PFP Safety Analysis Report.

Mr. Strickland assisted in the development of the ISMS Phase I/II review plan for the Plutonium Finishing Plant and the review plan for the FH/DOE-RL verification review. In addition, he served as a member of the PFP ISMS Verification Core Team.

Carrie J. Swafford-Chube

Ms. Swafford-Chube is employed by the DOE, Richland Operations Office as an Independent Oversight Specialist for the Analysis and Evaluation Division. She oversees contractor independent and self-assessment programs. Ms. Swafford-Chube received a Bachelor of Science degree in Civil Engineering from Southern University Baton Rouge, Louisiana in 1992 and is currently taking graduate courses at Washington State University Tri-Cities. She began her career at the Hanford Site in 1994 as a Project Engineer in the Tank Waste Remediation Systems. Prior to working at the Hanford Site, Ms. Swafford-Chube was employed by the Illinois Department of Transportation as a Civil Engineer where she worked in both design and construction.

Ms. Swafford-Chube is a member of the RL ISM Development Team. She has participated in one offsite review at the DOE Princeton Plasma Physics Laboratory in Princeton, New Jersey. She also participated in six RL Phase I/II ISMS Verifications: Office of River Protection, Phase II ISMV; Fluor Daniel Hanford Phase I ISMV; Plutonium Finishing Plant Phase I/II ISMV (as the MGO subteam lead); the Fluor Hanford Phase I ISMV (as the MGO Subteam Lead), and the Environmental Restoration Contractor Phase I/II ISMSV. She also was the DOE oversight for the DynCorp ISM Verification performed by the Facility Evaluation Board.

She has conducted assessments reviewing the management assessment programs of the prime and subcontractors. She has also participated in three audits and numerous assessments. Ms. Swafford-Chube completed the Office of Civilian Radioactive Waste Management Quality Assurance Requirements and Description Lead Auditor Training (DOE/RW-0333P, Revision 7) and the Carlsbad Area Office Auditor and Lead Auditor Training.

Glyn D. Trenchard

Mr. Trenchard is a qualified Facility Representative for the Office of River Protection. He provides field oversight of contractor maintenance and operations activities for the 200 East Area Tank Farm Facilities. He routinely participates in assessments and readiness reviews.

Mr. Trenchard earned a B. S. in Mechanical Engineering (1987) and a M. S. in Engineering Management (1999) from Washington State University and is a member of Tau Beta Pi, the national engineering honor society.

He has over 12 years of experience in the nuclear field. Prior to becoming a Facility Representative, he spent 5 years as a project engineer for DOE-RL. He managed two projects from initial planning and conceptual design, through validation and definitive design and into construction. He monitored the project cost, schedule and technical baselines and performed safety surveillances of the construction sites, reporting findings to management and the contractor. Prior to that, he spent 5 years as a nuclear test engineer at Puget Sound Naval Shipyard. He was involved in every stage of reactor plant testing including developing written test procedures, conducting pre-test briefs, recording test data, directing test evolutions and auditing nuclear records.

Scott G. Van Camp

Mr. Van Camp is Acting Deputy Director for the Office of the Waste Isolation Pilot Plant (WIPP) Program. This office is within the Waste Management Program of DOE, and is located in Germantown, Maryland. The Waste Isolation Pilot Plant is a research and development facility designed to demonstrate the safe, geologic disposal of transuranic and mixed-transuranic waste. With over 11 years of experience in geology-related work, Mr. Van Camp has spent the past 5 years involved in repository work in both the public and private sector. Prior to joining DOE, Mr. Van Camp spent six years working in petroleum exploration efforts on the Gulf Coast of the United States.

As Acting Deputy Director for the Waste Isolation Pilot Plant Program, Mr. Van Camp oversees the development of headquarter's policy for the WIPP Program. Mr. Van Camp also serves as the headquarter's liaison with the Environmental Protection Agency, interfacing on issues such as meeting the requirements of environmental laws and regulations, and technical information exchanges.

Prior to his current position, Mr. Van Camp was the Acting Director for the Experimental Programs Division in the WIPP Program Office. As Acting Division Director, his responsibilities were overseeing the development, collection, and evaluation of data and performance assessment activities to determine the WIPP facility's compliance with regulatory standards.

Mr. Van Camp has a Bachelor of Science degree in Geology from West Virginia University, a Bachelor of Arts degree in Chemistry from West Virginia University, and a Master of Science degree in Geology from the University of North Carolina. He is a registered Professional Geologist.

Richard Warriner

Mr. Warriner is currently serving as a Quality Assurance Engineer for the Fluor Hanford Facility Evaluation Board. He has over 25 years of diversified experience in the nuclear industry including nuclear power operations and research, waste management and storage, environmental remediation and laboratory management. Mr. Warriner has been involved in a variety of specific nuclear related activities including reactor materials testing and development, fusion material production, and advanced submarine core installation and testing. He has also played a key role in the start-up of the FFTF Fuel Storage Facility, the Waste Sampling and Characterization Facility (WSCF) Laboratory and 200 Area Effluent Treatment Facility.

