Ohio Underground Mine Safety Task Force

Report and Recommendations

March 2006

Executive Summary

On February 6, 2006 Governor Bob Taft announced his strong endorsement of Department of Natural Resources (ODNR) Director Sam Speck's proposal to form a multi-interest Underground Mine Task Force. The assigned mission of this Task Force was:

> *To evaluate Ohio's underground mine emergency response program and to provide written recommendations to the Director of the Department of Natural Resources within 45 days that will improve prevention of underground mine emergencies, improve protection of miners and enhance response to mine emergencies in the State of Ohio.*

The multi-interest Task Force, comprised of safety professionals from the mining industry, labor and ODNR, met weekly between February 14, 2006 and March 14, 2006. The Task Force took into account Ohio's existing mine safety resources, including safety requirements, emergency response communications systems, training program, staff resources, equipment and emergency response network. Also addressed are several areas where Task Force members feel Ohio can continue to be proactive in preventing accidents, protecting miners and responding to emergencies.

Subject-matter experts were invited to give presentations to the Task Force on state-of-the art safety equipment and technological advancements. Presentations covered several types of communications and tracking systems, self-contained self-rescuers (SCSR), tag lines, refuge chambers and other barricading materials. Task Force members visited the State Emergency Operations Center to evaluate communications and logistics assistance that is available and also toured ODNR's New Philadelphia Mine Rescue Station.

All members of the Task Force were in agreement that Ohio should be the leader in mine safety and work to ensure that the best possible tools are provided to improve protection of miners in the aftermath of an emergency, such as a fire or explosion, but also prevent emergencies and promote early response. To accomplish this, the Task Force evaluated improvements that could be accomplished through the following four mechanisms:

- Internal review of administrative processes and procedures in place at each mine;
- Amendments to the Ohio Revised Code (ORC) and administrative rules;
- Administrative changes in the ODNR Mine Safety Program;
- Research and development of safety-related technologies.

Task Force recommendations are made in several areas:

- Increased and better miner training
- Early detection of carbon monoxide
- Installation of lifelines/taglines systems
- Additional oxygen stations
- Additional and better rescue equipment
- Better rescue team training
- Mine emergency drills

The Task Force also recommends that ODNR convene a Focus Group annually to review mine safety requirements, procedures, training and emerging technology in order to promote continuous improvement of Ohio's mine safety. The Task Force recognizes the need and importance of two-way radio systems, safe rooms and personal trackers, and recommended further study and support to push development of these emerging technologies that will enhance the safety of Ohio's underground mine workers.

Background

In the aftermath of the tragic underground miner fatalities in West Virginia during January 2006, appropriate questions were raised regarding the adequacy of efforts at the federal, state and private-sector level, to protect and respond to trapped miners during underground mine emergencies. At the federal level, the U.S. Department of Labor's Mine Safety and Health Administration (MSHA) has officially requested data, comments and information for the purpose of improving mine rescue equipment and technology. On March 9, 2006 MSHA published an Emergency Temporary Standard that mandates several improvements for oxygen supplies and escape procedures in all states including Ohio. Several coal mining states began reviews and some have enacted rules aimed at improving communication systems, providing underground oxygen supplies and improving emergency response. As the recent deaths in West Virginia remind us, the job of safety is never done. In addition, with the global focus on energy needs and clean coal combustion, Ohio expects significant growth in its mining industry.

The record of mine safety performance in Ohio's existing ten underground coal mines and four non-coal underground mines has been good, as evidenced by the low number of fatalities and accident rates that are better than the national average. Moreover, Ohio has not had a mine disaster since 1944.

Ohio has been proactive in managing mine rescue response, as evidenced by ODNR's mine rescue network supported by:

- A rescue team at all but one of the underground mines in Ohio
- Five ODNR rescue trucks
- Each Ohio rescue team having access to an infrared camera that will allow rescuers to see through smoke
- ODNR's foam-generating fire fighting equipment
- Three rescue stations maintained by ODNR located throughout the coal region so as to optimize response time

- An ODNR mine rescue coordinator position created prior to the Sago, West Virginia accident, to coordinate and improve the quality of underground mine rescue team training and response
- Ohio's State Emergency Operations Center, which allows streamlined and effective emergency response communications

In addition, procedures are in place to enhance mine disaster readiness including

- Annual underground mine safety inspectors' participation in four regional mine rescue competitions to test the skills and preparedness of Ohio rescue teams
- An annual unannounced mock emergency to measure preparedness and response times in order to improve rescue procedures
- Annual inspections of mine rescue readiness by the U.S. Department of Labor's Mine Safety Health Administration
- Training of mine rescue teams

Important Notes

The Task Force is aware that many of the issues that were evaluated are also being studied by the Mine Safety and Health Administration (MSHA) of the U.S. Department of Labor. On March 9, 2006, MSHA released Emergency Temporary Standards addressing some of the issues considered by the Task Force, with additional amendments expected. The Task Force endeavored to develop recommendations and adopt standards that would not conflict with those being considered by MSHA. The Task Force has developed its recommendations with the intent that they will work in unison with the efforts currently being put forth by MSHA, industry and labor to accomplish our shared goals.

