Mine Emergency Preparedness and Response

SEEK REFUGE: YOUR THIRD LINE OF DEFENSE

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Assessment of Needs and Planning

- What if your mine had a Mine Emergency today? What would you do?
- ARE YOU PREPARED? What can you do to prepare?
  - Provide Risk Assessments/Mitigation
  - Plan for Contingencies in ERPs (What If's)
  - Provide Training
  - Plan ahead – Develop a Mine Emergency Organizational Structure

Risk Analysis and Mitigation

- Identify Hazards That May Cause Explosions, Fires, Inundations, Ground Control Failures
- Perform a Risk Assessment Based on Hazards
- Eliminate, Control and Reduce Risks
- Administer the Risk Management Process

Responsible Persons

- Are your Responsible Persons Ready to handle a mine emergency? How do you know?
  - Need Competency Assessments for Responsible Persons
  - Responsible Person training materials have been developed – “Responding to a Mine Emergency” IG 110
  - Training modules have been developed for Responsible Persons and Command and Control

Mine Rescue Teams

- How quickly will your designated mine rescue teams and other available teams get to your mine?
- Have you determined their availability/level of competency/quality compared to other teams? Do you have pre-arrangements with other mines?

Fire Fighting

- Are you prepared to fight a mine fire?
  - Have you performed a Mine Fire Preparedness Assessment?
- Do you have Mine Fire Brigades?
  - Are they well trained?
  - Are they well equipped?
- Do you have listings of inert gas vendors in your ERP? How quickly can they get to your mine?
- Is the surface area above the mine accessible? Will roads need to be built? Do you have the resources necessary to respond?

Training for Preparedness

- What types of training are available to prepare miners for emergency evacuations?
  - MERD
  - Responsible Persons
  - Command and Control
  - Emergency Response Decision-Making
  - Emergency Communications
  - Leadership Training for Supervisors
  - Team-Building Training
  - Simulated Smoke Training
  - Dealing with Stress
  - Self-Escape

Are You Ready?

- Will your emergency systems work after an explosion or during a mine fire?
- Mines need to Harden Communications, Tracking Systems, and Mine-Wide Monitoring Systems
- Is your mine in compliance with Communications and Tracking requirements?

Surface Surveying

- Have you pre-located key underground locations on the surface above your mine? (**Refuge Alternatives**, extent of mining, etc.)
- How many mines have done pre-surveys?
  - Coal Surveying Data (Spreadsheet)
- Do you know how to quickly contact knowledgeable surveyors that know your mine?
  - Are Surveyors Listed in your ERP?
  - Are you relying on GPS surveying devices to work during inclement weather?
- Don’t depend on surveyors being available when you need them – Get your pre-surveys done!

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SUBJECT: Global Positioning System (GPS) and Established Surface Stations or Markers

District	Mine IDs	Active Mines	Mine has established strategic surface stations or markers over the underground active working sections	Surface markers are readily accessible and easily located	Markers are protected from the elements and vandalism and are easily recognizable	Mine shows markers on a map that also depicts surface features such as roads, streams, power lines, etc.	Operator includes the surface markers' placement in the mine's emergency preparedness planning and/or ERP	Company/Operator has **fully** implemented these recommendations.
DISTRICT 01	12	9	8	7	8	8	0	0
DISTRICT 02	42	33	26	26	26	26	5	6
DISTRICT 03	29	27	6	7	6	9	1	3
DISTRICT 04	164	115	28	31	32	32	0	0
DISTRICT 05	65	49	15	15	11	8	3	6
DISTRICT 06	105	68	34	34	33	42	0	1
DISTRICT 07	72	59	6	6	6	6	0	6
DISTRICT 08	25	19	0	6	6	6	0	0
DISTRICT 09	26	20	13	12	12	12	4	3
DISTRICT 10	12	12	7	9	8	8	2	2
DISTRICT 11	9	7	6	7	7	6	0	5
Grand Total	561	418	149	160	155	163	15	32

Information updated 1/14/2010

Borehole Drilling

- Are competent drillers immediately available?
- Are they listed in your ERP? Can they drill both rescue and probe holes?
- What will you do if the hole misses the mine openings? Do you have a back-up plan?
- Have you determined the availability of site preparation resources (surveyors, dozers, etc.)?

Evacuation

- What will your miners do during an **Emergency** – Try to escape? Take shelter?
- Evacuate! Evacuate!
- Only if blocked/injured – take shelter
- What can you do?
  - Train, Train, Train

Refuge Alternative Issues

- What New Issues Do We Face Due to the Introduction of Refuge Alternatives in Mines?
  - Can you communicate using a surface borehole ?
    - What type of communications system will you use?
    - How will you communicate with miners in the RA?
    - Will miners need to leave the RA to communicate?
    - Can standardized connections be supplies for generic system?

Refuge Alternative Issues

- Can you provide supplemental air from the surface using a borehole?
  - Will you use a pipe, hose, or tube?
  - What system will you use on the surface to provide breathable air?
  - Can the RA be equipped with a standardized fitting?
  - Will miners need to leave the RA to connect the fitting?
  - Are RAs equipped with an air relief valve?

