

NUMI



MINOS

Soudan Underground Lab Outreach and Safety Programs

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May, 2003

Outreach

- Public Tours
- School Tours and Interpreters
- Outreach Information
- High School Teachers
- New Displays
- Future Upgrades

Outreach at Soudan

- Over 6000 people visited the laboratory in '02
 - > Record: 652 people in one day for our annual Open House
 - > About 1500 on school tours
 - > The rest visited the lab on DNR tours of the facility
- Over 1500 people so far in '03
 - > Over 1000 in school tours in So far in 2003
 - > 393 people for the '03 Open House



Training tour guides



Roger Dixon
giving a
CDMS II Tour

Public Tours

- The Soudan Underground State Park runs the tours
 - Two daily tours for up to 20 people from May 23rd till Sept. 30th
 - Trained DNR interpreters give a 60 minute tour
 - The last 10 minutes of each tour a physicist comes and answers any additional questions
- A typical tour asks many questions and we have received many comments on how interesting they found their visits
- Everyone loves the Mural which adds a great touch of color as well as some Physics History



Showing video clip of plane construction



Mural by Joseph Giannetti funded by UM Foundation

School Tours

- For the 2002-2003 school year we sent out lesson plans and other information to school groups in advance of their lab tours
 - > Brochures, question and answer sheets as well as introductory DVD are all part of the education package
 - > The quality of the tour increases dramatically if the students receive information before the tour
 - > We have 2 school teachers that are going to spend several weeks this summer continuing to upgrade the lesson plans (next slide)
- We hope to start sending out a smaller introduction package to all the schools within a few hundred miles for next school year

High School Teacher Program

- Funding from Stanford and NSF has become available to hire 2 part time School Teachers this summer to
 - Help to conduct twice-daily tours of the laboratory
 - Assess and develop tour materials
 - Assess and develop materials for pre-tour activities for both elementary and advanced school class tours
 - Participate in the operation and maintenance of the MINOS detector
 - Participate in the preliminary analysis of data from MINOS
 - Assess possible future high school class projects in association with the laboratory
- We hope that this experience will grow into possible continuing programs for involvement of students and teachers in the laboratory programs. A national program, QUARKNET, exists which may be a possible avenue for this

New Outreach Displays

New CDMS II Display



NuMI Display-New Horn

New Outreach Displays

New Theater
Area for
Viewing
Introductory
Video



Future Displays

- Kiosk on the surface in visitor center
 - > Touch screen
 - Links to NuMI, MINOS, CDMS, Fermilab
 - > Cosmic ray detector (from Quarknet)
 - > Informational poster and brochures
- Traveling Show
 - > I already do 3 or 4 of these every year, want to put together a Outreach program for visiting schools

Safety at Soudan

- Overview
- Inspections
- Joint Safety Meetings
- Visitor Training and Documentation
- Safety Training
- Mine Rescue Team
- Safety Record

Safety at Soudan

- Safety at the Soudan Underground Lab is run by the University of Minnesota
- MINOS Safety Plan Document
 - > Approved by U of M Occupational Safety Department (Mike Austin), DNR regional safety officer (Terry Lahti) and Fermilab ES&H
 - > Current copies of this living document are at all 3 sites
 - > Needs to be updated for operating time period
- Joint Safety Review Committee
 - > Formed to review on-site issues with U of M and DNR
- Procedure Review Committee
 - > Formed to create & review material handling procedures