Because underground mines are currently required to comply with both federal (MSHA) and state regulations, the Task Force focused on areas of improvement within existing regulations and possible revisions to state regulations as well as safety-related technologies that are now becoming available or are under development.

Task Force Members

The Task Force was comprised of experts from the ODNR Division of Mineral Resources Management (DMRM) and its mine safety section, representatives of companies engaged in each type of underground mining in Ohio and representatives of labor. *Detailed profiles of Task Force members are provided later in this report, beginning on page 17.*

Michael Sponsler	Chief, Division of Mineral Resources Management
Scott Kell	Deputy Chief, Division of Mineral Resources Management
Jerry Stewart	Mine Safety Manager, Division of Mineral Resources Management
John Ziants	Mine Safety Coordinator, Division of Mineral Resources
Shelly Harding	Office Assistant, Division of Mineral Resources Management
Jerry Taylor	Murray Energy (coal longwall mining)
David Zatezalo	CAM Ohio LLC (coal room and pillar mining)
Donald Orvach	Cargill Deicing Technologies (salt mining)
Thomas MacKall	East Fairfield Coal (limestone mining)
Babe Erdos	United Mine Workers of America – UMWA (labor - coal mining)
Bill Bousquet	United Steel Workers of America – USWA (labor - salt mining)
Gregory Patterson	Mountain Spring Coal (coal room and pillar mining)

Recommendations and Discussion

The Ohio Underground Mine Safety Task Force respectfully submits the following recommendations to improve safety in Ohio mines and the response capabilities in the event of an emergency situation. *A compact list of Task Force recommendations is provided later in this report, beginning on page 15.*

A. Prevention

A-1) Due to the extreme operational differences and variation of hazards present between coal and non-coal mines, a work group should be formed to specifically evaluate safety in non-coal mines.

The likelihood of fires and explosions is greater in coal mines due to the potential presence of explosive gases and the combustibility of the product being mined. Therefore, many of the efforts to prevent problems and protect miners need to be vastly different. The Task Force believes that efforts to improve safety in non-coal mines would be best accomplished separately by a work group of stakeholders to address specific needs in that segment of the industry.

A-2) The ORC section 1567 should be amended to require installation of monitoring systems on all underground conveyor belts to provide the earliest possible detection of fires.

All underground mines utilizing conveyor belts for haulage and operating in the State of Ohio shall provide monitoring systems on each conveyor belt that will provide the earliest possible warning of fire. The Chief of DMRM shall promulgate rules governing these systems, with the input of industry and labor.

Today, carbon monoxide (CO) monitoring technology exists and is employed within some mines in the state to provide for this fire detection. Conveyor belts are one of the most likely places for a fire to occur. The timely knowledge of a fire is critical to subsequent actions, such as extinguishment or evacuation, and their likelihood of success.

A-3) All mines should utilize communications systems that will function properly not only on a day-to-day basis, but also will remain effective after a fire or explosion.

The Task Force believes that technology needs to be employed which will provide two-way communications from the surface to all persons underground at all times. Unfortunately, this technology is not available today, and as such, cannot be mandated. The systems currently available are all dependent upon the integrity of cables, which can be damaged by fire or explosion.

Locator, tracking and existing communications systems today provide less than needed information about the location and condition of miners. Existing systems being touted today are limited to one-way paging with only general location ability. Recent disasters

have clearly demonstrated the need and advantage of having interactive communications available after an event. Pieces of this technology exist today and, we believe, with assistance such a system could be developed in a short time.

The Task Force considered stopgap measures such as modifications to hard-wired systems currently in use or the installation of additional systems. Consensus could not be reached on how to make an effective recommendation.

A-4) Research and development of safety technologies should be pursued by the Industry, DMRM and labor working in conjunction with MSHA. DMRM should dedicate staff time to coordinate this process.

