

Environmental, Safety, and Health

Mike Andrews

LBNF ESH Manager

LBNF Far Site-Cryo ESH

06 December 2016



Outline

- Project ISM Integration
- Subcontractor ESH Selection Criteria
- Subcontractor ESH Support & Oversight Requirements
- ESH regulatory requirements
- ESH Programmatic Expectations
- Daily Work Planning & Hazard Analysis
- ESH Training Requirements
- LBNF/SURF Unescorted Worker Training
- Personal Protective Equipment Requirements
- Project ESH support and oversight
- Summary

ESH is Integrated into the LBNF Project

- The Project follows Fermilab's ESH Manual (FESHM) Chapter 1010, Laboratory Environment, Safety, and Health Management System and Its Implementation
- Fermilab's integrated safety management program is validated through DOE-Fermilab Site Office (FSO) evaluation of the labs ESH goals and independent external assessors (Office of Enterprise Assessment)
- The ES&H program is equivalent to ISO 14001/OHSAS 18001
- Fermilab/LBNF has worked closely with SURF over the last five years to develop a successful ESH Program
- LBNF/DUNE, Fermilab & SURF all have a goal of ZERO incidents!
- ESH is the #1 Priority to the LBNF Project, Fermilab, and SURF!

Subcontractor ESH Selection Criteria

- Mandatory Requirements
 - Submit the Fermilab Subcontractor Safety Questionnaire
 - Minimum FRA safety requirements
 - EMR less than 1.0
 - Less than 85% of the BLS average for TRCR & LWCR for heavy construction
- Past Corporate Performance regarding ESHQ
 - Offer's safety statistics on Exhibit F reviewed & evaluated
 - OSHA incident rates and inspection history (3 yr. history)
 - Insurance Experience Modification Rate (EMR) (3 yr. history)
 - Corporate ESH Manual reviewed & evaluated
 - Past performance regarding environmental protection
- It is Fermilab & DOE's primary goal to hire subcontractors with excellent ESH programs

Subcontractor ESH Support & Oversight Requirements

- Project management capabilities & experience of key personnel
 - Project Manager & Site Superintendent
 - OSHA 30 Hour training
 - Engineers, Inspectors, and/or Operators
 - OSHA 30 Hour & activity specific training (e.g. competent person)
 - ESH Manager (Representative on site during all shifts)
 - Minimum experience
 - OSHA 30 Hour training
 - Minimum of twenty (20) years of demonstrated ESH experience
 - Minimum of five (5) projects of similar size & scope as the LBNF FSF
 - Preferred experience
 - BS degree in ESH related field
 - Certified Safety Professional
 - Construction Safety & Health Technician certification

LBNF/DUNE ESH Regulations, Standards, & Codes

- Applicable Regulations, Standards, & Codes
 - Fermilab Environmental Safety & Health Manual (FESHM)
 - 10 CFR 851 Worker Safety & Health Program
 - DOE STD-1212-2012 Explosive Safety & ATF Pub 5400.7
 - OSHA 1926 & 1910 (Occupational Safety & Health)
 - Current ACGIH Threshold Limit Values (TLV's)
 - NFPA (Fire & Life Safety)
 - International Building Code (IBC)
 - DOE 450.4 Integrated Safety Management (ISM)
 - 10CFR 40 CFR (Environmental)
 - 10CFR 49 (DOT)
 - DOE 451.1B NEPA Compliance Program
 - ANSI B30 Series – Crane Safety
 - SURF EHS Manual
 - Lead, SD Building Codes
 - Chapter 74 Administrative Rules of South Dakota (S.D. DENR)
 - SD Rules of the Division of Motor Services, South Dakota

