

MINERALS AND MINING (EXPLOSIVES) REGULATIONS, 2012 (LI 2177)

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MINERALS AND MINING (EXPLOSIVES) REGULATIONS, 2012

IN EXERCISE of the powers conferred on the Minister responsible for Mines by section 110 of the Minerals and Mining Act, (Act 703), 2006, these Regulations are made this day 20th of March, 2012.

Application and general administration

Regulation 1—Application

(1) These Regulations apply to

(a) the conveyance, storage, possession, manufacture and use of explosives for mining, quarrying and civil works; and

(b) substances used for the manufacture of explosives.

(2) These Regulations do not apply to

(a) an explosive or substance imported or used by the Police or Military; or

(b) a coloured flare, firework, percussion cap, rocket or any other similar device used by the Ports and Harbour, Aviation, and Railway Authorities.

Regulation 2—Chief Inspector of Explosives and Inspectors of Explosives

The Chief Inspector of Mines is the chief inspector of explosives, and the inspectors of mines are the inspectors of explosives for the purposes of administering and enforcing these Regulations.

Regulation 3—Powers and duties of an inspector

(1) For the purposes of these Regulations, the Chief Inspector or an inspector may in respect of a mining activity

(a) enter, inspect and examine at any time a magazine, building, factory, plant, vehicle and blasting site where explosives and substances for the manufacture of explosives are kept or used;

(b) inspect security arrangements at the site, magazine or place;

(c) make enquiries in respect of

(i) the state and condition of a magazine and the explosives contained in the magazine and the state and condition of a building, premises, factory, plant, equipment and appliance associated with the manufacture, storage, transportation or use of explosives;

- (ii) the adequacy of any special rules in force;
 - (iii) matters relating to the health and safety of persons employed for the handling, storage, manufacture, transportation or use of explosives or substances and materials used in the manufacture of explosives;
 - (iv) the causes of an accident arising, from the handling, transportation, storage, manufacture, use of explosives or substances and materials used for the manufacture of explosives;
 - (v) the compliance with the provisions of these Regulations, and other laws relating to explosives and materials used in the manufacture of explosives;
- (d) take or remove for the purpose of analysis or testing or use evidence in connection with an offence against these Regulations, explosives, blasting equipment, chemicals and other substances or materials from a mine, quarry, plant, factory or civil blasting site;
- (e) inspect, take extracts from or make copies of a record or document relating to the manufacture, storage or use of explosives; and
- (f) by written notice to the holder of the mineral right, owner or manager order
- (i) the cessation of an operation relating to explosives and the withdrawal of persons from an area considered dangerous; or
 - (ii) in relation to explosives, the discontinuation of the use of a tool, machinery, equipment or appliance that is considered unsafe, until an action required and specified in the order is taken and fully complied with.
- (2) Where an inspector has reasonable grounds to believe that there is danger to persons, the inspector may require the immediate cessation of all operations within the area affected and the withdrawal of persons from that area until precautions that the inspector considers adequate have been taken to restore continued safe conditions in the affected area.
- (3) The Chief Inspector may hold an accident or incident inquiry and for that purpose
- (a) may summon a person whose evidence is considered likely to be material to the determination of any question relevant to the subject of the inquiry;
 - (b) shall give three days written notice of the time and place to the manager affected by the inquiry, and that manager shall, if necessary with the assistance of the police, ensure that the persons who are required to attend the inquiry are given notice of the time and place of the inquiry;
 - (c) obtain and record statements from witnesses; and
 - (d) require the production of plans, photographs, books and documents;
- (4) The Chief Inspector may
- (a) appear at an inquest, call and examine witnesses, and assist in the conduct of prosecution for an offence under these Regulations;

(b) request the company and assistance of the police to carry out duties that are required under these Regulations and under the Laws of Ghana, where the Inspector may have reason to suspect that explosives or substances to manufacture explosives are being illegally kept in a place; and

(c) take evidence on oath.

Regulation 4—Reporting of accidents and incidents

(1) A manager shall within forty-eight hours after an accident or incident involving explosives report the accident or incident by means of telephone, facsimile or any other appropriate method of communication to the nearest Inspector and police station and shall within seven days of the incident confirm the report in writing, stating full particulars of the incident to the Chief Inspector.

(2) A person shall not interfere with a site, where an accident or incident involving explosives has occurred, with or without the permission of an Inspector.

(3) Despite subregulation (1), a manager shall report an accident or incident within twenty four hours after the occurrence of the accident or incident if the accident or incident

(a) results in significant loss of containment which causes injury or damage, or concern in the surrounding community;

(b) involves an unplanned explosion or fire, including precursors to fire in the form of smouldering, overheating or source of ignition;

(c) involves explosives which are not on a company site but arise from the transport or storage of raw materials, products, intermediates or wastes;

(d) involves contamination or pollution arising from the use or disposal of explosives;

(e) involves premature detonation; and

(f) involves theft or attempted theft of explosives, accessories and security sensitive ammonium nitrate.

(4) A manager shall report an accident or incident within one week after the occurrence of the accident or incident if the accident or incident involves

(a) product quality issues with potential downstream impact on safety, health or environment;

(b) illnesses or health effects attributed to explosives; or

(c) inappropriate disposal or destruction of explosives.

(5) A manager shall report in writing to the Chief Inspector within one month of its occurrence, any event with no adverse outcome or relatively minor outcome that could have had much more serious consequences.

Regulation 5—Power of the Chief Inspector to prepare guidelines

The Chief Inspector shall prepare guidelines on any matter that concerns the proper carrying out of these Regulations.

Regulation 6—Management of explosives

- (1) A holder of a mineral right in relation to which explosives are used and a manager shall, in relation to the use of explosives under that manager's control, appoint a person with a valid explosives manager's certificate as explosives manager.
- (2) A manager shall ensure that activities that involve explosives, accessories or precursor substances are
 - (a) managed by a certified explosives manager;
 - (b) carried out only by competent and certified persons; and
 - (c) carried out only if the licences and permits required are in place.
- (3) The appointment of competent persons does not relieve the holder of a mineral right or a manager, of any personal responsibilities under these Regulations.

Regulation 7—Contravention of these Regulations

A person who contravenes any of these Regulations or an order made under these Regulations for which a sanction is not provided commits an offence and is liable on summary conviction to a fine of not less than fifty penalty units and not more than one hundred penalty units or a term of imprisonment of not less than three months and not more than six months.

Operating plans

Regulation 8—Explosives operating plans requirement

- (1) A manager shall before conducting and at the beginning of any operation under these Regulations submit to the Chief Inspector an explosives operating plan which shall show in detail the proposed activities to be conducted.
- (2) The explosives operating plan shall be consistent with and responsive to the requirements of the licences and permits issued under these Regulations.
- (3) A manager shall ensure that each explosives operation for which the manager is responsible or is in charge or in control of is conducted in accordance with an approved explosives operating plan.
- (4) The Chief Inspector shall after the approval of the explosives operating plan issue an explosives operating licence within fourteen days in accordance with regulations 6, 8, 9 and 10
- (5) A manager shall give notice to the Chief Inspector of any significant change in an operation, under the plan before the implementation of that operation.
- (6) A manager shall for the purpose of the renewal of that manager's operating licence submit yearly, updated explosives operating plans.
- (7) A company shall submit only one comprehensive explosives operating plan to cover the entire business of that company.

(8) A person who fails to submit an explosives plan required by this regulation and regulation 9 is liable to pay to the Commission a penalty of ten thousand United States dollars in the first instance and an additional penalty of two thousand United States dollars for each day the report remains unsubmitted.

Regulation 9—Types of explosives operating plans

A manager shall provide one or more of the following relevant plans as is appropriate to the explosives activity to be carried out under the control of the manager

- (a) an explosives storage operating plan;
- (b) an explosives transport operating plan;
- (c) an explosives manufacturing operating plan;
- (d) an explosives use operating plan;
- (e) an explosives dealer operating plan; and
- (f) a blasting firm operating plan.

Regulation 10—Content of explosives operating plans

(1) A holder of a mineral right or a manager shall submit three copies of the explosives operating plan to the Chief Inspector for approval.

(2) Despite subregulation (1), the Chief Inspector may request a holder of a mineral right or a manager to submit additional copies of the explosives operating plan and the holder or the manager shall comply.

(3) The explosives operating plan shall contain, at least,

- (a) the full name under which the business in respect of which the plan is prepared is conducted;
- (b) names, addresses and telephone numbers of persons responsible for operations to be conducted, and of persons on whom notices and orders are to be served;
- (c) the address of the location at which the business is to be conducted;
- (d) the full name, address and a copy of the certificate of the explosives manager of the business;
- (e) the name and location of the mineral right in relation to which the plan is prepared;
- (f) a general description of the activities to be carried out;
- (g) in the case of an explosives magazine, construction drawings of storage areas and storage plans as specified in accordance with regulation 145;
- (h) in the case of manufacturing and mixing plant, construction drawings, equipment list, process description, and the details specified in regulation 72;
- (i) in the case of transportation, specifications of vehicles used for the transportation of the explosives and the type of explosives to be transported; and

- (j) in the case of use of explosives, a description of
 - (i) the safety measures at a blast site;
 - (ii) the type of explosives, initiating system, the accessories to be used and preparation of primer, charging and stemming;
 - (iii) the equipment to be used on a blast site;
 - (iv) the preparations and firing and blast area security, as specified in regulation 189;
 - (v) the ventilation conditions in underground mines;
 - (vi) the safety distances and measures to limit the travelling distance of flying rock; and
 - (vii) the study of the area to be affected and measures to reduce ground vibration and air overpressure caused by blasting to an acceptable level.
- (4) For each activity under this regulation, the operating plan shall include
 - (a) a code of safe working practice;
 - (b) a system of record keeping,
 - (c) a security plan; and
 - (d) an emergency response plan

Regulation 11—Code of safe working practice

- (1) A manager shall ensure that each activity for which that manager is responsible and which involves explosives is carried out according to a written code of safe working practice and that each activity has its own description of safe working practice consisting of
 - (a) the title of the job;
 - (b) a description of the location of the job;
 - (c) a description of the basic function of the job;
 - (d) the general precautions to be taken into account in the respective job;
 - (e) a description of documentation applicable;
 - (f) the equipment and authorised tools required;
 - (g) a description of products to be handled that involve risks;
 - (h) the personal protective equipment required;
 - (i) the notable incidents which have to be communicated to the supervisor;
 - (j) a detailed description of preparatory activities before the start of the job;
 - (k) a detailed description of the activities to be carried out, the risks involved and the measures provided for the prevention of the risk ; and

- (1) a detailed description of the activities required after the completion of the job and the clean up.
- (2) A manager shall for the purpose of implementing safe work procedures ensure that
 - (a) employees receive training before being assigned to a job;
 - (b) an employee who is trained but is assigned to a new area of work receives the required induction; and
 - (c) safe work practice codes are reviewed once a year and are modified when equipment, installations, products, tools or risks change.
- (3) A manager who contravenes this regulation commits an offence and is liable on summary conviction to a fine of not less than two hundred penalty units and not more than five hundred penalty units or to a term of imprisonment of not less than fifteen months and not more than two years or to both.

Regulation 12—Security plan

- (1) A manager shall, in relation to explosives, conduct a risk assessment of the entire operation for which the manager is responsible and develop a security plan.
- (2) A manager shall appoint a competent person as security coordinator to be in charge of security in respect of activities involving explosives for which the manager is responsible.

Regulation 13—Emergency response plan

- (1) A manager shall
 - (a) in relation to explosives for which that manager is responsible, prepare an emergency response plan which shall be included in the operating plan to be submitted to the Chief Inspector; and
 - (b) ensure that the emergency response plan is implemented during an emergency connected to explosives.
- (2) An emergency response plan shall
 - (a) give a description and an assessment of emergency scenarios and risks and shall include an emergency plan in relation to
 - (i) fire;
 - (ii) transportation accident involving explosives;
 - (iii) a spill; and
 - (iv) a detonation;
 - (b) provide for the establishment of an emergency co-ordination centre;
 - (c) provide for emergency notification procedures and communication systems;
 - (d) provide for emergency equipment and resources;

- (e) provide response procedures for emergency situations;
 - (f) provide for clean-up, remediation and other procedures for returning operations to their normal state; and
 - (g) provide for training of staff.
- (3) An Emergency Response Plan shall be reviewed after each exercise or emergency and when changes are made that affect the existing plan.
- (4) The Chief Inspector may prepare guidelines which set out minimum standards for an emergency response plan.

Regulation 14—Annual inspection

- (1) A specialist approved by the Chief Inspector shall, once in a year, together with an Inspector thoroughly examine each installation and equipment in a place where explosives are stored, transported, manufactured or used.
- (2) The Chief Inspector shall issue an inspection certificate as set out in Form A in the Second Schedule after the completion of the inspection, if the Chief Inspector is satisfied with the result of the inspection.

Certificates, licences and permits

Regulation 15—Certificates of competency, business licences and permits

- (1) A manager shall ensure that an activity for which that manager is responsible and which involves explosives is carried out only
- (a) under the supervision of a person who has the required certificate of competency in accordance with subregulation (2);
 - (b) by a person who has the specific business licence for the respective activity in accordance with subregulation (5); and
 - (c) if the permit for the activity, where applicable, is granted in accordance with sub-regulation (4).
- (2) The commission may issue a certificate of competency to a person, if the person satisfies a board of examiners appointed by the Commission that that person qualifies for the certificate.
- (3) A certificate issued under subregulation (2) is subject to other conditions that the Commission may determine.
- (4) A certificate of competency which may be issued under subregulation (2) is
- (a) an explosives certificate of competency, in the form of
 - (i) a blastman certificate of competency to use explosives in an underground mine;
 - (ii) a blastman certificate of competency to use explosives in a surface mine; or
 - (iii) a certificate of competency to handle explosives for storage and transportation; and

- (b) an explosives manager's certificate of competency which authorises an explosives manager to
- (i) supervise the use of explosives in a mine, quarry or works;
 - (ii) operate an explosives manufacturing or mixing plant; and
 - (iii) store, transport and to deal commercially with explosives.

(5) The Commission may issue to a manager who holds a certificate of competency in accordance with subregulation (2) and who represents a company with an operating licence

- (a) to buy and use explosives;
- (b) to store explosives;
- (c) to buy, sell, deal with explosives and act as a broker of explosives;
- (d) to manufacture explosives;
- (e) to import and export explosives;
- (f) to transport explosives; and
- (g) for a blasting firm.

(6) A licence issued under subregulation (5) is subject to other conditions that the Commission may determine.

(7) A person may engage in the acquisition, storage or transportation of explosives only if the Commission has issued that person with a permit to

- (a) acquire a specific type and amount of explosives,
- (b) sell a specific type and amount of explosives,
- (c) store explosives, and
- (d) transport explosives.

(8) Subregulation (7) (d) does not apply to transportation of explosives at a mine site.

(9) A person who contravenes subregulation (1) or (2) commits an offence and is liable on summary conviction to a fine of not less than five hundred penalty units and not more than one thousand penalty units or to a term of imprisonment of not more than four years or to both.

Regulation 16—Register of certificates, licences and permits

The Chief Inspector shall maintain detailed records of certificates, licences and permits issued under these Regulations and matters relating to the expiration, suspension and cancellation of a certificate, licence or permit.

Regulation 17—Fees

The fee payable in respect of a certificate, licence and permit shall be as specified in the First Schedule.

Regulation 18—Records to be kept by Chief Inspector

The Chief Inspector shall keep a detailed record of forfeitures and suspensions of certificates of competency and business licences issued under these Regulations and cause the relevant details of each licence to be recorded.

Regulation 19—Grievance settlement in respect of decision of Inspector

(1) A person who is aggrieved by a decision or order of an Inspector made under these Regulations may appeal in writing as set out in Form B in the Second Schedule within fourteen days to the Chief Inspector who shall within twenty-one days after receipt of the appeal, hear and dispose of the appeal.

(2) Where an appeal is made under subregulation (1), the Chief Inspector may

(a) rescind or affirm the decision or order which is being appealed against; or

(b) make a new decision or order in substitution.

(3) A person aggrieved by the decision or order of the Chief Inspector may appeal in writing to the Chief Executive Officer of the Minerals Commission who may uphold or reject the appeal.

(4) The Chief Executive Officer of the Minerals Commission may impose additional conditions as the Chief Executive Officer considers necessary where the appeal is rejected.

Regulation 20—Explosives manager's certificate of competency

(1) A manager shall ensure that in relation to explosives for which that manager is responsible

(a) each activity which involves the explosives is carried out under the supervision of an Explosives Manager who has a certificate of competency;

(b) a person does not carry out, or at the request of another person carry out, the duties of an Explosives Manager, unless that person or that other person proves to the satisfaction of the Chief Inspector that that person or that other person

(i) is the holder of a recognised degree or diploma in mining or an equivalent qualification and in addition has complied with the examination requirements;

(ii) has at least four years practical industrial experience;

(iii) has worked as a blastman for at least two years;

(iv) is the holder of a certificate of competency to conduct blasting operations issued by the Chief Inspector;

(v) has satisfied a board of examiners appointed by the Commission of that person's or other person's knowledge of explosives and these Regulations;

(vi) has a certificate from a qualified medical practitioner stating that that person or that other person has sound sight and hearing and is not subject to any bodily or mental infirmity likely to interfere with the efficient discharge of that person's or that other person's duties; and

(vii) is the holder of a recognised first aid certificate.

(2) At least one of the members of the board of examiners appointed under subparagraph (v) of paragraph (b) of subregulation (1) shall be a senior mine officer.

(3) A certificate of competency shall be for a period of not more than five years and may be renewed for a further period of five years if the holder is exercising duties as an Explosives Manager.

Regulation 21—Explosives certificate of competency

(1) A manager shall in relation to explosives for which that manager is responsible ensure that a person

(a) does not conduct or instruct another person to conduct blasting operations or to prepare an explosive charge, or

(b) is not put in charge of, or permitted to instruct another person to be in charge of, a section or working place of a mine where blasting operations are being carried on

unless that person or that other person is the holder of a certificate of competency as set out in Form C in the Second Schedule granted by the Commission in accordance with subregulation (2).

(2) An applicant for a certificate of competency shall be examined by a board consisting either of an Inspector and a person nominated by the Chief Inspector or an Inspector and a senior mine officer.

(3) The board shall

(a) keep a record of the persons examined; and

(b) forward to the Chief Inspector its recommendations in respect of the person so examined.

(4) The Chief Inspector may on receipt of the recommendations request the Commission to issue a certificate of competency to the applicant and the certificate

(a) may be endorsed by the Chief Inspector with special restrictions as to the purpose and place of use; and

(b) shall contain a means of identification of the holder that the Chief Inspector may require.

(5) An Inspector may endorse, suspend or withdraw the certificate of a person to whom a certificate of competency has been issued if that person is proved to the satisfaction of the Inspector to have

(a) been inattentive or negligent in the execution of duty, or

(b) engaged in a misconduct which is likely to be detrimental to the efficient discharge of duty.

(6) An Inspector who endorses, suspends or withdraws a certificate of competency under subregulation (5) shall within forty eight hours report that action to the Chief Inspector.

(7) A person dissatisfied with the decision of an Inspector under this regulation may apply to the Chief Inspector for a review of the decision.

(8) A certificate of competency shall not be issued to a person who in the opinion of a qualified medical practitioner, has defective eyesight or hearing or is subject to any bodily infirmity likely to interfere with the efficient discharge of that person's duty

(9) A certificate of competency shall be for a period of not more than five years and may be renewed for a further period of five years if the holder is exercising duties as a blast man.

(10) A certificate of competency as set out in Forms C1, C2 and C3 in the Second Schedule may be issued to a competent person for the

(a) use of explosives in underground mines;

(b) use of explosives in surface mines; and

(c) handling of explosives for storage and transportation.

(11) A company may on behalf of a qualified employee of the company apply to the Commission in writing as set out in Form D in the Second Schedule, for an examination to be conducted for that employee for a certificate of competency for any of the purposes stated in sub-regulation (10).

(12) The Commission shall, in conducting the examination consider the knowledge and experience of the employee.

(13) The Commission may, after conducting the examination issue a certificate of competency in the prescribed form for the appropriate purpose and in accordance with the requirements of these Regulations.

(14) The Commission shall endorse on the certificate of competency, the purpose of the certificate and the certificate may be subject to restriction in relation to the purpose, place of use or period of use as determined by the Commission.

Operating licence

Regulation 22—Operating licence for mines and civil works companies

(1) A person who intends to buy and use explosives shall apply to the Commission for an operating licence to buy and use explosives.

(2) An application for a licence to buy and use explosives shall be in writing as set out in Form E in the Second Schedule and

(a) be made by the manager or the explosives manager, and

(b) include an acceptable operating plan in accordance with regulations 8, 9 and 10

(3) On receipt of an application for the purchase and use of explosives, the Commission shall verify whether the applicant

(a) holds a valid operating licence to store explosives; or

(b) has a letter from the holder of an operating licence to store explosives in the holder's magazine; and

(c) is a holder of an explosives manager's certificate of competency.

(4) The Commission shall issue an operating licence for the purchase and use of explosives if the conditions of subregulations (2) and (3) are met.

(5) An operating licence for the purchase and use of explosives is valid for only the activities and at the place stipulated in the licence, and for a period of one calendar year.

(6) The holder of an operating licence under this regulation shall apply in the same manner as for a new licence as set out in Form D in the Second Schedule for the renewal of the licence not later than one month before the end of each year.

Regulation 23—Operating licence for the storage of explosives

(1) A person shall not construct a building or other structure to be used as a magazine for the storage of explosives if that person does not have an operating licence granted for that purpose by the Commission.

