

**DENR Administrative Order
No. 2000-98**

**SUBJECT : MINE SAFETY AND HEALTH
STANDARDS**

**AUTHORITY FOR THE PROMULGATION OF THIS
STANDARD**

Pursuant Section 8 of Republic Act No. 7942, otherwise known as the “Philippine Mining Act of 1995” and the pertinent provisions of Chapter 15 of DENR Administrative Order No. 96-40, as amended and Book IV Rule II Section 1(c) of the Implementing Rules and Regulations of the Labor Code of the Philippines, as amended, to implement the functions of the Director of Mines & Geosciences with regards to mine safety under Section 3 (c) of Commonwealth Act No. 136, the following health, sanitation and safety standards are hereby promulgated.

OBJECTIVES

This Order is promulgated for the purpose of;

1. To promote a culture of safety and health;
2. To provide for the strict enforcement of safety and health measures;
3. To provide for effective monitoring systems, inspections, investigations and inquiries to improve health and safety;
4. To establish tripartite linkages in promoting safety and health matters;
5. To promote training and human resources development;
6. To comply with the international law obligations of the government relating to mine safety and health.

SCOPE AND COVERAGE

This Order shall govern all employers, employees, contractors, permittees, service contractors and other entities engaged in any exploration, mining, quarrying, mineral processing, other allied or related operations.

TITLE AND DEFINITIONS

TITLE : This Order shall be known and may be cited as the “Mine Safety and Health Standard”.

DEFINITION OF TERMS : As used in, and for the purpose of this Order, the following terms, whether in the singular or plural form, unless the context indicates otherwise shall have the following meaning :

1. “Order” - the Mine Safety and Health Standards;
2. “Bureau” - the Mines and Geosciences Bureau;
3. “Director” - the Director of Mines and Geosciences Bureau;
4. “Accident” - an undesired event in which, the contact, the exposure or the movement of a person to objects, equipment, machineries, substances, conditions or other persons may or may not cause personal injury, damage to property and delay.
5. “Accident Frequency Rate” - the total fatal and non-fatal lost-time accidents per million manhours worked, and may be expressed in the following formula:

$$\text{Frequency Rate} = \frac{\text{No. of Lost-Time Accident} \times 1,000,000}{\text{Manhours Worked}}$$

6. **“Accident Severity Rate”** - the days lost per million manhours worked and may be expressed in the following formula :

$$\text{Severity Rate} = \frac{\text{No. of Days Lost} \times 1,000,000}{\text{Manhours Worked}}$$

7. **“Authorized Nuclear Device Operators”** - inducted, trained and qualified to use and operate the nuclear device as defined under the code of Philippine Nuclear Research Institute (PNRI) Regulations
8. **“Blaster”** - a person who is a holder of a valid Blaster’s Foreman license issued by the Philippine National Police upon the proper endorsement of the Bureau.
9. **“Blasting Area”** - the area where actual blasting operations will be conducted including the vicinity in which concussions and/or flying material can be reasonably be expected to cause injury or property damage.
10. **“Contractor”** - a perfected mining rights holder.
11. **“Decommissioning”**- a process in which the mine facility is placed in a safe and environmentally acceptable condition prior to cessation of mining operation.
12. **“Detonator”** - device used for detonating an explosive; like ordinary, electric, non-electric blasting caps, exploders, percussion caps, primers, electric detonators.
13. **“Dose Limits”** - amount of exposure to radiation in excess of As Low As Reasonably Achievable (ALARA) or CPR Part 3 limits.
14. **“Dredge”** - any floating vessel used for mining operations consisting of digging, cutting, excavating or raising (whether by mechanical,

hydraulic or pneumatic means) any rock, metal, mineral or mineral substance including sand and gravel from below the surface of a body of water and the purpose of treating or otherwise dealing with any rock and minerals which have been dug, cut, excavated or raised above water.

15. "Electrical Installations" - include but not limited to electrical supply equipment, electrical utilization equipment, electric generating plant, electric supply line and substation.
16. "Electrical Supply Equipment" - any equipment which produces, modifies, regulates controls or safeguards the supply of electric energy.
17. "Employee" - any person hired, permitted or suffered to work by an employer.
18. "Employer" - includes any person or entity acting directly or indirectly in the interest of an employer, in relation to an employee.
19. "Excavation" or "Workings" - any or all parts of an active or inactive mine including shafts, tunnels, drifts, crosscuts and raises.
20. "Explosive" - any chemical compound or mechanical mixture, which by fire, friction, concussions, percussion or detonation, may cause a sudden release of gases having pressure capable of producing destructive effects.
21. "Hot Material" - a material having temperature exceeding 57° C.
22. "Inhabited Building" - A building regularly occupied in whole or in part as a habitation for human beings, or any workplace, church, schoolhouse, railroad station, stores or other structures where people are accustomed to assemble, except any building or

structure occupied in connection with the manufacture, transportation, storage or use of explosives.

23. “Imminent Danger” - a condition or practice that could reasonably be expected to cause death or serious physical injury or damage to property prior to the adoption of appropriate measures to counter the risk.
24. “Leaching” - process of dissolving the valuable minerals from an ore or concentrate feed and extracting the metal(s) of interest into the solution.
25. “Leachants” - chemicals/reagents used in dissolving minerals/metals.
26. “Liquefied Petroleum Gas - the gas liquefied by compression consisting of flammable hydro-carbons, such as propane, butane, obtained as a by product from refining petroleum or from natural gas; used chiefly as domestic fuel; industrial and motor fuel).
27. “Lost-Time Accident” - those that will prevent the injured from reporting to work on the working day following the day of injury and thereafter. Also to be considered as lost-time accident is when the injured person, after reporting to work on the working day following the day of injury, fails to continue his normal work due to complications and accident resulting to permanent injuries or disabilities as listed in Appendix A. Counting of days lost shall start from the time the injured person fails to report for work.
28. “Lost-Time Accident, Fatal” – lost time accident that results in the death of the injured person.
29. “Lost-Time Accident, Non-Fatal” – any injury which does not result in death or permanent total or permanent partial disability but which results in disability from work for a day or more.

30. "Magazine" - any building or structure other than explosive manufacturing building used for the storage of explosives and blasting accessories. There are three (3) types of magazines.
- a. The Permanent Storage Magazine where a large quantity of explosive is kept.
 - b. The Issuing Magazine where a small or moderate quantity of explosive is kept.
 - c. Portable Magazine an approved steel container used to store explosives for a short period of time.
31. "Manager" - the person responsible for the overall direction, control and supervision of the entire operation.
32. "Material Safety Data Sheet (MSDS)" – The Document that describes the identity of a substance which includes among others company product information, composition information on ingredients, hazard identification and control and clean-up procedures in cases of accidental spill.
33. "Mechanical Equipment, Machinery or Process" - steam engines, internal combustion engines, boilers, turbines, crushers, mills, mixers, pumps, compressors, cranes, conveyors, hoists, elevators, pipe lines, line-shifting or the like, but shall not include motor vehicles, street cars, locomotives, steamships, motor ships, airplanes and similar machinery used as means of transportation.
34. "Mechanical Works, Plant" - steam plants, internal combustion engine plants, power plants, pumping plants, refrigerating plants, mill shops, factories, foundries, heat generating plants, chemicals or other prime movers.
35. "Mine" - include all excavations or workings for the purpose of searching for or finding minerals as well as the workings of mineral deposits, whether abandoned or actually being worked on the

surface or underground, together with all buildings, premises, installations, and appliances belonging or appertaining thereto.

36. "Mining Operations" - any mining activity involving exploration, development and utilization.
37. "Non-Lost Time Accident" - those that will not prevent the injured person from reporting to his designated work on the working day following the day of injury and thereafter.
38. "Occupational Health Practitioner" - refers to a physician, nurse, engineer, dentist or chemist and other qualified health professional duly licensed to practice his/her profession in the Philippines and possessing all of the additional qualifications required by the Department of Health.
39. "Part-time Safety Engineer" – shall be allotted at least four (4) hours per week to perform the duties as safety engineer and a holder of a safety engineer's permit issued by the concerned Regional Office.
40. "Plant" - include mineral processing plant, beneficiating plant, foundry shop, cement plant, laboratory, office building and the like.
41. "Primed Cartridge" - an explosive cartridge to which a detonator has been attached.
42. "Producing Mine" - any mine involved in the utilization of mineral deposit/s.
43. "Radiological Safety and Health Officer" – A person authorized by the Philippine Nuclear Research Institute to manage a radiation safety program.
44. "Regional Director" - the Regional Director of any MGB Regional Office.

45. “Service Contractor” - any person or entity that has a contract for a specific job to undertake any services with a mining contractor, permittee or his duly authorized representative.
46. “Service Contract Worker” - any person who works for a service contractor.
47. “Surface Working” - a mine working or excavation other than underground.
48. “Supervisor” - any person to whom the employer has delegated authority and responsibility for the direction and control of workmen.
49. “Trackless Unit” – any vehicle, drill rigs, trackless load, haul dump unit or service unit which is powered by a diesel, compressed or electric motor; used for loading, hauling, grading, drilling or services functions and not mounted on rail.
50. “Traffic Control” - patrol vehicles, traffic lights, signs, barricades, detours, flagmen, or other techniques and device used to regulate movement of vehicles according to prevailing circumstances.
51. “Underground Working” - a mine working or excavation beneath the surface of the ground.
52. “Workshop” - pertains to machines, foundry, electrical, fabrication, repair, carpentry and overhauling shops; motorpool; and other similar shops.

CHAPTER I GENERAL PROVISIONS

SECTION 1 : ACCIDENT AND ILLNESSES

- Rule 1** - A record shall be kept of all occupational accidents and illnesses occurring in a mine in a form prescribed by the Bureau.
- Rule 2** - Whenever an accident occurs in a mine resulting to the death of, or in serious physical injury to one or more persons, the employer or his duly authorized representative shall within twenty-four (24) hours, immediately by the quickest means available, give notice thereof, to the Director, Regional Director, or their duly authorized representative/s. Detailed report shall be submitted to the Director or Regional Director or his duly authorized representative within fifteen (15) days after notice of knowledge by the employer of the accident.
- Rule 3** - When any physical injury results in the death of the person injured, and health threatening occurrences the employer or his duly authorized representative must give notice thereof to the Director, Regional Director or their duly authorized representatives without delay.
- Rule 4** - For the purpose of any injury or inspection related to safety, health and sanitation, the Director or the Regional Director or their duly authorized representative;
- a. Can require the employer during reasonable business hours to produce any document related to the accident.
 - b. Can require the employer to present any of his employees to be investigated or examined to make and sign under oath a declaration made by him in his examination.

- Rule 5** - Monthly employers report of accident or sickness including damage to property shall be submitted within fifteen (15) days after every calendar month to the Regional Director and Director copy furnish the Department of Labor and Employment – Bureau of Working Conditions (DOLE-BWC).
- Rule 6** - Monthly statistical data on Accident shall be accomplished and submitted within the first fifteen (15) days after every calendar month to the Regional Director and Director, copy furnish the Department of Labor and Employment – Bureau of Working Conditions (DOLE-BWC).

SECTION 2: CLASSIFICATION OF MINES AND SERVICE CONTRACTORS

- Rule 7** - For purposes of this Order, Mines or Service Contractors shall be classified as follows:
- a. Class "A" - Those underground and surface mines/service contractor employing a total of not less than one hundred fifty (150) and two hundred fifty (250) employees, respectively.
 - b. Class "B" - Those underground and surface mines/service contractor employing a total of not less than fifty (50) and seventy-five (75) employees, respectively, to not more than one hundred fifty (150) and two hundred fifty (250) employees, respectively.
 - c. Class "C" - Those underground and surface mines/service contractor employing a total of not less than twenty five

(25) employees and not more than fifty (50) employees, respectively, to not more than fifty (50) and seventy-five (75) employees, respectively.

d. Class "D" - Those underground and surface mines/service contractor, employing a total of not more than twenty five (25) and fifty (50) personnel respectively.

Rule 8 - Class "A" mines and service contractors shall have at least one full time Safety Engineer and one full time Safety Inspector: Provided, that those underground and surface mines employing more than one hundred fifty (150) and two hundred fifty (250) employees, respectively, shall have additional safety engineers, safety inspectors and/or deputized safety inspector as required by the Bureau to have all active working places visited at least once every shift.

Rule 9 - Class "B" mines and service contractors shall have at least one (1) full time Safety Engineer and one (1) full time Safety Inspector. Provided, that the same shall have additional safety engineer/inspector as required by the Bureau to have all active workplaces visited at least once every shift.

Rule 10 - Class "C" mines and service contractors shall have at least one (1) part-time Safety Engineer, one (1) full time Safety Inspector and a deputy safety inspector. Provided, that the same shall have additional safety engineer/inspector as required by the Bureau to have all active workplaces visited at least once every shift.

Rule 11 - Class "D" mines and service contractors shall have at least one (1) part time safety engineer and one (1) full time safety inspector.

SECTION 3 : ESTABLISHMENT OF A SAFETY AND HEALTH ORGANIZATION

Rule 12 - Employer shall establish and provide for a safety and health office which is independent from other offices under the direct and immediate control and supervision of the Manager who shall be primarily responsible for the formulation and effective implementation of the company's safety and health program and enforcement of these rules and regulations.

Rule 13 - Safety and Health Office shall be headed by a duly registered Safety Engineer, and for Class "D" mine, its safety unit shall be headed by a part-time Safety Engineer.

Rule 14 - Safety and health practices of every employer shall be monitored and regulated by the Bureau.

SECTION 4 : QUALIFICATION OF SAFETY MEN

Rule 15 - All safety engineers and safety inspectors shall be duly registered with the Regional Office and the corresponding permit shall be issued for this purpose.

Rule 16 - A Safety Engineer must possess the following qualifications:

1. Registration of Safety Engineers

- a. A duly registered and currently licensed mining engineer with at least one (1) year supervisory**

experience in mining operation and/or mine safety work; or

- b. A duly registered and currently licensed engineer, geologist, metallurgist with at least five (5) years experience in mining operation and/or mine safety work.

Provided that the applicant must have undergone 40 hours of occupational safety and health training/seminars sponsored by the Bureau and/or recognized institution.

2. Registration of Temporary Safety Engineers

Applicants who failed to meet the aforementioned qualifications may still apply under this regulation: Provided that they shall possess the following requirements:

- a. Any duly registered and currently licensed Engineer, Geologist, and Chemist with at least two (2) years experience as Safety inspector preferably under the employ of the company.
- b. The applicant must undergo 40 hours of occupational safety and health training/seminars sponsored by the Bureau and/or recognized institution: Provided, that upon issuance of the permit, the applicant shall apply for the conversion of the permit to full pledged safety engineer permit upon meeting the minimum requirement prescribed in (1). Provided, further, that failure of the applicant to convert the said permit within two (2) years shall render the permit cancelled.

Rule 17 - A Safety Inspector must possess the following qualifications:

1. Registration of Safety Inspector

- a. A graduate in any engineering, geology, metallurgy or chemistry course with at least one (1) year experience in safety work or two (2) years experience in mining operation; or**
- b. A college undergraduate in any engineering, geology metallurgy or chemistry course with at least two (2) years experience in safety work or 3 years experience in mining operation; or**
- c. At least a high school graduate with four (4) years experience in safety work or five (5) years experience in mining operation.**

2. Registration of Temporary Safety Inspector

- a. A graduate in any Engineering, Geology or Chemistry course with one (1) year experience in Mining Operation**
- b. A college graduate in any Engineering, Geology or Chemistry Course with at least one (1) year experience in Safety Work or two (2) years experience in mining operation.**
- c. At least high school graduate with two (2) years experience in Safety Work or three (3) years experience in mining operation.**

Those issued with the permit under this regulation shall convert the permit to full pledge safety inspector after meeting the minimum requirements and failure to convert the permit

within two (2) years shall render the permit cancelled.