Mr. Warriner is qualified as a Fluor Hanford Facility Evaluation Board Assessment Team Leader as well as a NQA-1 & Office of Civilian Radioactive Waste Management (OCRWM) Lead Auditor. He has held various Quality Assurance organization leadership positions, including Director, and has an extensive background in program development.

Mr. Warriner is a certified professional manager and holds an Associates of Science from Mohegan Community College.

APPENDIX C

**FLUOR HANFORD
CRITERIA AND REVIEW APPROACH DOCUMENTS**

OBJECTIVE

HAZ.1 - The full spectrum of hazards associated with the scope of work is identified, analyzed, and categorized. Those individuals responsible for the analysis of environmental, safety, and health (ES&H) and worker protection hazards are integrated with personnel assigned to analyze the processes.

Criteria

1. Procedures and/or mechanisms are in place and used by personnel to ensure hazards associated with the work throughout the facility have been identified and analyzed. The resulting documentation is defined and implemented.
2. Procedures and/or mechanisms are in place and used by personnel that describe the interfaces, roles and responsibilities of those personnel who identify and analyze the hazards of the scope of work. The execution of these mechanisms ensures personnel responsible for the analysis of ES&H 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.

Approach

Record Review

- Review the documents that govern the conduct, review, and approval of facility or activity hazard analysis and documentation such as Process Hazards Analysis (PHA), Preliminary Hazards Review (PHR), Preliminary Safety Analysis Report (PSAR), job hazards analysis (JHA), and Work Control Permits (WCP).
- Verify that the records of facilities and activity hazard analyses conform to the hazard analysis requirements.
- Coordinate the review of work-related documents such as JHAs, and work packages with the OP and Subject Matter Expert functional area reviewers.
- Review procedures governing the performance of hazard analysis to verify that ES&H personnel are integrated into the process.

Interviews

- Interview personnel responsible for the identification and analysis of work hazards.
- In nuclear facilities, for example, this should include personnel responsible for Unreviewed Safety Question (USQ) determination, lock and tag preparation, procedure technical reviews, etc.

Observations

If possible, observe the actual preparation and field implementation of the analysis of hazards. In nuclear facilities, this should include USQ determination, preparation of a JHA, SAR/TSR, or Criticality Safety Evaluation, etc.

OBJECTIVE

HAZ.2 - An integrated process has been established and is used 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. Procedures and/or mechanisms are in place and utilized by personnel to develop, review, approve, maintain, and implement all elements of the facility Authorization Basis Documentation with an integrated workforce.
2. Procedures and/or mechanisms that identify and implement appropriate controls for hazards mitigation within the facility or activity are developed and used by workers and approved by line managers. These procedures/mechanisms reflect the set of safety requirements agreed to by DOE.
3. Standards and requirements are identified before work is performed and appropriately tailored to the hazards.
4. Procedures and/or mechanisms are in place to develop, maintain, and utilize (and effectively and accurately implement) Authorization Agreements (AA).

Approach

Record Review

- Review a sample of hazard control documents to verify safety controls are provided for the hazards identified and that the control strategy encompasses a hierarchy of the following:
 - Hazard elimination
 - Engineering controls
 - Administrative controls
 - Personnel protective equipment.

NOTE: Typical documents include AAs, Safety Analysis Reports (SAR), Technical Safety Requirements (TSR), Health and Safety Plans (HASP), Radiological Work Permits (RWP), operating procedures, etc.

- Review procedure/processes for the selection and maintenance of appropriate standards and requirements.
- Review procedures/processes for the preparation, review, approval, and revision of AAs.
- Review procedures and mechanisms to ensure accurate and effective implementation of Authorization Basis documentation.

- Sample actual implementing documentation.
- Coordinate the review of work-related documents, such as RWPs and operating procedures with the OP and Subject Matter Expert functional area reviewers.

Interviews

Interview personnel responsible for developing and implementing hazard controls and/or Authorization Basis documentation at the facility level. This should include personnel such as those responsible for SAR/TSR preparations and implementation, as low as reasonably achievable (ALARA) review requirements, Process Hazards Analysis, activities, job hazard analyses, etc.

Observations

Observe the actual process development, review, approval, and implementation of SAR/TSR, AA, and other Authorization Basis documents as available.

OBJECTIVE

MGO.1- An integrated process has been established and is used to identify and prioritize specific mission-discrete tasks, mission-process operations, modifications, and work items.

Criteria

1. Line management identifies and prioritizes mission-related tasks and processes, modifications, and work items are in place and used by personnel.
2. Personnel define the roles and responsibilities for the identification and prioritization of mission-related tasks and processes, facility or process modification, and other related work items.
3. Personnel ensure identified work (i.e., mission-related tasks and process, processes or facility modification, maintenance work, etc.) can be accomplished within the standards and requirements identified for the facility.

Approach

Record Review

- Review the facility or activity long-range planning documentation. This should include such items as the following: summary schedules, plans of the week, long-range maintenance schedules, modification schedule, etc.
- Review the procedures and mechanisms that line managers utilize to identify and prioritize mission-related tasks and processes, modifications, and work items.
- Review the procedures and/or mechanisms that are used by the facility or activity to ensure that identified work can be accomplished in accordance with established standards and requirements.