(2) The licence shall be obtained on application to the Commission.

(3) The application shall be in writing as set out in Form F in the Second Schedule and

(a) be made by the manager or the explosives manager;

(b) include an acceptable operating plan in accordance with these Regulations; and

(c) include accurate and detailed drawings, specifications and a site plan for the proposed magazine.

(4) The construction of a building or structure to be used as a magazine shall not deviate from the drawings and specifications for that building as submitted in the application or with any other requirements determined by the Commission on the advice of the Chief Inspector

(5) An Inspector shall before a licence is granted under this regulation, carry out an inspection of the construction, fencing and earthing of the building or structure to be used as the magazine and test the lightning protection provided at the proposed magazine and submit the findings and recommendations of the Inspector to the Chief Inspector.

(6) The Chief Inspector shall forward the findings and recommendations of the Inspector under subregulation (5) to the Commission and the Commission shall on receipt of the findings and recommendations grant or refuse to grant the licence as appropriate.

(7) The licence shall state the types and maximum quantities of explosives which may be stored in that magazine, together with other conditions that the Commission considers necessary.

(8) The holder of an operating licence for the storage of explosives shall comply with the conditions of the licence for the magazine and with these Regulations.

(9) The holder of an operating licence for the storage of explosive to be

(a) shall only store explosives purchased or acquired in accordance with these Regulations; and

(b) may store explosives for another holder where written authority as set out in Form F in the Second Schedule has been given for that storage by the Chief Inspector

(10) A signed copy of the authority given under paragraph (b) of subregulation (9) shall be displayed alongside the licence, inside the magazine, during the period the explosives are stored there.

(11) An operating licence issued under this regulation may be revoked by the Commission

(a) if the owner or occupier of the magazine contravenes any of the requirements or conditions specified in the licence;

or

(b) if the licence was issued in respect of a magazine in a mining concession and the mining operations in the concession have ceased.

(12) The Commission may issue a new licence varying the requirements and conditions contained in a previous licence and the previous licence shall cease to have effect on the issue of the new licence.

(13) An operating licence to store explosives is valid for one calendar year and may be renewed on application.

(14) The application for the renewal of the licence shall be made in the same manner as an application for a new licence and be in writing as set out in Form F of the Second Schedule and be made to the Commission not later than one month before the end of the year to which the licence relates.

Regulation 24—Operating licence to sell, deal with or act as broker of explosives

(1) A person shall not sell or deal in explosives unless that person has a licence granted for that purpose by the Commission

(2) The licence shall be obtained on application to the Commission.

(3) The application for the licence shall

(a) be in writing as set out in Form G in the Second Schedule;

(b) be made by a qualified explosives manager; and

(c) include an acceptable operating plan in accordance with regulations 8, 9 and 10.

(4) A dealer in explosives shall keep records and submit monthly returns in the manner and form set out in Form H in the Second Schedule.

(5) A dealer in explosives shall

(a) keep that dealer's supply of explosives in a magazine that is erected, licensed and maintained in accordance with these Regulations or in another place for the storage of explosives licensed by the Chief Inspector;

(b) not supply explosives to a person who does not have a permit or licence, issued by or under the authority of the Commissioner; and

(c) not sell explosives which are expired or are in any way damaged or defective, unless written approval has been obtained from the Commission.

(6) A dealer in explosives

(a) shall not sell explosives which are damp, exude liquid, or which the dealer has reason to believe are defective or unsafe; and

(b) shall where any explosive is found to be in the condition referred in paragraph (a) report the situation without delay to an Inspector.

(7) Explosives found to be in any manner defective under subregulation (6) shall be disposed of as directed by the Inspector.

(8) The licence to sell, deal in or act as a broker of explosives is valid for one calendar year and is renewable on application.

(9) The application for the renewal of the licence under subregulation (3) shall be in the same manner as an application for a new licence and be in writing as set out in Form G in the Second Schedule and be made to the Commission not later than one month before the end of the year.

Regulation 25—Monthly returns in respect of import or export of explosives under an operating licence

(1) A person granted a licence to import and export explosives shall submit monthly returns to the Commission.

(2) The monthly returns shall

(a) be in writing as set out in Form I in the Second Schedule,

(b) contain details of

(i) the explosives in stock at the beginning and at the end of each month; and

(ii) the explosives received and issued by the licensee;

and

(c) be submitted to the Commission not later than the fifteenth day of the month immediately following the month to which the returns relate.

Regulation 26—Operating licence to manufacture explosives

(1) A person shall not manufacture explosives unless that person has a licence granted for that purpose by the Commission.

(2) The licence shall be obtained on application to the Commission.

(3) The Commission, on receipt of an application may issue the licence, subject to the conditions and for the period determined by the Commission.

(4) The application for the licence shall

(a) be in writing as set out in Form J in the Second Schedule;

(b) be made by an explosives manager; and

(c) include an acceptable operating plan in accordance with regulations 9 and 10.

(5) A person granted a licence to manufacture explosives shall comply with the conditions of the licence and the requirements of these Regulations in relation to the manufacture, storage, use or disposal of the explosives.

(6) The licence to manufacture explosives is valid for one calendar year and is renewable on application.

(7) The application for the renewal of the licence shall be made in the same manner as an application for a new licence and be in writing as set out in Form J of the Second Schedule and be made to the Commission not later than one month before the end of the year.

Regulation 27—Operating licence for transportation of explosives

(1) A person shall not transport explosives if that person does not have an operating licence granted for that purpose by the Commission

(2) The licence shall be obtained on application to the Commission.

(3) The application shall

(a) be in writing as set out in Form K in the Second Schedule;

(b) be made by an explosives manager; and

(c) include an acceptable operating plan in accordance with these Regulations.

(4) The operating licence is

(a) valid only for the area and for the period stipulated in the licence; and

(b) subject to renewal on application.

(5) The application for the renewal shall be the same as for a new licence and shall be

(a) in writing as set out in Form K in the Second Schedule; and

(b) made to the Commission not later than one month before the end of the year.

(6) The licence shall be renewed if the applicant satisfies the conditions for the renewal of the licence.

Regulation 28—Licence for blasting firm

(1) A person shall not operate a blasting firm or carry out blasting activities as a contractor for a holder of a mineral right or a civil works company if that firm does not have a licence granted for that purpose by the Commission.

- (2) The licence shall be obtained on application to the Commission.
- (3) The application shall be
- (a) in writing as set out in Form L in the Second Schedule;
 - (b) made by an explosives manager appointed in accordance with regulation 15(1) or a certified quarry manager; and
 - (c) include an operating plan in accordance with regulations 9 and 10.
- (4) The owner of a blasting firm shall in relation to that firm
- (a) appoint an explosives manager, if the owner is not qualified to be certified as an explosives manager;
 - (b) appoint blast men who have certificates of competency;
 - (c) provide the explosives manager with the assistance, means, special clothing, equipment and instructions to carry out the duties of an explosives manager in accordance with these Regulations;
 - (d) as regards the risk associated with the blasting activities and danger to life and property that emanate from blasting activities, obtain adequate insurance cover;
 - (e) take reasonable steps to ensure that the provisions of these Regulations are complied with by each employee who does any work in relation to the transportation, storage, use or handling of explosives;
 - (f) ensure that employees who are to be engaged in blasting are instructed in writing on the scope of their responsibilities;
 - (g) supply the necessary resources to the explosives manager to enable that manager to maintain equipment in good and proper condition and to obtain the information required for safe blasting activities; and
 - (h) ensure that records which relate to blasting activities are kept for at least five years or if required in writing by the Commission for a longer period after the closure of the operation of the mine, business or transport.
- (5) The licence is valid for one calendar year and is subject to renewal on application.
- (6) The application for the renewal of the licence shall be made in same manner as for a new licence and shall be in writing as set out in Form L in the Second Schedule and be made to the Commission not later than one month before the end of the year.
- (7) The Commission shall renew the licence if the applicant satisfies the conditions for a licence under subregulations (1), (2) and (3).

Regulation 29—Notice of changes

The Commission shall be given notice of

- (a) a change of ownership;

- (b) a change of name;
- (c) a change of address; and
- (d) an appointment of a new manager or explosives manager at least one month before the change becomes effective.

Permits issued by the Commission

Regulation 30—Permit for acquisition of specific type and amount of explosives

- (1) A holder of an operating licence may, in accordance with regulations 22, 23, 24, 26, 27 or 28, apply for a permit as set out in Form M in the Second Schedule, to purchase a specific type and amount of explosives.
- (2) The permit in Form M shall specify
 - (a) the type and the maximum amount of explosives which may be possessed at any time; and
 - (b) the type and the total amount of explosives which may be purchased under the permit.

Regulation 31—Permit for sale or disposal of specific type and amount of explosives

- (1) A person who holds an operating licence in accordance with 24, may apply for a permit as set out in Form N in the Second Schedule to sell or otherwise dispose of a specific type and amount of explosives.
- (2) A person who sells or disposes of explosives under a Form N permit shall give notice to the Chief Inspector about the type and the amount of the explosives sold or otherwise disposed of.
- (3) Where the permit relates to a limited amount of explosives and the total amount of explosives endorsed on the copies of Form N is equal to the amount of explosives for which the permit has been issued, the person selling or otherwise disposing of the explosives shall retain of the endorsed Form N and forward the other copy to the Chief Inspector.

Regulation 32—Permit for storage of explosives in a magazine

- (1) A person shall not store explosives in a magazine if that person does not have a permit issued for that purpose by the Commission.
- (2) The permit shall be as set out in Form O in the Second Schedule and shall be displayed in the magazine.
- (3) A permit to store explosives is valid for one year and is renewable on application.
- (4) The Commission may impose additional conditions and fix the maximum quantity and the type of explosives to be stored in each magazine.
- (5) The application for renewal shall be made in the same manner as for a new licence and shall be in writing as set out in Form O in the Second Schedule and be submitted to the Commission at least one month before the beginning of the new year, if the explosives magazines continue to be used.

Regulation 33—Permit to transport explosives

- (1) A person who holds an operating licence under regulation 22 to 27 may apply for a permit as set out in Form P in the Second Schedule to transport a specific type and amount of explosives.
- (2) A person who transports explosives under a Form P permit shall give notice to the Chief Inspector about the type and amount of explosives to be transported at least forty-eight hours before the explosives are transported.

Regulation 34—Selling or possession of explosives without permit

- (1) A person shall not sell, give out to another person or allow another person to take explosives in that person's possession or under that person's control unless the transaction is in accordance with these Regulations.
- (2) A person shall not purchase, acquire, or possess explosives without a permit issued under these Regulations.
- (3) Explosives purchased or acquired under a permit as set out in Form M may be held by the person to whom the permit was issued after the expiration of the permit for the period that the Chief Inspector may in writing permit.
- (4) A person who contravenes subregulation (1) commits an offence and is liable on summary conviction to a fine of not more than one thousand penalty units or to a term of imprisonment of not more than four years or to both.

Regulation 35—Explosives to be used only in accordance with permit

- (1) Except with the written permission of the Chief Inspector, a person shall not use an explosive for a purpose and at a place other than that specified in the permit issued in respect of that explosive.
- (2) A person who contravenes subregulation (1) is liable on summary conviction to pay to the Commission a penalty of two thousand and five hundred United States dollars.

Regulation 36—Import and export control

- (1) An Inspector may
 - (a) remove samples of explosives for the purpose of conducting analyses or tests to determine the quality of the explosives; and
 - (b) open and inspect a consignment of explosives, whether it is in a container or not, at a place and time determined by the Inspector.
- (2) An Inspector who reasonably suspects that a consignment of explosives does not comply with these Regulations, may prohibit that consignment from being issued until it has been demonstrated to the satisfaction of the Inspector that the product is safe for use.

Regulation 37—Provision for use of explosives in mine and civil work sites

(1) Subject to subregulation (2), these Regulations shall not be construed to prevent a holder of an operating licence for buying and using explosives from issuing explosives to that holder's workmen for blasting operations confined to the works controlled by the licence holder.

(2) A holder of an operating licence for buying and using explosives shall keep a book in which that holder shall, on each day enter the amount and type of explosives issued by that holder to the workmen on that day.

(3) An Inspector may at any reasonable time inspect the book kept under subregulation (2).

Authorisation, packaging and labelling of explosives

Regulation 38—Explosives and accessories to be authorised

A person shall not use an explosive or accessory to an explosive unless the use of the explosive or accessory is authorised by the Chief Inspector.

Regulation 39—Classification procedure

(1) A manufacturer, dealer or an applicant for classification of a product which contains an explosive substance shall provide adequate information

(a) concerning the names and characteristics of explosive substances in the product; and

(b) on the results of relevant tests which have been done on the product.

(2) Each explosive substance shall be properly tested by an institution recognised and approved by the Chief Inspector.

Regulation 40—Explosives and precursor substances to be classified according to UN classification

(1) The Commission shall ensure that explosives and precursor substances imported into the country or used in this country are classified in accordance with the latest edition of the Recommendations on the Transport of Dangerous Goods, prepared by the United Nations Committee of Experts on the Transport of Dangerous Goods.

(2) The tests required to ensure that explosives and precursor substances are classified in the manner specified in subregulation (1), shall be carried out according to the latest edition of the UN Manual of Tests and Criteria.

Regulation 41—Classes and divisions of explosives

The Commission shall classify

(a) explosives in divisions and compatibility groups in accordance with the UN Code and

(b) each explosive substance or article by the United Nations Serial Number.

Regulation 42—Explosives for underground blasting

A manager shall ensure that

(a) only an explosive authorised by the Commission is used for underground blasting for which that manager is responsible

(b) an explosive for underground blasting is of a nature that produces a minimum of harmful gases and vapours.

Regulation 43—Packaging of explosives

(1) A person who manufactures, deals in or uses explosives shall ensure that the explosives are packaged in accordance with the latest edition of the Recommendations on the Transport of Dangerous Goods, prepared by the United Nations Committee of Experts on the Transport of Dangerous Goods.

(2) A person licensed to manufacture explosives shall ensure that

(a) any explosives taken out of the explosives manufacturing plant are packaged and marked in accordance with the requirements of these Regulations;

(b) the interior of each package, is clean and free of foreign material; and

(c) each package that is used is destroyed.

Regulation 44—Marking of packages and labelling of individual explosive articles

A person who manufactures, deals in, uses, import into or exports from this country explosives shall ensure that

(a) each explosive package is marked in accordance with the United Nations Committee of Experts Recommendations on Transport of Dangerous Goods or in the case of imported or exported explosives, in accordance with the requirements of the IMDG Code if imported or exported by sea, or the ICAO instructions if imported or exported by air;

(b) in addition to the marking required under paragraph (a), the outer packaging of explosives used for blasting bear the following additional information;

(i) the date of manufacture and the date of issue from the factory, or any other information indicating the dates approved by the Chief Inspector;

(ii) the name and address of the purchaser or consignee;

(iii) the expiry date, taking into account the weather conditions of Ghana; and

(iv) a unique identification number; and

(c) a conspicuous label containing the information required under (a) and (b) is attached to cases and pallets in a manner that makes the label prominent and readily visible .

Regulation 45—Documentation of explosives

(1) A person who manufactures explosives shall establish a system for collecting data in relation to the explosives including their unique identification throughout the supply chain and life cycle

(2) The data collection system shall be set up in a manner that allows the person who manufactures the explosives to keep track of the explosives and identify those possessing the explosives at any time.

(3) A person who manufactures explosives shall keep and maintain data collected including the unique identifications for a period of five years after the delivery or after the end of the life cycle of the explosive where that is known which ever event occurs earlier.

(4) A person who manufactures, deals in or uses explosives shall

(a) keep a record of identifications of explosives, together with pertinent information including the type of explosive and the company or person given custody of the explosives;

(b) record the location of each explosive while the explosive is in the possession or custody of that person who manufactures, deals in or uses the explosive until it is either transferred to another company or used;

(c) at regular intervals test the data collection system of that person in order to ensure the effectiveness of the system and the quality of the data recorded;

(d) protect the data collected against accidental or malicious damage or destruction; and

(e) provide the competent authorities, upon request, with the information concerning the origin and location of each explosive during its life cycle and throughout the supply chain.

Reporting and documentation

Regulation 46—Records and reporting

(1) A person who holds a licence in accordance with regulations 22, 23, 24, 26, 27 or 28 shall ensure that up-to-date records are kept and maintained in relation to the explosives.

(2) The records to be kept under subregulation (1) include

(a) a storage book, which shall be kept at a magazine, a working party magazine or place, where explosives or precursor substances are stored and which gives details of

(i) the location of each explosive or precursor substance within the business premises;

(ii) the quantity of each explosive or precursor substance at the business premises;

(iii) the entry and exit of explosives or precursor substances,

(iv) where a quantity of explosives or precursor substances are supplied to other businesses, the date of supply, the details of the client and the transporter and the quantity supplied;

(b) a manufacturing book which shall be kept at any manufacturing and mixing plant and which indicates the type, quantity and date of production of the explosive or precursor substance produced at the plant;

(c) a transport book, which shall be kept by the person licensed to transport explosives in accordance with regulation 27, and which indicates:

- (i) the type and quantity of each load of the explosives and its date of transport;
 - (ii) the details of the client, the details of the company and the person who is responsible for the loading onto and offloading of the explosives from the truck;
- (d) a dealers book, which shall be kept by the person licensed in accordance with regulations 24 and 26, and which indicates:
- (i) orders received from clients, with details of the clients, the date of receipt and the type and quantity of explosive;
 - (ii) full details of each sale or transaction made, giving details of the client, the transporter and the type and quantity of explosive supplied;
 - (iii) the ownership of the explosive, as entered in the storage book in accordance with paragraph (a), or an excerpt of the storage book if the magazine of another company is used;
- (e) a use book, which shall be kept by a person licensed in accordance with regulation 22 or 28 and which indicates the date of issue and the type and the quantity of explosives and blasting agents:
- (i) ordered for each blast,
 - (ii) consumed at any individual blast, and
 - (iii) returned to the magazine,
- (f) a loss and incidence book which shall be kept at any explosives business, and which indicates:
- (i) any leak, spill, unintended emission, misuse, theft or loss of an explosive or precursor substance;
 - (ii) a deterioration in or damage to the explosive or precursor substance or the container or packaging within which it is contained or other change in the condition of an explosive or precursor substance that affects the fitness of the explosive or precursor for use;
 - (iii) where a quantity of explosives or precursor substances are disposed of, other than by being used or consumed for its intended purpose, the date of disposal, the quantity disposed of and the place of disposal.
- (3) A manager shall ensure that
- (a) sufficient monitoring and inspection of explosives or precursor substances for which that manager is responsible is undertaken to keep the records accurate.
 - (b) the records referred to in subregulations (1) and (2) in relation to explosives or precursor substances are maintained at the place of business until:
 - (i) five years after the closure of the business; or
 - (ii) five years after the explosives or precursor substance permanently ceases to be used or stored at the business.

(4) The manager shall make the records available for inspection by an inspector at any time during working hours.

Regulation 47—Monthly returns of explosives

(1) A holder of an explosives licence shall submit to the Chief Inspector monthly returns as set out in Form Q in the Second Schedule.

(2) A summary of the entries made during the previous month in the books specified in regulation 46 shall be submitted to the Chief Inspector not later than the fifteenth day of the month immediately following the end of the month to which the returns relate.

(3) A person licensed in accordance with regulation 24 shall after the end of each month submit to the Chief Inspector, a return as set out in Form R in the Second Schedule, giving full details of each sale or transaction made by that person during the month.

(4) The return shall be submitted not later than the fifteenth day of the month immediately following that to which the return relates.

General safety precautions

Regulation 48—Establishment of general safety rules by manager

(1) A manager shall prepare general safety rules for activities that relate to explosives for which that manager is responsible and copies of these safety rules shall be prominently displayed in a conspicuous place on buildings and installations connected to the explosives.

(2) The manager and the immediate supervisor for the activities shall ensure that general safety precautions and safe work practices are followed.

(3) A manager shall ensure that in relation to explosives for which that manager is responsible, copies of

(a) the safe work procedures are displayed at every job post;

and

(b) the emergency plan is prominently displayed in conspicuous places on buildings and installations connected to the explosives.

Regulation 49—Posting of Regulations

A manager shall make copies of these Regulations available for the use of the employees under that manager and post copies of the relevant provisions of these Regulations at the office and at other conspicuous places determined by the manager.

Regulation 50—Training and induction

A manager shall ensure that

(a) personnel for whom that manager is responsible and who are likely to be involved in an activity relating to explosives receive training in the hazards associated with explosives;

- (b) each employee and visitor receive an induction on the general safety rules;
- (c) each employee receives training at that employee's job post before that employee assumes that job post; and
- (d) induction and training are documented.

Regulation 51—Age of employment for a magazine

A manager shall not employ a person under the age of twenty-one years in a magazine, explosives factory or in an area where explosives are transported or used.

Regulation 52—Appointment of safety officer

- (1) The manager of an explosives factory or mixing plant shall appoint a competent person to be the safety officer for the explosives factory or mixing plant.
- (2) The safety officer shall implement and enforce general safety rules and
 - (a) inspect and check safety and fire fighting equipment at the intervals laid down in the general safety rules required under regulation 48 and report any maintenance or replacement required to the manager;
 - (b) inspect and ensure that employees wear and use the protective clothing and equipment necessary to protect them from the hazards of their particular duty;
 - (c) regularly check and in conjunction with the manager, update the emergency procedures for the explosives factory or mixing plant; and
 - (d) take the necessary steps to ensure the safety awareness of employees

Regulation 53—Avoidance of sources of ignition in proximity to explosives

- (1) A person shall not
 - (a) carry out at a distance of less than thirty metres to a place where explosives are handled, operations that can lead to ignition or initiation of explosives;
 - (b) bring any source of ignition including fire and spark within a distance of thirty metres to a place where explosives are handled
- (2) Paragraph (b) of subregulation (1) does not apply to substances for the handling, charging or initiation of explosives.