Rule 18 - Those who have been holding the position of safety engineers or safety inspectors duly registered and approved by the Regional Office during the time of the promulgation of this Order, may be registered as such.

Rule 19 - All safety engineer/inspector permits shall be subject to renewal every three (3) years with the Regional Office.

Rule 20 - Employees with at least ten (10) years experience either in safety work or mining operation may be deputized by the employer as safety men, with the designation of a deputy safety inspector which shall be reported to the Regional Office.

SECTION 5 : DUTIES AND RESPONSIBILITIES

Rule 21 - The Employer shall:

1. Assess all safety and health risks in all its workplaces and deal with them in the following order of priority:
 - a. eliminate the risks;
 - b. control the risks at source;
 - c. minimize the risk by means to include the design of safe work systems, and
 - d. in so far as the risk remains, provide for the use of personal protective equipment at no cost to the employees, having regard to what is reasonable, practicable and feasible and to good practice and the exercise of due diligence.

2. Take every reasonable precaution necessary to ensure the safety and health of the employees while on duty;
3. Make available personal protective equipment (PPE) in accordance with the type of work performed at no cost to the employee;
4. Allow at least one (1) week period for orientation of newly hired employees which shall be in the form of lecture and/or actual observation of the working place where they will be assigned;
5. Provide training of employees in first-aid, mine rescue, fire fighting and other safety and health measures and proper job procedures to increase competence;
6. Be responsible for the adoption and enforcement of a set of safety and health rules and regulations applicable to each particular area and possibly with translation in the dialect understandable to the employees of the mine. A printed copy shall be distributed to every employee including the Bureau;
7. The employer shall constitute a Central Safety and Health Committee (CSHC), which shall include labor, union representatives and representatives from service contractors if any. This committee shall maintain a continuous regular monthly meetings and shall submit the minutes thereof to the Director copy furnished the Regional Director;
8. Provide hospitalization, medical facilities, including the transportation to the hospital and provide full treatment to employees injured and those suffered

from occupational related diseases during the performance of their work (as required by Republic Act No. 3961, the Labor Code as amended and its implementing Rules and Regulations, the Social Security Law and the Philippine Health and Insurance Corporation);

9. Provide all necessary facilities for a safe, sanitary and healthful working condition such as suitable toilets, showers, laundrying, drying of clothes, wash basins and changing facilities which are gender specific;
10. Maintain a fully equipped first-aid station/s at strategic points in the mine;
11. Submit to the Director a Safety and Health Program covering its area of operation fifteen (15) working days before every calendar year in accordance with the guidelines hereto attached;
12. Inform the worker in a comprehensible manner of the hazards associated with their work, health risk involved and relevant technical and organizational measures applied to relevant mining activities or to the plant, machinery and equipment, appliances or structures;
13. Involve the safety engineer in the preparation of risk assessment regarding the design, alteration selection or modification of processes, construction of structures, installations of machinery and equipment;
14. Where reproductive health hazards and risk have been identified, provided training and special technical and organizational measures including the

right to alternative work, where appropriate without any loss of salary, especially during health risk periods such as pregnancy and breast feeding;

15. Provide the opportunity of all employees to undergo the following examination free of charge:

- Pre-employment exam
- Annual periodic exam
- Relation to work medical exam
- Transfer exam
- Separation exam
- Special medical exam

16. Provide regular health surveillance of workers exposed to occupational health hazards;

17. Provide where possible, for re-integration or rehabilitation of workers unable to undertake their normal duties due to occupational injuries.

18. Provide where appropriate self-rescuers and sufficient fire proof and self-contained refuge chambers that are easily identifiable and accessible in the event of an emergency;

19. Prepare an emergency response preparedness program for reasonably foreseeable industrial and natural disasters;

20. Maintain a system of inspection to detect all hazards of operation and report or inform all concerned of any safety hazards that may affect or endanger the latter job and operation;

21. Investigate each and every accident as well as those unsafe and unsanitary conditions with the aim of determining the best remedies to prevent its recurrence;
22. Maintain a continuous and regular safety and health meetings for all employees;
23. Provide bulletin boards to be displayed on conspicuous places accessible to employees for the posting of all notices and information regarding safety and health;
24. Not assign any employee to work alone where he can not be seen, heard or cannot get proper and close supervision; and
25. Be responsible for the compliance of this Order by its employees/service contractor's worker and other persons or entities who are within its premises.

Rule 22 - The Safety Engineer/Safety Inspector/Deputy Safety Inspector shall:

1. Institute and formulate safety and health program for the company in accordance with the guidelines prescribed for this purpose;
2. Formulate emergency response preparedness program for the company in accordance with the guidelines prescribed for this purpose;
3. Maintain a system of inspection to detect all hazards of operation and report or inform (to) all concerned of all safety and health hazards that may endanger the latter's job and operation;

4. Make routine inspection of the mine;
5. Make a daily report of inspection and inform the department heads concern and union/employees' representative on the places inspected as to ventilation, sanitation, unsafe acts/conditions and working procedures;
6. Keep a record of all accidents and safety inspection reports including records and reports of service contractors, copy furnished the union/ employees' representative;
7. Receive oral and written reports of employees about unsafe and unhealthy conditions and recommend to management for remedial measures;
8. Instruct/train employees on accident prevention, first-aid, and sanitation;
9. Initiate the organization of Central Safety and Health Committees as required in this Order, and conduct meetings for the promotion of safety and health;
10. Investigate and report all mine accidents and promulgate ways and means of preventing their recurrence; and
11. Not alter or modify the accident scene as practicable as possible until the Bureau's investigation team has completed the inquiry.

SECTION 6 : RIGHTS OF EMPLOYEES

Rule 23 - Employees shall have the following rights:

- 1. To request and obtain, where there is cause for concern on safety and health grounds, inspections and investigation reports to be conducted by the employer's representative/ concerned government agencies.**
- 2. To know and be informed of workplace hazards that may affect their safety and health.**
- 3. To obtain information, relevant to their safety and health, held by the employer's representatives/ concerned government agencies.**
- 4. To remove themselves from any location at the mine when circumstances arise which appear, with reasonable justification, to pose a imminent danger to their safety and health. Provided that they will report it immediately to their supervisor, safety engineer/inspector or worker's safety representative for evaluation.**
- 5. To demand recognition of their rights in relation to safety and health policies.**
- 6. To participate in the formulation of company safety and health policies.**
- 7. Collectively select safety and health representatives.**

Rule 24 - Employees' representatives shall exercise the following rights: To represent workers of all aspects in safety and health matters including, where applicable, the exercise of the rights provided in Rule 23;

1. To participate in safety and health inspections and investigations to be conducted by the employer and concerned government agencies at the workplace;
2. To monitor and investigate safety and health matters;
3. To have recourse to advisers and independent experts;
4. To consult with the employer/government in a timely fashion on safety and health matters, including policies and standard operating procedures; and
5. To initiate and recommend to employer for training and career opportunities of the workers in relation to safety and health matters.

SECTION 7 : DUTIES OF EMPLOYEES AND EMPLOYEES'REPRESENTATIVES

Rule 25 - The employee/employee's representative shall:

1. Faithfully observe and comply with all rules and regulations, standard operating procedures and notices pertaining to safety and health.
2. Promptly report and warn fellow employees of all unsafe and unhealthy conditions that maybe encountered in the mine;

3. To help management in the preservation and where applicable, implementation of safety and health rules and regulations;
4. Report for duty well-rested, sober free from influences of liquor or drugs or in such conditions as to enable him to use all ordinary precautions to avoid accidents;
5. Not carry intoxicating liquor or prohibited drugs into the working place;
6. Immediately administer first-aid, if qualified, to an injured fellow employee or get in touch with the nearest first-aid station or knowledgeable persons who shall make the necessary steps for the proper treatment of the injured employees;
7. Not commit nuisance nor loiter in any part of the mine before and after the shift; and
8. Not interfere with, remove, displace, damage or destroy any safety and health device or other appliances furnished for protection or interfere with any method or process adopted with the purpose of minimizing hazards.

Rule 26 - The employee's representative shall :

1. Disseminate to employees the results of safety inspections;
2. Assists the employer in the conduct of information dissemination of workplace hazard to employees; and

3. Dutifully attend all regular meetings of the Central Safety and Health Committee and other Safety Committees.

SECTION 8 : CENTRAL SAFETY & HEALTH COMMITTEE

Rule 27 - Every employer shall ensure that a Central Safety and Health Committee is established within one (1) month from the start of the operation.

Rule 28 - The Central Safety and Health Committee shall consist of the following :

For Class A, B and C mines;

Chairman - The highest official of the mine or his authorized representative who occupies a key position in the mine.

Members - Department heads;

- Four (4) workers (union members or employee's representative);
- The company physician/nurse; and
- One (1) representative from each service contractors

Secretary - The safety engineer.

For Class D mines;

Chairman - The highest official or his authorized representative.

- Members** - Supervisors;
- Two (2) workers (union members or employee's representative);
 - The company nurse; and
 - One (1) representative from each service contractors

Secretary - The safety inspector.

Rule 29 - The employer shall be allowed to expand the minimum requirements of the composition of the committee as may be deemed necessary. In case where there is no labor union, the employee's representative shall be elected by majority votes.

Rule 30 - The Central Safety and Health Committee shall:

1. Provide a forum for consultation and cooperation between the employer or manager of the mine, employees and members in initiating, developing and implementing measures designed to ensure the safety and health of employees at the mine.
2. Be well informed of the safety and health standards and to review and recommends to the manager or employer the rules and procedures as regards to the safety and health of the employees.
3. Recommend to the manager or employer the establishment, maintenance and monitoring of programs, measures and procedures relating to the safety and health of employees.
4. Conduct a monthly safety meeting and the minutes of which to be submitted to the manager/employer and the Bureau/Regional Office.

5. Review reports of inspection and accident investigations for proper implementation of mitigating measure.
6. Develop and conduct semi-annual drill and review of the emergency response and preparedness program of the company to test its effectivity to respond to every perceivable hazard that may arise in the mine.
7. Provide necessary support to the Bureau in the enforcement of the safety rules and regulations.

CHAPTER II

SECTION 9 : SAFETY AND HEALTH TRAINING

Rule 31 - Employer shall provide employees who are involved in mining operation with safety and health training which shall be incorporated in its annual safety and health program. The safety and health training program shall include, but not limited, to the following :

- a. New employees having no underground mining experience shall receive no less than twenty-four (24) hours of training if they are to work underground. Such training shall include instruction in the statutory rights of employees and their representatives, use of self rescue device and use of respiratory devices, hazard recognition, escape ways, walk around training, emergency procedures, basic ventilation, basic roof control, electrical hazards, first aid and the safety and health aspect of the tasks to which the employee will be assigned.

- b. New employees having no surface mining experience shall receive no less than twenty-four (24) hours of training if they are to work on the surface. Such training shall include instruction in the statutory rights of employees and their representatives, use of self rescue device where appropriate and use of respiratory devices where appropriate, hazard recognition, emergency procedures, electrical hazards, first aid walk around training and the safety and health aspect specific to the task where the employee will be assigned.
- c. All employees shall receive no less than eight (8) hours of refresher training no less frequency than once each twelve (12) months.
- d. An employee who is reassigned to a new task in which he/she has no previous work experience shall receive training as required under items (a) and (b).

Rule 32 - Upon completion of each training program, the employer shall certify that the employee has received that specified training in each subject topic. A machine copy of the certificate for each employee shall be kept by the employer and shall be made available for inspection at the mine site and a copy thereof shall be given to each employee at the completion of each training.

Rule 33 - Employer who willfully make false certification shall be slapped with the necessary fines.

CHAPTER III

**SECTION 10 : STOPPAGE, RESUMPTION AND
DECOMMISSIONING OF OPERATIONS**

Rule 34 - In cases where mining operation shall be stopped, the manager shall notify the Regional Director in writing, copy furnished the Bureau, as to the following :

- a. the reason for and the planned duration of the stoppage;
- b. whether the closure is total or access to underground and/or open pit workings is to be maintained;
- c. if underground and/or open pit access is to be maintained, details of the arrangement that have been made for the provision of regular services and emergency services to ensure the safety of employees engaged in maintaining the mine;
- d. the measures that have been taken to prevent unauthorized access or entry to the mine; and
- e. the precautions that have been undertaken to protect underground equipment and service installations.

Rule 35 - The manager shall notify the Regional Director, copy furnished the Bureau, on the resumption of mining operation after stoppage which contains ;

- a. adequate information to demonstrate that basic mine services and emergency response capacity have been maintained or restored; and
- b. details of any substantial changes that have been made to the mine or mining operations at the mine.

Rule 36 - Prior to the decommissioning of mining operations, the employer shall notify in writing the Regional Director, copy furnished the Bureau, the following;

- a. precautionary measures to ensure that access to underground workings have been secured to prevent unauthorized entry;
- b. precautions taken to prevent, so far as practicable, any post mining subsidence into underground workings, by backfilling stope voids and by other appropriate measures;
- c. measures taken to ensure that all plant, equipment and structures have been removed or secured and left in a safe condition;
- d. precautions taken to remove or proper disposal of all hazardous and toxic substances in accordance with R. A. 6969.

CHAPTER IV

SECTION 11 : EXPLORATION OPERATIONS

Rule 37 - No employee shall be permitted to work by the employer in all exploration activities unless the employee is properly oriented and provided with the necessary training to enable the employee to manage the risks associated with the hazard of exploration operations.

Rule 38 - Employer shall make accessible to employees in a comprehensible manner a copy of safe working procedural manual involving all aspects of exploration works.

Rule 39 - Employer shall ensure that employees assigned in exploration works are provided with suitable vehicles first

aid kit and appropriate equipment which shall also include communication and emergency equipment.

- Rule 40 - Employer shall provide adequate training of employee in safety procedures whenever a helicopter or fixed winged aircraft is used in exploration work.
- Rule 41 - No employee shall be allowed to work in test pits, trenches and any excavation works in unstable ground or where depth exceeds 1.5 meters without the necessary support or shoring.
- Rule 42 - Employer shall not assign employee to engage in drilling and excavation operations unless the employee is adequately trained and proficient in performing these activities.
- Rule 43 - Explosives, flammable materials, dangerous and hazardous substances shall not be allowed in exploration activities unless such are covered by necessary permits and that the employees are trained to handle such materials.
- Rule 44 - No exploration activities shall be allowed in abandoned workings and mine shafts unless such have been thoroughly inspected and declared safe by safety engineer/safety inspector.
- Rule 45 - Employer shall institute remedial measures whenever disturbance of earth (test pitting, trenching, etc) is undertaken to make the site safe.