The Task Force believes that existing technologies can be married and refined to develop two-way communication systems. Further, the Task Force believes that Ohio should be the national leader in driving the development of new technologies to improve all aspects of mine safety. We should continue beyond the current search for communications and tracking equipment to encourage and coordinate research and development for years to come. Historically, research and development of innovative ideas to improve safety in mines has been driven by the occurrence of disasters like the ones at Sago and Aracoma in West Virginia. It is time to become proactive and develop a long-term mechanism to ensure continued research and development.

After learning much from subject-matter experts, the Task Force believes the development of two-way voice communications and equipment to allow trapped miners to effectively barricade should be the areas of initial focus. The Task Force urges Ohio to provide research and development monies to drive technological improvements.

A-5) The ORC Section 1561 should be amended to require anyone wishing to serve as a foreperson, who has not been actively employed in the industry for an extended period of time be either re-trained and/or re-certified. This change should also modify the current fees for examination.

The ORC should require the re-certification of persons holding any underground certification who have, regardless of reason, not worked for a period of two years or greater in the underground mining industry. Such re-certification shall take place before performing any certified work in an underground mine in the State of Ohio. DMRM shall develop an examination specifically for this purpose.

The ORC should require the re-training of persons holding any underground certification who have, regardless of reason, not worked for a period of one year or greater in the underground mining industry. Such re-training should be required before performing any certified work in any underground mine in the State of Ohio. This training would consist of topics prescribed in a training program submitted by the operator and approved by the Chief of DMRM.

Due to the immensely important role played by certified miners in all aspects of mine safety, Ohio should update the current statutory provisions. Under current statute, once a

person receives certification they are certified for life, unless there is a revocation for purposely violating the mining laws. Mining methods and technology are constantly changing; often these changes affect safety rules and procedures. If someone is to conduct safety examinations and direct workers in performing duties safely, they must be familiar with the current mining methods and technology.

A-6) Electrical training provided to the industry by DMRM should be expanded.

DMRM should provide more training for potential mine electricians, training on basic electrical applications for non-electricians and more annual refresher training for electricians.

Currently mine electricians must pass a test to become certified in Ohio. DMRM conducts extensive training classes to prepare miners for the test. This process has been very useful in providing a solid foundation as well as elevating compliance with electrical rules and regulations. To complement the present efforts, all miners should be given basic electrical training.

One of the best ways to prevent electrical hazards from causing accidents (including fires and explosions) in mining is through training. Training increases a miner's respect for electrical equipment and devices by pointing out the hazards and consequences of improper installation and maintenance, as well as the correct procedures to be employed.

A-7) DMRM should provide firefighting and smoke training for all miners.

DMRM should develop a training curriculum that is specific to each mine's layout and particular needs, employing both lecture and hands-on methods to deliver this training.

In the event of a fire in an underground mine, the best way to prevent a disaster is through early intervention. The more prepared all miners are to combat a fire in its earliest stages, the more likely there will be a positive outcome. One of the greatest challenges in providing effective fire training is the simulation of working in a smoke filled environment. DMRM should make available smoke training for all miners. The ability of emergency responders to work in a smoke-filled environment without becoming disoriented will be greatly enhanced through this type of training.

A-8) DMRM should provide more task-specific training during inspection activities.

One effective way to prevent accidents from taking place is one-on-one training with the workers. Formal classroom-type training plays an important role in making the workplace safer; however, in certain instances, talking with an individual in the actual work environment is more effective.

Currently State Mine Safety Inspectors observe work practices and talk with individuals about evaluating ways they do their jobs. Suggestions are given on ways to improve those practices, when appropriate. Workers value the thoughts and advice of inspectors in this

type of situation, knowing that they travel to different mines and see how others perform similar tasks.

A-9) DMRM should take a more active role in new miner and annual refresher training.

One of the most difficult obstacles to overcome in training is keeping it interesting and informative for participants. Utilizing different instructors and techniques helps to keep the training fresh. DMRM instructors can work with company trainers in development and presentation of various segments of new miner training as well as annual refresher training.

A-10) DMRM should develop a staffing plan for the Mine Safety Program that ensures the ability to implement new recommendations and grow with the industry, while meeting current mandates such as mine rescue preparedness, safety inspections, certification and training.

The Task Force believes the Mine Safety Program plays an important role in improving safety in Ohio with all four program areas; mine rescue, inspections, certification of miners and training. To provide maximum benefit, the program must be adequately staffed. Recognizing that several of these Task Force recommendations increase responsibilities, a staffing plan should be developed to keep staffing at an appropriate level. The plan should provide a gauge that allows staffing to fluctuate with the industry, based upon number of mines, man-hours worked and production.

A-11) Tax incentives for any capital expenditures made by mining companies for safety equipment for use in Ohio mines should be deductible from Ohio Income Tax in the year acquired.

