

# MSHA MINE EMERGENCY OPERATIONS



# MSHA Command Vehicles

- MSHA/MEO maintains two mobile Command Vehicles that can be utilized at any emergency site.
- Bus-type vehicles (diesel) that are specially equipped to be used for a quick, temporary MSHA/DOL on-site headquarters.
- Equipped with several types of communications equipment including cell phones, satellite telephone, land line telephones (teleconference), on-site radios, and fax/copy machine.
- Computers with mine mapping software (CAD), modems, and can tie into MSHA computer network.



- 1994 Chapparral, 1998 Monarch
- 39' 6" long, 13' 2" height, 8' 6" wide
- Weighs 23,400 lbs.
- Two on-board 6.5 Kw generators
- Power needed – 50 Amps., 220 VAC (single phase) (land line)

# Command vehicle Interior - Communications center, computer work area, and conference area



# Manufacturer Information

- 1994 Chapparral
  - Manufactured by Isley's Commercial Vehicles and Equipment
  - Vehicle cost about \$167,000 w/o equipment
  - Communications and computer equipment cost about \$40,000
  - Mesa, Arizona
  - Company has gone out of business
- 1998 Monarch
  - Manufactured by Monarch Specialized Motor Coach Corporation
  - Vehicle cost about \$175,000 w/o equipment
  - Albion, Indiana
  - Communications and computer equipment cost about \$40,000
  - Company has gone out of business

# MSHA Mine Rescue Teams

- Coal Mine Emergency Unit has 30 volunteer team members
- M/NM has 15 team members
- Highly training in use of self-contained rescue breathing apparatus, gas detectors, thermal imagers, ventilation measuring equipment, communications equipment, etc.
- Teams train one day each month and wear breathing apparatus for at least 2 hours per session.



# Rescue Team Support

- Provides a heated/cooled work area
- Work bench for apparatus and instrumentation
- Contains spare parts, battery chargers, and communications



# MEO Field Equipment Stations

- PITTSBURGH
- NORTON, VA
- BIRMINGHAM, AL
- DENVER, CO
- VACAVILLE, CA
- GREEN RIVER, WY
- BENTON, IL
- PRICE, UT





**LOCATION OF MINE EMERGENCY Equipment AND DISTRICT OFFICES - JULY 2002**



**PRICE (COAL PO)**

- 1. Satellite Phone
- 1. IR Equipment
- 1. Gas Sampling Taring
- 1. Calibration Gas

**COEUR D'ALENE (NMMA PO)**

- 1. Satellite Phone
- 1. IR Equipment
- 1. Gas Sampling Taring
- 1. Calibration Gas

**GREEN RIVER (NMMA PO)**

- 1. Satellite Phone
- 1. IR Equipment
- 1. Gas Sampling Taring
- 1. Calibration Gas

**BENTON (COAL PO)**

- 1. Satellite Phone
- 1. IR Equipment
- 1. Gas Sampling Taring
- 1. Calibration Gas

**PITTSBURGH TECH SUPPORT**

- 1. Satellite Phone
- 1. IR Equipment
- 1. Gas Sampling Taring
- 1. Calibration Gas
- 1. P.O. Box Rescue Mater.
- 1. Mine Emergency Response Kit
- 1. Mine Rescue Vehicle
- 1. International Phone
- 1. Gas Sampling Taring
- 1. Mine Rescue

**Mine Emergency Vehicle**

- 1. Ventilation Fan
- 1. Gas Fan
- 1. Electrical Fan
- 1. T.L. Power Truck
- 1. Generator Truck
- 1. MCI Truck
- 1. Truck Trailer

**NATIONAL MINE HEALTH AND SAFETY ACADEMY**

- 1. Satellite Phone
- 1. IR Equipment
- 1. Gas Sampling Taring
- 1. Calibration Gas
- 1. Mine Rescue Vehicle
- 1. MCI Truck
- 1. Truck Trailer

**Mine Emergency Vehicle**

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**MAP LEGEND**

- Satellite Phone
- IR Equipment
- Coal District Office
- NMMA District Office
- Mine Rescue Vehicle

Scale: 1" = 70 Miles

# Emergency Equipment at Field Locations

- First response equipment
- Infra-red and electrochemical gas monitoring equipment
- Gas sample tubing
- Calibration Gases
- Satellite telephone