CHAPTER V

SECTION 12 : DRILLING

- Rule 46 - Drill operators shall inspect all drilling accessories, tools, hoisting cables, hoses, derricks and platforms and the drilling machine before the start of the drilling operation.**
- Rule 47 - Drill operators shall see to it that the chuck head, water-swivel, drill rod strings and other pertinent connections are properly tightened and cleared of materials before starting to drill.**
- Rule 48 - Drill operators shall give sufficient warning before starting the drill engine and commence drilling.**
- Rule 49 - Only non-rotating cable shall be used for hoisting purposes.**
- Rule 50 - One shall always keep clear from rotating or moving accessories or drill parts.**
- Rule 51 - Drill rigs, floorings and platforms shall be properly anchored.**
- Rule 52 - Railings shall be installed around platforms, otherwise men shall use safety ropes or belts.**
- Rule 53 - One shall not hold the wrench at the gripping tip when tightening or loosening accessories particularly rods or casings.**
- Rule 54 - When transferring drill machine, it shall be prohibited to straddle over the cable nor hold it with bare hands.**
- Rule 55 - When moving drill machine up or down slopes, it shall always be anchored.**

CHAPTER VI UNDERGROUND MINING RULES

SECTION 13 : GENERAL PROVISIONS

- Rule 56 - All underground mines shall have at least two (2) interconnected, properly maintained openings to the surface, except :
- a. Mines that have shafts, raises, or any opening in the process of being connected to the surface.
 - b. Shafts, winzes, raises, drifts, crosscuts, tunnels, inclines, grade, slopes for prospecting and exploration but not for the extractions of mineral under such conditions and with such precautions as the Bureau may require.
- Rule 57 - Routes to exits and fresh air bases through the underground workings shall be established and shall be plainly marked with signs showing the direction to be taken in case of emergency.
- Rule 58 - When first entering a working place, the ground shall be examined for any loose rocks and tested for drummy sound. Loose rocks with drummy sounds shall be barred down or blasted or properly supported before any work is started. The walls and back of such working place shall be tested for loose rocks and drummy ground several times during the shift.
- Rule 59 - An effective auxiliary lighting shall be provided in any place in the underground mine where persons have to assess ground conditions at a distance greater than the effective range of a cap lamp.

- Rule 60 - In areas where there is an identified risk from natural occurring noxious or asphyxiant gases in underground mine, the manager shall ensure the provision of an effective and sufficient ventilation.
- Rule 61 - The manager shall never allow the storage of flammable liquids or materials within fifty (50) meter radius of any main entrance to the underground mine.
- Rule 62 - When employees are working one above the other or in any position where they might be injured by falling rocks or debris of any kind, they shall be required to inform one another to take precautions or give warning before work is started.
- Rule 63 - It shall be prohibited to stay or work under suspended loads.
- Rule 64 - Any equipment to be operated by remote control shall have a written procedures, which includes regular test, standard operating system and a safe procedure of retrieving when immobilized.

SECTION 14 : PROTECTION AGAINST WATER

- Rule 65 - No mine working or opening shall be driven or caused to be driven under rivers, sea or any known accumulation of standing or running water on the surface with less than 25 meters of back or thickness from the true river bed and the roof of the mine working in massive, unbroken or unfractured igneous rocks nor less than 50 meters back or thickness when the roof of the mine working is broken or fractured rocks. The true depth of the riverbed shall be determined at different points. Deviations from the above requirements shall be subject to the approval of the Bureau.

- Rule 66 - A daily inspection shall be conducted of the mine workings located under rivers, sea or any known accumulation of standing or running water on the surface.
- Rule 67 - A detailed survey of the said mine workings shall be made after every blast to ascertain the thickness or back of the said workings with respect to the true river or sea bed.
- Rule 68 - It shall be prohibited to perform work of any kind in mine workings located under the river, sea or any known accumulation of standing or running water on the surface without proper supervision.
- Rule 69 - No mine workings shall be allowed to approach nearer than eight (8) meters to any part of a winze or shaft or any other openings where there is known or suspected dangerous accumulation of water. When advancing towards the suspected or known water pocket, boreholes shall be drilled at least eight (8) meters ahead of a face in a lateral direction across the course of the drive, which shall not exceed two and a half (2.5) meters wide.
- Rule 70 - Where there is danger of a sudden inburst of water, additional safety precautions such as doors, dams, and the like, shall be constructed.
- Rule 71 - When blasting is done on the face of a mine working in the vicinity of another mine working suspected to be filled with water, the doors shall be properly closed.

**SECTION 15 : SUBSIDENCE, LOOSE OR
RUNNING GROUND SUPPORTS**

- Rule 72 - All underground employees shall be instructed to recognize signs of impending ground collapse or subsidence. In such cases, the responsible mine officials shall be notified immediately to determine the course of action to be taken. In cases of imminent collapse, alarm shall be sounded and all personnel withdrawn.**
- Rule 73 - Mining in loose or heavy ground shall be closely supervised and shall follow the accepted standard support methods.**
- Rule 74 - When necessary, all working places and travelways shall be kept properly supported and only standard supports shall be installed in accordance with the generally accepted procedure in the mine.**
- Rule 75 - In mines where ground support is necessary, adequate supply of support material shall be maintained and made available. Loose and scaly ground shall be properly supported.**
- Rule 76 - If for any cause, the necessary support material is not available and the work place presents a hazard, the work at such place shall be stopped, barricaded, and warning signs posted.**
- Rule 77 - In running ground, booms, safety stulls and spillings shall be erected to project ahead from the last set of support.**
- Rule 78 - It shall be prohibited to remove or modify supports which are in place except under instructions and close supervision.**

- Rule 79 -** Fractured and broken roof or back of mine workings shall be provided with closely installed laggings of at least five (5) centimeters thick and shall be tightly blocked.
- Rule 80 -** In breakthroughs, winzes and openings where there is danger of falling and slipping, adequate covers shall be provided. Where such openings are used as waste or ore passages, it shall be provided with grizzlies, guard rails or the like.
- Rule 81 -** Floors in all types of supported stope shall be properly centered on the caps, particularly after blasting, and nailed whenever deemed necessary.
- Rule 82 -** Safety platform shall be installed in all types of supported stope where filling is not kept close to the back.
- Rule 83 -** Stopes except top slicing shall be provided with two (2) entrances, the stope manway and the fill raise manway for ventilation and escapeway.
- Rule 84 -** Bastard and square sets in the stope shall be provided with blocks and wedges securely installed at the walls and roof. Top laggings with pigsties or blocks shall be installed on top of the highest sets.

SECTION 16 : STOPES AND RAISES

- Rule 85 -** Every stope and development opening shall be provided with at least one pinch bar of appropriate length and diameter, properly pointed or sharpened.
- Rule 86 -** Timber slides, chutes and ore pockets shall be provided with safety rope at the collar. When repairing linings, posts, caps inside chutes or cribbings of raises, ore

passes or pockets, the use of safety belts and lifelines shall be required.

- Rule 87 -** Manways of stopes, raises, and timber passes shall be provided with an overhead protection while in the process of advancing.
- Rule 88 -** Chute compartments used as passageways from the manway to the adjacent stope shall be provided with double stage bulkhead of appropriate size.
- Rule 89 -** Miners working in a shrinkage stope shall be provided with working platform or planks of appropriate size.
- Rule 90 -** When blasting down mat in top slice stopes or in other heavily timbered stopes; the timbers shall be watered before blasting.
- Rule 91 -** Blasting down mat in top-slice stopes shall be done in the middle of the shift. The stope shall be checked as soon as smoke has cleared after blasting. When top-slice stopes are worked in two shifts or more, blasting of the mat may be done at the end of the shift provided that the incoming shift is at hand to inspect the stope for fire as soon as the smoke has cleared out.
- Rule 92 -** Extra precautions such as barricade and the like shall be taken when a raise or other opening is within six (6) meters of connection with a level or other openings.
- Rule 93 -** Handles of chute gates shall project away from the dead end of haulageways.
- Rule 94 -** When a hang-up chute needs to be blasted from below, a blasting stick shall be used in placing the charge.

- Rule 95 - Bars used for pinching a chute shall have a blunt end and preferably equipped with a suitable handgrip.**
- Rule 96 - Only authorized persons shall be allowed near or within the vicinity of a chute or ore pocket when cars are being loaded.**
- Rule 97 - Chutes shall not be drawn empty but shall have sufficient amount of rocks left in the bottom to prevent the rocks from flying out when ore or waste is being dumped from above.**
- Rule 98 - Whenever possible all trolley wires passing in front of chutes, ore pockets, timber, ore or waste passes shall be cut before and after and shall be connected with insulated jumpers.**

SECTION 17 : MANWAYS AND LADDERWAYS

- Rule 99 - Manways and ladderways shall have proper signs or notices whether passable or not. Entrances of passable manways or ladderways shall be kept clean and in good condition at all times. Unpassable manways or ladderways shall be provided with appropriate bulkheads and signs.**
- Rule 100 - All ladders shall project at least sixty (60) centimeters above every platform of the ladderways unless convenient and sufficient handholds are provided.**
- Rule 101 - All ladders shall be installed so far as practicable at an angle not greater than seventy (70) degrees from the horizontal and shall have substantial and adequate landing platform for every nine (9) meters vertical distance from each other. If installed greater than seventy (70) degrees from the horizontal, it shall have**

substantial and adequate landing platform for every four and a half (4.5) meters vertical distance from each other.

- Rule 102** - All ladders shall be staggered so that no section is directly in line with the next adjacent section. The ladders shall be constructed of adequately strong materials with rungs placed at equal intervals of thirty-five (35) centimeters apart and securely fastened and maintained in good condition at all times.
- Rule 103** - Platform openings shall be of appropriate dimension for easy passage.
- Rule 104** - It shall be prohibited to drop drill steels, tools or any material down a manway or chute.
- Rule 105** - It shall be prohibited to follow a man who is going up a ladder carrying tools, timber, drill steel and other materials.
- Rule 106** - Openings located on the level of multi-compartment raises shall be provided with cover and partition board shall be installed between the chute compartment and the manway compartment.
- Rule 107** - It shall be prohibited to install water and air pipes at the middle of ladderways. All pipes shall be installed on one side of the ladderway.
- Rule 108** - Manway compartments supported by square sets and exceeding forty-five (45) meters in height shall be provided with center and cross bracings.
- Rule 109** - Manway compartments being used as manway and timber pass shall be provided with adequate linings,

timber slide and ladderway. Upper end of timber slide shall be properly covered when not in use.

- Rule 110** - When pulling the chute of an advancing raise, no person shall be allowed inside the raise.
- Rule 111** - In advancing double compartment raise sixty (60) meters or more in height, control chute shall be provided.
- Rule 112** - Manways of an advancing double compartment raise shall be situated away from the face of a dead end.

SECTION 18 : TRACK HAULAGE LEVELS AND TRAMMING

- Rule 113** - Trolley wires shall be installed not less than two (2) meters above the rails and all hangers shall be adequately insulated. If trolley wires are installed less than two (2) meters from the rails, it shall be provided with rubber or wooden guards.
- Rule 114** - Trolley hangers shall be securely fastened with the use of log screws if installed below the caps or any other wooden supports. Hangers installed along unsupported roofs or travel ways shall be securely fastened with the use of bolts to the steel rod or pipe. The steel rod or pipe support shall be adequately fastened to the roof of travel ways.
- Rule 115** - Hangers shall be installed at both sides of the splice with a maximum distance of fifty (50) centimeters from the splicer.

- Rule 116** - Trolley wires shall be sectionalized by proper switches at intervals not to exceed three hundred (300) meters; switches shall also be installed in all branch lines near the beginning.
- Rule 117** - Main haulage levels with inadequate clearance shall be provided with shelter holes placed not more than thirty (30) meters apart along the walkway side.
- Rule 118** - Live trolley wires shall be de-energized or properly insulated by using rubber or wooden trolley guards when working around them.
- Rule 119** - Diesel engines shall not be used in any part of underground workings and in tunnels under construction except when velocity of air current is adequate and concentration of gases are less than the maximum allowable.
- Rule 120** - Only locomotive operators or motormen or other authorized personnel shall be permitted to operate locomotive or motor. A brakeman or helper who is authorized to run a locomotive or a motor is subject to the same rules applied to locomotive operator or motorman.
- Rule 121** - Locomotive operators and motormen shall be required to take charge of their crews and equipment and the operation of haulage works.
- Rule 122** - It shall be prohibited to ride on locomotives or trains except the motormen or locomotive operators and other authorized haulage crews.

- Rule 123 - Motormen or locomotive operators on duty shall be supplied with and shall be required to carry at all times an independent light for use in case of power interruption.
- Rule 124 - The motormen or locomotive operators shall be required to be in his proper place on the locomotive or motor before the power is turned on.
- Rule 125 - Motormen or locomotive operators shall be required to give warning signals when starting, backing, approaching curves or intersections and shall reduce speed when men are known to be working or when passing chutes, switches, ventilation or other doors, or when rounding curves. Brakemen or helpers shall, likewise, be provided with whistles.
- Rule 126 - It shall be prohibited for motormen or locomotive operators to take signals from, or allow cars to be coupled or uncoupled by, or rail switched by, anyone except the brakemen.
- Rule 127 - Trains shall be pulled and not pushed by the locomotives except when not feasible to do so.
- Rule 128 - When it is necessary to push the trains, the brakemen or helper shall be required to stay inside the second empty car from the front.
- Rule 129 - Platform cars when attached to a train shall not be pushed ahead of the locomotive, except to a nearby switch. In this case, the locomotive shall travel slowly.
- Rule 130 - "Fly switching" shall not be permitted. Switches in a mine shall be made uniform and from designs with full consideration of safety in haulage.

- Rule 131 - The brakemen or helpers shall be prohibited to make running or "flying switches", run along a moving train, or get on or off while the train is in motion.
- Rule 132 - It shall be prohibited to ride between cars, or on top of loaded cars, nor pass from one side to another while the train is in motion.
- Rule 133 - Locomotive operators shall not be permitted to leave their locomotive unless it is at full stop, the control of which is in neutral position, the brake fully engaged and trolley pole removed from wire.
- Rule 134 - When taking over the train, the crew shall be required to conduct a complete inspection of the train.
- Rule 135 - A motorman or locomotive operator shall be required to keep his train or locomotive under such control at all times that he can stop within the distance he can see ahead or within the distance to the next crossing or turnout.
- Rule 136 - It shall be prohibited to reverse the motor for braking.
- Rule 137 - Train or locomotive shall not be moved if the locomotive operator is in doubt of the signals.
- Rule 138 - When using a light to signal, the train crew shall be required to use the following signals:
1. **To stop train in motion, wave light horizontally.**
 2. **To move train toward source of signal, swing light to circular motion.**
 3. **To move train away from source of signal, wave light in vertical direction.**

Rule 139 - Brakemen or helpers shall be provided with whistles and the following code of signals shall be adopted:

1. **One blow of whistle, to stop train in motion.**
2. **One blow of whistle, to start train forward.**
3. **Two blows of whistle, to move train back.**
4. **Three blows of whistle, to move train forward slowly.**
5. **Four blows of whistle, to move train back slowly.**

Rule 140 - Cars and trains shall be parked so as not to endanger persons on other trains or obstruct the ventilating current.

Rule 141 - When there is a power failure, the motorman or locomotive operator shall be required to bring his train to stop, detach the trolley pole from the trolley line and not allow it to coast.

Rule 142 - Coupling hook shall be used in coupling and uncoupling cars.

Rule 143 - Haulage crews shall be required to know rules pertaining to blasting.

Rule 144 - Haulage levels shall be kept free of spillage and debris. Tracks shall be kept well drained and properly surfaced.

Rule 145 - Rails shall be heavy enough to carry safely the heaviest rolling stock and shall be firmly attached to ties of adequate size and spacing.

Rule 146 - Rails, points and/or cross bonds on haulage levels shall be connected with plates, or welded and rails shall be well supported by ties.

- Rule 147 - The track shall be well aligned and curved and free from high or low joints, broken rails, defective switch and switch joints and improperly aligned frogs.
- Rule 148 - Where practicable, there shall be a continuous clearance on one side of at least seventy-five (75) centimeters from the nearest obstruction to the farthest projection of moving equipment.
- Rule 149 - Timber or other materials shall be piled so as to leave ample room for clearance between the pile and the train.
- Rule 150 - Manual switches whenever in use shall be provided with parallel throws and bridle bars.
- Rule 151 - A light, radio, or telephone signal system shall be provided to control movements of two or more locomotives or other self-propelled track-mounted equipment operated independently on the same track.
- Rule 152 - Locomotives shall be provided with adequate headlights, taillights and warning devices.
- Rule 153 - Trolley pole shall follow the direction of the locomotive. In case it is not possible and in places where forepoling is used, locomotives shall travel slowly.
- Rule 154 - Locomotives and cars shall be securely blocked before leaving them on a grade.
- Rule 155 - One or more cars shall be placed between locomotive and a car hauling rails, pipes or similar materials.
- Rule 156 - Only authorized electrician shall undertake electrical repairs on locomotives.

