

Section 1.

1. These regulations may be cited as the Blasting Regulations.

Section 2.

2. (1) In these regulations

"blaster" means a person who is the holder of a valid blaster's permit issued by the Chief Mines Safety Officer;

"blasting agent" means a dry nitrate mixture explosive and includes any AN/FO mixture;

"blasting log" means the record of loading details and examination of the site after a blast;

"blasting area" means any area extending at least 50 metres (164 feet) in all directions from any place in which explosive materials are being prepared or placed, or in which an unexploded charge is known or believed to exist;

"blasting operation" includes the preparing, placing and firing of a charge, the handling of a misfire and the destroying of any explosive materials;

"container" means a fully enclosed, locked, and secure receptacle used for the transportation or temporary keeping of explosive materials;

"conveyance" includes any aircraft, watercraft, motor vehicle or vehicle used to transport explosive materials;

"danger area" means any area in which there may be a danger to any person from flying material or any other hazard resulting from a blast;

"detonator" means a blasting cap used to initiate detonation in an explosive;

"down-the-hole delay" means a non-electric initiating device which includes a delay detonator designed to be placed within the explosive charge in the borehole;

"explosive" means any chemical compound or mixture the primary or common purpose of which is to function by explosion;

"explosive materials" includes detonators and explosives;

"emulsion, slurry, or waternet" means an explosive having a water-resistant composition which falls under Class 2 of the regulations under the Explosives Act (Canada) and Class 1.5 of the Transportation of Dangerous Goods Act (Canada);

"flammable material" includes any fuel, paper, rag, or other similar material that is readily combustible and may cause or spread fire or explosion;

"magazine" means any building or other structure conforming to the standards made pursuant to the Explosives Act (Canada);

"primer" means an explosive to which a detonator or other initiating device has been attached.

(2) In these regulations, where a unit of measurement is given in metric (System International d'Unites - SI) the metric unit is binding and if an Imperial Unit appears in parenthesis after it the Imperial Unit is given only as an approximate equivalent.

Section 2. APPLICATION

2. These regulations apply to any operation in which explosives are used for blasting.

Section 3. BLASTING PERMITS

3. (1) A Chief Mines Safety Officer, or a Safety Officer authorized by the Chief Mines Safety Officer, may issue a blaster's permit, in a form to be prescribed by the Director to any person authorizing such person to conduct blasting operations.
(2) A blaster's permit issued under this section shall be subject to such restrictions and conditions as may be endorsed on it by the issuing officer.

Section 4.

4. (1) A blaster shall
 - (a) be physically capable of conducting or directing a blasting operation,
 - (b) be competent in the use of any explosive materials and any blasting methods employed, and,
 - (c) have satisfied the requirements for certification.
(2) Every applicant for a blaster's permit shall make and transmit to the Chief Mines Safety Officer an application in a form prescribed by the Director accompanied by a written testimonial from an employer or blaster certifying that the applicant has had at least six months experience in connection with blasting operations, or as an assistant to a blaster, and that in the opinion of such employer or blaster the applicant's knowledge and experience qualifies him or her to handle explosives.
(3) The Chief Mines Safety Officer or any person authorized by him may issue a temporary blaster's permit in a form prescribed by the Director to any person to handle and use explosives.
(4) No permit shall be issued under this section unless the Chief Mines Safety Officer or the person authorized by him or her is satisfied that the applicant for the permit has an adequate knowledge of the handling and use of explosives.
(5) A temporary blaster's permit issued under this section shall be valid for a specified period not exceeding ninety days and shall be subject to such restrictions and conditions as may be endorsed on it by the person who issues it.
(6) Where a permit is issued under this section by any person authorized by the Chief Mines Safety Officer, that person shall forthwith notify the Chief Mines Safety Officer of the issuance of the permit.

Section 5.

5. (1) Before issuing a blaster's permit or a temporary blaster's permit, the person from whom the permit is sought shall examine the applicant for the permit as to the

applicant's knowledge of the following

- (a) drilling for blasting purposes;
- (b) commercial explosives;
- (c) blasting accessories;
- (d) the use of safety fuses, detonating cord, and other non- electric initiating systems;
- (e) electrical blasting;
- (f) transportation and storage of explosives and blasting accessories; and
- (g) the safe use of explosives for general purposes, to the extent required to satisfy the examiner that the applicant is qualified for the permit.