Tax incentives will help to ensure that installing new unplanned safety equipment does not take away from the capital planned for other safety-related spending.

B. Protection

B-1) Self-contained self-rescuers (SCSR) should be provided in quantities that will enable all persons to escape in an emergency situation.

The SCSR is perhaps the most important piece of equipment in mining. The Task Force believes that an adequate supply must be provided to facilitate an effective evacuation of a mine in an emergency.

The Emergency Temporary Standard (ETS) recently put in place by MSHA mandates that multiple SCSRs be provided at various locations throughout each mine. We believe that the ETS provides adequate protection for miners; therefore, no further action needs to be taken in this regard.

B-2) Lifelines should be installed in the escapeways of all underground coal mines. Training on escapeways should be provided for all miners.

Recognizing the visual impediment of smoke and potential disorientation of miners during emergency evacuation, the Task Force feels that a means needs to be provided to readily ensure that miners travel the quickest route to the surface.

The installation of lifelines in all underground coal mines is required by the ETS recently put in place by MSHA. This ETS includes training on escapeways for all miners. It is believed that the ETS provides adequate protection for miners; therefore, no further action is recommended in this regard.

B-3) The ORC should require that tag or tie off lines be provided to all miners working in an underground coal mine.

All underground coal mines operating in the State of Ohio shall provide either tag lines for each crew or individual tie off lines for each miner such that miners can be physically connected as crews in the event of emergency evacuation.

Recognizing the visual impediment of smoke and potential disorientation of miners during emergency evacuation, the Task Force feels that a means needs to be provided to keep individuals from becoming disconnected from their group. It is believed this was a factor in the recent fire and subsequent fatalities at the Aracoma Mine in West Virginia.

B-4) The current EMT requirement in the ORC should be amended to include the classification of "Mine EMT."

The classification of "Mine EMT" should be added to the ORC section 1565.15. Certified EMT instructors with the knowledge of mining and associated injuries and illnesses should be consulted to develop criteria for training in this classification.

Currently the training of EMTs must comply with 4765.01 ORC. The required training curriculum is very rigid and geared for persons who will be working with an emergency medical service. A large part of the training focuses on requirements for ambulances, automobile extrication and transportation of victims. To issue EMT certification under the current statute, this curriculum must be followed completely. A significant amount of time must be spent training on topics not pertinent to what responders will face underground. For this classification Ohio, should keep the current core curriculum, eliminate parts not pertinent and make modifications to provide effective training more focused on the situations that would be encountered while working in a mine.

B-5) A continuing evaluation, study and eventual implementation of barricading technology is needed. It is therefore proposed that a separate group be appointed to study utilization and implementation of these technologies and report back to the Director of ODNR on the status and implementation of these recommendations within a six-month period.

During the work and deliberations of the Underground Mine Safety Task Force, presentations were made by several groups which highlighted the availability of more advanced barricading technology than that which has traditionally been utilized in the underground mining industry.

These technologies, while of NASA and military origin, have obvious benefit to the underground extractive industries and could provide a "safe haven" for trapped miners for a four-day period or more. Several other states and federal agencies are evaluating the issues involved in the transfer of this technology and the Task Force agrees that substantial gains would be made in Ohio's efforts to improve mine safety as these technologies can be commercialized and utilized.

It is therefore proposed that a separate group be appointed to study utilization and implementation of these technologies and report back to the Director of ODNR on the status and implementation recommendations within a six-month period.

C. Response

C-1) The State mine rescue network should be enhanced by adding a fourth station in northern Jefferson County to shorten the current response times and to increase the capacity of the system. To further reduce response times, the Shadyside station should be relocated to the Barnesville area in the ODNR Division of Forestry's building on State Route 148.

Historically a response time goal has been two hours travel time from a station to a mine. The recent disaster at Sago, West Virginia points clearly to the need to improve response time. The Task Force believes that reducing response time will dramatically improve the chances of a successful outcome in an emergency.

Currently in Ohio there are eleven mine rescue teams, with the twelfth team starting up at the Rosebud mine. These teams are comprised of at least six members who are employees of the mining companies. These teams, except for the salt mine teams, depend completely upon DMRM's equipment housed and serviced from three stations. DMRM provides equipment to support and complement that, which is provided by the salt mines. DMRM staff train these teams or work in conjunction with company trainers. Currently the response time averages 67 minutes. The recommended changes will reduce that average to 43 minutes, an improvement of 36%.

This proposal would also increase the capacity of the network by adding two sets of breathing apparatus and the associated support equipment. The rescue efforts at the recent fire at the Aracoma mine emphasize the importance of deploying multiple teams quickly.

