



The Deputy Secretary of Energy

1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 586-5500 • FAX (202) 586-0148

June 3, 1998

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, D.C. 20004

Dear Mr. ^{John}Chairman:

This letter forwards a report outlining the Department of Energy's program for assessing work performance and tracking related to corrective actions, as requested in your letter of March 20, 1998. The Department recognizes that these activities are an essential feature of our integrated safety management system.

We are committed to strengthening our use of feedback and operating experience so as to improve the safety of our operations. Our path forward, as described in the attached report, focuses on four areas: 1) accelerating implementation of DOE Policy 450.5; 2) improving the Department's tracking and follow-up processes; 3) improving the Department's Lesson Learned processes; and, 4) improving implementation of the Department's Functions, Responsibilities, and Authorities Manual. Mr. Richard Crowe, Director of the Department's Safety Management Implementation Team, and other senior DOE managers will be ready to discuss our path forward at the June 24, 1998, quarterly meeting.

We appreciate your advice and support. If you have questions, feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Betty".

Elizabeth A. Moler

Enclosure



DOE Report Addressing Feedback and Improvement Processes

The Department is strengthening the use of feedback and operating experience as an integral part of Integrated Safety Management (ISM). The Department's commitment to continuous feedback and improvement is consistently evident in the governing policy and direction for implementing ISM. This includes the April 1996 implementation plan for Defense Nuclear Facilities Safety Board (the Board) Recommendation 95-2, the October 1996 safety management policy (DOE P 450.4), and the November 1997 safety management guide (DOE G 450.4-1). The Department has built a solid foundation of rules and directives that mandate assessment, feedback and improvement, and corrective action programs throughout DOE headquarters, field, and contractor organizations.

Further, DOE acquisition regulation clauses for ISM, codified at 48 CFR 970, require assessment of contractor performance to include appropriateness of award fees, and direct the contractor to develop assessment, feedback and improvement, and corrective action programs as part of their safety management system description. The ISM clauses are now contained in 28 major operating contracts, and are actively being negotiated into nine others to be implemented in Fiscal Year 1998.

Nonetheless, the Department acknowledges the issues raised by the Board in Chairman Conway's March 20, 1998 letter to Deputy Secretary Moler. In response, the Department has collected information relative to the feedback and improvement core function from the following field and program offices, which were also involved in responding to the Board's December 23, 1997 information request:

- Office of Defense Programs
- Office of Environmental Management
- Office of Environment, Safety and Health
- Albuquerque Operations Office
- Idaho Operations Office
- Nevada Operations Office
- Oakland Operations Office
- Oak Ridge Operations Office
- Rocky Flats Field Office
- Richland Operations Office
- Savannah River Operations Office

The attached binder provides the full responses by the field and program offices, in response to the Board's reporting requirements. In each case, the cognizant manager from the office has approved the submittal. A wide variety of different mechanisms are employed at the contractor, line, and independent oversight levels to accomplish the feedback and improvement function. A summary of the field and program office responses is also provided.

Continuous improvement is accomplished through a series of assessments and follow-up corrective actions. After initial assessments and corrective action implementation, subsequent assessments review both the effectiveness of prior corrective actions as well as additional areas that merit attention as identified through prior assessments, operational awareness, occurrence reports, performance indicators, emerging vulnerabilities, and lessons learned at other facilities. Continuous improvement requires a commitment to the values of excellence, continuous learning, and critical self-evaluation.

Conclusions

There is a solid foundation of rules and directives that mandate feedback and improvement programs. The Department's overall framework of rules and directives, including associated manuals and guidance documents, is adequate for driving the feedback and improvement function. Numerous data streams of feedback and improvement information are available throughout the Department to support informed decision-making and effective management assessments. The emphasis for further improvement needs to be on effective implementation, integration, tracking and closure, at all levels, within the existing framework.

Contractors are implementing a variety of feedback and improvement mechanisms. There is evidence that the necessary frameworks for self-assessments and quality improvement processes are being developed and implemented. Within these frameworks, contractors are implementing and improving the effectiveness of their programs. Whereas previous contractor programs may have tended to downplay safety-significant deficiencies to protect award fees, DOE contractors now have incentives to report safety issues and problems to DOE management, correct them, and share lessons more openly throughout the complex.

The Department can further enhance and institutionalize the feedback and improvement function as required within the existing framework of ISM. While a wealth of feedback and improvement data is developed and available, this information is not consistently characterized, analyzed, integrated, prioritized, and communicated within DOE. Tracking and follow-up systems are not consistently in place and integrated with site-wide priorities to ensure timely action is taken. Increased use of computerized information systems can provide an effective tool for DOE line management to monitor multiple data streams of assessment and corrective action information. DOE's line oversight of contractor self-assessment programs, clearly required by DOE Policy 450.5, needs particular, sustained emphasis by both headquarters and field element managers. Until and unless the data are accurately correlated with the work being performed, DOE cannot truly assess performance. Additionally, lessons learned are not aggressively shared and acted upon within or across sites.

The Department is continuing to evaluate the information collected during development of this report. The path forward below represents the key actions identified and agreed-upon to continue progress toward a more effective feedback and improvement function. These actions do not represent a course change, but a renewed emphasis on feedback and improvement activities within the existing ISM framework. The main focus of these actions is effective implementation of defined DOE line management responsibilities. Line management is the only organizational entity that can bring about the changes necessary to implement and sustain safety management.

The Path Forward

The Department will focus on four areas: 1) accelerating implementation of DOE Policy 450.5; 2) improving the Department's tracking and follow-up processes, 3) improving the Department's Lesson Learned processes; and, 4) improving FRAM implementation relative to the feedback

and improvement function. The path forward also makes provisions for reporting on the progress of these activities.

Accelerating Implementation of Policy 450.5

1. The SMIT will obtain status information from line management on their schedules to complete implementation of DOE Policy 450.5. The SMIT will compile overall Department status on DOE Policy 450.5 implementation and provide periodic updates to DOE senior management on this implementation status. The target date for the SMIT to compile an overall Department status on DOE Policy 450.5 implementation is October 1998.
2. The SMIT will coordinate a working meeting with the field and program offices to discuss and share lessons learned and expectations for implementation of a good program for feedback and improvement. For the working meeting, the SMIT will coordinate and develop specific guidance for implementation of feedback and improvement programs. This guidance will address the attributes of a good feedback and improvement program, including the DSC SPAT 15 report developed to support implementation of DOE Policy 450.5. The target date for the working meeting is November 1998.
3. EH will update the ISM training course to incorporate appropriate site specific examples of feedback and improvement. The target date for revising the ISM training course is December 1998.
4. The SMIT will revise the ISM Verification Team Leader's Handbook on evaluating the feedback and improvement function, including the specific Criteria Review and Approach Documents (CRADs) used for verifications. The ISM Verification Team Leader's Handbook was last issued in February 1998 and is reissued on an annual basis. The target date for revising the ISM Verification Team Leader's Handbook on evaluating the feedback and improvement function is February 1999.