# Satellite Telephones

- Capable of communicating from anywhere in the United States
- Built into briefcases for quick response
- Can be used in vehicles or offices



# TV Probe Truck

- Self-contained system with generator
- Two permissible TV probes
- Each probe has light source, remote focus, zoom lens, iris, 360 degree rotation
- 1500 feet of cable on winch



**TV Probe Truck at CAM Ohio, Hopedale Mine, near  
Cadiz, OH, February 7, 2005**



# Gas Monitoring Truck

- Continuous sampling and recording of mine gases
- Methane
- Carbon monoxide
- Carbon dioxide
- Oxygen
- Barometric pressure recordings



# Gas Analysis Laboratory

- Gas samples are analyzed from tubes or bottle samples
- Two portable gas chromatographs (used in MSHA laboratories)
- Methane, ethane, propane, acetylene, oxygen, nitrogen, hydrogen, carbon dioxide, carbon monoxide, and other low weight hydro-carbons



West Elk Mine Hole F	GAS CONCENTRATIONS										
	Date	H2	O2	N2	CH4	CO	CO2	C2H2	C2H4	C2H6	Ar
	and Time	ppm	%	%	%	ppm	%	ppm	ppm	ppm	%
02/08/2000 20:07	1104	18.00	78.71	0.41	1058	1.72	0	34	112	0.93	
02/08/2000 21:01	1073	18.18	78.66	0.36	1006	1.65	0	35	110	0.93	
02/08/2000 22:31	1208	17.92	78.70	0.40	1130	1.80	0	39	121	0.93	
02/08/2000 23:21	1111	18.12	78.69	0.41	981	1.62	0	32	105	0.93	
02/09/2000 0:49	1201	17.93	78.74	0.44	1063	1.73	0	36	114	0.93	
02/09/2000 1:19	1090	18.02	78.74	0.39	1019	1.70	0	36	113	0.93	
02/09/2000 2:51	1110	17.87	78.76	0.44	1071	1.77	0	36	121	0.93	
02/09/2000 3:20	1278	17.65	78.80	0.49	1136	1.87	0	36	125	0.93	
02/09/2000 4:46	1204	17.75	78.77	0.44	1142	1.86	0	38	129	0.93	
02/09/2000 5:47	1172	17.76	78.77	0.44	1121	1.85	0	38	128	0.93	
02/09/2000 7:08	1272	17.71	78.76	0.45	1161	1.89	0	39	131	0.93	
02/09/2000 8:55	1329	17.69	78.76	0.45	1202	1.89	0	40	128	0.93	
02/09/2000 10:15	1170	17.77	78.76	0.45	1172	1.84	0	41	126	0.93	
02/09/2000 10:45	1263	17.71	78.75	0.49	1217	1.86	0	43	125	0.93	
02/09/2000 11:20	1199	17.82	78.76	0.44	1156	1.80	0	41	122	0.93	
02/09/2000 12:45	1219	17.71	78.78	0.47	1175	1.86	0	40	130	0.93	
02/09/2000 15:20	1230	17.56	78.82	0.51	1174	1.93	0	39	136	0.93	



# Mine Explorer Robot

- Permissible
- Modified ANDROS Wolverine robot, used by military and swat teams
- 3 TV cameras, remote display
- Continuous display of mine gases from Industrial Scientific detection instrument
- Approximately 5000 feet of fiber optic control/data cable





# Excel #3 Mine Fire Recovery

- ROBOT USED TO EXPLORE PAST SLOPE BOTTOM AHEAD OF TEAMS
- MEU TEAM LOGGED OVER 190 HOURS OF APPARATUS TIME UNDERGROUND



# Rescue Capsule

- Two sections – 1 personnel section and 1 equipment section
- Sections can be used in tandem
- Personnel section:  
650 lbs, 21 ½”  
diameter, 110” length



# “New Capsule”



# Queecreek Mine Rescue – “9 for 9”



# Mine Emergency Responses -2004-2005

- Recovery of Pinnacle mine
- Emergency deployment to mine fire at Dotiki mine and recovery of mine
- Emergency deployment to Excel #3 mine (Recovery of mine in January, 2005)
- Emergency deployment and reopening of Buchanan #1 mine (May, 2005)