There were as many as six teams working and six standing by. During a mine rescue operation, for each team that is working, a back up team must be ready to respond to assist the first. Currently the DMRM network has a total of six sets of breathing apparatus, two at each of the three stations. Therefore, at current capacity only three teams could be working at a time. The addition of two more sets of apparatus into the network would allow for four teams working and four as back up, an improvement of 33%.

C-2) Mine rescue breathing apparatus should be updated to the best equipment available.

The Draeger BG-4 self-contained breathing apparatus in use today were purchased 12 years ago. In 1994 they were the first generation of the BG-4 model. Since that time there have been several upgrades to the equipment, in fact the latest model is the fourth generation. Soon some major changes will be needed to retrofit the apparatus to accommodate new parts. Several of the enhancements in the machines have improved the level of protection provided to the wearer by utilizing a much better system to monitor the apparatus and warn the wearer of potential problems. The changes have also bolstered the robustness of the machine housing which has been a problem with current equipment. Given the high cost of retrofitting and the enhanced protection to the wearer, replacement is the best option.

C-3) DMRM should develop a long-term maintenance and replacement plan to continually update mine rescue equipment, ensuring maximum protection of mine rescue teams and ability to adequately respond to any emergency situation.

Equipment maintenance and upgrading is crucial to ability to respond to emergencies. Some equipment needs the Task Force identified are: turnout gear for protection in high temperature environments, pagers to enhance the ability to contact team members and additional foam-generating equipment for fire fighting.

C-4) DMRM should provide more technical and hands-on training in fire fighting and working in smoke for all mine rescue teams.

Currently, DMRM, in conjunction with MSHA, provides training once each year at MSHA's simulated mine at the training academy in Beckley, West Virginia. This provides an opportunity to train teams in a simulated smoke-filled environment, which is critical to team safety and the success of an emergency operation. During the remainder of the year, training is conducted at various mines and at the rescue stations. Training is provided both hands-on and in a classroom setting. The Task Force believes that in Ohio training should be taken to the next level. A facility should be provided to conduct training in smoke and to provide hands-on fire training. This type of training should become the norm, not a once-a-year event.

C-5) DMRM should continue to work with the State Emergency Operations Center and enhance that relationship by utilizing the MARCS radio system. Communications with County Emergency Management Agencies and like organizations needs to improve to ensure continuity.

The current DMRM notification and communications strategies are sound, but should be reviewed periodically and changed as needed. The use of MARCS (Multi-Agency Radio Communications System) radios in the mine rescue network should greatly enhance communications and resource deployment in an emergency.

C-6) DMRM staff should work with mine operators to develop and maintain effective mine emergency plans.

Each mine develops an emergency plan to provide not only supplies for underground emergency operation but also for security, meals, medical assistance, accommodations for families and many other crucial needs. DMRM staff should work with operators to develop such plans and to help maintain them; constant review and monitoring are required to keep them current. DMRM staff being involved in this process can enhance the overall preparedness of the network by helping to share ideas and resources of the various mines.

C-7) DMRM staff should develop an enhanced protocol for activating mine rescue team members, which would include maps to all mines and a schedule for updates.

The Task Force recognizes an area to improve the readiness of mine rescue teams is a more clearly defined protocol on activation. The need exists to periodically review how each team will assemble and travel to the location of an emergency. Since team members do not routinely travel to other mines, it is important to establish directions, which are updated on a regular basis.

C-8) Annually, each mine should participate in a mock emergency drill.

Each mine should participate jointly with DMRM staff and local emergency services in conducting a mock emergency at least once each year. The purpose of this drill would be to test all communication systems, response times, availability and readiness of equipment and the mine's emergency preparedness program.

C-9) The ORC should be amended to provide liability indemnification for rescue workers and responding companies.

Chapter 1561 of the ORC should be amended to provide indemnification for mine rescue team members and companies providing teams to assist at other locations. Mine rescue operations are inherently dangerous and small mistakes can lead to problems. Persons acting within the level of their training and expertise should be protected while responding in an emergency.

C-10) A mine rescue focus group should meet annually to critique the Ohio mine rescue network, including the training of teams.

DMRM should facilitate the meeting of a focus group at least annually to evaluate the entire mine rescue network within the state. The group should look at equipment, training and over-all preparedness and make recommendations for improvement. This group should consist of representatives from the various mining companies, labor, mine rescue teams and DMRM.