Improving Tracking and Follow-up Processes

5. The SMIT will prepare an information request for the field and program offices to report on their management systems used for tracking and following-up on identified deficiencies and corrective actions. This request will encompass all those key mechanisms used for safety management feedback and improvement, including EH independent oversight assessments. The target date for releasing the information request is July 1998.
6. The field and program offices will provide the requested report to the SMIT and the SMIT will compile the results, and make recommendations to line management to increase the effectiveness of tracking and follow-up activities. The target date for compiling the results and providing recommendations is December 1998.

7. Subsequently, EH independent oversight will annually review the progress on increasing the effectiveness of field and program office management systems.

Improving DOE Lessons Learned Processes

8. The SMIT will determine objectives and success criteria for sharing findings and lessons learned for implementing ISM. The SMIT will identify and extract key findings and lessons learned for implementing ISM and implementing DOE Policy 450.5. The SMIT will periodically disseminate and discuss these key lessons learned with the SMIT office points of contact at weekly SMIT meetings. These findings and lessons learned will be culled from Readiness Assessments, Operational Readiness Reviews, ISM Verification Reviews, EH-2 site assessments, and other relevant mechanisms providing safety improvement information. Selected field sites will be identified to present briefings of ISM implementation lessons learned at the next ISM Lessons Learned workshop. The target date to define objectives and success criteria, and to begin disseminating and discussing lessons learned on ISM implementation in accordance with those objectives and criteria is July 1998.
9. As identified by the Deputy Secretary at the field managers meeting in April 1998, the DSC, with the support of the SMIT, will develop guidance on improving lessons learned programs for the complex. This guidance will build on the existing foundation of ongoing lessons learned efforts and focus on improved effectiveness. EH will revise the ISM Guide by January 1999 to incorporate this additional lessons learned guidance as well as the the additional guidance developed on feedback and improvement associated with DOE Policy 450.5 implementation.

Improving FRAM Implementation

10. The SMIT will perform an analysis of DOE functions, responsibilities, and authorities for safety feedback and improvement, as contained in the existing FRAMs. The SMIT will also compile current implementation status of these functions, responsibilities, and authorities. The SMIT will provide associated recommendations to Line Management for improving the FRAMs and their implementation. The target date for the SMIT to analyze the FRAMs and provide recommendations is December 1998.

Reporting on Improvement Actions

The Director, SMIT, will present a status of implementation of these actions to the Deputy Secretary by December 1998. In addition, the SMIT will present the status of these actions at the first quarterly public meeting with the Board in Calendar Year 1999. Finally, the SMIT will be prepared to present the status of these four key areas in the Department's path forward at a subsequent DOE Safety Management Leadership Forum.

FEEDBACK AND CONTINUOUS IMPROVEMENT



June 3, 1998

**Report prepared in response to a March 20, 1998,
reporting requirement from the Defense Nuclear Facilities
Safety Board, pursuant to 42 U.S.C. 2286b(d)**

INDEX

Tab A	Summary of Field and Program Responses
Tab B	Office of Environment, Safety and Health Response
Tab C	Technical Bulletin 97-2 ES&H Lessons Learned Programs
Tab D	Office of Defense Programs Response
Tab E	Office of Environmental Management Response
Tab F	Albuquerque Operations Office & Contractor Response
Tab G	Idaho Operations Office & Contractor Response
Tab H	Nevada Operations Office & Contractor Response
Tab I	Oak Ridge Operations Office & Contractor Response
Tab J	Oakland Operations Office & Contractor Response
Tab K	Rocky Flats Operations Office & Contractor Response
Tab L	Richland Operations Office & Contractor Response
Tab M	Richland Operations Office & Contractor Response
Tab N	Savannah River Operations Office & Contractor Response

SUMMARY OF FIELD AND PROGRAM RESPONSES

In response to the Board's letter of March 20, 1998, the Department has collected information relative to the feedback and improvement core function from the following field and program offices, which were also involved in responding to the Board's December 23, 1997 information request:

- Office of Defense Programs
- Office of Environmental Management
- Office of Environment, Safety and Health
- Albuquerque Operations Office
- Idaho Operations Office
- Nevada Operations Office
- Oakland Operations Office
- Oak Ridge Operations Office
- Rocky Flats Field Office
- Richland Operations Office
- Savannah River Operations Office

The following is a summary of field and program office responses regarding contractor self-assessments and DOE line management assessments.

I. CONTRACTOR SELF-ASSESSMENT

In addition to the Department's safety management policy and guide, several other key Department directives establish clear requirements and expectations for contractor self-assessment. Principle among these are DOE Policy 450.5, "Line Environment, Safety and Health (ES&H) Oversight," and 10 CFR 830.120, "Nuclear Safety Management, Quality Assurance Requirements."

A. Programs In Response to DOE Policy 450.5 and 10 CFR 830.120

The following contractors have acknowledged that they have developed and are implementing assessment and feedback programs as required by DOE Policy 450.5 and 10 CFR 830.120:

- Los Alamos National Laboratory (LANL)
- Mason and Hanger Corporation (MHC)
- Sandia National Laboratories (SNL)
- Lockheed Martin Idaho Technologies Co. (LMITCO)
- Bechtel Nevada
- Lawrence Livermore National Laboratory (LLNL)
- Bechtel Jacobs Company LLC
- Lockheed Martin Energy Research Corporation (LMER)
- Lockheed Martin Energy Systems, Inc. (LMES)
- Kaiser-Hill (K-H)
- Fluor Daniel Hanford (Fluor)
- Westinghouse Savannah River Corporation (WSRC)

The Department's current evaluation is that some of these programs are robust and meet the needs of ISM, while others are in various stages of evolution and implementation roll-out. The follow-up activities described in the path forward for this report encompass actions that will focus further Department attention on evaluating the effectiveness of these contractor programs.

Contractor Self-Assessments. DOE Policy 450.5, "Line Environment, Safety and Health Oversight," requires a robust, rigorous, and credible contractor ES&H self-assessment program which is linked to the DOE Safety Management System and addresses the following elements: performance measures and performance indicators; line and independent evaluations; compliance with applicable requirements

(rules, regulatory standards, contract terms); data collection, analysis, and corrective actions; and continuous feedback and performance improvement.

Programs developed and implemented which satisfy DOE Policy 450.5 fall into three main categories:

- Internal Independent Assessments
- Safety Self-Assessment - by function and organization - at management, supervisor, and employee levels
- Management Self-Assessments - management walk-arounds, field surveillance reviews, and event critiques

The criteria for formality of assessments, qualifications of assessors, and documentation of review processes and results are established for different organizational levels. In general, internal independent assessments are more formal, employing dedicated and trained auditors, augmented by subject matter experts, and use more rigorous planning, preparation, and documentation standards. Management and safety self-assessments tend to be more frequent, more informal, and closer to the working level, but contract personnel appear most likely to take ownership and make changes from self-assessments.

Self-assessments focus on a combination of compliance with requirements (rules, regulations, contract terms) and overall performance and customer satisfaction. Contractors use a variety of approaches to define the scope of their self-assessment programs. For example, MHC targets their self-assessments based on trends, special emphasis areas, vulnerabilities, and risk. Many contractors report that assessment frequency is commensurate with hazards.

