Section 1.

1. These regulations may be cited as the Mine Safety Regulations.

Section 2.

2. "bulkhead" means a structure built for impounding water or confining air under pressure in a crosscut, drift, or other mine opening and constructed in a manner to close off completely the crosscut, drift, or other mine opening;
"dam" means a structure built for impounding water in a drift, crosscut, or other mine opening and constructed in a manner to permit an unobstructed overflow of the water.
"electrical-mechanical officer" means a safety officer who is designated as an electrical-mechanical officer;
"dust exposure occupation" means
    (a) any employment underground in a mine,
    (b) any employment in an open pit
    (c) any employment in crushing plants and assay grinding rooms
    (d) employment in dry milling and dry concentrating
    (e) employment in wet concentrating plants, where plants are not adequately separated from any crushing plants
    (f) employment in an area designated by the Chief Mines Safety Officer as an area subject to dust exposure.
"machinery" includes steam and other engines, boilers, furnaces, milling and crushing apparatus, hoisting and pumping equipment, materials handling equipment, chains, trucks, tramways, blocks, tackle, ropes, tools, and all machines and appliances used in or in connection with a mine;
"manager" means a person in immediate charge of a mine;
"mining development" means any work or undertaking for the purpose of prospecting, proving or opening up any metallic or non-metallic mineral or mineral bearing deposit for industrial or manufacturing purposes and includes trenching and diamond drilling.
"mining plant" means any roasting or smelting furnace, concentrator, mill or place used for or in connection with washing, crushing, grinding, sifting, reducing, leaching, roasting, smelting, refining, treating, or research.
"mine rescue superintendent" means a safety officer designated by the deputy head as a mine rescue superintendent;
"shaft" means a vertical or incline excavation in a mine extending downward from the surface or from some interior point through which workers or materials are transported, and includes a pit or winze;
"surface mine" means a pit or quarry where metallic or any mineral bearing substance is being or has been removed by means of an excavation open to the surface so as to supply material for industrial or manufacturing purposes and includes any work, undertaking or facility used in connection therewith;
"underground mine" means a mine that is not a surface mine and includes any work, undertaking or facility used in connection therewith.

Section 3.

3. (1) Subject to subsection (2), these regulations apply to all mines and mining plants and to mining development.
(2) These regulations do not apply
(a) to the construction of a mining plant on the surface, or
(b) to any construction at the surface of a mine for the purpose of developing the mine.

Section 4.

4. In applying these regulations the composition, design, size, or arrangement of any material, object, device, or thing may vary from the composition, design, size, or arrangement prescribed if the variation affords protection for the health or safety of workers equivalent to or better than the standard prescribed by these regulations and written notice of the variation is given to the health and safety committee, the trade union, if any, and the Chief Mines Safety Officer.

Section 5.

5. (1) The owner of a mine shall give or cause the manager to give written notice to the Chief Mines Safety Officer within fourteen days prior to the commencement of mining operations or resumption of mining operations after an interruption of three months or more.
(2) The owner or manager of a mine shall, in addition to the notice referred to in subsection (1), furnish the Chief Mines Safety Officer with any other information respecting the mine that the officer may require.

Section 6.

6. (1) The owner, agent, or manager of a mine shall keep in the office of the mine accurate plans on a scale in accordance with good engineering practice, and up to date not more than 3 months last past, as follows:
(a) a surface plan showing the claims on which mining operations are being carried out and showing all lakes, streams, main roads, railways, power transmission lines, buildings, shaft openings, adits, surface workings, diamond drill holes collared on surface, dumps, and tailing ponds and their overflow;
(b) an underground plan showing all underground workings, including shafts, tunnels, diamond drill holes, dams, and bulkheads;
(c) vertical mine sections at suitable intervals and suitable azimuths, showing all shafts, tunnels, drifts, stopes, and other mine workings in relation to the surface, including the location of the top of the bedrock, surface of the overburden and bottom and surface of a known body of water or watercourse; and

(d) adequate ventilation plans showing the normal direction and volume of the main air currents and the location of permanent fans, ventilation doors, stopes and connections with adjacent mines.

(2) The owner or manager of a mine shall produce all plans, sections and diagrams to a safety officer at an examination of a mine; shall render them available at any time; and supply the officer with copies upon request.

(3) Where necessary the Chief Mines Safety Officer may grant an exemption from the provisions of subsections (1) and (2).

Section 7. GENERAL APPLICATION

7. Unless otherwise indicated in these regulations, the provisions of the Occupational Health Regulations apply to all mining operations.

Section 8.

8. Unless otherwise indicated in these regulations, the provisions of the General Safety Regulations apply to all mining operations.

Section 9.

9. Notwithstanding the provisions of the General Safety Regulations, the following additional provisions apply to welding, burning, or cutting in an underground mine:

(a) the regulators and manifolds of oxygen and acetylene cylinders shall be disconnected when the cylinders are being transported underground;

(b) unless procedures for safe use have been established by a supervisor in charge of the workplace, a charged gas system installed for welding, burning or cutting shall not be used for any other purpose;

(c) an insulated conductor of adequate size shall be used to carry the welding current back to an electric welder unless another safe return path has been provided;

(d) a second worker who is a competent person shall attend oxygen and acetylene control devices when oxygen and acetylene cylinders are set up in

(a) a position not readily available to the worker performing cutting, welding or burning operations, and

(b) a shaft conveyance while a worker is welding, burning or cutting on or from the conveyance.

Section 10.

10. (1) Unless otherwise indicated in these regulations, the provisions of the Minimum First Aid Regulations apply to all mining operations.

(2) Notwithstanding subsection (1) at every mine employing four or more persons per shift there shall be at least one person trained in rendering first aid.

Section 11.

11. Unless otherwise indicated in these regulations the provisions of the Radiation Regulations apply to all mining operations.

Section 12. MINE CLOSURE

12. (1) The owner of the mine shall give or cause the manager to give written notice to the Chief Mines Safety Officer within fourteen days prior to closing down of a mine.
(2) When a mine has been closed down or work in it has been discontinued, the owner or agent shall within such reasonable time as may be prescribed by the Chief Mines Safety Officer cause the entrances to the mine and all other pits and openings, dangerous by reason of their depth or other conditions, to be fenced and to be kept securely fenced or otherwise protected against inadvertent access, unless the Chief Mines Safety Officer grants an exemption in writing, which the officer may do if in his or her opinion the workings present no greater hazard than the natural topographic features of the area.
(3) Prior to operations at a mine being terminated, a shaft or raise opening shall be
(a) capped with a stopping or reinforced concrete, or
(b) filled and kept filled with material so that any subsidence of the material will not endanger any person.
(4) The stopping prescribed in paragraph (3)(a) shall be
(a) secured to solid rock or to a concrete collar secured to solid rock, and
(b) capable of supporting a uniformly distributed load of 12 kPa (1.7 lb per sq. in.) or a concentrated load of fifty-four kilonewtons (12,000 lbs), whichever is greater.

Section 13.

13. (1) Where a mine is closed down or work in it has been discontinued, the owner, agent, or manager of the mine at the time of closure shall, within six weeks after closure, file in the office of the Chief Mines Safety Officer an accurate plan signed by the owner, agent, or manager, on the scale on which the plan used in the mine was prepared, showing the boundaries of the workings of the mine up to the time of closure and the boundaries of the mineral claims in which these workings are situated.
(2) The plans filed or photographic copies of them shall be preserved as a permanent record in the office of the Chief Mines Safety Officer, but no person except officials of the Ministry of Energy, Mines and Petroleum Resources shall be permitted, without the consent of the owner, to see the plan until after a lapse of five years from the time of closure, except when in the opinion of the Chief Mines Safety Officer, it is necessary in the interest of safety to show the plan to the owner of the adjoining property or of

surface rights.
(3) When a mine has been closed down or work in it has been discontinued, the owner or manager shall cause all hazardous substances to be stored or disposed of in a manner satisfactory to the Chief Mines Safety Officer.
(4) Dangerous chemicals left at a shut down mine without permission of the Chief Mines Safety Officer may be disposed of by the Chief Mines Safety Officer and the costs incurred in doing so shall be a debt due from the owner of the mine.
(5) When any mine is closed down or work in it has been discontinued, all explosives, fuse and detonators, ignitor cords or blasting caps shall be disposed of and no explosives may be stored at any such closed-down mine without the written permission of the Chief Mines Safety Officer.
(6) In case of the abandonment of a mine or plant, the owner, agent, or manager shall cause the station or stations supplying power to and being the property of the mine or plant to be disconnected from the power source and within fourteen days shall notify the Chief Mines Safety Officer in writing that the disconnection has been made.

Section 14. EMPLOYMENT

14. (1) The minimum age of a worker in a mine shall be
    (a) sixteen years of age at a surface mine excluding working face, and
    (b) eighteen years of age at an underground mine or at the working face of a surface mine.
    (2) Every person employed as a supervisor and every person who is engaged in supervising the work of other workers shall be able to give orders in the language commonly used in the mine.
    (3) The Director of Occupational Health and Safety may develop training programs that set specific requirements that must be achieved by those wishing to be certified as first line supervisors.
    (4) Any person employed as a deck worker, cage tender, skip tender, or hoist operator and every person employed underground in a mine shall have knowledge of the language commonly used in the mine in which they are employed sufficient to enable them to carry out their duties in a competent manner.

Section 15.

15. At every mine, a system approved by the Chief Mines safety Officer shall be established and maintained to check in persons going on shift and check out persons going off shift, and it shall be the duty of all persons to check in and check out in accordance with the system.

Section 16.

16. (1) Where there is non-continuous shift operation in the mine areas, the on-coming shift

shall be warned of any abnormal condition affecting the safety of operations.
(2) The warning shall consist of a written record over the signature of a responsible person on the off-going shift and shall be read and countersigned by the corresponding responsible person on the on- coming shift before workers are permitted to resume operations in the area indicated in the record.

Section 17.

17. (1) No worker shall be scheduled to remain in an underground mine for more than eight hours in any consecutive twenty-four hours, measured from the time the worker enters an underground mine until the time he or she leaves the underground mine.
(2) Notwithstanding subsection (1), a worker may remain underground in a mine
(a) when an emergency causes an extension of the time,
(b) for more than eight hours in any consecutive twenty-four hours on one day of a week but only for the purpose of changing shift or for the purpose of avoiding work on Sunday or on a holiday, or
(c) if the worker is a supervisor, pump worker, cage tender, or is a person engaged solely in surveying or measuring or in emergency repair work necessary to permit production.
(3) A worker shall not be permitted to operate a mine hoist for more than eight hours in any consecutive twenty-four hours, except in a case provided for paragraphs (2)(a) or (b) or in subsection (4), but
(a) where no competent substitute is available, the worker may work extra time not exceeding four hours in any consecutive twenty-four hours for a period not exceeding fourteen calendar days in any four week period, or
(b) where the work is not carried out continuously on three shifts per day, the worker may work such extra time as is necessary for lowering or hoisting the workers employed on the shift, at the beginning and end of their shift.
(4) An employer at an underground mine may apply to the Director for an order exempting the employer from the provisions of subsection 17(1).
(5) In making a decision or order under subsection (4) the Director shall consider
(a) the remoteness of the mine,
(b) the difficulty of access to the mine,
(c) the condition of the mine and procedures implemented in the operation of the mine,
(d) procedures proposed by the employer to counteract the effects of the increased work schedule,
(e) the consent of the workers or of the trade union representing the workers, if any, and
(f) the recommendation of the Chief Mines Safety Officer.
(6) An order issued under subsection (5) may include one or more provisions applicable to an increased work schedule.
(7) An order issued under subsection (5) may include an expiry date.

Section 18. MEDICAL EXAMINATIONS

18. (1) Prior to the employment of any person in a dust exposure occupation, every employer shall cause that person to be examined by a qualified medical practitioner, and such initial medical examination shall include a chest x-ray.
(2) Where a qualified medical practitioner finds on examination that a person is free from disease of the respiratory organs and otherwise fit for employment in a dust exposure occupation, he or she shall deliver to the person a certificate of fitness.
(3) The holder of a certificate shall be re-examined by a qualified medical practitioner once every 12 months and on the request of a medical practitioner shall undergo a chest x-ray.
(4) Unless otherwise required by these regulations, the person in respect of whom a certificate described in subsection (2) has been given shall have a chest x-ray every 36 months from the date of their most recent hiring.
(5) Subsections (3) and (4) do not apply to a person who is normally required to work less than 20% of their working time in any one month in a dust exposure occupation.
(6) The Chief Mines Safety Officer may at any time require any person who is employed in a dust exposure occupation to be examined by a qualified medical practitioner, and the medical practitioner shall endorse the results of such examination on the certificate issued to that person.
(7) A medical practitioner shall, within thirty days after conducting a medical examination, send to the Chief Mines Safety Officer the chest x-ray photographs and the particulars of occupational and medical history and medical reports and opinions related to the examinations.
(8) The Chief Mines Safety Officer shall produce x-ray photographs and particulars of occupational and medical history and medical reports and opinions filed with the officer pursuant to these regulations for inspection by
    (a) a qualified medical practitioner for use in connection with a medical examination of the person of whom such x-ray photographs and particulars of occupational and medical history and medical reports and opinions relate,
    (b) the person to whom such x-ray photographs and particulars of occupational and medical history and medical reports and opinions relate, or to the Workers' Compensation Board appointed or established under similar legislation of any province for use in the adjustment or settlement of any claim by such person under that legislation, or
    (c) any other person where the written consent of the person to whom such x-ray photographs, particulars of occupational and medical history and medical reports and opinions relate is filed with the Chief Mines Safety Officer.

Section 19. FIRE CONTROL AND EMERGENCY PROCEDURES

19. (1) General procedures to be followed both on surface and underground in case of fire underground or in any mine plant building which may endanger the entrance to the mine shall be drawn up by the manager and all persons concerned shall be informed and kept informed of their duties and copies of the procedures or suitable excerpts shall be kept posted in the shaft house and other prominent places.
(2) Procedures for fighting fire in surface plant buildings at a mine shall be drawn up and

suitable signs pertaining to and excerpts from the procedures shall be kept posted in prominent places.
(3) Tests of the effectiveness of such procedures shall be made at least once a year and a report of the effectiveness of the test shall be made available to a safety officer.

Section 20.

