

ONTARIO MINE RESCUE

PREPARED SINCE 1929

Southern District Mine

2023



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1.0 Fire Procedures

1.1 Southern District Mine (Updated 2023)

1.1.1 To Report a Fire

Any person who discovers a fire in the mine, which cannot be extinguished, must call for the EMERGENCY ALARM. If located underground, the person discovering the fire must go to the nearest telephone and phone the #1 Shaft Hoistman using the Pager phone. Give the hoistman your name, payroll number, the location, type and extent of the fire, and request that the EMERGENCY ALARM be activated.

The person requesting the EMERGENCY ALARM must go to the nearest refuge station, contact a supervisor and report actions taken. Any employees encountered on the way to the refuge station must be informed of the fire and advised to go to the nearest refuge station. If smoke is encountered along the way, proceed to the nearest escape way, informing any employees you meet along the way.

1.1.2 #1 Shaft Hoistman's Duties

On being requested to activate the emergency alarm, the hoistman will do the following:

- a) Obtain and record the name, payroll number and location of the caller, location and type of fire.
- b) Activate the EMERGENCY ALARM as follows:

On the Touch screen Monitor, touch the EMERGENCY ALARM ICON. A message will appear on the screen asking you to confirm the alarm by touching the EMERGENCY ALARM ICON twice. Touch the icon on the screen twice and the EMERGENCY ALARM will be activated. To indicate activation, the icon will change colour to red and flash continuously until de-activated.

- c) Phone security and inform them that there is a fire underground and pass on all relevant information.
- d) Discontinue skipping, bring the cage to surface and wait for instructions from the Emergency Control Group.

1.1.3 Emergency Alarm

The Emergency Alarm System consists of sirens and flashing lights located in appropriate locations and within 300' of all working faces. All conveyors and the Continuous Miner will stop when the emergency alarm is activated See Fire Procedures.



1.1.4 Transfer Conveyor Operator / Skiptender

Upon hearing the EMERGENCY ALARM, check your monitor to confirm that the conveyors have stopped and skipping has ceased. Immediately don your Self Rescuer and if there is no smoke outside the booth, proceed to the North Section Refuge Station. If there is smoke, close the door and call the hoistman. Help will be sent immediately.

1.1.5 Employees' Duties

Employees, upon receiving the Emergency Alarm, will immediately proceed to the nearest Refuge Station in fresh air.

- a) Information pertaining to the fire must be relayed immediately to the supervisor.
- b) All persons will remain in the refuge stations until instructed to leave by the supervisor in charge.
- c) Persons brought up to surface must report to their department and be checked out before leaving the property.
- d) Mine rescue personnel underground who report to surface must be cleared by their department before proceeding to the mine rescue sub-station.
- e) Mine rescue personnel on surface that are on shift will report to the mine rescue substation after having been cleared by their supervisor.

Employees unable to reach a refuge station due to smoke, etc. should not run around aimlessly. They must retreat from the smoke and consider building a barricade.

1.2 Points Regarding Barricading

- a) When the decision to build a barricade has been made and there is a telephone in the vicinity, if time allows, phone surface and give the names and numbers of employees and location of barricade site.
- b) The supervisor or employee with the most construction experience should take charge.
- c) Select a dead-end drift free of smoke that will provide a maximum quantity of air. As much area as possible should be included in the barricaded area, regardless of the number of people in the party. Make sure there are no other openings or connections with other workings through which gasses can enter.
- d) Turn off the fan if the switch is readily available or disconnect the vent tubing as near to the fan as possible to stop smoke from being pushed towards the barricade site.
- e) All useful material nearby such as tools, timber, vent tubing, nails and lunch pails should be brought to the construction site.
- f) Erect the barricade as quickly as possible, making it as airtight as possible.
- g) Leave a note outside the barricade indicating the number of persons inside.
- h) When the barricade is complete, rest as much as possible to conserve oxygen and spread



out through the area.

- i) Take turns at checking the barricade for air tightness and walking through the area to mix the air. Conserve food, water and battery lights. Smoking is prohibited.
- j) Remain calm inside the barricade until a mine rescue team arrives.

1.3 Self-Contained Self Rescuer

1.3.1 Procedure

- DO NOT TAMPER WITH IT.
- Keep your rescuer on your person at all times.
- If it is accidentally opened or damaged, report it personally at the end of your shift to your foreman.
- Your self rescuer is for one purpose:

TO ENABLE YOU TO ESCAPE FROM A SMOKE OR CONTAMINATED ATMOSPHERE.