Many contractors are actively moving to strengthen their self-assessment capabilities and performance. For example, LANL is developing and providing training to increase the effectiveness of its management walk-around program and SNL is developing self-assessment questions for each section of their ES&H Manual.

Quality Assurance Programs. 10 CFR 830.120, "Nuclear Safety Management, Quality Assurance Requirements," requires that contractors establish and implement quality improvement processes and conduct management assessments. Specifically, 10 CFR 830.120 (c)(1)(iii) states,

"Processes to detect and prevent quality problems shall be established and implemented. Items, services, and processes that do not meet established requirements shall be identified, controlled, and corrected according to the importance of the problem and the work affected. Correction shall include identifying the causes of problems and working to prevent recurrence. Item characteristics, process implementation, and other quality-related information shall be reviewed and the data analyzed to identify items, services, and processes needing improvement."

Further, 10 CFR 830.120 (c)(3) states,

"(i) Management Assessment. Managers shall assess their management processes. Problems that hinder the organization from achieving its objectives shall be identified and corrected. (ii) Independent Assessment. Independent assessments shall be planned and conducted to measure item and service quality, to measure the adequacy of work performance, and to promote improvement. The group performing independent assessments shall have sufficient authority and freedom from the line to carry out its responsibilities. Persons conducting independent assessments shall be technically qualified and knowledgeable in the areas assessed."

In general, self-assessment programs consistent with 10 CFR 830.120 exist and are being implemented. These quality programs are relatively mature, as the quality requirements in DOE Order 5700.6C had been in place for many years. As LMER observes, the challenge to implementing successful programs involves establishing an environment, where personnel have the freedom to, and are expected to, identify potential problems, non-conformances, and improvements without fear of reprisal. Contractor programs meeting 10 CFR 830.120 include:

- Quality Management Plans and Programs
- Non-Conformance and/or Deficiency Reporting Systems
- Root Cause Analysis Programs
- Corrective Action Programs and Issues Management Systems
- Management Safety Boards
- Process Deficiency Resolution System
- Quality Alerts, Green Cards, and Stop Work Programs

Additional Self-Assessment Programs. In addition to the self-assessment programs mentioned above, DOE contractors identified a host of other feedback and improvement mechanisms which they employ to varying degrees to improve their safety performance:

- Occurrence Reporting and Follow-up
- Lessons Learned Programs
- Performance Indicators Programs
- Performance Measures Programs
- ES&H Data Trending, Tracking, and Reporting
- Employee Concerns and Suggestion Programs
- Enhanced Work Planning
- Readiness Assessments and Operational Readiness Reviews
- Integrated Safety Management
- Price-Anderson Amendments Act Reporting and Follow-up
- External reviews by state and federal government bodies

Several contractors indicated that they had integrated issue management and tracking systems. These systems encompass a variety of functions including issue reporting, categorization, issue analysis, causal analysis, action disposition, action management, prioritization, verification, validation, and closure tracking. Examples of these systems include the Site-Wide Action Tracking (AT) system used by MHC; the Site Item Reportability and Issue Management (SIRIM) system used by WSRC; and the Computerized Requirements Evaluation, Assessment, and Technical Evidence System (CREATES) used by Bechtel Nevada.

Several contractors stressed the need to establish assessment and corrective action priorities and schedules. For example:

- K-H has developed a strategy for integrating subcontractor efforts via a working group which periodically evaluates the "collective significance" of findings and issues identified in the self-assessment process and reports to senior management.
- At Pantex, MHC developed a program which includes all plant divisions and develops an issues listing to provide target areas for future emphasis in self-assessment. Integrated assessment schedules are needed to effectively and efficiently facilitate and respond to the various internal

and external assessments. Where corrective actions require significant expenditure of resources, DOE approval of funding and resource priorities must be obtained.

- K-H uses an integrated Assessment Plan, which is updated biweekly to capture assessment findings, and reviewed quarterly with DOE for prioritization and resource allocation.

B. Evidence of Successful Contractor Self-Assessment Programs

Contractors are implementing a variety of feedback and improvement mechanisms. There is evidence that the necessary frameworks for self-assessments and quality improvement processes are being developed and implemented. Within these frameworks, contractors are implementing and improving the effectiveness of their programs. During 1997, LMITCO at Idaho performed over 2000 assessments, including routine walk-about, with over 75% of those being conducted by managers. They also identified an average of 120 concerns and 100 deficiencies each month through their internal independent assessment program. LMES at Oak Ridge has over 1200 management assessments scheduled for 1998.

The follow-up and corrective action systems for contractor self-assessments are implemented in varying degrees of rigor. There is evidence of successful contractor self-assessment programs. As an example, the WSRC Facility Evaluation Board (FEB) identified weakness in the self-assessment process as a core issue in the 1996 report to the WSRC president. The FEB program has been exported for use at several other sites and has contributed greatly to both improvement in operations and improvement in lessons sharing across the Savannah River Site (SRS).

Contractors are also effectively using information technology to increase their effectiveness in sharing lessons learned. For example, WSRC increased the hit (accesses) rate on their Lessons Learned Home Page to over 2200 per month through recent upgrades. To facilitate widespread dissemination of pertinent ES&H information, SNL created the ES&H Virtual Library web-site. LMITCO implemented its Issues Communications and Resolution Environment (ICARE) on an electronic mail platform to enhance its access and usefulness.

As an example of a contractor initiative, Bechtel Jacobs in Oak Ridge, in response to a Type A accident involving a welding/cutting fatality at Building K-33 in the East Tennessee Technology Park (ETTP, formerly, K-25) site, implemented a more effective safety suggestion program called "I Care—We Care." This new system was developed by workers, and workers administer the program. All contractors report that they are progressing toward the goal of effective assessment and feedback. Contractors acknowledge the need for continued improvement and emphasis on self-assessments and corrective action systems.

Additionally, DOE is aware that many contractors are putting in place site and facility information systems to integrate data on systems, safety documentation, procurement, inventory, compliance documents, work permits and packages, and other information needed to effectively do work, close corrective and maintenance actions, and achieve compliance. These systems can be effective tools for feedback and improvement in maintenance, engineering, and operational functions.

II. DOE LINE MANAGEMENT

DOE maintains awareness of work under its cognizance through numerous ongoing reporting, monitoring and analysis efforts. DOE Order 5700.6C requires field element managers to "ensure the

adequacy of contractor's Quality Assurance Program by performing independent assessments." DOE Policy 450.5 delineates field element responsibilities on oversight as follows:

- Operational awareness of contractor work activities, typically through DOE local line managers and staff such as facility representatives, subject matter experts, and other specialists.
- Review of performance against formally established ES&H performance measures, other ES&H performance indicators, and using contractor self-assessments.
- Review and assessment in support of required readiness assessments, operational readiness reviews, Safety Management System documentation and on-site verification reviews, and authorization basis document reviews.
- A periodic, value-added appraisal of sufficient frequency and duration to confirm the contractor's safe performance of work and the effectiveness of the self-assessment program.
- For-cause reviews, as necessary.

