Mine Rescue Scenarios

3rd International Mine Rescue Conference

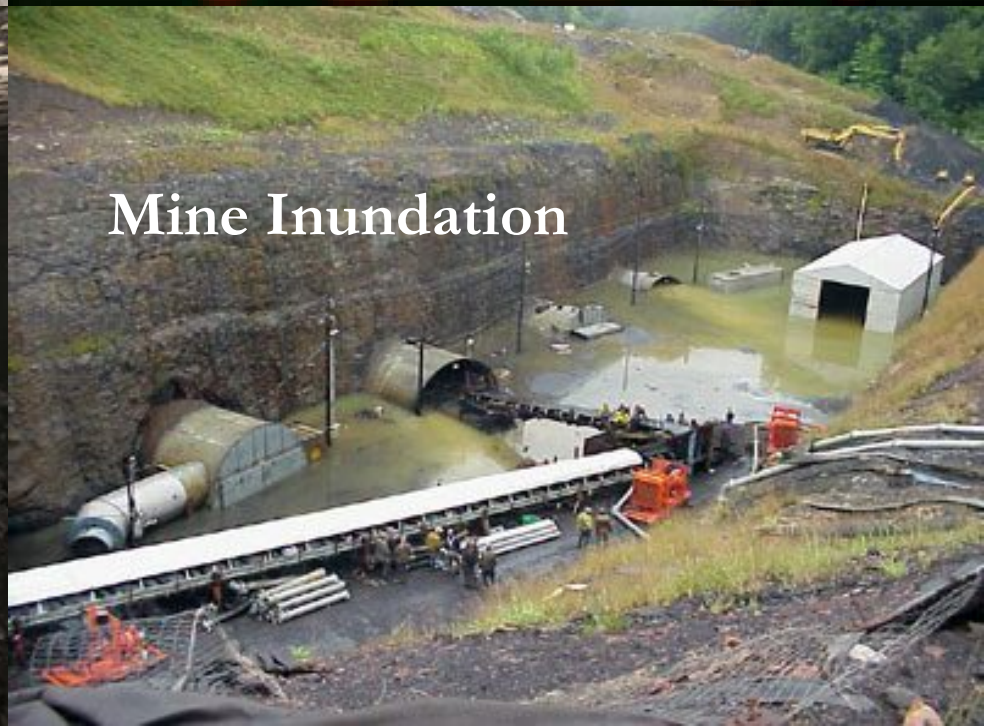
September 1, 2007

Workplace Safety Hazards

Mine Explosion

Mine Fire

Ground Failure


Mine Inundation

Mine Operators must notify MSHA after accidents occur

MSHA responds with enforcement and Technical Support personnel as warranted

Command Center Established at Mine

- Company
- MSHA
- State
- Labor Representatives

Plans developed by company to conduct rescue and recovery operations; Subject to review and approval prior to implementation

MSHA Technical Support

Collect and analyze gas samples from underground locations

Determine explosibility of gas mixtures

Record gas sampling data, calculate gas indices, and produce graphical trending of data

Monitor barometric pressure changes, and produce graphical representation of forecasts

Boreholes

Work Hard Coal Co., LLC S Mine Main Return	GAS CONCENTRATIONS									
Date	H2	O2	N2	CH4	CO	CO2	C2H2	C2H4	C2H6	Ar
and Time	ppm	%	%	%	ppm	%	ppm	ppm	ppm	%
8/20/07 23:00	792	20.52	78.10	0.15	845	0.13	19	30	16	0.93
8/20/07 23:30	752	20.54	78.10	0.14	806	0.13	6	21	4	0.93
8/21/07 0:00	671	20.60	78.06	0.14	779	0.12	8	25	0	0.93
8/21/07 0:30	599	20.55	78.12	0.14	751	0.12	15	19	0	0.93
8/21/07 1:00	657	20.57	78.11	0.13	725	0.12	5	14	0	0.93
8/21/07 1:30	726	20.57	78.10	0.13	699	0.12	10	21	0	0.93
8/21/07 2:00	639	20.56	78.13	0.13	654	0.11	10	21	0	0.93
8/21/07 2:30	632	20.64	78.06	0.13	635	0.11	8	16	4	0.93
8/21/07 3:00	632	20.61	78.10	0.13	604	0.11	4	18	0	0.93
8/21/07 3:30	359	20.61	78.14	0.12	570	0.10	0	0	0	0.93
8/21/07 4:00	491	20.60	78.14	0.12	550	0.09	4	0	0	0.93
8/21/07 4:30	435	20.61	78.14	0.12	531	0.10	0	0	0	0.93
8/21/07 5:00	543	20.65	78.10	0.12	507	0.10	0	0	0	0.93
8/21/07 5:30	410	20.65	78.13	0.12	478	0.09	0	0	0	0.93
8/21/07 6:00	374	20.67	78.12	0.11	445	0.09	0	0	0	0.93
8/21/07 6:30	379	20.71	78.08	0.11	432	0.08	0	0	0	0.93

Remote Gas Sampling

Inert Gas Injection and Ventilation

Camera Exploration

Remote Seals

Rescue Capsule

Mine Emergency Experience

Experience in mine emergency responses is priceless.

In 1980s, Due to retirement of experienced managers, MSHA determined a need to train new managers on mine emergency response

Mine Emergency Responsiveness Development

MERD

MSHA Training exercise for managers assigned to respond to mine emergencies.

Role-Playing exercise incorporating mine accident, plan development and execution, including direction of mine rescue teams.

Provided to some mining companies and labor organizations.

Mine Emergency Responsiveness Development

Key participants are given a mine map and background information on simulated mine evening before exercise.

Mine Layout
Mine Ventilation
Mine Electrical
Methane Liberation
Mine Rescue Teams
Mine Employment
Mine Geology
Equipment Utilized
Fire Protection and Detection Systems

Mine Emergency Responsiveness Development

Key participants : Superintendent, Mine Foreman, MSHA District Manager, State Director of Mines

Key participants typically the “new guys”

Mine Emergency Responsiveness Development

Incorporates actual mine pager phone communication system.

Provide participants with gas sampling ‘data’ to induce decision making.

Simulated advancement of mine rescue teams and reporting of underground conditions.

Mine Emergency Responsiveness Development

Also simulate media coverage and family briefings.

Goal is to build awareness of need for Emergency Preparedness for mine disaster response.

Feedback provided to participants after completing the exercise

Mine Emergency Responsiveness Development

Either coal or metal/nonmetal mine;
Surface or underground

Ideal class size approximately 20 people

Normally completed in 8 hours

Emphasis is on operations in Command Center; development and approval of plans; and decision making

Modified MERD Training

Participants given a mine map and background information on simulated mine.

Instructors inform the participants of a mine accident (fire or explosion).

Instructors create scenarios, asking participants "What would you do if…..?"

Modified MERD Training

Today, you are all invited to participate in a simplified Coalburger Mine MERD Exercise.

You are the Mine Superintendent of the Coalburger Coal Mine

What would you do?