Interviews

Interview management personnel responsible for the identification and prioritization of work. This should include personnel responsible for long-range planning documentation, schedule preparation, etc.

Observations

Observe work definition and planning activities such as plan of the week meetings, long-range scheduling meetings, etc.

OBJECTIVE

MGO.2 - Clear and unambiguous roles and responsibilities are defined and maintained at all levels within the facility or activity. Managers at all levels demonstrate a commitment to ISMS through policies, procedures, and their participation in the process. Facility or activity line managers are responsible and accountable for safety. Facility or activity personnel are competent commensurate with their responsibility for safety.

Criteria

1. Clear roles and responsibilities are defined within the facility or activity to ensure that safety is maintained at all levels.
2. Line management is responsible for safety.
3. Processes are implemented to ensure personnel who supervise and perform work have competence commensurate with their responsibilities.

Approach

Record Review

- Review facility or activity manuals of practice that define roles and responsibilities of personnel responsible for safety.
- Review plans, procedures, position descriptions, and other documentation that describe roles and responsibilities related to ensuring safety is maintained. The review should consider personnel in line management and staff positions and should evaluate whether line managers are responsible for safety.
- Review the procedures established to select, train, and qualify managers and the work force to ensure they are competent to safely perform their assigned responsibilities/work. Review the records of qualification and certification as applicable.

Interviews

- Interview selected personnel at all levels of facility or activity management that are identified by the record review above and verify their understanding and commitment to ensuring that safety is maintained for all work at the facility or activity.
- Interview a selected number of supervisors and workers (see definition) to determine their understanding of competency requirements and their commitment to performing work safely.

Observations

Observe scheduled activities that demonstrate 1) clear roles and responsibilities are established and understood; 2) line managers are actively involved with decisions affecting safety; and 3) managers and workers are competent to perform their duties. Activities, such as weekly planning meetings, plan of the day, event critiques, safety training, and safety meetings are typical events that may provide good examples of the safety training and decision-making process.

OBJECTIVE

MGO.3 - An integrated process has been established that ensures mechanisms are in place to ensure continuous improvements are implemented through an assessment and feedback process, which functions at each level of work and at every stage in the work process.

Criteria

1. Personnel collect feedback information, such as self-assessments, monitoring against performance objectives, occurrence reporting, and routine observation. Personnel assigned these roles are competent to execute these responsibilities.
2. Feedback and improvement information opportunities are developed at the site and facility levels, as well as the individual maintenance or activity level. The information that is developed at the individual maintenance or activity level is used to provide feedback and improvement during future similar or related activities.
3. Managers identify improvement opportunities. Evaluation and analysis mechanisms should include processes for translating operational, oversight, and assessment information into improvement processes and appropriate lessons learned.
4. Managers consider and resolve recommendations for improvement, including worker suggestions.
5. A process for oversight has been implemented that ensures that regulatory compliance is maintained as required by rules, laws, and permits.

Approach

Record Review

- Review procedures to ensure that a process is established to ensure continuous improvements are implemented through an assessment and feedback process, which functions at each level of work and at every stage in the work process.
- Review the performance monitoring documentation for the feedback and continuous improvement process. This should include such documents as occurrence reports, shift orders, deficiency reports, post-job reviews, safety observer reports, employee concerns programs, and reports of self-assessments.
- Review procedures for work to determine that adequate feedback and improvement mechanisms are in place at the individual maintenance or activity level.
- Review actual data from these processes to evaluate the effectiveness of the implementation of these mechanisms.

- Review the performance measures and performance indicators established to determine that these tools provide information that is truly a direct indicator of how safely the work is being planned.
- Review procedures/processes established to select, train, and qualify personnel responsible for the feedback and improvement programs.
- Review the performance measures and performance indicators established to determine that these tools provide infrastructure that is truly a direct indicator of how safely the work is being performed.

Interviews

Interview personnel responsible for administering the feedback and continuous improvement progress. This should include personnel such as those responsible for occurrence reporting, lessons-learned preparation, shift orders preparation, worker concerns program, self-assessment, and oversight. Interview personnel responsible for capturing and utilizing feedback and improvement information during individual maintenance or other work activities.

Observations

Observe development and utilization of feedback and continuous improvement activities. This should include such things as conducting post-job critiques, monitored evolutions, post-As Low as Reasonably Achievable reviews, conducting a self-assessment or independent assessments, etc.

OBJECTIVE

OP.1 - An integrated process has been established and is used to effectively plan work for the facility or activity. Within work planning, clear roles and responsibilities have been established and there is a satisfactory level of competence.

Criteria

1. Work planning is integrated at the individual maintenance or activity level and fully analyzes hazards and develops appropriate controls.
2. Personnel involved in the work planning process understand their roles and responsibilities.
3. Personnel assigned to work planning have a satisfactory level of competence for the subject area assigned.
4. Safety requirements are integrated into work planning.
5. Lessons learned from work execution are incorporated into work planning.
6. Workers actively participate in the work planning process.
7. A safety-conscious work force environment exists.