A. Operational Awareness/Facility Representatives

DOE line managers report that operational awareness is maintained through a number of formal and informal mechanisms. Program/project managers maintain continuous operational awareness of their projects and facilities by walking their spaces; conducting periodic status meetings and phone conferences with their contractor counterparts; reviewing periodic status reports and event summary sheets; and performing periodic facility, project, and operations reviews. Program/project managers provide routine feedback to their contractor counterparts calling attention to deficiencies that need to be corrected and identifying performance trends. As an example of effective implementation of ISM principles, the Albuquerque operations office has developed the Site Integration and Control Board to ensure that consistent and clear communication is provided to its site contractors. When necessary, formal feedback mechanisms, such as memorandums are employed. Program/project managers are supported by subject matter experts in the conduct of assessments. DOE operational awareness can be improved through better site-wide programs and integration.

Facility Representative (FR) programs play crucial roles in conducting day-to-day oversight of contractor operations. FR programs are based on DOE Standard 1063-97, "Establishing and Maintaining a Facility Representative Program at DOE Facilities." FRs are trained and qualified and often use written procedures and protocols to structure their work. FR assignments are made based on the hazards, complexity, activity level, and mission importance of DOE facilities. FRs perform field observations, walk-downs, periodic surveillances, document reviews, event reviews, and formal assessments. FRs have been characterized as the "eyes and ears" of DOE line and project managers. FRs are supported by subject matter experts and ES&H personnel as needed. FRs identify deficiencies and areas for improvement, and routinely communicate them to DOE field and program project managers and contractors. FRs also identify proficiencies and strengths. FRs make return facility visits to follow-up on deficiencies and to validate effectiveness of corrective actions. FRs provide periodic reports on open findings and actions.

DOE managers are able to enhance their operational awareness by monitoring extensive sources of available information which provide real-time data or trends pertinent to worker, public, and environmental safety (see also Attachment 2 of Appendix 1), including:

- Occurrence Reporting and Processing System (ORPS),
- Computerized Accident/Incident Reporting System (CAIRS),
- Operating Experience Weekly Summary (OEWS),
- Performance Indicators Data Service (PIDS),

- Radiation Exposure Management System (REMS),
- Medical Surveillance Information System (MSIS),
- Noncompliance Tracking System (NTS),
- Safety Issues Management System (SIMS),
- EH Safety Notices, Alerts, and Bulletins,
- Society for Effective Lessons Learned (SELLS)
- Energy Facility Contractor Operating Group (EFCOG),
- TRADE Occurrence Reporting Special Interest Group (OR SIG)
- Lessons Learned List System (LLLS),
- Daily Operating Events Reports (DOERs),
- Readiness Assessments and Operational Readiness Reviews,
- Integrated Safety Management Implementation Assessments,
- Quality Management Reviews,
- External assessment results (EH, Inspector General, Defense Nuclear Facilities Safety Board, Environmental Protection Agency, General Accounting Office, and other federal and state agencies)

Several field offices report that line managers use tailored issue management systems to help them track and prioritize various operational data and activities. For example, the Kirtland Area Office uses its Kirtland Issues Management System (KIMS) while the Oakland Operations Office uses its Oakland Information Management System (OIMS) to track and manage compliance and performance activities. Operational awareness is further enhanced through DOE program managers and technical support staff participation in Departmental ES&H committees, working groups and other organizational bodies. These cross-organizational interfaces provide further opportunities for DOE to accomplish programmatic coordination, improve communication of policy and performance expectations, gain operational awareness, and share lessons learned and technical information.

B. Periodic and “For Cause” Assessments

Routine assessments are used to evaluate specific technical areas on a periodic basis or when specific milestones are reached. Changes in assessment requirements and reduced resources resulted in efforts to streamline the routine reviews and sharpen the focus on trouble areas. The content, frequency, and the extent of these assessments are determined by observations derived from a number of factors including operational awareness, prior assessments, occurrence reports, performance indicators, corrective action status, management concerns, emerging vulnerabilities, and lessons learned at other facilities. Like contractor self-assessments, DOE line periodic assessments focus on a combination of compliance with requirements (rules, directives, contract terms) and overall performance and customer satisfaction. DOE is in the process of implementing line ES&H oversight required by DOE Policy 450.5 at all levels. Examples of routine/periodic assessments include:

- Conduct of Operations Reviews
- Procurement Quality Reviews
- Chemical Safety Reviews
- Environmental Compliance Reviews
- Fire Protection Reviews
- ES&H Program Reviews
- Quality Assurance Audits
- Operational Readiness Reviews
- Safety Management System Reviews

Many operations offices reported use of a master assessment plan or schedule. This allows them to balance their assessments so they don't overburden the operational personnel. It also allows for control of the periodicity to review whether periodic assessments are occurring at the proper interval.

"For cause" assessments are used to investigate poor performance trends indicating potential for improvement requiring DOE follow-up to protect government interests. These assessments are typically associated with imminent danger to people, property, the environment, or operational integrity. Examples of recent "For Cause" assessments include:

- Electrical Safety Operational Awareness Review at LANL in November 1997
- Fire Protection System Review at the Y-12 Plant at Oak Ridge in November 1997

Headquarters program office personnel support field elements by supplying subject matter experts to augment field assessment teams and by providing targeted technical assessments. In May 1997, such a technical assessment identified weaknesses in the Bioassay Program at Mound. This assessment drove similar reviews performed at the majority of DOE sites. Programmatic concerns were identified and corrective actions are being implemented.

C. Occurrence Reporting/Follow-up

Although typically a "lagging" indicator, occurrence reporting is an important element of ES&H performance oversight and improvement. This long-standing program is defined in Department directives DOE Order 232.1, "Occurrence Reporting," and DOE Manual 232.1-1, "Occurrence Reporting and Processing of Operations Information." The occurrence reporting process addresses two principle objectives: 1) it supports operational awareness by DOE line managers, and 2) it guides reflection and improvement on occurrences that meet an initial reporting criteria. For each occurrence, the ORPS process calls for the root cause to be identified, corrective actions to be developed, and corrective actions to be tracked to closure. The Facility Representatives are often designated as DOE's responsible managers for approving, tracking, and validating completion of corrective actions. Line and program managers also review the occurrence reports to maintain operational awareness, to identify performance trends, and to ensure that lessons are learned.

DOE has made a strong commitment to occurrence reporting as part of an effective safety culture. At headquarters, Defense Programs and Environmental Management review ORPS occurrences on a daily basis. Occurrence reporting provides input into lessons learned programs. For example, the Operational Experience Weekly Summary provides highlights of the most applicable occurrences for review and use at other sites and facilities. Several DOE sites, such as INEEL, SRS, and Hanford, track ORPS performance as part of their performance indicators reports. At some sites, ORPS corrective action status is tracked as a corporate ES&H performance indicator and reviewed by senior management as part of quarterly management reviews with field element managers.

Overall, occurrence reporting is considered an effective mechanism for safety feedback and improvement. It identifies and reviews a large number of occurrences and develops corrective actions to improve safety performance. Corrective actions are tracked and followed to completion. Continued attention is needed to monitor the timeliness of corrective actions and to avoid establishing contract performance measures that encourage contractors to find rationales to avoid making occurrence reports.

