

Integrated Safety Management (ISM) Program for the NOvA Project

1.0 Line Management Responsible for Safety

1.1 Fermilab Policy

Responsibility for environment, safety, and health (ES&H) is defined in the Fermilab ES&H Manual (FESHM) Chapter 1030. It states:

“The Laboratory Director is ultimately responsible for safety, but each person at Fermilab is responsible for establishing knowledgeable control of the hazards encountered at the Laboratory. The necessary level of knowledgeable control is established by a combination of formal training and common sense.”

Other documents which support this policy include:

NOvA Project Management Plan (PMP)

NOvA Project Execution Plan (PEP)

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 NOvA project are discussed in various references, such as Director’s Policy Manual, FESHM, and the NOvA Project Management Plan. The key roles and responsibilities are discussed here:

2.1 Fermilab Roles and Responsibilities

2.1.1 NOvA Project Manager/Deputy Project Manager

The position’s roles and responsibilities are incorporated into the NOvA Project Management Plan. These individuals are responsible for administering, planning, organizing, and controlling the NOvA project technical, cost, schedule and ES&H objectives. All ES&H follows line management up to the Project Manager 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 NOvA Project and Accelerator & NuMI Upgrades Sub-Project ES&H Coordinator

The NOvA Project ES&H Coordinator has overall ES&H oversight responsibility for the NOvA Project. This person coordinates any activities and facilitates the resolution of any issues that cut across various Divisions and institutions. The NOvA Project ES&H Coordinator has been assigned to assist the NOvA Project Management Team in constructing/fabricating, installing, commissioning, and operating all aspects of the NOvA project by providing ES&H oversight of these activities. He keeps the NOvA Project Manager informed of current potential upcoming ES&H issues. The PPD Senior Safety Officer (PPDSSO) is responsible for completing reports such as ORPS and CAIRS.

The NOvA Accelerator and NuMI Upgrades (ANU) Sub-Project ES&H Coordinator has overall ES&H oversight responsibility for the ANU sub-project. This person coordinates any activities and facilitates the resolution of any issues that cut across various Divisions and institutions relating to the Accelerator and NuMI Upgrades sub-project (WBS 1.0 and 2.0). The NOvA ANU Sub-Project ES&H Coordinator has been assigned to assist the NOvA ANU Sub-Project Management Team in constructing/fabricating, installing, commissioning, and operating all aspects of the NOvA ANU Sub-Project by providing ES&H oversight of these activities.

The Project ESH Coordinator(s) shall review and concur on all Work Plans, Means & Methods, Installation Procedures and Hazard Analysis's prepared by or submitted to the Task Managers and Construction Coordinators

2.1.3 NOvA Project Mechanical Engineer

The NOvA Project Mechanical Engineer is responsible for coordination of mechanical aspects of the design, fabrication and installation phases of the project. He/she also works with the NOvA ES&H Coordinator to implement Fermilab's policy of Integrated Safety Management (ISM) in the project and resolve any ES&H issues that may arise.

2.1.4 NOvA Project Electrical Engineer

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

2.1.5 NOvA Level 2 Managers

L2 Managers are responsible for implementing the PEP in conjunction with all applicable ESH standards and policies including FESHM. They are also responsible for applying the Integrated Safety Management principles to their subsystems

2.1.6 NOvA Task Managers

NOvA Task Managers are responsible for direct implementation of all ESH policies and standards to the tasks being performed on a daily basis. The Task Managers serves as the point of contact between all subcontractors and Fermilab. The Task Managers are responsible for all the tasks defined for a Fermilab Task Manager as found in FESHM 7010. They are responsible for assuring that the subcontractor(s) are complying with applicable ES&H requirements. Specific activities include: develop hazard analysis's and provide to NOvA ESH Coordinator for review and comment, complete inspections, communication with the Project ESH Coordinator and Project Manager for addressing identified ES&H concerns.

2.1.7 ESH Section Oversight

The ESH Section is responsible for providing laboratory ESH oversight of the NOvA Project. This is done through the assignment of a construction safety coordinator who conducts regular site inspections with the NOvA Project ESH Coordinator to observe NOvA Project management is compliance with all ESH standards and requirements.

Any concerns identified are brought to the attention of the NOvA ESH Coordinator. They are also documented to assure appropriate level of tracking.