Approach

Record Review

- Review a sample of work packages in the planning, active, and completed stages.
- Review documents associated with work planning to gain an understanding of the process and the roles and responsibilities of personnel involved in work planning.
- Review a sample of maintenance and operation procedures to ensure that proper procedures were followed for preparation, review, and approval.

Interviews

- Interview personnel responsible for planning the performance of the work. This should include personnel such as those responsible for preparing and maintaining documents such as the Plan of the Day (POD), Automatic Job Hazard Analysis, work packages, maintenance procedures, equipment status files, pre-job briefings, and the conduct of facility or activity operations.
- Interview personnel responsible for development of maintenance or individual activity procedures and controls.

- Verify adequate worker involvement at each step of the process.

Observations

- Observe the actual work planning processes and activities supporting the work planning, i.e., resource availability, training and qualifications of resources, and Employee Job Task Analysis. This should include such items as pre-job briefings, Job Hazard Analysis (JHA) pre-job walk downs, work improvement team meetings, review of safety requirements, etc.
- Observe work hazard identification activities. This should include such things as validation of procedures, procedure tracking, compensatory measures determination, etc.

OBJECTIVE

OP.2 - An integrated process has been established and is used to authorize and execute the identified work for the facility or activity.

Criteria

1. An adequate state of readiness of the facility or activity and operational work force is confirmed prior to authorizing the performance of work.
2. Processes used to gain authorization to conduct operations are implemented.
3. Hazards are appropriately controlled and integrated into work performance.
4. Workers have adequate competence for their duties.
5. Feedback from work planning and execution and lessons learned are integrated into work processes.

Approach

Record Review

- Review post-job critiques, Job Hazard Analysis (JHA), and other records to determine if lessons learned and feedback are effectively integrated into the work processes.
- Review selection, training, and qualification training requirements and records to ensure that maintenance and operations personnel are competent for work being performed.
- Review documents associated with work execution to gain an understanding of the process and the roles and responsibilities of personnel involved in work execution.

Interviews

- Interview personnel responsible for authorizing and performing work. This should include personnel such as those responsible for preparing and maintaining documents such as the Plan of the Day (POD), equipment status files, pre-job briefings, and the conduct of facility or activity operations.
- Interview personnel responsible for approval and execution of individual activity procedures and controls.
- Interview operations, maintenance, and safety personnel and verify adequate worker involvement at each step of the process.
- Interview personnel responsible and involved in the work feedback process.

Observations

- Observe the actual authorization and performance of work activities. This should include such items as pre-job briefings, authorization by managers to proceed, command and control of the work, review of safety requirements, etc.
- Observe *work hazard identification* activities. This should include such things as validation of procedures, procedure tracking, compensatory measures determination, etc.
- Observe post-job reviews and other methods used to provide feedback for continuous improvement.

Subject Matter Expert Interactions

The SME CRAD should be adapted as required and used by SMEs to assess whether the core functions and guiding principles of ISMS are met for the control of work within the specified discipline. Specific disciplines used during this verification include the following:

- Radiological Controls and Protection
- Occupational Safety and Health
- Environmental Protection/Chemical Management
- Quality Assurance
- Criticality Safety.

OBJECTIVE

SME.1 - Radiological Controls and Protection. Within the Radiological Controls and Protection area, the planning of work includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within the Radiological Controls and Protection area, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. Procedures and/or mechanisms for Radiological Control and Protection are implemented and provide adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.
2. Procedures and/or mechanisms for Radiological Controls and Protection contain clear roles and responsibilities. Radiological Controls and Protection is effectively integrated with line and support managers to ensure that line managers are responsible for safety.
3. Procedures and/or mechanisms for Radiological Controls and Protection require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. Procedures and/or mechanisms for Radiological Controls and Protection ensure that personnel who are assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms for Radiological Controls and Protection implement (within the subject area) feedback and continuous improvement.

Approach

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for Radiological Controls and Protection at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that Radiological Controls and Protection are effectively integrated into the facility or activity procedures.
- Review selected lessons learned to assess that lessons learned have been effectively used within the Radiological Controls and Protection area.
- Review selection, training, and qualification records of personnel in Radiological Controls and Protection area to determine if they meet competency standards.

Interviews

- Interview personnel and responsible managers assigned to Radiological Controls and Protection area.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to the Radiological Controls and Protection area to assess the level of competence.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as a Radiological Work Permit (RWP), Job Hazards Analysis, or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

OBJECTIVE

SME.2 - Occupational Safety and Health. Within the Occupational Safety and Health areas, the planning of work includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within the Industrial Hygiene and Safety areas, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. Procedures and/or mechanisms for Occupational Safety and Health areas require adequate planning of individual work items to ensure that hazards are analyzed and controls are implemented.
2. Procedures and/or mechanisms for Occupational Safety and Health areas contain clear roles and responsibilities. Occupational Safety and Health is effectively integrated with line-support managers to ensure that line managers are responsible for safety.
3. Procedures and/or mechanisms for Occupational Safety and Health require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. Procedures and/or mechanisms for Occupational Safety and Health require that personnel who are assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms for Occupational Safety and Health require that within the subject area, feedback and continuous improvement occur.

