Fermilab Integrated ES&H Management Plan

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FERMILAB INTEGRATED ES&H MANAGEMENT PLAN
Revision No. 9

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1.0 INTRODUCTION

The Fermilab mission is to advance the understanding of the fundamental nature of matter and energy by providing leadership and resources for qualified researchers to conduct basic research at the frontiers of high-energy physics and related disciplines.

It is the objective of Fermilab management to systematically integrate excellence in environment, safety, and health (ES&H) into the management and work practices of all activities at all levels so that the mission is achieved while protecting the public, the workers, and the environment. This goal is accomplished by ensuring that the overall management of ES&H functions and activities is an integral part of our mission accomplishment. As a function of this integration, it is important to recognize that the use of the word "safety" refers to the reduction or elimination of all hazards, including hazards to health and environment.

This IESHM Plan (IMP) describes the integration process and references the supporting documents that support the Laboratory's IESHM program.

2.0 LABORATORY POLICY AND PROGRAM FOR IESHM

In February 1998 the Director issued the following policy statement:

> "Fermilab employees and users will only conduct work and operations in a safe and environmentally sound manner."

The policy applies to all employees, users, research visitors, subcontractors and their sub-tier contractors. All are expected to fully comply with all procedures, instructions and directives contained in the Fermilab ES&H Manual in order to reduce or eliminate hazards in the workplace. It is Fermilab's policy to integrate environment, safety and health protection into all aspects of our work, utilizing the principles and core functions of the Integrated Safety Management System. Every person on site at the laboratory is responsible for ES&H and is accountable for performing all activities in a safe and environmentally responsible manner.

The policy is reaffirmed every year, and has been incorporated into the Laboratory Director's Policy Manual (http://www.fnal.gov/directorate/Policy_Manual.html). Injury prevention goals are established by the Environment, Safety, and Health Executive Committee (ESHEC) every year. Environmental goals and objectives are established annually by the Environmental Protection Subcommittee and approved through the

ESHEC. Success in meeting these goals and the contractual performance measures is monitored by the Director and division/section heads through periodic reports from the Senior Laboratory Safety Officer at the weekly Scheduling Meetings. The policy and goals are found at http://www-esh.fnal.gov/pls/default/lsc.html.

The management systems at Fermilab are designed to satisfy the objectives of Integrated Safety Management as stated in DOE P 450.4, and Environmental Management System (EMS) as stated in DOE O 450.1. Fermilab policies and programs are designed to systematically integrate ES&H into the management and work practices at all levels so that our mission is accomplished while protecting the public, the workers, and the environment.

Evidence of implementation of Fermilab's ES&H program is documented in several manuals; the Fermilab ES&H Manual (FESHM) - http://www-esh.fnal.gov/pls/default/esh_home_page.page?this_page=800), the Fermilab Radiological Control Manual (FRCM) (http://www-esh.fnal.gov/pls/default/esh_home_page.page?this_page=900), and the Emergency Response Plan, etc. The requirements of the program are to be implemented uniformly across Laboratory organizations unless there is a reason for different implementation practices.

Fermilab strives to allow divisions/sections to tailor the Laboratory (institutional) ES&H Program to meet the needs of their organizations when possible. Divisions/Sections participate in the development of institutional programs and considerable effort is made to obtain universal buy-in as Lab programs are developed, so implementation variations are few. Uniformity is imposed where implementation by one organization may have a negative impact on another; e.g., training uniformity is nearly universal, traffic enforcement is universal. There are distinct variations in implementation at the division/section level or activity level only when there is a need because of the nature of the operations.

The Laboratory practice of ensuring that draft ES&H programs receive labwide review ensures that hazard control systems within a specific functional area do not conflict with controls established in other functional areas. This distribution and review allows experts from various disciplines and technical skills to provide input on the proposed ES&H programs before they are adopted.