Regulation 54—Smoking and intoxicating beverages and narcotics or dangerous drugs forbidden

- (1) A person shall not smoke a cigarette or any other substance within
 - (a) the fenced areas of a magazine or manufacturing plant;
 - (b) thirty metres of a blast site, container loaded with explosives, vehicle loaded with explosives or a site where explosives are present.

(2) A person shall not, while handling or transporting explosives or while in a magazine, manufacturing plant, blast site or within thirty metres of explosives carry anything which might cause combustion.

(3) A person under the influence of alcohol, narcotics or any other similar drug shall not be in the proximity of explosives and where a person who fits the description in this section is found near explosives, the manager responsible for the explosives shall cause that person to be immediately removed from that site.

Regulation 55—Hot work permit procedure required for repair work in explosives business

(1) A manager shall ensure that repair work in any premises connected to explosives for which that manager is responsible is carried out under a permit and in accordance with a hot work procedure.

(2) The hot work procedure consists of documented

- (a) risk assessment,
- (b) determination of safety measures,
- (c) determination of activities and their sequence,
- (d) supervision, and
- (e) signature of competent supervisor of permit.

Regulation 56—Fire precautions

(1) A manager shall for the purpose of minimizing the possibility are of fire at a place for which the manager is responsible and in which explosives are stored, manufactured or otherwise present

(a) keep the surroundings within close proximity of the explosives clean and free from combustible material;

(b) prohibit persons from smoking cigarettes and other substances within thirty metres distance from the explosives;

and

(c) ensure that operations which constitute a fire hazard, including welding, grinding, or cutting are not conducted within the proximity of explosives.

(2) A manager shall develop a detailed evacuation plan to ensure quick and safe evacuation of people from the site and immediate surroundings to a safe place where a fire gets out of control.

(3) The safe place shall be specified in the emergency response plan.

Regulation 57—Removal of cultivation, shrubs or weeds

A manager shall ensure that the area within the distance of thirty metres from a danger building or danger zone for which that manager is responsible is kept clean and free of

(a) cultivation, shrubs or weeds which are likely be sources of danger as a result of fire; and

(b) accumulation of inflammable materials.

Regulation 58—Effective means of fire fighting

(1) The manager of a business which relates to explosives shall provide an appropriate and effective means of fire fighting.

(2) The person responsible for a vehicle used for the transportation of explosives and blasting agents shall equip that vehicle with at least two fire extinguishers each weighing at least five kilograms in weight.

(3) The manager of a magazine or an explosives manufacturing plant shall equip that magazine or plant with

(a) a source of water supply for fire fighting;

(b) a water ring line and fire hydrants with hoses and nozzles for fire fighting;

(c) fire extinguishers and buckets of loose sand at strategic positions; and

(d) alarm buttons which trigger acoustic warning signals.

Regulation 59—Fighting of fires

A manager shall ensure that

(a) where there is a fire and explosives are likely to be at risk, personnel are informed of the possibility of an explosion and requested to take suitable precautions;

(b) in massive fires of ammonium nitrate, fire fighting is abandoned unless large volumes of water can be applied by remote control.

Regulation 60—Personal protective equipment

(1) A manager shall ensure that employees of that manager who handle explosives, precursor substances or other dangerous goods are provided with personal protective equipment necessary to prevent the exposure of those employees, as far as is practicable, to hazards.

(2) An employee shall use personal protective equipment which is provided to that employee for the purposes of handling dangerous goods, in the manner in which the employee has properly been instructed.

Regulation 61—General obligations of employees

(1) Each employee at an explosives works shall take reasonable care

(a) to ensure that employee's own health and safety at work;

and,

(b) to avoid any act that adversely affects the safety or health of any other person at the work place.

(2) An employee shall co-operate with the manager and the supervisor of that employee in the carrying out of that employee's obligations under these Regulations.

(3) An employee is not liable for a contravention of this regulation in respect of an act if that act was done at the direction of a supervisor.

Regulation 62—Responsibility of manager for prevention of theft and loss of explosives

(1) A manager shall take precautions and authorise persons to ensure that explosives lawfully held by the manager are not lost or stolen.

(2) Each person who has possession or control of an explosive shall take reasonable precaution to ensure that the explosive is not lost or stolen.

Regulation 63—Fencing

A manager shall ensure that

(a) an area where a magazine or a manufacturing plant for explosives is located is fenced;

(b) an area where explosives are handled is barricaded; and

(c) the fencing and locking of the area is in accordance with regulation 152.

Regulation 64—Restriction and control of access

(1) A manager shall ensure that

(a) a danger area is only entered through a gate the access to which is controlled by a gatekeeper, security guard or any other person authorised by the explosives manager;

(b) a register which contains records of each person who enters or leaves a danger area together with the date and time that person enters and leaves the danger area is kept;

(c) any unauthorised entry to a danger area is recorded and reported to the police;

(d) each person who enters or leaves a danger area submits to a search by a gatekeeper, security guard or another person authorised by the explosives manager;

(e) each employee involved in explosive materials operations is subject to a periodic search.

(2) A search shall include a search of clothing, lunch boxes, lockers, and vehicles brought into the area of explosive materials operation.

(3) The register to be kept under paragraph (b) of subregulation (1) shall be kept for a period of three years.

Regulation 65—Number of persons allowed in danger area

A manager shall ensure that

(a) the number of persons allowed to stay within a danger area and within a danger building is restricted; and

(b) signboards are placed at the entry of a danger building displaying the maximum number of persons allowed to stay in that building.

Regulation 66—Material safety data sheet

(1) A manager shall ensure that at any place for which the manager is responsible and where explosives and precursor substances are manufactured, stored, handled, transported or used, a material safety data sheet is kept and made immediately available for use in emergency response to accidents and incidents which involve these explosives and precursor substances.

(2) The material safety data sheet shall for each explosive or precursor substance contain the following information

(a) the UN number preceded by the letters "UN";

(b) the proper shipping name as determined in accordance with the list of dangerous goods of the UN code;

(c) the class or, the division of the goods to which the explosive or substance belongs, including for Class 1, the compatibility group letter;

(d) the characteristics and the hazards of the explosive or substance;

(e) the emergency procedures to be followed in the event of an accident; and

(f) a medical first aid guide in the event of an accident.

(3) In entering the class or division of the goods under paragraph (c) of subregulation (2) any assigned subsidiary hazard class or division number shall be entered after the numerical hazard class or division and enclosed in parenthesis and the words "Class" or "Division" may be written before the primary or subsidiary hazard class or division numbers.

(4) Material safety data sheets shall be kept away from the packages containing the dangerous goods but at a location which ensures that they are immediately accessible in the event of an accident or incident.

Regulation 67—Management of waste

A manager shall

(a) establish a system to manage waste from explosives and precursor substances; and

(b) ensure that waste from explosives and precursor substances are labelled.

Regulation 68—Precaution in opening cases

A manager shall ensure that except where cases are screwed down, in which case an iron screwdriver may be used to withdraw the screws and for no other purpose, only implements of wood, brass or copper are used in opening cases containing explosives.

Regulation 69—Deteriorated explosives

(1) Where a manager suspects that explosives have deteriorated, the manager shall

(a) not permit the explosives to be used,

(b) report the full particulars of the deterioration to the Inspector in the specific area; and

(c) dispose of the explosives in a manner approved by the Inspector

(2) The Inspector may order the disposal by destruction or otherwise of an explosive which the Inspector considers to be unsafe for storage or use.

Regulation 70—Destruction of explosives

A manager shall in relation to explosives for which that manager is responsible ensure that,

(a) the destruction of an explosive is carried out only in a manner approved by that manager;

(b) records are kept of the quantities and types of explosives destroyed, and the destruction methods employed;

(c) the residue from an explosive destroyed by burning is disposed of in accordance with the applicable environmental legislation;

(d) an explosive is not abandoned, thrown away, buried, discarded or placed with garbage;

(e) before an explosive is destroyed, an exclusion zone is established around the explosive, and made secure;

(f) an explosive is destroyed by burning or detonation only under the control of a person competent in the destruction of explosives;

(g) a detonator is destroyed separately from other explosives; and

(h) an explosive is not detonated

(i) on stony ground,

(ii) in a shallow hole in a strong ground, or

(iii) in an area where debris is likely to become missiles.

Manufacture of classes of mining and civil explosives

Regulation 71—Permits and licences required for manufacturing UN Class 1 and 5.1 substances

(1) A person may establish a plant for the manufacture of UN Class 1 or 5.1 substances if that person has

(a) an approved operating plan in accordance with regulations 9 and 10;

(b) a valid operating license in accordance with regulation 26;

(c) a permit from the Ministry of Interior;

(d) in that person's employment an explosives manager in accordance with regulation 20;

(e) in that person's employment competent personnel in accordance with regulation 21.

(2) A plant for the manufacture of UN Class 1 or 5.1 substances may be established, maintained and operated only in accordance with these Regulations.

Regulation 72—Plans, specifications and site plans

(1) A person who

(a) intends to establish a plant for the manufacture of UN Class 1 or 5.1 substance shall submit in triplicate to the Chief Inspector for approval, detailed drawings, specifications and site plans of the proposed plant before construction relating to the proposed plant is commenced or carried out; or

(b) operates a plant for the manufacture of UN Class 1 or 5.1 shall, where a significant alteration, modification, addition or extension of the plant is required, submit detailed drawings and specifications of the alteration, modification or extension in duplicate to the Chief Inspector for approval before the alteration, modification or extension is commenced or carried out.

(2) A construction, alteration, modification or extension under subregulation (1) or (2) shall not, deviate from

(a) the drawings and specifications approved by the Chief Inspector, or

(b) any requirements given by the Chief Inspector.

Regulation 73—Manager of UN Class 1 or 5.1 plant to make special rules

(1) The Manager of a plant for the manufacture of UN Class 1 or 5.1 substances including explosives or of a mixing plant for blasting agents may make special rules which are not inconsistent with these Regulations, to provide for

(a) the safety of the processes and procedures that are applied in the explosives factory or mixing plant;

(b) the safety and proper discipline of a person who is employed or who enters the explosives factory or plant;

(c) the measures or precautions to be taken for the prevention of accidents; and

(d) the procedures to be followed by a person employed at the explosives factory or mixing plant in case of emergency.

(2) The special rules shall be

(a) submitted to the Chief Inspector for approval and when approved, have the same force and effect as these Regulations; and

(b) brought to the knowledge of each employee who in the opinion of the manager is required by virtue of the employment to have specific knowledge of the special rules.

Regulation 74—Table of distances

A manager shall in relation to UN Class 1 explosives or any other explosives facility for which that manager is responsible ensure that

(a) in the determination of the minimum safety distance from explosives, the maximum quantity of explosives which can explode in one single explosion is taken into consideration; and

(b) where ammonium nitrate is stored in the proximity of the explosives and is likely to be affected by the explosion, fifty percent of the weight of the ammonium nitrate is added in the calculation of the maximum quantity of explosives which can explode in one single explosion.

Regulation 75—Protection of UN Class plant with mound

A manager of a UN Class 1 plant shall ensure that

- (a) the plant is protected with a mound consisting of either an earth embankment or with the prior approval of the Chief Inspector, an earth-filled wall completely around it;
- (b) the embankment or wall is maintained in good condition and is at least
 - (i) as high as the maximum height of the stored material; and
 - (ii) one metre broad at the top and has exterior slope at the natural angle of repose of earth; and
- (c) individual elements of the plant including oxidizer tanks, fuel tanks, organic phase tanks, matrix storage tanks, ANFO silos, ammonium nitrate stores and other substances which may become explosive, are separated from each other and
 - (i) kept at an appropriate safety distance to prevent propagation of an explosion; and
 - (ii) enclosed with mounds.

Regulation 76—Authorisation of danger buildings

(1) A manager shall ensure that each danger area or building used for or associated with the manufacture of UN class 1 substances for which that manager is responsible, is shown on the official site plan and is classified as a danger area or building.

(2) A manager shall not classify an area or a building as a danger area or building unless the building or area is authorised for the function specified by the Chief Inspector, who may, at the time of the authorization impose conditions that are determined by the Chief Inspector to be appropriate.

(3) The authorisation for a danger building or area shall show

- (a) the quantity of explosives or other materials permitted to be or to remain in the building or area;
- (b) the operations to be carried on in the building or area; and
- (c) the maximum number of persons permitted in the building or area at any one time.

(4) A danger building or area shall only be used in accordance with the authorisation that is granted for the use of the building or area.

Regulation 77—Documents to be exhibited in danger building or area

A manager shall ensure that there is affixed in a conspicuous place and position inside each danger building or area for which that manager is responsible

- (a) a copy of the original of the authorisation for the building or area;

- (b) a copy of the special rules which apply to the building or area;
- (c) a copy of safe work procedures that apply to the job posts in the building;
- (d) material safety data sheets of substances stored, used or produced in the danger building;
- (e) a copy of any other conditions which the Chief Inspector may require; and
- (f) a list of tools and instruments permitted in it.

Regulation 78—Permitted tools in danger building or area

A manager shall ensure that

- (a) each tool or implement used in a danger building or area for which that manager is responsible is made of or effectively covered with non-sparking material or any other approved material; and
- (b) a tool other than a tool shown on the list displayed under regulation 77(f) is not taken, used or kept in a danger building or area for which that manager is responsible.

Regulation 79—Danger buildings to be kept clean

A manager shall ensure that

- (a) the interior, benches, shelves, installations and fittings of a danger building or area for which that manager is responsible and all movable articles in that building are kept clean and free from explosives, ingredients, grit and any other extraneous matter or material;
- (b) floors and traffic areas are swept frequently to prevent accumulation of explosive material; and
- (c) a material liable to spontaneous ignition including oiled rags and oiled waste are not taken into a danger building except for the purpose of immediate supply and work or for immediate use in that building and on the cessation of the work or use is immediately removed.

Regulation 80—General provisions for UN Class 1 and Class 5.1 manufacturing plants

A manager shall in relation to a manufacturing plant for which that manager is responsible ensure that

- (a) tools and equipment are kept in an approved location when not in use during operations,
- (b) mixers, pumps, valves, and related equipment are designed to permit regular and periodic flushing, cleaning, dismantling, inspection and maintenance;
- (c) electric motors and generators shall be provided with suitable overload protection devices;
- (d) electrical generators, motors, proportioning devices, and other electrical enclosures are electrically bonded;
- (e) the grounding conductors to electrical equipment are effectively bonded to the service-entrance ground connection and to equipment ground connections in a manner that provides a continuous low resistance path to ground;

- (f) during the approach and progress of an electrical storm, explosive material manufacturing and handling operations are suspended and personnel withdrawn to a safe location;
- (g) ventilation equipment, where required, operate and personnel exits are unlocked before operations are begun,
- (h) repairs to explosive material processing machinery do not begin until prescribed clean-up and decontamination are performed;
- (i) repair work is approved by authorized supervisory personnel;
- (j) new or newly repaired, process equipment used in explosive material operations are examined and test-operated before being placed into routine service;
- (k) only tools approved by the manager are used for construction, maintenance and repairs in operations relating to explosive material;
- (l) process temperatures and contacting equipment surface temperatures are less than the decomposition temperature of any ingredient or mixture used in an activity connected to explosives;
- (m) whenever new or special ingredients are introduced for the purpose of an activity connected to explosives, specific handling requirements are adopted and employed to assure the safe handling of these ingredients;
- (n) machinery and equipment used in explosive manufacturing processes are inspected and maintained as part of a programmed preventive maintenance system;
- (o) the inspections are documented and recorded;
- (p) hot work operations are performed only under a permit, in accordance with regulation 55;
- (q) contract personnel working in explosive manufacturing areas are instructed on site-specific standard operating procedures, emergency procedures, hot work operations, and explosive magazine safety procedures before being engaged in any activity in those areas;
- (r) contractors provide Material Safety Data Sheets to their contract employees; and
- (s) a standard procedure is established for the hazard potentials which could result from changes in explosive manufacturing processes, raw materials and explosive formulations or manufacturing equipment.

Regulation 81—Foreign objects or materials for UN class 1 plants

A manager shall in relation to a UN class 1 plant for which that manager is responsible ensure that

- (a) each empty bag or carton is shaken out and each trolley or other receptacle is examined to ensure that it is free from foreign matter before being filled with explosives or ingredients;
- (b) raw materials and reworked materials used in manufacturing processes do not contain foreign objects that are likely to create an impact or friction hazard;

(c) procedures to prevent hazardous foreign objects from entering the manufacturing process are established; and

(d) wrist watches, tie pins or clips, earrings, and all other jewellery, including finger rings are not worn in operating buildings.

Regulation 82—Spilled ingredients and waste explosives

A manager shall ensure that explosives, or ingredients spilled or dropped and waste explosives, waste material or articles contaminated with explosives for which that manager is responsible, are deposited in a suitable place or receptacle and disposed of in a manner specified by the manager.

Regulation 83—Duties of person in charge of danger building

The person in charge of a plant, machine or apparatus in a danger building shall

(a) before commencing work and after any break during the use of the plant, machine or apparatus inspect the plant, machine or apparatus;

(b) where a defect is found in the plant, machine or apparatus, not start the plant, machine or apparatus, and if the defect is found after the plant, machine or apparatus has been started, stop the plant, machine or apparatus immediately;

(c) in either of the events mentioned in paragraph (a) or (b), immediately inform that person's superior and the plant, machine or apparatus shall not be restarted until the defect is remedied.

Manufacture of blasting agents

Regulation 84—Mixing house buildings

(1) A manager shall ensure that buildings or other facilities for which that manager is responsible and which are used for the mixing of blasting agents have

(a) exterior walls which are constructed of non-combustible materials;

(b) floors which are made of concrete or other non-absorbent material and have no drains or piping into which molten materials can flow and be confined during a fire;

(c) liquid fuel storage facilities, including fuel oil storage facilities, which are;

(i) separated from the manufacturing plant and any UN class 5.1 oxidiser, at a minimum distance of thirty metres;

(ii) placed in a bunded area with a minimum capacity of a hundred and ten percent of the tank volume of the storage facility;

(d) heating units which are properly designed and located and which do not depend on combustion processes;

(e) electric heaters which do not have exposed resistance elements;

(f) the sources of heat for combustion provided from units which are located outside the mixing building;

- (g) internal combustion engines including diesel or gasoline powered generators, which are
 - (i) located outside the mixing building, or
 - (ii) isolated by a permanent firewall and adequately ventilated;
 - (h) the exhaust system on each combustion engine provided with a spark arrester muffler, or remotely located, so that spark emissions do not present a hazard to materials in or adjacent to the building;
 - (i) adequate ventilation;
 - (j) materials in excess of current mixing requirements stored in a place other than in the buildings;
 - (k) stock of unprocessed ammonium nitrate and processed blasting agents physically separated from each other and from the area in which mixing or packaging operations are conducted;
 - (l) electrical installations including circuits and switching shall comply with the requirements of the relevant Regulations of the Energy Commission;
 - (m) electrical equipment enclosures which comply with a rating of IP55;
 - (n) procedures that provide for particular attention to be paid to the possible existence of combustible dusts, including powdered aluminium in mixing operations, which may necessitate a higher degree of protection for electrical equipment
 - (o) lightning protection; and
 - (p) only locks and nuts which are designed to prevent a nut from coming loose.
- (2) A manager shall ensure that the equipment of a mixing plant for which that manager is responsible
- (a) is in the case of processing equipment including mixing and conveying equipment, designed in a manner that makes it compatible with the sensitivity of the material handled;
 - (b) is designed
 - (i) to minimize the possibility of frictional heating, compaction, overloading, confinement, and the accumulation of dust;
 - (ii) in a manner that makes the surfaces accessible for cleaning and that permits ventilation in hollow shafts;
 - (iii) in a manner that prevents the flow of fuel to the mixer in case of fire or other emergency situation.
 - (c) has its frame and other parts electrically bonded together and earthed;
 - (d) has its bearings and gears protected against accumulations of product dust;
 - (e) is constructed
 - (i) of materials compatible with ammonium nitrate;

(ii) to prevent the spillage of ammonium nitrate or blasting agent during mixing operations.

Regulation 85—Manufacture of emulsion

A manager shall as regards manufacturing of emulsion for which that manager is responsible ensure that

- (a) process controls are established to ensure the safe manufacturing of the emulsion;
- (b) procedures are established to manage unsafe confinement of non-detonable or non-sensitised blasting agents during operation or cleaning activities;
- (c) control of contaminants and additives and unsafe accumulation of contaminants and additives are prevented;
- (d) each site where a pump is used for the transfer of blasting agents has a documented pump selection, operating and maintenance management system that satisfies the requirements of these Regulations;
- (e) the management system has procedures which ensure that
 - (i) pump protection systems are established to detect and prevent dead heading and dry operation of the pump;
 - (ii) each pump is uniquely identified and a logbook and incident report book is provided and maintained for each pump;
 - (iii) a program is established to document general and specified inspections, corrective maintenance and major repairs;
 - (iv) pump protection systems are tested in accordance with a documented procedure on a regular schedule;
 - (v) tanks, hoppers, and pump systems are designed to minimize the risk of introducing foreign bodies into the process;
 - (vi) pumps are attended to by competent personnel during operation.