(2) An examination under this section may be written or oral or may be given in any other manner as the person conducting the examination may require for the purpose of establishing the qualifications of the applicant.

Section 6.

6. (1) No person shall conduct or direct a blasting operation unless the details of their permit have been recorded and verified by the employer.
- (2) When conducting or directing a blasting operation, blasters shall keep their permits readily available and produce them for inspection upon the request of a safety officer.
- (3) A copy of a permit is not acceptable as proof of issuance of the permit unless the copy is certified a true copy by the person who issued the permit or by the Chief Mines Safety Officer.

Section 7. BLASTING INCIDENTS

7. (1) Notwithstanding Part 7 of the Occupational Health and Safety Act, where a blasting incident involves personal injury or an unusual occurrence with explosive materials, the employer shall report immediately the incident to the Chief Mines Safety Officer and forward without delay a written report of the incident.
- (2) The written report shall include
- (a) the names and permit numbers of all blasters involved,
 - (b) the details of the detonators, explosives, accessories and blasting equipment used,
 - (c) a copy of the blasting log, and
 - (d) a description of the action taken by the employer.

Section 8.

8. (1) If there is reason to believe that a blaster has not complied with any regulation relating to blasting, the employer shall immediately investigate the matter and may suspend the blaster from conducting or directing any blasting operation and submit a

report of the investigation to the Chief Mines Safety Officer.

(2) A safety officer may suspend and take possession of a blaster's permit when he or she has reason to believe that the safety of any person has been or may be jeopardized by a blaster.

Section 9.

9. (1) The Chief Mines Safety Officer may suspend or revoke a blaster's permit if a blaster fails or refuses to comply with any regulation relating to blasting, or for any other cause which is considered sufficient by the Chief Mines Safety Officer.

(2) Where the Chief Mines Safety Officer has suspended or is considering suspension or revocation of a blaster's permit, the person affected will be given written reasons for any decision and may appeal such decision to the Occupational Health and Safety Board.

Section 10. TRANSPORTATION OF EXPLOSIVE MATERIALS

10.(1) No explosive materials in excess of 30 kilograms (66 lbs) shall be transported in a conveyance unless the portion of the conveyance in which explosive materials are transported is a van, tank, secured container, or compartment that is fully enclosed, locked, and fire resistant.

(2) No explosive material shall be transported in a conveyance unless

(a) any detonator or detonating connector (relay) is kept in a separate container or separated from other types of explosive materials by means of a barrier approved pursuant to the Explosives Act (Canada), and

(b) the explosive materials are protected from contact with exposed iron or steel surfaces, except as permitted by the authority having jurisdiction.

Section 11.

11.(1) A conveyance transporting more than 30 kilograms (66 lbs) of explosive materials shall display signs that

(a) bear the word "EXPLOSIVES" in letters at least 150 millimetres (6 inches) in height on a contrasting background, and

(b) are visible from all sides of the conveyance.

(2) The signs shall not be displayed when a conveyance is empty of explosive materials.

(3) This section does not apply to aircraft.

Section 12.

- 12.(1) A conveyance transporting more than 30 kilograms (66 lbs) of explosive materials shall be equipped with at least 2 fire extinguishers, each of which is readily available for use and has a ULC rating of 5 BC or greater.
- (2) When a conveyance is operated in freezing temperatures, the fire extinguishers shall be of a non-freezing type.
- (3) Where the amount of explosives does not exceed 30 kilograms (66 lbs) the number of fire extinguishers may be reduced to one.

Section 13.

- 13.(1) No electric detonator shall be transported in a radio transmitter equipped conveyance unless
 - (a) the leg wires of the detonator are folded and shunted, as shipped by the manufacturer, and
 - (b) the detonator is in a closed metal container that is
 - (i) lined with wood or other approved material, and
 - (ii) electrically bonded to the conveyance
- (2) Any radio capable of transmission shall be switched off whenever the metal container is open.

Section 14.

- 14.(1) Before loading explosive materials for transportation, the conveyance shall be inspected to ensure that
 - (a) the fire extinguishers are filled and in working order,
 - (b) the electric wiring is completely insulated and firmly secured,
 - (c) the fuel tank and feed lines have no leaks,
 - (d) the chassis, engine, pan and bottom of the conveyance are reasonably clean and free from surplus oil and grease,
 - (e) the brakes and steering apparatus are in good condition, and
 - (f) the conveyance is in sound mechanical condition.