2.1. Vertical Integration

Vertical integration of the ES&H program is facilitated by the downward flow of information regarding expectations for ES&H program implementation. Vertical integration occurs from management through the organizational lines down to the individual worker. At the same time, vertical integration provides mechanisms for the upward flow of information about problems in implementing the ES&H program. This includes requests for support and resources from the worker and through the organization to supervisors, and/or upper management, as

appropriate. Numerous mechanisms are built into the way Fermilab and DOE conduct business to provide vertical integration of the ES&H Program. For example, establishment of hazard controls starts with Fermilab's Work Smart Standards (WSS), which are integrated into division/section procedures, which are integrated into a lockout/tagout procedure for a specialized piece of equipment.

The downward flow of information takes on many forms from very formal correspondence, audits, and contracts to more informal exchanges through e-mail, Fermilab Today, training, conversations, and walkthroughs. Conversely, many mechanisms have been developed for information to flow upward from the front line workers, to Laboratory management, and to DOE elements as appropriate.

2.2. Horizontal Integration

Horizontal integration is needed to provide for parity (i.e., within an organization, similar controls would be expected for similar hazards and similar work) and compatibility to avoid conflicting requirements among organizations and technical disciplines. For example, coordination meetings and committee meetings not only provide for passing information up and down the chain of responsibility, but also often provide opportunities for program comparisons within the organization.

2.3 Worker Participation

It is understood at Fermilab that implementation of a successful ES&H program cannot be imposed from above. The work will be conducted safely and with minimal environmental impacts only if workers are involved in the process of planning the work to identify potential hazards associated with the work activities. Mechanisms in place to provide for worker involvement include: ES&H committees within the divisions/sections, worker participation in line self assessments, participation on teams that develop draft ES&H policies and programs, participation in the review and comment on draft ES&H policies and programs, participation in the development of and teaching of ES&H training courses, and participation in lessons learned activities.

3.0 OVERRIDING MANAGEMENT PRINCIPLES

3.1 Line Responsibility

Line responsibility has been the cornerstone for the development of the ES&H program at Fermilab. All are responsible for the protection of the public, the workers, and the environment. Within the Laboratory, responsibility for ES&H and hazard reduction at all levels is explicitly defined in the Fermilab ES&H Manual (FESHM) Chapter 1030 starting with the Laboratory Director and

extending to each individual worker. This FESHM chapter goes on to define the detailed ES&H responsibilities of the line organization from individuals through supervisors to division and section heads and on up to and including the Laboratory Director. FESHM 1080 sets forth line responsibility for visiting scientists. Line management responsibility for ES&H has flowed down to subcontractor through the contractual documents.

The foundation of IESHM is line responsibility; i.e., the line organization must have the authority, responsibility, and be held accountable for integrating ES&H into, and as a part of, all of the work that they do. Line responsibility for ES&H is woven into the organizational structure, as well as all aspects of the ES&H program at Fermilab. The Laboratory Director has ultimate responsibility for all aspects of ES&H for all work done under the DOE contract with Fermilab Research Alliance, LLC (FRA) for Fermilab. The Director delegates the ES&H responsibility to the line managers (division/section heads) assigned to carry out the work. The responsibility is further delegated to line supervisors and ultimately to the workers.

3.2 Clear Roles and Responsibilities

As indicated above, FESHM Chapter 1030 identifies the ES&H responsibilities of all laboratory employees. Chapter 1030 also identifies roles and responsibilities of various safety personnel, other staff with special ES&H responsibilities, and users and visitors performing work at or otherwise using the Fermilab facilities.

The FESHM defines responsibilities for all Laboratory employees, experimenters, certain employees trained to perform hazardous tasks, individuals who sponsor special events, supervisors, building managers, spokespersons for experiments, division/section heads, division/section Senior Safety Officers (SSOs), the ES&H Director, the ESH Section, and the Directorate.

When there are special responsibilities (i.e., specific responsibilities above and beyond the general responsibilities described in Chapter 1030), those responsibilities are called out at the beginning of each section of the FESHM. For example, the Associate Director for Operations Support is named the "Facility Manager" for occurrence reporting purposes in FESHM 3010.

3.2.1 Laboratory Director

The Laboratory Director sets ES&H policy, and provides direction on implementation strategies and budgets.