Regulation 86—Mixing houses for blasting agents to comply with tables of distances

(1) A manager shall ensure that a mixing house used for the preparation and the buildings used for the storage of blasting agents in a factory for the production of blasting agents for which that manager is responsible, complies with the safety distances for danger buildings determined by the Chief Inspector in accordance with the quantity distances for U.N. division 1 explosives.

(2) The safety distances determined under subregulation (1) shall be as specified in the Third Schedule.

Regulation 87—Mixing plant operation

A manager shall, in relation to a mixing house for which that manager is responsible, ensure that

- (a) the floors and equipment of the mixing house are, as far as is reasonably practicable, kept clean and a cleaning and collection system for dangerous residues is provided for the mixing house;
- (b) a daily visual inspection is made of the mixing, conveying and electrical equipment to determine that the equipment is in good operating condition;
- (c) a program of systematic maintenance is conducted at regular intervals; and
- (d) the entire mixing and packaging plant is cleaned regularly to prevent excessive accumulation of dust, grease, and product ingredients.

Regulation 88—Storage prohibited in mixing house

A manager shall, in relation to a mixing house for which that manager is responsible, ensure that

- (a) the amount of ammonium nitrate permitted to be taken into the mixing house for processing into a blasting agent is sufficient in quantity for immediate mixing;
- (b) the storage of ammonium nitrate in the mixing house is prohibited;
- (c) a bulk processed blasting agent is not stored in the vicinity of the mixing plant;.
- (d) the safety distances determines under regulation 86 are applied; and
- (e) a processed blasting agent is removed immediately after it has been packaged to a blasting agent storage area or a magazine.

Manufacture of blasting agents on site

Regulation 89—Equipment of approved design

A manager shall ensure that an equipment is used for the manufacture of blasting agents on site only if the design and materials used in the construction of the equipment have been approved by the Chief Inspector.

Regulation 90—Hand mixing

A manager shall, in relation to mixing for which that manager is responsible, ensure that

- (a) when ingredients are mixed by hand, the implements used are of wood or non-sparking materials; and
- (b) implements and mixing containers are thoroughly washed immediately after use.

Regulation 91—Supervision in manufacture

A manager shall ensure that the manufacture of blasting agents on site is carried out under the direct supervision of a person who has a certificate of competency for blasting in accordance with regulation 15.

Regulation 92—Prohibition of manufacture underground

A person shall not manufacture blasting agents underground.

Manufacture of explosives

Regulation 93—Thunder-storms approaching UN class 1 or 5.1 plant

- (1) Where a thunder-storm approaches the vicinity of an UN class 1 or 5.1 plant the manager of the plant shall decide whether or not the thunder-storm constitutes a danger to the plant.
- (2) Where the manager of the plant decides that the thunder-storm constitutes a danger to the plant, the manager shall direct operations to cease and persons in the plant to be withdrawn to a safe place.

Regulation 94—Testing of explosives

A manager shall establish a safe working procedure for the testing of explosives under that manager's control and every testing of explosives under the control of that manager shall only be carried out in accordance with that procedure.

Transportation of explosives

Regulation 95—Permits and licences required for transportation

- (1) A person may transport explosives by road, if that person has in accordance with
 - (a) regulations 9 and 10, an approved operating plan;
 - (b) regulation 27, an approved operating licence;
 - (c) regulation 28, an explosives manager;
 - (d) regulation 21, competent personnel and has the Police permits required for transportation.
- (2) Subregulation (1) does not apply to transportation on the surface or underground within a mining lease.

Regulation 96—Authorised vehicle

- (1) A person shall not use a vehicle for the transportation of explosives, unless the use of the vehicle for that purpose is authorised by the Chief Inspector.
- (2) The Chief Inspector shall in the authorisation specify the nature and maximum amounts of explosives to be carried at any one time and may impose other conditions that are necessary for the purpose.

Regulation 97—Use of authorised vehicle for other materials

A vehicle authorised to be used for the transportation of explosives may be used for the transportation of other materials if the compartment in which the explosives are carried is thoroughly washed out class before and after the vehicle has been used for transportation of explosives.

Regulation 98—Detonators to be transported separately

- (1) A person shall not transport detonators in the same compartment with other explosives.

(2) A person may transport nitro-compound explosives, blasting agents and detonating fuses together but shall not transport any of them together with a detonator.

Regulation 99—Only unopened boxes or containers in authorised vehicles

A person who transports explosives shall

- (a) transport the explosives in an authorised vehicle, and
- (b) pack the explosives in sound, completely covered or other closed approved container.

Regulation 100—Effective packaging of explosives

A person who transports explosives in a road vehicle shall effectively protect the explosives against displacement.

Regulation 101—Fuel to be carried only in a fuel tank

A person who transports

- (a) both fuel and explosives in a road vehicle, shall ensure that the fuel is carried in a fuel tank; and
- (b) explosives in a road vehicle shall ensure that no other material is put in the compartment in which the explosives are carried

Regulation 102—Explosives not to be carried in cab

A person who drives a vehicle shall not carry explosives in the driver's cab of that vehicle.

Regulation 103—Explosives compartment to be cleaned

A person who drives a vehicle in which explosives are transported shall keep the interior of the explosives compartment clean and in good order.

Conveyance by road

Regulation 104—Authorised vehicle requirements

A person who uses a vehicle to transport explosives shall ensure that the vehicle is authorised and

- (a) is of sound construction and free from any patent defect, and is maintained in good working order;
- (b) is propelled by a diesel engine;
- (c) is provided with two fire extinguishers mounted on a suitable holder that are readily available for use and which are kept in good working order at all times;
- (d) the driving cab of that vehicle is separated from the load carrying compartment of the vehicle and where the body of the vehicle is built directly onto the driving cab, a fire-proof bulkhead is provided across the full width of the body;

- (e) the compartment of the vehicle in which the explosives are conveyed is totally enclosed, covered with sheet metal and lined internally with
 - (i) wood which has been treated in a manner that renders it non-inflammable, or
 - (ii) some other approved material;
- (f) the compartment which contains the explosives in the vehicle is adequately ventilated;
- (g) has no openings except the doors, which are fitted closely, and other openings which are required to comply with paragraph (f);
- (h) where persons are required to be transported for the purposes of loading or unloading, the vehicle has a suitably constructed separate compartment for the conveyance of those persons;
- (i) has a "NO SMOKING" sign posted in the cab and in the separate compartment provided in accordance with paragraph (h);
- (j) the exhaust pipe of the vehicle is fitted and directed in a manner that ensures that neither the pipe nor the exhaust gases pass under any part of the compartment used for carrying the explosives;
- (k) has adequate bonding provided between the chassis and the body in a manner that maintains a complete circuit between the chassis and body;
- (l) has two earthing chains which are adequately bonded to the chassis and maintained between the chassis and the ground, one at the front and one at the rear;
- (m) except where the vehicle is empty, has at each corner so as to be distinctly visible from the front and rear, a red flag which is at least four hundred and fifty millimetres square with the letter E in black superimposed in the middle;
- (n) where the vehicle is loaded with explosives, has posted
 - (i) on the two sides and on the front and the rear in red paint on a white background and in a manner that enables it to be distinctly visible from the front, rear and sides, a sign that bears the words "DANGER-EXPLOSIVES"; and
 - (ii) on the rear a sign that bears the figure and words "60 km per hour";
- (o) has an isolating switch in the electrical circuit in a readily accessible position;
- (p) does not have electric cables inside the compartment in which explosives are transported;
- (q) a copy of the original of the authorisation is displayed in the cab behind a glass or other suitable material;
- (r) has in a conspicuous place relevant emergency, safety and contact information related to the products being transported;
- (s) the battery on the vehicle
 - (i) is secured to prevent movement in the event of over turn of the vehicle;
 - (ii) is in an accessible position; and

(iii) has a substantial acid-resistant and ventilated cover that is electrically insulated on the side adjacent to the battery terminals.

Regulation 105—Route and speed limit

(1) A person who transports explosives by road shall convey the explosives by the most direct route and by the quickest and safest means

(2) Subregulation (1) does not apply within a city or town where an alternative route which is not the most direct route passes through areas of lesser population density.

(3) A local authority may prescribe the route to be used by vehicles which transport explosives within its area of jurisdiction.

(4) A person who drives a vehicle that is transporting explosives shall not drive faster than sixty kilometres per hour.

Regulation 106—Hours for conveying explosives by roads

A person who transports explosives in a motor vehicle, shall transport the explosives between 6.00 am and 6.00 pm.

Regulation 107—Vehicles to be accompanied by competent person and police escort

(1) A person who transports explosives in a road vehicle shall ensure that the explosives are under the direct control of a person who has a certificate of competency in explosives in accordance with regulation 15 (2).

(2) Without limiting subregulation (1), a person who transports explosives in a road vehicle shall ensure that the transportation is done under a police escort.

Regulation 108—Trailers

A person shall not transport explosives in a trailer attached to a road vehicle.

Regulation 109—Prohibition against stopping and parking

(1) Subject to subregulation (2), a person driving a road vehicle that is transporting explosives, shall not stop or park that vehicle in any city, town, village or residential accommodation.

(2) Subregulation (1) does not apply where a vehicle is stopped

(i) to avoid an accident;

(ii) to comply with a traffic sign;

(ii) to obey a direction lawfully given by an authorized person; or

(iv) due to some cause beyond the control of the driver.

(3) A person driving a vehicle that is transporting explosives may park the vehicle outside a city, town or village at a location off a public road and at a reasonable and safe distance from an inhabited building, if the vehicle is kept in charge of a blastman and is accompanied by a police escort both of whom stay with the vehicle throughout the period the vehicle is parked.

Regulation 110—Procedure for vehicles involved in accidents

(1) Where a vehicle transporting explosives is involved in an accident, the person transporting the explosives shall ensure that

(a) the explosives are examined by a person who is a competent person under regulation 15(2) and where the explosives have been damaged or spilled the competent person implements the measures determined in the emergency response plan to make the area safe and to recover the explosives;

(b) arrangements are made to keep the explosives under guard at all times;

(c) where the competent person accompanying the explosives vehicle is not available, the police guards the explosives and a second competent person is sent to the scene;

(d) where the vehicle cannot continue the journey, the competent person arranges for an authorised vehicle to transport the explosives to their destination; and

(e) the competent person within twenty four hours reports the accident to the nearest Inspector.

(2) For the purposes of this regulation, a competent person is a person issued with a certificate of competency by the Commission under regulation 15 (2).

Regulation 111—Switching off engine during loading and unloading

A manager shall ensure that where explosives for which that manager is responsible are being loaded into or unloaded from a road vehicle the engine of the vehicle is switched off and due care is taken by the person in charge of the loading or unloading to ensure that a person, other than a person assisting the person in charge in loading or unloading, does not have access to the explosives.

Regulation 112—Prohibition of matches, means of ignition, steel, iron heels or exposed nails

A person engaged in loading or unloading explosives into or from a road vehicle shall not

(a) carry matches or any other means of producing ignition, or

(b) wear boots or shoes with steel or iron heels, tips or exposed nails.

Regulation 113—Vehicle upon arrival at destination to be unloaded

A manager shall, in relation to explosives for which that manager is responsible, ensure that explosives transported by a road vehicle are

(a) unloaded immediately on arrival of the vehicle at its destination, and

(b) stored in a magazine or used immediately.

Regulation 114—Thunder-storm during transportation

A person driving a road vehicle which is transporting explosives shall, on the approach of and during a thunder-storm, park the vehicle off the highway at least five hundred metres from an inhabited building.

Regulation 115—Convoys

Where two or more road vehicles transporting explosives are travelling in a convoy the drivers of the vehicles shall maintain a distance of at least fifty metres between one vehicle and the other.

Transportation of explosives at surface mine or works

Regulation 116—Undue delay during transfer

A person responsible for the transfer of explosives from a magazine shall ensure that the transfer is arranged in a manner that avoids undue delay between the time the explosives leave the magazine and the time they are properly stored in another magazine or distributed to the points of use.

Regulation 117—Permitted types of conveyance for explosives at any mine or works

(1) A manager shall, in relation to the transportation of explosives for which that manager is responsible, ensure that the explosives are transported from one magazine to another magazine or from a magazine to a work place by

- (a) a vehicle that uses rubber tyres and is propelled by a diesel engine;
- (b) a vehicle that runs on rails whether propelled by a locomotive or by hand;
- (c) a conveyance attached to a winding plant or an approved lifting appliance; or
- (d) a lift.

which is of sound construction, made of suitable material, has adequate strength and is free from patent defects and maintained in good working order.

(2) Where any operations carried out under these Regulations require the use of explosives in quantities which the Chief Inspector considers to be of a large magnitude, the Chief Inspector may, where necessary, direct that the transportation of the explosives on the surface should only be by an authorised road vehicle equipped in accordance with regulations 104 and 105.

Mobile mixing units

Regulation 118—Mobile mixing units

(1) A manager shall ensure that a mobile mixing unit or truck for which that manager is responsible

- (a) is roadworthy and in sound mechanical condition and repair;
- (b) has a body constructed of materials that are not combustible;
- (c) has an engine and exhaust system which are located forward of the rear of the cabin or shielded;
- (d) and which is equipped with a battery, has the battery
 - (i) secured to prevent movement of the battery in the event of vehicle overturn;
 - (ii) located in an accessible position; and
 - (iii) provided with a substantial acid-resistant and ventilated cover that is electrically insulated on the side adjacent to the battery terminals;

- (e) has an isolating switch in the electrical circuit in a readily accessible position;
- (f) and which has an engine fitted with an alternator, has a battery isolation switch of a type that automatically opens the alternator field coil circuit immediately before the battery is isolated;
- (g) and which is to be used to load free-flowing granular explosives pneumatically, is provided with adequate earthing;
- (h) has a processing equipment designed to provide for the effective segregation of ingredients prior to mixing, including minimizing the possibility of mixing during incident or accident conditions;
- (i) is constructed in a manner that adequately protects ingredients and explosives against direct sunlight and adverse weather conditions and provides secure protection that prevents it from being dislodged during normal transport;
- (j) and which supplies electric power to a processing equipment by a self-contained motor-generator located on the truck, has the motor-generator separated from the explosive discharge area of the truck;
- (k) is provided with pressure relief valve on containers of ingredients or explosives that might produce pressures under confinement or in the event of fire, with the protection pressure relief valve installed in a manner that provides protection against permanent closure in an accident;
- (l) and which is fitted with a pressure-relief valve as a pressure relief mechanism, has the pressure relief valve directed in a manner that prevents harm to personnel in the vicinity of the unit or truck;
- (m) has tanks for liquid ingredients or explosives to dampen movements of the contents during transport if the movements are likely to cause a loss of vehicle control or any other hazardous situation;
- (n) has its processing equipment firmly and effectively secured to its body and mobile equipment, including hoses, effectively restrained while travelling;
- (o) has its transfer equipment, including delivery hoses, adequately restrained to ensure control is maintained during transfer operations;
- (p) and which is equipped with airbrakes, is for the purpose of delivery operations provided with
 - (i) a positive action parking brake, which sets the wheel brakes on at least one axle;
 - (ii) wheel chocks to supplement the parking brakes where necessary;
- (q) is equipped with a mixing and delivery system that is arranged in a manner that enables the operator in normal position during operations to have a full view of explosives delivery points, or have adequate communication with another operator who has a full view;
- (r) has its mixing and delivery systems equipped with an emergency stop, appropriately labelled and in easy reach of the operator monitoring the operations;
- (s) is operated in accordance with regulation 84(2);

(t) has its processing equipment including tanks, hoses, taps and valves clearly labelled to properly identify contents and use;

(u) is marked or bears a sign, as appropriate, as follows:

(i) when carrying explosives is marked "DANGER-EXPLOSIVE";

(ii) when carrying only ingredients of explosives, or any dangerous goods in sufficient quantities is marked "DANGER";

(iii) in relation to moving augers and the need for eye protection bears the signs:

"(A) EYE PROTECTION MUST BE WORN WHEN IN OPERATION.' and

(B) 'CAUTION - AUGERS MAY MOVE WITHOUT WARNING'

(v) is equipped with material safety data sheets which provide emergency procedure guides appropriate to the materials being transported.

(2) The manager shall ensure that where 'EXPLOSIVES' signs are not required to be posted on a mobile mixing unit or truck for which that manager is responsible the signs are available at the site and displayed at the site during mixing operations.

(3) Mobile mixing units not specified in these Regulations may be used after approval has been obtained from the Chief Inspector of Mines.

Conveyance underground

Regulation 119—No undue delay to occur during transfer

A manager shall ensure that

(a) the transfer of explosives from a magazine is arranged in a manner that prevents undue delay between the time the explosives leave the magazine and the time they are properly stored in another magazine or distributed to points of use;

(b) explosives are not left at any level, station or near the shaft collar or other entrance to the mine but are transferred to the underground magazine or points of use without undue delay.

Regulation 120—Transportation of explosives with rubber tyred vehicle

A person who uses a vehicle that has rubber tyres for the transportation of explosives in connection with these Regulations shall ensure that

(a) the compartments of the vehicle in which the explosives are carried, are lined internally with wood which is non-inflammable or with other material that may be approved by the Chief Inspector;

(b) the vehicle has

(i) a red flashing light clearly visible at least sixty metres away; and

(ii) a klaxon, siren, hooter or automatically operated bell.

Regulation 121—Transportation of explosives by rail

A person who transports explosives in a carriage by rail shall ensure that

- (a) the compartments of each carriage in which explosives are carried are lined internally with wood which has been rendered non-inflammable or with another material approved by the Chief Inspector;
- (b) the compartments of the carriage in which explosives are carried are suitably enclosed and locked;
- (c) the carriages in which the explosives are transported are separated from the locomotive by one empty carriage.

Regulation 122—Painting of rail bound carriages used exclusively for explosives

A person who transports explosives in a carriage which is used exclusively for transporting explosives shall ensure that the carriage is painted with a distinctive red colour.

Regulation 123—Precautions while carrying explosives

A person who transports explosives in connection with these Regulations shall ensure that

- (a) the explosives are transported in sound boxes or bags or in approved closed containers in a vehicle or carriage;
- (b) detonators are not transported together with other explosives on the same vehicle or carriage.

Regulation 124—Limitation for speed for various conveyances underground

(1) A person who transports explosives in connection with these Regulations shall ensure that in the case of transportation of the explosives

- (a) in a carriage by rail underground, the locomotive that pulls the carriage containing the explosives does not travel at a speed greater than ten kilometres per hour; and
- (b) underground by a vehicle that uses rubber tyres, the vehicle conveying explosives does not travel at a speed greater than fifteen kilometres per hour.

(2) A person who transports explosives in a conveyance operated by a winding engine plant shall ensure that the conveyance does not exceed the speed specified by the Manager, which in any event shall not exceed half of the approved speed for hoisting of personnel.

Regulation 125—Precautions in haulage ways

A person who transports explosives under these Regulations shall ensure that a definite arrangement is made to enable the vehicle used for transporting the explosives to have a right-of-way before the vehicle is moved and where a locomotive is used for propelling a train, the locomotive is maintained on the forward end of the train carrying the explosives.

Regulation 126—Transportation of explosives in shafts

(1) A manager shall in relation to the transportation of explosives in a shaft for which that manager is responsible ensure that proper notice is given to the winding engine driver, banksman and skipman immediately before explosives are conveyed in a shaft by means of a cage or other conveyance.

(2) A person shall not place in or take out of a shaft conveyance, an explosive except under the immediate supervision of a holder of a blastman's certificate of competency in accordance with regulation 21.

(3) A manager shall in relation to the transportation of explosives in a shaft for which that manager is responsible ensure that

(a) a detonator and explosive are not transported together in a shaft conveyance; and

(b) with the exception of fuses and fuse igniters, other materials are not transported with explosives in a shaft conveyance.

Regulation 127—Explosives in transit under a blastman

A manager shall ensure that explosives for which that manager is responsible and which are in transit are at all times under the direct supervision of a person who holds a blastman's certificate of competency in accordance with regulation 21.

Regulation 128—Only cage tender and blastman to travel with explosives

A person, other than the cage tender or a holder of a blastman's certificate of competency in accordance with regulation 21, shall not travel together with explosives in a conveyance in a shaft or winze.

Regulation 129—Boxes, cases and canisters for transportation of explosives

A manager shall in relation to explosives in a magazine for which that manager is responsible, ensure that the explosives are transported from the underground magazine to the working face in boxes, cases and canisters approved by the Chief Inspector.

Storage of explosives

Regulation 130—Storage permits and leases

(1) A Manager shall store explosives of division U.N. class 1 for which that manager is responsible, in accordance with the operating plan provided in regulations 9 and 10 and the operating licence provided in regulation 23.

(2) The Holder of a mining lease shall ensure that each mine for which that holder is responsible has

(a) an explosives manager in accordance with regulation 20;

(b) competent personnel in accordance with regulation 21; and

(c) a permit to store explosives in accordance with regulation 32

Regulation 131—Receipt and delivery of explosives

- (1) The holder of a certificate of competency in charge of an explosives magazine shall
- (a) receive and store explosives in the magazine and distribute them in an appropriate manner;
 - (b) not receive or deliver explosives which are not in good order and condition;
 - (c) by a written order authorise the issue of explosives from the magazine;
 - (d) keep in the magazine an Explosives Storage Book; and
 - (e) keep full particulars of receipts and deliveries of explosives in the Explosives Storage Book.
- (2) A manager shall, in addition to the records required in subregulation (1), accurately record each delivery of explosives made to the person in charge of the working place to which the explosives were delivered.