2.2 Laboratories, Universities and Institutions Participating in the NOvA Project

All Laboratories, Universities, and Institutions participating in the NOvA Project are required to follow their organizations' ESH Programs, Policies, and Procedures, as outlined in the MOU/SOW's with FNAL.

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 project.

In addition, special training will be provided as appropriate. As appropriate, project personnel will take MI65/MINOS Underground Safety Training and the appropriate level of Radiation Safety Training. Additional training will be required dependent on the hazards. The NOvA Project Manager, the NOvA Deputy Project Manager, the Associate Project Manager and the NOvA Project ESH Coordinator have taken the appropriate safety Course as dictated by their ITNA and the TRAIN database to successfully complete this project in a safe manner.

All NOvA Task Managers will have the Fermilab Task Manager Construction Coordinator training and the necessary updates. They have also all received training in incident investigation and scene preservation as well.

4.0 Balance Priorities

The key to balancing priorities is assuring the decision makers, in this project the NOvA Project Manager, Deputy Project Manager and Associate Project Manager are provided accurate information about the work activity, schedule, costs, hazards, risks, and controls. These are discussed with Level 2 Managers during the weekly Technical Board meeting. This is also achieved through work planning meetings.

5.0 Identification of Safety Standards and Requirements

5.1 Work Smart Set

The Work Smart (formerly Necessary and Sufficient) Standards Set itemizes all the ES & H laws, regulations, and standards to which Fermilab, including the NOvA Project must adhere. The standards set is part of Fermilab's contract with the Department of Energy and can be found at Appendix 1 - List B - Fermilab Work Smart Standards <http://www-esh.fnal.gov/FESHM/1000/1070-TA.pdf>. Appendix A includes the new contact listing of DOE Orders which the Lab must follow.

5.2 FESHM

The FESHM is Fermilab's document that describes how Fermilab implement's its ES&H Program. Various chapters have requirements for subcontractors included within them. For example, Chapter 7010 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 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 to indicate acceptance of the requirements within the HA.

6.2 Personal Protective Equipment (PPE)

The level of PPE required during installation will be determined appropriately. Those individuals who enter the MI65/MINOS underground facilities must wear hard hats and

also wear hearing protection were defined. All visitors to the site must be escorted and receive the MINOS Visitor Safety Briefing and Self Rescuer Field Training.

6.3 Training

The NOvA installation workforce is required to complete appropriate level of Radiation Safety Training and MI65/MINOS Underground Safety Training prior to accessing the underground facility. Additional required training will be dictated by an employee or users ITNA, which should be kept up to date. Fermilab requires all subcontractors to take 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

The Lab 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). They review safety and general documentation and then recommend (or require remediation before) unattended operation.

7.1 Work Notification

At the start of the installation phase of the project, a work permit and notification 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, NOvA Management will have regular job briefings. They will start with a big meeting, and then the individual work groups will meet to discuss their individual work group activities. 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 NOvA Project Management During Installation

7.3.1 Weekly Scheduled Inspections

There will be a regular NOvA ES&H Management walkthrough of the NOvA installation sites with representatives from DOE-FAO, NOvA Project Management, and ESH Section as appropriate. Observations will be documented and ES&H deficiencies noted.

7.3.2 Unscheduled Inspections

The NOvA Management, Task Managers and ESH Oversight personnel conduct unscheduled inspections to assure compliance with applicable ES&H standards. Results will be documented and discussed in NOvA Project Management progress meetings.

7.3.3 Progress Meetings

NOvA will conduct regular progress meetings. ES&H issues will be addressed at these meetings.

7.3.4 Daily Consultation

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.

7.3.5 Incidents/Investigations

Should an incident occur, all employees, users, and subcontractors are instructed to dialing 3131 to activate the Fermilab Emergency Response Plan.

The Task Manager and Project ESH Coordinator are responsible for investigating the incident. If the incident involves a recordable injury, PPD SSO is expected to generate a CAIRS within 48 hours. The NOvA ESH 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 PPD SSO is responsible for entering information into the Fermilab injury/illness database.