3.2.2 Line Managers

Most line managers (division/section heads) have professional ES&H personnel on their staff to support their implementation of Fermilab's

ES&H program and provide the managers with assessments of the effectiveness of their personnel in implementing Fermilab's ES&H program. The number of ES&H professionals and the nature of their expertise vary depending upon the type of work conducted by the line organization. Laboratory organizations with relatively little ES&H exposure, as an alternative to having their own ES&H personnel, may develop memoranda of agreement with other divisions/sections to supply ES&H expertise as needed. Each division/section has a Senior Safety Officer (SSO). The responsibilities of the SSOs are spelled out in FESHM 1030. Communication with the SSOs, the ES&H Director and other members of the Directorate is facilitated by monthly meetings which all attend.

Division/Section ES&H groups, including SSOs, provide a close link to planning, managing, and performing work safely. Members of these ES&H organizations, as members of that division/section, participate in the work planning, self-assessments, project design, and budgeting activities. The role of these line ES&H organizations is key to integrating ES&H with the work. The SSOs meet on a monthly basis to assure consistent integration of ES&H across organizational boundaries.

Line supervisors are responsible for planning and conducting work safely, and in an environmentally sound manner, consistent with established policy and direction. They are also responsible for assuring that worker training and qualifications are appropriate. Building managers have landlord responsibility for providing a safe infrastructure to perform work. Line workers are responsible for the safe performance of work, including planning and budgeting, hazard identification (e.g., Hazard Assessment Document (HAD), National Environmental Policy Act (NEPA), Safety Assessment Documents (SADs)), work controls (e.g., writing procedures and hazard analyses, and supporting safety committees), and assessments (e.g., Tripartite Self-Assessment Program).

3.2.3 ESH Section

The Director has established a staff organization of ES&H professionals (ESH Section) independent of the line organizations. One function of this group is to provide the Director with an independent assessment of the effectiveness of the line managers in carrying out their responsibilities. This is similar to a corporate ES&H function within commercial organizations. The ESH Section also provides Laboratory-wide ES&H expertise, corporate consistency, support to line divisions/sections, provision of ES&H training and records, environmental monitoring, waste management, and ES&H oversight. In addition, the ESH Section has specified line responsibilities for procurement, maintenance, storage,

monitoring, and development of certain ES&H programs and materials, such as emergency response and instrumentation calibration.

The ESH Director is responsible for advising the Laboratory Director on ES&H matters. That individual serves as the Senior Laboratory Safety Officer (SLSO), the Senior Radiation Safety Officer and the Senior Environmental Safety Officer for the Laboratory.

3.2.4 Environment, Safety and Health Executive Committee (ESHEC)

The ESHEC is a high level committee of senior Laboratory officials whose function is to advise the Director on ES&H/Quality Assurance (QA) policy. Annually, the ESHEC reviews the ES&H policy, progress in meeting current year labwide ES&H goals, and establishes the next-year labwide ES&H goals. Membership of the ESHEC includes the Laboratory Director, who serves as chair, Deputy Director, Associate Directors, and the division/section heads

3.2.5 Laboratory Safety Committee (LSC)

The LSC has been established to provide an avenue for Laboratory employees to advise the Director on ES&H policy and program needs. There is extensive worker participation on the LSC, the LSC subcommittees, and their sub-panels. Over 200 employees participate on these committees. About one quarter are ES&H professionals with varying expertise, the others are physicists, engineers, technicians and other support personnel. The technical expertise harnessed by the subcommittees is crucial to the development of effective technical safety programs and to the technical review of the implementation of those programs. The Chief Operating Officer (COO) is the chair of the LSC. The membership of the LSC and its subcommittees can be found at http://www-esh.fnal.gov/pls/default/lsc.html. FESHM 1030 Technical Appendix (TA) provides a description of the responsibilities of these and other relevant ES&H committees and subcommittees.

The technical subcommittees of the LSC include:

- Cryogenic Safety
- Electrical Safety
- Emergency Preparedness
- Environmental Protection
- Ergonomics
- Fire Hazard
- Industrial Hygiene
- Injury/Illness Prevention
- Mechanical Safety
- Radiation Safety

Senior Safety Officers
Subcontractor Safety
Traffic Safety

3.2.6 Employees

Every employee at Fermilab has responsibility to follow the principles of IESHM in performing the work. Each individual also has the authority and responsibility to stop work, which they feel is not safe or may cause environmental damage.