Regulation 132—Explosives required for a shift

A person in charge of an explosives magazine shall

- (a) issue from the magazine to the person in charge of each working place only the probable quantity of explosives required for the use of the shift;
- (b) place the explosives issued in securely closed canisters or boxes;
- (c) issue the explosives to the person in charge of the working place not more than thirty minutes before the working place is ready for blasting; and
- (d) ensure that the explosives are conveyed directly from the magazine to the working place.

Regulation 133—Cleanliness

A manager shall, in respect of a magazine for which that manager is responsible, ensure that

- (a) the floor of the magazine is kept free of dirt or grit;
- (b) where provided, magazine shoes or galoshes are kept adjacent to the door; and
- (c) spillages are cleaned up immediately and removed in accordance with safe work procedures.

Regulation 134—General provisions for explosives magazines

- (1) A person carrying a radio transmitter or a cellular telephone shall not enter the fenced area surrounding an explosives magazine if the transmitter or telephone is not switched off.
- (2) A person shall not enter an explosives magazine if that person is wearing a pair of boots or shoes which has an exposed metal.
- (3) A manager shall ensure that
 - (a) except with the permission of an inspector in writing, and under conditions determined by the inspector, explosives in an explosives magazine are only handled during the hours of six O'clock in the morning and six O'clock in the evening; and
 - (b) care is taken to prevent concussion in the storage of explosives in an explosives magazine.

Regulation 135—Storage rules

The person in charge of an explosives magazine shall ensure that

(a) explosives stored in the magazine are

(i) stored on the duck boards, runners or shelves in a manner that ensures that the bottom row of cases is not less than one hundred and fifty millimetres from the floor;

(ii) stacked only to a height of not more than one hundred and eighty centimetres and the height is delineated by a red line painted along each of the walls of the storage chamber;

(b) a case of explosives is not stored within three hundred millimetres of the wall of a magazine;

(c) the horizontal distance between two rows of cases of explosives is not less than seven hundred and fifty millimetres;

(d) when explosives are first received into the magazine, the explosives are clearly stamped with the date of receipt;

(e) explosives stored in the magazine are

(i) stacked in a manner that enables the date of receipt and the date of manufacture of the explosive to be clearly visible;

(ii) issued in rotation, so that explosives which are of the same type and size, and stamped with the earliest date of manufacture are used first;

(iii) issued only on production of a written order signed by a person authorised by the manager to make the order.

(f) detonators and blasting initiators are stored together but not with other explosives;

Regulation 136—Opening of packages

The person in charge of an explosives magazine shall ensure that where it is necessary to open a package containing explosives, care is taken to remove the package to a safe distance from the explosives magazine or in a lobby of the magazine.

Regulation 137—Posting of storage permit

The person in charge of an explosives magazine shall post a copy of the original valid storage permit for the magazine issued in accordance with regulation 32 and a copy of the abstracts of these Regulations behind a suitable transparent material in a position that makes it clearly visible at all times.

Regulation 138—Storage of other materials prohibited

A person shall not store any material in a magazine other than the type of explosives for which the magazine is licensed.

Regulation 139—Naked light, matches or smoking prohibited

(1) A person shall not smoke or take any naked light into a magazine area or a danger building or danger zone as prescribed in regulation 56.

(2) A person shall not take material which is smouldering or an article designed or adapted to produce a naked flame into a magazine or magazine area.

Regulation 140—Repairs to magazine

(1) A repair work shall not be carried out on a magazine, unless the repair work is authorized in writing by the manager of the magazine.

(2) For the purpose of this regulation, repair work includes magazine installations comprising among other structures, mounds, fences, access and drainage.

(3) The person in charge of a magazine shall ensure that in the process of repair work magazine installations including structures, mounds, fences, access and drainage are kept in good order and where welding, oxy-cutting or an activity likely to generate heat, sparks or friction is to be carried out in or on the outside of an existing magazine, the following precautions are observed:

(a) the contents of the magazine are removed and stored in a safe place, away from the repair activities;

(b) the internal timber lining of the magazine are removed to expose the internal surface of the wall to be affected by heat and to protect the internal lining from sparks and fire;

(c) before the repair work starts, the magazine is examined and declared safe for repair work to proceed; and

(d) the repair is done under a hot work permit which is in accordance with regulation 55.

(4) The person in charge of a magazine shall ensure that when the activities listed in subregulation 3(b) of this regulation are completed, the following actions are taken before explosive material is returned to the magazine

(a) the internal surface of the wall is allowed to cool to ambient temperature;

(b) the internal lining of the magazine is installed after the surrounding area has been inspected by a competent person to ensure that there is no smoke or fire; and

(c) the magazine is examined and declared safe for returning the explosives to the magazine.

Regulation 141—Inspection

The person in charge of an explosives magazine shall give access to the Chief Inspector or any other officer appointed by the Chief Inspector for inspection of the magazine.

Regulation 142—Destruction of explosives which have become unfit for use

(1) The Chief Inspector or another officer appointed for that purpose by the Chief Inspector may order the destruction of any explosives found in a magazine, which in the Chief Inspector's or that other officer's opinion has become unfit for use.

(2) Where the Chief Inspector or an officer appointed by the Chief Inspector for the purpose, orders the destruction of an explosive, the explosive shall be immediately destroyed by a blast man and compensation is not payable for the destruction.

Regulation 143—Responsibility for magazines

(1) A manager shall appoint a person who has a certificate of competency for that purpose as a magazine keeper to handle explosives in accordance with regulation 15 (2) (a) (iii).

(2) The person in charge of a magazine shall

(a) keep the key of the magazine only for the time that the key is required to be used, and

(b) where the key is not required for immediate use, keep the key securely locked in a safe place determined by the manager.

(3) The person in charge of a magazine shall keep in the magazine a register that shows

(a) the current stock of explosives;

(b) the quantities and type of explosives issued and received;

(c) the dates of the issues and receipts;

(d) the person to whom the issues were made or from whom the explosives were received;

(e) the name of the person in charge of the magazine which issued or received the explosives;

and the explosives register shall be open for inspection by an Inspector or person authorised by the Chief Inspector.

Regulation 144—Security guards

(1) A person in charge of a magazine shall assign security guards to be on duty at the magazine for as long as there are explosives in the magazine.

(2) A security guard assigned to a duty post under subregulation (1), who deserts that duty post, is negligent in the discharge of the duties related to that post or commits any other act of indiscipline, is liable to disciplinary action and sanctions in accordance with the rules of the employer of that security guard.

Surface magazines

Regulation 145—Plans to be approved

(1) A person shall not construct or engage another person to construct a surface magazine unless that person has submitted detailed plans, specifications and site plans of the magazine including the fencing required by regulation 152 to the Commission for approval.

(2) The approval shall be obtained on application to the Commission.

(3) The application shall be in writing and in the form determined by the Commission and be accompanied with

(a) a statement that specifies the types of explosives and the quantity of each type of explosive to be stored in the magazine, and the residential address of the proposed site of the explosives magazine;

(b) four copies of a plan drawn to a scale of 1:500, 1:1000, 1:2000, 1:2500 or 1:5000, according to the size of the property, that shows

(i) the site of the proposed explosives magazine and fence in relation to neighbouring roads, including the access road to the explosives magazine,

(ii) railways, buildings and boundaries of properties, and

(iii) the contour of the land on which the explosives magazine is to be erected and that indicates, with the site as centre, circles, with radii proportionate to the safety distances established under regulation 86;

(c) a plan in triplicate, drawn to a scale of 1:25 or 1:50 or 1:100, that shows the design and specifications of the proposed explosives magazine and mounds and a layout plan of the proposed explosives magazine showing the distances between magazines as well as between the magazines and the fence, as specified in regulation 152.

(4) The Commission shall grant the application within thirty days after the submission of the application, if the Commission is satisfied that the applicant has satisfied the requirements for the approval.

(5) Where the application is granted, one set of endorsed plans shall be returned to the applicant and the building of the explosives magazines and mound shall not be commenced by the applicant until the endorsed plans have been received by the applicant.

(6) The approval for the construction of an explosives magazine lapses if the construction of the explosives magazine is not commenced within three months after the date of approval of the construction plan, but the approval may on application be extended by the Chief Inspector in writing, for a further period of three months.

(7) The application for extension shall be made not later than thirty days before the expiry date and the applicant shall inform the Chief the Inspector of any changes to the original application and plans.

(8) Where an explosives magazine is erected in the vicinity of a power line, the explosives magazine shall be separated from the power line by a horizontal distance of not less than one hundred metres.

(9) Modifications or extensions to an existing magazine shall only take place after prior approval of the Chief Inspector has been obtained.

(10) For the purpose of this regulation the distance between two buildings used as magazines

(a) is the shortest distance between the nearest walls of the buildings, whether mounded or unmounded; or

(b) where the mound is an integral part of the building, is the distance from the inner wall of one building to the inner wall of the other building.

Regulation 146—Protection of magazine with mound

(1) A manager shall ensure that

(a) each explosives magazine for which that manager is responsible is protected by a mound in the form of an earth embankment, or with the prior approval of the Chief Inspector, an earth-filled wall completely surrounding it;

(b) the mound is maintained in good condition and is

(i) at least as high as the eaves of the roof of the building;

(ii) at least one metre broad at the top and has its exterior slope at the natural angle of repose of earth;

(iii) at a distance of not more than one metre from the building at ground level; and

(iv) protected against erosion at the top and the slopes.

(2) Without limiting subregulation (1), where a magazine by virtue of its position is naturally protected by a surrounding terrain, in the nature of an adit or some other geographic feature, the magazine shall have a mound in front of the entrance erected to a height equal to the height of the adit.

Regulation 147—Magazine to be of substantial building

(1) A manager shall ensure that

(a) each magazine for which that manager is responsible is a substantial building with the roof, walls and floor properly secured against unlawful entry; and

(b) where the roof, floor or walls of the magazine include reinforcing, the reinforcing is connected to the lightning protection system required by these Regulations.

(2) For the purpose of subregulation (1), "properly secured" means that the building is either

(a) under permanent supervision by a security guard; or

(b) constructed in a manner that ensures that in an unguarded state it is considered by the Chief Inspector to be secure by virtue of its construction.

Regulation 148—Prohibition of magazines near dwellings and public roads

A person shall not construct an explosives magazine closer to a dwelling, public road, or vulnerable facility than the respective distance prescribed in regulation 145.

Regulation 149—Magazine construction requirements

Except with the prior approval of the Commission and subject to the conditions determined by the Commission, a manager shall ensure that each magazine for which that manager is responsible

- (a) has walls constructed of burnt bricks, concrete blocks, cement blocks, stone or any combination of these materials with the internal surface of each wall smooth-finished with cement plaster;
- (b) has a floor constructed of impermeable material and the floor is at least one hundred and fifty millimetres above the ground level;
- (c) has a ceiling
 - (i) constructed of heat insulating and non inflammable material with adequate ventilation above the ceiling; or
 - (ii) made of a wire mesh of substantial gauge;
- (d) which is licensed for the storage of more than one thousand cases of twenty-five kilogram of explosives, has two separate chambers consisting of a storage chamber and an entrance lobby through which a single access can be had to the storage chamber;
- (e) has an entrance consisting of a door or double doors, which opens outwards, is equipped with two locks of the type approved by the Chief Inspector and is made of steel lined with timber on the inside or made of stout timber faced with steel on the outside and, where the hinges are bolted to the door, the nuts are on the inside;
- (f) has adequate drainage to conduct water away from the magazine;
- (g) does not have an exposed iron or steel on the inside except the wire mesh ceiling permitted to be installed under paragraph (c) of this regulation; and
- (h) has adequate ventilation.

- (2) A manager may use a standard shipping container as an explosives magazine if the container
- (a) is wood lined on the inside and the fastening screws or nails used in the construction of the container or a part of the container are countersunk and covered with a suitable sealing material;
 - (b) is provided with ventilation openings to allow for a flow of air through the magazine;
 - (c) where made of steel or another metal has openings which are not more than 0.09 m² with a minimum total open area of 1.0 m², which are securely safeguarded, with the guards securely fixed to the structure;
 - (d) is provided with drainage to prevent water from accumulating in the magazine;
 - (e) where made of steel or another metal capable of conducting electricity, is earthed; and
 - (f) is provided with a shade roof.

Regulation 150—Detonators and high explosives to be stored in separate magazines

A manager shall in relation to a magazine for which that manager is responsible ensure that

- (a) explosives belonging to UN division 1.1 D are not stored with explosives of other divisions; and

(b) detonators, pertaining to UN divisions 1.1 B and 1.4 S are not stored with explosives of other divisions.

Regulation 151—Electrical installation in explosives magazines

A manager shall in relation to a magazine for which that manager is responsible establish and enforce processes that ensure that

- (a) an electrical equipment is not sent or received into the magazine;
- (b) where electric lights are required in the magazine, provision is made for the lights to be mounted outside the magazine to provide illumination through suitable openings into the magazine,
- (c) the openings required under paragraph (b) are of a size or constructed in a manner that prevents a person using any of these openings as an entry; and
- (d) each switch and fuse of a lighting circuit of a magazine is installed in a fire-proof cabinet on the outside of the building.

Regulation 152—Fencing and locking

(1) A manager shall in relation to a magazine for which that manager is responsible ensure that

- (a) a double perimeter fence which is not less than five metres apart, with a no man's land in-between the fences is constructed around the magazine;
- (b) the area between the perimeter of the double fencing and the magazine and an area extending not less than five metres on the inner side and not less than five metres on the outer side is kept clear of vegetation;
- (c) fences around a danger area
 - (i) are constructed of high tensile steel chain link fence two and a half metres high and buried into the ground to a depth of three hundred millimetres or set into a concrete base to prevent access under the fence;
 - (ii) have barbed or razor wire fixed to the top of them;
 - (iii) have posts made of steel or concrete;
 - (iv) have wire mesh of a substantial gauge;
- (d) gates of fences and magazine doors are secured by a locking system
 - (i) which is of substantial construction and has hasp, staple and lock which are covered or recessed so that they cannot be accessed by a bolt cutter or similar device;
 - (ii) which uses padlocks of high security design and has bolts that cannot be cut with a bolt cutter;
 - (iii) which has at least two separate locks fitted to each door;
- (e) the fence around the danger area is guarded by

- (i) lighting posts;
 - (ii) a closed circuit television camera system; and
 - (iii) an emergency power generator to provide electrical energy for lighting and the cameras in case of power cut.
- (2) The Chief Inspector may grant exemptions from any of the requirements of subregulation (1) subject to conditions that the Chief Inspector may impose.

Regulation 153—Ground to be kept clear of shrubs and weeds

A manager shall not permit the cultivation of plants or the growth of shrubs or weeds which is likely to cause fire within twenty-five metres of an explosives magazine for which that manager is responsible.

Regulation 154—Security of magazines

A manager shall ensure that in respect of a magazine for which that manager is responsible

- (a) sufficient lighting is provided to enable
 - (i) the area external to the perimeter fence surrounding a danger area to be lit to a distance of twenty metres from the fence;
 - (ii) intruders who approach the fence to be seen; and
- (b) in large permanent installations consideration is given to the use of
 - (i) electric fencing;
 - (ii) monitoring and alarm systems linked to security control rooms; and
 - (iii) security patrol management systems.

Regulation 155—Magazine keys

- (1) A manager shall ensure that
- (a) each magazine has two locks or padlocks and each lock or padlock has only two keys; and
 - (b) the first key of the lock or padlock is kept by the manager and the second one by the head of the company's security department.
- (2) The Chief Inspector may direct that the custody of the second key be given to a police officer of the Arms and Ammunition Department.

Regulation 156—Warning notices

- (1) A manager responsible for a magazine shall cause to be displayed on the entry gate of the fence surrounding the magazine and at suitable places around that fence, a signboard bearing the words; "DANGER, EXPLOSIVES MAGAZINE"; "UNAUTHORISED PERSONS PROHIBITED" and "NO SMOKING"

(2) The inscription on the signboard shall be painted in red on a white background and the signboard shall be maintained in good condition.

Regulation 157—Magazine equipment requirement

(1) Except with the prior approval of the Chief Inspector and subject to conditions determined by the Chief Inspector a manager shall ensure that each magazine for which that manager is responsible is equipped with

(a) partitions and shelves made of timber with all nails and screws countersunk with no exposed metal fittings except of non-sparking material, where necessary,

(b) duck boards or runners of wood or other approved material on which the cases or cartons of explosives are stored.

(2) A manager shall ensure that in a magazine for which that manager is responsible

(a) where the explosives to be stored in that magazine are blasting agents in bags or sacks, the explosives are stacked with the bottom layer placed directly onto the floor;

(b) a maximum Celsius thermometer is hung inside that magazine and readings are taken and recorded as the occasion requires.

(3) A manager shall ensure that

(a) for the purpose of a magazine for which that manager is responsible, there are kept

(i) at least two fire extinguishers of an approved type, which are maintained in a good working order;

(ii) soft brushes and brooms which are made of wood, copper, brass or other non-sparking materials and which do not have metal fittings

(b) there is kept at least one hand lamp or light of an approved type in any magazine for which that manager is responsible.

(4) The fire extinguishers required under subregulation (3) (a) (i) shall be kept in a readily accessible position outside the magazine.

Regulation 158—Lightning protection system

A manager shall ensure that

(a) each magazine for which that manager is responsible is provided with an efficient lightning protection system;

(b) the lightning protection system is thoroughly examined and tested at least once every six months; and

(c) the details of the examination and test, and the date on which they were conducted are recorded in the magazine register by the competent person carrying out the examinations and tests.

Regulation 159—Power lines

A manager shall ensure that the horizontal distance between a magazine for which that manager is responsible and any overhead power line carrying an electric current at a voltage that exceeds two hundred and twenty volts is not less than one hundred metres.

Regulation 160—Opening and closing of doors and windows

The person in charge of a magazine shall ensure that the windows and doors of the magazine are, subject to the state of the weather, opened each day and great care is observed when the windows and doors are closed each evening.

Storage of UN Division 5.1 substances

Regulation 161—Permits and licences for storage of UN Division 5.1 substances

A person shall not store a UN Division 5.1 substance for the manufacture of explosives unless that person has

- (a) an approved operating plan in accordance with regulations 9 and 10;
- (b) an approved operating license in accordance with regulation 23;
- (c) an explosives manager in accordance with regulation 20; and
- (d) competent personnel in accordance with regulation 21.

Regulation 162—Storage of ammonium nitrate

(1) A person may store ammonium nitrate only on premises and in storage facilities approved by the Commission.

(2) The approval shall be obtained on application to the Commission.

(3) The application shall be accompanied with

(a) a statement that sets out the mass of ammonium nitrate to be stored and whether it is to be stored in bulk or bags;

(b) a plan in triplicate, drawn to a scale of 1:25, 1:50 or 1:100 showing the design and specifications of the proposed ammonium nitrate storage facility; and

(c) a site plan showing the position of the storage facility in relation to other facilities.

(4) The Commission shall refer the application to the Chief Inspector, who after consultation with the applicant, shall determine minimum distances to be maintained from the ammonium nitrate storage facility to public buildings, residential areas and other public places.

(5) The applicant shall, immediately after the erection of an ammonium nitrate storage facility has been completed, inform the Chief inspector of the completion.

(6) A manager responsible for an ammonium nitrate storage facility shall ensure that

(a) an unauthorized person does not have access to the ammonium nitrate storage facility;

(b) a person does not smoke any substance or possess any smoldering substance within thirty metres of an ammonium nitrate storage facility; and

(c) rules are made to sanction any person who contravenes paragraphs (a) and (b).

(7) A manager shall, in relation to an ammonium nitrate storage facility for which that manager is responsible, ensure that

(a) stores or tanks containing combustible material are placed in a bunded area and are not kept within thirty metres from a store of ammonium nitrate;

(b) fire hydrants, hoses and nozzles are available at all sides of the storage facility in which the ammonium nitrate is kept;

(c) fire extinguishers are provided and maintained in good condition and kept outside the building comprising the facility;

(d) the facility is well ventilated;

(e) the facility has a concrete floor;

(f) bags of ammonium nitrate stored in the facility are stored on pallets;

(g) a system is provided around the facility to drain run-off water away from the facility;

(h) the facility is enclosed within one single fence, which is two and a half metres high, and which has a gate with a lock;

(i) the security of the facility is included in the security system of the person who operates the facility; and

(j) the facility has a lightning protection system.

(8) A person shall not break up solidified ammonium nitrate by using an explosive or any other means of causing an explosion.

Underground magazines

Regulation 163—Storage of explosives underground

A manager shall ensure that

(a) explosives under the care of that manager are stored in underground magazines in places and under conditions approved by the Commission in writing;

(b) only the quantity of explosives to be consumed within twenty four hours are stored in the magazine,

(c) each underground magazine has a log book in accordance with regulation 131;

(d) the maximum amount of explosives allowed in one chamber of the magazine does not exceed five thousand kilogrammes;

(e) the magazine is clearly labelled with the word `EXPLOSIVES`, in red on white background.

Regulation 164—Location of underground magazine

A manager shall ensure that

- (a) an underground magazine for which that manager is responsible is located in a place that ensures that the magazine is segregated from any
 - (i) major access or emergency escape route, including a shaft or a ladder way;
 - (ii) high-occupancy area, including an office, a crib room or a workshop;
 - (iii) dangerous goods including storage areas for fuel or lubricants or bays for refuelling or servicing at a minimum distance of seventy five metres;
 - (iv) major service installations, including winder, or electrical installations; and
 - (v) area of seismic activity;
- (b) walls and roofs of an underground magazine for which that manager is responsible are;
 - (i) unless stable, reinforced with roof and wall support to prevent falls of rock;
 - (ii) where required, sealed to prevent water seepage;
- (c) detonators are stored in different magazine chambers and separated from other explosives and blasting agents; and
- (d) the distance between the magazine chambers is not less than ten metres and the entries to the chambers are not in line of sight.