Section 15.

- 15.(1) Any person engaged in the loading, conveying, or unloading of explosive materials shall be instructed in and observe all safety precautions.
- (2) No explosive materials shall be dropped, thrown, or abused during loading and unloading.
- (3) No person other than a blaster may accompany the normal operating crew of a conveyance transporting explosive materials.

- (4) A maximum of 3 persons, including an operator, may ride on a motor vehicle transporting explosive materials.
- (5) Any conveyance or mobile equipment containing explosive materials shall be attended by a competent person at all times, whether mobile or parked.

Section 16.

- 16.(1) No flammable materials shall be permitted on or in proximity to a conveyance transporting explosive materials.
- (2) No smoking or open flames shall be permitted within 15 metres (50 feet) of a conveyance transporting explosive materials.

Section 17.

- 17.(1) A conveyance shall be adequately fuelled before it is loaded with explosive materials.
- (2) No conveyance containing explosive materials shall be re-fuelled unless
 - (a) re-fuelling is necessary for the conveyance to reach its destination,
 - (b) the ignition is shut off and the brakes set, and
 - (c) the fuel tank is filled at a place where the number of persons is kept to a minimum.

Section 18.

- 18.(1) A motor vehicle transporting explosive materials shall
 - (a) be operated in a manner consistent with road, traffic and weather conditions, and
 - (b) be in charge of and attended by a competent operator who is at least 18 years of age, the holder of a valid driver's licence, and instructed in the transportation of explosive materials.
- (2) No explosive materials shall be transported in a trailer or in any form of semi-trailer unless it is equipped with power brakes operated from the tractor cab.

Section 19.

- 19.(1) No oil well perforating gun shall be transported when primed with a detonator or when the explosive, including the detonating cord, is exposed, or when the charge or end ports are open.
- (2) A perforating gun may be transported in an open conveyance, but the gun shall
 - (a) be separated to prevent contact with any other gun, and

(b) be securely fastened to the conveyance by heavy duty chains and padlocks approved pursuant to the Explosives Act (Canada).

Section 20.

20. No explosive materials shall be transported on a seismic tank truck having an open flame water heater unless
- (a) the distance between the heat tube and the outside of the tank is at least 360 millimetres (14 inches), and
 - (b) any wood burning heat has
 - (i) a fire box that fully contains the fuel, and
 - (ii) two dampers mounted in the heat tube, one at the vent end and the other at the fire box so that the flame may be shut off instantly in the event of an accident, and
 - (c) the detonator container is located on the opposite side of the truck from the explosive container, and both conform to the Type 6 magazine standards issued pursuant to the "Explosives Act" (Canada).

Section 21. KEEPING OF EXPLOSIVE MATERIALS

- 21.(1) Explosive materials delivered to a work site shall be:
- (a) attended by a competent person, or
 - (b) properly kept in locked and secured containers.
- (2) In subsection (1), "attended by" means the physical presence of an authorized person who is in visual contact with and has control over any explosive materials.
- (3) Explosive materials shall be kept at a safe location.
- (4) No explosive materials shall be kept on a conveyance or drilling rig unless the materials are in secure containers and the conveyance or rig is attended by a competent person.
- (5) Explosive materials that are to be stored beyond the normal working hours shall be returned to a licensed magazine or otherwise stored in accordance with the Explosives Act (Canada).
- (6) All magazines must be licensed in a form to be prescribed by the Director. The Chief Mines Safety Officer or a Safety Officer authorized by the Chief Mines Safety Officer, may issue a magazine licence to any person authorizing such person to keep a magazine.
- (7) No detonator or detonating connector (relay) shall be kept with other types of explosive materials.
- (8) Igniter cord, matches, pull wire lighters, and other flammable accessories shall be kept separately from any detonator or explosive.

Section 22.

- 22.(1) The interior of a container shall be kept clean and dry and shall be constructed, covered, or lined to prevent the exposure of any iron, steel, or other hard or gritty materials.
- (2) Flammable material shall be kept a safe distance, not less than 7.5 metres (25 feet), from a container or storage place for explosive materials.

Section 23.