3.2.7 Visiting Scientists

Visiting scientists who come to Fermilab to conduct work have the responsibility to follow the principles of IESHM through compliance with the FESHM and the FRCM. It is Fermilab policy that each experimenter is accountable to a de facto supervisor who is a member of the experiment line management. Each member of the experiment's line management is accountable to the next higher level of management in their respective experiment. Ultimately, the Spokesperson for the experiment is accountable to the Director.

3.2.8 Subcontractors

Subcontractors working at Fermilab are required to follow the IESHM principle and functions, just as employees and visiting scientists. The principles of IESHM are lowed down contractually though the contract terms and conditions. Hazard analyses are required for all construction projects, and for all high hazard contracted service work. High hazard work is defined in FESHM 7020. For large cost construction items Fermilab requires submittal of a description of the subcontractor's ES&H management systems

3.3 Competence Commensurate with Responsibilities

Clear and unambiguous lines of authority and responsibility for assuring successful ES&H performance have been established at all organization levels. Key management and ES&H positions are filled by appointment by the Director based on knowledge of the skills needed for the position and the competency of the candidates. This includes the division/section heads, ES&H Director, ES&H committee chairs, ES&H committee members, and very importantly, project managers.

The hiring process is viewed as a crucial element in maintaining a competent staff. The requisitioner defines critical skills and physical requirements. Before

employment offers are made, the Laboratory Services Section takes measures to ensure that the candidates meet the qualifications for the position. Promotions and transfers are monitored by the Personnel Office to ensure appropriate requirements are met.

Newly hired employees, and visiting scientists receive a 4-hour ES&H orientation, which includes a section on IESHM and details of Fermilab's environmental management systems. Subcontractor employees receive an orientation, which includes a section on IESHM and an attendance card that lists the IESHM principles and functions. Required ES&H training is specified in the FESHM. Supervisors complete an Individual Training Needs Assessment (ITNA) that identifies all the ES&H training his/her employee is required to take. Supervisors are responsible to ensure employees have a training plan and are fulfilling the requirements. The ES&H Section, division/section ES&H group, and/or the DOE Fermi Area Site (DOE FSO) periodically audit ES&H training materials, courses and training records as part of the tripartite assessment program.

A Performance Review is conducted for each employee every year. The review form has includes goals associated with responsibilities, skills, training, performance and future training needs, and ES&H performance. Both the employee and supervisor comment on each item. Employees and supervisors meet and discuss each item. The next level of management is required to sign the form as validation of the review. Employees are requested to sign the forms as indicating they have participated in the review and are encouraged to note on the form any disagreement with the supervisor evaluation. Division/Section heads review all forms from personnel within their organization. Performance review forms are reviewed by the Fermilab Personnel Office to ensure that there is a follow-up resolution to any problems that are noted.

3.4 Balanced Priorities

The key to balancing priorities is ensuring that those who make the decisions are authorized to do so and that they have accurate information about the nature of the work, the hazards, and appropriate controls. In addition, resources must be effectively allocated to address ES&H, programmatic, and operational considerations.

Research program, administration, and ES&H priorities are discussed each week at the Laboratory Director's Scheduling Meeting. This meeting, attended by the Director, all division/section heads, program planning and other members of the Directorate has a standing agenda that includes physics operations, occurrence reports, a report on occupational injuries/illnesses and environmental issues and other significant accidents during the preceding week, status of leading/lagging indicators, as well as special items of interest, and reports from every

division/section. This is a long-standing and ongoing planning and prioritization meeting.

Division/Section heads are responsible for funding all ES&H needs within their organizations. It is the Director's policy that all ES&H needs that cost less than 1% of the organization's budget must be done, without question, within the organization's budget. More expensive needs must be brought to the attention of the Director if funding is not planned within the year. Urgent items are dealt with immediately, and funded by the Directorate, if necessary.