IF YOU HAVE TO USE YOUR SELF RESCUER:

1. Get to a refuge station or fresh air raise immediately.
2. Do not talk while wearing the rescuer.
3. Walk at a steady pace, do not rush or run. You will find it harder to breathe.
4. Do not take off your rescuer until instructed to do so.
5. Know your evacuation route to a refuge station or fresh air source.

1.3.2 Rules For Use

WHEN DO I PUT ON THE SELF RESCUER?

1. When I hear/see the Emergency Alarm
2. Sight... Smoke or Air becoming hazy
3. Smell... Burning
4. Sound... Explosion
5. Feel... A sudden rush of air
6. When told to do so by an Official

DO NOT WAIT TO BE TOLD

Better to wear your self rescuer in doubt ... than to be carried out.



WHEN DO I TAKE OFF THE SELF RESCUER?

1. When it is safe - Refuge station
- Fresh air source
2. When told to do so by an Official or Mine Rescue Team

1.4 Refuge Station Procedures

Upon arrival, a Supervisor, Mine Rescue personnel or Senior Worker will take charge.

Once all men are in, seal the door with clay.

1. Set up Rana-Air system:
 - a. turn on oxygen
 - b. set oxygen flow
 - c. insert carbon dioxide scrubber cartridge
 - d. turn on carbon dioxide blower
 - e. monitor colour change indicator on carbon dioxide scrubber cartridge and replace as required
2. Record the names and payroll numbers of all the occupants.
3. Wait for Emergency Control to call you. Call Control only in an emergency.
4. Conserve water, food and cap lamps.
5. NO SMOKING

1.5 Supervisors' Duties

All supervisors and other managers, who are underground at the time, will go to the nearest refuge station and follow these instructions:

1. The senior supervisor will take charge.
2. Have all doors and cracks sealed with fire clay, at your discretion.
3. Account for all persons who are in your refuge station. Fill out the forms available in the refuge station. Make special note of all mine rescue personnel.
4. Keep the people in the refuge station and the door closed and sealed with the clay provided.
5. Count the persons present and inquire of missing personnel; report all those present to the shifters' office by badge number when such information is required.
6. Wait for headquarters to establish phone communication.
7. Contact surface only in an emergency or to relay information pertaining to the fire.



1.6 Security's Duties

On being informed of and underground fire the security officer on shift will do the following:

1. Notify Senior Management
2. Notify Mine Rescue Station
3. Notify Ministry of Labour
4. Call out Mine Rescue Teams
5. Notify Neighbouring Mine
6. Notify Medical Facilities
7. Control all traffic at Gatehouse. Only emergency vehicles and personnel will be allowed on site.

1.7 Control Group

1. Location: Dry conference room
2. Base Director: Mine Superintendent
3. The following are to report to the control group base:
 - a) Mine Superintendent
 - b) Mine Ventilation Engineer
 - c) Safety Superintendent
 - d) Mine technician

The Base Director will assign a person to control access in and out of the base. Mine rescue and advisory personnel will be contacted at the Base Director's request.

1.8 Duties of Control Group Personnel

1. Ensure that all underground personnel have been accounted for. (Mine technician to phone all Refuge Stations, etc.)
2. Assign personnel to guard the Fresh Air Raises and notify Control if any workers arrive on surface.
3. Ascertain the location of the fire.
4. Obtain current ventilation plans.
5. Prepare mine rescue plans.
6. Co-ordinate and direct mine rescue operations including the locating of missing personnel, the control/extinguishing of fires, the restoration of ventilation and evacuation of personnel.
7. Keep a complete written log of events.



1.9 Advisory Group

1. Location: Engineering Room
2. Base Director: Manager of Mining
3. The following are to report to the advisory group base:
 - a) Manager of Mining
 - b) General Manager
 - c) Manager of Engineering
 - d) Manager of Maintenance Services
 - e) Electrical Superintendent
4. The following personnel are to notify the Advisory Group of their location and are to place themselves on "Standby":
 - a) Warehouse Superintendent
 - b) Surface Services Superintendent
 - c) Fire Chief



2.0 Description of Southern District Mine (2023)

2.1 Description of Workings

The Southern District Mine is a single-level salt mine with the ore body at about a 100 foot depth. There are 3 specific mining sections actively being worked, the South East, West, and North sections.