Regulation 165—Design of underground magazine

A manager shall ensure that

- (a) a magazine chamber underground for which that manager is responsible and which has a capacity for more than one thousand kilogrammes of explosives, has an explosive buffer space opposite the entry to the chamber;
- (b) a magazine for which that manager is responsible has adequate ventilation system to protect the stored explosives from adverse effects of high temperature or humidity;
- (c) an access to an underground magazine for which the manager is responsible is
 - (i) provided with a barrier capable of stopping a vehicle or with an elevated storage bay to prevent access by a vehicle to within six metres by a powered vehicle;
 - (ii) inclined away from the magazine to provide drainage and prevent the ponding of water; and
 - (iii) has at least one 90° turn adjacent to the magazine;
- (d) a magazine for which that manager is responsible is painted white and kept clean to improve illumination;

(e) an electrical installation is not allowed in an underground explosives magazine for which that manager is responsible.

Regulation 166—Locking device for underground magazine

A manager shall ensure that in an underground magazine for which that manager is responsible

(a) the doors and locking devices are constructed in a manner and fitted with locks as specified in regulation 152 (d) to ensure that;

(i) the doors open outwards without causing an obstruction and are prevented from accidental closing by a restraining device; and

(ii) the locking devices prevent unlawful entry.

Regulation 167—Fire prevention for underground magazine

A manager responsible for an underground magazine shall ensure that the fire fighting system in that magazine, where that magazine has a capacity of

(a) less than one thousand kilograms consists of;

(i) at least two fire extinguishers, of five kilograms each;

(ii) two buckets of dry loose sand; and

(iii) a fire hydrant and a hose connected to a fresh water pipeline,

(b) more than one thousand kilograms,

(i) is either remotely or automatically operated;

(ii) has pipelines and control valves that are fire-resistant, clearly marked and accessible from ground level;

(iii) is maintained in accordance with the manufacturer's recommendations and inspected at least once in a month;

(iv) is of a sprinkler type; and

(v) is of the type recommended by the manufacturer for the type of explosives stored.

Regulation 168—Temporary underground magazine

(1) A manager

(a) may locate a temporary underground magazine in a production or a development area; and

(b) shall ensure that that magazine

(i) is of substantial stability and constructed of metal, wood or other material that offers protection to the contents;

(ii) has locking devices to prevent unlawful entry and is fitted with locks as specified in regulation 152(d);

- (iii) is left empty when there is no job in the vicinity;
 - (iv) is emptied, cleaned out and repaired before being placed in a new location;
 - (v) has a log book according to regulation 131.
- (2) A manager shall ensure that in an underground magazine for which that manager is responsible
- (a) detonators and explosives are stored separately and at a distance of not less than ten metres and not in line of sight;
 - (b) the storage areas are designed in a manner that prevents a runaway or reversing vehicle from coming into contact with explosives; and
 - (c) the quantity of explosives stored cover only the particular job which is being done or which is to be done within twenty four hours, whichever is less.

General rules for use of explosives

Regulation 169—Permits and licences for the use of explosives

A person shall not use explosives unless that person has

- (a) an approved operating plan in accordance with regulations 8, 9 and 10;
- (b) an approved operating licence in accordance with regulation 22;
- (c) an explosives manager in accordance with regulation 20 and a mine manager in accordance with regulation 37 of the Minerals and Mining (Health and Safety) Regulations, 2012 (L.I. 2182);
- (d) in the case of a quarry or civil works, a quarry manager who has a quarry manager's certificate of competency in accordance with regulation 38 of the Minerals and Mining (Health and Safety) Regulations, 2012 (L.I. 2182);
- (e) competent personnel in accordance with regulation 21; and
- (f) has a permit for the acquisition of explosives in accordance with regulation 30.

Regulation 170—Mine manager to make specific rules

- (1) The manager of a mine in which explosives are used shall make special rules, which are consistent with these regulations, and in accordance with regulations 11, 12 and 13.
- (2) The manager shall submit the special rules to the Chief Inspector for the Chief Inspector's approval and the rules when approved, shall have the same effect as regulations made under these Regulations.
- (3) The manager shall issue a copy of the special rules to each employee who, in the opinion of the manager, is required by the nature of the job of that employee to have special knowledge of the rules.
- (4) An employee who is issued with a copy of the special rules under subregulation (3) shall give a receipt for the rules and the receipt shall be kept by the manager,

Regulation 171—Only competent and certified persons allowed to use explosives

- (1) A person shall not handle or use explosives, unless that person is competent to do so under this regulation
- (2) For the purpose of subregulation (1), "competent" means having satisfied the requirements of regulation 20 or 21 and having documentation confirming the certificate.
- (3) A blastman with a certificate of competency shall be responsible for a blast site.

Regulation 172—Use of explosives supplied by mine

A person who works in a mine, shall

- (a) not use at that person's working place, explosives which are not supplied to that person from the magazine of the mine where that person is employed;
- (b) not take away any explosives from the mine without the written permission of the manager; or
- (c) not secrete explosives or be in possession of explosives in or about a mine or works except as provided for in these Regulations.

Regulation 173—Documentation

A manager shall ensure that reports and documentation required under regulations 46 and 47 are prepared, kept and submitted.

Regulation 174—Disposal of packaging material

A manager shall ensure that a box, carton or paper bag that once contained explosives is not used again, and that the packaging material is burnt after checking to ensure that the contents have been effectively removed.

Use of explosives in surface mines and works

Regulation 175—Precautions at blast site

- (1) The blastman in charge of a blast site shall conduct a blast site inspection and identify and mitigate any hazard that poses an unacceptable risk before loading of explosives commences.
- (2) A manager shall ensure that—
 - (a) in an operation that requires the use of explosives, a non-work zone is established around the blast site by taking into consideration vehicle movements adjacent to the blast area, plant maintenance and other non-blasting-related activities;.
 - (b) the blast site is barricaded off with witches-hats at a distance of not more than ten metres and signboards bearing the inscription "KEEP OFF - BLAST SITE" are posted at the entry areas to the blast site;
 - (c) sources of ignition other than those which are required to initiate the shot are not introduced into the blast area;

- (d) an equipment or machinery other than a vehicle carrying explosives and stemming material is not taken or sent to the blast site;
- (e) equipment or machinery which is permitted to be taken or sent to a blast site for charging operations, is of a special design which can cope with the risks involved;
- (f) a person does not, with the exception of stemming loaders which are approved by the Chief Inspector and which are guided by a spotter, drive a vehicle or take or send equipment or machinery over charged holes; and
- (g) a person does not smoke any substance in or take or send naked light, or machinery likely to generate heat or sparks to a place within the vicinity of a blast site.

Regulation 176—Exclusion zones for surface blasting

- (1) A manager shall ensure that for any explosion that that manager is responsible,
 - (a) the minimum safety distance between a blast and a person near the blast site is five hundred metres;
 - (b) the size of the exclusion zone is increased if fly rock from the blast can travel beyond the minimum safety distance provided in paragraph (a).
- (2) The minimum safety distance for civil works may with the permission of the Chief Inspector be decreased if persons will not be endangered by the decrease.

Regulation 177—Charging and blasting time

A manager shall in respect of any explosion that that manager is responsible ensure that

- (a) charging of blast holes and blasting are only carried out during daytime;
- (b) blasting on the surface at the mine, explosives factory or works is carried out only during the day-time except for the purpose of blasting a hang-up at any ore or waste bin, grizzly or crusher.

Regulation 178—Sleeping shots

- (1) A manager of a surface mine that uses explosives shall submit a plan which states how to deal with incidental sleeping shots to the Chief Inspector.
- (2) A manager shall, where a blasting operation is of a nature that requires charging up for more than one day, obtain permission from the Chief Inspector, and provide for the guarding of the blast site to the satisfaction of an inspector before the operation.

Regulation 179—Charging of blast holes

A blastman shall ensure that

- (a) a blast hole is thoroughly cleaned of loose material immediately before being charged;
- (b) where a blast hole is not charged immediately, the blast hole is plugged or otherwise protected to prevent debris from entering the blast hole;
- (c) undue force is not used to insert a charge in a blast hole;

- (d) care is taken in the process of charging to avoid the presence of extraneous matter between cartridges;
- (e) only a protected-type of detonator is used when pneumatic charging and electric firing of free-flowing granular explosives are employed;
- (f) for the purposes of charging, tamping rods of suitable length of wood or other non-metallic material are used; and
- (g) in the process of charging care is taken to ensure that the lead wires, detonating cord, signal tube or safety fuse connected to the primer are not damaged during the placing of stemming material and subsequent tamping.

Regulation 180—General provisions for initiation of blast

An explosives manager shall ensure that in relation to initiation of blasting

- (a) tie-in of the blast only starts when charging and stemming is finished;
- (b) a person does not drive or send a vehicle to a blast site where tie-in of a blast is in progress; and
- (c) initiation of a blast is carried out from a safe distance.

Regulation 181—Initiation

(1) An explosives manager shall in relation to an explosion for which hat manager is responsible ensure that where

- (a) a shock tube is used and the initiation of the shock tube is to be done with a detonator, the last action is the attachment of the initiating or starting detonator to the trunk-line or lead-in line;
- (b) a capped fuse is used;
 - (i) a match is used to light a single fuse only and where more than one fuse is lit, an appropriate type of fuse lighter is used;
 - (ii) more than eight applications of a fuse lighter are not made at any one initiation;
 - (iii) devices used for connecting the number of safety fuses used and for firing of the fuses by means of a master fuse or ignition cord are of a type suitable and safe for their intended use;
 - (iv) the burning speed of a safety fuse is tested before use; and
 - (v) the length of the capped fuse gives sufficient time for the blastman to move to a safe place;
- (c) a detonating cord with trunk and branch lines is used
 - (i) a sealing tube or tape, or other sealing compound is used on all joints or open ends of the detonating cord where protection is required from weather or water;
 - (ii) the detonating cord lines are sufficiently taut to prevent formation of loops but sufficient of slack in branch lines to allow for possible subsidence of materials in the blast holes;

- (d) an electric detonator is used,
 - (i) only an exploder of the appropriate rating is used in conducting an electric blasting operation;
 - (ii) an exploder is stored in a clean area free from moisture, oil and other contaminants;
 - (iii) the shotfirer, before commencing loading, keeps the exploder inoperative until required for firing and after firing, stores the exploder after making it safe or keeps it inoperative until it is required to fire the next shot;
 - (iv) the exploder is tested monthly to the rated maximum capacity, after an interval of non-use during operations or when a loss of efficiency is suspected;
- (2) An explosives manager shall ensure that
 - (a) for the purposes of blasting
 - (i) the firing cable is of sufficient length to enable the blastman connect the shot exploder at a safe place;
 - (ii) the firing cable and connecting wires are tested for continuity and insulation before use;
 - (iii) the firing cable that leads to the blasting site is short-circuited while the lead wires from the detonators are being connected;
 - (iv) the short-circuit is not removed until the blasting area has been cleared and the firing cable is about to be connected to the exploder; and
 - (v) the short circuit is replaced immediately after the firing switch has been opened and the firing cable removed from the exploder;
 - (b) electrical contact is not made to the exploder until immediately before firing and that the contact is disconnected immediately after firing;
 - (c) before the firing circuit is connected to the exploder, the detonating circuit and firing cable is tested from a safe position and with the area cleared;
 - (d) where an electronic detonator is used for the purposes of blasting,
 - (i) personnel who use the detonator undergo specific training in the use and handling of the particular detonator system;
 - (ii) components from different electronic systems or suppliers are not combined;
 - (e) only wires, connectors, and coupling devices specified by the manufacturer are used;
 - (f) wire ends, connectors and fittings are kept clean and clear from dirt or contamination;
 - (g) electronic detonators are not held while being tested or programmed;
 - (h) manufacturer recommendations to protect electronic detonators from electromagnetic, radio frequency or other electrical interference sources are followed;
 - (i) manufacturer's instructions relating to aborting a blast are followed; and

(j) a minimum of thirty minutes is allowed before returning to the blast site after a blast is aborted unless a manufacturer provides other specific instructions.

Regulation 182—Remote firing

An explosives manager shall in relation to an explosion for which that manager is responsible ensure that

(a) the sequence for obtaining a firing output is capable of being suspended, abandoned and terminated at any point up to the signalling of blast, without causing the initiation of explosives;

(b) a change to supply of power to any part or whole of the remote firing system does not cause initiation of explosives;

(c) a fault or a series of faults does not produce firing output or cause initiation of explosives;

(d) an external interference to any part of the remote firing system leading to the firing cable or signal tube does not produce firing output or cause initiation of explosives;

(e) portable remote controllers and portable remote exploders are of robust design and capable of withstanding a free vertical fall of one metre onto a rigid concrete surface without damage that would otherwise cause the inadvertent initiation of explosives;

(f) a locked physical barrier that prevents access to the operating mechanism and terminals is provided;

(g) personnel are not involved in the repair or use of a remote-controlled firing system until the personnel are suitably trained to current industry competence level for the particular task;

(h) remote firing equipment is only repaired or overhauled under the supervision of a competent person, working in an accredited or a certified workshop;

(i) in the procedure for remote firing

(i) the remotely operated exploder is placed in a safe position; and

(ii) the firing cable or signal tube is not connected to the remotely operated exploder until personnel in the blasting area, including the shotfirer, are in a safe position.

Regulation 183—Firing

An explosives manager shall in relation to an explosion for which that manager is responsible ensure that precautions are taken before and during firing to provide for the safety of persons and property as required in the operating plan.

Regulation 184—Post blast inspection

A blastman shall, in relation to a blast for which that blastman is responsible,

(a) carry out a post-blast inspection to ascertain if it is safe for personnel to return to the blast site and for routine operations to resume;

(b) determine whether fumes and dust are at acceptable levels;

(c) examine the blasted site to determine whether there have been misfires and any other abnormalities; and

(d) give the "all clear" signal after having ensured that the site is left in a safe condition.

Regulation 185—Misfires

(1) A blastman shall, in relation to a blast for which that blastman is responsible,

(a) mark a misfire and establish an exclusion zone around the misfire;

(b) where explosive hazards are the only hazards present, and other hazards, including lingering dust and fumes, are not present, ensure that the minimum waiting time is observed:

(i) five minutes, except in the case of safety fuse initiation;

(ii) thirty minutes within which a person shall not approach the location of a misfire, where a charge or detonator that is intended to be directly initiated by a safety fuse is identified as having failed to be initiated,

(c) ensure that a misfire is treated

(i) by re-firing, if intact lead wires are found;

(ii) by removal of the stemming, followed by re-priming, re-stemming and initiation;

(iii) by removal of the explosive from the blast hole by flushing the blast hole with water, or water and air, after any stemming material has been removed;

(iv) by mechanical or manual removal of the explosive;

(v) where it is not possible or practicable to treat a misfire by any of the methods specified in subparagraphs (i), (ii), (iii) and (iv), by drilling a relieving blast hole as parallel as possible to the original blast hole and charging and firing the relieving blast hole;

(d) ensure that work does not resume at a location where a misfire has been treated until the blastman has made a thorough search of the location for any explosive from the misfired charge and any recovered explosive is disposed of in a suitable and safe manner;

(e) the blastman does not abandon, discard, leave unguarded or otherwise neglect to safely dispose of, or ensure the security of, any explosive recovered in the treatment of misfires;

(f) ensure that stemming is removed by applying water under pressure, or a mixture of water and compressed air, through a non-ferrous blowpipe or hose.

(2) A relieving blast hole shall not be drilled under paragraph (c) (v) of subregulation (1), unless it is established through risk assessment that the drill will not contact an explosive.

Use of explosives underground

Regulation 186—Applicable regulations

Regulations 139 to 145 apply where appropriate to the use of explosives underground.

Regulation 187—Drill and blast scheme

A manager shall ensure that in relation to explosions for which that manager is responsible

- (a) drilling of a borehole for blasting is carried out only according to a drill and blast scheme, approved by the manager, and given to the respective drill crew and blastmen;
- (b) the drill and blast scheme
 - (i) shows the position, direction, number, length and diameter of boreholes of the blast;
 - (ii) provides details on type and quantity of explosives, the delays of detonators and the initiation system;
 - (iii) provides health and safety instructions specifying the exclusion zone, number and position of blast guards, minimum duration of re-entry period and arrangement of water blast; and
 - (iv) gives the distance of the auxiliary ventilation to the face in headings.

Regulation 188—Underground drilling of blast holes

- (1) A manager shall ensure that in relation to an explosion for which that manager is responsible
 - (a) drilling and loading of blast holes at a blast site are not undertaken at the same time;
 - (b) drilling is not carried out in the floor, walls, face or back of a development or stop heading, or in a bench or shaft bottom, until the area to be drilled has been washed down and the sockets washed and cleaned and examined for misfires, cracks and loose rocks and other dangers;
 - (c) loose and loosened rock and ground are removed from the face and immediate vicinity of the area to be drilled;
 - (d) a hole is not drilled in a socket or within twenty centimetres of the edge of a socket, including the shattered area left in a face from a burn cut;
 - (e) a misfired hole is plugged with a wooden plug of a type approved by the Inspector and marked with a circle;
 - (f) a socket is thoroughly cleaned, examined for explosives and plugged with a wooden plug of a type approved by the Inspector and a sufficient supply of wooden plugs is kept by the blastman in a location that makes it readily available;
 - (g) drilling is not undertaken in a face that contains a charged hole or a misfire;
 - (i) unless under the continuous supervision of a mine captain or the shift boss; and
 - (ii) within a minimum distance of two metres from the misfired hole; and
 - (h) a person does not deepen or cause or permit to be deepened a socket or hole which has been left unused.
- (2) A blastman shall point out to each driller working under that blastman and, wherever possible, clearly mark with chalk, paint or other material, the exact position and direction of any hole to be drilled and a person shall not in drilling deviate from the position and direction indicated.

Regulation 189—Inspection of blasting site before commencement of work

- (1) A blastman shall be the first to enter a working place where blasting is carried out, either at the beginning of the shift or after blasting.
- (2) Except where a workman is where necessary required by the blastman to assist the blastman to make a place where blasting is carried out safe, a blastman shall not allow a workman to proceed to that place until the blastman considers that place safe.

Regulation 190—Conditions for charging of drill holes

A manager shall in relation to an explosion for which that manager is responsible ensure that

- (a) before a borehole is charged, the blast site is barricaded and no other work is allowed within a safety distance of at least thirty metres;
- (b) only a blastman charges a drill hole;
- (c) a non-certificated person works under the continuous control and supervision of a certificated blastman and handles only the container or tube and valve of the injector pipe when a round is being charged;
- (d) in the preparation of a charge and the firing of a charge, a blastman, where that blastman needs assistance, is assisted by a reliable person who may not hold a certificate and who acts under the blastman's direct supervision and that the blastman is held personally responsible for any accident that occurs by reason of the ignorance, inexperience or carelessness of the person who assists;
- (e) the wooden plug with which a misfired hole or socket of a hole has been plugged is handled or removed only by a blastman; and
- (f) a person other than a blastman does not open or interfere in any manner with a box containing explosives.

Regulation 191—Charging of drill holes

- (1) A blastman shall
 - (a) thoroughly clean out drill holes before attempting to charge up the holes;
 - (b) ensure that only ANBA, ANFO or emulsion blasting agent is poured or pumped directly into a bore hole;
 - (c) for the purpose of initiating a charge with capped fuse, and
in making up a charge after inserting the detonator with its attached fuse in the primer cartridge, securely fasten it to the cartridge by means of a string or other suitable material so that the fuse and detonator cannot be inadvertently withdrawn;
 - (d) ensure that only tools made of wood, brass, copper or plastic are used in the process of initiating a charge;
 - (e) ensure that explosives which are in cartridges are not forcibly pressed into a hole of insufficient size;

(f) ensure that only sand which is loosely filled in, sand and lime mixed and made up in cartridge form, soft clay slightly tamped or water cartridges are used as tamping material; and

(g) test the water blast before starting the tying-in and if as a result of the test, the water air blast is found not in order, the tying-in shall be discontinued until the water blast is repaired.

(2) A person other than a blastman shall not extract or attempt to extract tamping or explosives from a hole which has once been charged.

(3) A blastman may extract tamping or explosives from a hole which has once been charged if the blastman uses water under adequate pressure or water and compressed air under adequate pressure applied through a pipe of a design and material approved by the Inspector.

(4) Where water and compressed air which are under adequate pressure are not ordinarily available, a blastman may extract tamping only by means of a wooden or copper scraper, to the extent that allows a misfired hole to be re-fired.

Regulation 192—Safety fuses

(1) The manager of a mine shall in relation to the use of explosives in the mine ensure that a safety fuse which is less than one metre in length and which has a rate of burning of less than eighty seconds or more than hundred seconds for each hundred metres, is not used in the mine without the consent of the Chief Inspector.

(2) The manager of a mine shall in relation to the use of explosives in the mine

(a) ascertain the rate of burning of the fuses; and

(b) ensure that the rate of burning of the fuses as ascertained are made known to persons who are required to use the fuses.