- Rule 157** - Trammers and muckers shall be required to inspect the muck for "misfires" and loose dynamite before shovelling it into the car.
- Rule 158** - Trammers and muckers shall be required to keep their muckpile at an inclination such that the rock boulders and muck from the top of the muck pile shall not roll down.
- Rule 159** - It shall be prohibited for trammers to place their hands on top of the car when pushing it. Mine cars shall be provided with handles welded below the top.
- Rule 160** - Muck in cars shall be properly levelled before starting to move the car.
- Rule 161** - Dry muckpile shall be wetted before loading.

SECTION 19 : TRACKLESS HAULAGEWAY

- Rule 162** - Extra precautions shall be observed for the safe operation of trackless units and adequate number of warning notices shall be conspicuously posted along the haulageway.
- Rule 163** - The road surface of each haulageway shall be regularly graded and ballasted to ensure that it is maintained in good and safe condition.
- Rule 164** - The dimensions in each haulageway in the mine shall be sufficiently provided with the necessary clearances.
- Rule 165** - An appropriate traffic control system shall be adopted whenever two or more trackless units are

required to operate in a haulageway to minimize the risks of accidental collision between two units.

Rule 166 - A safety niche for every 100 meters shall be provided along narrow haulageway where clearance between the side of equipment and wall is less than 0.5 meter on each side.

Rule 167 - An escape shelter shall be provided along the haulageway at regular intervals to protect the employee from passing low profile trucks (LPT)

SECTION 20 : CONVEYOR HAULAGEWAY

Rule 168 - No employee shall be allowed to ride on a conveyor whether moving or stationary unless the conveyor is under repair.

Rule 169 - An audible warning device shall be sounded every time before any conveyor belt at the mine is started to amply warn persons that the conveyor belt is about to start.

Rule 170 - No employee shall be allowed to go under a moving conveyor.

Rule 171 - The conveyor shall be installed with a suitable walkway or travelway to allow safe access for maintenance or other purposes.

SECTION 21 : WINZES, SHAFTS AND SHAFT STATIONS

- Rule 172** - The regulations governing shafts which are applicable to winzes shall be embodied.
- Rule 173** - Shafts shall be provided with doors, gates, guardrails or other protection as may be necessary.
- Rule 174** - No stoping shall be undertaken within sixteen (16) meters radius from the main shaft.
- Rule 175** - Shafts and winzes shall be provided with ladderways and handrails when the inclination from the horizontal exceeds twenty (20) degrees.
- Rule 176** - Shaft stations, loading and landing places shall be kept clean at all times.
- Rule 177** - When any work is to be done in a shaft, the hoistman shall be notified as to the nature of the work to be done. A clearance shall be given to the hoistman by the man in-charge of the work upon completion of the work.
- Rule 178** - Men working in shafts and winzes shall be required to wear safety belts with the lifelines firmly secured.
- Rule 179** - No employee shall be allowed to inspect or work in a shaft alone.
- Rule 180** - It shall be prohibited to commence work in a shaft until the hoist man has been duly advised and has turned over the signalling responsibility to the repair crew.
- Rule 181** - No hoisting shall be done in a hoisting compartment while it is under repair or inspection. The hoist may be operated if required during repairs or

inspection provided that the necessary precautionary measures have been observed.

- Rule 182** - When hoisting is done above men working in a shaft or winze, double deck bulkheads of adequate sizes shall be installed above the working chamber.
- Rule 183** - A sign marked "MEN WORKING IN SHAFT" shall be conspicuously installed and guards be posted if necessary whenever men are at work in the shaft.
- Rule 184** - Materials lowered or hoisted in shafts shall be properly secured.
- Rule 185** - Repair work in shafts using cage or skip shall be done from an adequate platform bolted to the cage or skip with an iron bonnet securely clamped on the hoisting cable or a cage with a stationary platform of sufficient strength shall be used.
- Rule 186** - When changing skip or cage or doing any other work in shafts, the man in charge of the work shall be required to ensure proper materials are used for platform. A wooden platform shall not be less than ten (10) centimeters thick and openings shall not be more than five (5) centimeters.
- Rule 187** - When men are working in the shaft, care shall be taken to prevent materials from falling down. It shall be prohibited to place tools or materials near the shaft where these are likely to fall.
- Rule 188** - When men are working at the bottom of the shaft or winze, the cage, skip bucket or other conveyance shall not be lowered directly to the bottom but always

stopped about 4.5 meters above until a signal is given to lower them.

Rule 189 - A cage or skip shall be used when doing electrical work in or adjacent hoisting compartment of any shaft, otherwise, adequate bulkhead shall be provided above the working platform.

Rule 190 - For any hot works, such as oxy-acetylene or arc welding in a shaft, all adjacent timbers and other combustible materials shall be inspected and wetted.

Rule 191 - If work has to be done on top of muck in loading pockets, it shall be required to guard against loading and drawing while such work is in progress.

Rule 192 - After a repair has been made in the shaft, a trial run throughout the hoisting depth shall be made of the empty cage or skip to ascertain whether the shaft is safe and clear.

Rule 193 - It shall be prohibited to stay nearer than three (3) meters from the shaft collar while waiting to board the cage.

SECTION 22 : SHAFT OR WINZE SINKING

Rule 194 - When it is necessary to blast in shaft bottom or shaft station, the hoistman upon receiving the blasting signal shall be required to raise the bucket or skip at a safe distance and lower back to former position to acknowledge the signal. He shall not answer any other signal after this except the signal to hoist men.

Rule 195 - Riding on crosshead or bucket rims shall be strictly prohibited.

- Rule 196** - No bucket or other means of conveyance shall be allowed to leave the top or bottom of the shaft or winze unless the shaft in-charge has steadied it.
- Rule 197** - In the course of sinking shafts or winzes, the bucket or other means of conveyance shall not be filled with loose rock or other materials above the level of the brim.
- Rule 198** - It shall be prohibited to work at the bottom of the shaft unless protected by an adequate covering extending over the whole area of the shaft, with sufficient space left for the passage of any sinking cage, skip or other means of conveyance. The clearance of cover from the shaft bottom shall be maintained at eighteen (18) meters and twenty-seven (27) meters for vertical and inclined shafts, respectively.
- Rule 199** - In the course of shaft or winze sinking, the ladderway shall be placed within such minimum distance from the bottom of the said shaft or winze that will secure the ladderway from damage during blasting. The lower end of such ladderway to the bottom of the shaft or winze shall be provided with chain and wire rope ladders.
- Rule 200** - In the course of shaft or winze sinking and before drilling is commenced, the ground shall be thoroughly washed over within one (1) meter of any hole to be drilled. If the ground to be examined is under water, it shall be drained so as to expose the presence of all misfires and pockets.

SECTION 23 : GENERAL HOISTING RULES

- Rule 201** - Maximum rates of hoisting speed for materials and rocks shall be fixed by the manager.
- Rule 202** - A schedule of the hoisting speeds shall be shown on the signal code signs in the hoistroom.
- Rule 203** - The working speed for hoisting or lowering men shall not exceed the speed recommended by the hoist manufacturer.
- Rule 204** - A Hoistman Log Book shall be kept to record all hoisting operation entries.
- Rule 205** - When hoisting of men is done through a shaft or winze or raise over twenty (20) meters deep, proper safety device shall be installed to prevent overwinding.
- Rule 206** - The manager shall determine the maximum number of men permitted to ride in the hoist at any one time and such shall be posted at each station.
- Rule 207**- Except when shaft or winze sinking operations are in progress, hoisting or lowering men through a vertical shaft or winze 30 meters or more shall not be permitted unless an iron-bonneted safety cage, skip or bucket is used.
- Rule 208** - It shall be prohibited to get in or out of the cage, skip or bucket after the signal to move has been given to the hoistman.
- Rule 209** - The end of tools, timber or other materials protruding out of the cage and handled through the shaft shall be securely fastened.
- Rule 210** - Drill steels, or other materials shall be placed far enough from the collar of the shaft or other opening.

- Rule 211** - It shall be prohibited to ride on the bail of the skip.
- Rule 212** - Men shall be required to properly line up without crowding or pushing when boarding the cage.
- Rule 213** - It shall be prohibited for men to ride on boards placed across the top of skips.
- Rule 214** - Open light or smoking in the cage, skip or bucket shall be prohibited.
- Rule 215** - Only shaft tenders, helpers and other authorized persons shall be permitted to ride in a cage or skip when explosives, tools, equipment and other loose materials are being handled.
- Rule 216** - Cages in which loading and unloading of heavy machinery or equipment is done shall be properly secured.
- Rule 217** - Provisions for emergency braking shall be made aside from the hoist brake.
- Rule 218** - Emergency brakes shall be tested at every change of shift.
- Rule 219** - Open hooks shall not be used as attachment with a bucket, cage or skip or other conveyances. Only safety hooks, shackles or the like shall be used.
- Rule 220** - In shafts where cages or skips are used to hoist men, an emergency cable or chain sling shall be provided as an additional precaution in the event of the failure of the clevis pin the emergency sling will prevent the skip or cage from falling. However,

especially designed attachments may be used with the permission of the Bureau, provided strict examination of attachments is done.

Rule 221 - Safety catches or dogs of cages shall be inspected and drop tested with load equivalent to its full capacity at least once every three (3) months.

Rule 222 - Safety catches or dogs of cages or skips shall be provided when used for hoisting men, except:

- a. Cages or skips with three or more cables; or
- b. Where steel guides are used.

SECTION 24 : HOISTING OPERATOR

Rule 223 - Only qualified hoisting operators shall be allowed to discharge the duties of hoistmen or hoist operator.

Rule 224 - The hoistman or hoist operator shall be required to comply with the following requirements:

- a. At least high school graduate.
- b. Pass a physical and medical, neuro-psychiatric examinations and drug testing by the duly licensed physician of the employer attesting that he is physically and mentally fit.
- c. The examination must be of recent date, not more than thirty (30) days (Appendix C) prior to his employment as hoisting operator.
- d. Show competence in an actual test in handling the hoist and knowledge of hoisting procedures.
- e. Know and be able to carry out all the hoisting signals or code as directed.

- f. Submit to a periodic re-examination by the duly licensed physician of the employer at intervals not exceeding six (6) months.

Rule 225 - Duties and responsibilities of the hoisting operator.

- a. At the beginning of a shift, examine and inspect the hoist and accessory hoisting apparatus and report immediately to the proper authorities any part not functioning normally.
- b. Not operate the defective hoist or hoisting apparatus, which will endanger the safety of men and apparatus.
- c. At all times, be directly in charge of his engine and shall not at any time during the shift delegate any of his duties to any other person except to the designated trainee under his supervision.
- d. Keep careful watch over his engine and all machinery under his charge.
- e. Hold no conversation with anyone or distract him while his hoist is in motion.
- f. Exclude anyone from the hoist room except those who are authorized.
- g. Not to answer any signal which is not included on the signal code list.
- h. Not move a cage, skip or bucket unless a proper signal is received.
- i. Always return or acknowledge the proper signal that he receives.
- j. After returning the signal, wait for a while before finally hoisting or lowering the cage, skip or bucket
- k. Not accept hoisting instruction by telephone unless made by an authorized person.
- l. Whenever possible, place cages or skips in balance before hoisting men.

- m. Not have cages or skips carrying men when the cage/skip is temporarily parked prior to motion without a cager.
- n. At the beginning of each shift, check all the apparatus by operating the cage through the full length of the shaft before hoisting or lowering men especially when the hoist has been shut down for sometime.
- o. After any repairs, run the cage, skip or bucket or other apparatus up and down the working part of the shaft at least once.
- p. Before leaving his post, run the cage, skip or bucket or other hoisting conveyance at least three (3) meters above the collar of the shaft, or above a level or station.
- q. Not permit oiling of engine while in motion.
- r. Periodically check the indicator of the hoist with the actual level intervals.
- s. Report in detail to the relief hoistman and enter in the logbook any change or adjustment made on the equipment by a mechanic or other authorized persons.

SECTION 25 : HOISTING OF PERSONS AND MATERIALS

Rule 226 - The winding system shall be:

- a. Capable of running at various speeds with light and heavy loads, and can be readily slowed and stopped and after stopping, can immediately be started again in either direction.
- b. Capable of lifting from the bottom to the top of the shaft or winze the maximum unbalanced load on one drum.

- c. Capable of being maintained in a position of rest by means of its own brake or brakes when each winding drum is unclutched from the engine with no more slipping greater than thirty (30) centimeters when the conveyance is loaded to the maximum weight of persons, whichever is greater. In calculating the total weight of persons for the purpose of this sub-rule, seventy (70) kilograms shall be allowed for each person.
- d. Such that the rope will not slip on the drum or sheave under any possible working conditions where no parts of the rope is rigidly fixed.

Rule 227 - The drum of the winding engine shall have flanges or horns, or other appliances which are sufficient to prevent the rope from slipping off or coiling unevenly.

Rule 228 - Every winding system shall, in addition to any marks on the rope, be provided with reliable depth indicators showing to the hoisting operator at his driving seat at all times.

- a. The position of the cage, skip or other means of conveyance; and
- b. At what place in the shaft, changes or gradient necessitated reduction in speed.

On any new engine installed after approval of this Order, the pointer of the dial indicator on the driver's right hand shall move in a clockwise direction when lowering and in the case of a post and spiral indicator the pointer shall move up or down as the conveyance moves up or down.

In the case of Whiting hoists, single drum hoist and hoists having two (2) drums permanently

fixed on one shaft, only one indicator shall be provided.

Rule 229 - In every shaft exceeding one hundred (100) meters in depth, adequate provision shall be made whereby the hoistman is warned of the arrival of the cage, skip or other means of conveyance at a point in the shaft, the distance of which from the top landing place is less than the equivalent of three (3) revolutions of the drum or sheave of the winding engine.

Rule 230 - To all hoisting engine operating in shafts, the following requirements shall apply :

- a. Where persons are regularly conveyed, there shall be fitted at least one efficient automatic overwinding prevention device.
- b. There shall be fitted above the bank spring keps or jack catches or some other effective contrivance to support any conveyance detached as the result of an overwind.
- c. Where the end of the winding ropes is fastened to the drum of the winding engine, there shall be fitted detaching hooks to detach from the winding rope and support any overwound conveyance in the headgear. Such detaching hooks shall be additional devices to those required in paragraph (b) above: Provided that the Director or any of his authorized representative may grant exemption from the requirement of fitting detaching hooks in the case of a winding system in a vertical shaft in the course of sinking.
- d. Where the winding rope is not fastened to the drum or sheave of the winding engine:

- i. The over-run space on the headgear above the highest established stopping place shall be provided with rigid guides or other appliances so arranged that the overwound conveyance is retarded; and
 - ii. The over-run space at the bottom of the shaft below the lowest established stopping place shall be provided with rigid guides or other appliance so arranged that an overwound conveyance is retarded and arrested before it can collide with any fixed obstacle.
- e. Where speed of over three hundred (300) meters per minute is permitted, there shall be fitted and in use a tachograph and speed indicator which shall be maintained in efficient working order. The speed indicator shall be so situated that the winding speed can at all times be easily read by the engine driver from his driving seat.