D. Vulnerability Assessments/Corrective Action Programs

ES&H vulnerability assessments were DOE-wide reviews to identify and characterize safety problems in DOE's facilities. Major vulnerability assessments include:

- Spent Nuclear Fuel Vulnerability Study, 1993
- Chemical Safety Vulnerability Study, DOE/EH-0396P, September 1994
- Plutonium Vulnerability Study, DOE/EH-0415, November 1994
- Highly Enriched Uranium Vulnerability Study, DOE/EH-0525, December 1996

Corrective actions and milestones were developed by line management for most of the vulnerabilities. Line managers have the responsibility to obtain the necessary resources to complete corrective actions on an appropriate schedule. A failure to effectively address identified vulnerabilities in a timely manner was demonstrated by the Hanford explosion at the Plutonium Finishing Plant in May 1997. The need to balance priorities effectively and to reduce risks is a point reinforced by this event.

E. Accident Investigations/Corrective Actions

Like occurrence reports, accident investigations are "lagging" indicators. Formal DOE accident investigation boards are convened by EH for Type A or by field element managers for Type B investigations in accordance with DOE Order 225.1A, "Accident Investigations," and DOE Guide 225.1A-1, "Implementation Guide for Use with DOE Order 225.1A, Accident Investigations." The objective of this directive is "to prescribe requirements for conducting investigations of certain accidents occurring at the DOE operations and sites; to prevent the recurrence of such accidents; and to contribute to improved environmental protection and safety and health of DOE employees, contractors, and the public."

Accident investigations are conducted by qualified personnel independent of the direct line management involved in the accident and entail a systematic and analytical evaluation of the event to determine the root and contributing causes. Organizations maintain a cadre of trained and qualified personnel to conduct investigations. Teams are augmented by subject matter experts as necessary. In addition to establishing and analyzing the facts of the accident and determining the causal factors, the accident investigation board is also responsible to "evaluate the effectiveness of safety management systems, the adequacy of policy and policy implementation, and the effectiveness of line management oversight as they relate to the accident."

Following the accident investigation, the identified DOE and contractor organizations are responsible for developing and implementing corrective actions to address judgments of need identified in the investigation reports. The convening authority is responsible for approving investigation reports and corrective actions. Cognizant secretarial officer approval of all corrective action plans responding to Type A and B accident investigations is required. Corrective actions are generally monitored in a management tracking system with routine federal oversight for closure. Independent follow-up is conducted by the EH Office of Oversight to verify the completion of approved corrective actions and satisfaction of the identified judgments of need. Examples of recent investigations include:

- Fall Fatality at Radioactive Waste Management Complex TRU Storage Area, INEEL, March 1996
- Electrical Accident with Injury in Building 209, LANL, April 1996
- Electrical Shock at Technical Area 53, LANL, August 1996
- Electrical Shock at TRA-609 Test Reactor Area INEEL, September 1996

- Construction Fatality at the Brookhaven National Laboratory (BNL), June 1997
- Welding/Cutting Fatality at K-33 Building, K-25 Site, Oak Ridge, Tennessee, February 1997
- LANL Accident Follow-up Review, January 1998
- Plutonium Intake by Crane Operator at SRS F-Canyon, 1997
- Curium Intake by Shredder Operator, Building 513, LLNL, 1997
- Leakage of Waste Containers near Kingman, Arizona, December 1997
- PRF Explosion at Plutonium Finishing Plant, Hanford, 1997

Overall, the Department's accident investigation process is considered an effective mechanism for safety feedback and improvement. It is a mature program with clear direction and guidelines for conduct. It effectively identifies and reviews accidents, develops corrective actions to improve safety performance, and provides lessons learned throughout the DOE complex. Corrective actions are tracked through a variety of tracking systems and followed to completion. Continued attention is needed to monitor the timeliness of corrective actions and to avoid establishing contract performance measures that encourage contractors to find rationales to avoid reporting accidents.

F. Validations of Contractor Self-Assessments

DOE Policy 450.5 on line ES&H oversight has, as a cornerstone, a robust, rigorous, and credible contractor self-assessment program. This policy also delineates the responsibility of DOE field elements for providing periodic appraisals of the effectiveness of the contractor self-assessment programs. DOE headquarters program offices are responsible for monitoring the performance and effectiveness of DOE field element and contractor through the review of information and participation in various assessments and appraisals.

As reported by the DOE operations offices, they use an array of methods to validate contractor self-assessment programs, for example:

- spot checks,
- participation in entrance and exit meetings for contractor self-assessments,
- real-time observation of contractor self-assessment in progress,
- review and discussion of individual assessment reports with contractor management,
- review of major assessment reports, such as readiness self-assessments and safety management assessments,
- independent assessment and validation of the results of contractor self-assessments,
- specific assessments directed at evaluating contractor self-assessment processes, and
- year-end performance appraisals.

Field offices reported ongoing efforts being pursued to gain broader sharing of contractor self-assessment results. As DOE Policy 450.5 is a relatively new policy, and initial implementation is ongoing, important opportunities exist for the sharing of good practices and lessons learned among the DOE field elements on reviewing contractor self-assessment effectiveness. The Department Standards Committee (DSC) has an ongoing initiative, Standard Process Action Team (SPAT)-15, which is developing guidance on the attributes of good assessments.

G. Evaluations of Contractor Performance Measures

DOE acquisition regulation (48 CFR 970.5204-2) requires establishment and assessment of contractor performance on an annual basis. Further, DOE Policy 450.5 requires that DOE field elements review contractor performance against formally established ES&H performance measures, and other ES&H

performance indicators. DOE field elements have or are formulating performance measures as part of their contracts with their M&I and M&O contractors. These performance measures or expectations are negotiated on an annual basis. Annual DOE performance appraisals determine the annual award fees for contractors. These financial incentives are considered significant if correctly used to improve safety and feedback. These appraisals include review and validation of contractor self-assessments against performance measures and independent assessment of contractor performance.

Throughout the year, periodic management meetings are held to review, refine and evaluate site performance against these measures. Safety feedback and improvement is accomplished through these periodic meetings. Some field offices report the use of these performance measures by facility representatives in day-to-day surveillances of contractor activities. Savannah River Operations Office has developed a "Dashboard" application on their executive information system which allows managers to see at a glance contractor progress against performance measures. DOE field offices may also perform for-cause assessments if performance against agreed-upon measures significantly deteriorates.

The performance incentive process encourages contractors to strive for continuous performance improvement. DOE is on a learning curve in engaging the contractors in performance-based work. One challenge in the use of performance measures is finding the right balance between measures that assure major milestones are achieved and ones that ensure that they are achieved in a safe manner. More accurate coupling of performance data with the work being conducted will enhance the Department's understanding of trends in safety performance. Quarterly management reviews provide a top-level management review of program performance, including use and evaluation of ES&H corporate performance indicators.



