Short Baseline Neutrino Program

Integrated Safety Management Plan

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1.0 Line Management Responsible for Safety

1.1 Fermilab ES&H Policy

Responsibility for Environment, Safety, and Health (ES&H) is defined in the Fermilab ES&H Manual (FESHM) Chapter 1010. It states:

"…Individuals at the Laboratory are responsible for the ES&H aspects of activities they perform or that are carried out under their supervision. Every employee shall be responsible for following all ES&H requirements pertinent to their work. Unsafe conditions or actions shall be reported by employees to their supervisor or, if supervising personnel are unavailable, to their Division Safety Officer (DSO). Individuals are to stop activities that pose an imminent danger to employees, the public, or the environment…"

2.0 Clear Roles and Responsibilities

It is important that roles and responsibilities be clearly understood. Roles and responsibilities for those organizations involved in the SBN program are discussed in various references, such as Director's Policy Manual, FESHM, and the SBN Program Management Plan. The key roles and responsibilities are discussed below.

2.1 Roles and Responsibilities

2.1.1 SBN Program Coordinator/Deputy Program Coordinator

These individuals are responsible for administering, planning, organizing, and controlling the SBN program technical, cost, schedule and ES&H objectives. All ES&H follows line management up to the Program Coordinator and the Deputy, who therefore has the responsibility to assure that the appropriate competence and training exists at all levels, and that the appropriate processes consistent with the ISM five core functions are in place.

2.1.2 SBN Program ES&H Coordinator

The SBN Program ES&H Coordinator has been assigned to assist the SBN Program Management Team in ensuring that all program activities follow Fermilab ES&H practices. The ES&H Coordinator will assist in reviewing all Work Plans, Means & Methods, Installation Procedures and Hazard Analyses prepared by or submitted to the Program subsystem managers and Installation Coordinators, and will provide input where necessary to ensure that ESH&Q policies, standards and requirements are properly incorporated.

2.1.3 SBN Program Mechanical Engineers

The SBN Program Mechanical Engineers are responsible for coordination of mechanical aspects of the design, fabrication and installation phases of the project. He/she also works with the SBN ES&H Coordinator to implement Fermilab's policy of Integrated Safety Management (ISM) in the project, propose and organize design reviews with ES&H requirements in mind, and resolve any ES&H issues that may arise.

2.1.4 SBN Program Electrical Coordinator

The SBN Program Electrical Coordinator is responsible for coordination of electrical aspects of the design, fabrication and installation phases of the project. He/she also works with the SBN ES&H Coordinator to implement Fermilab's policy of Integrated Safety Management (ISM) in the program, propose and organize design reviews with ES&H requirements in mind, and resolve any ES&H issues that may arise.

2.1.5 SBN Technical Coordinators

The SBN Technical Coordinators are responsible for coordinating the work of the various subsystems of their assignment. Technical Coordinators will ensure all work is performed following applicable ES&H standards and policies at the site of work; and applying ISM principles in the program.

2.1.6 SBN Program Level 2 Managers

Level 2 Managers are responsible for implementing program work in conjunction with all applicable ES&H standards and policies including those in FESHM. They are also responsible for applying the ISM principles in the construction and operation of their subsystems.

2.1.7 CERN-INFN-Fermilab Safety Points-of-Contact

The Safety Points-of-Contact work together to ensure that the detectors and infrastructure are within compliance with both Fermilab and DOE ES&H standards. *Additional roles under discussion.*

2.1.8 SBN Program Installation Coordinators

SBN Installation Coordinators are responsible for direct implementation of all ES&H policies and standards to the tasks being performed on a daily basis during installation of the near and far detectors, and associated equipment required for SBN. The Installation Coordinators serve as the point of contact between all subcontractors and Fermilab. They are responsible for assuring that the subcontractor(s) are complying with applicable ES&H requirements. Specific activities include: develop hazard analyses and provide to SBN ES&H Coordinator for review and comment, complete inspections, communication with the SBN ES&H Coordinator and Program Coordinator for addressing identified ES&H concerns.

2.1.9 ESH&Q Section Oversight

The ESH&Q Section is responsible for providing laboratory ES&H oversight of the SBN Program. This is done through the assignment of a construction safety coordinator who conducts regular site inspections with the SBN Program ES&H Coordinator to observe SBN Program management is in compliance with all ES&H standards and requirements. Any concerns identified are brought to the attention of the SBN ES&H Coordinator. They are also documented to assure appropriate level of tracking.

2.1.10 Line Managers at all Institutions Participating in the SBN Program

Line managers are the primary operating interface with employees, with guests and visitors, as well as with contractors/vendors at all SBN institutions. Within the framework of the ISM, line managers are expected to contribute to work planning, pre-job communication of hazards and controls, work monitoring, and evaluation of results.

2.1.11 Contractors and Subcontractors

Contractors and Subcontractors performing work for the SBN Program are expected to incorporate environmental health and worker safety into the planning of each task, ensure the safety and health of their personnel, and provide all the necessary training and personal protective equipment for their employees.

Each contractor/subcontractor working on the Fermilab site will be assigned to a Task Manager or Construction Coordinator.

3.0 Competence Commensurate With Responsibilities

It is important that each one of these key individuals have the expertise to effectively complete their assignment. Each has brought a wealth of technical and ES&H expertise to the program. In addition, special training will be provided as appropriate, and additional training will be required dependent on the hazards. The Program Coordinator, the Deputy Program Coordinator, and the Program ES&H Coordinator have taken the appropriate safety course(s) as dictated by their ITNA and the TRAIN database to successfully complete this program in a safe manner.