Rule 231 - Headframe and shafts shall have provisions for over-winding and over-run, respectively, as follows:

- a. The headframe shall, except in such cases as may be exempted in writing by the Director or his authorized representative be carried to such height as to allow a clearance of at least eight (8) meters in which the conveyance can travel above the highest passenger landing place in case of overwind before it collides with any fixed obstacle excluding contact with any retarding appliances provided in paragraph (d) of Rule 230.
- b. The shaft bottom shall, except in cases which may be exempted in writing by the Director or his authorized representative be carried of such depth

as to allow an over-run space of at least eight (8) meters in which the conveyance can travel below the lowest passenger landing place in case of an overwind before it collides with any retarding appliance provided for in paragraph (d) of Rule 182; Provided that such over-run space need not be provided in the case of a shaft in the course of sinking or in the case of a shaft not exceeding three hundred (300) meters in depth where the winding system does not include the use of a balance rope or tail rope.

Rule 232 - Requirements and procedures regarding examination, testing and use of hoist rope, tail rope or balance rope shall be as follows:

- a. A hoist rope, balance rope or tail rope newly installed, whether new or previously used and the attachments connecting any such rope to any conveyance or balance or counter-weight shall be carefully examined by a competent person appointed for the purpose by the manager, and shall not be used in connection with the hoisting of persons until the conveyance loaded with the maximum permitted weight have been run two complete test trips down and up between the highest and the lowest stopping places ordinarily in use. The result of this examination and test shall be immediately recorded in a logbook, termed the Hoisting Rope Logbook, which shall be opened to the Director or his authorized representative. The record shall be signed by the person who conducted the examinations and test.
- b. The Hoisting Rope Logbook shall contain the following particulars:

- (i) Name of manufacturer
Date of manufacture
Date of rope installations
Name and type of shaft
Winding plant certificate number
Coil number of rope
Length of rope in meters
Weight of rope per meter in kilograms
Diameter of rope in centimeters
Construction of rope:
 - Type and length of lay;
 - Number of strands;
 - Class of heart of rope;
 - Lubrication;
Construction of strands:
 - Number of wires
 - Diameter of wires;
 - Class of core;
 - Class of steel in wires;
 - Tensile strength of steel;Breaking load of rope:
Rope test certificate number and place test

- (ii) Dates of recapping rope
Dates of testing rope
Breaking load at each test
Dates of shortening rope
Dates of turning rope and for end
Date rope taken off
Dates of annealing or renewing rope connections.

- c. The Hoisting Rope Logbook shall be examined and countersigned by the examiner appointed as soon as practicable after any entry is made.

- Rule 233** - In case of a winding engine installed erected before approval of this Order, where the winding arrangements are such as to render any provision of Rule 184 erroneous the Director may grant exemption therefrom under such condition as he may deem proper.
- Rule 234** - No trolley, trailer or other conveyance shall be attached to a conveyance operated by a winding engine in a shaft or winze where persons are regularly conveyed unless permission in writing has been obtained from the Director under such condition as he may impose.
- Rule 235** - The Director shall fix the maximum duration of the shift to be worked by the hoisting operator and shall in such a case insert this condition on the certificate of permission.
- Rule 236** - The manager shall appoint in writing a competent person or persons whose duty shall be to examine carefully:
- a. at least once a day the winding ropes, the balance or tail ropes, the connection of the winding ropes to the drums, the connection referred to in Rule 241 the conveyances and any safety catches attached thereto, the pulley wheels and sheaves, the brakes, the depths indicators, the safety device and all external parts of the winding equipment.
 - b. at least once a week, the signalling arrangements and the safety devices used in connection therewith.
 - c. at least once a week, the guides or rails and the winding compartments generally including the

doors, gates or barriers and auxiliary equipment at stations and landing platforms.

- d. at least once a week, the overwinding prevention device and the external parts of the engine.
- e. at least once a year, the winding engine as to the working condition of the internal mechanical parts and, as far as reasonably practicable the internal electrical parts.
- f. at least once a month, at intervals not exceeding forty-five (45) days, the structure of the winding rope and the balance or tail rope with the view of ascertaining the amount of deterioration thereof. For the purposes of this examination, the rope shall be thoroughly cleansed at places to be selected by the persons making the examination who shall note any reduction in the circumference of the rope, any variation in the length of the lay of the rope, the superficial condition of the wires as to wear, corrosion, fractures and brittleness, and all other data necessary for ascertaining the amount, extent and distribution of the deterioration of the rope. If the examination discloses features such as undue or rapid wear, or feature of the wire which, although not constituting sufficient reason for condemning the rope, call for than usual attention, the examination required under this paragraph shall be made more frequently.
- g. at least once a month or at intervals not exceeding forty-five (45) days, the connection between the winding rope and the run and the connections referred to in Rule 241.

Rule 237 - Any evidence of any weakness or defect which may endanger the safety of persons and cannot be immediately remedied, the persons making the examination shall without delay report such to the

manager in writing. Until such weakness or defect is remedied the winding plant shall not be used except in so far as may be necessary in connection with the remedying of such weakness or defect.

Rule 238 - The manager shall keep or cause to be kept at the mine the following books termed:

- a. The Mechanic Logbook in which shall be entered the name of each person appointed under Rule 236 to perform the duties mentioned in paragraph (a) or (b) thereof together with the particulars of the duties of such person. A true report of every examination referred to in paragraph (a) and (e) of Rule 236 shall be recorded and signed without any delay in the Mechanic Logbook by the person making such examination. This book shall be inspected and the reports therein shall be countersigned at least once a week by the person appointed in terms of Rule 223 and 224.
- b. The Shaft Log Book in which will be entered the names of persons appointed under Rule 241 to perform the duties mentioned in paragraph (c) thereof together with the duties of each person. A true report of the results of every examination referred to in that paragraph shall be recorded and signed without delay in the Shaft Logbook by the person making such examination. This book shall be inspected and the reports therein countersigned at least once a week by the manager.

Rule 239 - The manager shall keep or cause to be kept in the hoist room a book to be termed the Hoistman's Logbook, in which shall be recorded in duplicate the following :

- a. a true report of the condition of the winding engine, including the brakes, clutches, reversing gear, depth indicators, and all other fittings. Such report shall be made and signed by the hoisting operator for each period of charge, the time and duration of which are to be recorded;
- b. a true report of the condition of the signalling arrangements together with a record of any signals received by the operator which he has questioned. Such report shall be made and signed by the hoisting operator for each period of charge;
- c. any special instructions involving the safety of persons given to the engine operator. Such entry shall be signed by the person giving the instruction and countersigned by the hoisting operator.

Rule 240 - Entries in the Hoistman's Logbook shall be inspected and countersigned daily by the persons appointed to carry out the duties specified in Rule 236. The duplicate shall be inspected and signed daily by the persons appointed in terms of Rules 223 and 224.

Rule 241 - At intervals of not more than six months, the connections:

- a. between the conveyance and the winding rope;
- b. between the conveyance and any trolley trailer or other attached conveyance; and
- c. between the conveyance and any balance or tail rope, shall be annealed or given other proper heat treatment or be discarded and replaced; provided that exemption from this provision may be granted by the Director in the case of connections of a class of steel which does not require heat treatment. The provisions of this paragraph shall also apply to the connection between a counterweight and the

winding rope and between a counterweight and any balance or tail rope.

Rule 242 - A proper record shall be kept of the heat treatment of the connection referred to in Rule 241 and the person appointed in terms of Rules 223 and 224 shall add to the record his report on the method and procedure followed in such treatment and his comments on the results. All such connections and their component parts shall be clearly marked for the purpose of identification.

Rule 243 - At least one spare hoist rope suitable for each winding engine in use shall be kept in reserve in every mine, and shall be at all times ready for use at all times except when there are two (2) engines for the same shaft or when the Director has in writing granted exemption from the requirements of this section.

Rule 244 - No persons shall travel in a conveyance operated by winding engine if such conveyance is loaded or partially loaded with rocks and no person shall travel in a conveyance operated by a hoisting engine which is being simultaneously used for the hoisting of rocks: Provided that if authorized by the manager, persons engaged in sinking operations in a vertical shaft or winze may descend such shaft or winze in a conveyance operated by a hoisting engine which is being simultaneously used for the raising of rocks.

SECTION 26 : SIGNALS

Rule 245 - Every shaft or winze fifteen (15) meters or more in depth shall be provided with an efficient and adequate means of distinct and definite signals between hoist

room and the various points in the shaft where hoisting is being done (See Appendix D for Signal Code).

- Rule 246** - All signals shall be made distinctly as follows :
- a. when the conveyance is "ready to move", five (5) bell signals are given to the hoist operator. He shall acknowledge that he is ready to hoist by returning the same signal once.
 - b. after acknowledgement is made the hoist operator under no circumstances shall acknowledge any other signal given to him.
- Rule 247** - Signalling device in shafts or winzes or stations shall be safe and within easy reach of the person inside the bucket, cage or skip.
- Rule 248** - Signalling device shall be protected from falling objects and other destructive elements.
- Rule 249** - The signal code used in the mine shall be posted conspicuously in hoistrooms, at shaft stations and at places where signals are required.
- Rule 250** - The signal code shall be plainly printed and of such size as to be easily read at all times.
- Rule 251** - All signals shall be given according to the signal code as hereby prescribed under "Appendix D" or in emergency cases as determined by the manager.
- Rule 252** - In addition to posting the full signal code at the required locations, there shall be placed a separate signboard on which must be displayed in large legible letters the destination of the station and corresponding bell signal.

**SECTION 27 : CAGE, BUCKET AND SKIP
TENDER**

- Rule 253** - In every mine operated on two or more levels in which men are hoisted by cage, skip or other conveyance other than a bucket, such cage or other conveyance shall be operated under the charge of a person appointed as tender, and no person other than the tender shall give the signal for the movement of the cage, skip or other conveyance during the handling of the men through the shaft.
- Rule 254** - Cagers shall be required to comply with hoisting rules and regulations.
- Rule 255** - Only competent persons trained for the job shall be selected as cagers, skip tenders, etc.
- Rule 256** - Only the cager or tender is permitted to give signals except in cases of emergency where any competent person may give the signal.
- Rule 257** - The skip or cage tender shall be prohibited from giving signals to hoist or lower before closing the gate/door of his cage, and also that of the shaft.
- Rule 258** - Every cager shall be required to inspect the cage and equipment he is to operate and report any irregularity to the hoisting operator.
- Rule 259** - Every cager or tender shall be required to acquaint himself with the fire protection device in the shaft and stations.

SECTION 28 : HOISTING ROPES OR CABLES

Rule 260 - The dynamic load factor of a new cable shall be calculated by a competent engineer by dividing the breaking strength of the rope as rated by the manufacturers or in accordance with approved tests on a sample made by authorized agencies, by the sum of the maximum load to be hoisted, plus the total weight of the rope in the shaft when fully let-out, plus bending and acceleration stresses.

Rule 261 - The minimum static load safety factor shall not be less than those shown in the following:

TABLE I - SAFETY FACTORS OF HOISTING ROPES*

<u>MINIMUM DEPTH IN METERS</u>	<u>MINIMUM SAFETY FACTOR OF NEW ROPE</u>	<u>SAFETY FACTOR WHEN ROPE SHALL BE DISCARDED</u>
150 or less	8	6.4
151 – 300	7	5.8
301 – 600	6	5.0
601 – 900	5	4.3
901 or more	4	3.6

*Excerpts from U. S. Bureau of Mines, Bulletin No. 75

SECTION 29 : ATTACHMENT OF HOISTING ROPES

Rule 262 - A rope shall be attached by means of zinc-filled socket or rope clips or clamps or the like.

Rule 263 - Socketing. The method of connection of sockets to cables shall meet the detailed specifications of the American Standard Association: Pamphlet M-11 (pp. 29-30).

Rule 264 - Rope clips. The U-bolt type cables clamps or clips shall be used. The base of U-bolt shall be in contact with the short end of the rope.

Rule 265 - The number of clips required to develop approximately 80% of the strength of a 6 by 19 plowsteel rope shall be as shown in the accompanying tabulations.

TABLE II - SPACING AND NUMBER OF CLIPS FOR DIFFERENT SIZE OF HOISTING ROPES*

DIAMETER OF ROPE		NO. OF CLIPS	SPACING BETWEEN CLIPS		EFFICIENCY OF FASTENING	LENGTH OF WRENCH TO USE	
<u>mm.</u>	<u>(in.)</u>		<u>mm.</u>	<u>(in.)</u>		<u>mm.</u>	<u>(in.)</u>
6.35	1/4	5	114.0	4 1/2	77.4	457.2	18
22.22	7/8	5	139.7	5 1/2	79.1	609.6	24
28.57	1 1/8	5	177.8	7	80.0	609.6	24
25.40	1	5	152.4	6	79.9	609.6	24
31.80	1 1/4	6	203.2	8	82.1	609.6	24
34.92	1 3/8	7	228.6	9	-	609.6	24
37.65	1 1/2	8	254.0	10	-	609.6	24
41.27	1 5/8	8	254.0	10	-	609.6	24
44.45	1 3/4	8	279.0	11	-	609.6	24
47.60	1 7/8	8	304.8	12	-	609.6	24
37.65	1 1/2	8	304.8	12	-	609.6	24

*Excerpts from U.S. Bureau of Mines Bulletin

Rule 266 - The length of the thimble required for clamped ropes attachment shall be at least fourteen (14) times

the diameter of the rope and eight (8) times the diameter in width.

Rule 267 - New rope shall be long enough to permit cutting of the end at least six (6) times. The cutting of the rope shall be on the point of the last clip at both ends.

Rule 268 - A minimum of three (3) laps of rope shall be on the drum when the skip, cage or bucket is at the lowest point of the hoist way after the final cutting and installing have been made.

SECTION 30 : DISCARDING OF HOISTING ROPE

Rule 269 - When a standard rope has six (6) wires broken in one rope lay, the same shall be discarded and replaced.

Rule 270 - When the wires on crown are worn out to sixty-five (65) percent of their original diameter, the rope shall be replaced.

Rule 271 - Where there is a sudden decrease in the diameter of the rope the same shall be replaced.

Rule 272 - When marked corrosion appears, the rope shall be replaced.

Rule 273 - When the actual factor of safety is less than the prescribed minimum factor of safety of the rope as shown in Table I, the rope shall be replaced.

Rule 274 - Hoisting ropes shall be replaced as soon as there is evidence or undue weakness or other conditions that indicate failure.

SECTION 31 : SHEAVES AND DRUMS

Rule 275 - Sheaves and drums shall be at least as large as the minimum size recommended by the manufacturers. Good practice requires that the diameter of the drum or sheaves for wire rope shall not be less than as follows:

TABLE III -DIAMETER OF DRUM OR SHEAVE WITH RESPECT TO SIZE OF ROPE

<u>TYPE OF ROPE</u>		<u>DIAMETER OF DRUMS OR SHEAVES</u>
For ropes of 6 X 7 construction diameter	-	96 X the rope
For ropes of 6 X 19 construction diameter	-	60 X the rope
For ropes of 8 X 19 construction diameter	-	30 X the rope
For ropes of 6 X 37 construction diameter	-	30 X the rope

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Rule 276 - Fleet angles shall not be more than one and one-half (1 1/2) degrees.

Rule 277 - Proper lubrication of the rope shall be done.