Estimate of Costs

The Task Force was charged with estimating the additional cost for the industry and DMRM to implement its recommendations. The cost estimates provided do not include any cost associated with changes in the MSHA regulations, as in *(Recommendation D-2)*. It is very difficult to estimate the cost to the industry since many of the recommendations involve training, which is not proposed in a traditional classroom setting. Time involved in training is a cost of doing business, but the amount will not be known until the length of training can be determined. *Recommendation A-3* requires utilization of an effective two-way communication system, which is not yet available; therefore, costs cannot be estimated.

The following estimates are provided for implementation of other recommendations:

Cost estimate for industry

The estimated initial cost is $844,000.

- *(Recommendation A-1) Participation in a work group to evaluate amending the ORC for non-coal mines.*
  It is estimated this recommendation would cost $12,000.

- *(Recommendation A-2) Installation of fire detection monitors, currently the best technology is carbon monoxide (CO) detectors.*
  The cost is vastly different from mine to mine dependent upon size and current systems being utilized. An estimated cost to the industry is $800,000.

- *(Recommendation B-3) Use of tag lines for miners to use for escape.*
  An initial cost is estimated at $22,000.

- *(Recommendation C-8) Participation in a mock emergency drill each year.*
  Staff time is estimated to cost $5,000 per year.

- *(Recommendation C-10) Participation in mine rescue work group.*
  Participation by a representative of each mine would cost $5,000.

Cost estimate for DMRM

Implementing the Task Force recommendations will increase costs to the Mine Safety Program for equipment and personnel. Improvements to response times and the capabilities of the mine rescue network will require additional equipment. To accomplish the additional equipment maintenance, training, research and certification recommendations, DMRM will need additional staff.

The estimated initial cost is $1,131,200.
The estimated annual cost is $ 559,000.

Staffing Costs

An estimated increase of four full-time positions is needed to accomplish these recommendations. This would require annually $280,000 for salaries and benefits plus $90,000 in support cost. An initial equipment cost of $100,000 would also be needed. Increased workload areas created by the Task Force recommendations are:

- *(Recommendation A-5) Additional testing and certification*
- *(Recommendation A-6) Additional electrical training*
- *(Recommendation A-7) Implementation of fire and smoke training for miners*
- *(Recommendation A-8)Additional task training for miners during inspections*
- *(Recommendation A-4) Implementation of coordination of research and development of new technologies*
- *(Recommendation A-9) Additional involvement in new miner and annual refresher training*
- *(Recommendation B-4) Amendment of the current EMT requirement in the ORC and to develop training criteria for Mine EMT.*
- *(Recommendation B-5) Facilitation of group to evaluate, study and make recommendations on eventual implementation of barricading technology is needed*
- *(Recommendation C-1) Additional maintenance time for mine rescue equipment*
- *(Recommendation C-4) Implementation of fire and smoke training for mine rescue teams*
- *(Recommendation C-5) Additional coordination with the state EOC and local emergency services*
- *(Recommendation C-6) Implementation of lending assistance in the development of mine emergency plans*
- *(Recommendation C-7) DMRM staff time for development of an enhance protocol for activating mine rescue team members which would include maps to all mines and a schedule for updates*
- *(Recommendation C-8) Implementation of mock emergency drills at each mine annually*
- *(Recommendation C-9) Amendment of the ORC to provide liability indemnification*
- *(Recommendation C-10) Facilitation of annual meetings of a mine rescue focus group*

Equipment and Facility Costs

- *(Recommendations C-1 & A-7) Add a fourth mine rescue station in northern Jefferson County, relocate the Barnesville station and provide for firefighting and smoke training.* The initial cost of the additional fourth mine rescue station in Jefferson County is estimated at $300,000 for equipment and $12,000 for structural building modifications.

  The annual lease and maintenance of the building is estimated at $27,000.

  The proposed relocation of the Shadyside rescue station to Barnesville will include building modifications for housing mine rescue equipment and to accommodate smoke and fire training as well as some general repairs and office updates. The cost is estimated at $175,000.

  This location will require $22,000 in annual maintenance.

- *(Recommendation A-7) Provide firefighting and smoke training for all miners.* To provide the highest quality training to all miners in fire fighting the use of an electronic simulator could be a most useful tool. The simulator provides a virtual reality setting for hands on training, simulating a fire. This would be a portable unit that can be taken to any mine site.

  The cost is estimated at $83,000.

- *(Recommendation C-2) Upgrade the 42 self-contained breathing apparatus now maintained by DMRM.*

  This is estimated to cost $376,200.

- *(Recommendation C-5) Installation of the MARCS communication system in rescue vehicles.*

  The estimated cost is $49,000.

- *(Recommendation C-3) Purchase of turn-out gear for protection of responders during fire fighting.*

  The cost is estimated at $36,000.