Department of Energy

Washington, DC 20585

June 3, 1998

Memorandum For: Richard Crowe, Director
Safety Management Implementation Team

From: Peter N. Brush
Acting Assistant Secretary
Environment, Safety and Health

A handwritten signature in black ink, appearing to read "Peter N. Brush", written over the typed name.

Subject: IMPLEMENTING THE FEEDBACK AND IMPROVEMENT
FUNCTION OF INTEGRATED SAFETY MANAGEMENT

In response to your memo of March 31, 1998, the attached summary provides information on two subjects:

- Framework of Rules and Directives mandating feedback and improvement; and
- DOE Independent, Internal Oversight.

Should you have any questions on this material, please do not hesitate to contact me.



FRAMEWORK OF RULES AND DIRECTIVES

The Department has built a solid foundation of rules and directives that mandate assessment, feedback and improvement, and corrective action programs throughout DOE headquarters, field, and contractor organizations. Table 1 cites requirements for these types of programs found in numerous rules and directives and their implementing manuals and guidance documents. The Department has established a strong framework for the feedback and improvement core function of Integrated Safety Management.

Likewise, there are numerous existing data streams of feedback and improvement information that are available throughout the Department to support informed decision-making and effective management assessments. Table 2 identifies and describes some of these key sources of feedback and improvement information. The presence of multiple data streams requires that the Department understand the strengths and limitations (including reliability and completeness) of these various data streams, and determine how much and in what combination each source of data should be used to improve safety performance.

DOE INDEPENDENT, INTERNAL OVERSIGHT

The EH Office of Oversight is responsible for independent oversight of DOE's ES&H and nuclear safeguards and security (S&S) programs. Its mission is to ensure that the Secretary and Departmental and contractor management have a comprehensive understanding of the effectiveness of these programs. The mission is accomplished by conducting integrated safety management evaluations, safeguards and security inspections, special studies, and the day-to-day monitoring activities by the office's EH Residents located at key sites.

The Office of Oversight is also responsible for DOE's accident investigation program, and is specifically charged with verifying completion of approved corrective actions and satisfaction of judgements of need identified in Type A and Type B accident investigations.

Responsibility for tracking and correcting the weaknesses and deficiencies identified by oversight activities rests with the Department's line managers.

A. Follow-up Actions Taken with Respect to Findings and Observations

Follow-up is one of the most important functions of the Office of Oversight. Follow-up actions are specifically designed to determine the effectiveness of actions taken to correct weaknesses identified from oversight evaluations or accident investigations. Follow-up is conducted in the following three ways.

EH Site Residents and Oversight Integration Teams. Through daily site observations and surveillances, the EH Residents are the headquarter's link for ES&H and S&S programs. The EH Residents are the front line of defense in ensuring that acceptable safety management programs are in place and that workers, the public and the environment are protected. This

presence also facilitates the reporting of on-the-ground, real-time information on problems as they arise.

The Office of Oversight has also empaneled permanent, matrix-type teams charged with maintaining the expertise and information needed to perform follow-up activities at individual DOE sites and facilities. As their name suggests, they perform an important integrating function, bringing together information from within DOE and from external sources. The teams also coordinate closely with the oversight analysis group, a core team of analysts solely dedicated to the analysis of data collected by oversight activities and available from Departmental databases and other sources. Currently, teams are in place for:

- | | | | |
|----------------|---------|---------|----------|
| · ANL-East | · INEEL | · ORNL | · SNL-CA |
| · ANL-West | · KCP | · ETTP | · SNL-NM |
| · BNL | · LLNL | · Y-12 | · SRS |
| · FEMP | · LANL | · PTX | · YMP |
| · Hanford/PNNL | · MEMP | · RFETS | |

The teams receive technical direction and guidance from a steering committee, which includes the four Oversight office directors and team leaders of the analysis and information management control groups. The steering committee receives policy and management direction from the Oversight deputy assistant secretary and associate deputy assistant secretary. Team members maintain contact with the appropriate Headquarters staff, field points-of-contact, and individuals associated with organizations external to DOE, such as the Board, the General Accounting Office, and the Environmental Protection Agency.

The oversight integration teams identify and prioritize issues and problem areas and propose follow-up actions. The priorities of these follow-up issues and actions are approved by the steering committee, and are used to aid scheduling of follow-up reviews, EH resident surveillances, and other follow-up evaluations (such as by the Office of Security Evaluations). Prioritization involves ranking the issues at each site based, in part, on a determination of the significance of each issue according to relative risk (as it relates to DOE's guiding principles for safety management). Issue ranking is done through consensus of the integration team to quantify the relative standing of the issues based on greatest or lowest hazard or impact. The results of this process guide the development of follow-up recommendations.

Site-Specific Follow-up Reviews. Follow-up field reviews are usually carried out by the site integration teams. At sites that have them, follow-up activities are conducted by residents in coordination with the integration teams. Based on the issues previously identified, the teams prepare strategies for each site, including recommendations regarding methods and milestones for follow-up activities, which could consist of surveillances conducted by the residents, or simply checking the status of corrective actions by contacting points-of-contact at field sites or DOE headquarters. Resources are allocated and preparations are made for visiting the applicable field or, if necessary, headquarters element(s).

The Office of Oversight has, thus far, completed three follow-up reviews:

- **Rocky Flats.** The Rocky Flats follow-up review focused on vital safety systems and authorization basis at Buildings 371 and 771, as well as plutonium vulnerabilities, which were areas of major concern during the March 1995 Safety Management Evaluations. Although progress had been made, management emphasis on vital safety systems was needed in Building 371, where increased redundancy could improve the reliability of the building. Also, continued management attention to relating the facility authorization basis to the building's physical condition is necessary to maintain safety.
- **INEEL.** The accident investigation follow-up review at INEEL revealed that, in some cases, corrective action programs were being improved, but were not yet fully effective. Progress was achieved more through individual or facility initiatives than through formalized changes to site-wide procedures and requirements.

The review also determined that contractors were not being held accountable for corrective actions. With regard to the fatal fall accident, the corrective actions had been closed; however, several lessons learned based on judgments of need had not been applied to subcontractor operations. Most notably, the medical surveillance program to ensure subcontractor fitness for duty and the line oversight programs for subcontractors had not been effectively implemented.

Marked improvement in safety awareness, however, was noted at all levels. Personnel interviewed were familiar with both the fatal fall and the electrical shock accident and were factoring the realization of those incidents into their work activities.

- **LANL.** The follow-up review at LANL disclosed that, although a good foundation for improving safety was being established, benefits of progress made at the institutional level had not been fully realized at the facility and activity levels. Two years after a serious electrical accident, the electrical safety program did not provide adequate assurance that electrical work would be performed in accordance with effective procedures at all facilities and activities.

The follow-up review found that one of the most significant deficiencies identified in the accident investigations, as well as in the Office of Oversight safety management evaluation --developing and adhering to procedures --was still a significant problem. Other deficiencies that needed to be addressed included inconsistencies and discrepancies in the work planning and control procedures and insufficient rigor in the hazards screening and analysis processes.