20. (1) Fire fighting equipment deemed necessary by the Chief Mines Safety Officer shall be provided and maintained
    (a) in or about every headframe, shaft house, portal house, and every other plant building and at every shaft or winze station underground, and
    (b) at all underground crushers, pump stations, tipples, and underground electrical installations.
(2) The manager shall appoint one or more persons who shall make a monthly inspection of all fire fighting equipment and make a report in writing to the manager stating that such examination has been made and certifying the conditions found.

Section 21.

21. (1) No flammable refuse shall be allowed to accumulate underground; instead it shall be removed from the mine and be brought to the surface and there disposed of in a suitable manner.
(2) Flammable refuse shall not be allowed to accumulate in or about any headframe, shaft house, portal house or any other plant building.
(3) Suitable non-flammable containers with covers for the temporary disposal of flammable refuse such as scrap paper, oily waste, rags, and other similar materials, shall be provided at all shaft stations, underground shops, lunch rooms and buildings or enclosures necessary for the housing of machinery or equipment or stores and such containers shall be regularly emptied and the materials so accumulated brought to the surface and disposed of in a suitable manner.

Section 22.

22. No person shall build, set or maintain a fire underground for any purpose unless the necessary firefighting equipment has been provided, and they have
    (a) authority from the mine manager,
    (b) received suitable instructions from the manager for so doing.

Section 23.

23. Every shift boss or mine captain shall certify in writing to the mine manager at least once

a week that there is no accumulation of flammable refuse underground in the area under their supervision except as reported by them.

Section 24.

24. Grease, oil, or other flammable material shall not be stored in a headframe, portal house or shaft house, but it is permissible, if adequate precautions are taken, to have in a headframe, portal house or shaft house, for distribution only, an amount not exceeding the requirements for one day's operation.

Section 25.

25. (1) Volatile flammable liquids may not be stored in any shaft house or portal house.
(2) No volatile flammable liquids may be transported underground except in types of containers approved by a Chief Mines Safety Officer.
(3) No oil, grease or volatile flammable liquids may be kept or stored underground except in accordance with this section.
(4) No amount of oil or grease in excess of the requirements for seven days may be kept or stored underground.
(5) No amount of volatile flammable liquids may be kept or stored underground in excess of the requirements for the current day's work.
(6) Where any oil, grease or volatile flammable liquids are kept or stored underground pursuant to this section, they shall be contained in receptacles approved by a safety officer.

Section 26.

26. All timber not in use in a mine shall as soon as practicable be taken from the mine and shall not be piled up or permitted to decay therein.

Section 27.

27. (1) Where a blow torch or welding, cutting, or other hot work equipment is used underground, or in a headframe, shaft house, or other surface building in which a fire may endanger the mine entrance of the underground workings, a procedure for the safe use of hot work equipment shall be prepared in writing and signed by the supervisor in charge of the mine.
(2) Only a worker who is a competent person or is under the direction of a competent person shall use hot work equipment.
(3) In addition to the hot work procedure required by subsection (1), written instructions shall be issued to the worker by a supervisor before the hot work equipment is used

respecting

(a) the type of work,

(b) the location of the work,

(c) when the work is to be done, and

(d) any special measures and procedures to be taken before, during and after the work.

(4) Where hot work equipment is used in a shaft, timbered area, or fire hazard area

(a) the area adjacent to the particular work place shall be wet down,

(i) before the work is begun, and

(ii) when the work is stopped and the worker using the hot work equipment intends to leave,

(b) the area adjacent to the particular work place shall be examined for potential fire hazards,

(i) before the work is begun,

(ii) when the work is stopped and the worker intends to leave the area, and

(iii) on at least one other occasion approximately two hours after the work is stopped,

(c) fire-fighting equipment suitable for extinguishing any potential fire shall be available, and

(d) workers shall be protected from fumes, vapours or gases by

(i) ventilation, or

(ii) the wearing of respirators.

(5) Subsection (1) does not apply to hot work being performed in a repair station or garage protected by a fire suppression system.

(6) Subsection (4)(a) does not apply where the wetting down will create a hazard because of freezing or the presence of electrical equipment.

Section 28.

28. All underground shops, lunchrooms, and buildings or enclosures necessary for the housing of machinery and equipment and stores and the furnishings of such shall be so located, constructed, and maintained as to reduce the fire hazard to a minimum.

Section 29.

29. (1) Where a fire hazard is created at a mine by smoking, the use of open-flame lamps, matches, or other means of producing heat or fire, a safety officer may designate such mine or part or parts of such mine as a fire hazard area.

(2) No person shall smoke or be allowed to smoke, use open-flame lamps, matches, or other means of producing heat or fire in such areas except with the permission in writing of a safety officer and under such conditions as he or she may deem proper.

(3) Fire hazard areas shall be properly identified by means of suitable warning signs and the owner or manager shall cause such signs to be installed and maintained as long as the area is so designated.

(4) When a flammable gas in dangerous concentrations has been found to exist in any

mine working, the working or parts of the working shall immediately be considered as a fire hazard area and every precaution shall be taken while clearing the area or doing any work therein to prevent ignition of the gas and these precautions shall be continued as long as the hazard exists.

Section 30.

30. Where operations involving the use of acetylene, kerosene, gasoline, or other torches are conducted, suitable measures for protection against fire shall be adopted and rigidly adhered to.

Section 31.

31. (1) Where practicable, there shall be a sufficient number of fire doors installed underground in every mine to cut off the shaft or other entrance from the other workings of the mine.
(2) Where fire doors are installed, they shall be of fire resistant construction
(a) maintained in proper order, and
(b) kept clear of all obstructions so as to be readily usable at all times.

Section 32.

32. (1) Except during the initial stages of exploration and development of a mine, in addition to the opening through which workers are let into or out of the mine and the ore extracted, a separate emergency exit shall be provided.
(2) The exit required by subsection (1) shall be
(a) located more than 30 m (100 ft.) from the main hoisting shaft or ramp,
(b) of sufficient size to afford an easy passageway, for workers wearing mine rescue equipment,
(c) where necessary, provided with ladders from the deepest workings to the surface,
(d) marked on all levels by signs and arrows pointing the way of exit in a manner to expedite escape,
(e) made known to all underground workers who shall be instructed as to the route to the emergency exit, and
(f) inspected at least once a month by a competent person who shall give a written report of such inspection to the manager in charge of the mine.
(3) A structure covering the emergency exit shall be constructed of material with at least a one hour fire-resistance rating.

Section 33.

33. (1) Every mine worked from shafts or adits producing 90 tonnes over (100 tons) of ore per day and any other mine that the Chief Mines Safety Officer may designate shall be equipped with an apparatus for the introduction into the mine workings of ethyl mercaptan or other warning gas or material approved by the Chief Mines Safety Officer.
(2) The apparatus shall at all times be made available and kept ready for instant use for the purpose of warning workers underground of any emergency necessitating a speedy evacuation of the workings.
(3) A test of the effectiveness of the warning and a report on the functioning of the system shall be made at least once in each year and a report of the test submitted to the Chief Mines Safety Officer.

Section 34.

34. (1) Where the Chief Mines Safety Officer deems it necessary or advisable for the protection of workers employed underground, the officer may order refuge stations to be provided and maintained at such places within the mine as directed.
(2) Every refuge station shall have water, air, and telephone connections to the surface and be separated from adjoining workings by closable openings so arranged and equipped that gases can be prevented from entering the refuge station.

Section 35.

35. (1) An air compressor driven by a prime mover exceeding twenty-five kilowatts when installed in an underground mine shall be:
    (a) designed and installed so as to minimize the hazard of fire or explosion due to the accumulation of carbonaceous material in air system.
    (b) provided with protective devices that prevent its operation if,
        (i) the temperature of the air at the discharge line is in excess of normal,
        (ii) the temperature of the compressor cooling water and cooling air is in excess of normal, or
        (iii) the flow and pressure of compressor lubricating oil is below normal.

Section 36. MINE RESCUE

36. (1) This section and sections 37, 38, and 39 apply only to those mines that the Chief Mines Safety Officer determines conduct operations that may require the use of mine rescue apparatus.
(2) Mine rescue stations shall be established, equipped, operated, and maintained at such places and in such manner as the Chief Mines Safety Officer may direct.
(3) A mine rescue superintendent shall be responsible for the maintenance of mine rescue equipment in good and serviceable condition at all times and for the operation of

mine rescue stations.

Section 37.

37. (1) Notwithstanding any other provision of these regulations, the Chief Mines Safety Officer may establish, equip, operate and maintain mine rescue stations.
(2) The cost of operating and maintaining mine rescue equipment and mine rescue stations, including the salaries of mine rescue superintendents, shall be recoverable from the owner of every mine in accordance with this section.
(3) The Executive Council Member may assess at rates to be fixed from time to time by the Commissioner in Executive Council every mine to which this section applies with the cost of maintenance of mine rescue equipment and with the cost of operation of mine rescue stations including the salaries of mine rescue superintendents.
(4) The assessment referred to in subsection (3) shall be made quarterly and shall be apportioned among the mines to which this section applies on a per person per month basis for
(a) underground operations,
(b) surface mines, or
(c) any combination of underground and surface mine operations.
(5) Money paid, collected, or received in accordance with this section shall be paid to the Territorial Treasurer.

Section 38.

38. (1) The manager of a mine shall cause sufficient personnel at the mine, including such proportion of the supervisory personnel as the Chief Mines Safety Officer may direct, to be trained as mine rescue crews in the use and maintenance of mine rescue apparatus.
(2) Mine rescue crews shall be trained by a mine rescue superintendent in accordance with any direction given by the Chief Mines Safety Officer.
(3) The manager of a mine shall supervise mine rescue crews in all mine rescue work and recovery operations conducted at the mine.
(4) The owner or manager of a mine shall submit to the Chief Mines Safety Officer such returns or other information respecting safety at a mine or mine rescue training or operations as the Chief Mines Safety Officer may set.

Section 39.

39. (1) A mine rescue crew member shall possess such physical qualifications and establish competency in mine rescue skills as may be set by the Chief Mines Safety Officer.
(2) The owner of a mine shall make available training facilities and workers are to be taught and trained in mine rescue work at the expense of the owner.
(3) A mine rescue operation at a mine shall be under the direction of the supervisor in charge of the mine and the costs of the rescue operation shall be at the expense of the

owner of the mine.

Section 40.

40. Notice shall be given immediately to a mine rescue superintendent and to the Chief Mines Safety Officer when the services of a mine rescue crew are required.

Section 41. CONTROL OF WATER

41. Every working mine shall be provided with such machinery and appliances as required to keep the mine free from water where the accumulation or flow of water may endanger the lives of workers in the mine or in any adjoining mine.

Section 42.

42. (1) Where a working in a mine approaches a place where there is or may be an accumulation of water, boreholes shall be kept well in advance and additional precautions considered necessary to reduce the danger of a sudden breakthrough of the water shall be taken.
(2) Where the workings in a mine are approaching abandoned workings, whether in or belonging to that mine or another mine, the manager in charge of the present workings shall report the circumstances in writing to the Chief Mines Safety Officer before the present workings reach within 91 m (300 ft.) of the abandoned workings.
(3) No work shall be done within 91 m (300 ft.) of the abandoned workings until a definite method of proceeding with the work has been submitted to and approved by the Chief Mines Safety Officer.
(4) Subsection (3) does not apply where the abandoned workings can be readily examined and a knowledge obtained of the condition prevailing in them.
(5) A tailings dam or any other surface structure for the impoundment of tailings shall be
(a) designed in accordance with good engineering practice
(b) constructed in accordance with the design; and
(c) maintained so that the structure provides stability against any static and dynamic loading to which it may be subjected.

Section 43.

43. (1) No bulkhead or dam shall be constructed underground without the written permission of the Chief Mines Safety Officer and then only when constructed in accordance with plans and specifications that have been approved by the officer.
(2) Subsection (1) does not apply in the case of a small structure less than 1 m (3 ft. 3 in.) in height used solely for diverting the ordinary level drainage or storing water for

mining purposes.
(3) The location of every bulkhead and dam shall be clearly shown on the mine plans.

Section 44. ELECTRICAL

44. Unless otherwise indicated in these regulations, the electrical standards specified by the General Safety Regulations apply to all mining operations.

Section 45.

45. (1) All electrical equipment shall be installed, maintained, and operated in accordance with CSA standard M421 - use of electricity in mines, except where those standards do not conform with the Act or these regulations or where the Chief Mines Safety Officer grants an exemption from these provisions.
(2) It is the duty of the owners, agents, and managers of a mine, and of persons or firms who by contract or otherwise undertakes for the owners the installation, alteration, removal or repair of electrical equipment in or about the mine, to conduct their work in accordance with these regulations.
(3) The Chief Mines Safety Officer shall be notified and be supplied with plans and specifications of any proposed
    (a) major electrical installation,
    (b) radio-frequency installation, or
    (c) major extension or alterations to existing installations.
(4) Approval must be obtained from the Chief Mines Safety Officer prior to installations referred to in subsection (1).

Section 46.

46. (1) Where electrical apparatus is used at any mine it shall be in charge of a person who shall be qualified by experience to handle such apparatus.
(2) Every person operating or having charge of electrical apparatus shall have been instructed in this duty and shall be competent to perform the required work.
(3) Repairs, extensions, and changes to existing electrical installations shall be made only by qualified persons.

Section 47.

47. One conductor of the secondary circuits of all instrument transformers shall be grounded unless the circuits are installed and guarded as required for the high-voltage circuits of the transformers.

Section 48.

48. (1) In supply stations suitable working space shall be provided and maintained about all electrical equipment.
(2) The following minimum clearances shall be maintained:

TABLE

Volts to ground	Equipment on one side of aisle	Equipment on both sides of aisle
300 to 750	1 m (3.3 ft.)	1 m (3. 3 ft.)
Above 750	1 m (3.3 ft.)	1.5 m (5 ft.)

Section 49.

49. (1) On all underground distribution systems over 300 volts suitable instruments or devices shall be installed and maintained for indicating the presence of ground faults.
(2) Indication of a ground fault by the detection system shall be followed immediately by location and disconnection of the source of the ground fault.
(3) All ground faults shall be cleared and corrected immediately.

Section 50.

50. (1) Where electrical energy is taken underground, provision shall be made so that the current can be cut off on the surface.
(2) The control device shall not be accessible to any person except those in charge of such device and if not located in a supply station, shall be in a separate room or screened-off enclosure.

