Yukon Mine Rescue Standard

March 3, 2016

In an effort to enhance, augment and update the current mine rescue requirements in sections 15.36 and 15.37 of the *Yukon Occupational Health and Safety Regulations*, the Director of Occupational Health and Safety has set in place this Yukon Mine Rescue Standard, with which all surface and underground mine operations in Yukon must comply.

DEFINITIONS

15.01

"mine" includes

(a) a place where mechanical disturbance of the ground or any excavation is made to explore for or produce mineral-bearing substances, placer minerals, rock, limestone, earth, clay, sand, gravel, coal or carbonaceous material,

(b) all cleared areas, machinery and equipment for use in servicing a mine or for use in connection with a mine and buildings,

(c) all activities including exploratory drilling, excavation, processing, concentrating, waste disposal, and site reclamation,

(d) closed and abandoned mines where there is work activity, and

(e) surface and underground mines or projects;

MUTUAL AID

A Mutual Aid Agreement (MAA) is a formal, signed agreement between two mining employers under which one employer provides a mine rescue team to the other employer in an emergency. A standard underground mine rescue team consists of five people, plus the co-ordinator, trained to respond to emergencies. (Though this definition specifically refers to mine rescue teams, in practice MAAs in industry are prepared to send any required resources – equipment, materials, two workers, seven workers, etc.) YWCHSB recommends the approach taken by employers is to work out an agreement to address any and all human resource concerns.

All **underground mines** or **underground exploration projects** operating in the Yukon shall establish mutual aid agreements with outside sources or emergency agencies capable of providing additional trained personnel and equipment in the event of an emergency occurring at their mine that exceeds the capabilities of the mines/workplaces own mine rescue / emergency response resources. (Not required if an underground mine has the capability to field three fully trained and equipped mine rescue teams.)

YWCHSB has mine rescue equipment available to use in the event of an emergency occurring at a mine to augment existing rescue capability. It is the responsibility of the mine, or its authorized delegate, to make a request to YWCHSB to use the equipment. The mine's response manager and the YWCHSB representative will coordinate logistics to transport equipment to the mine (for example, mine flies SCBAs to scene while YWCHSB mobilizes trailer to scene). The use and care of the equipment is the mine's or project's responsibility. The return of equipment after use, to YWCHSB, shall be in a timely manner and in the condition it was received when deployed.

The mine rescue equipment available includes:

- 15 BG4 units with spare bottles
- Rescue rope and rigging equipment
- A complement of equipment as identified in the Basic Emergency Equipment and Supplies list found in the General Requirements section at the end of this document.

MINE RESCUE

15.36

Mine rescue station specified

Mine rescue stations shall be established, equipped, operated and maintained at such specified places and in such manner:

(a) As a professional engineer or other competent person may certify,

(b) As the director may accept, and

(c) As a safety officer may direct as conditions in the mine change or as mining progresses.

15.37

Training

(1) A sufficient number of workers including supervisory personnel shall be trained and assigned to the mine rescue crews and related responsibilities.

Trainer

(2) A competent person shall be appointed as a trainer for mine rescue teams.

Team training

(3) The mine rescue team members shall be trained by the mine rescue coordinator or other qualified mine rescue trainer.

Training information

(4) Information regarding the mine rescue training and operation shall be provided upon request to the director; mine rescue coordinator, or safety officer.

Candidates

(5) A candidate for the mine rescue team shall possess physical qualifications and competency necessary for mine rescue work.

Training facility

(6) Training facilities shall be provided by the mine or project owner and the workers shall be trained in mine rescue work at the owner's expense.

Costs

(7) A mine rescue operation shall be under the direction of a supervisor in charge of the mine or project and the costs of the rescue operation shall be at the expense of the owner of the mine or project.

Notice of rescue action

(8) As well as the notice required by the Occupational Health and Safety Act, notice shall be given immediately to the Mine Rescue Coordinator and to the Director, when the services of a mine rescue crew are required.

Note: It is recommended that contact be made with the YWCHSB Duty Officer through the emergency contact numbers!