3.5 Identification of ES&H Standards and Requirements

Fermilab has adopted the Necessary and Sufficient (N&S) Process for determining the WSS to determine the appropriate ES&H standards to ensure the safe and environmentally responsible operations of the laboratory. Fermilab, in conjunction with participation from the DOE FSO, the DOE Chicago Office (CH) and the DOE Office of Science (SC), conducted the first site-wide application of the Departmental N&S Closure Process. The result was a set of significant hazard aspects and impacts that were used to establish a Work Smart Set of Standards (WSS). The WSS were incorporated into the prime contract with DOE. These standards, when properly implemented, provide adequate assurance that the public, workers, and environment are protected from adverse consequences. Fermilab's work activities, the hazards associated with the work, and the standards are reviewed on an annual basis, and revised as needed. Additionally, new standards promulgated by DOE or national standards-making bodies (e.g. National Fire Protection Association) are evaluated and incorporated into the WSS as appropriate.

3.6 Hazard Control Tailored to the Work Being Performed

Engineering and administrative controls are in place to prevent and mitigate ES&H hazards. Many of these controls are discussed in the FESHM. The controls are tailored to the work being performed. Employee participation is extremely important in this area of work planning. Lessons learned for incidents or earlier experiences with similar work activities are integrated into the hazard controls.

3.7 Operations Authorization

No work is begun until the appropriate authorization has been obtained. Fermilab has an extensive operations authorization process, which is again tailored to the work to be performed. Examples of mechanisms in which DOE authorizes FRA to do work include the contract between DOE and FRA, construction authorizations, Accelerator Safety Envelope, Accelerator Readiness Reviews, and annual budget/work authorizations.

Within the Laboratory, there are a number of mechanisms for the Director to authorize work at the division/section level. These include budget reviews, and Director approval of the FESHM and FRCM. In addition, there are various levels of work authorizations within the ES&H program, such as NEPA, work notification, Radiation Work Permit, (RWP), Electrical Work/Hazard Analysis Permit, Work Permit & Notification (WPN), etc. These are all identified in the FESHM and FRCM.

The Laboratory has established work control processes to assure that projects leading to the capitalization of an asset are appropriately scoped, planned and managed, including necessary reporting and performance tracking.

4.0 INTEGRATED SAFETY MANAGEMENT FUNCTIONS

4.1 Defining the Scope of Work

4.1.1 Institutional Level

The contract for the operation of Fermilab establishes the overall statement of work for the Laboratory, and contains explicit expectations and performance measures related to the safe performance of work. The Statement of Work (Article 4), and the Environment, Safety and Health clause (Article 72), clearly reflect the concept of integrating ES&H into the way work is planned, managed and performed at the Laboratory.

The annual budget/work authorization process defines the work to be done each year. This cycle begins with the submission of Field Work Proposals (FWPs) that define the work planned for the current year and the two following years. Subsequent to that submission, there is an on-site DOE Program Review, which reviews the plans for the current and future years, with recommendations for modification of the work plans defined in the FWP. Finally, at the beginning of the fiscal year, a Financial Plan is sent to the Lab describing the work for the year and the fund allocation for each work package. During the fiscal year, there is a refinement of the financial plan each month adding or subtracting work/money.

Work is also defined within the construction authorization system. This includes General Plant Projects, Accelerator Improvement Projects, and Congressional line item construction projects. The Lab prepares Conceptual Design Reports and appropriate NEPA documentation and submits requests for Project Directives to the Contracting Officer. Approval of the project includes approval of the cost, scope and schedule. Significant changes to the project require approval by the Contracting Officer.

Weekly meetings are held between the DOE FSO Contracting Officer and the Directorate to discuss contractual issues, reporting requirements, project progress, and other administrative matters such as ES&H performance. Additional meetings are also held between ES&H personnel in the DOE FSO, the Directorate and the SLSO to discuss ES&H issues of mutual interest to DOE and the Lab.

Laboratory performance measures, including ES&H performance measures are established annually in negotiation with DOE FSO to support the conduct and evaluation of the work. Performance measures are communicated to Fermilab line management, ES&H professionals, and other employees. ES&H performance measures are tracked at the weekly Scheduling Meeting.