Section 51. SURFACE MINING

51. Where clay, sand, gravel, or other unconsolidated material is being worked or removed
(a) removal of such material shall not be permitted by undercutting or undermining,
(b) no working place shall have a vertical height of more than 3 m (10 ft.), and where the thickness of the material being mined exceeds 3 m (10 ft.) high in depth, the work shall be done in terraces or benches unless the material is maintained at a suitable angle to ensure safety, and
(c) paragraphs (a) and (b) do not apply where in the opinion of the safety officer the material is worked or removed by means where there is no danger to workers.
(d) No person shall be permitted to operate loading equipment at the face of a pit where clay, sand, gravel, or other unconsolidated material is being worked or removed

(a) except where the bench face is adequately sloped, and
(b) using equipment which cannot reach within 1.5 m (5 ft.) of the bench above.

Section 52.

52. (1) Unless permission in writing is first obtained from the Chief Mines Safety Officer, all open-cut workings over 20 m (65 ft.) in depth shall be worked in benches not more than 20 m (65 ft.) in vertical height.
(2) The width of the bench shall permit safe access to the working face, but in no case shall it be less than the vertical height of the face, and the overall slope of the pit wall shall not exceed the angle approved by the Chief Mines Safety Officer.
(3) Precautions shall be taken to maintain the walls, benches, and broken material in a safe working condition; no working face shall be advanced by undercutting.

Section 53.

53. (1) All unconsolidated material such as clay, sand, gravel and loose rock lying within 1.8 m (6 ft.) of the rim of the pit or edge of a berm or a bench shall be removed.
(2) Beyond this strip, all overburden shall be sloped to an angle less than its natural angle of repose.

Section 54.

54. (1) No person shall be permitted to work near pit walls until such walls have been scaled or examined by the shift boss or pit foreman and declared safe.
(2) If a wall or face is found dangerous, the shift boss or pit foreman shall have all hazards removed before permitting any other work.

Section 55.

55. Every pit or quarry dangerous by reason of its conditions or depth shall be securely fenced or otherwise protected against inadvertent access.

Section 56.

56. (1) Excavation operations in sand, clay, or gravel or other natural unconsolidated material shall not be carried on within a distance from the boundary of adjoining land that is half the height of the total pit face, and material that sloughs from within this distance shall not be removed.
(2) No operations in consolidated material shall be carried on in a pit or quarry within 4.5

m (15 ft.) of the boundary of adjoining land.
(3) Subsections (1) and (2) do not apply where the owners of the adjoining land consent to the excavation or operations.

Section 57.

57. (1) No worker shall be raised or lowered or be permitted to be raised or lowered at a surface mine or mining plant by any hoist, derrick, crane or similar device unless
(a) such device is examined and tested by a competent person before being used to raise or lower the worker,
(b) a safe procedure for raising or lowering the worker is established and adopted by the supervisor in charge of the mine or mining plant,
(c) there is a device by which the hoist operator and the worker being raised or lowered can exchange movement signals except where the worker being transported is visible at all times to the hoist operator.
(2) Where a load is being hoisted or lowered by means of a hoist or derrick at a pit or quarry the signal person shall notify all persons in the vicinity to retire to a place of safety until the load has cleared the danger zone.

Section 58.

58. (1) At every pit or quarry there shall be provided and maintained in good working condition a suitable travel way leading from the working level of the pit or quarry to the surface.
(2) Where the travel way is inclined at more than twenty-five degrees and less than forty-five degrees to the horizontal, stairways, or ladders shall be provided.
(3) All stairways shall be equipped with substantial and suitably placed handrails and foot cleats.
(4) Where the travel way is inclined at more than forty-five degrees to the horizontal, ladders shall be used.
(5) Substantial platforms shall be built at intervals not exceeding 6.4 m (21 ft.) in the ladder way, and at all places where the ladders are offset.
(6) No ladder shall be installed at an inclination of more than seventy degrees to the horizontal, except for approved access ladders to equipment.

Section 59.

59. (1) An effective block automatic derail or safety switch shall be provided at the top of each inclined place to prevent cars accidentally running down; such an installation is not required where the skip or car remains on the hoisting cable.
(2) All tracks shall be maintained in good working condition.

Section 60.

60. (1) No person shall remain in the cab of a vehicle while it is being loaded by a power driven shovel or similar equipment, unless the cab had adequate protection at the back and over the top.
(2) No person shall work or be in a position underneath the raised box of any dump truck or underneath a bulldozer or scraper blade, loader bucket or other similar equipment unless the box, blade, bucket, or other equipment is adequately secured independently of the normal operating controls.

Section 61.

61. (1) Every truck or loader when newly put into service and having a manufacturer's gross vehicle weight in excess of 45,500 kg (100,000 pounds) shall have a manufacturer's nameplate affixed to the inside of the cab in full view of the operator and the nameplate shall show
    (a) the vehicle serial number,
    (b) the maximum rated load capacity, and
    (c) the maximum grade on which the vehicle may safely operate.
(2) Clearly marked emergency run off lanes or effective impact barriers shall be provided at suitable locations on all roadways used for the transport of persons or for haulage purposes in which the grade exceeds 5%.
(3) Where material is dumped from a vehicle over a bank or bench, a bumper block or a ridge of material shall be provided to act as an effective stop block.
(4) Material shall not be dumped from a vehicle over a bank or bench where the ground at the dumping place may fail to support the weight of a loaded vehicle.

UNDERGROUND MINING

Section 62. General Safety

62. (1) Where the enclosing rocks are potentially hazardous, every adit, tunnel, stope or other working in which work is being carried on or through which persons pass, shall be securely cased, lined or timbered, or otherwise made secure.
(2) Where a ground condition indicates that a rock burst or uncontrolled fall of ground may occur, the condition shall be recorded in writing by the supervisor of the work shift and signed by him and the record shall describe the state of the corrective measures taken.

Section 63.

63. The manager or persons appointed by the manager shall
(a) examine at least once during each shift all working parts of a mine in order to ascertain that they are in safe working condition, and
(b) examine at least once a month the other portions of a mine that are not barricaded or access prevented by notice.

Section 64.

64. The employer shall provide and maintain an adequate supply of properly dressed scaling bars, gads, and other equipment necessary for scaling.

Section 65.

65. Where repair work is in progress in any manway or where conditions arise that may endanger travel through the manways, the manway shall be closed off or adequate signs designating the unfitness of the manways for travel purposes shall be posted at all entrances to the manway.

Section 66.

66. (1) Diamond drill holes shall be plotted on all working plans.
(2) When any active mine heading is advancing toward any diamond drill hole, the collar or the nearest points of intersection of the hole or both shall be securely closed off or guarded at all times that blasting is being done within 4.6 m (15 ft.) of any possible intersection of the hole.
(3) The collar and any points of intersection of every diamond drill hole, underground, shall be plainly marked at the time that drilling is discontinued or an intersection made.
(4) Such markings shall consist of a single capital letter "H" in yellow paint measuring 30.5 cm x 30.5 cm (12 in. x 12 in.), which shall be placed within 1.2 m (4 ft.) of the collar or intersection.

Section 67.

67. Dangerous places such as openings in floors, pits, elevated platforms, trap holes, or mill holes shall be fenced off to safeguard effectively those persons authorized to work or be in the vicinity.

Section 68.

68. (1) Where a ladder way is installed in an underground mine or in a headframe used in conjunction with a shaft and the ladder way is inclined at more than seventy degrees from the horizontal,

(a) the ladder way shall be provided with substantial platforms at intervals not greater than 7 m (23 ft.),

(b) the ladders shall be offset at the platforms,

(c) except for openings large enough to permit the passage of a worker, the platforms shall be fully enclosed, and

(d) if installed in a shaft manway, the ladders shall be placed over the openings of the platforms below.

(2) Where the ladder way is inclined at less than seventy degrees to the horizontal the ladders may be continuous and the provisions of paragraphs (1)(a) and (c) shall apply.

(3) Where a ladder way is inclined at less than fifty degrees to the horizontal, no platform is required except at points of offset.

(4) Where a ladder way is the only means of access for mine rescue purposes, the opening shall be large enough for such purpose.

Section 69.

69. Every counterweight shall be situated or guarded to avoid injury to any person should it become detached from its fastenings.

Section 70.

70. A conveyor in an underground mine shall have

(a) devices that guard against excessive slip between the belt and the driving pulley, and

(b) a fire suppression system at the driven end unless fire retardant belting is used or the conveyor is continually attended by a worker.

Section 71.

71. Where possible, no connection between mine workings shall be made until a thorough examination of the workings, towards which active heading is advancing, has been made and shown that the work can be proceeded with in a safe manner; the point of connection shall be guarded as an entry when blasting within 9 m (30 ft.) of a break through.

Section 72. Portal and Shaft Collar

72. No permanent building shall be erected within 15 m (50 ft.) or form part of any closed-in portion of a headframe or portal house except with the prior permission of the Chief Mines Safety Officer or where the buildings and the shaft house or integrated building as a whole are of non-flammable construction.

Section 73.

73. (1) At every adit or tunnel the mouth of which is covered by a building there shall be provided and maintained, near the mouth of the adit, tunnel, or incline, a door which shall be
    (a) of metal or metal covered,
    (b) suitably hung at a place not more than 15 m (50 ft.) from the mouth, and
    (c) arranged so that it can be closed from inside and outside of the building by a pull wire or cable.
(2) A safety officer may require the installation of other fire doors considered necessary.
(3) Snowsheds connecting the entrance of a mine to surface buildings are not permitted unless
    (a) the written permission of the Chief Mines Safety Officer has been obtained, and
    (b) the construction is such that a fire of a surface building will be prevented from reaching the mine entrance.

Section 74.

74. (1) No steam boiler or diesel engine shall be installed in a manner that a portion of it is within 22.8 m (75 ft.) of the nearest point of the collar of a shaft or other entrance to a mine.
(2) No gasoline or other internal combustion engine using highly volatile liquids or flammable gases shall be installed within 23 m (75 ft.) of the nearest point of the building housing the hoist or within 30 m (100 ft.) of the nearest point of a part of the collar of a shaft or other entrance to a mine.
(3) Where it is impossible to comply with subsections (1) and (2), the Chief Mines Safety Officer may permit the installation of steam boilers, diesel engines, gasoline or other internal combustion engines in locations and under the conditions as the officer sees fit.
(4) Except for the actual fuel tanks of operating equipment, no storage of gasoline or liquid fuel, except in tanks below the surface, shall be permitted within 30 m (100 ft.) of the collar of a shaft or other entrance to a mine.
(5) The natural drainage from the location shall be such that the flow is in a direction opposite to the location of a shaft or mine entrance.

Section 75. Shaft Sinking

75. (1) Every shaft and winze in a mine shall be securely cased, lined, or timbered and during sinking operations the casing, lining, or timbering shall be maintained within a safe distance from the bottom and this distance shall not exceed 15 m (50 ft.).
(2) The guides, guide attachments and shaft casing, lining or timbering shall be of sufficient strength and shall be suitably designed, installed and maintained so that the safety catches may grip the guides properly at any point in the shaft.

Section 76.

76. During shaft sinking operations no work shall be done in any place in a shaft or winze while workers are working in another part of the shaft or winze below such place, unless the people working in the lower position are protected from the danger of falling material by a securely constructed covering extending over a sufficient portion of the shaft to afford complete protection.

Section 77.

77. During shaft sinking operations, if a permanent ladder is not provided to the bottom, an auxiliary ladder that will reach from the permanent ladders to the bottom shall be provided in such convenient position that it may be promptly lowered to any point at which a worker is working.

Section 78.

78. (1) Where steel, timber, or other material is being raised or lowered in any shaft conveyance, the material shall be loaded in a manner to prevent it from shifting its position and, if necessary, it shall be secured to the conveyance.
(2) When the material projects above the sides of the conveyance, it shall be securely fastened to the conveyance or lashed to the hoisting rope in a manner not to damage the rope.

Section 79.

79. In a shaft or winze, in the course of sinking, the bucket or skip shall be filled only in a manner that no piece of loose rock shall project above the level of the brim.

Section 80.

80. (1) During sinking operations in any shaft or winze, the bucket or skip used for returning workers to the work place following any blasting operation shall not be lowered on the initial trip beyond the point where, owing to the blast, it may be unsafe to proceed without a careful examination and in no case shall the point be less than 15 m (50 ft.) above the blasting set or bulkhead.
(2) The bucket or skip shall be lowered from such point only on signal from the people accompanying it and at a speed that is fully under control, by signal, of those people.
(3) Only sufficient workers shall be carried on the trip as are required to properly conduct a careful examination of the shaft or winze.

Section 81.

81. In a shaft or winze in the course of sinking, the bucket or skip shall not be lowered directly to the bottom but shall be held at least 4.5 m (15 ft.) above, and shall remain there until a separate signal to lower the same has been given by the person in charge of sinking.

Section 82.

82. No bucket shall be allowed to leave the top or bottom of any shaft or winze until the worker in charge thereof has steadied it or caused it to be steadied.

Section 83.

83. (1) In a shaft or winze, in the course of sinking, provisions shall be made and maintained to ensure that the bucket or skip will not be dumped while the dumping doors are open or other means applied to prevent spillage falling into the shaft or winze.
(2) The design of any device for this purpose shall be submitted for approval by the Chief Mines Safety Officer before the device is installed.
(3) A door or doors to cover the sinking compartments shall be maintained at the collar or other points of service of every shaft or winze while sinking is in progress.
(4) The door or doors shall be kept closed at all times that tools or material are being loaded into or unloaded from the bucket or skip at the collar or other points of service of the shaft, except when the bucket or skip is unloaded by dumping arrangements as provided in subsections (1) and (2).
(5) The door or doors shall be closed when people are loaded or unloaded, except where a safety crosshead fills the compartment at the collar or other points of service.
(6) Dual lights shall be installed to indicate to the hoist operation that;
(a) the crosshead and bucket are descending together from the bucket dumping position;
(b) the service doors are in or out of the shaft compartment; and

(c) the dump doors are in or out of the shaft compartment.

Section 84.

84. (1) After a depth of 90 m (295 ft.) below the sheave has been attained in the sinking of any vertical shaft or winze, a bucket and crosshead, as referred to in subsection (2) shall be used.
(2) When a closed type of crosshead is not used the bucket shall be barrel shaped and shall be suspended by the upper rim and shall be at least 1 m (3.3 ft.) high.

Section 85.

85. (1) All sinking crossheads shall be provided with a safety appliance of a design approved by a safety officer for attaching the bucket to the crosshead, so constructed that the crosshead cannot stick in the hoisting compartment without also stopping the bucket.
(2) All crossheads shall be of a design approved by the Chief Mines Safety Officer.