The following numbers are monitored 24 hours a day:

1-867-667-5450 Toll Free 1-800-661-0443

UNDERGROUND MINES

The manager of an underground mine employing 10 or fewer persons underground at one time shall ensure the following, or an alternative that is acceptable to the Chief Mines Safety Officer:

- There is a minimum of one qualified mine rescue team on site.
- There are four persons trained and equipped in mine rescue to provide first response and assessment capabilities.

The manager of an underground mine employing fewer than 50, but more than 10 persons underground at one time shall ensure the following, or an alternative that is acceptable to the Chief Mines Safety Officer:

- There is a minimum of two qualified mine rescue teams on site.
- On every shift there are four persons trained in mine rescue.

The manager of an underground mine employing more than 50 persons underground at one time shall ensure the following, or an alternative that is acceptable to the Chief Mines Safety Officer:

- There is a minimum of three qualified mine rescue teams on site.
- On every shift there are four persons trained in Mine Rescue.

At an underground mine, the mine manager shall ensure that all mine rescue personnel are not underground at any one time.

The manager of an underground mine shall establish a comprehensive underground orientation (survival mine rescue), including the use of approved self-rescue apparatus, warning system (typically stench gas), ventilation, ground control, and the use of firefighting equipment in place at the mine.

Note: All persons employed at the mine, including contractors and visitors, shall be given the underground orientation before entering the underground mine.

UNDERGROUND TEAM COMPLEMENT

The required complement of an underground mine rescue team shall be six qualified members. One member who shall be the designated team captain (No. 1 member), one the designated vice-captain (No. 5 member), and one the designated coordinator (No. 6 member), along with the three other team members. The designated coordinator (No. 6 member) shall remain at either the surface of the mine or at the fresh air base.

UNDERGROUND EXPLORATION

The manager of an underground exploration project employing fewer than 10 persons underground at one time shall ensure the following, or an alternative that is acceptable to the Chief Mines Safety Officer:

- There are four persons trained and equipped in mine rescue to provide first-response and assessment capabilities.
- There is an acceptable Mine Emergency Response Plan (MERP) in place.

The manager of an underground exploration project employing more than 10 persons underground at one time shall ensure the following, or an alternative that is acceptable to the Chief Mines Safety Officer:

- There is a minimum of one qualified mine rescue team on site.
- On every shift there are four persons trained in mine rescue to provide first-response and assessment capabilities.
- There is an acceptable Mine Emergency Response Plan (MERP) in place.

SURFACE MINES (OPEN PIT)

The manager of an open pit mine employing fewer than 25 persons working per shift shall ensure the following, or an alternative that is acceptable to the Chief Mines Safety Officer:

- On every shift there are four persons trained and equipped in Mine Rescue to provide first-response and assessment capabilities.
- There is an acceptable Mine Emergency Response Plan (MERP) in place.

The CMSO or a safety officer may order an increase if conditions warrant.

The manager of an open pit mine employing more than 25 persons working per shift shall ensure the following, or an alternative that is acceptable to the Chief Mines Safety Officer:

- The mine has one fully trained and equipped mine rescue team available at all times.
- In addition to the full team requirement, a mine with a continuous 24-hour shift schedule shall ensure that there are four mine rescue persons per shift (for example, six day shift team members and four night shift members).
- There is an acceptable Mine Emergency Response Plan (MERP) in place.

The CMSO or a safety officer may order an increase if conditions warrant.

SURFACE TEAM COMPLEMENT

The required complement of a surface mine rescue team shall be six qualified members, one of whom shall be the designated captain, one the designated vice- captain, and four other team members.

MINE RESCUE CERTIFICATION

A person shall not be considered as a qualified candidate or member of a mine rescue team until the following minimum requirements are met:

- Is a minimum of 18 years of age.
- Has adequate knowledge of the language normally used at the mine.
- Possesses a valid St. John Ambulance Standard First Aid Certificate or equivalent and a Transportation Endorsement (spinal immobilization) certificate or equivalent.
- Does not have perforated eardrums (tympanic membranes).
- Is free from facial hair or jewellery that could interfere with the face-piece seal of any breathing apparatus.
- Once certified as a mine rescue member, practises as part of a team for a minimum of 10 hours during each quarter of the year the mine or exploration project operates.
- Is appropriately trained to use self-contained breathing apparatus, under air/oxygen.
- Is medically fit for the nature of the work required, (pre-course medical performed by a physician followed by renewed medical at maximum of two-year intervals).
- Has achieved a 70% overall score from a combination of the written, practical and skills demonstration to receive a basic mine rescue certificate.