- 23.(1) A container shall be conspicuously marked with the word "EXPLOSIVES".
- (2) Prior to the preparation of a charge at the loading site, any detonators shall be kept in an enclosed box which is crush-resistant and conspicuously marked with the word "DETONATORS".

Section 24. DRILLING

- 24.(1) No drilling shall be done in a previously blasted area until the surface to be drilled is exposed and carefully examined for holes or remnants of holes containing explosive materials.
- (2) If a hole or a remnant of a hole containing explosive materials is found, those materials shall be detonated or removed.
- (3) No drilling shall be done
- (a) within 150 millimetres (6 inches) of any remnant of a previously blasted hole, or
 - (b) within 15 metres (49 feet) to a loaded hole unless
 - (i) such drilling is necessary
 - (ii) the angle of the loaded hole is determined, and
 - (iii) a blaster directs the angle and depth of the hole being drilled, and
 - (c) closer to any part of a loaded hole than a distance equal to half the total depth of the hole being drilled, and in no instance closer than 6 metres (20 feet) from any part of a loaded hole.
- (4) A drill hole shall be of sufficient diameter to permit free insertion of the explosive materials to the bottom of the hole without cutting, pounding, ramming or undue pressure.

Section 25. CONTROL OF BLASTING AREA

- 25.(1) No person shall conduct or direct a blasting operation unless they are the holder of a valid blaster's permit issued under these regulations and the work involved is within the scope of that permit.
- (2) For any blasting operation the employer shall appoint a blaster responsible for conducting or directing the work.

Section 26.

- 26.(1) No person shall conduct or direct any work in a blasting area without prior approval of the blaster responsible for that area.
- (2) No blaster shall authorize or permit any work that may jeopardize the safety of any person.
- (3) No person other than a blaster shall assist in any blasting operation unless
 - (a) that person is
 - (i) instructed in the safe work procedures,
 - (ii) competent, and
 - (b) the blaster who directs the work is present in the blasting area.

Section 27. HANDLING OF EXPLOSIVE MATERIALS

- 27.(1) No explosive materials shall be kept in the clothing worn by any person.
- (2) Any detonator or detonating connector (relay) shall be kept and handled separately from other types of explosive materials until the last practicable moment before bringing them together.
- (3) No explosive other than a blasting agent shall be stripped of its protective casing or wrapper.

Section 28.

- 28.(1) Upon the approach of an electrical storm
 - (a) the handling of explosive materials shall be suspended,
 - (b) all persons shall be removed from the danger area, and
 - (c) the danger area shall be guarded for the duration of the storm.
- (2) The blaster appointed by the employer pursuant to subsection 25(2) shall determine the duration of the suspension of operations and that decision shall not be over-ruled by supervisory personnel.
- (3) This section does not apply to an underground working where only non-electrical initiating devices are used.

Section 29.

- 29.(1) No flammable material or open flame, including any ignited material, shall be in proximity to explosive materials or within the blasting area.
- (2) This regulation does not apply to a device acceptable to the Chief Mines Safety Officer for use in igniting safety fuse.

Section 30.

30. Explosives hardened by low temperature shall not be warmed near an open fire or a steam boiler or by direct contact with steam or hot water.

Section 31.

31. Explosive materials which are stained, damaged, or deteriorated shall be examined by a blaster or other qualified person and

- (a) if the defect in any explosive is found to be slight, it may be used but only with a new explosive as a primer, and
- (b) if any explosive materials are deemed to be unserviceable, those materials shall be destroyed in a safe manner.

Section 32.

32.(1) A container or package which is known or suspected to contain explosive materials or residue of those materials shall be handled with care to prevent undue impact or exposure to excessive heat.

(2) Any surplus box, carton, or liner which contained explosive materials shall be collected and destroyed in a safe manner.

Section 33.

33.(1) Unused explosive materials shall be returned to a container or magazine or destroyed in a safe manner.

(2) No explosive materials shall be abandoned.

Section 34. PRIMING AND LOADING

34.(1) No primer shall be made up until immediately before the placing of the charge.

(2) Only a non-sparking implement designed for punching a hole in the cartridge of an explosive, other than a blasting agent, shall be used for that purpose.

Section 35.

35.(1) No hole shall be loaded with explosive materials until it has been examined and, if necessary, cleaned.