ESH Programmatic Expectations

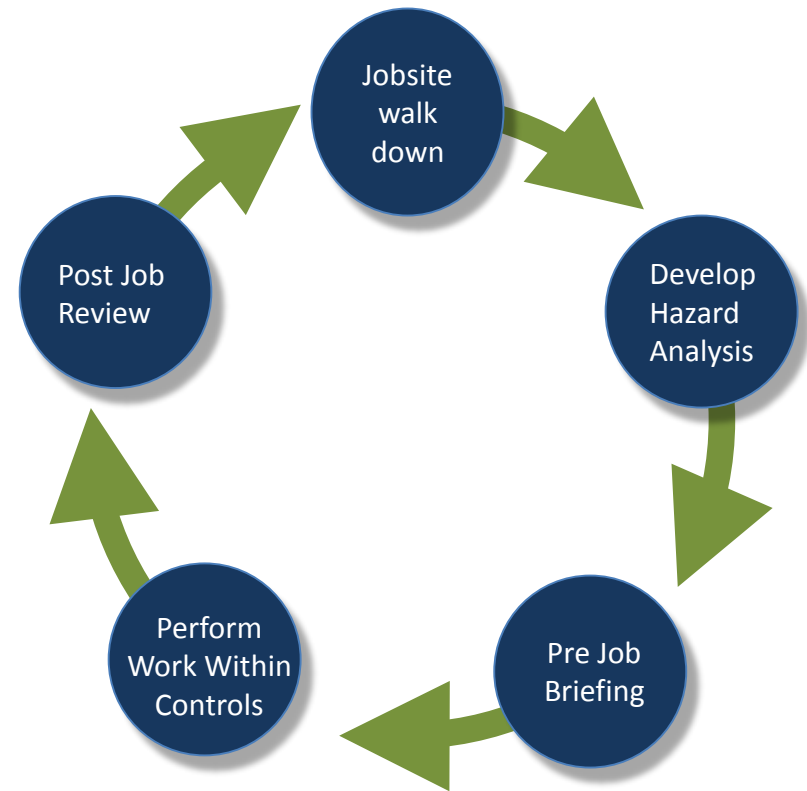
- Subcontractor(s) to implement & enforce their approved ESH Program & Site Specific ESH Plan
 - ESH Policy and expectations
 - General Rules of Conduct
 - ESH Compliance & Enforcement
 - Subcontractor requirements
 - Job site orientation
 - Hazard Analysis
 - Training
 - Daily work planning meetings
 - Personal protective equipment
 - Hoisting & rigging
 - Fall protection systems
 - Electrical safety
 - ESH inspection (Internal & External)
 - Emergency/incident reporting
- Construction contacts will flow down ESH expectations to sub tier subcontractors
 - Incident goals, daily work planning meetings, hazard analysis, & 10CFR851 which includes all ESH regulatory requirements

Daily Work Planning

- Daily Work Planning Meetings
 - Meeting held at the beginning of shift
 - Attended by all subcontractor personnel onsite that day
 - Meeting lead by subcontractor superintendent
 - Duration of the meeting approximately 10-15 minutes at minimum
 - Each sub-tier subcontractor foreman to discuss work activities & locations for that day along with a summary of hazards
 - Discuss deliveries of equipment & materials to the site
 - ESH Manager to discuss any ESH issues & reinforcing ESH program
 - Reminding work force to follow their HA's & update as needed
 - Feedback from work force

Work Planning & Hazard Analysis

- **Job site walk down**-inspection of the job site should be conducted prior to developing the hazard analysis in order to assure all job site hazards and work control issues are identified and addressed
- **Develop Hazard Analysis** - catalogues potential hazards in all phases of project, and provides a solid basis for project design, planning, and execution
- **Pre-job briefings**- Dialogue between supervisor and crew to ensure that all understand the scope of what is to be accomplished, procedural steps, roles and responsibilities, and hazards and controls.
- **Perform work**- within controls in Hazard Analysis
- **Post job review**- After the activity has been completed, the HA should be updated to include improvements that were identified while performing the work. This will help assure better planning and a safer work experience the next time the job is performed.



Daily Work Planning Documentation

- Task based hazard analysis documentation
 - Reviewed & accepted by subcontractor ESH Manager
 - Reviewed by LBNF ESH Coordinator
- Safety Data Sheets (SDS)
 - Submitted to LBNF ESH Coordinator for submission to SURF ESH Department
- Burn/Hot Work Permits
 - Utilize SURF hot work permit system
 - Submitted to LBNF Far Site ESH Coordinator for approval by SURF ESH Department

ESH Training Requirements

- Provided to associated subcontractors
 - Fermilab ESH Orientation (5 minute video)
 - SURF Site Orientation - Surface (60 minutes)
 - SURF Site Orientation - Underground (60 minutes)
 - SURF Modified Underground Guide Training (24hrs/3 days)
- Provided by the subcontractor to their personnel
 - Corporate & Site Specific ESH Orientation
 - Verification of completion of OSHA required training
 - Competent training for excavation, scaffold, 30 OSHA
 - Task specific training (LOTO, NFPA-70E, equipment operator, fall protection, respirator/fit test
 - Training & certification available on-site