- *(Recommendation C-3) Carry out a long-term maintenance schedule and for updating rescue, fire fighting and training equipment.*

  It is estimated that an additional $140,000 will be needed annually.

List of Recommendations

A. Prevention

A-1) Due to the extreme operational differences and variation of hazards present between coal and non-coal mines, a work group should be formed to specifically evaluate safety in non-coal mines.

A-2) The ORC section 1567 should be amended to require installation of monitoring systems on all underground conveyor belts to provide the earliest possible detection of fires.

A-3) All mines should utilize communications systems that will function properly not only on a day-to-day basis, but also will remain effective after a fire or explosion.

A-4) The industry, DMRM and labor working in conjunction with MSHA should pursue research and development of safety technologies. DMRM should dedicate staff time to lead and support this process.

A-5) The ORC Section 1561 should be amended to require anyone wishing to serve as a foreperson, who has not been actively employed in the industry for an extended period of time be either re-trained and/or re-certified. This change should also modify the current fees for examination.

A-6) Electrical training provided to the industry by DMRM should be expanded.

A-7) DMRM should provide firefighting and smoke training for all miners.

A-8) DMRM should provide more task-specific training during inspection activities.

A-9) DMRM should take a more active role in new miner and annual refresher training.

A-10) DMRM should develop a staffing plan for the Mine Safety Program that ensures the ability to implement new recommendations and grow with the industry, while meeting current mandates such as mine rescue preparedness, safety inspections, certification and training.

A-11) Tax incentives for any capital expenditures made by mining companies for safety equipment for use in Ohio mines should be deductible from Ohio Income Tax in the year acquired.

B. Protection

B-1) Self-contained self-rescuers (SCSR) should be provided in quantities that will enable all persons to escape in an emergency situation.

B-2) Lifelines should be installed in the escapeways of all underground coal mines. Training on escapeways should be provided for all miners.

B-3) The ORC should be revised to require that tag or tie off lines be provided to all miners working in an underground coal mine.

B-4) The current Emergency Medical Technician (EMT) requirement in the ORC should be amended to include the classification of "Mine EMT".

B-5) A continuing evaluation, study and eventual implementation of barricading technology is needed. It is therefore proposed that a separate group be appointed to study utilization and implementation of these technologies and report back to the Director of ODNR on the status and implementation of these recommendations within a six-month period.

C. Response

C-1) The State mine rescue network should be enhanced by adding a fourth station in northern Jefferson County to shorten the current response times. To further reduce response times, the Shadyside station should be relocated to the Barnesville area in the ODNR Division of Forestry building on State Route 148.

C-2) Mine rescue breathing apparatus should be updated to the best equipment available.

C-3) DMRM should develop a long-term maintenance and replacement plan to continually update mine rescue equipment, ensuring maximum protection of mine rescue teams and ability to adequately response to any emergency situation.

C-4) DMRM should provide more technical and hands-on training in fire fighting and working in smoke for all mine rescue teams.

C-5) DMRM should continue to work with the State Emergency Operations Center and enhance that relationship by utilizing the MARCS radio system. Communications with County Emergency Management Agencies and like organizations needs to improve to ensure continuity.

C-6) DMRM staff should work with mine operators to develop and maintain effective mine emergency plans.

C-7) DMRM staff should develop an enhanced protocol for activating mine rescue team members, which would include maps to all mines and a schedule for updates.

C-8) Annually, each mine should participate in a mock emergency drill.

C-9) The ORC should be amended to provide liability indemnification for rescue workers and responding companies.

C-10) A mine rescue focus group should meet annually to critique the Ohio mine rescue network, including the training of teams.

Other Topics Discussed by the Task Force

The Task Force discussed several topics other than those addressed in the recommendations, however the consensus of the group was to not make any recommendations in those areas. Those topics included:

- Adoption of federal regulations for DMRM inspection activities
- Requiring certification of all miners, in addition to the current positions requiring certification
- Drug testing
- Availability of transportation at all times

Task Force Profiles

Mike Sponsler is the Chief of the Ohio Department of Natural Resources, Division of Mineral Resources, a position he has held since 2000. Prior to his current position he was the Division Director of the Reclamation Program in the Indiana Department of Natural Resources. He has also served at the Assistant Division Supervisor in the Illinois Department of Mines and Minerals, Land Reclamation Division. He has B.S. from Illinois Benedictine College in Biology and an M.S. from Southern Illinois University in Zoology (Wildlife Ecology).

Scott Kell is the Deputy Chief of the Ohio Department of Natural Resources, Division of Mineral Resources and oversees the State Mine Safety Program. He is a professional geologist with a BS from Mount Union College and MS from Kent State University.