The West section is a 4' thick, high quality, low impurity, ore seam. The ore from this section is blended with the ore from the lower grade South East sections. Historically, it was mined by Jackleg drill and blast using a Room and Pillar method. Ground support consisted of natural planned caving in the mined out areas and timber cribbing in active areas.

In 1996, a modernization program improved the mining in the West section. Mining is conducted by a Continuous Miner. The ore is trammed to a conveyor by a fleet of three electric shuttle cars and conveyed to the main conveyor. Ground support now includes four foot rock bolts and timbering where necessary.

Low profile battery locomotives are still used to move men and materials to the West section.

The North and South East sections dome up and down to an ore thickness of 35 feet. The mining methods of these sections also use a systematic room-and-pillar method with planned caving. These sections have been developed to operate with fully trackless large mobile equipment and maintain numerous active headings. Ground support is maintained by leaving 2 feet of ore at the roof and bolting through this with 10 foot roof bolts to competent ground above. Ore is conveyed to the #1 shaft for skipping to surface.

The shaft was enlarged in 1978 to facilitate a larger cage and separate skip compartment. The shaft is concrete lined with timber guides. Air and water lines installed in the shaft were left functional to the shaft station. The shaft has sprinklers and there is a hydrant at the station with a 100 feet hose. Even with concrete lining, the #1 shaft still experiences a substantial ground water seepage, which is collected in the sump below the mining level at the bottom of the shaft.

There is a second sump between the #15 and #6 ramps at 8 and 103 which handles water seepage from the transition section along the ramp. This water is pumped to the #1 shaft sump for transfer to surface.

Since a large amount of stagnant water has also accumulated in the old workings of the West section, a series of temporary dams were installed. A pump and a drain line are being run to drain off this accumulation to the main travel way where it can run to the shaft.

2.2 Neighbouring Mine

The Canadian Mineral Gypsum Mine is located 32 kilometers from the Southern District Mine. It has 15 active mine rescue volunteers and is an 11 apparatus substation.



3.0 Mine Services

3.1 Air and Water

Portable air compressors are located in the shop.

Water is supplied via the 4 inch line located in the #1 shaft, with a header located at the shaft station.

3.2 Electricity

Electricity is supplied via the #1 shaft. There is a CAT C32 backup generator located on surface that will supply power to the hoist, this will start automatically in the event of a power disruption. A locked electrical substation is located at the shaft station. Separate electrical feeds supply the South East, West and North Sections. Individual electrical circuits supply the Main Shop and Portable Electrical Transformers (known as Subs). These circuits can be shut off from the Shaft station electrical substation. Total electrical feed can be shut off from surface. Portable subs are located in working sections as required.

3.3 Ventilation

Fresh air is supplied via two fresh air raises. One fresh air raise is located in the South East section and one located in the west section. The west ventilation fan is located underground on the level. Power to the fan is fed via the ventilation raise. The East ventilation fan is located on surface. The power to all main fans is controlled from surface. Return air is directed to a common return airway and exhausts up the #1 shaft. Concrete sections or cemented rock bulkheads seal off old workings to direct fresh air to the working areas. Portable floor mounted electric fans are located in the working areas as required. Fabrene curtains are used for temporary ventilation control. Ventilation doors control air flow in areas where access is required.

Fan specifications are:

West Fresh Air Raise	East Fresh Air Raise
30,000 CFM at 1.8" W.G.	100,000 CFM at 1.8" W.G.
42 1/4" Blade	54" Blade
21" Hub	30" Hub
1,179 R.P.M.	1,170 R.P.M.
20 HP 100 HP	

3.4 Conveyors

Conveyors service all mining sections. They are located in #25 drift, #104 drift and #10 drift. Any drift used as a conveyor way has a minimum back height of five feet and width often feet. Feeder breakers (crushers) are located at the tail end of all conveyors. A transfer conveyor delivers ore to the Loading Pocket.



3.5 Refuge Stations

There are three refuge stations, one each located in the South East, West and North sections.

All refuge stations contain clay, bottled water, pager phone, first aid kit and stretcher. They are supplied with the RANA-AIR mine refuge air centre that will provide 36 hours of safe breathing air for up to twenty people.

3.6 Tools and Supplies

Located on surface, underground shops and warehouse.

3.7 Communications

Bell telephones are located in surface offices, the gatehouse (security), deck, underground shifters office and shaft station. They can provide emergency access to outside lines.