Safety Organization at the University of Minnesota

University of Minnesota
President, VP, Provosts & Chancellors

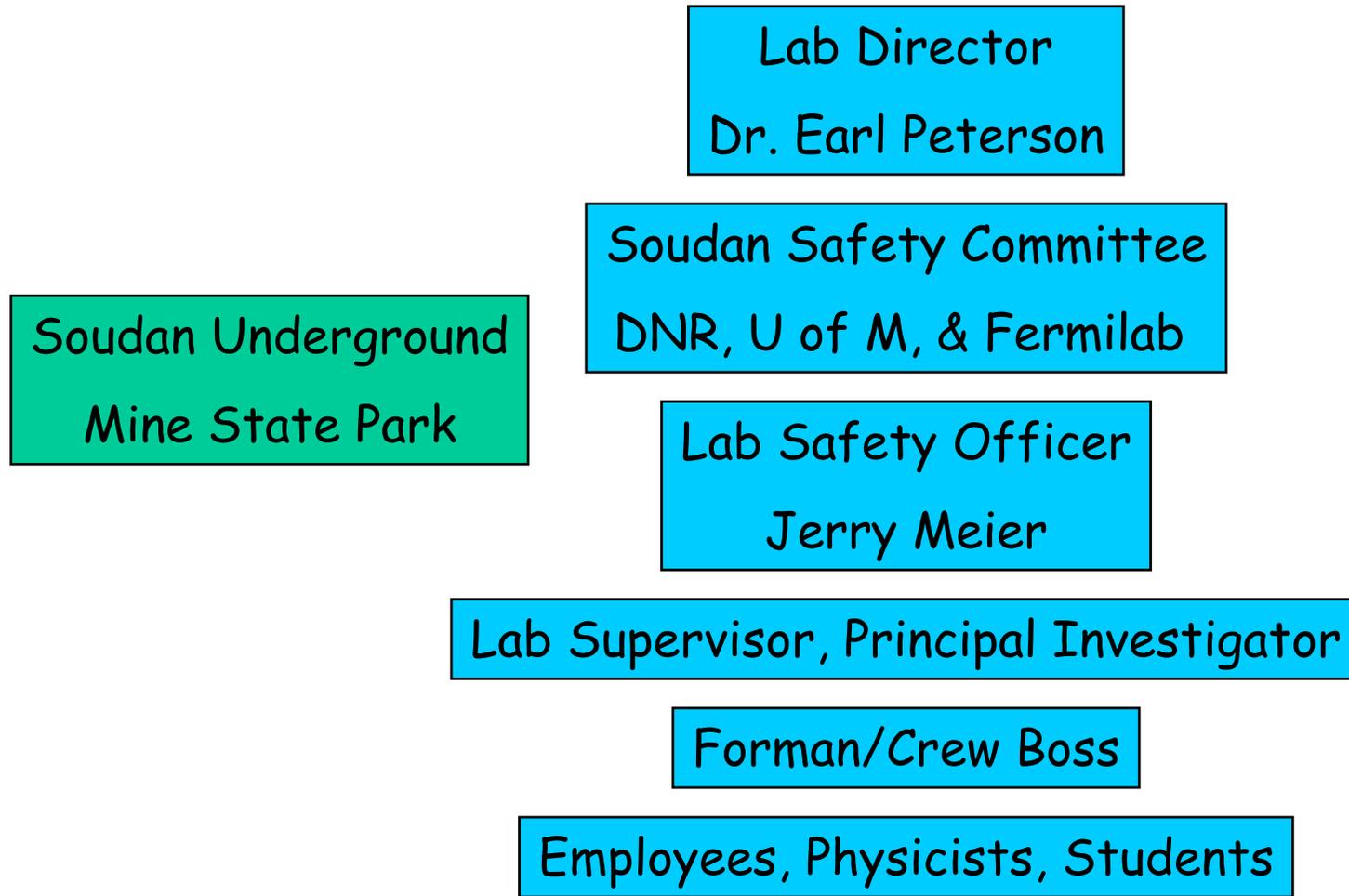
University of Minnesota
Deans, Directors and Department Heads

Department of Environmental Health and Safety
Radiation Safety Building Code Division Occupational Safety

Lab Director
Dr. Earl Peterson

Soudan Underground Lab
Safety Committee

Safety Organization Chart at the Soudan Underground Lab



Safety Inspections at Soudan

- Monthly inspections of equipment and facilities
 - > Cranes, fork lifts, trucks
 - > Fire extinguishers, emergency Lights
- Yearly inspection by Soudan Laboratory Safety Committee
- Yearly inspections by outside experts
 - > Overhead, gantry, and mobile cranes
 - > Fire sprinkler system
 - > Fire extinguishers
 - > OSHA Site Safety Inspection (DNR)

Joint Safety Meeting

- Monthly joint (UMN, DNR, CDMS, MINOS) safety meetings are held monthly
- Topics include:
 - > Annual fire safety refresher
 - > Annual operators certification
 - > Cryogenic safety
 - > Back safety
 - > Site safety updates
 - > Rescue team exercises
- Review any current issues at the mine





Yearly Safety Training Program

- Jan - Employee Right to Know (MERKTA), MSDS and physical hazards **
- Feb - Incident Command refresher
- Mar - Forklift refresher **
- Apr - High Angle Rescue
- May - Cage rider refresher, Self-Rescuer **
- Jun - Phd Gas meter
- Jul - open
- Aug - open
- Sep - Confined Space**
- Oct - Fire extinguishers
- Nov - CPR, AED, First Aid, Blood borne pathogens, PPE
- Dec - Crane operation and material handling **

** required for U of M employees

Visitor Training and Documentation

- All visitors to the lab coming for more than one day must receive a two hour Safety and Lab Orientation Class
 - > Lab Safety Handbook
 - > All visitors must go through a yearly refresher
- New contractors must also go through on-site safety training
 - > Lab Safety Handbook for Contractors

Mine Rescue Team



Mine Rescue Team

- Mine Rescue Team
 - > Joint team with DNR and U of M
 - > 13 members on team, minimum of 6 needed for emergency
 - > Monthly training required with Bio-Pack Self Contained Breathing Apparatus (SCBA)
 - > Act out emergency scenarios each month



Putting on gear for practice scenario

Mine Rescue Team



High Angle Rescue Practice



Safety Equipment at Soudan

- 6 BioPac 240 four-hour re-breathing SCBA units on site
 - Same units now being used at Fermilab for its rescue team. An MOU should be written for cross backup help between sites
- 3 Heart Stream AED defibrillators
- 2 High concentration emergency oxygen kits (25Lpm) with D size cylinders
- Emergency Jump kits
- Gurneys, stretchers, other transport equipment
- High Level Rescue Equipment
 - Ropes, pulleys, winches, straps, etc.
- First Aid Stations
- Refuge Room-heated area upstream of lab, water, bedding, first aid, dehydrated food

Safety Record at Soudan

- We have had 14 safety reports at Soudan since 1998
 - > 1 lost days incident
 - A welder (career ironworker) herniated disk while adjusting steel plates at the assembly workstation
 - > 9 recordable injuries
 - > 3 near misses
- Safety rates
 - > Lost days injury rate of 1.1 (1 in 179k hours)
 - > OSHA recordable rate of 11.0 (10 in 179k hours)
 - > These include MINOS, visitors, CDMS and facility operations