Mine rescue candidates who are to be considered for underground or surface certification must be familiar with the mining conditions, practices, hazards and equipment encountered, or that may exist in their place of work (for example, underground orientation, ventilation and ground control training, or surface geography/terrain and adverse weather conditions).

QUALIFIED PERSON

The Mine Manager shall appoint a competent, qualified person:

- To be responsible for the care and maintenance of all rescue apparatus.
- To ensure that an up-to-date logbook is kept at the mine, which records the condition of all equipment used for mine rescue or firefighting.

RECORDS

The Mine Manager shall ensure a record of all mine rescue training is maintained at the mine site or exploration project.

- The logbook shall be maintained by the competent person appointed by the Mine Manager to conduct the training.
- The logbook shall contain the particulars of the training conducted, including dates and durations of the exercises, as well as content covered, and
- The names and signatures of all participants including the trainer.
- The logbook shall note the pre- and post-training condition of all equipment used during the training session.

MINE PLANS FOR MINE RESCUE PURPOSES

The Mine Manager shall ensure that the information required under part 15.04 of the regulations is readily available for the use of mine rescue teams during an emergency and for training purposes.

15.04

Information on site

Plans, drawings, sections, specifications and related information showing the current status of the underground mining operation or project shall be maintained at the site of an underground mine or project and made readily available to a safety officer, a member of the joint health and safety committee concerned workers, and mine rescue personnel, when requested. This information shall include:

Surface Mines:

(1) A surface plan showing the location of claims with mining operations and showing all lakes, streams, main roads, railways, power transmission lines, buildings, shaft openings, portals, surface workings, diamond drill holes collared on surface, dumps, and tailing ponds and their overflow.

Underground Mines:

(2) An underground plan showing all underground workings, including shafts, tunnels, diamond drill holes, refuge stations, fuelling stations, escape ways, explosive magazine, lunch room, firefighting provisions, communication network, dams, and bulkheads.

(3) Vertical cross-sections of the underground mine or project at suitable intervals and suitable azimuths, showing all shafts, tunnels, drifts, stopes, and other workings in relation to the surface, including the location of the top of the bedrock, surface and bottom of the overburden, and surface of a known body of water or watercourse.

(4) Adequate ventilation plans showing the normal directions and volumes of the main air currents and locations of permanent fans, ventilation doors, stopes, and connections with adjacent underground mines or projects.

MINE EMERGENCY RESPONSE PLAN (MERP)

The Mine Manager shall develop and file with the Chief Mine Safety Officer, a Mine Emergency Response Plan which shall be kept up to date and adhered to in the event of an emergency. The Mine Emergency Response Plan shall contain all of the elements required in the "Yukon Mine Emergency Response Plan Guidelines for the Mining Industry" that may be amended from time to time.

MINE RESCUE CERTIFICATION

The mine rescue training basic certification is based on the Western Canada Mine Rescue Manual. The following is the course expectation and examination requirements:

- 40-hour basic mine rescue course including successful completion of the final exam. (The application form has mandatory items that must be completed by the instructor.)
- The training will be conducted by an instructor that the YWCHSB has certified to conduct the training.
- The exam will be conducted by the YWCHSB Mine Rescue Coordinator or qualified safety officer and will be comprised of:
- Written/verbal examination
- Practical skills: (knots, ropes and pulley systems)
- Demonstration skills: (bench test of rescue and site-specific equipment)
- A candidate who successfully completes the examination process will receive a Basic Yukon Mine Rescue Certificate. Candidates must achieve a 70% grade to receive a certificate.