EH Resident Issues Weekly Report and Site Profiles. A summary of the EH Resident issues report is provided to DOE managers on a weekly basis. The residents routinely track the most significant issues and findings, as well as the status of their corrective actions. The current status of issues and findings can also be found in the site profiles.

The integration teams collect, evaluate, and validate data to develop an accurate picture of ES&H and S&S performance at the site. The most significant issues and findings, including the status of corrective actions, are documented in the Office of Oversight's twenty site profiles. Site profiles have been prepared for each of the above-listed sites which have oversight integration teams. The profiles are revised twice each year, with the next revision available in June 1998.

Additionally, in developing the site profiles and in conducting follow-up reviews, the teams determine the effectiveness of the line organizations to monitor status to closure. For example, the accident investigation follow-up review at INEEL, discussed above, revealed that in some cases corrective action programs were being improved, but were not yet fully effective.

B. Information Tracking Systems

Data tracking systems are important because the oversight integration teams must collect and evaluate information from all available data sources, identify site-specific performance trends and vulnerabilities in order to develop site profiles.

Over the past year, the Office of Oversight has been able to develop a software tool designed to organize site ES&H information around the ISM framework. When fully implemented, this approach will enable EH to obtain and analyze, at various sites, up-to-date safety information electronically, including the status of corrective actions. The software tool is designed to facilitate access to information located behind a site's "firewall" without jeopardizing the security of the site's network.

The concept and software have been piloted at Pacific Northwest National Laboratory with excellent results. Currently, the ES&H staff at Fluor Daniel, Hanford, BNL, LANL, and at Sandia are working with the Office of Oversight to take advantage of the concept.

C. Obstacles and Resolution Mechanisms

As a matter of routine, the Office of Oversight evaluation and follow-up review teams brief line management at the site, operations and field offices, program offices, Congressional sub-committee staff, and the Board on the results of evaluations and follow-up reviews.

When the Office of Oversight and line management cannot resolve issues regarding significance or the priority of corrective action, the issues are elevated to successively higher levels of management, as well as briefed to Congressional committee staff. Regardless of whether there is agreement on the significance or priority of corrective actions regarding issues uncovered during its evaluations, the Office of Oversight continues to find cases in which the corrective action taken has not been sufficient.

Table 1 -- Rules and Directives That Mandate Assessment, Feedback and Improvement, and Corrective Action Programs

Category	Citation	Requirement	Description
Integrated Safety Management	P 450.4 G 450.4-1	Feedback & Improvement, Oversight, Corrective Action	Core Function #5: Provide Feedback and Continuous Improvement. "Feedback information on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, line and independent oversight is conducted, and, if necessary, regulatory enforcement actions occur...the process should ensure corrective actions are effective in establishing a state of readiness."
	48 CFR 970 (DEAR ISM Clause)	Assessment, Feedback & Improvement, Corrective Action	"...plans shall be developed to facilitate the assessment of contractor performance and ensure the appropriateness of any award or incentive fee payment...the (safety management system) shall describe how the contractor will...provide feedback on adequacy of controls and continue to improve safety management...the contractor has the responsibility to take corrective action. The Heads of Contracting Activities will assure that the contracting activity maintains a listing of...required corrective actions..."
Safety Management Functions, Responsibilities, & Authorities	P 411.1 M 411.1-1	Assessment, Feedback & Improvement, Corrective Action, Lessons Learned, Oversight	"the management system should contain processes that continuously improve...safety, quality...and efficiency (management is responsible to) direct contractors to develop a lessons-learned program...direct contractors to report occurrences...(and) oversee...ES&H reporting at the site...(and) perform assessments...to identify areas (of) improvement."
		Oversight	EH responsibilities: "Perform independent oversight of line management to assess success of the...safety management system...report the results of independent oversight activities to the Secretary, Congress, CSOs, FEMs, and contractors."
Line Environment, Safety & Health (ES&H) Oversight	P 450.5	Assessment, Oversight, Feedback & Improvement, Corrective Action, Verification	"A robust, rigorous, and credible contractor ES&H self-assessment program...includes: ...line and independent evaluations...data collection, analysis, corrective actions, continuous feedback and performance improvement...field elements...(shall) review and assess performance...Headquarters line functions of ES&H oversight are: monitor field element and contractor performance through the review of information... participate in field...appraisals, assessments, surveillances, and walkthroughs of contractor facilities...conduct reviews of field performance, including verification."
Occurrence Reporting	O 232.1A M 232.1-1A	Assessment, Feedback & Improvement, Lessons Learned, Corrective Action	"Managers...ensure that lessons learned are identified...review and assess reportable occurrence information...ensure that...reports and operations information are disseminated...and are reviewed for generic implications...to improve operations...the facility manager shall keep the status of...corrective actions...on the ORPS data base. "

Table 1 -- Rules and Directives That Mandate Assessment, Feedback and Improvement, and Corrective Action Programs

Category	Citation	Requirement	Description
Performance Indicators & Operations Analysis	O 210.1 G 210.1-1	Assessment, Feedback & Improvement, Lessons Learned, Corrective Action	"DOE elements...and contractors shall establish a program that identifies, gathers, verifies, analyzes, trends, disseminates, and makes use of ES&H performance indicators...to base decisions, establish goals, identify...trends...problems...apply lessons learned...and implement feedback mechanisms for identification and communication of ES&H good practices, lessons learned, and corrective actions."
Accident Investigations	O 225.1A G 225.1-1	Lessons Learned, Corrective Action Plans	"Lessons learned from the accident investigation are...disseminated DOE-wide within 90 days...corrective action plans are completed, and corrective actions are implemented..."
Nuclear Safety Management -- Quality Assurance	10 CFR 830.120 O 5700.6c O 414.1 (draft) G 830.120 G 414.1-1 G 440.1-6 G 120.1-5 ASME NQA-1 ASQC Q9001	Assesment, Feedback & Improvement, Corrective Action, Follow-Up	"Managers shall assess their...processes...problems...shall be identified and corrected... Independent assessments shall be planned and conducted to measure item and service quality...the adequacy of work performance, and to promote improvement...Processes to detect and prevent...problems shall be established and implemented. Items, services...processes that do not meet...requirements shall be identified, controlled, and corrected according to importance...Correction shall include identifying...causes of problems and working to prevent recurrence...information shall be reviewed and data analyzed to identify items, services, and processes needing improvement...follow-up...should be performed to verify the effectiveness of corrective action..."
Startup and Restart of Nuclear Facilities	O 425.1	Independent Review	"The facility shall be started up (or restarted), only after independent reviews of readiness have been conducted..."
		Lessons Learned	"...there shall be a "Lessons Learned" section of the...report that may relate to design, construction, operation, and decommissioning of similar facilities and future...efforts."
Conduct of Operations	O 5480.19	Assessment	"Line organizations assess the effectiveness of corporate directives, plans, or procedures at facilities under their cognizance...and assess the effectiveness of their implementation..."
Nuclear Explosives Operations Safety	O 452.2A	Lessons Learned	"DOE and DOE contractors and laboratories shall evaluate the safety lessons to be learned from critical evaluations of operating experience and other sources of evidence..."
Defense Nuclear Facilities Safety Board	M 140.1-1	Action Tracking	Safety Issues Management: "...actions items shall be tracked and managed at the Departmental level where the action items are undertaken."
ES&H Policy	P 450.1	Feedback & Improvement	"Fundamental to the attainment of (excellence is) continuous improvement...we will encourage and promote the sharing of environment, safety and health information."