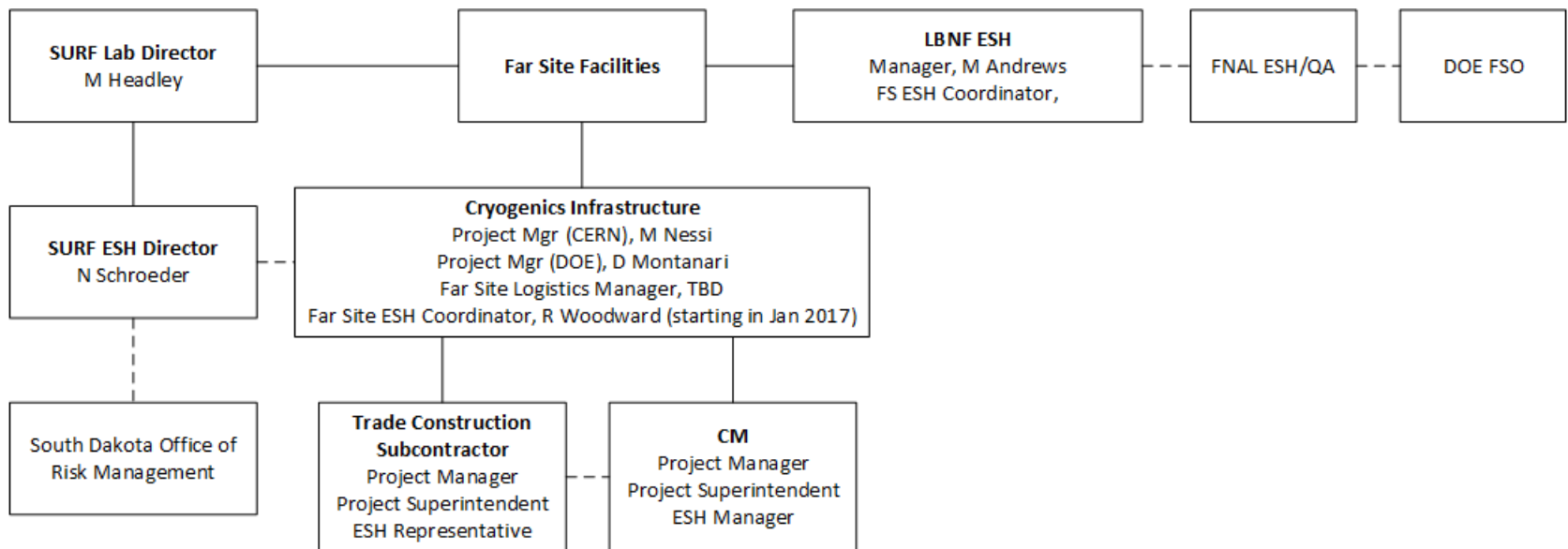
SURF Modified Underground Guide Training Requirements

- 24 hours of training
 - Includes site specific “walks”
- All Superintendents, Foremen, and Supervision
 - Responsible for working groups UG
- Underground guide specific requirements
 - Emergency Communications
 - Emergency Planning/Response
 - Ventilation flow paths
 - Evacuation plan, routes, Area of Refuge
 - Specific travel ways UG for LBNF/DUNE
 - Facility specific hazards within easement space

Personnel Protective Equipment Requirements

- Hard hats – shall meet the ANSI Z89.1 & high voltage electrical work shall meet ANSI Z89.2. Hard hats should be marked with the appropriate designation
- Safety glasses with side shields – shall meet ANSI Z87.1
- High visibility reflective garment – minimum ANSI Class 2
- Gloves
- Cap lamp with battery & charging station
- MSA W-65 self rescuer – inspection program needed
- Suitable work clothing – minimum shall be short (1/4 length) sleeved shirt, long trousers, & safety toes boots providing ankle protection meeting ANSI Z41
- No canvas, tennis, or deck shoes permitted in construction subcontract work area

LBNF Far Site Cryogenic Construction ESH Oversight



Project ESH Oversight

- Subcontractor ESH Oversight on all shifts
 - Daily ESH program oversight by the ESH Manager, Superintendents, & Foremen
 - Verify flowdown of ESH requirements to sub tier subcontractors
- LBNF Project Daily Oversight
 - ESH Coordinator, Project Manager, Engineering Support
 - ESH coordination & walkthroughs
- External walkthroughs on a Monthly/Quarterly basis
 - SURF ESH Department
 - Fermilab ESHQ Section
 - Department of Energy Fermilab Site Office
 - SD Office of Risk Management

Summary

- ESH is integrated into the LBNF Project
- Subcontractor ESH selection criteria, support, & oversight is defined
- ESH requirements, codes, & standards are defined
- ESH expectations need to be flowed down to sub-tier subcontractors
- Work planning & hazard analysis is a key element of the ESH program
- ESH training requirements are defined
- PPE requirements are defined
- LBNF Project ESH Oversight process understood
- The LBNF Project, Fermilab, SURF, & DOE are focused on ESH