4.1.2 Division/Section

Within Fermilab, there are a number of mechanisms for the Director to define the work at the division/section level. For example, divisions/sections participate in the annual budget process described above. Thus, an FWP prepared by the division/section heads describes their anticipated work. With the arrival of the financial plan, the Director authorizes divisions/sections to conduct the work described in the plan.

The Director provides direction to division/section heads for their development of specific plans related to the program, organizational and project management plans, as well as budgets. ES&H review and advice is provided by the ESH Section, ES&H review committees, and the various technical subcommittees of the LSC.

4.1.3 Program/Activity

Line organizations are responsible for planning the work, identifying ES&H concerns and resources needed to support the work. Once annual operating plans are developed, ongoing work planning and project management is the responsibility of the division/section heads, who provide recommendations to the Directorate. The Directorate also holds weekly meetings with line and safety managers to discuss planned work and to establish priorities. Progress on priority items is also tracked and reported at the weekly Scheduling Meeting.

4.2 Identifying and Analyzing Hazards

Before work is performed at Fermilab, hazards are identified and analyzed so that appropriate controls can be developed. Hazard analyses are performed at both the facility level and at the project level for major projects as well as at the activity level by Fermilab employees and subcontractors.

The complexity and formality of the hazard identification process and subsequent development of work controls are tailored to the specific conditions and work activity. Similarly, individual hazard analyses are tailored to the specific conditions and nature of the work. In addition, the FESHM identifies the requirements and training necessary to assure that personnel conducting these reviews are qualified.

4.2.1 Laboratory Level Hazard Identification Processes

Fermilab has a sitewide HAD that identifies the hazards across the site that may impact workers, the public, or the environment. The Fermilab emergency management program has been developed from the HAD. It is reviewed annually and revised accordingly. Any changes to laboratory activities that result in the addition or subtraction of a significant hazard are evaluated per the process described within the HAD.

4.2.2 Division/Section

Hazard identification is a routine part of the self-assessment program. The self-assessment program includes requirements for supervisor, manager, and building manager walk-throughs, Fire Department inspections, and the Tripartite Self-Assessment Program. All of the identified hazards are reviewed, prioritized, and mitigative actions planned and taken.

4.2.4 Facility/Project Level Hazard Identification Processes

Hazard identification and analysis are required of subcontractors in their contracts with the Laboratory. Employees and visiting scientists conduct hazard analyses in accordance with FESHM 2060. Subcontracted employees conduct hazard analyses in accordance with the FESHM 7000 series chapters.

In many cases, the ESH Section and line personnel also identify local hazards through preparation of facility-specific Hazard Maps. Hazard Maps provide key building hazard information in a standardized and manageable format that includes input from the ESH Section and line operating organizations. Standard symbols are used to convey the type of hazard at a glance.

Formal safety assessment and environmental planning documents are prepared to identify and analyze potential hazards for all research activities.

In addition, procedures have been established to assure that Fermilab personnel and visiting experimenters have a consistent approach for

identifying and controlling hazards related to experiments. The Fermilab Accelerator Division and Particle Physics Division administer these procedures.

Subcommittees of the LSC are frequently employed to review issues that require specialized knowledge or broad organizational representation such as the safety of cryogenic systems or development of safety policies. Division/Section review committees are employed in a similar fashion, but at lower levels.

4.2.5 Work Level Hazard Identification Processes

On an individual level, periodic Health Risk Assessments (HRAs) of employees includes review and identification of potential worker hazards. These assessments are completed by the supervisor and identify to the medical department hazards to which an employee may be exposed. The Senior Safety Officer and the Fermilab Medical Department then identifies and implements a medical surveillance programs.

Employees are encouraged to identify and report ES&H issues to their supervisor. The supervisor is expected to respond to these issues and take appropriate action. Safety committees and other less formally structured groups of employees conduct workplace inspections in order to identify hazards and assure appropriate mitigation.

In parallel with these specific hazard analyses efforts, the ES&H line organizations, supported by the ESH Section, perform inspections and surveys to identify and mitigate hazards. The types of surveys include industrial hygiene, radiation surveys, and ventilation surveys to monitor flow performance of local exhaust systems used to control hazardous air contaminants.