SECTION 32 : SLOPE ROPE HAULAGE

- Rule 278** - Slopes or inclines over forty-five (45) meters in depth shall comply with the herein set of regulations (Rule 279-285).
- Rule 279** - The maximum safe working load shall not be more than one-fifth (1/5) of the breaking load as given in the schedule of the cable manufacturers for 915 meters or less and not more than one-fourth (1/4) for over 915 meters.
- Rule 280** - Safety switch or other equally efficient derail device for skips shall be installed in all inclines and slopes.
- Rule 281** - It shall be prohibited for a person to walk on slope or incline while hoisting is in progress.
- Rule 282** - It shall be prohibited to ride in or on cars or platform of any slopes or inclines without proper authorization from the manager.
- Rule 283** - Hoist shall be situated so that operator has a full view of the trip at all times. if this is impractical, the hoisting apparatus shall be provided with a suitable indicating device showing at all times the position of cars or trips.
- Rule 284** - Rollers shall be spaced at unequal intervals to prevent rhythmical vibration of the ropes.
- Rule 285** - Rollers for carrying wire ropes in inclined shafts or slopes shall not be spaced more than thirty (30) meters apart.

SECTION 33 : AIR HOIST

- Rule 286** - Air hoists used for hoisting in raises shall be kept in proper working order at all times and pulley guards shall be provided. Skips or buckets when not in use shall be placed down on the level.
- Rule 287** - Air hoist shall be installed in place that neither the machine nor the operator is exposed to material falling down the raise.
- Rule 288** - In shaft sinking due to wet condition of the working compartment, only air hoist and other compressed air apparatus shall be used.

SECTION 34 : SCRAPER/SLUSHER MACHINES

- Rule 289** - An adequate and effective scraper guard shall be provided to protect the operator from being hit by broken cable.
- Rule 290** - Electric scraper/slusher shall be properly grounded.
- Rule 291** - When scraping in open working places, the operator shall be provided with adequate and effective overhead protection.
- Rule 292** - The scraper/slusher operator and his helper shall be required to stay in a safe place while the scraper/slusher is in operation.
- Rule 293** - If electric scraper/slusher are to be raised vertically from one elevation to another, an independent hoist shall be used. A safety sling of appropriate size shall be provided on both lines of the air hose of the machine to serve as additional anchor.

Rule 294 - Air slusher/scrapers shall be properly anchored.

SECTION 35 : MUCKING MACHINE

Rule 295 - Only authorized person shall be allowed to operate a mucking machine.

Rule 296 - The compressed air or power running the mucking machine shall always be closed when not in use.

Rule 297 - Safety pin or bar or any other safety device that can be used to hold the bucket in an upright and stable position shall be provided. This device shall be chained, or hooked or anchored by any suitable means to the side of the machine for ready use.

Rule 298 - While re-railing a mucking machine or whenever it becomes necessary to do some work in front of the machine, the bucket shall be properly secured.

Rule 299 - Operators knuckle guard and platform shall be provided and shall be in its proper place when machine is in operation.

Rule 300 - Mucking machine hoses and other equipment shall be retreated at a safe distance from the face before blasting.

Rule 301 - Drill steels and mucking machine bucket shall not be used to sprag a derailed mucking machine back on the track.

SECTION 36 : BLOCK CAVING

A. Grizzly Level Operation

- Rule 302** - Slusher/grizzly level operators and helpers shall be provided with the necessary personal protective equipment and working tools.
- Rule 303** - Slusher operator shall be required to check the slusher motor and its accessories such as circuit breaker, motor cover, push button switch and the proper winding of the slusher cable on the slusher motor drum before any slushing is to be done.
- Rule 304** - Missing or defective signal device and spotlight as well as grounded or improperly insulated spotlight lines shall be reported immediately to the supervisor-in-charge or electrician on duty.
- Rule 305** - Circuit breaker of slusher motor shall always be switched off when entering the slusher line.
- Rule 306** - Missing or defective stop boards of finger or draw raises shall be replaced immediately.
- Rule 307** - Defective parts of grizzlies shall be repaired immediately.
- Rule 308** - Only finger or draw raises scheduled by the person in-charge of the shift shall be drawn.
- Rule 309** - One shall always stay at the safe side of the finger or draw raises being inspected or stopboards being removed to be able to retreat safely when there is an in-rush of ore especially when there is water.
- Rule 310** - Appropriate tools such as chute or draw bar or rope shall be used when removing or pulling up the stop boards of the finger or draw raises.

- Rule 311** - Before slushing ore into the short ore pass filling up transfer raises, it shall be insured that the chute gates are closed.
- Rule 312** - As much as possible, boulders shall not be blasted at the grizzly to avoid damage to the slusher motor as well as grizzly bars.
- Rule 313** - Stop boards of finger raise or draw raise shall be returned in place when the draw had been completed.
- Rule 314** - Pipe, rod or chain shall be provided as handholds for persons passing over grizzlies.
- Rule 315** - Hang-up finger raises shall be reported immediately. In no case shall employees be allowed to enter the finger raise.
- Rule 316** - Drawing shall be stopped in all adjacent finger raises around the "pack-up" or "hang-up" finger raises to prevent movement while charging explosives.
- Rule 317** - Blasting of the "pack-up" or "hang-up" finger raises shall be closely supervised.
- Rule 318** - Explosives shall be securely tied to blasting sticks. Adequate length of blasting sticks shall be used in positioning the charge. When a detonating fuse is used, it shall be long enough to reach the collar of the draw point where the blasting cap and fuse are to be connected. Where igniter cord is used, it shall be long enough to reach the collar of the draw point.
- Rule 319** - All access from any other drift or level that provides entrance to the finger raise to be blasted shall be well guarded.

Rule 320 - When it is necessary to enter "pack-up" or "hang-up" raise, adequate precautionary measures shall be taken.

B. Slusher Operations

Rule 321 - When slushing, the cable shall always be guided by sheaves, pipe or steel and the like.

Rule 322 - Slusher motor switches shall be labelled before any work is done on or around the machine.

Rule 323 - It shall be prohibited to stand near or walk along cables when the scraper is in motion.

Rule 324 - Operators shall be required to keep cable winding straight and running freely through the sheaves.

Rule 325 - Cover guards shall not be removed except when it is necessary for repairs and shall be replaced and properly fastened before the machine is operated.

Rule 326 - Slushers that are not secured by based bolts shall be firmly stulled down or wedged under band-holes.

Rule 327 - Slusher operators shall be required to report immediately to the Supervisor-In-Charge on any water accumulation in short ore passes.

C. Miscellaneous Rules in Block Caving Operations

Rule 328 - In case the subsidence zone of a block caving operations falls on a flat area or a depression where there is a possibility of water being accumulated, the following shall be followed:

- a. Regular back filling of the subsidence shall be undertaken to maintain a minimum of 4% gradient over the subsidence area to drain off rainwater.
- b. Tailings and slurries shall not be used as backfill on subsidence area.
- c. Pipe-outs found within the subsidence area shall be filled immediately.
- d. Unauthorized persons and vehicles shall be restricted from the subsidence area.
- e. Adequate supply of lifelines shall be kept at the immediate vicinity of the subsidence area.
- f. Periodic survey regarding rate of subsidence, pipe outs, cracks and other significant observations in the area shall be undertaken. Records shall be kept to serve as reference by all concerned.

SECTION 37 : RAISING

A. Alimak Raising

- Rule 329** - In raising, the following shall be maintained/provided:
- a. top deck clear
 - b. cage clean
 - c. climbing shoes in the cage
 - d. safety belt attachments in cage
 - e. emergency tools in cage
- Rule 330** - It is prohibited to stand or work on the top deck of the climber at the bottom of the raise.
- Rule 331** - Hose reel motor and control shall be tested before ascending.

- Rule 332** - When ascending or descending the raise, employees shall stay only inside the cage.
- Rule 333** - When ascending the raise, the following shall be observed :
- a. Check and clean out racks and gear teeth
 - b. Bar down
 - c. Check all rock bolts
- Rule 334** - When barring down the face, any large rocks on the top of the Alimak cage shall be brought down to the bottom.
- Rule 335** - When installing racks, the following shall be observed:
- a. Keep the racks as closely in line as practicable as possible.
 - b. Keep the racks securely bolted into place.
 - c. Inspect the racks and rockbolts regularly.
- Rule 336** - Tools, explosives or any other materials shall not be carried on top deck of the climber.
- Rule 337** - The face shall be checked for misfires and bootlegs before starting to drill.
- Rule 338** - Adequate ventilation shall be provided to the face.
- Rule 339** - Header plate at the topmost section of the guide rack shall be provided.
- Rule 340** - Preventive maintenance shall be conducted by authorized servicemen on the climber and its accessories regularly.

Rule 341 - The climber down the raise shall be tested by gravity at least once a week.

Rule 342 - Only authorized operator shall be allowed to operate the raise climber.

B. Raise Boring

Rule 343 - Raise bore stations shall be adequately ventilated.

Rule 344 - Cuttings (muck) shall not be allowed to accumulate for a long period of time to avoid secondary blasting due to compaction.

Rule 345 - On soft or moderately hard ground, the raise bore shall be grouted or concrete lined to avoid slabbing or caving of the walls.

Rule 346 - Collar shall be covered with rigid screen and fenced.

SECTION 38 : FUELLING AND SERVICING

Rule 347 - The Regional Director shall be notified in writing of the location and details of proposed automotive diesel fuel service and storage facility before such are to be installed/constructed in the underground mine.

Rule 348 - The manager shall ensure that the location, method of construction and means of ventilation of a diesel fuel service facility shall reduce the risks and conform with pertinent laws.

Rule 349 - No installation/construction of underground fuel facility shall be allowed unless a risk assessment has

been conducted by the company and approved by the Regional Director.

Rule 350 - The manager shall ensure that the fuel being transported and stored underground in containers are free from leaks and properly secured.

SECTION 39 : MINE RESCUE ORGANIZATION

Rule 351 - Mines employing fifty (50) or more men underground at any one time shall maintain a mine rescue organization capable of sustaining operation during an emergency until outside help or assistance is available.

Rule 352 - A mine establishing a rescue organization shall provide and maintain Mine Rescue station with a minimum of 5-unit self-contained oxygen breathing apparatus of at least 2-hour duration and adequate auxiliary apparatus, equipment and other maintenance facilities.

Rule 353 - A mine rescue team shall maintain a minimum of 12 fully trained men.

Rule 354 - A regular member of a mine rescue team shall possess the following qualifications and shall be certified by the Bureau:

- a. Not less than 21 years nor more than 45 years in age.
- b. Must pass a rigid physical examination.
- c. Must pass the basic mine rescue course.

d. Must have previous training in First Aid.

Rule 355 - A mine maintaining a Mine Rescue Organization shall prepare and make available an up to date emergency flow chart that would define the emergency course of action.

Rule 356 - A refuge chamber or chambers or other places that can be safely designated as escape bases shall be provided underground. Refuge chambers shall be provided with the necessary life sustaining equipment and supplies.

Rule 357 - All neighboring mines shall organize a Mutual-Aid Mine Rescue Emergency Program.

CHAPTER VII SURFACE MINING RULES

SECTION 40 : GENERAL PROVISIONS

Rule 358 - All other safety and health rules and regulations cited elsewhere in this Order which are applicable to surface mining operations are hereby embodied.

Rule 359 - The vertical height of working benches shall be kept at the maximum reach of the shovel/loader being used.

Rule 360 - The manager shall ensure that the design, layout, construction and maintenance of any dump or stockpile shall take into account the following factors to minimize the potential instability:

- a. The nature of material dumped;
- b. The size and weight of equipment used;
- c. The site condition including stability of the area where it is sited;
- d. The drainage condition; and
- e. The atmospheric conditions.

Rule 361 - The manager shall ensure that no quarry/open pit is mined so close to the boundaries of the tenement in order to provide adequate space to install protection against inadvertently access by any person after such is abandoned.

Rule 362 - The slope and height of benches shall be governed by the competence and stability of the ground such that the danger of sudden slide is minimized.

Rule 363 - A spotter or person directing the movement of equipment during night-time shall be provided with illuminating device such as flashlight, miner's lamp, reflectorized vest and gloves or any combination thereof.

Rule 364 - When resuming excavations after heavy rains and blasting, all banks shall be inspected for cracks or ground movement which may indicate the beginning of a slide or rock sloughing and that proper markings shall be placed thereat.

Rule 365 - It shall be prohibited to work on or under any overhanging bank. The overhang shall be brought down first before any kind of work is started.

Rule 366 - If it is necessary to work above others, precautionary measures shall be observed and the persons working below shall be properly notified.

- Rule 367** - It shall be prohibited to stay or pass under a raised bucket or under any suspended load.
- Rule 368** - In coming near or working around operating equipment, an employee shall make known to the operator of his presence in the area or shall stay within the lines of sight of the operator.
- Rule 369** - Spare or brokendown equipment shall not be left unattended near the toe or crest of a bench and unstable ground.
- Rule 370** - Employees working within the mine/quarry and its immediate vicinities shall be made aware and acquainted with the mine's standard blasting procedures.
- Rule 371** - Personnel of other departments servicing the pit area shall be required to coordinate with the mine/quarry supervisor on duty. Servicing of any equipment shall be conducted in areas not affected by operation or free from other moving equipment.
- Rule 372** - No tourists, sightseers and other visitors shall be allowed to enter a mine area without proper authorization and the necessary escort. There shall be at least one escort for the group.
- Rule 373** - Whenever open pits are excavated through abandoned underground workings, cavernous formations or in close proximity to existing underground workings, the manager shall ensure that appropriate precautions are undertaken and written safe working procedures are to be followed.

SECTION 41 : DRILLING OPERATIONS

- Rule 374** - When it is necessary for both the operator and helper to leave the equipment, the machine shall be shut down.
- Rule 375** - In the event of a power failure in the pit, the control of the drill shall be turned to the neutral position until power is restored.
- Rule 376** - When drilling near the crest of a bank, the drill shall be oriented at right angle and not parallel to the bank.
- Rule 377** - Unauthorized persons shall not be permitted to stay on the platform while the drill is in motion.
- Rule 378** - Electrical and power cable repairs shall be done by authorized electricians only.
- Rule 379** - When travelling up-ramp or down ramp, the front end or mast end of machine shall be on the uphill side of the grade. A dozer and towing cables shall be provided to support the drill during ramp travel.
- Rule 380** - Staying or resting under the drill at any time shall be strictly prohibited.
- Rule 381** - Climbing the mast while the drill is in operation shall be prohibited. Mechanical defects or unsafe conditions of the equipment shall be reported to the supervisor immediately.
- Rule 382** - The drill shall not be moved when no communication/coordination is established between the operator and his helper.

Rule 383 - When the drill is travelling under conditions of poor visibility, all movements shall be guided by a helper or supervisor.

Rule 384 - When operating near power lines, the drilling machine and its mast or derrick shall not be posted closer than 6 meters horizontally and 1.5 meters vertically from such lines.

SECTION 42 : LOADING OPERATION

Rule 385 - Shovels shall not be moved up or down a ramp, between benches, under power lines, or any dangerous place unless the pit supervisor is directing the work. The brake shall always be checked before the equipment is moved up or down the ramp. A dozer and towing cables shall be provided to support shovels during ramp travel.

Rule 386 - Before the shovel is moved, the area shall be cleared of cable and equipment.

Rule 387 - The power cable shall not be hung over the bucket teeth. Rope slings/cable booth shall be used and care shall be taken so as not to subject the cable to great tensile force.

Rule 388 - It shall be prohibited to work between the shovel and the bank unless the shovel has been moved far enough from it.

Rule 389 - The shovel shall be moved to a safe distance from the bank when not in use or under repair.