Section 86. Shaft and Hoisting Operations

86. (1) Where a mine shaft exceeds 100 m (330 ft.) in vertical depth, a shaft conveyance shall be provided for the raising and lowering of workers.
(2) No mine hoisting plant shall be put to or continued in normal service if it is or ought to be known to have a defect or be in an improper state of repair except for the purpose of correcting the defect or improper state of repair.

Section 87.

87. A bulkhead or other suitable stop shall be placed in every working shaft to prevent that part of the hoisting conveyance carrying people from being inadvertently lowered into water in the sump of the shaft.

Section 88.

88. No stoping shall be done within 30 m (100 ft.) of a shaft that is used for the transport of persons unless the Chief Mines Safety Officer has approved a written application to do so.

Section 89.

89. (1) The top of every shaft shall be securely fenced or protected by a gate or guard-rail.
(2) At all shaft and winze openings on the surface and on every level, loading pocket, or other shaft opening unless securely closed off, the hoisting compartments shall be protected by a substantial gate which shall be kept closed except when the hoisting conveyance is being loaded or unloaded at such point, the clearance beneath any gate shall be kept to a minimum.
(3) Where haulage trucks lead up to any hoisting compartment on surface or underground, the gate on the compartment shall be reinforced in a manner strong enough to withstand any impact caused by collision with any motor, train or car operated on the tracks.

Section 90.

90. A safe passageway and standing room for a person outside the shaft shall be provided at all workings opening into a shaft and the manway shall be directly connected with such openings.

Section 91.

91. (1) When material is handled in any shaft or winze compartment, there shall be maintained around that compartment, except on the side on which material is to be loaded or unloaded, a substantial partition at the collar and at all levels.
(2) The partition shall extend above the collar and all levels a distance not less than the height of the hoisting conveyance plus 1.8 m (6 ft.) and it shall extend below the collar at all levels at least 1.8 m (6 ft.).
(3) Subsection (1) and (2) shall not apply during sinking operations.

Section 92.

92. Wherever a counterweight is used in a shaft or winze, it shall operate in a separate enclosed compartment.

Section 93.

93. (1) No person shall do any work or conduct any examination in any compartment of a shaft or winze or in that part of the headframe used in conjunction with the compartment while hoisting operations other than those necessary for doing the work or conducting the examination, are in progress in the compartment.
(2) No person shall do any work or conduct any examination in a shaft or winze or in that

part of a headframe used in conjunction therewith, unless he or she is adequately protected from accidental contact with any moving hoisting conveyance or the danger of falling objects accidentally dislodged.

Section 94.

94. Where a bucket is used in any shaft or winze for other than sinking purposes
(a) a set of doors shall be maintained at the collar of the shaft or winze, and shall be kept closed at all times that tools or supplies are being loaded into or taken out of the bucket,
(b) a suitable landing device shall be used at every working level when the bucket is being loaded or unloaded at that level, and
(c) simultaneous operations shall not be carried on at more than one level until the style or structure and method of operation of any device installed at intermediate levels has been submitted to and has received the approval of the Chief Mines Safety Officer.

Section 95.

95. (1) A suitable ladder way or an independently powered conveyance shall be provided in every shaft.
(2) Except for an auxiliary ladder used in shaft-sinking operations, no ladder shall be installed in a shaft in a vertical position.

Section 96.

96. (1) The manway in a shaft shall be separated from the hoisting or counter-weight compartments by a partition.
(2) Between levels, the partition may consist of metal of suitable weight and mesh to prevent a falling object from entering the manway or the intrusion of an object from the manway into the hoisting compartment.
(3) A safe passageway and standing room for a person outside the shaft shall be provided at all workings opening into a shaft and the manway shall be directly connected with such openings.

Section 97. Mine Hoisting Plant

97. (1) Except for the purpose of testing before being put into service in a particular location no mine hoisting plant shall be operated without a valid mine hoisting plant permit.
(2) The permit prescribed by subsection (1) may be issued by the Chief Mines Safety Officer upon receipt of certification obtained from a professional engineer and such

permit may be cancelled if the mine hoisting plant is not installed, maintained and operated in compliance with the Occupational Health and Safety Act and these regulations.
(3) Such certification shall be valid only when the plant is installed, maintained and operated in compliance with these regulations, and operated in the location specified in the permit.
(4) A mine hoisting plant permit shall be in a form provided by the Director.

Section 98.

98. (1) No shaft conveyance shall be used without a subsisting shaft conveyance permit.
(2) A permit to operate a shaft conveyance may be issued by the Chief Mines Safety Officer upon receipt of certification obtained from a professional engineer and such permit may be cancelled if the shaft conveyance is not installed, maintained, and operated in compliance with the Occupational Health and Safety Act and these regulations.
(3) Such certification shall be valid only where the shaft conveyance is installed, maintained and operated in compliance with these regulations, and operated in the location specified in the permit.
(4) No shaft conveyance shall be loaded in excess of the maximum number of persons or weight of material stated in the permit.
(5) A permit to operate a shaft conveyance shall be in a form prescribed by the Director.
(6) A notice in a form prescribed by the Director, stating the authorized loads of shaft conveyance, shall be posted at the shaft collar.

Section 99.

99. A check for compliance with section 97 shall be conducted on a mine hoisting plant before being put into initial service in a particular location.

Section 100.

100. (1) In determining the maximum weight of materials for the permit for a shaft conveyance, the Chief Mines Safety Officer shall take into consideration the maximum load that a mine hoisting plant is capable of safely carrying.
(2) The maximum number of persons that may be carried by a shaft conveyance shall not exceed 85 percent of the maximum weight of material divided by ninety kilograms (200 lbs.).
(3) Subject to subsection (2), the maximum number of persons that can be carried on a shaft conveyance shall be determined as follows:
(a) where the clear floor area of a deck of a shaft conveyance is 1.86 square meters (20 sq. ft.) or less there shall be at least 0.20 square meters (2 sq. ft.) for each person;

(b) where the clear floor area of a deck of a shaft conveyance is more than 1.86 square meters (20 sq. ft.) and less than 4.64 square meters (50 sq. ft.), there shall be at least 0.15 square meters (1.7 sq. ft.) for each person; and
(c) where the clear floor area of a deck of a shaft conveyance is 4.64 square meters (50 sq. ft.) or more, there shall be at least 0.14 square meters (1.5 sq. ft.) for each person.

Section 101.

101. The following log books shall be obtained from the Chief Mines Safety Officer and used for each mine hoisting plant:
(1) Electrical Hoisting Equipment Record Book.
(2) Hoisting Machinery Record Book.
(3) Hoist Operator's Log Book.
(4) Rope Record Book.
(5) Shaft Inspection Record Book.

Section 102.

102. A headframe on the surface or underground in an underground mine shall
(a) be designed in accordance with good engineering practice,
(b) have the plans of the design certified by a professional engineer,
(c) be constructed in accordance with the design,
(d) be of sufficient strength to safely withstand all loads to which it is likely to be subjected, and
(e) be of sufficient height to provide a distance for an over-wind that exceeds the greater of
(i) twice the stopping distance of the hoist at the maximum speed permitted by the hoist controls, or
(ii) 3 m (10 ft.).

Section 103.

103. A mine shaft shall
(a) be designed in accordance with good engineering practice,
(b) have a means to guide each shaft conveyance to prevent contact with another shaft conveyance or shaft furnishings,
(c) have under-wind clearances that exceed the stopping distance of the shaft conveyance when travelling at the maximum speed permitted by the hoist controls, except
(i) during shaft sinking, or
(ii) when chairs are used to land a skip during loading, and
(d) where a friction hoist is installed, have tapered guides or other such devices

above and below the limits of regular travel of the shaft conveyance and counterweight, arrange to act as a direct physical brake to decelerate and stop the counter weight and shaft conveyance in the event of an over-travel.

Section 104.

104. (1) Protective devices and procedures shall be used to prevent a shaft conveyance or counterweight from coming into contact with an intermediate shaft obstruction.
(2) A device which may become an intermediate shaft obstruction shall be positively locked out of the shaft compartment to prevent inadvertent entry into the compartment.
(3) The location of the intermediate shaft obstruction shall be marked on the depth indicator of a hoist.
(4) The protective procedure for operating the intermediate shaft obstruction shall be prepared in writing and posted for use by the hoist operator.
(5) Doors for covering the shaft at the collar to facilitate the maintenance of a shaft conveyance are not an intermediate shaft obstruction if
(a) they are positively latched out of the shaft compartments when not in use, and
(b) dual lights are installed to indicate to the hoist operator whether such doors are in or out of the shaft compartment.

Section 105.

105. (1) No hoist shall be used for the transporting of persons unless it has a braking system consisting of at least two sets of mechanical brakes to stop and hold the drum for the shaft conveyance transporting the persons.
(2) Each set of mechanical brakes shall
(a) stop and hold the drum when the shaft conveyance or counterweight is operating at its maximum load,
(b) be so arranged to be capable of being tested independently, and
(c) be arranged to apply normal braking effort before a linkage or brake piston reaches a limit of travel.
(3) At least one of the mechanical brakes shall be designed and arranged to
(a) apply directly to the drum and
(b) apply automatically when
(i) the safety circuit of the hoist is interrupted, or
(ii) the pressure in the hydraulic or pneumatic system for applying brakes has dropped below normal.
(4) The braking system shall be arranged so that
(a) the brakes are applied by control levers that are pulled unless brake and power control levers are common, and
(b) any brake weights installed to provide auxiliary braking force can be readily tested for freedom of movement.

Section 106.

106. (1) The brakes of a drum hoist shall be arranged to decelerate the hoist at a rate greater than 1.5 meters per second (5 ft. per sec.) and less than 3.7 meters per second (12 ft. per sec.) where braking is initiated by an interrupted safety circuit and the hoist is
(a) normally used for the transporting of persons, and
(b) operating in the normal full speed zone.
(2) The braking system of a hoist not normally used to transport people shall be designed and arranged to safely stop and hold the hoist under all conditions or normal load, speed and direction of travel.

Section 107.

107. (1) A clutch of a drum hoist shall be interlocked with the brake so that
(a) the clutch can be disengaged only when the brake of the drum is fully applied, and
(b) the clutch is fully engaged before the brake of the drum can be released.
(2) The controls for engaging and disengaging a clutch shall be guarded to prevent their inadvertent operation.
(3) No band type friction clutch shall be used.

Section 108.

108. (1) Except as prescribed in subsection (2), (3) and (4), the drum diameter to rope diameter ratio for a drum hoist shall be equal to or greater than
(a) 60 to 1, where the nominal rope diameter is 25.4 millimeters (1 in.) or less, or
(b) 80 to 1, where the nominal rope diameter is greater than 25.4 millimeters (1 in.).
(2) The drum diameter to rope diameter ratio for a drum hoist in use for shaft sinking or for preliminary development work during shaft sinking shall be equal to or greater than
(a) 48 to 1, where the nominal rope diameter is 25.4 millimeters (1 in.) or less, and
(b) 60 to 1, where the nominal rope diameter is greater than 25.4 millimeters (1 in.).
(3) The drum diameter to rope diameter ratio of a friction hoist shall be equal to or greater than
(a) 80 to 1, for stranded ropes, and
(b) 100 to 1, for locked coil ropes.

Section 109.

109. No drum hoist shall have
(a) more than three layers of rope where the drum has helical or spiral grooving or does not have grooving,
(b) more than four layers of rope if the drum has parallel and half pitch grooving, and
(c) less than three dead turns of the rope on the drum.

Section 110.

110. (1) The drum of a drum hoist shall be equipped with
(a) grooves that properly fit the rope, unless the hoist is being used for shaft sinking or preliminary development work during shaft sinking in which case the drum may be smooth, and
(b) flanges of sufficient height to contain all the rope and which are strong enough to withstand any loading by the rope.
(2) A conical drum hoist shall be provided with grooves that prevent the rope from slipping off.

Section 111.

111. A drum hoist and a sheave shall be arranged so that the rope
(a) coils properly across the face of the drum,
(b) winds smoothly from one layer to another, and
(c) winds without cutting into the rope layer beneath.

Section 112.

112. Bolts and other fittings of a mine hoisting plant shall be properly secured.

Section 113.

113. A hoist shall be provided with depth indicators that continuously, accurately, and clearly indicate to the hoist operator the position
(a) of a shaft conveyance and counterweight, if any,
(b) in an inclined shaft, of a change in gradient that requires a reduction in hoist speed,
(c) at which the over-wind, under-wind and track limit devices are set to operate,
(d) of any intermediate shaft obstruction,
(e) of the limits of normal travel for the shaft conveyance and counterweight, if any, and
(f) of any collar doors, dump doors and crosshead landing chairs.

Section 114.

114. (1) A steam or air powered hoist shall be provided with devices that
(a) protect against an over-wind,
(b) protect against an under-wind, except during shaft sinking,
(c) indicate the air or steam pressure for the hoist operator, and

(d) permit the air or steam supply to the hoist engine to be readily shut off by the hoist operator.

(2) Where the hoisting plant consists of a single shaft conveyance without a counterweight, the compression of the engine of an air or steam powered hoist may be used as an automatic brake if

(a) the engine is non-reversing,

(b) the exhaust restraining valve is fail-safe,

(c) the piping system is strong enough to withstand the air or steam pressures,

(d) the compression has sufficient braking capacity to stop the hoist carrying its maximum load,

(e) the normal speed of the hoist is less than 2.5 meters per second (8 ft. per sec.), and

(f) specifications and arrangements of the hoist have been submitted to the Chief Mines Safety Officer.

Section 115.

115. A hoist being used as a tugger or utility hoist shall be maintained and used so as not to endanger the safety of a worker.

Section 116.

116. A hoist that is relocated shall comply with the requirements of these regulations.

Section 117.

117. (1) Before a sheave is used, a certificate for the sheave shall be obtained from the manufacturer of the sheave or a professional engineer competent in sheave design certifying as to

(a) the maximum rated load,

(b) the diameter of rope for which it was designed,

(c) the breaking strength of the rope for which it was designed, and

(d) the maximum amount of groove wear that shall be permitted.

(2) No sheave shall be

(a) loaded above the maximum rated load, or

(b) used other than in compliance with the certificate.

(3) The ratio of the diameter of the sheave to the diameter of the rope shall be as specified in regulation 108.