Approach

- Review the applicable FH procedures and selected records that define the activities and interactions for these activities.
- Assess the adequacy of the process to meet the criteria and determine that the individual subject areas are effectively integrated into the facility or activity procedures.
- Review any lessons learned that provide an opportunity to assess that lessons learned have been effectively used within the subject areas.
- Review personnel training records in the subject area to determine that they meet competency.
- Interview personnel and responsible managers in the subject areas assigned. Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.

- Interview personnel assigned to the subject areas to assess the level of competence.
- Observe events such as the development of procedures, development of hazards analyses (e.g., Radiological Work Permit or Job Hazard Analysis) or the approval process for individual work items, which includes interactions with personnel of the subject areas, and the conduct of work.

Record Review

- Review the manuals of practice and selected records that define and implement the procedures and interactions required for Occupational Safety and Health at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that the Occupational Safety and Health are effectively integrated into facility and activity-level procedures.
- Review selected lessons learned to assess that lessons learned have been effectively used within the Occupational Safety and Health areas.
- Review training records of selected personnel to determine if they meet competency standards to perform work safely.

Interviews

- Interview personnel and responsible managers assigned to the Occupational Safety and Health areas to assess their level of competence.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview workers to assess their involvement in the analysis of hazards development and specification of necessary controls, and ability to provide feedback.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as an Automated Job Hazard Analysis, or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

OBJECTIVE

SME.3 - Environmental Protection/Chemical Management. Within Environmental Protection/Chemical Management, work planning includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within Environmental Protection/Chemical Management, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. Environmental Protection/Chemical Management are integrated into work planning of individual work items to ensure that hazards are analyzed and environmental controls are identified. (HAZ)
2. Environmental Protection/Chemical Management contain clear roles and responsibilities. The individual subject area is effectively integrated with line support managers to ensure that line managers are responsible for environmental protection requirements (MGO.2, OP.1)
3. Environmental Protection/Chemical Management require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work. (OP.1, OP.2)
4. Environmental Protection/Chemical Management require that personnel who are assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms are implemented to ensure Environmental Protection/Chemical Management require that within the subject area, feedback and continuous improvement occurs, including subcontractor oversight.

Approach

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for Environmental Protection/Chemical Management at the facility or activity.
- Review any lessons learned that provide an opportunity to assess that lessons learned have been effectively used or implemented within Environmental Protection/Chemical Management.
- Review the Chemical Management Implementation Plan and determine if the above criteria are being satisfied as a result of the implementation plan.
- Review personnel training records to determine if they meet competency standards.

Interviews

- Interview personnel and managers responsible for implementation of Environmental Protection/Chemical Management.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to Environmental Protection/Chemical Management to assess the level of competence.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis (such as a Radiological Work Permit or Job Hazard Analysis), or the approval process for an individual work item, which includes interactions with personnel of the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements.

OBJECTIVE

SME.4 - Quality Assurance. Quality Assurance (QA) policies, plans, procedures, and programs for FH and subcontractor personnel are in place to ensure 1) competence is commensurate with responsibilities; 2) a practice of continuous performance improvement is implemented; and 3) the responsibility for ownership of quality and verification of qualification prior to work assignment lies with line management.

Criteria

1. Procedures and/or mechanisms for QA are in place, implemented, and used by personnel to evaluate and analyze quality control and procurement at the facility and activity level.
2. Procedures and/or mechanisms for QA areas contain clear roles and responsibilities. QA is effectively integrated with line-support managers to ensure that line managers are responsible for safety.
3. Procedures and/or mechanisms for QA require controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. Procedures and/or mechanisms for QA are implemented to ensure that personnel assigned to the subject area have a satisfactory level of competence.
5. Procedures and/or mechanisms for QA are implemented to ensure that within the subject area, feedback and continuous improvement occur.

Approach

- Review the applicable FH procedures and selected records that define the activities and interactions for these activities.
- Assess the adequacy of the documents to meet the criteria and determine that the individual subject areas are effectively integrated into the facility or activity procedures.
- Review any self-assessments and lessons learned that provide an opportunity to assess that Opportunities for Improvement have been effectively used within the subject area.
- Review personnel training records in the subject area to determine that they meet competency.
- Interview personnel and responsible managers in the subject areas assigned. Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to the subject area to assess the level of competence.

- Observe events such as the development of procedures, development of hazards analyses (e.g., Radiological Work Permit or Job Hazard Analysis) or the approval process for individual work items, which includes interactions with personnel of the subject area.

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for QA at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that QA is effectively integrated into facility and activity-level procedures.
- Review selected self-assessments and lessons learned to assess that Opportunities for Improvement have been effectively used within the QA area.
- Review training records of personnel in the QA area to determine if they meet competency standards.

Interviews

- Interview personnel and responsible managers assigned to the QA area to assess their level of competence.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as an Automated Job Hazard Analysis, or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

OBJECTIVE

SME.5 - Criticality Safety. Within the Criticality Safety area, the planning of work includes an integrated analysis of hazards and development and specification of necessary controls. There is an adequate process for the authorization and control of work and a process for identifying opportunities for feedback and continuous improvement. Within the Criticality Safety area, line managers are responsible for safety, clear roles and responsibilities have been established, and there is a satisfactory level of competence.