Table 1 -- Rules and Directives That Mandate Assessment, Feedback and Improvement, and Corrective Action Programs

Category	Citation	Requirement	Description
ES&H Reporting	O 231.1 M 231.1	Feedback & Improvement	"...ensure collection and reporting of information on environment, safety and health that is ...essential for evaluating...operations and identifying opportunities for improvement..."
Training	O 360.1	Self-Assessment	"Headquarters and field...offices shall conduct...self-assessments of the implementation of the technical qualification program..."
Radiation Protection	10 CFR 835 P 441.1	Audits	"Internal audits...shall be conducted no less frequently than every three years..."
Management Control Program	O 413.1 31 USC 3512	Corrective Action Plans	"...action plans shall...incorporate results of trend analysis...to identify and correct...deficiencies...identify corrective action critical milestones that portray...steps to rectify the problem, its root cause, and any deficiencies...identified through trend analysis."
Packaging & Transportation Safety	O 460.1A	Lessons Learned & Corrective Action	"Environmental Management (shall) support sharing of packaging and transportation safety successes, problems, and corrective actions...through...an effective lessons learned program...field offices (shall) support...programs to share...safety successes and problems."
Worker Protection Management	O 440.1A M 440.1-3 G 440.1-6	Lessons Learned	"DOE elements and contractors (shall) conduct trend analysis and issue lessons learned...and collect and disseminate information of suspect/counterfeit parts..."
		Assessment	"DOE and its contractors (shall) use exposure assessment data to trigger reporting of incidents (and) establish specific performance measures relating to control of hazards..."
Emergency Management	O 151.1 G 151.1-1	Corrective Action, Lessons Learned	"The emergency management program shall include a system to track and verify correction of findings or lessons learned from training, drills, exercises, and actual responses."
NEPA Compliance Program	O 451.1A	Lessons Learned and Improvement	"DOE's NEPA compliance program shall include...a system for reporting lessons learned and encouraging continuous improvement."

Table 2 – Feedback and Improvement Data Streams

Type	Data Stream	Description
Operating Experience	Occurrence Reporting & Processing System (ORPS)	ORPS is a computerized system for occurrence reporting required by O 232.1. DOE's occurrence reporting program makes occurrence information available for analysis and identification of generic implications and operational improvements.
	Computerized Accident & Incident Reporting System (CAIRS)	CAIRS is used to collect and analyze DOE and contractor reports of injuries, illnesses, and other accidents that occur during DOE operations.
	Operating Experience Weekly Summary (OEWS)	OEWS encourages exchange of operating experience among the DOE complex, the commercial nuclear industry, and international nuclear safety organizations.
Performance Indicators	Performance Indicator Data Service (PIDS)	PIDS is an interactive site where users access the quarterly ES&H report on worker safety and health and environmental indicators. The report presents collection and analysis of ES&H data that focuses on general characterization and trends.
	Radiation Exposure Monitoring System (REMS)	REMS is a centralized radiation exposure database which includes occupational radiation exposure data for all individuals (DOE personnel, contractors, visitors) monitored at DOE facilities. The DOE Annual Report on Occupational Radiation Exposure contains data and analysis from the REMS system.
	Medical Surveillance Information System (MSIS)	MSIS converts clinical and demographic information from the DOE occupational medicine programs into a useful relational form to analyze complex-wide worker health trends.
Corrective Actions	Non-compliance Tracking System (NTS)	NTS is a centralized database for the contractor community for reporting and tracking potential violations of nuclear safety requirements. DOE uses NTS to obtain information on the progress that contractors have made in implementing corrective actions.
	Safety Issue Management System (SIMS)	SIMS is a tracking database for all commitments and action items assigned as a result of DNFSB recommendations and Departmental responses.
	Department Audit Report Tracking System (DARTS)	DARTS tracks status of open recommendations made in Office of Inspector General, who uses the database to review the progress of corrective actions from audits and inspections.
	Enforcement Actions and Letters	Enforcement actions in response to the Price-Anderson Amendments Act are in the form of notices of violation. Enforcement letters inform the contractor that DOE will continue monitoring their corrective actions.

Table 2 – Feedback and Improvement Data Streams (continued)

Type	Data Stream	Description
Lessons Learned	EH Safety Notices, Alerts, and Bulletins	.EH publishes Safety Notices, Alerts and Bulletins to communicate safety information to a wide audience. Alerts detail safety-significant events and are signed by the EH Assistant Secretary. Notices and Bulletins provide important information from technical studies that promote “pursuit of excellence”.
	Society for Effective Lessons Learned Sharing (SELLS)	SELLS makes recommendations for continuous improvement to the DOE complex on sharing and utilization of lessons learned information.
	Energy Facility Contractor Operating Group (EFCOG)	EFCOG provides a forum to improve communication; share lessons learned, and disseminate common solutions to problems among contractors. There are 18 active contractor members.
	TRADE Occurrence Reporting Special Interest Group (OR SIG)	The TRADE OR SIG is a network of individuals who strive to enhance the occurrence reporting process and foster utilization of data. There are more than 700 members of the OR SIG from DOE and the DOE contracting community.
	Lessons Learned List Server	The Lessons Learned List Server is an E-mail system that receives and redistributes lessons learned to over 300 DOE subscribers across the complex. Submittals are reviewed and retransmitted to lessons learned coordinators at each site for further distribution.
	Department Standards Committee (DSC)	The DSC is a DOE-wide committee with representation by all headquarters and field elements. The committee assists in implementation and improvement of standards-based ISM approaches.
	RadCon Coordinating Committee (RCCC)	The RCCC is composed of the Department’s headquarters and field radiation protection professionals and serves as a forum to promote and enhance worker radiation protection across the Department.
	Fire Protection Committee (FPC)	The FPC identifies, tracks and resolves fire safety issues through assessments, analysis of ORPS and CAIRS data, and information exchange via the fire protection list server.
Reports	Vulnerability Assessments (Chemical, Pu, HEU, Spent Fuel)	Studies conducted by EH to determine the ES&H vulnerabilities and make recommendations regarding the materials stored at DOE facilities. Management plans were developed by the program and field offices to assign and track corrective actions.
	Accident Investigation Reports (Type A and B)	The Office of Oversight conducts accident investigations and reports and verifies completion of findings and recommendations.
	Integrated Safety Management (ISM) Verification Reports	ISM verification teams perform assessments of contractor’s ISMS description and implementation of the ISM DEAR clause which includes developing specific recommendations for corrective action.
	EH Residents Reports	EH site residents produce weekly reports which provide preliminary information on accidents, events, items for management attention, and status of previously identified safety issues for nine sites across the DOE complex.
	Site Profiles (20 sites)	Site profiles present key ES&H and safeguards and security issues using current information on organizations, facilities, operating status, vulnerabilities, and safety performance.