(4) A sheave shall

(a) be made of materials that will safely withstand the ambient temperatures,

(b) be fitted with a groove to fit the rope being used, and

(c) bear a serial number and the date of its manufacture.

(5) The shaft of a sheave shall be examined for flaws by a non- destructive test by a

person competent in such testing

(a) before being put into service in a particular location,

(b) after installation, and

(c) at a regular frequency as recommended by a person competent in such testing.

Section 118.

118. (1) A shaft rope shall not be used unless

(a) a 2.5 m (8 ft.) representative sample has been tested for its breaking strength by a destructive test, and

(b) a Certificate of Test has been obtained from a cable testing laboratory approved by the Commissioner in Executive Council.

(c) a copy of the Certificate of Test is forwarded to the Chief Mines Safety Officer.

(2) After six months of service and thereafter at intervals of six months, the hoisting rope of a drum hoist shall have a portion not less than 2.5 m (8 ft.) in length cut off the lower end from a portion above the clamps or other attachments, except in the case of the rope tested by an electromagnetic testing device as permitted under section 119. The first such cut will be made after eighteen months of service and at intervals of six months thereafter.

(3) The portion of rope cut shall have the ends adequately fastened with binding wire before the cut is made to prevent the disturbance of the strands and shall be sent to a testing laboratory approved by the Commissioner in Executive Council.

(4) The certificate of the test shall be forwarded to the Chief Mines Safety Officer and as well shall be kept on file and a summary thereof recorded in a Rope Record Book.

(5) No hoisting rope which has been used, stored or in and out of use for two years, shall continue to be used or put in use except with permission in writing from the Chief Mines Safety Officer.

Section 119.

119. (1) Hoisting ropes on drum hoists, and friction hoists may be tested throughout their working length by an electromagnetic testing device within the first six months of service and thereafter at intervals as determined by the Chief Mines Safety Officer.

(2) The electromagnetic testing service and the agency or company supplying the service shall be approved by the Chief Mines Safety Officer.

(3) The dates and results of the electromagnetic tests shall be entered in a Rope Record Book.

(4) Records of each electromagnetic test, including graphs and interpretations, over the signature of the person making the interpretation, shall be sent to the Chief Mines Safety Officer within fourteen days after the test is made.

Section 120.

120. (1) Shaft ropes shall be attached by closed devices that will not inadvertently disconnect.

(2) In a drum hoist installation, the hoisting rope from a shaft conveyance and counterweight shall be attached to the drum of the hoist.

(3) No wedge type attachments shall be used unless the attachments are

(a) in sound condition, and

(b) certified at least once every six years of use as being in sound condition by a competent person or by the manufacturer.

(4) When the attachments for a shaft hoisting rope are first installed, or re-installed after disassembling, the following measures and procedures shall be taken before the hoist is put to use

(a) two test trips of the conveyance or counterweight through the working part of the shaft, while the conveyance or counterweight is carrying normal load, shall be performed,

(b) an examination of the attachments upon the completion of the two test trips shall be made,

(c) any necessary adjustments shall be made,

(d) a record of any adjustments, examinations and test trips shall be made in the Hoisting Machinery Record Book by the person or persons making the adjustments, examinations and test trips.

(5) Where shaft rope attachments are made using rope clips, the number of clips to be used and their torque shall be in accordance with the General Safety Regulations.

Section 121.

121. (1) Where a work platform that is not a shaft conveyance is used to transport or support a worker who is performing work in a shaft, the work platform shall be

(a) designed by a professional engineer in accordance with good engineering practices, and

(b) built in accordance with the design.

(2) Notice in writing of the use of a work platform shall be given to the Chief Mines Safety Officer before put in initial use.

Section 122. Skips and Cages

122. (1) A cage, being used to transport persons shall

(a) where it is supported by only a single rope or attachment point, have the safety catches and mechanisms prescribed in subsection (4),

(b) except on any side which has a door, be enclosed by sheet steel at least 3 mm (1/8 in.) thick,

(c) have ventilation adequate for the persons being transported,

(d) have a hood of steel plate at least 5 mm (1/5 in.) thick,

(e) have a door or doors as prescribed in subsection (2)

(f) have an internal height greater than 2.1 m (7 ft.),
(g) have a clearance at the door that is greater than 1.8 m (6 ft.), and
(h) have, where practical, an exit in the roof which can be opened from inside or outside the cage.

(2) The door or doors on a cage shall
(a) be at least 1.5 m (5 ft.) high,
(b) be mounted and arranged so they cannot be opened outward from the cage,
(c) have devices for positive latching in the closed positions,
(d) be of solid materials, except for a viewing window,
(e) be so arranged that they may be closed at all times that persons or materials, except rolling stock, are being transported in the cage,
(f) be mounted so as to provide only enough clearance at the floor to permit free closing or opening, and
(g) be of adequate strength to withstand normal shock loads.

(3) The shaft signal pull cord shall be located in a convenient place for the skip tender.

(4) Safety catches and mechanisms on a cage or skip shall
(a) be of a type and design approved by the Chief Mines Safety Officer,
(b) stop and hold a cage or skip transporting persons should the supporting rope or attachment break, and
(c) be subjected to the tests prescribed in section 123(1) and successfully pass the free fall test prescribed in section 123(2)
(i) prior to the cage or skip first being used to transport persons, and
(ii) prior to the cage or skip first being used after repairs to correct distortion of the safety catches and mechanisms.

Section 123.

123. (1) Free fall tests shall be performed under the following conditions:
(a) the cage or skip shall carry a weight equal to its maximum permitted load of persons and any material permitted to be carried at the same time;
(b) the cage or skip shall travel at a speed equal to normal hoisting speed when transporting persons;
(c) the guides on which the test is made shall be fairly representative of those in the shaft.

(2) A free fall test shall be successfully passed if
(a) the skip or cage is decelerated to a stop within one and three times the rate of gravity,
(b) there is no damage to the safety dogs and mechanisms,
(c) the safety dogs engage the guides constantly during deceleration, and
(d) a calculation shows that the safety dogs will stop the cage or skip when it is carrying its maximum material load.

(3) A report of a free fall test shall be submitted to the Chief Mines Safety Officer on the free fall test form and be recorded in the Hoisting Machinery Record Book for the hoist.

Section 124.

124. (1) When a skip is being used to carry people, the hoist shall
(a) be equipped with control devices that prevent the skip from being taken
(i) to the dump position, and
(ii) to the skip loading pocket unless the controls for loading the skip with ore or waste have been made inoperative,
(b) not be permitted to travel in excess of one-half its normal speed and in no case shall the speed be permitted to exceed 5 m per second (16.5 ft. per sec.).
(2) The control devices of the hoist shall be designed and installed to be fail-safe.
(3) An audible or visual signal that the control device for the hoist are set in operation shall be given to people entering a skip.
(4) Chairs used for landing a cage shall be
(a) arranged to fall clear and remain clear of the shaft compartment when the cage is lifted off the chairs,
(b) operable only from outside the cage, and
(c) so arranged as not to distort the cage.
(5) Chairs fastened to shaft station posts shall be of a chain type.

Section 125. Electric Hoists

125. (1) No hoist that is electrically powered shall be used unless it has a safety circuit that
(a) is fail-safe,
(b) when interrupted, operates to
(i) set the brakes;
(ii) remove power from the hoist motor or motors; and
(iii) stop the mine hoist when in motion.
(2) The safety circuit of a hoist shall be interrupted when
(a) there is a failure of a power supply to the hoist electrical system which may affect safe operation,
(b) there is an overload on the hoist motors of a magnitude and duration exceeding normal,
(c) there is a short circuit in the hoist electrical system, and
(d) a prescribed safety device has operated.
(3) A switch to interrupt the safety circuit of a hoist shall be installed and the switch shall be
(a) manually operable,
(b) located within easy reach of the host operator when at the controls,
(c) readily recognizable, and
(d) readily operable.
(4) A track limit device shall be installed in each shaft compartment that will be operated directly by the shaft conveyance or counterweight to interrupt the safety circuit of a hoist in the case of an overwound shaft conveyance or counterweight.
(5) Devices shall be installed to protect a shaft conveyance or counterweight against,
(a) an over-wind,
(b) an under-wind, except during shaft sinking,
(c) approaching the limits of travel at an excessive speed, and

(d) operating or being operated at an over-speed in excess of that for which the hoisting plant was designed and intended.

(6) The devices required by subsection (5) shall

(a) operate to interrupt the safety circuit when activated,

(b) be driven directly by the drum,

(c) be protected for loss of motion,

(d) prevent the paying out of excess rope during shaft sinking, and

(e) be set to stop the hoist before a shaft conveyance, counterweight and their attachments make contact with a fixed part of a mine shaft or headframe.

(7) Devices shall be installed for a friction hoist that is set to interrupt the safety circuit where

(a) excessive slip between the drum and a hoisting rope or ropes occur,

(b) a violent swing or large rise in the loop of a balance rope occurs, and

(c) a shaft conveyance and counterweight approaches the collar of a mine shaft at excessive speed.

(8) The devices required for the purposes of paragraph (7)(c) shall be installed in the mine shaft.

(9) On a friction hoist, a device shall be installed that synchronizes the position of the shaft conveyance with safety devices driven from the drum.

(10) A hoist that is electrically powered shall

(a) have an ammeter within plain view of the hoist operator to indicate the hoist motor current,

(b) except when the slowdown control at the limits of travel is automatic, have a device to warn the operator, audibly, that the hoist is approaching the limit where a reduction in speed is necessary for safe manual braking,

(c) have a speed indicator if the normal speed exceeds 2.5 meters per second (8 ft. per sec.),

(d) have a device from which a voltage signal that is proportioned to the speed of the hoist can be obtained,

(e) have a back-out device as prescribed in subsection (11) by which a shaft conveyance or counterweight can be removed from an over-wound or under-wound position,

(f) if equipped with an underwind by-pass device, have such device

(i) manually operable only, and

(ii) restrict the hoist operation to slow speed,

(g) have over-wind by-pass devices that

(i) are manually operable only,

(ii) when in use restrict hoist operation to slow speed, and

(iii) allow hoist travel beyond the first device providing overwind protection,

(h) have a master controller that has a neutral or brake reset position,

(i) have any brake operating levers arranged so that upon an interruption of the safety circuit the power to the hoist cannot be restored until the levers are in the brake applied position,

(j) have accurate and sensitive safety controllers, and

(k) have each safety-related device capable of being effective under the environmental conditions in which it is installed.

(11) A back-out device shall

(a) be manually operable only, and

(b) prevent the brake or brakes from being released until sufficient torque has been

developed to ensure movement in the correct direction.

(12) The adjustment of a protective device shall be altered only by a competent person authorized to do so.

Section 126. Safety Examinations and Certificates

126. (1) A competent person or persons shall be appointed to examine an electrically powered or controlled hoist.

(2) An examination shall be made at least once each week of the

(a) hoist motors,

(b) hoist controls,

(c) electrical safety devices, and

(d) signalling devices.

(3) A record of the examination, servicing and repair shall be made in the Electrical Hoisting Equipment Record Book.

(4) The entries in the Electrical Hoisting Equipment Record Book shall be dated and signed by the person performing the examination, servicing, or repairs.

(5) A record of a failure or accident involving an electrical component of a hoist motor and controls, electrical safety and signalling devices shall be made in the Electrical Hoisting Equipment Record Book by the supervisor in charge of electrical hoisting equipment.

(6) The supervisor in charge of the mine hoisting plant shall

(a) at least once each week, review the entries made in the Electrical Hoisting Equipment Record Book during the preceding week,

(b) ascertain that the examinations prescribed in subsection (2) have been made and all necessary work done, and

(c) upon completion of each review required by paragraph (a), certify in the Electrical Hoisting Equipment Record Book that paragraphs (a) and (b) have been complied with.

Section 127.

127. (1) A competent person or persons shall be appointed to examine the mechanical parts of a mine hoisting plant.

(2) An examination shall be made

(a) at least once in each normal production day, of the

(i) exterior of each hoisting and tail rope to detect the presence of kinks or other damage and to note the appearance of the rope dressings, and

(ii) safety catches of the shaft conveyance for any defects,

(b) at least once in each week, of

(i) any conveyance safety mechanisms for proper adjustment and freedom of movement;

(ii) any head, deflection or idler sheaves, their shafting and bearer and sole plates,

(iii) the attachments of each shaft rope,

(iv) the attachments on any shaft or conveyance or counterweight,
(v) any shaft conveyance, counterweight and work platform,
(vi) the hoist parts, brakes, brake-clutch interlocks, depth indicators,
(vii) any hoisting equipment being used for shaft sinking, and
(viii) any auxiliary brake operating weights to assure their freedom of movement and holding capacity,

(c) at least once each month, of
(i) the shaft ropes to determine,
(a) the amount of wear, distortion and corrosion,
(b) the need for lubrication,
(c) the need for changing the wear patterns,
(ii) the hoisting ropes for the number and location of broken wires, and
(iii) the friction treads of a friction hoist,

(d) at least once every six months of service, of
(i) the hoisting rope of a drum hoist within the attachments at the drum and at the drum spout, and
(ii) the hoisting rope of a friction hoist within attachments at the shaft conveyance or counterweight in accordance with an established procedure, and

(e) at least once every twelve months, of
(i) bolt locking devices, foundation bolts and all bolts critical to hoist safety, and
(ii) the bails, suspension gear and structure of the shaft conveyance and counterweight.

(3) At least once every six months, the safety catches and mechanisms of the cage or other shaft conveyance shall be tested and such tests shall consist of releasing the empty conveyance suddenly in some suitable manner from rest, so that the safety catches have the opportunity to grip the guides and, where the safety catches do not act satisfactorily, the cage or other shaft conveyance shall not be used for lowering or raising workers until the safety catches have been repaired and tested and shown to operate satisfactorily.

(4) Hoisting ropes in use on a drum hoist shall be cleaned when necessary and shall be dressed with lubricant at least once each month so as to maintain a good coating and a record of the cleaning and dressing shall be entered in the Hoisting Machinery Record Book and the entry shall be dated and signed by the supervisor in charge of the work.

(5) After every six months of service on a drum hoist the portion of the hosting rope that is within the clamps at the attachment of a shaft conveyance or counterweight shall be cut off.

(6) After every eighteen months of service on a friction hoist the portion of the hoisting rope and tail rope that is within the wedge and socket attachments shall be cut off.