Criteria

1. The Criticality Safety Program requires adequate planning of individual work items to ensure that hazards are analyzed and controls are identified.
2. The Criticality Safety Program contains clear roles and responsibilities. Criticality Safety is effectively integrated with line and support managers to ensure that line managers are responsible for safety.
3. The Criticality Safety Program requires controls to be implemented, that these controls are effectively integrated, and readiness is confirmed prior to performing work.
4. The Criticality Safety Program requires that personnel who are assigned to the subject area have a satisfactory level of competence.
5. The Criticality Safety Program requires that within the subject area, feedback and continuous improvement occurs.

Approach

Record Review

- Review the manuals of practice and selected records that define the procedures and interactions required for Criticality Safety at the facility or activity.
- Assess the adequacy of the documents to meet the criteria above and determine that Criticality Safety is effectively integrated into the facility or activity procedures.
- Review selected lessons learned to assess that lessons learned have been effectively used within the Criticality Safety area.
- Review selection, training, and qualification records of personnel in Criticality Safety area to determine if they meet competency standards.

Interviews

- Interview personnel and responsible managers assigned to Criticality Safety area.
- Interview line managers to assess the establishment of clear roles and responsibilities and the understanding of the support provided to line managers.
- Interview personnel assigned to the Criticality Safety area to assess the level of competence.

Observations

- Observe events such as the development of a procedure, development of a hazards analysis such as a Criticality Prevention Specification or Job Hazards Analysis, or the approval process for an individual work item, which includes interactions with personnel in the subject area.
- Observe field conditions and work performed to validate that work as planned is executable and meets established requirements. Interview appropriate personnel to ensure they believe this is true.

APPENDIX D

**U. S. DEPARTMENT OF ENERGY, RICHLAND OPERATIONS OFFICE
CRITERIA AND REVIEW APPROACH DOCUMENTS**

OBJECTIVE

DOE.1 - DOE processes and procedures ensure that missions are translated into work, work is formally authorized, expectations are set, tasks are identified, priorities are balanced, and resources are allocated. Contracts include ISMS requirements.

Criteria

1. RL guidance for translating mission into work includes delineating its plan of work. This means the scope, schedule, and funding allocations for each fiscal year.
2. RL guidance for setting expectations for the contractor is established through contracts and regulations. These contracts and regulations provide guidance on expected performance, set goals and priorities, and allocate resources.
3. RL roles and responsibilities are clearly delineated to ensure a satisfactory level of safety, accountability, and authority to define the scope of work.
4. RL procedures ensure that the contractor adequately prioritizes work so that, when the ISMS is implemented, mission and safety expectations are met within available budget and resources. RL procedures require that performance objectives, including environmental, safety, and health (ES&H) performance objectives, and related goals and priorities are reviewed and approved.
5. RL procedures provide for RL approval of proposed tasks and prioritization. Work planning procedures provide for feedback and continuous improvement.
6. RL procedures provide for change control of approved tasks, prioritization, and identification of resources.
7. RL contracts incorporate DEAR 970.5204-2, "Integration of Environment, Safety, and Health Into Work Planning and Execution," and DEAR 970.5204-78, "Laws, Regulations, and DOE Directives" and require flowdown into subcontracts involving complex or hazardous work. A process is in place for modifying contracts based on new or revised regulations or requirements.
8. The prioritization and allocation process clearly addresses both ES&H and programmatic needs. The process involves line management input and approval of the results.
9. Priorities include commitments and agreements to RL as well as stakeholders.
10. Resource allocations reflect the tailored hazard controls.
11. The incentive and performance fee structure promotes balanced priorities.
12. RL procedures for defining the scope of work ensure balanced priorities.

Approach

Record Review

- Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); and Functions, Responsibilities, and Authorities (FRA) and RL implementing procedures.
- Determine if there is adequate guidance for RL involvement in the clear definition and authorization of the scope of work.
- Determine if the mechanisms for translation of the missions and policies from higher authority are appropriate, if a mechanism for assigning and balancing priorities has been established, and if performance objectives are reviewed and approved.
- Determine if the roles and responsibilities for RL personnel are adequate to support the corporate/site mission.
- Verify that RL line management and staff personnel roles, responsibilities, and authorities are appropriate to support ISMS.
- Review personnel position descriptions, selection criteria, training programs, and training records to determine if staff competency is adequate.
- Review mission prioritization procedures to determine if tailoring of resources is appropriate.
- Verify that the budget process allows adequate resources for standards selection, hazard controls, and work authorization processes to support work planning and scope definition.
- Review corporate/site manuals of practice that describe the budget and planning process and those documents that identify mission requirements, the approval of contractor plans, and those that address the assignment of budget priorities.
- Review corporate/site procedures for formally documenting change control procedures.
- Review how safety requirements are included in subcontracts, as well as the flowdown of the DEAR clause into subcontracts for hazardous work.
- Select several mission tasks from the RL programs and planning documents and track the tasks through the process to evaluate how the above criteria are met.
- Review future year planning and current year authorized work. Select several current year authorizations and track change control.
- Select several RL and contractor subcontracts and review for incorporation of the ISM DEAR clauses.