EMERGENCY RESPONSE (MINE RESCUE) PERSONNEL

Underground Mine

During an underground emergency, the mine's response plan shall provide for access to a minimum of ten active mine rescue personnel within a reasonable response time, a minimum complement of ten breathing apparatus including the ability to service and maintain the equipment. If mine rescue personnel must be deployed, there shall be an "active" response team of five, a "back-up" team of five and a "reserve" team of five (the third team can be en route via a mutual aid agreement). The size of the underground workforce and identified risk factors, along with the nature of the incident, will further dictate the required number of active mine rescue personnel.

Surface Mine

A surface emergency response station shall have access to a minimum of six active mine rescue personnel within a reasonable response time, and a minimum complement of six breathing apparatus including the ability to service and maintain the equipment. The size of the surface pit workforce and identified risk factors, along with the nature of the incident, will further dictate the required number of active mine rescue personnel.

GENERAL REQUIREMENTS FOR BASIC EMERGENCY EQUIPMENT AND SUPPLIES

Each emergency response station should at a minimum include, but shall not be limited to, the following: breathing apparatus, equipment and supplies as identified in "Basic Emergency Equipment and Supplies" list below. Operational requirements or predetermined risk factors may necessitate additional breathing apparatus, equipment or supplies, along with transportation logistics to transport the equipment and supplies to the incident scene.

BASIC EMERGENCY EQUIPMENT AND SUPPLIES:

Underground Mine

- 10 BG-4 or equivalent apparatus for underground mines
- 5 Spare oxygen cylinders
- 5 Blocks of ice per breathing apparatus
- 100 kg. CO2 Adsorbent
- 2 Self-contained self rescuers (examples: Ocenco, Carevent, Drager Oxy SR 90,
- Drager Oxy 3000/6000)
- 1 Oxygen booster pump
- 4 Jumbo cylinders of oxygen (medical-grade oxygen)
- 1 RZ- 25 Tester or equivalent
- 2 Gas detection devices- electronic or manual with adequate supply of sample tubes
- 10 2-m / 6-ft link lines
- 4 Signalling devices
- 2 Fire extinguishers
- 2 Basket stretchers
- 2 Sets of emergency first aid supplies
- 1 Oxygen therapy unit
- 1 Set of emergency tools, as identified through site-specific assessments
- Rescue rope and rigging equipment (practice set and ready-for-use set recommended)

Note: it is recommended that the basket stretcher contains a set of tools that may include but shall not be limited to the following: axe, measuring device, claw hammer and nails, scaling bar, shovel, saw, rescue rope and rigging, lockout locks and PPE.

Surface Mine

- 6 Self-contained breathing apparatus for surface mines
- 6 Spare air cylinders
- 2 Gas detection devices- electronic or manual with adequate supply of sample tubes
- 12 2-m / 6-ft link lines
- 6 Signalling devices
- 2 Fire extinguishers
- 2 Basket stretchers
- 2 Sets of emergency first aid supplies
- 1 Oxygen therapy unit
- 1 Set of emergency tools, as identified through site-specific assessments Rescue rope and rigging equipment (practice set and ready-for-use recommended)

Underground Exploration

- 4 BG-4 or equivalent apparatus, or 4 open-circuit self-contained (1-hour duration) or equivalent apparatus
- 4 Spare oxygen / air cylinders
- 4 Blocks of ice for use with BG-4 breathing apparatus
- 20 kg. CO2 Absorbent
- 1 Self-contained self rescuer (examples: Ocenco, Carevent, Drager Oxy SR 90, Drager Oxy 3000/6000)
- 1 RZ-25 Tester or equivalent or an offsite arrangement for service
- 2 Gas detection devices- electronic or manual with adequate supply of sample tubes
- 4 –2-m / 6-ft link lines
- 2 Signalling devices
- 2 Fire extinguishers
- 2 Basket stretchers
- 2 Sets of emergency first aid supplies
- 1 Oxygen therapy unit

EQUIPMENT MAINTENANCE

Mine rescue breathing apparatus and all rescue equipment shall be maintained, stored and used in accordance with manufacturer specifications and “best practice” industry standards by competent and qualified personnel.