(7) An examination shall be made by a competent person, using, non- destructive methods acceptable to the Chief Mines Safety Officer, to determine the condition of the
(a) mine hoist shafting, brake pins and linkages, and
(b) structural parts, attachment pins, and draw-bars of a shaft conveyance and counterweight, and

(8) The examination referred to in subsection (7) shall be made
(a) before initial use of the parts, and
(b) at regular intervals that are no greater than
(i) those recommended by the competent person performing such an examination, or

(ii) those required by the Chief Mines Safety Officer.

(9) Drawings of the parts to be examined under subsection (7) shall be made available upon request to the person performing the examination.

(10) A record of the examination required by this section and any servicing and repairs shall be entered in the Hoisting Machinery Record Book and the entries in the Record Book shall be dated and signed by the person performing the examination, servicing, or repairs.

(11) A record of a failure and accident involving a mechanical part of a mine hoisting plant shall be made in the Hoisting Machinery Record Book by the supervisor in charge of the mechanical hoisting equipment.

(12) The supervisor in charge of the mechanical parts of the mine hoisting plant shall countersign each entry made in the Hoisting Machinery Record Book with respect to examinations made under subsection (7).

(13) The supervisor in charge of the mine hoisting plant shall

(a) at least once each week, review the entries made in the Hoisting Machinery Record Book during the preceding week,

(b) ascertain that the examinations required by this section have been made and all necessary work done, and

(c) upon completion of the review required by clause (a), certify in the Hoisting Machinery Record Book that clauses (a) and (b) had been complied with.

Section 128.

128. (1) An examination shall be made by a competent person of

(a) the mine shaft, at least once every week,

(b) the shaft guides, timbers, walls, and compartments used for hoisting, at least once every month,

(c) the headframe, headframe foundation and back legs, sheave deck, dump, bin and bin supports, at least once every year,

(d) the shaft sump, at such frequency as is necessary to assure that the tail, guide and rubbing rope connections are clear of water and spillage, and

(e) water in the shaft sump at least once every year to determine its pH.

(2) A record of the examinations required by subsection (1) and any servicing and repairs shall be entered in the Shaft Inspection Record Book and such entries shall be dated and signed by the person performing the examination, servicing or repairs.

(3) The supervisor in charge of the mine shaft and headframe shall

(a) at least once each week, review the entries made in the Shaft Inspection Record Book during the preceding week,

(b) ascertain that the examinations required by subsection (1) have been made and all necessary work done,

(c) upon completion of the review required by paragraph (a), certify in the Shaft Inspection Record Book that he has complied with paragraphs (a) and (b).

Section 129.

129. The ropes, sheaves, brakes, attachments and other parts of a utility or tugger hoist shall be regularly examined by a competent person and kept in safe condition.

Section 130.

130. (1) A certificate shall be obtained for each shaft conveyance or counterweight showing its
    (a) rated load, as certified by a professional engineer; and
    (b) serial number, date of manufacturing and the name of the manufacturer.
(2) Each shaft conveyance and counterweight shall be examined and inspected at least once in every five years of use by a competent person and a record of such examination and inspection shall be kept available for inspection.
(3) All parts of a shaft conveyance or counterweight when in service and carrying the rated load shall be capable of withstanding at least four times the maximum allowable design stresses without permanent distortion.
(4) The maximum allowable design stresses shall be those established by good engineering practice and include the effects of
    (a) the weight of the conveyance or counterweight,
    (b) the rated load,
    (c) any impact load,
    (d) any dynamic load,
    (e) stress concentration factors,
    (f) corrosion,
    (g) metal fatigue, and
    (h) dissimilar materials.
(5) Where a worker performs work from the top of a shaft conveyance or counterweight, there shall be provided for the worker
    (a) a safe footing, and
    (b) overhead protection, except when changing shaft guides.
(6) Devices shall be provided in a shaft conveyance by which any equipment or supplies within the conveyance may be safely secured.

Section 131.

131. (1) A certificate for each hoist shall be obtained from the manufacturer of the hoist or a professional engineer competent in the design of mine hoisting plants certifying
    (a) the maximum rope pull,
    (b) the maximum suspended load, and
    (c) the maximum unbalanced load in the case of a friction hoist.
(2) No hoist shall be loaded above the maximums certified.

Section 132. COMMMUNICATION

132. (1) A system for communicating by voice shall be installed and maintained at an underground mine at the discretion of the Chief Mines Safety Officer.
(2) The communication system required by subsection (1) shall permit communication between persons at
(a) the collar of the shaft, including the collar of an internal shaft,
(b) the landing stations in use in a shaft,
(c) the hoist room for the shaft including the hoist room for an internal shaft,
(d) an underground refuge station, and
(e) an attended place on surface.

Section 133.

133. (1) Every working shaft shall be provided with some suitable means of communicating by distinct and definite signals to the hoist room from the bottom of the shaft, from every working level, from the collar, and from every landing deck.
(2) A separate audible signal system shall be installed for the control of each hoisting conveyance operated from a single hoist and there shall be a sufficient difference in the signals to the hoist operator that they are easily distinguishable.
(3) Where an electrical signal system is installed, the hoist operator shall return the signal to the person giving the signal when workers are about to be hoisted or lowered.
(4) No device for signalling to or communicating with the hoist operator shall be installed or operated in or on any shaft conveyance without the written permission of a safety officer.

Section 134.

134. (1) The code of signals set out in Appendix "A" shall be used at every mine and a copy of the code shall be printed and kept posted in every hoist room and at every level or other recognized landing place in every working shaft or winze.
(2) When the conveyance arrives at a station, the hoist operator will give a three-bell signal which must be returned by the cage tender before workers are permitted to enter or leave the conveyance.
(3) At any time that workers are carried in a hoisting conveyance, the hoist operator shall not move the hoisting conveyance within a period of five seconds after receiving a signal designating a movement and, in case the operator is unable to act within one minute of receiving any complete signal, the operator shall not move the hoisting conveyance before receiving another complete signal.
(4) After a hoist operator has received a three-bell signal, the operator shall remain at the hoist controls until receiving the signal designating the movement required and completing the movement.
(5) After commencing the movement the hoist operator shall complete it without interruption unless he or she receives a stop signal, or in case of emergency.

Section 135. Hoist Operators

135. (1) No person shall operate or be permitted to operate a hoist, unless that person
(a) holds a subsisting Hoist Operator's Medical Certificate,
(b) is a competent person or, in the case of a worker being trained to operate the hoist, is under the direct supervision of a competent person, and
(2) A person operating a hoist shall
(a) undergo a medical examination by a qualified medical practitioner before commencing work as a hoist operator and every twelve months thereafter; and
(b) obtain a Hoist Operator's Medical Certificate certifying that the person is physically fit to operate a hoist.
(3) A Hoist Operator's Medical Certificate shall
(a) be kept available for inspection, and
(b) expire twelve months after its date.
(4) A Hoist Operator's Medical Certificate shall be in a form prescribed by the Director.

Section 136.

136. (1) A report shall be made by the hoist operator in a Hoist Operator's Log Book for each shift performed by him or her of
(a) the working condition of
(i) the hoist brakes, clutches and clutch brake interlocks,
(ii) the depth indicator,
(iii) the signal system,
(iv) the hoist controls,
(v) the over-wind and under-wind devices, and
(vi) other devices which may affect safe hoist operation,
(b) any instructions given to him or her affecting hoist operations,
(c) any unusual circumstances in connection with the operation of the hoist,
(d) the results of any tests prescribed by these regulations,
(e) any trial trips,
(f) any inadvertent stoppages, and
(g) the operator's actual starting and finishing time.
(2) The hoist operator shall
(a) review and countersign all entries in the Hoist Operator's Log Book for the preceding two shifts, and
(b) sign in the Hoist Operator's Log Book for his or her period of duty.
(3) A person issuing instructions to the hoist operator shall record and sign such instructions in the Hoist Operator's Log Book.
(4) The supervisor in charge of a mine hoist shall review and countersign each working day the entries in the Hoist Operator's Log Book for the preceding twenty-four hour work period.
(5) The Hoist Operator's Log Book shall be kept in the hoist room and available for inspection.

Section 137.

137. (1) A hoist operator shall

(a) at the start of his or her shift

(i) test for the satisfactory working conditions of the hoist brakes, and

(ii) test the holding capacity of any friction clutch, in accordance with a procedure established for the hoist,

(b) at least once in twenty-four hours of use of a hoist, test the over-wind and under-wind protective devices by operating the hoist into them,

(c) make a return trip of a shaft conveyance

(i) through the working part of a shaft, if there has been a stoppage in hoisting for a period exceeding two hours, and

(ii) below any part of a shaft that has been under repair, after the repairs have been completed;

(d) remain at the hoist controls when the hoist is in motion under manual control,

(e) except when the hoist is on automatic control, apply the hoist brakes and set the controls to remove power from the hoist motors before leaving the hoist operator's position,

(f) not be in voice communication when the hoist is in motion and under manual control, except during an emergency or during maintenance and examination,

(g) not operate the hoist to transport any person unless at least two brakes can be applied to stop the hoist drum,

(h) not lower persons on an unclutched drum,

(i) when heavy loads or irregularly shaped loads are on or under the shaft conveyance, operate the hoist with caution,

(j) complete the hoist movement required by an executive signal after the hoist movement is begun unless there is a signal to stop or an emergency signal, and

(k) upon receiving a 3-bell executive signal, remain at the hoist controls unless the hoist movement required by the signal is completed.

Section 138.

138. (1) No person shall

(a) operate or interfere with devices or controls for operating a hoist unless authorized,

(b) speak to the hoist operator while he or she is operating the hoist on manual control, except in an emergency or when the hoist is being repaired, maintained or adjusted,

(c) be on a cage while it is being placed onto or removed from chairs,

(d) be in, on, or under a shaft conveyance or counterweight which is supported by an unclutched drum unless the conveyance or counterweight is secured in position or unless otherwise permitted under these regulations,

(e) leave a shaft conveyance that has inadvertently stopped at a point other than a shaft station, except upon instruction from an authorized person outside the conveyance,

(f) put to use any chairs for landing a cage unless

(i) a signal for chairing has been made and returned, or

(ii) special arrangements have been made to operate a cage with a car, in balance, from that location,

(g) permit the normal operation of a mine hoist if an object which may be a hazard to the operation of a shaft conveyance or counterweight has fallen down a mine shaft until,

(i) a shaft inspection or a trial run through the affected part has been made,

(ii) any obstructions have been removed, and

(iii) any damage affecting safe operation has been repaired.

Section 139.

139. (1) The hoist operator shall be instructed in the procedures to follow in operating the hoist and in the procedures for operating any safety devices where there is

(a) an intermediate shaft obstruction,

(b) an emergency,

(c) an inadvertent hoist stoppage.

(2) A notice shall be posted in the hoist room warning that no person shall speak to the hoist operator while the hoist operator is operating the hoist on manual control, except in an emergency or when the hoist is being repaired, maintained or adjusted.

(3) A hoist operator shall be available at a mine to manually operate an automatically controlled mine hoist when persons are underground.

(4) A competent person or persons shall be designated to

(a) give mine shaft signals,

(b) be in charge of a shaft conveyance,

(c) maintain discipline of persons riding in a shaft conveyance,

(d) enforce the load limits for the shaft conveyance, and

(e) notify the hoist operator of heavy loads or irregular shaped loads on or under the shaft conveyance.

(5) Procedures shall be adopted for removing persons from a shaft conveyance that has stopped inadvertently at a place in a shaft other than a shaft station.

(6) When equipment or supplies are being transported in a shaft, they shall

(a) when in a shaft conveyance, be loaded and secured in a manner to prevent shifting,

(b) when secured to a hoisting rope of the conveyance, be secured in a manner to prevent damage to the rope and permit the safety mechanisms of the conveyance to operate, and

(c) when transported below the shaft conveyance or crosshead, be suspended in a manner to prevent contact with shaft furnishings.

(7) The suspension system or arrangement used to transport equipment or supplies below the shaft conveyance or crosshead shall be capable of withstanding at least four times the maximum allowable design stresses without permanent distortion to any component of the system or arrangement, and shall meet the requirements prescribed by Section 130(4).

Section 140.

140. (1) No person shall be transported in a shaft conveyance
(a) that is a cage, unless the cage doors are securely closed,
(b) while the hoist that is raising or lowering the shaft conveyance is being used to transport ore or waste,
(c) that is multi-deck cage, where supplies or service rolling stock are being transported, except that persons may be carried on top deck when
(i) such materials are carried on another deck,
(ii) the materials are adequately secured,
(iii) the doors of the top deck are closed,
(iv) the combined load does not exceed 85 percent of the material load limit of the conveyance, and
(v) the scheduled trips for persons have been completed,
(d) where personal hand tools or equipment are being transported, unless such tools or equipment are
(i) protected by guards,
(ii) secured, and
(iii) the combined load does not exceed 85 percent of the material load limit of the conveyance,
(e) unless a worker authorized to give signals is in charge of the conveyance, and
(f) with explosives, supplies or service rolling stock.
(2) Notwithstanding paragraph (1) (f), those workers required to handle explosives or supplies or service rolling stock may be transported with the explosives, supplies, or service rolling stock if space is provided for the safety of the workers and the combined load does not exceed 85 percent of the material load limit of the conveyance.

Section 141. Underground Haulage

141. (1) Every locomotive, engine, trolley, or motor vehicle used above or below ground shall be equipped with a suitable audible signal that shall be maintained in proper working condition.
(2) Except when used in adequately lighted buildings or areas, every locomotive, engine, trolley, or motor vehicle used above or below ground shall be equipped with a headlight or headlights that shall be maintained in proper working condition; motor vehicles used for trackless haulage shall be equipped with a suitable taillight or taillights that shall be maintained in proper working condition.
(3) The audible signal with which a locomotive, engine, trolley, or motor car is equipped shall be sounded when starting and at other times as a warning of danger.
(4) In mechanical haulage underground, all made up trains shall be equipped with a suitable taillight or reflector.
(5) This section does not apply to a motor vehicle propelled by compressed air.

Section 142.

142. (1) The locomotive operating platform shall be provided with a suitable seat and an adequate guard for the protection of the motor operator.
(2) Every storage battery and trolley locomotive shall be equipped with a deadman control switch and with a control lever so installed that the lever cannot be removed when the power is on.
(3) Every storage battery and trolley locomotive shall, when manually operated, be operated only when the operator is in the proper position at the controls.

Section 143.