Interviews

- Interview RL and contractor personnel responsible for management of the budget process.
- Discuss work authorization and performance activities with RL and contractor personnel and determine whether there are adequate mechanisms to ensure that work is properly authorized at all levels.
- Determine whether work safety is perceived as an integral part of work authorization methods and issue resolution.
- Interview line managers responsible for DOE-Headquarters-directed mission accomplishment.
- *Interview the ES&H manager to determine how the process for integration of safety into mission tasks is accomplished.*
- Interview RL and contractor line managers to determine their understanding and implementation of the process for translation of mission into work and formal work authorization.
- Interview selected ES&H professionals and line managers to determine how safety is incorporated into the budget plans and authorization.
- Interview RL and contractor procurement personnel regarding subcontract flowdown requirements.

Observations

If possible, observe actual budgetary discussions (including meetings involving the development of the out-year planning documents) within and between RL and the contractor.

OBJECTIVE

DOE.2 - DOE has established processes and formal procedures that interface efficiently and effectively with the contractor's organization for ensuring that work is performed safely.

Criteria

1. RL line management responsibility for safety includes RL processes and procedures for ensuring effective contractor operations oversight, the review and approval of the analysis of hazards and controls and for ensuring that all work is performed within controls.
2. RL has established clear roles and responsibilities to ensure that work is performed safely and within controls.
3. RL procedures ensure that personnel who review or oversee the safe performance of work and those responsible for approving hazard analyses and controls have competence commensurate with the responsibilities to which they are assigned.
4. RL procedures require readiness be properly verified and authorized before commencing operations.
5. RL 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 List A/List B.

Approach

Record Review

- Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); and Functions, Responsibilities, and Authorities (FRA) documents and RL implementing procedures for effective interface with the contractor.
- Determine if there is adequate guidance for the authorization and oversight of work by RL. Verify that personnel authorized to perform these functions have clear roles and responsibilities.
- Determine if the chain-of-command is clearly described.
- Verify that the Facility Representative (FR) program is tailored to match the work.
- Determine if oversight is balanced with risk and the priority of the mission being performed.

Interviews

- Discuss the systematic oversight of work with RL and contractor personnel.
- Determine whether oversight is adequate or excessive. Discuss the safety oversight programs with FRs, Subject Matter Experts, and contractor personnel to determine if it is effective.

OBJECTIVE

DOE.3 - DOE has implemented processes that interface efficiently and effectively with the contractor's organization to provide the contractor with feedback for continuous improvement. Feedback information to the contractor on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, contractor line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur. RL has implemented internal processes for feedback and continuous improvement.

Criteria

1. RL procedures ensure that RL competence is commensurate with responsibilities for providing feedback for continuous improvement.
2. Documented RL processes are implemented for defining personnel performance expectations, evaluating performance, and providing feedback to employees. Performance is linked to training plans.
3. RL procedures ensure that feedback is provided for continuous improvement in the identification of safety standards and requirements.
4. RL procedures ensure that feedback is provided for continuous improvement in the tailored hazard controls of the work being performed.
5. RL procedures promote continuous improvement and efficiency of RL activities. RL has implemented internal self-assessment and lessons-learned programs; and corrective actions are developed, implemented, and tracked.
6. RL has implemented processes to establish performance measures or metrics for the performance of work, including safety performance, with the objective of continuous improvement. Measures include RL as well as contractor's performance.
7. RL procedures and/or mechanisms require that contractors develop a lessons-learned program and that RL monitors its implementation. A process is established for reviewing occurrence reports and approving proposed corrective action reports.
8. RL corrective actions are developed, implemented, and tracked to profit from prior experience and lessons learned. RL provides effective line oversight of the contractor's self-assessment and lessons-learned programs.
9. RL's Implementation Plan in response to Defense Nuclear Facilities Safety Board Recommendation 98-1, and processes for addressing and resolving safety issues raised by EH-2, have been effectively implemented at RL.

Approach

Record Review

- Review the Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); Functions, Responsibilities, and Authorities (FRA) documents; and RL implementing procedures to determine how the feedback program functions. Verify that there is RL line management involvement. Determine that the roles and responsibilities for these programs are clear.
- Review RL training requirements and records to ensure that personnel are appropriately trained to perform their responsibilities.
- Review personnel position descriptions, selected criteria, training programs, and training records to determine if staff competency is adequate.
- Verify that balanced priorities and tailored approaches are used to conserve and maximize use of resources.
- Review the procedures for issue management and determine if this system enhances the improvement process.
- Review the RL process established to provide line oversight of the contractor's self-assessment programs.
- Review RL internal processes and guidance to the contractor concerning expectations for, and oversight of, a lessons-learned program.
- Review the effectiveness of the RL and contractor lessons-learned programs and procedures.
- Determine if the lessons learned between federal safety offices and offices of similar functions are appropriately integrated and shared.
- Evaluate the RL issues management and tracking system to ensure that there is an adequate system in place.

Interviews

- Discuss the feedback and continuous improvement process with RL personnel. Verify that safety is integrated into this process and that RL efforts in this area are important to safety.
- Determine if process improvement includes efforts to reduce unnecessary safety requirements and improve efficiency.
- Discuss the status of establishing line oversight of the contractor's self-assessment and lessons-learned programs.