Regulation 193—Blasting precautions underground

A manager shall, in relation to explosions for which that manager is responsible, ensure that

(a) the minimum safety distance between a blast and mine personnel is two hundred metres

(b) before firing, personnel in the blast area withdraw to a safe area which is at such a distance from the blast site that

(i) it will not be affected by fly rock, vibration or air overpressure;

(ii) blasting fumes and dust from the blast site will not reach that safe area

(c) areas of the mine which are likely to be contaminated by blasting fumes are cleared of personnel before blasting;

(d) only explosives which are suitable for underground blasting in accordance with regulation 186 are used;

(e) blasting is carried out at the end of the shift, except for blasts where less than five kilogrammes of explosives are used; and

(f) where blasting operations are close to neighbouring workings, a warning is given if the distance is less than two hundred metres and if the distance is less than fifty metres, work places in the neighbouring working are evacuated before any blast.

Regulation 194—Initiation of blast underground

A blastman shall in relation to an explosion for which that blastman is responsible

- (a) ensure that a blast is only initiated after persons in the blast area have been evacuated to a safe area and measures have been adopted to prevent the entry of persons into the blast area;
- (b) ensure that before firing, due warning is given in every direction;
- (c) ensure that immediately after initiation of the blast the water blast is started; and
- (d) where electric or electronic detonators are used, disconnect the cables from the exploder after firing;

Regulation 195—Re-entry period

A blastman shall not, in relation to a blast for which that blastman is responsible permit a person to enter the blasted site before thirty minutes have elapsed and until the blastman has examined the site and made it securely safe.

Regulation 196—Examination of blast site after blasting

A blastman shall, in relation to a blast for which that blastman is responsible

- (a) carefully examine the blast site for misfires; and
- (b) not allow any person to enter the working area, until the fumes caused by the explosion have been sufficiently dissipated.

Regulation 197—Misfires

A blastman shall, in relation to a blast for which that blastman is responsible ensure that

- (a) a misfired hole containing ANBA or ANFO explosives is thoroughly washed out and the resultant socket plugged; and
- (b) a misfired hole that cannot be washed out, is re-fired.

Monitoring and environmental limits

Regulation 198—Prevention of pollution of the environment

(1) The owner or manager of an explosives factory or mixing plant shall

- (a) take steps to prevent pollution of the environment resulting from any operation carried out in that factory or plant; and
- (b) conduct regular tests, in a manner and at a location that ensure that pollution of the environment above the maximum limits permitted, is not caused by any operation under that owner's or manager's control and report the results of the tests to the Chief Inspector.

(2) The Chief Inspector may by instructions to an owner or a manager, order that owner or manager to cease, within the time specified in the instructions, any operations which cause, or are likely to cause the discharge of gases, fumes, dust or liquid matter at a rate that exceeds that prescribed, and to take the action that the Chief Inspector considers necessary to prevent the charges.

(3) An owner or manager who contravenes subregulation (2) is liable to pay to the Commission a penalty of ten thousand United States dollars and an additional penalty of five thousand each day the contravention continues.

Regulation 199—Limits for vibration and air overpressure

The limits for vibration and air pressure specified in columns three and four apply to the types of blasting specified in column two in relation to the category specified in column one of the following table:

Category	Type of Blasting Operation	Peak component particle velocity (mm/s)	Peak sound pressure level (dBL)
Residential Area	All blasting	2mm/s maximum	117 dBL maximum

Unlawful possession and search

Regulation 200—Unlawful possession and use of explosives

(1) A person shall not possess or remove explosives in or from a mine, quarry or civil blasting site, or transport explosives to or from a mine, quarry or civil blasting site unless that person is the holder of a blasting licence granted under these Regulations and is authorised by the owner, manager or person responsible for the storage, use and transportation of the explosives at the mine, quarry or civil blasting site.

(2) A person who possesses explosives in contravention of these Regulations commits of an offence and is liable on summary conviction to the punishment specified in the Criminal Offences Act, 1960 (Act 29).

Regulation 201—Unlawful manufacture of explosives

A person who

(a) unlawfully manufactures explosives, or possesses substances or materials known to be used to manufacture explosives, or

(b) aids or abets a person in the unlawful manufacture of explosives or the unlawful possession of substances or material known to be used to manufacture explosives,

commits an offence and is liable on summary conviction to a fine of not less than one thousand penalty units and not more than one thousand five hundred penalty units or a term of imprisonment of not more than four years or to both.

Regulation 202—Search of vehicle and person

(1) An officer may, subject to articles 14 and 18 of the constitution stop, search or detain

(a) a vehicle if that officer has good reason to suspect that explosives, or materials used for the manufacture of explosives, are being unlawfully conveyed; or

(b) a person whom that officer suspects of unlawful possession of explosives or to be unlawfully conveying explosives.

(2) For the purposes of this regulation and regulation 203 to 206 "officer" means the Chief Inspector, an inspector appointed under these Regulations, and police officers.

Regulation 203—Search of premises

(1) Subject to regulation 204 and articles 14 and 18 of the Constitution and any other relevant enactment , an officer may

(a) enter a place, or premises where that officer has good reason to suspect that an explosive is being unlawfully kept or manufactured, and

(b) search or cause the place, building or premises to be searched.

(2) A person found in a place, or premises in which an explosive is found during a search under sub-regulation (1) commits an offence and is liable on summary conviction to a fine of not less than one thousand penalty units and not more than one thousand five hundred penalty units or a term of imprisonment of not more than four years or both.

Regulation 204—Disposal of explosives and accessories unlawfully possessed

Where, as a result of a search, an explosive, a substance or a material known to be used for the manufacture of explosives is found and a valid licence is not produced by the person who possesses or owns the explosive, substance or material, the officer concerned

(a) may seize the explosive substance or material, and

(b) shall arrange for it to be kept separately in a licensed magazine until an arrangement is made for their disposal in the manner prescribed.

Regulation 205—Officer to produce identity or authorisation

An officer in the exercise of the powers conferred on that officer under regulation 202 to 204, shall produce that officer's identity or authorisation to a person on the premises or the vehicle which is to be searched and who may wish to confirm the identity or authorisation of that officer.

Regulation 206—Wilful obstruction of an officer

A person who wilfully obstructs or resists an officer in the lawful exercise of a power conferred on that officer by regulation 202 to 204 , commits an offence and is liable on summary conviction

to a fine of not more than five hundred penalty units or imprisonment for a term of not more than two years or both.

Regulation 207—Interpretation

In these Regulations, unless the context otherwise requires

"accessories" mean initiation systems;

"ammonium nitrate" means the ammonium salt of nitric acid represented by the formula NH_4NO_3 and containing less than ten percent inert material as diluents;

"ANFO" means a blasting agent classified as UN division 1.5D, substance which does not contain essential ingredients other than prilled ammonium nitrate and fuel oil;

"approval" means written approval of the Chief Inspector;

"approved" means approved in writing by the Chief Inspector;

"blast area" means the area of a blast within the influence of flying rock missiles, gases and concussions;

"blast site" means the area where explosive material is handled during loading of a blast hole, including twenty metres in all directions from the perimeter formed by a loaded hole as applicable and along the full depth of the blast hole;

"blasting agent" means a material or mixture of materials which

(a) is not an explosive;

(b) is composed of ingredients none of which is classified as an explosive;

(c) consists of a fuel and oxidizer, intended for blasting; and

(d) the finished product of which as mixed and packaged for use or shipment, cannot be detonated by means of a No. 8 test blasting cap when unconfined;

"blastman" means a person who holds a valid certificate of competency for blasting, issued in accordance with these Regulations or under the repealed Regulations;

"booster" means an article which consists of a charge of detonating explosive without means of initiation and which is used to increase the initiating power of a detonator or a detonating cord;

"bootleg" means the part of a drilled blast hole that remains when the force of the explosion does not break the rock completely to the bottom of the hole;

"capped fuse" means a safety fuse with an attached detonator;

"Chief Inspector" means the Chief Inspector of Mines or the person appointed as Chief Inspector of Explosives by the Chief Inspector of Mines;

"Commercial explosives" mean explosives which are intended to be used in commercial or industrial operations;

"competent person" means a person who in relation to a duty or function has had adequate training and experience that enable that person to perform that duty or function without avoidable danger to that person or other persons;

"danger area" means the area inside the fence surrounding an explosives manufacturing plant or explosives magazine, together with the related storage area and building, as approved by the Chief Inspector as a danger area;

"danger building" means a building within a danger area, where explosives are manufactured, mixed, or stored;

"deflagration" means an explosive reaction in the form of a rapid combustion that moves through an explosive material at a velocity less than the speed of sound in the material;

"detonation" means an explosive reaction that moves through an explosive material at a velocity greater than the speed of sound in the material;

"detonating cord" means a flexible cord containing a centre core of high explosive which can be used to initiate detonations;

"detonator" includes electric blasting caps of instantaneous and delay types, electronic detonators, blasting caps for use with safety fuse, detonating cord delay connectors, and non electric instantaneous and delay blasting caps which use detonating cords, shock tubes, or any other replacement for electric leg wires, and any other device which contains an initiating or primary explosive that is used for initiating detonation in another explosive material and that excludes ignition or delay charges which may not contain more than 10 grams of total explosives by weight;

"electronic detonator" means detonator where the delay timing is provided by electronic circuitry within the detonator and initiated by way of digital signals provided by specialized firing equipment and which may be programmed by a specialized computer or programming device;

"emulsion explosives" means an explosive material containing substantial amounts of oxidizer dissolved in water droplets, surrounded by an immiscible fuel, or droplets of an immiscible fuel surrounded by water containing substantial amounts of oxidizer;

"explosive" includes dynamite, black powder, pellet powders, initiating explosives, blasting caps, safety fuse, fuse lighters, fuse igniters, squibs, cordeau detonant fuse, instantaneous fuse, igniter cords and igniters and any other chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, which involves substantially instantaneous release of gas and heat, unless that compound, mixture, or device is otherwise specifically classified by the "United Nations Recommendations on the Transport of Dangerous Goods, Part 2, chapter 2.1 classification of explosives";

"explosives business" means any commercial activity where explosives and precursor substances for mining or civil works are imported, exported, manufactured, mixed, transported, bought, sold, stored, consumed or destroyed;

"explosives container load" means the maximum permitted quantity of explosives which may be transported in an approved container by either rail or road transport;

"explosives manager" means a responsible person certified to supervise the activities of a company regarding explosives;

"fuse" means an article consisting of a core of fine-grained black powder surrounded by a flexible woven fabric with one or more protective outer coverings, which when ignited, burns at a predetermined rate without any external explosive effect;

"hang up" means a blockage by rock or other material of an ore or a waste pass, chute, or draw point;

"hole" means a hole made in any rock, material or substance, whether natural or man made, intended to contain explosives for the purpose of blasting;

"ICAO" means the International Civil Aviation Organisation established in terms of the Convention on International Civil Aviation, signed at Chicago on 7 December 1944;

"ICAO Instructions" means the Technical Instructions for the Safe Transport of Dangerous Goods by Air as adopted and published by the Council of ICAO which are based on the requirements of Annexure 18 to the Convention on International Civil Aviation (Chicago, 1944);

"IMDG Code" means the International Maritime Dangerous Goods Code as published by the International Maritime Organization;

"IMO" means the International Maritime Organisation established at the United Nations Convention in Geneva on 17 March 1948;

"Inspector" means Inspector of Explosives, or an Inspector of Mines;

"Inspectorate Division" means the Inspectorate Division of the Minerals Commission, established by section 102 of Act 703;

"licence" means a formal authority to conduct mineral exploration or exploitation;

"magazine" means a building or structure authorised, sanctioned, or licensed under these Regulations solely for the storage of explosives;

"manager" means a person in charge or in control of or responsible for a mine, quarry or civil works in which explosives are used, explosives factory, explosives transport, or who is a dealer or broker of an explosives business;

"manufacture" means to produce explosives through a physical or chemical process from a number of precursor substances;

"mass explosion" means an explosion which affects almost the entire load or quantity of explosives virtually instantaneously;

"Minister" means the Minister responsible for the mining and minerals sector;

"misfired charge" means a charge or a part of a charge of explosives which, after initiation procedures, fails to explode,

"misfired hole" means a hole in which the explosives or a portion of the explosives contained in that hole fail to explode;

"MMU" means mobile mixing unit, which is a vehicle designed to transport blasting agents to a blast site and to mix different precursor substances which, when filled into a borehole, become an explosive;

"NEQ" means net explosive quantity and is the mass of explosive material contained in an explosive;

"non-detonable explosive" means an explosive that needs extreme conditions to detonate;

"non-sensitised explosive" means an explosive or explosive substance that needs to be sensitised by the addition of a gassing agent, chemical sensitizers, gas bubbles, organic fuel or micro balloons before it can detonate;

"oxidiser or oxidising material" includes a nitrate or any other substance containing oxygen, that readily yields oxygen or other oxidizing substances to promote the combustion of organic matter or other fuel;

"owner" means the person or company that owns an explosives facility or explosives transportation business;

"permit" means a formal authority to conduct a specified activity;

"pre-charged area" means an area where blasting operations are being conducted or in which pre-charged holes or "sleeping holes" are located;

"pre-charged hole" means a hole charged with explosives which is not to be detonated during the shift in which it is charged;

"precursor substance" means a commercially manufactured, pre-packaged chemical, including an oxidizer, flammable liquid or solid, or similar ingredient, which is not classified as Class 1 materials but which when mixed or combined with another chemical, forms an explosive;

"primary blasting" means the act of detonating explosives in holes charged with explosives for the purpose of fragmenting virgin ground;

"primer" means a unit, package or cartridge of explosives used to detonate other explosives or blasting agents, and which contains a detonator or detonating cord to which is attached a detonator designed to ignite the detonating cord;

"rail truck load" means the maximum permitted quantity of explosives which may be transported in an approved rail truck;

"re entry period" means the period of time specified by the manager of a mine or of works and approved by an Inspector during which a person is not allowed to enter a place or area after a primary or secondary blast in that place or area;

"safety fuse" means a flexible cord containing solid flammable material by which fire or flame is conveyed at a continuous and uniform rate from the point of ignition to a cut end to which a fuse detonator is usually attached;

"secondary blasting" includes any blast other than a primary blast that fragments large rocks, the blasting of hang ups, sockets, or hitches and the relating of misfired holes and any blasting required to make a place or an area safe;

"semi-conductive hose" means a hose of not more than two megohms resistance over its entire length and of not less 15,000 ohms per metre with an electrical resistance high enough to limit flow of stray electric currents to safe levels and yet not so high as to prevent drainage of static electric charges to ground;

"sensitivity" means a physical characteristic of an explosive material which indicates the ability of that material to be detonated on receiving an external impulse in the nature of an impact, a shock, a flame, friction or other influence which can cause explosive decomposition;

"sleeping shots" means a blast area in which the blastholes have been loaded but which has not been tied up and which is not intended to be initiated during the relevant day or shift;

"sleeping shot" means a blast area in which the blast holes have been loaded but which has not been tied up and which is not intended to be initiated during the relevant day or shift.;

"socket" means bootleg, a hole or part of a hole which remains charged with explosives and which if detonated is known as a misfired hole;

"special industrial explosives materials" mean shaped materials and sheet forms and various other extrusions, pellets, and packages of high explosives, in the nature of dynamite, trinitrotoluene (TNT), pentaerythritol tetranitrate (PETN), hexahydro-1,3,5-trinitro-s-triazine (RDX), and other similar compounds used for high-energy-rate forming, expanding, and shaping in metal fabrication, and for dismemberment and quick reduction of scrap metal;

"shotfirer" means blasting licence holder;

"supervise" means to watch and direct affairs;

"United Nations Serial Number" means one of the four-digit numbers devised by the United Nations to an explosive article or explosive substance as a means of identification;

"UN Class 1 explosives" means the following subdivisions of division 1 and the compatibility groups:

(a) division 1.1 which comprise substances and articles which have a mass explosion hazard, which affects almost the entire load virtually instantaneously;

(b) division 1.2 which comprises substances and articles which have a projection hazard but not a mass explosion hazard;

(c) division 1.3 which comprises substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard and substances and articles

- (i) which give rise to considerable radiant heat; or
- (ii) which burn one after another, producing minor blast or projection effects or both;
- (d) division 1.4 which comprises substances and articles which present no significant hazard, in the event of ignition or initiation during transport and which in the event of an explosion of the substance or article have effects which are largely confined to the package with no projection of fragments of appreciable size or range and in relation to which an external fire cannot cause virtually instantaneous explosion of almost the entire contents of the package;
- (e) division 1.5 which comprises very insensitive substances which have a mass explosion hazard, but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions;
- (f) division 1.6 which comprises extremely insensitive articles which do not have a mass explosion hazard and which contain only extremely insensitive detonating substances and demonstrate a negligible probability of accidental initiation or propagation;
- (g) Compatibility group A comprises primary explosive substance;
- (h) Compatibility group B comprises articles which contain a primary explosive substance but do not contain two or more effective protective features and include detonators for blasting, detonator assemblies for blasting and primers, cap-type even though these do not contain primary explosives;
- (i) Compatibility group D comprises secondary detonating explosive substances or black powder or articles containing a secondary detonating explosive substance, in each case without means of initiation and without a propelling charge, or articles containing a primary explosive substance and containing two or more effective protective features;
- (j) Compatibility group S comprises substance or article so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prohibit fire fighting or other emergency response efforts in the immediate vicinity of the package;

"UN Code" means the fourteenth revised edition of the Recommendations on the Transport of Dangerous Goods, prepared by the United Nations Committee of Experts on the Transport of Dangerous Goods published in New York in 2004, or a later edition in substitution for and not an alternative to the fourteenth revised edition;

"UN Manual of Tests and Criteria" means the fourth revised edition of the UN Manual of Tests and Criteria or a later edition in substitution for and not an alternative to the fourth revised edition;

"water gels or slurry explosives" mean materials used for blasting which contain substantial proportions of water and high proportions of ammonium nitrate, some of which are in solution in the water and which material may be sensitized by another material classed as an explosive, in the form of TNT or smokeless powder, or contain no ingredient classified as an explosive but is sensitized with metals or with other fuels.

Regulation 208—Revocation and savings

(1) The Explosives Regulations, 1970 (LI 666) are hereby revoked.

(2) Despite the revocation in subregulation (1), any certificate, licence, permit or authorisation issued under the revoked enactment and which was in force immediately before the commencement of these Regulations shall continue to be in force until it expires or is revoked under these Regulations.

SCHEDULES

FIRST SCHEDULE

Fees

1. Explosives / Detonators Storage Licence (Users) (GH¢1,000.00) per Magazine
2. Explosives / Detonators Storage Licence (Dealers and Manufactures) (GH¢5,000.00) per Magazine
3. Permit to Purchase Explosives etc. (Form L) (GH¢2,000.00) per year
4. Permit to sell or otherwise dispose of Explosives (Form M) (GH¢500.00) per Transaction
5. Blasting / Handling Certificate of Competency Examination (GH¢500.00) per Candidate
6. Explosives Manager's Certificate of Competency Examination (GH¢2,000.00) per Candidate
7. Pre-licencing Inspection GH¢500.00 per Application
8. Explosives Manufacture Operating Permit GH¢5,000.00
9. Explosives Transport Operating Permit GH¢5,000.00
10. Mining Services Operating Permit GH¢5,000.00
11. Licence as Explosives Vehicle GH¢500.00 per vehicle per year
12. Application Forms GH¢50.00 each

SECOND SCHEDULE

FORMS

Minerals and Mining (Explosives) Regulations, 2012 (L.I. 2177)

FORM A

Regulation 14(2)

Certificate Number:

CERTIFICATE OF ANNUAL INSPECTION OF EXPLOSIVES FACILITY

Section 1: Specialist's data

Date of

Inspection:.....

Name of Specialist Title
Postal Address P.O. Box Town Region
Mobile Phone # Facsimile # Email Address

Section 2: Inspector's data

Name of Inspector Title
Postal Address
Mobile Phone # P.O. Box Town Region
Facsimile # Email Address

Section 3: Company's data

Name of Company
Office
Location
Postal Address
P.O. Box
Facsimile #
City /Town/Village Email Address
Region Website
Fixed Phone Line # Mobile Phone Line #

Section 4: Particulars of Holder's Explosives Facility

Type of Facility
Location Plan Number
Date of Approval Licenced Capacity
Licence Number Date of Expiry

Section 5: Name of Holder's Representative(s) accompanying the Specialist and Inspector on the inspection:

Name Designation

Section 6: Details of the inspection

Section/Facilities inspected Specialist's / Inspector's Remarks

.....
.....

Signature of Specialist

Date

.....

Signature of Inspector

Date

.....

Section 8: Chief Inspector of Mines Remarks:

.....
.....

Chief Inspector of Mines

Date

SECTION 2: DECISION BEING APPEALED AGAINST

SECTION 3: GROUNDS OF APPEAL

SECTION 4: RELIEFS SOUGHT

SECTION 5: NAMES & ADDRESSES OF ALL PERSONS DIRECTLY AFFECTED BY THE APPEAL

.....
.....

Signature

Date

NB: 1. Applicant may attach pleadings on a separate sheet of paper.

2. The notice of appeal must be accompanied with sufficient number of copies for service on all parties directly affected by the appeal.

FORM C

Regulation 21(1)

Certificate Number:

EXPLOSIVES CERTIFICATE OF COMPETENCY FOR EXPLOSIVES MANAGERS

This is to certify that

.....

Of

.....

was examined on.....day of.....20.....and was granted, under regulation 21 of the Minerals and Mining (Explosives) Regulation 2012, (LI 2177), a Certificate of Competency to carry out the duties of Explosives Manager, and that this Certificate shall permit him/her to carry out the duties of Explosives Manager as long as the said.....is employed in Ghana unless this Certificate shall in the meantime have been suspended or withdrawn by an Inspector.

This certificate of competency for underground managers is valid for five (5) years, but subject to periodic renewal.