- Rule 390** - The bucket shall be on the ground when a shovel is not in operation but care must be taken so as not to hit the power cable.
- Rule 391** - Banks shall be properly trimmed to ensure safety and stability.
- Rule 392** - The shovel dipper shall not be used to push trucks or other equipment.
- Rule 393** - Empty or loaded bucket shall not be swung over personnel and cabs of equipment. A shovel shall never be traveled with a loaded dipper.
- Rule 394** - Fixing misaligned hoist cable on the hoist drum shall be done by shovel mechanics unless other shovel crews are authorized to do the job. It shall be done with extreme care and proper coordination with the operator, if in doing, the drum needs to be rotated.
- Rule 395** - When misfires are discovered during excavations, the shovel operator shall stop operation and notify his supervisor immediately. The shovel shall not be allowed to resume operation unless the misfires are safely removed.
- Rule 396** - Properly labelled and color-coded emergency switch shall be provided below the counterweight of the shovel for emergency stopping.

SECTION 43 : HAULING OPERATION

A. Truck Haulage

- Rule 397** - Trucks shall be inspected at the beginning of each shift and during service periods. Any defects shall be reported immediately to the supervisor.
- Rule 398** - Gauges shall be in the operating range after start up and these shall be checked often during operation.
- Rule 399** - When travelling on a haulage road at the start of a shift, operators shall be required to drive slowly and check road/s for conditions and for any hazards.
- Rule 400** - The road shall be cleared before the truck is moved. The unit shall not be moved unless warning signal is given.
- Rule 401** - A minimum safe distance of 30 meters with a speed of 30 kph shall be observed in following another truck on a downgrade under normal conditions.
- Rule 402** - Trucks shall not be parked closer than 20 meters behind or in front or 2 meters beside other trucks.
- Rule 403** - Right-hand traffic shall always be maintained unless otherwise directed or driving at the left side of the road is justifiably and safely warranted.
- Rule 404** - It shall be prohibited to run over electric cables, rocks or other obstructing materials. Operators shall remove or ask others to remove any obstruction that may pose hazards once discovered.
- Rule 405** - Parked vehicles shall have the parking brakes on at all times. When on a grade, the front wheels shall be directed to the toe with the tires properly blocked.

- Rule 406** - Headlights shall be dimmed when approaching vehicles during nighttime.
- Rule 407** - It shall be prohibited for operators to enter or leave the cab while it is being loaded.
- Rule 408** - Dumping over a bank shall be prohibited unless it is provided with a safety berm or protective ridge or a spotter is employed. Designated dumping area shall be elevated at least 1% towards the crest.
- Rule 409** - Extreme caution shall be exercised when backing the truck to the edge of dump.
- Rule 410** - When in a dumping position, the truck shall be positioned at right angle to the dump with both rear wheels on the same level or at an equal distance from the safety berm. After dumping, the operator shall not start to travel unless the dumping carriage is completely down.
- Rule 411** - Operators shall be required to watch the swing radius of the shovel when backing up for loading position. If a spotter is employed, the operator shall wait for his signal.
- Rule 412** - Hauling trucks shall not be used to push or to pull other vehicles.
- Rule 413** - Empty trucks and light vehicles shall yield the right of way to loaded units or heavy equipment.
- Rule 414** - It is prohibited to overtake or pass a vehicle at curves and intersections. Overspeeding shall be avoided and speed limits of trucks in mine/quarry haulage roads shall be fixed.

- Rule 415** - Width of a permanent two (2) lanes haulage road shall not be less than three (3) times the width of the widest hauling truck.
- Rule 416** - All haulage roads shall be provided with safety berm with a height not less than the height of the cam or hub.
- Rule 417** - Spotters shall be required to guide and to occupy position not less than 4 meters away normal to the cab and at the driver side before giving the signal to dump.

B. Aerial Tramways

- Rule 418** - Buckets shall never be overloaded.
- Rule 419** - Bucket shall be well spaced to allow proper handling.
- Rule 420** - Carrier grips and loading dock mechanism shall be inspected at least once each shift.
- Rule 421** - Brakes of the prime mover or steeply pitching section shall be of positive action type and shall be inspected regularly and properly maintained.
- Rule 422** - Ropes and supports shall be inspected at least once a month or as often as necessary.
- Rule 423** - The tripping device at the dumping point shall always be kept properly adjusted.
- Rule 424** - Diameter of track cable connections shall be as close as possible to the diameter of the rope to prevent derailing of buckets.

Rule 425 - Swing guards shall be placed to prevent buckets from swinging, hitting towers and from falling.

Rule 426 - It shall be strictly prohibited to ride in aerial bucket.

SECTION 44 : SURFACE ELECTRICAL CABLE

Rule 427 - Trailing cable shall not run across the loaded blasthole areas.

Rule 428 - Climbing on any cable arch or pole when the power cable is energized shall be strictly prohibited.

Rule 429 - Trailing cables shall be inspected daily for cuts, bruises, breaks or any defects. Any damaged parts shall be reported and repaired immediately.

Rule 430 - Trailing cables shall be placed or laid out in such a way that these are protected or free from rock falling from the bucket of the shovel, spills from trucks, being run over by equipment or being covered by mud or muck.

Rule 431 - Appropriate high voltage resistant gloves and other safety gears shall always be worn whenever handling power cables.

Rule 432 - Trailing cables shall de-energized first before pulling out from mud/muck or before being placed in cable arches or cable poles.

Rule 433 - Trailing cable connected to switch houses shall be treated as energized until ascertained as not.

- Rule 434** - Switch houses shall be provided with signs or tags denoting the equipment to which these are connected.
- Rule 435** - Splice boxes and trailing cables shall not be allowed to be buried in mud or submerged in water.
- Rule 436** - Suspended trailing cable shall have enough clearances over all equipment passing under.
- Rule 437** - Any excess live trailing cable shall be arranged in a figure of eight (8).

SECTION 45 : HYDRAULICKING

- Rule 438** - The area within which hydraulicking is being carried out shall be marked with signs posted around it and unauthorized entry of person on the area is prohibited.
- a. Danger signs shall be posted around tailings dump or siltation pond.
 - b. Freshly formed banks of clay shall be sectioned off by warning signs.
 - c. Dumps and ponds constructed with earth banks shall be fenced off.
- Rule 439** - Before any hydraulic monitor is put into operation, all persons within the radius of the water jet shall leave the area. Only employees directly concerned with the operation of the monitor shall be allowed near in such during operation.
- Rule 440** - All work involved in shifting or repairing the monitor, replacement of the nozzle, as well as any work done within the radius of the water jet, shall be

carried out only after the stop valve on the water line has been shut-off.

- Rule 441** - The supply of water to the monitoring device shall be shut-off at each pause in operation, and the nozzle of the jet fixed in a position safe for all the persons working around it.
- Rule 442** - The belts at the joints in a pipeline shall never be tightened while pressure is on.
- Rule 443** - It shall be prohibited to leave an operating hydraulic monitor without control or to place the hands, or any other part of the body, and object in contact with jet stream.
- Rule 444** - No water supply pump or tailings pump shall be started until the chief operator of the hydraulic installation gives the order, after first sounding the start-up warning signals.
- Rule 445** - Each high pressure hydraulic installation shall have a stop valve in its main water supply line at a distance not greater than fifty (50) meters from the monitor.
- Rule 446** - To ensure that hydraulic installation will not burst under the pressure of the water, the installation shall be subjected to a preliminary pressure test prior to commissioning. During operation, the pressure of the water shall be constantly checked. Each hydraulic monitor shall be provided with pressure gauge.
- Rule 447** - Test pressure to which hydraulic installations are subjected prior to commissioning shall exceed the normal operating pressure by thirty (30) percent for the piping and eighty (80) percent for the water supply

pumps and tailings pump, but never less than five (5) atmospheres.

- Rule 448** - It shall be prohibited to come close to the foot of a steep face or walk along the top edge of a working face.
- Rule 449** - Distance from the hydraulic monitor to the face shall not be less than the height of the face. When working a dense ground liable to cause falls of large lumps, distance shall be at least 1.2 times the height of the face.
- Rule 450** - When working a face from the upwards, overhang that starts to develop in the ground shall be cut down in time with the water jet.
- Rule 451** - Large rocks and boulders exposed as the supporting ground is washed away shall be carefully and gradually washed down the slope.
- Rule 452** - Movement over water-deposited banks shall be prohibited until compactness and strength of the ground has been confirmed by thorough checking.
- Rule 453** - Electric power shall be supplied to a floating dredge pump installations by means of a trailing cable laid on separate floats or on the floats serving as support to the pulp line. The floats shall:
- a. not overturn or sink when four (4) workmen stand on them at a time;
 - b. be provided with footwalks on both sides and fitted with hand rails at least one meter high; and
 - c. be illuminated during the hours of darkness.

SECTION 46 : DREDGING

- Rule 454** - All safety rules regarding the operation of chain-and-bucket excavations shall apply.
- Rule 455** - During service, each floating dredge pump installations shall have at least two (2) rowboats in good condition, one of which shall be floating and ready. The life saving appliances shall be hanged conspicuously around the sides of floating dredge pumps.
- Rule 456** - A rope line shall be provided along the sides of the dredge pontoon at a convenient distance above the water line for grasp line of anyone who may accidentally fall into the water.
- Rule 457** - At least two (2) sets of life-saving appliances per twenty (20) meters of deck length shall be placed at conspicuous points along the sides of the dredge and shall be provided with sign boards.
- Rule 458** - Each dredge shall be served by at least two (2) row boats ready with oars, one of them floating at the side of the lantern mounted at the bow.
- Rule 459** - Before any operation on a dredge is started, the corresponding signals shall be given such as starting-up, shutdown, shiftover, etc.
- Rule 460** - While the dredge is in operation, it shall be prohibited to:
- a. Pass through the bucket carrying frame or move along it;

- b. Climb onto a bucket or chain link, nor enter the discharge batch, or remain at the bow of the pontoon or near the bucket slot when the bucket-chain frame is raised high; and
- c. Use of mooring ropes to reach the bank or over the pontoon or gangway to the bank.

Rule 461 - A trap or gangway of firm construction shall be suspended between the dredge and the bank to facilitate movements.

Rule 462 - No gangway or trap shall be raised or lowered when there is a person on it.

Rule 463 - A gangway fitted with handrails shall be provided for movement of personnel to and from the roof and upper deck.

CHAPTER VIII

SECTION 47 : HEAVY EQUIPMENT OPERATION

A. General Provisions

Rule 464 - Only authorized and qualified personnel shall be allowed to operate heavy equipment. Authorized personnel shall be a holder of Land Transportation Office driver's license.

Rule 465 - Only duly qualified and authorized persons shall be permitted to assist, operate and maintain any machine or equipment. Equipment operators shall be made responsible for the protection of men and equipment within their scope of jurisdiction.

- Rule 466** - When trackless equipment are used in underground mining, the manager shall ensure that employees :
- a. wear an outer vest or webbing harness with reflective material on their chest and back; or
 - b. have panels or strips of reflective material securely fastened to the clothing on their chest and back.
- Rule 467** - All vehicles in a mine so far as is practicable shall be fitted with roll over protective structures, blinkers and signal lights.
- Rule 468** - On-the-ground and on-the-cab inspections shall be conducted prior to starting and operating the unit.
- Rule 469** - Inspection of the conditions of all visible machine parts shall only be done when the machine is not in motion.
- Rule 470** - When refuelling, the operator shall shut off the engine and shall comply with the no smoking policy.
- Rule 471** - The operator shall follow strictly the Preventive Maintenance Schedule of each equipment in accordance with the procedure set by the manufacturer.
- Rule 472** - The operator shall immediately report any defective or faulty operation.
- Rule 473** - It shall be prohibited to clean and to apply oil and grease, adjust or repair any equipment while it is in operation.
- Rule 474** - Only authorized mechanics shall repair or make any adjustments to the equipment.

- Rule 475** - When repairing equipment, it shall be properly locked-out to prevent it from being set in motion.
- Rule 476** - The operator shall tag/lock operator's panel board whenever repair is being done on the unit.
- Rule 477** - No employee shall be allowed to undertake servicing of the battery unless equipped with the appropriate safety paraphernalia.
- Rule 478** - Before starting a repaired equipment, an inspection shall be done to make sure that all tools used are removed, all working parts of the machine are free to move without damage, and that nobody will be injured when the machine is set in motion.
- Rule 479** - Whenever washing/cleaning services is done in the unit :
- a. always shut-off the engine before cleaning.
 - b. never clean a hot engine.
 - c. always cover the starter, alternator, voltage regulator and electrical boxes when washing the unit with pressure washer.
- Rule 480** - The operator shall never start the machine unless :
- a. the area near the machine is clear.
 - b. all covers are installed.
 - c. the park brake system is applied.
 - d. the transmission control lever is in the neutral position.
- Rule 481** - The operator shall always travel the required speeds in congested areas

- Rule 482** - It shall be prohibited to use the machine or equipment other than its intended purpose.
- Rule 483** - The operator shall never leave the unit except in an emergency situation.
- Rule 484** - When parking on a sloping ground, operator shall always position the unit towards the sidewall, block the wheels, and switch off engine.
- Rule 485** - The operator shall always tag the steering control lever when a component has been removed from the machine.
- Rule 486** - No one shall be allowed to stand in the area of the center pivot (articulation hinge) unless the frame lock is fitted.
- Rule 487** - The operator of the trackless unit shall ensure that the transmission is always engaged while the unit is in motion.
- Rule 488** - A trackless unit shall not be parked and left unattended unless
- a. The engine or power supply has been switched off; and
 - b. The parking brake has been applied;
- Rule 489** - Before operating the machine, the operator shall check all safety devices thoroughly to ensure that the machine is in good operating condition.

- Rule 490** - Electrically driven machines shall be connected to the electrical supply via circuit breaker.
- Rule 491** - The operator shall always park the machine properly in designated area.
- Rule 492** - No employee shall be allowed to place any object in the operator's pit which may hinder or prevent access to safety and/or operating controls.
- Rule 493** - The operator shall always keep the machine clean at all times, especially from fuel, grease, oils, rags and and other combustible materials.
- Rule 494** - The operator shall always check fire extinguisher and/or fire prevention appliance before operating the equipment.
- Rule 495** - The operator shall always positioned the machine in an area that has been carefully barred down and/or rockbolted.
- Rule 496** - It shall be prohibited to get on or off any moving vehicles or equipment. Proper procedures in getting on or off equipment shall be observed.

B. Utility Tractors

- Rule 497** - No one shall be allowed to go near rotating drivelines, pinch points and the necessary machine guards shall be installed.
- Rule 498** - Transport of personnel to workplaces by the use of the tractor with trailer shall be allowed, provided that :

- a. **Sitting capacity of the trailer is observed;**
- b. **No assorted scraps or equipment parts are loaded on the trailer;**
- c. **Only handtools (i.e. wrench/pinch bar/shovel/bolts/bearings) are allowed to be transported along with the workers;**
- d. **Handrails, seats with backrest shall be provided on the trailer.**

Rule 499 - Only two riders shall be allowed at the tractor's rear.

Rule 500 - When the tractor is utilized to transport materials/scraps with the use of trailer, the following shall be observed.

- a. **Reduce speed when going upgrade or downgrade;**
- b. **Maintain the maximum speed of 20 km/hr;**
- c. **Towing bar pin is properly checked and secured.**
- d. **Load of the trailer should never exceed the gross weight (2.8 tons) of the tractor.**

C. Mobile Concrete Mixer (MCM)

Rule 501 - Prior to starting the engine, the "Operators" shall make sure that the MCM is in good-running condition and the areas around and underneath the vehicle are properly checked.

Rule 502 - During operation of "MCM", the operator shall ensure that:

- a. **no person shall be allowed within the frame or hinge area;**

- b. no person is allowed to board on or get off the vehicle while in motion;
- c. never leave the vehicle while the engine is idling.
- d. never use the safety/parking brake to stop the unit except in an emergency situation;
- e. when going downgrade, always shift to low gear.
- f. always shift to neutral gear when the parking brake(s) is applied when discharging;
- g. after discharging and/or at the end of the shift, always clean and wash the mixer drum.