- Discuss the effectiveness of the RL self-assessment and lessons-learned programs.
- Determine if personnel believe that safety activities are tailored to the risk and the priority of the work being performed.
- Discuss the effectiveness of issues and corrective action tracking systems.

OBJECTIVE

DOE.4 - RL procedures and mechanisms are effectively implemented to ensure that operations are formally and appropriately authorized and performed safely. RL line managers effectively review safety issues and concerns and have an active role in authorizing operations.

Criteria:

1. RL has effectively implemented procedures and/or mechanisms for confirming readiness and authorizing operations.
2. RL processes and procedures are implemented to ensure that the contractor's safety management system is properly implemented and that RL line management oversight of the contractor's worker, public, environment, and facility protection programs is performed effectively.
3. RL processes and procedures requiring day-to-day operational oversight of contractor activities through Facility Representatives and Subject Matter Experts are effectively implemented.
4. RL procedures and/or mechanisms ensure the implementation of quality assurance programs and ensure that contractors implement quality assurance programs.
5. RL procedures clearly define and establish line management control and responsibility for safety and for all aspects of work identification, planning and execution. Support organizations have clearly defined roles and responsibilities.

Approach:

Record Review

- Review the Review DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual* (FRAM); Functions, Responsibilities, and Authorities (FRA) documents; and RL implementing guidance to determine that the process for the authorization and oversight of operations is adequate.
- Review completed documentation for a representative operational authorization. Verify that those RL personnel assigned to perform these functions have clear roles and responsibilities.
- Determine if the oversight policy is balanced with risk and priority of mission.
- Review the quality assurance program established by RL and the interactions of that program with the contractor's quality assurance program.
- Review documentation of a completed QA activity.

- Verify RL programs hold line management responsible for safety and contain clear roles and responsibilities.

Interviews

- Discuss work authorization and performance activities with RL and contractor personnel to determine if there are adequate mechanisms to ensure that work is properly authorized at all levels.
- Determine if worker safety is perceived as an integral part of the work authorization process and that workers are involved in issue resolution, if appropriate.
- Discuss the RL oversight programs with RL and contractor personnel.
- Discuss the Facility Representative (FR) programs with FRs and Subject Matter Expert (SME) programs with SMEs and both with contractor personnel to determine if these programs are effective.
- Discuss oversight programs with RL staff who perform environmental, safety, and health (ES&H) management and supervision assignments.
- During interviews, verify understanding of line management responsibility for safety and understanding of clear roles and responsibilities.

Observations

Observe selected facility representative, SME and RL staff oversight activities.

OBJECTIVE

DOE.5 - DOE procedures and mechanisms are effectively implemented to ensure that hazards are analyzed, controls are developed, standards are appropriately selected and managed, authorization basis documents are developed and implemented, and that Authorization Agreements meet DOE requirements. Verify that RL line managers are using these processes effectively, consistent with DOE M 411.1-1, *Safety Management Functions, Responsibilities, and Authorities Manual (FRAM)*; and Functions, Responsibilities, and Authorities (FRA) requirements.

Criteria:

1. RL processes and/or mechanisms are in place to ensure that the contractor's hazard analysis covers the hazards associated with the work.
2. RL procedures and/or mechanisms are in place in which RL directs the contractor to establish a process and propose facility or activity-specific standards tailored to the work and the hazards. RL procedures require that appropriate safety requirements in necessary functional areas are included in contracts.
3. RL procedures and/or mechanisms are in place that direct contractor preparation of the authorization basis documentation and oversee the implementation by the contractor. Procedures for development, review, approval, maintenance, and utilization of Authorization Agreements are implemented.
4. Contractor procedures and/or mechanisms are in place to effectively and accurately implement all aspects of the Authorization Basis.

Approach:

Record Review

- Review RL procedures for ensuring that adequate provisions are included for verification that hazards are properly identified, analyzed, and categorized.
- Review the approved and in-process hazard analysis documentation to verify that contractor procedures and mechanisms have been properly reviewed and approved.
- Review RL procedures that specify the process to be followed for the review and approval of standards and hazard controls. Ascertain that RL has approved the process used by the contractor to tailor the selection of standards and requirements.
- Review the process used for the review, approval, and implementation of Authorization Basis documentation, including authorization protocols and agreements.
- Review the RL 98-1 site report and a sampling of RL legacy issues.

Interviews

- Interview selected RL personnel responsible for the review and approval of the results of the contractor's identification, analysis, and categorization of hazards to assess their understanding of the procedures and the underlying principles and requirements.
- Interview RL personnel responsible for the review and approval of the standard selection process including the approval of the authorization protocols and agreements.
- Interview RL personnel responsible for administering the issues management program and those RL line managers who provide oversight of the contractor's self-assessment programs.
- Interview selected RL line managers and safety personnel to discuss how particular issues were handled and whether any problems were identified in the process. If problems were identified, how were they addressed, and are there any recommendations for improvement in the process. Also, the process for reviewing and applying lessons learned at other sites will be discussed.

Observations

Observe the programs, processes, and mechanisms identified in practice.