4.0 Balanced Priorities

The key to balancing priorities is assuring the decision makers in this program, the SBN Program Coordinator and Deputy Program Coordinator, are provided accurate information about the work activity, schedule, costs, hazards, risks, and controls. These are discussed with Program subsystem managers during weekly program management meetings. This is also achieved through work planning meetings.

5.0 Identification of Safety Standards and Requirements

Before work is performed, the associated hazards are evaluated and an agreed-upon set of safety standards and requirements is established which, if properly implemented, will provide adequate assurance that the workers, the public, and the environment are protected from adverse consequences.

5.1 Work Smart Set

The Work Smart Standards Set itemizes all the ES&H laws, regulations, and standards to which Fermilab, including the SBN Program must adhere. This standards set is part of Fermilab's contract with the Department of Energy. The Fermilab Work Smart Standards can be found in FESHM 1070, or Appendix I of the contract.

5.2 FESHM

The Fermilab ES&H Manual (FESHM) describes how Fermilab implements its ES&H Program. Various chapters have requirements for subcontractors included within them. For example, Chapter 7010, “ES&H Program for Construction,” describes requirements for subcontractors and identifies roles and responsibilities of the line manager.

6.0 Hazard Controls Tailored to Work

6.1 Hazard Analysis

Fermilab has a defined hazard analysis (HA) process. The workers have been trained in its use. During the daily pre-job briefings during assembly and installation the hazard analysis applicable to the planned work is reviewed within each individual workgroup. Changes or new hazard analyses may be developed at that time as well. When hazard analyses are changed, or a new HA is developed, the workers review and sign the document to indicate acceptance of the requirements within the HA. The Hazard Analyses are kept in the SBN document database.

6.2 Personal Protective Equipment (PPE)

The level of PPE required during fabrication, construction and installation phases will be determined appropriately. Those individuals who enter construction areas must wear hard hats and steel-toed shoes. Hearing protection, fall protection and/or other forms of PPE may be required during certain activities, and will be documented in the Hazard Analyses as appropriate. All visitors to the site must be escorted.

6.3 Training

All required training for employees or users working on SBN will be specified by an Individual Training Needs Assessment (ITNA), which must be kept up-to-date. Fermilab requires all subcontractors to take the Fermilab Subcontractor Orientation. This course sets forth to the worker Fermilab's expectation that they will work safely. It also provides information for raising concerns if their management is not responsive to safety issues.

7.0 Operations Authorization

Fermilab has processes in place to ensure safe operations of equipment, experiments and accelerators. These processes are called Operational Readiness Clearances (ORC) and Accelerator Readiness Reviews (ARR). Safety committees (either Ad hoc or standing, as appropriate) review safety and general documentation and then recommend (or require remediation before) operation.

7.1 Work Notification

At the start of the installation phase of the program, a work permit and notification (WPN) will be issued, per FESHM 2020. A WPN is a work planning tool intended to provide timely notification of a proposed construction project or work activity that will have impact beyond a particular organizational group and/or the specific system or area affected by the work. It lists (identifies) applicable permits, site-specific training requirements, and organizations that need to be notified prior to the commencement of on-site work activities. The use of this form will serve as a reminder and as a checklist to identify hazards or other aspects of the work activity that are controlled by practices or requirements specific to Fermilab, as well as documenting the authorization to commence work by the landlord division/section.

7.2 Daily Huddles/Job Briefings/Hazard Analysis Review

During the installation phase, SBN Management will have regular job briefings. Details of the work expected to be conducted are shared with the workers. The hazard analysis is reviewed/revised/prepared based upon input from the workers.

7.3 Monitoring by SBN Program Management During Installation

There will be a regular SBN ES&H Management walkthrough of the SBN installation sites with representatives from SBN Program Management, and ESH&Q Section as appropriate. Observations will be documented and ES&H deficiencies noted and followed up. The SBN Management, Installation Coordinators and ES&H Oversight personnel conduct unscheduled inspections to assure compliance with applicable ES&H standards. Results will be documented and discussed in Program meetings.

The ES&H support personnel are available on a daily basis to consult with the construction coordinator on ES&H issues. These individuals are available to assist the construction coordinator with items such as hazard analysis review, ES&H issue resolution, and training.

7.4 Incidents/Investigations

Should an incident occur, all employees, users, and subcontractors are instructed to dial extension 3131 to activate the Fermilab Emergency Response Plan. The Installation Coordinator and ES&H Coordinator are responsible for investigating the incident. If the incident involves a recordable injury, the ND DSO is expected to generate a CAIRS within 48 hours. The ES&H Coordinator reviews the CAIRS report for completeness. Direct, root, and contributory causes are expected to be identified. Corrective actions are expected to be determined and quickly implemented. The ND DSO is responsible for entering information into the Fermilab injury/illness database and entering the investigation into the Human Performance Improvement (HPI) database.

Acronyms and Abbreviations

CAIRS	Computerized Accident Incident Reporting System
CFR	Code of Federal Regulations
DSO	Division Safety Officer
ES&H	Environment, Safety, and Health
ESH&Q	Environment, Safety, Health and Quality
Fermilab	Fermi National Accelerator Laboratory
FESHM	Fermilab Environment Safety & Health Manual
FNAL	Fermi National Accelerator Laboratory
HA	Hazard Analysis
HPI	Human Performance Improvement
ISM	Integrated Safety Management
ITNA	Individual Training Needs Assessment
ND	Neutrino Division
ORC	Operational Readiness Clearance
PPE	Personal Protective Equipment
SBN	Short Baseline Neutrino
WPN	Work Permit and Notification