- (2) No explosive materials shall be loaded into a hole if
 - (a) the distance between any part of that hole and the nearest drilling operation is less than half the total depth of the hole being drilled, or
 - (b) any part of that hole is within 6 metres (20 feet) of a drilling operation.
- (3) No explosive materials shall be loaded into a hole where the heat from a drilling operation, previous blasting, or any other cause may result in a premature detonation.

Section 36.

- 36.(1) When a hole is pneumatically loaded with a blasting agent, it shall be loaded by means of a semi-conductive hose designed for that purpose or by a method approved by the Chief Mines Safety Officer.
- (2) A machine used for pneumatic loading shall be effectively grounded before and during the loading operation; no loading machine shall be grounded to a haulage rail, pipe line, or other similar conductor.
- (3) No electric detonator shall be placed in a hole prior to the pneumatic loading of an explosive.
- (4) Unless approved by the Chief Mines Safety Officer, a liner with any detonator shall not be placed in a hole prior to the pneumatic loading of an explosive.

Section 37.

- 37.(1) No loading pole or tamping rod made of a sparking material shall be used to load or tamp an explosive.
- (2) The tamping of an explosive shall be done with pressure, not impact.
- (3) No undue pressure shall be exerted on any primer which contains a detonator.

Section 38.

- 38. Except under the direction of a blaster, no motor vehicle or mechanical equipment shall be permitted closer than 6 metres (20 feet) to a loaded hole.

Section 39.

- 39. Except for the interconnection of charges in the same hole, no explosive charge shall be connected to another charge or attached to a trunk line until immediately before the intended time of detonation.

Section 40.

- 40.(1) Holes that have been loaded, whether primed or not, shall not be left unattended.
- (2) A worker shall be posted to ensure that such holes are not tampered with when the work crew is absent from the site.
- (3) Subsection (2) does not apply to seismic operations in isolated locations, where loaded holes may be left unattended after the blaster has first ensured that all leg wires are shunted together, are tucked into the holes, and the holes are suitably covered.

Section 41. SAFETY FUSE AND DETONATING CORD

- 41.(1) Safety fuse shall be handled with care to avoid pinching and kinking.
- (2) No safety fuse shall be used in a blasting operation if it is deteriorated or damaged or less than 900 millimetres (3 feet) in length.
- (3) No safety fuse shall be used in a blasting operation unless control of the danger area can be maintained while the fuse is burning.

Section 42.

- 42.(1) Safety fuse shall only be ignited by means of a device that is acceptable to the Chief Mines Safety Officer.
- (2) Igniter cord shall be limited in length to ensure that all fuses in the circuit are burning within their holes before the first charge detonates.
- (3) No person shall remain in the danger area after the ignition of a safety fuse charge.

Section 43.

- 43.(1) Where detonating cord is used to prime a charge, the cord shall be cut from the supply reel before or as soon as possible after the charge is placed.
- (2) No detonating cord shall be interconnected or attached to a trunk line until all the holes are loaded.
- (3) A connection shall only be made with detonating cord in which the explosive core is dry.
- (4) A knot which connects detonating cord shall be secure and the connection shall be kept at right angles.
- (5) A detonating cord branch line or trunk line shall be free of loops, sharp kinks, or angles that may direct the cord back toward the oncoming line of detonation.
- (6) A multiple-row blast using trunk line shall contain crossties between the row
 - (a) to provide no less than 2 paths of initiation, and
 - (b) at intervals not to exceed 30 metres (98 feet).
- (7) No detonator shall be attached to a detonating cord until everything is in readiness for the blast.

Section 44. ELECTRICAL BLASTING

- 44.(1) Precautions shall be taken to prevent the premature detonation of electric detonators from any source of electricity.
- (2) An electric detonator shall remain short-circuited until it is wired into the blasting circuit; the shunt may be removed temporarily for the purpose of testing the detonator.
- (3) Detonator leg wires shall be held to one side of a hole when that hole is being loaded, tamped, or stemmed.
- (4) Any wire used in a blasting circuit shall be capable of transmitting the required current.
- (5) Any bare connection between wires in a blasting circuit shall be protected from contact with conductive materials and the ground.
- (6) Except for testing, a series of electric detonators shall be short-circuited until the time of detonation.

Section 45.