143. (1) In mechanical haulage on any level, drift or tunnel in or about a mine, no unauthorized person shall ride on any vehicles.
(2) Special trips for persons only shall be made on approved vehicles.

Section 144.

144. (1) On every level on which mechanical track haulage is employed, a clearance of 30 cm (12 in.) on one side and 60 cm (24 in.) on the other side shall be maintained between the sides of the haulage way and the cars or safety stations shall be cut every 30 m (100 ft.).
(2) On every level on which mechanical trackless haulage equipment is employed, a minimum total clearance of 1.5 m (5 ft.) shall be maintained between the sides of the haulage way or workings, and the mechanical equipment.
(3) On every level regularly used both for pedestrian traffic and trackless haulage where there is a total minimum clearance of less than 2.1 m (7 ft.), safety stations shall be cut at intervals not exceeding 30 m (100 ft.) and they shall be plainly marked.
(4) On all levels in which track or trackless haulage is employed, all backs of haulage ways and lips of draw points shall be so constructed as to clear the motor operator when he or she is sitting in the normal operating position.
(5) All regular travel ways shall be maintained clear of debris or obstructions that are likely to interfere with safe travel.

Section 145.

145. A safety section shall consist of a recess in the wall of a haulage way and shall be
(a) at least
    (i) 0.6 m (2 ft.) in depth, in addition to any existing clearance between the vehicle and the wall,
    (ii) 2 m (6 ft. 6 in.) in height, and
    (iii) 1.5 m (5 ft.) in length,
(b) plainly marked, and

(c) clean and free of obstruction.

Section 146.

146. (1) No electric haulage locomotive shall be left standing unattended unless the brakes have been set and the control lever placed in the neutral position.
(2) In the case of a storage battery haulage locomotive or trackless equipment the main switch shall also be placed in a non-operating position.

Section 147.

147. Every switch in a track either above or below ground on which cars are moved by mechanical power shall have the frog provided with a guard block of wood or iron if it is not so constructed that the hazard of a person catching their foot in it is reduced to a minimum.

Section 148.

148. (1) No internal combustion engine that uses gasoline, propane or other volatile substances as a fuel shall be used in an underground mine.
(2) No internal combustion engine shall be operated in any underground workings or in enclosed structures unless authority in writing is first obtained from the Chief Mines Safety Officer and under the conditions specified.

Section 149.

149. Before first using a diesel engine in an underground mine, an applicant shall submit to the Chief Mines Safety Officer
(a) an application showing the type of construction, complete identification data and specifications of the equipment
(b) the approval number issued by an approved testing laboratory or other acceptable agency,
(c) drawings showing
(i) the location and extent of the area in which the equipment will be operated,
(ii) the location and design of any underground fuelling station,
(iii) the ventilation system for the area in which the equipment will be operated indicating the maximum volume of airflow which can be supplied to the area.

Section 150.

150. No safety officer shall authorize the operation of equipment powered by internal combustion engines in any mine unless he or she is satisfied from information submitted, or as the result of a personal inspection that

(a) the area in which the equipment will be operated is acceptable,

(b) any underground refuelling station is properly constructed and equipped,

(c) the ventilation system is mechanically controlled, and is capable of supplying to the operating area an air current of sufficient volume to dilute the exhaust gases of the equipment to a concentration of not more than 50 parts per million by volume of carbon monoxide in the general atmosphere, but the volume of the air current shall not be less than 2.3 m^3 (75 $ft.^3$) per minute for each maximum brake horsepower of the equipment in addition to the normal requirements of the mine,

(d) the undiluted exhaust gases from a diesel engine shall have less than 1,000 parts per million by volume of carbon monoxide,

(e) all haulage way clearances comply with the requirements of section 144 of these regulations,

(f) no haulage way grade is greater than 15 degrees,

(g) the locomotive or equipment is equipped with

(i) an efficient headlight and means for giving audible warning signals,

(ii) an efficient non-toxic fire extinguisher so placed as to be within easy reach of the operator, and

(iii) an efficient scrubber for the exhaust gases.

Section 151.

151. No diesel equipment shall be operated underground in any mine where

(a) the carbon dioxide content of the air in the operating area exceeds permissible levels as set out in the Occupational Health Regulations,

(b) the percentage of flammable gases in the air in the operating area exceeds the lower explosive level (L.E.L.) of that gas.

Section 152.

152. (1) The fuel for a diesel engine shall have

(a) a flash point greater than 52°C (125°F) when tested by a closed cup method, and

(b) a sulphur content less than 0.25 percent by weight.

(2) No gasoline or other volatile fuel shall be used in the starting mechanism for a diesel engine.

Section 153.

153. (1) Tests shall be made to determine

(a) at least weekly, the volume of air flowing in underground haulageways and workings where diesel equipment is working,
(b) the carbon monoxide content of the undiluted exhaust discharging to atmosphere
(i) at least weekly, and
(ii) immediately following repairs to the engine which may have altered its combustion characteristics,
(c) at least weekly, the carbon monoxide content of the atmosphere at the operator's position,
(d) at least weekly, the nitrogen dioxide content of he atmosphere at the operator's position,
(e) at least every three months, the aldehyde content of the atmosphere at the operator's position, and
(f) where methane or other flammable gases exceed 0.75 percent by volume the atmosphere shall be tested at least weekly.

(2) The results of each test performed in pursuance of subsection (1) shall be entered in a book which shall be available to a safety officer at all times.

Section 154.

154. (1) A service garage or fuelling station in an underground mine shall
(a) be designed and protected to prevent inadvertent entry of an uncontrolled motor vehicle,
(b) be located so that in the event of a fire or explosion in the garage or station there will be a minimum effect on working areas of the mine or on underground installations including shafts, magazines, refuge stations, transformer installations, and other installations,
(c) have a concrete floor without service pits in the floor, and
(d) be equipped with a system to contain spills or oil and grease.

(2) A service garage shall accommodate the longest and widest vehicle that will use the station with adequate clearance to permit safe performance of all work therein.

(3) A fuelling station shall be established before a heading has advanced 250 m (820 ft.) from the ramp or shaft unless vehicles can be fuelled at another fuelling station.

(4) A fuelling station shall be separate from a service garage.

(5) A vehicle shall be fuelled where practicable at a fuelling station.

(6) Where a mobile fuelling supply tank is used the tank shall be clearly labelled with "No Smoking" signs.

(7) Any spillage of oil or fuel shall be taken up at once, deposited in a fireproof receptacle and removed from the mine without undue delay.

Section 155.

155. All underground equipment must use approved fire resistant hydraulic fluid; this requirement will be waived if
(a) the quantity of fluid is less than 11 litres (10 quarts), or
(b) the fluid is used only in the transmission or braking system.

(c) equipped with an approved fire suppression system.

Section 156. Raising

156. (1) Except where approved raise climbing equipment is used, all raises inclined at over fifty degrees from the horizontal which are to be driven more than 18 m (60 ft.) slope distance shall be divided into at least two compartments, one of which shall be maintained as a ladder way and shall be equipped with suitable ladders.
(2) The timbering shall be maintained within a safe distance of the face, and in no event shall the distance between the face and the top of the timbering exceed 7.5 m (25 ft.).

Section 157.

157. The tops of all raises or other openings to a level shall be kept securely covered, fenced off, or protected by suitable barricades to prevent inadvertent access.

Section 158.

158. (1) A power driven raise climber shall
(a) have at least two independent means of braking
(i) one of which shall be as close as practical to the final drive of the motor,
(ii) each capable of stopping and holding the climber with its maximum rated load, and
(iii) each arranged to permit independent testing,
(b) have a maximum load that it may carry as certified by its manufacturer, displayed on the climber or at the raise service position,
(c) be operated within the maximum load limit,
(d) except when the track on which it operates is being extended, have a stop block to prevent the climber being taken beyond the track, and
(e) have an effective means for communication between the climber and the raise service position.
(2) A raise climber that is electrically powered shall
(a) not be operated in excess of 750 volts,
(b) be protected by a ground fault system,
(c) have a visible break switch at the raise service area by which its power can be isolated,
(d) have a switch at the raise service area by which its power can be safely interrupted, and
(e) have a control switch on the climber by which power to its motor can be removed.
(3) The electrical supply to a raise climber shall be disconnected while explosives and electric caps are being loaded into a position for blasting.
(4) A means by which workers can be reached and removed from a raise climber shall be available for use.

(5) Devices that may affect the safe operation of a raise climber shall be examined by a competent person

(a) before the raise climber is first used at the raise and daily thereafter when in use, and

(b) during every major overhaul of the raise climber.

(6) A major overhaul shall be performed on a raise climber at the frequency recommended by the manufacturer of the climber or a competent person, whichever is the more frequent.

(7) A raise climber being used at a raise shall be thoroughly cleaned weekly.

(8) The brakes and controls of the raise climber shall be tested prior to first being used during a workshift.

(9) The main shafting of the drive train of a raise climber shall be examined by a competent person using non-destructive methods to determine if it is in sound condition

(a) before the raise climber is first put into service, and

(b) during every major overhaul of the raise climber and not less frequently than once for every 4,000 hours of use.

Section 159.

159. A log book shall be kept for each raise climber and the log book shall contain

(a) a record of the dates the examinations prescribed in section 158 subsections (5) and (9) are performed,

(b) a record of the findings during the examinations referred to in clause (a),

(c) a record of any repairs and modifications, and the signature of the person performing such examinations, repairs and modifications, and

(d) the signature of the supervisor authorizing the repairs and modifications, referred to in paragraph (c).

Section 160. Stoping

160. (1) Whenever chutes are pulled where persons are working or may enter at the time of pulling, the pulling area shall be marked by signs or the persons working in the vicinity shall be notified and, as pulling proceeds, proper precautions shall be taken to ascertain that the broken material is settling freely.

(2) When there is any indication of a hang-up, the location shall be adequately protected by suitable signs or barricades.

(3) No person shall enter or be permitted to enter any chute or transfer raise used for the passage of ore, rock, or other material by gravity in which the material is hung up.

Section 161.

161. Where the entrance or exit to a work place in an underground mine cannot be used at all times, a second means of entrance or exit shall be provided.

Section 162.

162. The top of every mill hole, manway, or other opening shall be kept covered or otherwise adequately protected.

Section 163.

163. Where persons are working below a level in a place the top of which is open to the level in close proximity to a haulage or travel way, the opening shall be securely covered or otherwise closed off from the haulage or travel way.

Section 164.

164. The cyanide content in the liquid portion of the tailings used for underground fill and in the effluent from the filled area shall be less than 20 milligrams per litre expressed as cyanide.

Section 165. Ventilation and Heating

165. Ventilation shall be provided and maintained in every part of a workplace in accordance with the Occupational Health Regulations.

Section 166.

166. All structures containing primary fans used in connection with the underground ventilation of a mine shall be constructed to reduce the fire hazard to a minimum and the installations shall be equipped with a warning device in the event of a malfunction.

Section 167.

167. No development heading shall be advanced more than the distance prescribed by the Chief Mines Safety Officer from the through air current unless ventilating equipment is installed delivering air to the face with sufficient volume and velocity to provide adequate ventilation.

Section 168.

168. A battery-charging station in an underground mine shall be ventilated to prevent the

accumulation of an explosive mixture of gases.

Section 169.

169. (1) Any proposed method of heating the underground mine ventilating air shall be submitted for approval to the Chief Mines Safety Officer.
(2) Any proposed method of heating air at a mine, using a direct- fired heater, shall use a design approved by the Canadian Standards Association and final acceptance shall be made by the Chief Mines Safety Officer.

Section 170.

170. An underground area that is not part of an underground mine ventilation system shall
(a) be effectively barricaded to prevent inadvertent entry,
(b) be posted with signs to warn a person that entry is prohibited.

Section 171.

171. (1) Underground workings, especially raises, shafts and sumps, that have been in disuse for some time shall be examined before being used again in order to ascertain whether the air is deficient in oxygen or dangerous gases have accumulated in them.
(2) Only adequately protected workers necessary to make the examination shall be allowed to proceed to those places.
(3) Where methane or other flammable gases are found in percentages exceeding 0.75 percent by volume in the operating area of any mine, the ambient air shall be tested at least once per week.

Section 172. Sanitation Requirements

172. (1) The manager of a mine shall provide on the surface and in underground workings of a mine sanitary convenience in accordance with these regulations.
(2) Where men are employed underground not less than one toilet shall be provided for every twenty-five men on any shift.
(3) Where men are employed on surface, not less than one toilet and one urinal shall be provided for every twenty-five persons on any shift.
(4) Where female persons are employed, not less than one toilet shall be provided for every fifteen females on any shift,
(5) Toilets for females shall be provided with entrances entirely separate from those for men.
(6) Toilets for men shall be clearly marked "men" and those for females shall be clearly marked "women".

Section 173.

173. (1) It shall be the duty of the operator to ensure that all toilets are
(a) kept clean and sanitary,
(b) conveniently placed with reference to the number of men or women employed on the different levels of the mine,
(c) placed in a well ventilated part of the mine, and
(d) cleared and cleaned at intervals not exceeding seven days.
(2) Sanitary conveniences, urinals and toilets on surface shall be kept clean and sanitary.

Section 174.

174. (1) Suitable and adequate facilities to wash and shower and to change and dry their clothing shall be provided for workers
(a) at an underground mine, and
(b) at a surface mine, where the workers are subject to dusty, dirty or wet conditions.
(2) At an underground mine, the facilities required by subsection (1) shall be located
(a) when above ground, near the principal entrance of the mine,
(b) unless of non-combustible construction, not nearer than 15 m (50 ft.) to a shaft house or portal house, and
(c) not in a hoist room or boiler house, unless a separate properly constructed room is provided.
(3) Separate facilities shall be provided for men and women.

Section 175.

175. A sufficient quantity of safe fresh drinking water with sanitary appliances for drinking shall be provided within reasonable access for all workers.

Section 176.

176. Where 10 or more persons are employed in a building or group of buildings on the surface or in a general work area underground, a suitable lunchroom shall be provided and kept clean and dry at all times while in use.

Section 177. Underground Blasting

177. In sections 178 to 202
"underground magazine" includes a main storage area for explosives underground;
"primer cartridge" means a cartridge into which a detonator is inserted for firing the

charge either by safety fuse or electric current;
"socket" means a hole or part of a hole remaining after the hole has been loaded with explosives and the charge fired and includes so called "Bootlegs";
"storage box" means a small container located adjacent to a working place where small quantities of explosives may be stored;
"spring", in relation to a drill hole, means the enlarging or enlargement of a drill hole by the use of explosives, and "springing" and "sprung" bear similar meanings as derivatives of "spring".