Refuge Alternative Issues

- How will you handle communications with family members?
  - When will family members be allow to talk with persons inside RAs?
  - How long can they talk?
  - What effect will this have on miners inside a RA?
  - What effect will this have on family members?

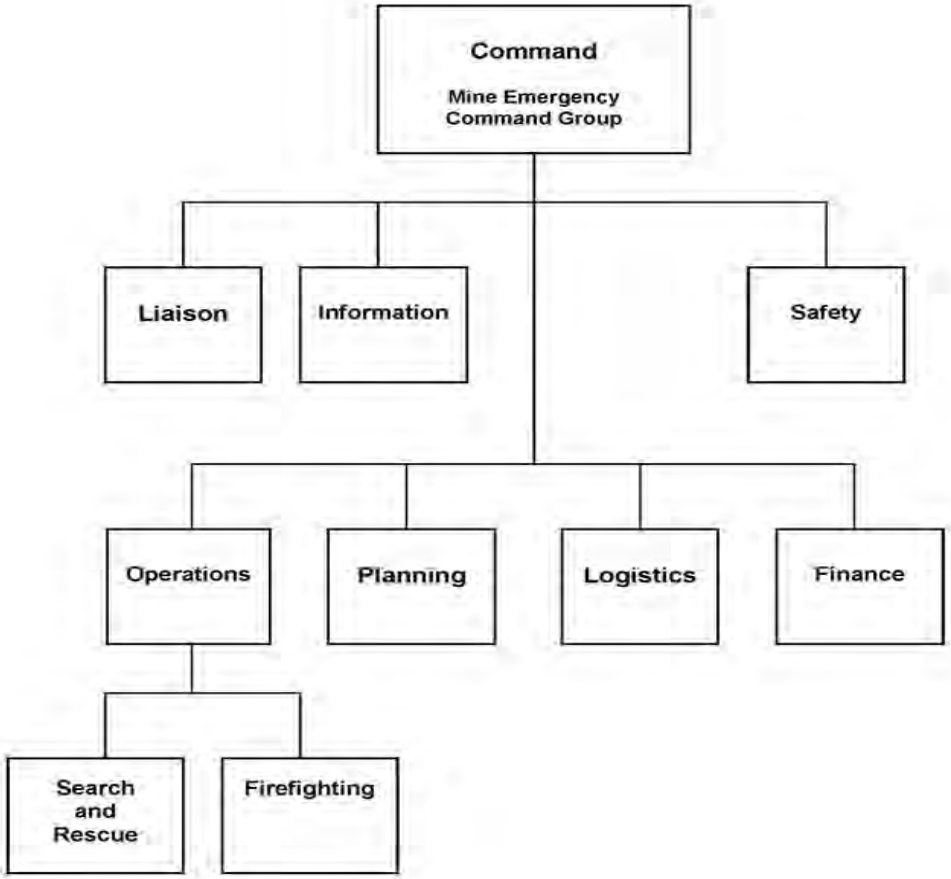
Refuge Alternative Issues

- How will mine rescue teams extract miners from a refuge alternative?
- How will injured miners be treated?
- Do you have extra SCSRs in your refuge alternatives for excursions out of the alternative?
- Can a RA withstand a 15 psi explosion?

Command and Control

- Who will manage/staff your Command Center? Where will it be located? Who is in Charge?
- Are you and your people trained on Command Center Operations? Incident Command System?
- Have you incorporated your Mine Emergency Organizational Structure into your ERP?

Mine Emergency Command System



Analysis of Mine Gases

- Do you have the equipment necessary to sample the mine gases from mine fans, boreholes, other areas of the mine?
- Sampling – Do you have permissible pumps, tubing, flame arrestors, sample bags/bottles, generators?
- Do you have adequate gas detectors (Need High Ranges for CO and CH4)?
- Can your people perform a trend analysis? Do you have the computer capability to display the readings in graphical format?

Gas Chromatographs

- Do you have or have access to Gas Chromatographs and Operators?
- Have you explored Contracting for Chromatograph Services?
- How quickly can this capability be setup at your mine?

Family Liaisons

- Are you prepared to supply support for family members and provide the necessary information at regular intervals?
- Have you made pre-arrangements for a facility to be used by family members and clergy? Food? Sleeping arrangements?
- Who will be your family liaisons?

SCSRs/SCBAs (MINER Act Requirements)

- When will new types of SCSRs/SCBAs be available that meet MINER Act requirements?
  - NIOSH has a contract to develop a new SCSR that meets MINER Act requirements
- SCBA Refill System is now available in the U.S., and has been used at a BHP in New Mexico, and at the Henderson Mine in Colorado

Sharing resources with other operators

- Can Gas Chromatographs and other key equipment be shared among mine operators?
- Have you made pre-arrangements for use of mine rescue teams from other operators?
- What other resources can be shared?

"Are You Prepared?" Mine Emergency Preparedness and Response Initiative

There is no such thing as "too prepared."

The history of mine emergencies has taught us that we can never be too prepared to respond to these life threatening events. We have also learned that even with the development of modern rescue equipment and techniques, gaps still remain in our capabilities that could hamper or harm a successful mine rescue effort. These shortcomings have been exposed during mine rescues over the past few years. In addition, new technologies such as refuge alternatives are changing the planning and execution of mine rescue efforts…