- 45.(1) No electrical blasting circuit shall be used within the minimum distance specified by ANSI/IME 20-1978 September 1981 entitled "Safety guide for the Prevention of Radio Frequency Radiation Hazards in the Use of Electric Blasting Caps" or other standards acceptable to the Director.
- (2) Where the minimum distance has not been determined, no electrical blasting circuit shall be used within
- (a) 95 metres (312 feet) of any CB or other mobile or portable radio frequency transmitter, or
 - (b) 915 metres (3000 feet) of an AM, FM, TV, or other fixed radio frequency transmitter.
- (3) Where control of mobile transmitters cannot be maintained, as on a public highway,
- (a) warning signs shall be posted to remind operators of motor vehicles to turn off transmitters,
 - (b) if necessary, flag carriers shall be posted to instruct operators accordingly, and
 - (c) blasting circuits shall be kept on the ground, with bare connections insulated or elevated sufficiently to prevent current leakage.

Section 46.

- 46.(1) Before firing any electrical blasting circuit, a galvanometer or blasting multimeter acceptable to the Chief Mines Safety Officer shall be used to test the resistance of each series and the complete circuit.
- (2) No electrical blast shall be fired unless the test reading corresponds to the calculated resistance for each series and the complete circuit.

Section 47.

- 47.(1) A blasting machine shall
- (a) be under the care of the blaster;
 - (b) be of a type acceptable to the Chief Mines Safety Officer;
 - (c) be kept in good mechanical condition;
 - (d) be tested, using methods specified by the manufacturer, on a regular basis and before any blast which may require the maximum output of the machine; and
 - (e) be isolated from and not connected to the electrical blasting circuit until the blast is ready to be fired.
- (2) The firing capacity shall be clearly marked on a blasting machine, and the capacity shall not be exceeded.
- (3) No dry or wet cell storage battery shall be used to fire an electric detonator.

Section 48.

- 48.(1) No electric detonator shall be fired from a power line or an electrical generator unless a blasting switch of a design acceptable to the Chief Mines Safety Officer is used.
- (2) During any electrical blasting operation the blasting switch shall be inaccessible to all persons except the blaster and isolated from the circuit until the blast is ready to be fired.

Section 49.

- 49.(1) Before firing any charge, the blasting circuit shall be visually inspected to ensure that all connections are secure and the blast can be safely detonated.
- (2) Any surplus explosive materials shall be removed to a safe place before the blast is detonated.
- (3) Precautions shall be taken for the protection of persons and property to minimize the hazards resulting from the blast; where necessary, blasting mats or other effective means shall be used to control flying material.
- (4) Blasting in proximity to trees shall be carried out in a manner to prevent broken tops and limbs, hangups, leaners, and other similar hazards to workers.
- (5) The danger area shall be kept clear of all persons during the blasting period.
- (6) The blaster may remain within the danger area, provided adequate shelter from the effects of the blast is available for protection.

Section 50.

- 50.(1) The blaster shall post the persons necessary to guard all possible access to the danger area.

- (2) Only competent persons shall be posted as guards and the blaster shall instruct them fully as to their duties and responsibilities.
- (3) A guard shall be posted at a location which is protected from flying material and other hazards resulting from the blast.
- (4) Once posted by the blaster, a guard shall
 - (a) prevent all persons from entering the danger area, and
 - (b) remain at his or her post until
 - (i) the charge is detonated and the "all clear" signal is sounded, or
 - (ii) he or she is personally relieved by the blaster.

Section 51.

- 51.(1) Before firing any explosive materials,
 - (a) every person in the danger area shall be given instruction in the warning signals, and
 - (b) the signal code shall be posted at conspicuous locations in the danger area.
- (2) A signalling device having a distinctive sound audible within the proximity of the danger area, shall be used to sound a warning in accordance with the following procedure:
 - (a) before the blast, 12 short signals shall be sounded at 1 second intervals.
 - (b) after the last warning signal is sounded, 2 minutes shall elapse before the charge is fired.
 - (c) following the blast, and after the area has been inspected and made safe, a continuous "all clear" signal of 15 seconds duration shall be sounded to signify that permission is granted to return to the area.
- (3) The signal procedure in this regulation does not apply to blasting in underground workings and may be modified for other applications upon written authorization by the Chief Mines Safety Officer.
- (4) The use of a signalling device alone shall not be deemed adequate assurance that the danger area is clear.