Usual Signature of Grantee.....

.....

.....

.....

.....] Board of Examiners

.....]

Issued in Accra this..... day of 20.....

.....

(Chief Inspector of Mines)

FORM C1

Regulation 21(10)

Certificate Number: □

EXPLOSIVES CERTIFICATE OF COMPETENCY FOR BLASTMAN: UNDERGROUND OPERATIONS

This is to certify that

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Of

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was examined onday of.....20.....and was granted, under regulation 21 of the Minerals and Mining (Explosives) Regulation 2012, (LI 2177), a Certificate of Competency to carry out the duties of Blastman in Underground Operations, and that this Certificate shall permit him/her to carry out the duties of Blastman in Underground Operations as long as the said is employed in Ghana unless this Certificate shall in the meantime have been suspended or withdrawn by an Inspector.

This certificate of competency for underground managers is valid for five (5) years, but subject to periodic renewal.

Usual Signature of
Grantee.....

.....
.....

.....] Board of
Examiners

.....]

Issued in Accra this day of
.....20.....

.....

(Chief Inspector of Mines)

FORM C2

Regulation 21(10)

Certificate Number: □

EXPLOSIVES CERTIFICATE OF COMPETENCY FOR BLASTMAN: SURFACE OPERATIONS

This is to certify that

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Of

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was examined onday of.....20.....and was granted, under regulation 21 of the Minerals and Mining (Explosives) Regulation 2012, (LI 2177), a Certificate of Competency to carry out the duties of Blastman in Surface Operations, and that this Certificate shall permit him/her to carry out the duties of Blastman in Surface Operations as long as the said is employed in Ghana unless this Certificate shall in the meantime have been suspended or withdrawn by an Inspector.

This certificate of competency for Mine Superintendents is valid for five (5) years, but subject to periodic renewal.

Usual Signature of
Grantee.....

.....
.....

.....] Board of
Examiners

.....]

Issued in Accra this day of
.....20.....

.....

(Chief Inspector of Mines)

FORM C3

Regulation 21(10)

Certificate Number: □

EXPLOSIVES CERTIFICATE OF COMPETENCY FOR EXPLOSIVES HANDLER:
TRANSPORT AND STORAGE

This is to certify that

.....
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Of

.....
.....

was examined onday
of.....20.....and was granted, under regulation
21 of the Minerals and Mining (Explosives) Regulation 2012, (LI 2177), a Certificate of
Competency to carry out the duties of Explosives Handler for storage transportation of explosives,
and that this Certificate shall permit him/her to carry out the duties of Explosives Handler for
storage and transportation of explosives as long as the said is
employed in Ghana unless this Certificate shall in the meantime have been suspended or
withdrawn by an Inspector.

This certificate of competency for Shift Boss is valid for five (5) years, but subject to periodic
renewal.

Usual Signature of
Grantee.....

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.....

.....] Board of
Examiners

.....]

Issued in Accra this day of
.....20.....

.....

(Chief Inspector of Mines)

FORM D

Regulation 21 (11)

APPLICATION FOR EXPLOSIVES CERTIFICATE OF COMPETENCY EXAMINATION

SECTION 1: APPLICANT'S DATA

Name of Company

Postal Address P. O. Box Facsimile #

City / Town / Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: CANDIDATE'S DATA

Name of Candidate Mine Number Job Title Experience in Explosives Activities, yrs
Type of certificate Required

I. Underground

II. Surface

III. Handling* M. O's Report: FIT / NOT FIT

* Handling as defined in Regulation 21 (10) (c)

I....., solemnly and sincerely declare that the above application /information

(Applicant/Representative) submitted is true and correct to the best of my knowledge

.....
.....

Signature

Date

FORM E

Regulation 22(2)

APPLICATION FOR PERMIT TO PURCHASE AND USE EXPLOSIVES

SECTION 1: APPLICANT'S DATA

Name of Company

Postal Address P. O. Box

Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVE DATA

Explosives Required for

Details of Applicant's Agreement:

File Number Registration Number

Date of Commencement Date of Expiry

Site(s) of the Blasting Operation

Name and Address of

Explosives & Detonator Supplier

State the Following Particulars of Applicant's Explosives Magazines

Site Plan Number

Date of Approval Storage Capacity

License Number Date of Expiry

State the Following Particulars of Applicant's Detonators Magazines

Site Plan Number

Date of Approval Storage Capacity

License Number Date of Expiry

Name of Explosives Manager, if different from (1) above:

Name of Explosives

Manager Certificate of

Competency Number

Names of Persons employed to conduct blasting operations:

Name Blasting Certificate Number

I, solemnly and sincerely declare that the above application/information submitted is true and correct to the best of my knowledge.

(Applicant / Representative)

.....
.....

Signature

Date

FORM F

Regulation 23 (3)

APPLICATION FOR PERMISSION TO CONSTRUCT AN EXPLOSIVES MAGAZINE

SECTION 1: APPLICANT'S DATA

Name of Company

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address
Region Website
Fixed Phone Line # Mobile Phone Line #

SECTION 2: MAGAZINE'S DATA

Name of Manager, if different from (1) above:

Name of Explosives

Manager Certificate of

Competency Number

Explosives required for

Details of Applicant's Mineral Rights Agreement:

File Number Registration Number

Date of Commencement Date of Expiry

Details of Applicant's Explosives Operating Licence:

Licence Number Date of Expiry

Particulars of Applicant's Proposed Explosives Magazines:

Proposed Site Proposed Construction Material

Dimension of Building

(L x W x H x) Storage Capacity Required

Details of Structures and Facilities in the vicinity and their respective distances to the magazine:

Structures and Facilities in the Vicinity Distance to Magazine

Particulars of Applicant's Proposed Detonators Magazines:

Proposed Site Proposed Construction Material

Dimension of Building

(L x W x H) Storage Capacity Required

Details of Structures and Facilities in the vicinity and their respective distances to the magazine

Structures and Facilities in the Vicinity Distance to Magazine

Names of Persons Employed to be in-charge of the Magazines:

Name Certificate of Competency Number

SECTION 3: DOCUMENTS SUBMITTED BY APPLICANT

Four (4) copies of Site Plan of the Proposed Magazine drawn according to Regulation 145 (a & b)

Sections showing details of the walls, roof, ceiling, doors, ventilation openings Three (3) copies of Plan Elevations showing designs and specifications of the Magazines, according to Regulations 145 (c) and 152, Front and side of the building showing mounds, roof and height of lightening conductor, drainage, fence, security post, location of fire fighting arrangements etc.

I, solemnly and sincerely declare that the above application/information submitted is true and correct to the best of my knowledge.

(Applicant / Representative)

.....
.....

Signature

Date

FORM G

Regulation 24(3) (a)

APPLICATION FOR PERMIT TO SELL, DEAL WITH OR BROKER EXPLOSIVES

SECTION 1: APPLICANT'S DATA

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVES AND DETONATORS DATA

Explosives Required for

Details of Applicant's Agreement:

File Number Registration Number

Date of Commencement Date of Expiry

Types of Explosives and Detonators Proposed to Sell, Deal in or Broker:

Name and Address of Explosives & Detonators Supplier (s):

Particulars of the Vehicle to be used for Conveyance:

Type of Vehicle Number	Vehicle Registration Number	Capacity	Explosives	Permit
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Particulars of Applicant's Explosives Magazines:

Site Plan Number

Date of Approval Storage Capacity

Licence Number Date of Expiry

Particulars of Applicant's Detonators Magazines:

Site Plan Number

Date of Approval Storage Capacity

Licence Number Date of Expiry

Name of Manager, if different from (1) above: Certificate of Competency Number

Name of Manager

Name of Persons employed to handle explosives:

Name Explosives Certificate Number

I, solemnly and sincerely declare that the above application /information submitted is true and correct to the best of my knowledge

(Applicant/Representative)

.....
.....

Signature

Date

FORM H

Regulation 24(4)

MONTHLY RETURNS OF HOLDER OF PERMIT TO SELL, DEAL IN OR BROKER
EXPLOSIVES

SECTION 1: HOLDER'S DATA

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVES AND DETONATORS DATA

Month of Returns Year

Types of Explosives Stock at Beginning of Month (Unit) Receipts During Month (Unit)
 Transfers During Month (Unit) Cumulative Transfers for year (Unit) Stock at the
End of Month (Unit)

Details of Receipts During Month:

Date Name and Address of Person from Whom Received Type of Explosives Quantity
Received (Unit)

Details of Transfers During Month:

Date	Name and Address of Person from Whom Transferred or Sold Quantity Sold (Unit)	Type of Explosives
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I, solemnly and sincerely declare that the above application/information submitted is true and correct to the best of my knowledge.

(Manager)

.....
.....

Signature

Date

NB: This Monthly Returns Form must reach the Chief Inspector of Mines not later than the 15th day of the Month immediately following the period to which the returns relates.

FORM I

Regulation 25(2) (a)

MONTHLY EXPLOSIVES IMPORTED/EXPORTED RETURNS FORM

SECTION 1: HOLDER'S DATA

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVES AND DETONATORS DATA

Month of Returns Year

Types of Explosives Stock at Beginning of Month (Unit) Exports During Month (Unit)
Exports During Month (Unit) Cumulative Transfers for year (Unit) Cumulative Transfers
for year (Unit) Stock at the End of Month (Unit)

Details of Receipts During Month:

Date Name and Address of Person from Whom Imported Type of Explosives Quantity
Received (Unit)

Details of Transfers During Month:

Date Name and Address of Person to Whom Exported Type of Explosives Quantity Sold
(Unit)

I, solemnly and sincerely declare that the above application/information submitted is true and correct to the best of my knowledge.

(Manager)

.....
.....

Signature

Date

NB: This Monthly Returns Form must reach the Chief Inspector of Mines not later than the 15th day of the Month immediately following the period to which the returns relates.

FORM J

Regulation 26 (4) (a)

APPLICATION FOR OPERATING LICENCE TO MANUFACTURE EXPLOSIVES

SECTION 1: APPLICANT'S DATA

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVES MANUFACTURING DATA

Purpose for the Manufacture of Explosives:

Details of applicant's Explosive Factory:

File Number Registration Number

Site Plan Number

Date of approval Date of Expiry

Particulars of Applicant's Explosives Magazines:

(Applicant may provide additional information on a separate sheet as an attachment)

Site Plan Number

Date of Approval Storage Capacity

Licence Number Date of Expiry

Particulars of Applicant's Detonators Magazines:

(Applicant may provide additional information on a separate sheet as an attachment)

Site Plan Number

Date of Approval Storage Capacity

Licence Number Date of Expiry

Name of Manager, if Different from (1) above:

Name of Manager Certificate of Competency Number

Names of Persons Employed to Supervise Operations in the Factory:

Name Certificate of Competency Number

I, solemnly and sincerely declare that the above application/information submitted is true and correct to the best of my knowledge.

(Applicant / Representative)

.....
.....

Signature

Date

NB: An Acceptable Operating Plan in accordance with Regulations 8, 9 & 10 of the Minerals and Mining (Explosives) Regulation 2012, L.I. 2177 must be attached to the application.

FORM K

Regulation 27(3) (a)

APPLICATION FOR OPERATING PERMIT TO TRANSPORT EXPLOSIVES

SECTION 1: APPLICANT'S DATA

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVES AND TRANSPORTATION DATA

Details of Applicant's Agreement:

File Number Registration Number

Date of Commencement Date of Expiry

Types of Explosives Proposed to be

Transported File Number File number

Explosives to be transported: (Applicant may provide additional information on a separate sheet as an attachment)

Particulars of Proposed Clients/Explosive Agent(s):

Name of Client / Agent Address Contact Number Location Address

Particulars of the Vehicle(s) to be used for Conveyance:

Type of Vehicle	Vehicle Registration Number	Capacity	Explosive Permit Number
-----------------	-----------------------------	----------	-------------------------

Name of Manager, if different from (I) above:

Name of Manager	Certificate of Competency Number
-----------------	----------------------------------

Names of Persons employed to handle/transport explosives:

Name	Explosives Certificate Number
------	-------------------------------

I, solemnly and sincerely declare that the above application/information submitted is true and correct to the best of my knowledge.

(Applicant / Representative)

.....
.....
Signature

Date

FORM L

Regulation 28(3) (a)

APPLICATION FOR OPERATING PERMIT AS A BLASTING FIRM

SECTION 1: APPLICANT'S DATA

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: BLASTING DATA

Explosive Required for

Details of Applicant's Agreement:

File Number Registration Number

Date of Commencement Date of Expiry

Name and Address of Explosives & Detonators Supplier(s):

Name of Explosive Manager, if different from (1) above:

Name of Explosives Manager Certificate of Competency Number

Names of Persons employed to conduct blasting operations:

Name Blasting Certificate Number

Details of Companies/Clients to whom services will be provided:

Name of Company/Client	Address	Site(s) of the Blasting Operations
------------------------	---------	------------------------------------

I, solemnly and sincerely declare that the above application/information submitted is true and correct to the best of my knowledge.

(Applicant / Representative)

.....
.....

Signature
Date

FORM M

Regulation 30(1)

Permit Number

PERMIT TO ACQUIRE SPECIFIC TYPE AND AMOUNT OF EXPLOSIVES

Permit is hereby granted to

.....
.....

Of

.....
.....

to purchase explosives as defined by the Minerals and Mining (Explosives) Regulations, 2012 (L.I. 2177) subject to the acquisition of explosives made under regulation 30 (1).

Explosives required for

Name and Address of Explosives & Detonators Supplier (s):

Explosives to be transported from Explosives to be transported to

Types and Quantities of Explosives to be acquired:

Types Quantities (Unit)

Conditions of this Permit:

1. This Permit is Valid until..... day of
.....20.....

2. This Permit is NOT TRANSFERABLE.

3. A copy of this permit should be served on:

*The Officer-In-Charge, Arms & Ammunitions, Ghana Police Service of
.....

(District).

*The Explosives Manager of
.....

.....(Applicant)

* The Assistant chief Inspector of Mines, Inspectorate Division of
.....

(District Office).

Dated in Accra this.....day of
.....20.....

Fees Paid (Amount in
Words):.....

Fee Paid: GHS..... Receipt
No:.....

.....
(Chief Inspector of Mines)

FORM N

Regulation 31(1)

Permit Number:

PERMIT FOR SALE OR DISPOSAL OF SPECIFIC TYPE AND AMOUNT OF EXPLOSIVES

Permit is hereby granted to

.....
.....

Of

.....
.....

to sell or dispose of explosives as defined by the Minerals and Mining (Explosives) Regulations,
2012 (L.I. 2177) subject to the acquisition of explosives made under regulation 30 (1).

Location of the Magazine

Magazine Licence Number

Date of Approval of the Magazine Licence

Name and Address of Person to whom explosives are to be sold:

Types of Explosives and Quantities to be sold or disposed:

Types Quantities (Unit)

Conditions of this Permit:

3. This Permit is Valid until.....day
of.....20.....

4. This Permit is NOT TRANSFERABLE.

5. A copy of this permit should be served on:

*The Officer-In-Charge, Arms & Ammunitions, Ghana Police Service
of.....

(District).

*The Explosives Manager
of.....

.....(Applicant)

*The Assistant chief Inspector of Mines, Inspectorate Division
of.....

(District Office).

Dated in Accra this.....day
of.....20.....

Fees Paid (Amount in Words):

Fees Paid: GHS

Receipt No:

.....

(Chief Inspector of Mines)

FORM O

Regulation 32(2)

Permit Number:

PERMIT FOR STORAGE OF EXPLOSIVES IN A MAGAZINE

Permit is hereby granted to

.....
.....

Of

.....
.....

to store explosives as defined by the Minerals and Mining (Explosives) Regulations, 2012 (L.I. 2177) subject to the acquisition of explosives made under regulation 30 (1).

Location of the Magazine

Magazine Licence Number

Date of Approval of the Magazine Licence

Name of Manager in-Charge of the Explosives
Competency Number

Manager's Explosives Certificate of

Storage Capacity NOT TO EXCEED (Unit)

Conditions of this Permit:

6. this Permit is Valid until.....day of
.....20.....

7. This Permit is NOT TRANSFERABLE.

8. Acopy of this permit should be served on:

* The Officer-In-Charge, Arms & Ammunitions, Ghana Police Service
of.....

(District).

* The Explosives Manager
of.....

.....(Applicant)

*The Assistant chief Inspector of Mines, Inspectorate Division
of.....

(District Office).

Dated in Accra thisday of
.....20.....

Fees Paid (Amount in
Words):.....
.....

Fee Paid: GHS.....
Receipt No:.....
.....

(Chief Inspector of Mines)

NB: A copy of this Permit shall be posted insie[sic] the Magazine.

FORM P

Regulation 33(1)

Permit Number:

PERMIT FOR TRANSPORTATION OF EXPLOSIVES IN A MAGAZINE

Permit is hereby granted to

.....
.....

of

.....
.....

to transport exlosives as defined by the Minerals and Mining (Explosives) Regulations, 2012 (L.I. 2177) subject to the acquisition of explosives made under regulation 30 (1).

Types(s) of Explosives

Amount of Explosives to be Conveyed at any one time (Unit) Transported Capacity
NOT TO EXCEED (Unit)

Conditions of this Permit:

7. This Permit is Valid untilday of
.....20.....

8. High Explosives and Detonators SHALL NOT be transported in the SAME CONVEYANCE

9. This Permit is NOT TRANSFERABLE.

Dated _____ in _____ Accra
this.....day of
.....20.....

Fees Paid (Amount in
Words):.....
.....

Fee Paid: GHS..... Receipt
No.....

.....

(Chief Inspector of Mines)

FORM Q

Regulation 47(1)

Permit Number:

MONTHLY EXPLOSIVES RETURNS OF A HOLDER OF A LICENCE TO USE
EXPLOSIVES

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVES AND DETONATORS DATA

Month of Returns Year

Types of Explosives Stock at beginning of Month (Unit) Receipts during month (Unit)
Quantity used during Month (Unit) Cumulative used for the Year (Unit) Stock at the
end of Month (Unit)

Details of Receipts During Month:

Date	Name and Address of Person from whom Received	Type of Explosives	Quantity Received (Unit)
------	---	--------------------	--------------------------

I, solemnly and sincerely declare that the above information submitted is true and correct to the best of my knowledge.

(Applicant/Representative)

.....
.....

Signature

Date

NB: This Monthly Return Form must reach the Chief Inspector of Mines not later than the 15th day of the Month immediately following the period to which the returns relates.

FORM R

Regulation 47(3)

Permit Number:

MONTHLY EXPLOSIVES RETURNS OF A HOLDER OF A LICENCE TO SELL, DEAL WITH OR ACT AS BROKER OF EXPLOSIVES

Name of Company

Office Location

Postal Address P. O. Box Facsimile #

City/Town/Village Email Address

Region Website

Fixed Phone Line # Mobile Phone Line #

SECTION 2: EXPLOSIVES AND DETONATORS DATA

Month of Returns Year

Types of Explosives Stock at beginning of Month (Unit) Receipts during Month (Unit)
Sales/Transactions during Month (Unit) Cumulative Sales / Transactions for the Year
(Unit) Stock at the end of Month (Unit)

Details of Receipts During Month:

Date Name and Address of Person from whom Received Type of Explosives Quantity
Received (Unit)

Details of Sales/Transactions during Month:

Date Name and Address of Person from Whom sold/Transferred Type of Explosives
Quantity Sold (Unit)

I....., solemnly and sincerely declare that the above information submitted is true and correct to the best of my knowledge.

(Manager / Representative)

.....
.....

Signature

Date

NB: This Monthly Return Form must reach the Chief Inspector of Mines not later than the 15th day of the Month immediately following the period to which the returns relates.

THIRD SCHEDULE

Table of Distances

NEQ Stored (Q) kg To Public roads To dwelling Houses To vulnerable facilities,
Schools, Church To other Explosives Storage To process building To ammonium nitrate
storage

	Mounded		Mounded		Mounded		Unmounded		Both mounded	
	Mounded	Mounded	Mounded	Mounded						
50	60	80	180	18	9	30	18	7		
100	70	100	210	23	12	38	23	9		
200	90	130	260	29	15	47	29	11		
300	100	150	300	33	17	54	33	13		
400	110	160	330	36	18	59	36	14		

500	120	170	360	39	20	64	39	15	
1000	150	220	450	48	24	80	53	18	
1500	170	250	510	55	28	92	66	22	
2000	190	280	560	61	31	105	78	23	
2500	200	300	610	66	33	110	90	25	
3000	220	320	650	70	35	120	105	26	
4000	240	350	710	77	39	130	130	29	
5000	255	380	760	83	42	140	140	31	
7500	295	435	870	94	47	155	155	35	
10000	320	480	960	105	52	175	175	39	
15000	370	550	1100	122	61	200	200	45	
20000	405	610	1220	135	66	220	220	45	
25000	435	650	1300	145	71	235	235	53	
30000	460	690	1380	150	75	250	250	56	
40000	510	760	1520	165	83	275	275	62	
50000	550	820	1640	180	89	295	295	67	
75000	625	940	1880	205	103	340	340	77	
100000		690	1040	2080	225	115	375	375	84
120000		730	1100	2200	240	120	395	395	89
140000		770	1160	2320	250	125	420	420	94
160000		810	1220	2440	265	135	435	435	98
180000		840	1260	2520	275	140	455	455	105
200000		870	1300	2600	285	145	470	470	110
250000		940	1400	2800	305	155	510	510	115

MIKE ALLEN HAMMAH M.P.

Minister responsible for Mines

Date of Gazette Notification: 20th March, 2012.

Entry into force: 15th June, 2012.