FESHM 2060 describes the Fermilab program for implementing job hazard analysis. Some division level internal procedures have been developed to implement this FESHM chapter.

4.3 Developing and Implementing ES&H Controls

4.3.1 Laboratory

The documents that establish ES&H controls for the majority of the Laboratory's work and operations are the FESHM, FRCM and the Emergency Response Plan.

By combining the foundation created by the approved Fermilab WSS set with the more specific implementation guidance contained in the FRCM,

FESHM, and other policy documents, Fermilab ensures that ES&H controls remain adequate and tailored to the work being performed.

4.3.2 Division/Section

While the Fermilab's WSS addresses the entire scope of site-wide ES&H hazards, the Accelerator Safety Envelope identifies the ES&H controls required to operate the accelerator safely. The Accelerator Safety Assessment Document is the basis for these controls. It was developed in accordance with the WSS set. Safety Assessment Documents are periodically updated by line organizations when the configuration of the accelerator facility or activity changes as the result of improvement projects. These documents are also updated if new hazards are introduced or the risk from a hazard changes beyond those previously analyzed and documented necessitating new controls. These documents are subsequently reviewed and approved by the SLSO and, as appropriate, the Fermilab Director and the DOE FSO.

Fermilab has traditionally supplemented its own technical and management expertise in developing ES&H controls with peer review. For example, peer review teams have been established in the disciplines of cryogenic safety, radiation protection, and ES&H management. Peer participation was a central part of the selection of the WSS set.

4.3.3 Facility/Project

Prior to the start of any significant project, a project execution plan and resource-loaded schedule are developed. ES&H standards are integrated into these planning documents. This execution plan and schedule are reviewed by the DOE FSO, technical peers, and ES&H professionals for adequacy prior to the commencement of the project and periodically during course of the project. If the project involves changes in the configuration of the accelerator or experimental areas, formal readiness reviews are conducted by the Lab and DOE FSO.

4.3.4 Work Activity

Formalized checklists, written hazard analyses, and procedures are often used to assure adequate ES&H controls are in place for complex experiments or operations involving significant hazards, such as electrical, oxygen deficiency, activation of a new or modified beamline. Often technical committees are established to ensure the technical basis for the controls is sound.

4.4 Performing Work Safely

In most situations at Fermilab, the people who perform the work also participate in the planning for the work, e.g., analyzing the hazards, determining the controls and implementing the controls. This avoids disconnects between those planning and implementing controls and those doing the work. It also makes good use of worker knowledge and incorporation of lessons learned into the work planning process.

The mechanisms established to ensure all workers are prepared and able to perform work safely include pre-job hazards analysis and planning, the establishment of ES&H controls, training, mentoring for qualification, operational checks, pre-job testing, safety checks; (e.g., systems, equipment, instruments, etc.), and project management reviews. In the pre-job phase, hazard analysis is closely linked to the establishment of adequate ES&H controls, the training and briefing of workers, the planning of the actual work, the development of a resource-loaded plan, and schedule to perform the work.

4.5 Assessing Performance for Continuous Improvement

ES&H Assessments are a means of collecting information about the ES&H program performance. Reliable, timely information is important for top-level managers to monitor the Laboratory ES&H performance against contractual requirements, raise ES&H awareness amongst employees, identify lessons learned that can be used to accelerate improvements, feel confident that vulnerabilities are aggressively sought out and mitigated responsibly, evaluate how well the Lab is fulfilling all regulatory requirements, and provide data for making risk-based decisions on resource allocations and program direction.

Fermilab is committed to implementing a strong ES&H Self Assessment program (SAP) to achieve its goal of no injuries to employees or damage to the environment. Self assessments are conducted consistent with the principles and functions of ISEHM. Further details of Fermilab's ES&H assurance program are found in FESHM 1040 and 1040.1.

Fermilab measures the effectiveness of its ES&H integration efforts through a variety of mechanisms. Performance measurement at Fermilab is achieved through multi-level assessments and measurement activities including an annual Laboratory self-assessment, independent ESH Section and safety committee oversight, and Directorate level management assessments. Leading and lagging ES&H indicators have been developed and are tracked by the Director and his direct reports during the weekly Scheduling Meeting. At the working level, incident reports are discussed to identify lessons learned to be incorporated into the work processes.