Section 52

- 52.(1) A record of each primary blast signed by the person in charge of the blast, shall be kept and the following information recorded:
 - (a) date, time and location of blast;
 - (b) burden, spacing, depth and number of holes blasted;
 - (c) weight of explosives and firing delays used in respect of each hole and note stemming used; and
 - (d) type of explosives.
- (2) The blasting log shall be
 - (a) readily available at the site of a blasting operation,
 - (b) retained by the employer upon completion of blasting operations at the work site, and

(c) produced for inspection upon the request of a safety officer.

Section 53.

53. All loaded holes in a blasting area shall be detonated in one blasting operation or in a manner that minimizes the possibility of misfires and other hazards.

Section 54. RETURNING TO THE BLASTING SITE

54.(1) Where a blast has been fired electrically, no person shall enter the area until the firing cables have been disconnected from the blasting machine and the lead wires have been short-circuited.

(2) Where safety fuse has been used in connection with a blast and where two or more shots are fired, no blaster or other person shall leave or be permitted to leave their place of refuge from the blast within the number of minutes that are equal to twice the number of metres (feet) in the longest fuse used in the blasting operation and such time shall be calculated from the time when the last shot is heard.

(3) After a blast is detonated, no person shall enter the blasting area until

(a) the air contaminants have dissipated, and

(b) the blaster has

(i) examined the area for undetonated explosive materials and other hazards, and

(ii) given permission for work to proceed.

(4) All hazards shall be identified and controlled before other work is resumed in the area.

(5) No blaster shall leave any blasting site before examining the area and attending to any undetonated explosive materials and other hazards caused by the blast.

(6) Subsection (5) does not apply where unauthorized access to the blasting site is effectively prevented and before any work commences a blaster examines the area and gives permission for work to proceed.

Section 55.

55.(1) Before other work is resumed in a blasted area, loose material on any face or slope shall be scaled, trimmed or otherwise stabilized by the use of equipment, machines and methods that minimize the hazard of injury to workers.

(2) When loose material is being removed, precautions shall be taken to protect workers against undetonated explosive materials and other hazards that may exist.

Section 56. MISFIRE PROCEDURES

- 56.(1) When a charge is known or suspected to have misfired, no person shall return to the blasting area until
- (a) 10 minutes have elapsed since the firing of a blast involving an electric or delay element detonator, or
 - (b) 30 minutes have elapsed since the expected detonation of any safety fuse charge.
- (2) When a charge is known or suspected to be burning or where post detonation fumes exist, no person shall return to the blasting area for at least 60 minutes.

Section 57.

- 57.(1) When there is evidence or suspicion of a misfired charge or undetonated explosive materials,
- (a) only the minimum number of persons required to correct the hazard shall be permitted in the blasting area,
 - (b) no person shall use metallic equipment in the immediate vicinity of any explosive materials until after a blaster has directed the hand removal of as much broken material as possible, and
 - (c) metallic equipment may be used to remove broken material if
 - (i) a blaster directs the equipment,
 - (ii) the illumination of the area is adequate, and
 - (iii) precautions are taken to prevent injury to any person from accidental detonation.

Section 58.

- 58.(1) A hole which contains a misfired charge shall be identified by a wooden marker or other effective means.
- (2) Except as permitted by the blaster responsible, no work other than that necessary to uncover and locate a misfired charge shall be undertaken in the blasting area until the hazard has been corrected.

Section 59.

- 59.(1) No person shall remove, relight, or disturb any fuse, detonator or any part of a charge or a misfired charge, with the following exception:
- (2) A blasting agent may be blown out with air, water, or a mixture of air and water, but only water shall be used in any hole containing an electric detonator; the old primer shall be blasted with a fresh primer.

Section 60.

- 60.(1) Where an additional hole and charge are necessary for the blasting of a misfired charge, no drilling shall be done unless
- (a) the angle of the misfired hole is determined,
 - (b) the blaster who placed the misfired charge directs the angle and depth of the hole being drilled, and
 - (c) the hole being drilled is at least 1.5 metres (5 feet) from any part of the misfired charge.
- (2) Where any of the above requirements cannot be met, the misfired hole shall be treated as a loaded hole.