Pager phones are located in surface offices, the gatehouse (security), hoistroom, deck, shaft stations, shops, feeder breakers, refuge stations, shifters office, conveyor operator booth, warehouse and portable electrical subs.

Radios are available in main haulage routes and working headings. Due to the room and pillar mining they only work in line of site to the leaky feeder cable.

3.8 Ground Support

Rock bolts are used throughout the mine. Timber sets and cribbing are used in the West section, where required.

3.9 Fuel Storage

A bulk fuel storage with a 2000 litre capacity is located underground near the shop area. Fuel is delivered by pipeline from surface via a borehole to the 100/6 intersection. From there it is piped to the Fuel Bay via 6 Drift and 103 Drift. The fuel bay is equipped with a fire door and a dry chemical fire suppression system both of which operate automatically (fusible link).

3.10 Burning and Welding Permits

Burning and welding permits are issued as required.

3.11 Garages

Most garages contain burning and welding equipment, normal compliment of tools, oil, grease, etc. Garages are equipped with manually activated dry chemical fire suppression systems and manually operated fire doors.



3.12 Hoist

#1 shaft is equipped with a conventional cage hoist and standard signals. All men operate their own cage. There are no cage tenders. In an emergency a cage tender may be assigned by Mine Rescue.

The skip hoist runs automatically. The 14-ton skips are loaded by a conveyor operator/skip tender located at the Transfer Conveyor. The hoistman is located on surface, isolated from the shaft area in fresh air.

3.13 Explosives

Explosives are delivered Mondays and Thursdays and stored in the West and South East section. The West section contains 150 kg. The South East section has a 1360 kg locked and licensed magazine.

Electric fuses are delivered Mondays and Thursdays and are stored in fuse magazines in the South East and West sections.

Blasting is done using a central blast method.

3.14 Escape Way

The South East and West Fresh Air Raises are equipped with ladders. #1 shaft has a separate manway.

3.15 Hazards and Obstructions

Poor ground areas are identified on the mine print.

3.16 History of Gas

Hydrogen sulphide occurs naturally in the ground water. Limited seepage of the ground water occurs from fractures near old gas wells.

Methane has been reported occasionally while rock bolting in the South East and West sections.

4.0 Emergency Preparedness

4.1 Workforce

Total of 77 employees at the Mine. Normal shifts are as follows:

Staff	15
Dayshift	30
Afternoon	20
Nightshift	12



4.2 Mine Rescue Volunteers

There are a total of 18 employees active at this mine. The Southern District Mine Rescue Station is located in Delaware, Ontario, and 240 kilometres from the Southern District Mine.

4.3 First Aid Training

46 employees are trained and current.

4.4 Fresh Air Base

The fresh air base is located at the discretion of the briefing officer.

4.5 Fire Fighting Equipment

Hose and nozzles are located on surface. A hydrant with 100' of fire hose and a nozzle is located at the shaft station. Dry chemical fire extinguishers of various sizes are located at electrical substations, shops, battery charging station, the U/G warehouse, feeder breakers, mobile equipment, shaft station, and other locations where required.

There are dry chemical fire suppression systems at the drive (head) end of all conveyors. The conveyor belting is not fire retardant.

4.6 First Aid Equipment

First aid kits are located in shops, refuge stations, portable electrical subs and surface. Stretchers are located in the Mine Rescue Sub-station and in Refuge Stations.

4.7 Fire Procedure

Fire procedure is described in Section 1 – Fire Procedures.

5.0 Emergency Equipment

5.1 Sub-Station

- 11 BG4s
- 2 Sets standard equipment
- 4 SSR90M
- 1 Carevent
- 1 Masterline O2 Pump



5.2 Main Underground Shop

- 3 SCSR
- 1 Electronic Hydrogen Sulphide Meter
- 1 Bolt cutter
- 1 Set of lifting bags with accessories
- 2 Hydraulic jacks

5.3 Mine Rescue Truck Inventory

- 6 BG4s
- 2 Sets standard equipment
- 4 SSR90M
- 1 CAREvent
- 1 Stretcher
- 6 Spare O2 Bottles
- 1 Set Lifting bags with Accessories Tool Kit
- 1 Milwaukee reciprocating saw
- 2 RZ7000
- 1 Thermal imaging camera
- 1 Low expansion foam system with foam
- 1 PROPAK