DOE FSO participates in performance of tripartite assessments, performance of Operational Awareness reviews, and monitors ES&H performance measures in the contract between FRA and DOE. The ES&H performance measures reflect

the Laboratory's understanding of the DOE's ES&H performance expectations, and describe expected outcomes resulting from work commitments. Key milestones and schedules tied to commitments are identified. The performance measures can be found at http://www-esh.fnal.gov/pls/default/esh_home_page.page?this_page=13. External regulatory oversight is performed by the Department of Transportation (DOT), Illinois DOT, Environmental Protection Agency (EPA), Illinois EPA, Illinois Department of Public Health, U.S. Corps of Engineers, the Illinois Fire Marshall, and Kane and DuPage Counties.

At the core of the assessment and continuous improvement program are the Tripartite assessments. Teams composed of ESH Section professionals, division/section technical and professional ES&H personnel, and the ES&H personnel from the DOE FSO perform the Tripartite assessments. These assessments include formal reports, prepared with DOE involvement, on the full range of ES&H activities and performance. Findings from Tripartite assessments and findings from all other sources are tracked to closure in a Fermilab database, ESHTRK. The features of ESHTRK include the ability to assign risk.

Occurrence and other incident reports and the lessons learned from them are an important part of the weekly Scheduling Meetings and the monthly SSO meetings, as well as the various LSC subcommittee meetings. These incident reports are also used at the working level to identify lessons learned that are quickly incorporated into the work process.

Annual personnel appraisals are tied, in part, to ES&H performance and work activities. Feedback on ES&H performance is an expected part of this process.

Triennial management appraisals are conducted by the Laboratory Directorate to assess Fermilab's overall performance in meeting FRA, Fermilab, and DOE ES&H objectives. The results of the appraisal, including specific recommendations for improvement, are communicated to the respective department managers, in order to assure lessons learned are integrated into future work activities.

FRA has established an ES&H Subcommittee of the Board of Governors. This subcommittee meets each quarter with representatives of the Directorate and the SLSO and his/her staff to review current ES&H performance. The results of the subcommittee deliberations are reported to the full assembly of the Board.

FermiToday, an electronic employee newsletter, published by the Fermilab Public Affairs Office is used quite often to communicate ES&H information. The newsletter is sent to all employees at Fermilab. A weekly feature, the Safety Tip of the Week, passes along lessons learned and safety tips and reminder to all employees.

The Fermilab ESH Section web site also includes a vast array of safety information and services that can be accessed by all Fermilab employees. Notifications of new "lessons learned" are distributed electronically within Fermilab. Furthermore, Fermilab Today, the daily employee newsletter also provides a forum for sharing safety and environmental information.

The Fermilab Employee Concerns Program implementing document is found in FESHM 1060. Employees are expected to bring forth ES&H issues to their supervisor for action. Lessons learned from these issues are incorporated into the work process. If the employee has safety concern in another work area, or a suggestion for improvement, but is not sure where to direct the issue, he/she can use the Computing Division Help Desk (https://computing.fnal.gov/cgi-bin/remedy/Helpdesk.pl?template=SafetyConcern.html). Should the employee feel uncomfortable bringing an issue to his/her supervisor, an employee can notify the ESH Section anonymously of the issue, either on-line (http://www-esh.fnal.gov/pls/default/Suggestions.html) or by calling the SLSO.

5.0 ANNUAL REVIEW OF IMP

Fermilab's IMP is reviewed annually and updated as appropriate to incorporate any changes in mission or budget that would result in changes to the IMP. Specifically updated will be the results of the contractual performance measures and the any changes to IESHM anticipated for the next 12 months.

Anticipated changes in FY07 will revolve around the continuous improvements proposed by FRA and incorporated into their contract for the management and operation of Fermilab. These improvements have been identified in the contract. A number of these proposals are anticipated to improve the ES&H program at Fermilab, including seeking International Standards Organization (ISO) certifications for both its environment and health and safety programs.