Section 178.

178. The Blasting Regulations pursuant to the Occupational Health and Safety Act apply to the handling and usage of explosives used in underground operations, but if there is an inconsistency between those Blasting Regulations and these regulations, these regulations apply.

Section 179.

179. (1) An amount exceeding 150 kilograms (330 lbs.) of explosives shall not be stored in any one place underground without the written permission of a safety officer.
(2) An application for a magazine licence shall be made in writing to the Chief Mines Safety Officer and shall be accompanied by plans and specifications showing the design and proposed location of the magazine.
(3) Explosives stored underground in quantities less than 150 kg shall be kept in containers approved by a safety officer.
(4) Where an explosive is used in an underground mine,
(a) it shall be of Fume Class I rating as established by the explosives Branch of the Department of Energy, Mines and Resources (Canada); or
(b) if other than Fume Class I rating, a procedure shall be prepared and adopted by the supervisor in charge of the mine, to ensure that no worker is exposed to fumes that endanger his health or safety.
(5) The explosives shall not be stored in places where there is a possibility of any train or car colliding with the explosives container or containers.
(6) Where explosives in excess of what may be stored in approved underground storages are required for operations such as long-hole blasts, only such quantities as can be loaded in a twenty-four hour period shall be kept underground at any time for such blasts; any explosives not loaded at the end of a shift shall be stored in accordance with this section or be adequately guarded.

Section 180.

180. A magazine or storage container in an underground mine shall be,
(a) located at least 60 m (200 ft.) from a

(i) shaft,
(ii) hoist room,
(iii) main access ramp,
(iv) refuge station, or
(v) transformer vault;

(b) conspicuously marked by a "DANGER-EXPLOSIVES" sign or signs.

Section 181.

181. (1) Detonators, blasting caps, capped fuse and ignitor cord while stored in underground workings, shall be kept in separate containers or magazines.
(2) Such containers or magazines shall not be located within 15 m (50 ft.) of any other explosives.
(3) The vicinity of a magazine shall be posted as a no smoking area.

Section 182.

182. (1) No flame-type light shall be taken within 15 m (50 ft.) of any place underground where explosives are stored unless such light is placed in such a position that no accident shall occur.
(2) No person shall smoke within 15 m (50 ft.) of any place or building where explosives are stored or while handling explosives.

Section 183.

183. (1) The manager of a mine shall appoint one or more persons who shall make a thorough weekly inspection of all explosives, explosives magazines, thaw houses, detonator or blasting cap storage buildings, cap and fuse houses, and all storage boxes or places in or near the mine used for the purpose of storing explosives or detonators or blasting caps and who shall make a report, in writing, to the manager stating that such examinations have been made and certifying as to the conditions found.
(2) The manager shall take immediate steps to correct any unsuitable conditions found and to dispose of any deteriorated existing explosives and shall make a prompt investigation when an act of careless placing or handling of explosives is discovered or reported.
(3) No employee shall commit an act of carelessness with explosives or where explosives are stored in a mine and no employee shall fail or neglect to report immediately to the manager of the mine any act of carelessness.
(4) The manager shall report all such acts of carelessness to the Chief Mines Safety Officer.

Section 184.

184. (1) When explosives are being transported in any shaft conveyance the person in charge of such operation shall give or cause to be given notice of the same to the deck and hoist operators.
(2) No person shall place in, have while in, or take out of the shaft conveyance any explosives except under the immediate supervision of a person appointed by the manager, foreman, or shift boss for the purpose.
(3) No other material shall be transported with explosives in any shaft conveyance.

Section 185.

185. (1) The transfer of explosives from the magazine or other surface storage place shall be so arranged that no undue delay shall occur between the time the explosives leave such surface storage place and the time they are properly stored in designated storage places in the mine or distributed to points of use in the mine.
(2) Explosives shall not be left at any level station or near the shaft collar or other entrance to the mine but shall be transferred from any designated storage place to other designated storage places or points of use without undue delay.

Section 186.

186. (1) Primers shall be made up as near to their point of use as is practicable in the interests of safety and only in sufficient numbers for the immediate work on hand.
(2) Detonators or blasting caps, capped fuses, made-up primers, ignitor cord, or other explosives shall not be transported in any conveyance whether on the surface or underground unless placed in separate, suitable closed containers.
(3) A worker may carry capped fuses with other explosives from the nearest storage place to a point of use without placing them in a container if they are kept separate from the other explosives but in no case shall made-up primers be transported or carried unless placed in separate, closed containers.

Section 187.

187. (1) Where explosives are transported in mine workings by means of mechanical haulage, including trackless equipment, the speed of the vehicle shall not at any time exceed 6 kph (4 mph) and definite arrangements for the right-of-way of such vehicle carrying explosives shall be made before the vehicle is moved.
(2) Where mechanical track haulage is used the locomotive shall be maintained on the forward end of the train carrying explosives unless some person walks in advance of the train to effectively guard the same.
(3) In track haulage, the car or cars carrying explosives shall be separated from the locomotive by an empty car or a spacer of equivalent length and in no case shall

explosives be carried on the locomotive.
(4) Where a trolley locomotive is used for the transportation of explosives in any mine the car or cars carrying explosives shall be protected from trolley-wire contact and other existing hazards.

Section 188.

188. (1) When holes are being sprung ample time must be allowed for the hole to cool off after each springing shot before loading another charge.
(2) Springing shall not be carried out if nearby holes have been charged as the latter may fire by propagation.

Section 189.

189. (1) The following procedures shall be adhered to in underground operations
(a) before drilling is commenced in a working place, the exposed face shall be washed with water and carefully examined for misfires and cut-off holes, giving special attention to old bottoms;
(b) no drilling shall be done within 15 cm (6 in.) of any hole that has been charged and blasted or any remnant of such hole;
(c) no drilling shall be done within 1.5 m (5 ft.) of any hole containing explosives;
(d) drilling and charging operations at a mine shall not be carried on simultaneously on the same face above or below each other within 7.5 m (25 ft.) horizontal distance.
(e) where practical, after the face has been checked all remnants of blasted holes shall be conspicuously marked by,
(i) a ring of contrasting paint or crayon
(ii) inserting sticks or plugs into the holes for lifter remnants in a heading
(2) (a) In underground mine operations where operating conditions preclude the use of water, an alternative method shall be used for checking each face for misfires and cut-off holes; and
(b) A written procedure detailing the method shall be prepared and followed.

Section 190.

190. (1) Every worker shall, before blasting, cause all entrances or approaches to the place or places where such blasting is to be done or where the safety of persons may be endangered by such blasting, to be effectively guarded so as to prevent inadvertent access to such place or places while such charges are being blasted.
(2) Posting of signs, or audible signals shall not be deemed adequate protection to warn of blasting operations.

Section 191.

191. (1) Where possible, no connection between mine workings shall be made until a thorough examination of the workings towards which the active heading is advancing has been made and has shown that the work can be proceeded with in a safe manner; such a point of connection shall be guarded as an entry when blasting within twice the length of the longest drill steel used or a minimum of 4.5 m (15 ft.) of breaking through.

Section 192.

192. Except where fired electrically, no fuse shorter than 1 m (3.3 ft.) shall be used in any blasting operation, nor shall any fuse be lighted at a point closer than 1 m (3.3 ft.) from the capped end.

Section 193.

193. (1) All holes which are charged with explosives in one loading operation shall be fired in one blasting operation.
(2) The Chief Mines Safety Officer may provide exemption from the provisions of subsection (1).

Section 194.

194. Before returning to the scene of any blasting operation every worker shall assure themselves that sufficient air has been introduced into the working place to drive out or dilute to a safe degree the gases produced in the blasting operation.

Section 195.

195. (1) Where more than one charge is fired no worker shall be permitted to conduct any blasting operation unless accompanied by one or more other workers.
(2) When ignitor cord is used to ignite the safety fuse or where blasting is initiated electrically, it may be considered as one charge for the purposes of subsection (1).
(3) Each worker shall carry a light unless the blasting operation is conducted on surface in daylight, or under artificial light.

Section 196.

196. (1) Where blasting is about to be done in any raise or stope, precautions shall be taken

to prevent the closing of the entrance to the working place and also to prevent interference with the effective circulation of air following the blast by the broken material produced by the blast.

(2) In the case of a single compartment raise or box hole, where material from the blast may block the means of entrance such precautions shall be taken to ensure the adequate ventilation of the working place before workers enter the same.

Section 197.

197. (1) When a worker fires a round of holes he or she shall, where possible, count the number of shots exploding and if there is any shot missing the worker shall report the fact to the mine captain or shift boss.

(2) If a missed hole has not been fired at the end of a shift, that fact, together with the location of the hole, shall be reported by the mine captain or shift boss to the mine captain or shift boss in charge of the next relay of workers going into that working place before work is commenced by them.

Section 198.

198. (1) Any charge which has misfired shall not be withdrawn but shall be blasted at a proper time and without undue delay.

(2) Where a mixture of ammonium nitrate and fuel oil has misfired it may be washed out of the hole.

Section 199.

199. No development heading shall be abandoned or work therein discontinued until the material broken at the firing of the last round shall have been cleared from the face and the whole face of the heading examined for explosives in missed or cut-off holes.

Section 200.

200. (1) After the first 3 m (10 ft.) advance has been made in any shaft or winze and until such time as the permanent timbers and ladders have reached the level upon which blasting is being done, all blasting in the shaft, winze, station or other workings being driven from the same shall be done by means of an electric initiation.

(2) In any raise, inclined at over fifty degrees from the horizontal after 7.5 m (25 ft.) of advance has been made or in any raise where free escape is not assured at all times, all blasting shall be done by means of an electric initiation.

Section 201.

201. Where blasting is done by electricity, a worker shall not enter or allow other persons to enter the place or places where the charges have been fired before disconnecting and short-circuiting the firing cables or wires from the blasting machine or portable direct-current battery or having verified that the switch of the approved blasting switch is open, and that the firing cables or wires are short-circuited, and the blasting box locked.

Section 202.

202. (1) The time for blasting shall be fixed so that the workers shall be exposed as little as practicable to dust and smoke.
(2) A clock keeping accurate time shall be kept in the change house.

Section 203. PLANTS AND BULK MATERIAL

203. No liquids or solids shall be transferred from one location or container to another location or container by the application of air under pressure except when equipment specifically designed for the purpose is used.

Section 204.

204. (1) Where the view of rail traffic at railway tracks on surface is obstructed in one or both directions, guardrails shall be placed at the approach to the tracks.
(2) Subsection (1) does not apply where
(a) restricted clearance makes guardrails impracticable, and
(b) a warning signal which automatically functions at the approach of a locomotive or train gives a warning signal that is both audible and visible, or
(c) a worker is guarding the approach.

Section 205.

205. Each scale car shall be provided with an audible warning alarm which shall be sounded by the operator each time a car is started, or each car shall be equipped with an automatic mechanical warning alarm which will sound when the car is moved.

Section 206.

206. (1) Precautions shall be taken to prevent contact between molten material and damp

surfaces, rusty surfaces, cold surfaces, moisture, water, or other substances where such contact may cause an explosion, and where such explosion may endanger a worker.
(2) Precautions shall be taken to prevent spillage of molten material from a ladle, slag pot or similar vessel where such spillage may endanger a worker.
(3) A ladle, slag pot or similar vessel shall be examined immediately before use and, if found to be defective or contaminated by a substance which may cause an explosion, shall not be used for molten material.

Section 207.

207. Where mechanical haulage is used on surface and the clearance between the sides of conveyances on parallel tracks or between the sides of conveyances and the side of any building or other structure is less than 50 cm (20 in.), the location shall be plainly marked showing the danger.

Schedule A. Mine Signal Code

1. (1) The following signals shall be used by all persons when working with hoisting equipment:

TABLE

1 bell	Stop immediately -- if in motion (Executive Signal).
1 bell	Hoist (Executive Signal).
2 bells	Lower (Executive Signal).
3 bells	Worker about to ascend or descend (Cautionary Signal).

This signal shall be given by the hoist operator when the conveyance has come to a stop to indicate to the cage tender that the conveyance will not be moved until a further directionary signal is received. The cage tender shall not open the conveyance door until he or she has received the 3-bell signal; where a return bell signal system is installed, the cage tender will return the 3-bell signal before workers are permitted to leave or enter the conveyance. This signal shall also be given by the cage tender and returned by the hoist operator after a prolonged stop at a level and before workers are permitted to enter the conveyance.

TABLE

Skip Dump	2 bells pause 1 bell
Shaft Collar	2 bells pause 2 bells
1st Level	2 bells pause 3 bells
2nd level	2 bells pause 4 bells
3rd level	2 bells pause 5 bells
4th level	4 bells pause 1 bell
5th level	4 bells pause 2 bells
6th level	4 bells pause 3 bells
7th level	4 bells pause 4 bells
8th level	4 bells pause 5 bells
9th level	5 bells pause 1 bell
10th level	5 bells pause 2 bells
11th level	5 bells pause 3 bells
12th level	5 bells pause 4 bells
13th level	5 bells pause 5 bells
14th level	6 bells pause 1 bell
15th level	6 bells pause 2 bells
16th level	6 bells pause 3 bells

2. (1) The following signals shall be used for intermediate stops between levels such as Loading Pockets, etc.:

1st stop-level signal given pause 2 bells pause, then Executive Signal.

2nd stop-level signal given pause 3 bells pause, then Executive Signal.

For example -- supposing there were two stops between the 5th and 6th level. The signal would then be for the 1st stop 4 bells pause 2 bells pause 2 bells. The hoist operator would return this signal and then the Executive Signal would be given; that is 1 bell to hoist and 2 bells to lower. The signal for the 2nd stop would be 4 bells pause 2 bells pause 3 bells and again the hoist operator would return the signal and again followed by the Executive Signal.

3. (1) The following signals are special signals used for special hoisting movements:

3 bells pause 3 bells pause 1 bell -- Hoist Slowly.

3 bells pause 3 bells pause 2 bells -- Lower Slowly.

4 bells followed by station signal -- Blasting Signal -- Hoist operator will answer by raising conveyance a few feet and lowering to original position.

5 bells -- Release cage.

9 bells -- Followed by station signal -- DANGER SIGNAL -- to be used only in case of fire or other emergency.