Section 61. SPECIAL APPLICATIONS

- 61.(1) No explosive charge shall be used for the purpose of avalanche control until the proposed method and procedure have been submitted to and granted written acceptance by the Chief Mines Safety Officer.
- (2) For any blasting method proposed for the avalanche control, the procedure shall include
- (a) the components of the charge,
 - (b) the on site transportation of any explosive materials,
 - (c) the assembly, placement and initiation of the charge,
 - (d) the guarding of the danger area, and
 - (e) the locating and destroying of any misfired charge.

Section 62.

- 62.(1) An exploding bridge-wire detonator is an electric initiating fuse which
- (a) is exempt from section 45 and subsections 13(1), 44(1), (2), (6), and 65(6), and
 - (b) may be transported, kept, and handled with other types of explosive materials but in a separate box or container that is conspicuously identified.
- (2) The control unit may be connected to the firing module before the circuit is completed.

Section 63.

- 63.No blaster shall use explosive materials to remove a snag or tree that may be a hazard to any person unless experienced and knowledgeable in the hazards likely to be encountered or unless accompanied by a person who has the requisite experience and knowledge.

Section 64.

- 64.(1) No primer used in a seismic blasting operation shall be assembled until the hole is ready to be loaded.
- (2) No detonator leg wire shall be thrown in the air or dragged along the ground.
- (3) An explosive charge shall be lowered into the hole by means of a device acceptable to the Chief Mines Safety Officer.
- (4) No explosive charge shall be lowered by the leg wires.
- (5) Unless necessary, no "in-hole" connection between a leg wire and another wire shall be used; any "in-hole" connection shall be secure and insulated with tape or other effective means.
- (6) Where conditions may result in damage to a leg wire
 - (a) the charge shall be primed with at least 2 detonators, or
 - (b) a detonating cord down line shall be employed as an alternative means of firing the charge.
- (7) Where necessary, an additional primed charge shall be placed in the hole to detonate the original charge.
- (8) No stemming material shall be placed in a loaded hole until the circuit continuity of at least 1 detonator in that hole is verified and recorded in the blasting log; this requirement does not apply if detonating cord is used to initiate the charge.
- (9) A loaded hole in an isolated area may be left unattended after any leg wires are shunted and suitably covered. The location of any seismic holes shall be recorded in the blasting log.
- (10) A seismic "in-hole" charge shall be detonated within the period of time specified by the manufacturer or the explosive materials, not to exceed 30 days of being loaded into the hole.

Section 65

- 65.(1) This section applies to underground workings.
- (2) No explosive materials shall be stored in an underground working without the prior written permission of the Chief Mines Safety Officer.
- (3) A conveyance transporting explosive materials in an underground working shall be equipped with a flashing red light and luminous signs which are conspicuously marked with the word "EXPLOSIVES".
- (4) Explosive materials shall be protected from contact with any trolley wire or other hazard.
- (5) No explosive materials shall be transported on the top of a locomotive.
- (6) When a blasting line is used in the vicinity of electrical lighting or power lines, precautions shall be taken to prevent the entry of electrical energy into the blasting line.
- (7) A water spray (atomizer) or other effective means to control dust shall be activated at the time of a blast.
- (8) A competent person shall be posted to guard any entry to the danger area, including an entrance to a work place,
 - (a) into which the blast may break through and
 - (b) containing any drill hole that intersects the blast.

(9) Immediately before firing a blast in an underground working, the blaster shall shout "FIRE" in every direction, or use another suitable signal, to warn any guards and other persons in the area of the impending blast.

(10) No person shall return to an underground working after a blast until the atmosphere has been tested in accordance with the Occupational Health Regulations.

Section 66.

66.(1) Only explosive materials and blasting accessories having hydrostatic pressure and water resistant packaging or properties shall be used in an underwater blasting operation.

(2) Whenever explosive materials are being used in an underwater blasting operation, a blasting flag (International Code Bravo, a solid red flag) shall be displayed.

(3) Precautions shall be taken to prevent damage to underwater structures in the danger area.

(4) No underwater blast shall be detonated when any diving operation or water craft is within the danger area nor until the diving supervisor has given permission for the blaster to fire the charge.

(5) After detonating an underwater blast, the site shall be examined as required by section 54, but the examination of the underwater site may be conducted by a competent diver who

(a) has been instructed in the recognition of undetonated explosive materials and other blasting related hazards, and

(b) is under the direction of a blaster.

(6) The blaster shall ensure that undetonated explosive materials or other blasting related hazards are removed.