Jerry Stewart is the Mine Safety Manager for the DMRM. He has been with the program for 22 years and worked in underground mining prior to that for seven years. He is Currently Vice President of the National Mine Rescue Association and a member of the Mine Rescue Veterans of the Pittsburgh District.

John Ziants has been with the ODNR-DMRM for the past four years as Mine Safety Coordinator. Current responsibilities include the supervision and coordination of State Mine Rescue preparedness and response, underground State Mine Inspectors and issues and the administration of state mine certification examinations. Ziants has worked in the underground bituminous industry in Ohio, Illinois and West Virginia in numerous capacities since 1971 and possesses a BA in Administrative Services from Ohio University.

Shelly Harding is the Office Assistant for the Ohio Mine Safety Program of the Ohio Department of Natural Resources, Division of Mineral Resources Management. Shelly has worked for the Ohio Department of Natural Resources for 22 years. Ms. Harding served as Task Force recorder.

Jerry Taylor has 38 years mining experience and has held positions as industrial engineer and underground supervisor for Island Creek Coal Company. He has worked as an instructor for entry-level mining courses at Belmont Joint Vocation School and has held positions as underground miner, training director, underground supervisor and safety director for North American Coal Corporation. He has been the Corporate Safety Director for Murray Energy Corporation since 1995, responsible for the health and safety of 2,200 miners at operations in 4 different states. He holds Mine Foreman certificates in Ohio and Pennsylvania. He has served as an executive board member of the National Mine Rescue Association and is a safety committee member of the National Mining Association.

David G. Zatezalo is President of CAM-Ohio LLC in Cadiz, Ohio. He has worked in the coal mining industry for 32 years in West Virginia, Ohio and Kentucky, and in Queensland and New South Wales, Australia. He has worked in many positions, beginning as a laborer in underground mines up to his current position. A registered mining engineer and MBA, he also holds mining certificates of competency in several states and is a member of the Mine Rescue Veterans of the Pittsburgh District.

Don Orvosh is the mine superintendent at the Cargill salt mine in Cleveland, Ohio. Don has worked at the Cleveland mine for over ten years and has been superintendent since 2003. Don has a previous background in the coal industry of West Virginia and southern Ohio and brings a wealth of knowledge from metal/non-metal and coal mining.

Tom Mackall is a graduate of Mount Union College (1971) and has been employed at East Fairfield Coal Co. since that time, currently as its President. East Fairfield is a family business founded in 1934 and located near Youngstown, Ohio. It mines coal, clay and limestone in four underground mines and two surface mines with 120 employees.

Babe Erdos has been a member of the United Mine Workers of America Local 1304 for 32 years. He is presently serving as the UMWA Ohio Political and Legislative Coordinator, a position he has held for 23 years. He has worked in underground coal mines and has held various positions at the local union level, including Mine Health and Safety Committee. He attended safety training at the Beckley Mine Academy on numerous occasions and on a wide range of topics.

Bill Bousquet is employed with Morton Salt (Fairport Mine). He has 37 years experience in mining. He has served as a Union Safety Representative for 25 years and is currently an overall Safety Representative for Morton Salt. Bill has been Vice President of the local union for 8 years and a Steward for 10 years. He has also served as union maintenance chairman for 8 years.

Gregory D. Patterson is President of Mountain Spring Coal Company, which has operated underground room and pillar coal mines in Jefferson and Columbiana Counties since 1987. He has a BS from The Pennsylvania State University in mining engineering and a MBA from the University of Charleston. He has more than 33 years of experience in the management of underground coal mines in Ohio, Pennsylvania and West Virginia.

Acknowledgements

The Task Force greatly appreciates the information and expertise provided by various subject-matter experts on safety equipment and new technologies.

02/21/06 Mine Site Technologies – Dennis Kent
CSE Corp. – Gary Madrid and Chuck Edwards
Presentation on "Underground Communication Systems – Enhancing Production and Safety at All Stages of the Mining Process."

02/28/06 ChemBio Shelter – Ed Rosciolo
Presentation on "Protecting You in an Uncertain World."

Battelle – Jim Reuther and Rick Givens
Presentation on "Breathing Curtain: New Mine-Fire Survivor Rescue Tool."

State Emergency Operations Center – Chris Webb and Jay Houston did a demonstration on how they handle emergency calls, etc.

03/07/06 Marco North America Inc. – Larry Murray
Hughes Supply – Mr. Hughes
Presentation on communication systems.

Emerald Construction Mine Area Net System – Lee Wise
Presentation on "Mine Area Network."

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