General References:

PPD Integrated Safety Management the procedure is:

http://www-ppd.fnal.gov/DivOffice/Operating_Manual/PPD_OPER_004ISM.pdf

PPDES&H Review of experiments the procedure is.

http://www-ppd.fnal.gov/DivOffice/Operating_Manual/PPD_ESH_006%20Rev%20of%20Exp.pdf

Appendix A: DOE Orders in New Contract Listing for FNAL

List B - List of Applicable Directives

APPENDIX I

DOE ORDERS AND NOTICES

APPLICABLE FOR IMPLEMENTATION
UNDER CONTRACT NO. DE-AC02-07CH11359

List B - List of Applicable Directives

December 2005

ORDERS/ NOTICES	DATES	TITLE
110.3	11/3/99	Conference Management
130.1	9/29/95	Budget Formulation Process
142.3	6/18/04	Unclassified Foreign Visits and Assignments Program
151.1C	11/02/05	Comprehensive Emergency Management System
200.1	9/30/96	Information Management Program
N 203.1	10/02/00	Software Quality Assurance
205.1	03/21/03	Department of Energy Cyber Security Management Program
DOE Manual 205.1-1	09/30/04	Incident Prevention, Warning, and Response Manual
DOE Manual 205.1-2	06/26/05	Clearing, Sanitization, and Destruction of Information System Storage Media, Memory Devices, and Related Hardware Manual
N 205.2	11/01/99	Foreign National Access To DOE Cyber Systems
N 205.3	11/23/99	Password Generation, Protection, and Use
N 205.8	02/11/04	Cyber Security Requirements for Wireless Devices and Information Systems

ORDERS/ NOTICES	DATES	TITLE
443.1	05/15/00	Protection of Human Subjects
442.1A	06/06/01	DOE Employee Concerns Program
470.2B	10/31/02	Independent Oversight and Performance Assurance Program
470.4	08/26/05	Safeguards and Security Program (Only the Manuals referenced in the Order are incorporated.)
471.3	4/09/03	Identifying and Protecting Official Use Only Information
475.1	12/10/04	Counterintelligence Program
N 481.1A	4/21/03	Reimbursable Work for Department of Homeland Security
481.1C	01/24/05	Work for Others (Non-Department of Energy Funded Work)
482.1	1/12/01	DOE Facilities Technology Partnering Programs
483.1	1/12/01	DOE Cooperative Research and Development Agreements
522.1	11/03/04	Pricing of Departmental Materials and Services
534.1B	1/06/03	Accounting
551.1B	8/19/03	Official Foreign Travel
580.1	12/07/05	Department of Energy Personal Property Management
1220.1A Chg. 1	06/28/01	Congressional and Intergovernmental Affairs
1450.4	11/12/92	Consensual Listening-In to or recording telephone/radio conversations
5400.5 Chg. 1 Chg. 2	2/08/90 6/05/90 1/07/93	Radiation Protection of the Public and the Environment <i>(Only Chapter 2, Section 1; and Chapter 3, as stated in the N & S set)</i>
DOE Std. 1090-2004	June 2004	Hoisting and Rigging Standard

ORDERS/ NOTICES	DATES	TITLE
N 205.9	02/19/04	Certification and Accreditation for Information Systems Including National Security Systems
N 205.10	02/19/04	Cyber Security Requirements for Risk Management
N 205.11	02/19/04	Security Requirements for Remote Access to DOE and Applicable Contractor Information Technology Systems
N 206.3	11/22/05	Personal Identity Verification
221.1	3/22/01	Reporting Fraud, Waste, and Abuse to the Office of the Inspector General
221.2	3/22/01	Cooperation with the Office of Inspector General
226.1	9/15/05	Implementation of Department of Energy Oversight Policy
241.1A Change 1	10/14/03	Scientific and Technical Information Management
243.1	2/3/06	Records Management Program
251.1A	1/30/98	Directives System
252.1	11/19/99	Technical Standards Program
350.1 Chg.1	9/30/96 5/08/98	Contractor Human Resource Management Programs
350.2A	10/29/03	Use of Management and Operating or Other Facility Management Contractor Employees for Services to DOE in the Washington, D.C., Area
412.1A	4/21/05	Work Authorization System
413.1A	4/18/02	Management Control Program
413.2B	04/19/06	Laboratory Directed Research and Development
413.3A	7/28/06	Program and Project Management for the Acquisition of Capital Assets
DOE MANUAL 413.3-1	3/28/03	Project Management for the Acquisition of Capital Assets
414.1C	6/17/05	Quality Assurance
430.1B	09/24/03	Real Property Asset Management
430.2A	04/15/02	Departmental Energy and Utilities Management