Rule 503 - During parking, the operator shall park the unit properly, set the parking brake and the transmission gear to neutral and allow the engine to idle for at least 1-2 minutes before shutting it off.

Rule 504 - Before towing the “MCM” for repair, the operator shall ensure that:

- a. both front and rear drivelines are disconnected;
- b. wheel brake is released mechanically by loosening the locknut and thread screw at the backplate of the wheel brake cover.

Rule 505 - Operator shall always reset the safety brakes after towing the unit at the repair shop.

D. Load-Haul-Dump/Low Profile Truck (LHD/LPT)

Rule 506 - The operator shall always disconnect the frame lock before operating the machine.

Rule 507 - The operator shall never use the steering lever as a handhold when mounting or dismounting the machine.

- Rule 508** - Operator shall always sound the horn before starting the engine.
- Rule 509** - Except the operator and the needed spotter, no one shall be allowed to ride in the equipment.
- Rule 510** - The operator shall lower the dump box to the “carry” position before moving.
- Rule 511** - The operator shall always use seatbelts.
- Rule 512** - The operator shall always install the tailgate locking bar and a safety support tube before attempting to work in the dump box area with the box raised.
- Rule 513** - Diesel locomotive and Load-Haul-Dump (LHD) shall be used under the following conditions :
- a. the fuel injection system shall be locked to prevent unauthorized charging of air-fuel ratio (approximately 20:1, i. e., the engine shall use twenty kilograms of air in burning one kilogram of fuel).
 - b. the fuel shall have a flash point of 66° C or higher and contain less than 0.12% sulfur by weight.
 - c. a scrubber cooling system or the like shall be provided for the exhaust gas of the engine.
 - d. provisions shall be made to dilute the exhaust gas with air to not more than 100 parts per million by volume of carbon monoxide before it is discharged into the surrounding atmosphere.
 - e. the diesel equipment shall be restricted to places where adequate ventilation is maintained.

f. the quantity of air supplied underground shall be adequate to dilute all toxic constituents of the exhaust gas to tolerable limits.

Rule 514 - No LHD machines shall ~~(not)~~ be operated without fire extinguishers.

Rule 515 - LHD operators shall not be permitted to leave the unit unless the engine is off, the parking brake is set, the key is removed and the bucket is pressed to the ground.

Rule 516 - When parking LHD on an incline, the machine shall be directed towards the bank or rib and wheels blocked.

Rule 517 - It shall be prohibited to stand in the "V" area or pivot section between the front and rear frame of the LHD while the engine is running.

Rule 518 - Any defect during pre-start checking of the LHD engine shall be reported immediately to authorized personnel.

E. Concrete/Shotcrete Pump

Rule 519 - The operator shall ensure that the pump is set-up on a firm ground.

Rule 520 - The operator shall always level the machine horizontally and lock the support legs before shotcreting.

Rule 521 - The operator shall install warning signs to close the working area from general traffic.

- Rule 522** - The operator shall always secure all lever couplings with safety pin to ensure that such cannot snap open.
- Rule 523** - The operator shall always maintain that the grate on the hopper is bolted or pinned in a closed position to restrict access.
- Rule 524** - Whenever maintenance shall be performed inside the hopper, the operator shall:
- a. switch off the machine.
 - b. check both hydraulic pressure gauges for zero readings.
- Rule 525** - The operator shall never let the delivery hose kink or buckle.
- Rule 526** - Except the nozzle man, no person shall be allowed near the concrete discharge end of the pipeline during shotcreting.
- Rule 527** - The operator and nozzle man shall follow the underground standard communication signals.
- Rule 528** - In cases where shotcreting has to be stopped or interrupted, the operator shall lubricate the line before resuming the activity to prevent clogging of the discharge line.
- Rule 529** - Whenever blockage occurs, the operator shall stop pumping immediately, reverse the pumping cycle for several strokes, switch off the machine and release all pressure on hydraulic gauges.
- Rule 530** - When clearing a clogged line, the operator shall ensure that no person is within twenty (20) feet minimum distance radius from the clogged line.

Rule 531 - Only the nozzle man shall be authorized to give signal to the pump operator during shotcreting.

F. Jumbo Drills

a. Before and during tramming

Rule 532 - The operator shall regularly conduct ocular inspection on the following:

- a. loose bolts, connections and other defects;
- b. the central articulation and cylinder pins are in place;
- c. all guards and protective devices are firmly in place;
- d. check the tires for wear, cracks and other defects;
- e. check the wheel nuts for torque setting;
- f. check the clip assembly on the rims.

Rule 533 - The operator shall ensure that the position of the boom is horizontal and centered with the front chassis centerline.

Rule 534 - The operator shall never swing the boom unless all four stabilizing jacks are set firmly on the ground.

Rule 536 - The operator shall always adhere to the grade and side limitations of the jumbo drills. For safe operation in forward reverse direction, the maximum allowable grade shall be 15 ° and the maximum allowable side slope shall be 5° when the machine is fully articulated.

b. Drilling

- Rule 537** - Before starting the powerpack, the operator shall ensure that all control levers are in neutral position.
- Rule 538** - The operator shall ensure that no person is within the danger area before moving the boom.
- Rule 539** - For optimum stability and perfectly parallel holes, the chassis shall be on line with the gallery being drilled.
- Rule 540** - The operator shall never start a motor while it is underloaded.
- Rule 541** - The operator shall always use the boom extension when approaching the drill feed to the face instead of the feed crowd cylinder.
- Rule 542** - Boom extension shall always be in the position, which allows the drill feed to be rotated/positioned below the boom, and maintained in such position until the drilling pattern has been completed.
- Rule 543** - Before drilling, the operator shall ensure that :
- a. the position and direction of the drill is correct.
 - b. the drill feed is firmly placed against the face and maintained in that position throughout the drilling operation.
- Rule 544** - The operator shall always ensure that the drill feed is always in contact with the face.
- Rule 545** - In correcting drilling direction, operator shall align the rod in the rod guides.

Rule 546 - To prevent oil overheating, the operator shall position the feed lever in the neutral position before positioning the boom to drill the next hole.

Rule 547 - The operator shall resort to manual percussion only when the drill steel is jammed in the hole.

G. Rockbreakers

Rule 548 - The operator shall maintain a constant down force on the breaker in line with the tool.

Rule 549 - The operator shall position the tool at a 90° angle to the surface of the rock and in no case that the boom shall be used to hold the breaker in position on the rock.

Rule 550 - The operator shall not operate the breaker with the hydraulic cylinders either fully extended or retracted.

Rule 551 - The operator shall never use the breaker tool in prying, picking or lifting.

Rule 552 - The operator shall never change the pressure setting of any valves unless authorized instruction has been obtained.

Rule 553 - The operator shall observe caution when draining hot fluids from the machine.

Rule 554 - The operator shall never operate the machine if any rotating part is damaged.

Rule 555 - A screen guard shall be provided between the operator and grizzly to protect the operator from fly rocks during breaking operation.

- Rule 556** - No breaking shall be allowed during dumping of ore by LHD/LPT operator.
- Rule 557** - The operator shall always position the rock breaker's boom away from the grizzly after breaking.
- Rule 558** - The operator shall ensure that the moil tool shall not hit the grizzly bars or grizzlies during breaking.
- Rule 559** - Rockbreaking operation shall be temporarily stopped when overheating of the unit occurs and such shall be reported immediately for repair.
- Rule 560** - No secondary blasting shall be allowed at the dumping point when the breaker bogs down.

H. Mobile Rockbreaker

- Rule 561** - The operator shall never remove any element of the exhaust system or any safety covers and devices from the machine.
- Rule 562** - When servicing the equipment, the operator shall always switch off the unit and extend the jacks to stabilize the unit.

I. Scrappers, Crane, Graders and Loaders

- Rule 563** - When the units are not in use, the blade, buckets or rippers shall be lowered on the ground.
- Rule 564** - Operators shall be required to be alert on the danger of slide or falling rocks when cleaning a toe.

- Rule 565** - Back-up lights shall be in good condition when working at night.
- Rule 567** - The foot brake on tractors and hand brakes on graders and loaders shall be ~~(b)~~locked when parked on an incline.
- Rule 568** - As far as is practicable, graders shall be operated in the same direction as traffic flow.
- Rule 569** - When maneuvering on inclined ground, the blade or bucket shall be kept as low as possible.
- Rule 570** - Unauthorized persons shall be prohibited to ride on dozers, graders or loaders.
- Rule 571** - All units shall be parked in an area free from slides and other hazards.

CHAPTER IX

SECTION 48 : OFFSHORE MINING

A. General Provisions

- Rule 572** - All requirements, rules and regulations as imposed by the Maritime Industry Authority (MARINA) and other concern government agencies shall apply.
- Rule 573** - Vessels shall be equipped with lifesavers, jackets and lifeboats to a total of at least one and a half times the number of persons who are on the vessel.
- Rule 574** - Offshore operations shall have at least one (1) standby motorboat available which is capable of being

launched fully loaded and shall accommodate at least one and a half times the number of persons on the vessel for emergency purposes.

- Rule 575** - Adequate and suitable firefighting equipment shall be made available.
- Rule 576** - All supervisors and workers shall be trained on the proper use of firefighting equipment.
- Rule 577** - Vessels shall always carry along full-time occupational health nurse, part-time occupational doctor and first aiders as may be deemed necessary by the Director and shall be provided with medicines, equipment and facilities.
- Rule 578** - A potable and adequate supply of drinking water shall be provided and maintained, conveniently accessible and clearly marked as drinking water for all persons.
- Rule 579** - Where diving operations are carried out, appropriate first aid and rescue equipment shall be provided.
- Rule 580** - It is prohibited to possess or acquire explosives without the proper authorization from the Philippine National Police or other proper authorities.
- Rule 581** - No person shall be allowed to use a dredge in any mining operation unless authorized by the Bureau.
- Rule 582** - An application may be filed with the Bureau for approval to use a dredge in any mining operation provided that the applicant shall submit:

- a. Plans showing the location of the dredging operation together with the general layout of the dredging proposal.
- b. Design and construction details of the dredge including;
 - i. Structural descriptions;
 - ii. The means to be used to maneuver the dredge from place to place in the dredging operation;
 - iii. The means to be used to break out and raise the products of the dredging operation;
 - iv. The maximum depth of the water at which the dredging operations are to be carried out.
- c. Design details of any mooring or anchoring apparatus to be used in carrying out the dredging operation;
- d. Details of the loads used in any design, stability and buoyancy calculations;
- e. Details of any ballast requirements or limitations including any restrictions on the storage of free liquid, and the maximum and minimum draught of the dredge;
- f. Details of the means of access from the tank to the dredge;
- g. Buoyancy and stability of the dredge under all operating condition;
- h. The results of buoyancy and stability tests; and
- i. Details of any apparatus obtained from concerned government agencies.

Rule 583 - Prior to any repairs, modifications or alterations to be carried out on a dredge that may affect its strength, buoyancy and stability, the company shall obtain/submit the following :

- a. Approval from the Bureau to carry out such work;
- b. Plans, specifications, drawing and design calculations are submitted to the Bureau which indicate the extent and nature of such work;
- c. Approval from the concerned government agencies.

Rule 584 - All life saving equipment shall be kept in a conspicuous place that is easily accessible and shall be immediately repaired or replaced when it is damaged or lost.

Rule 585 - No employee shall be allowed to interfere or tamper with any life saving equipment provided on the dredge except :

- a. For the purpose of saving lives;
- b. In the course of the conduct of a training exercise approved by the manager; or
- c. As otherwise authorized by the manager.

Rule 586 - The manager shall ensure so far as is practicable to pose warning signs in conspicuous places to warn persons of danger from the head lines, side lines and other drive lines or mooring lines.

Rule 587 - The manager shall ensure that each anchor for a head line, side line or mooring line is of adequate strength.

Rule 588 - Each dredge shall be served by at least two (2) row boats ready with cars, one of them floating at the side of the lantern mounted at the bow.

B. Life Saving Appliances

Rule 589 - A suitable stand-by vessel shall always be available and;

- a. Stationed in the vicinity of the dredge;
- b. Ready to render assistance in the event of an emergency on or near the dredge;
- c. Capable of accommodating safely on board all employees who may need to be rescued from the dredge;
- d. Equipped if necessary with a rescue or pick-up boat suitable for safely retrieving employees from the water by day or night.

Rule 590 - Whenever it is not necessary to provide a stand-by vessel either on the dredge or on a vessel alongside, a rescue or pick-up boat shall be provided.

Rule 591 - Until such time the emergency shelter accommodation or the living accommodation has been installed and is suitable for use, no person shall remain on the dredge unless :

- a. Safe means of access and egress are provided and maintained between the dredge and a suitable vessel/s; and
- b. The said vessel/s are stationed immediately alongside the dredge.

Rule 592 - Where the means of access or egress to a vessel alongside the dredge has to be removed, the number of employees left on the installation shall not normally exceed the capacity of the available accommodation on the dredge or the capacity of the survival craft and lifecraft as mentioned in Rule 574.

- Rule 593** - When employees are allowed to live on the dredge, such shall be provided with motor-propelled survival craft which are capable of being safely launched fully loaded and of accommodating in aggregate at least one-and-a-half times the number of employees who are on the dredge.
- Rule 594** - Where sufficient lifecrafts are provided to accommodate the total number of employees on the dredge, the number of motor propelled survival craft shall be sufficient to accommodate in aggregate the number of persons on the dredge.
- Rule 595** - The painter or rope of every inflatable lifecraft which is not davit-launched shall have external and secured to a strong point on the dredge.
- Rule 596** - Survival craft and lifecrafts shall be manufactured based on International Standard or conform with the specification standard set by the MARINA.
- Rule 597** - Suitable lifejackets shall be provided to employees, to a total of at least one and a half times the number of employees or as required by the MARINA, who are on the dredge.
- Rule 598** - All such lifejackets shall be properly maintained and kept readily available for use at a suitable place or places which shall be clearly marked.
- Rule 599** - Such lifejackets shall be manufactured by a recognized international standard or conform with the specifications set by the MARINA.

Rule 600 - Sufficient and suitable lifebuoys manufactured, distributed and installed shall be in accordance with international and national standards.

C. Offshore Communications

Rule 601 - Effective means of communication shall always be provided in the dredge and its stand-by vessel/s and helicopters.

Rule 602 - Where possible, there shall be radio or telephone; an alternative means of signalling shall also be provided.

Rule 603 - All such equipment shall be used only by a suitably trained and competent operator.

Rule 604 - Communication equipment shall be efficient, properly installed, regularly tested and kept in good condition.

Rule 605 - Radio-frequency Communication Equipment shall have the frequency conspicuously marked on both the transmitter and the receiver.

Rule 606 - Radio-frequency communication equipment shall not affect or be affected by any other signalling equipment in the neighborhood.

Rule 607 - In case of electrical storms which could affect the transmission, no radio signals shall be given in which misunderstandings might lead to an accident.

D. Helicopters

- Rule 608** - No helicopter shall land or take off from the dredge until radio or visual communication has been established between the helicopter and the dredge.
- Rule 609** - All practicable precautionary measures shall be taken to ensure the safety of employees on the dredge during the helicopter operations which include :
- a. The provision of any operational information concerning the dredge or any vessel which may be alongside as may be required by the person in charge of the helicopter; and
 - b. The control of any activity in the dredge that may endanger helicopter operations.
- Rule 610** - As practicable as is possible, suitable means shall be provided for ascertaining at any time :
- a. Wind speed and direction;
 - b. Air temperature;
 - c. Barometric pressure;
 - d. Visibility;
 - e. Cloud base; and
 - f. Cover
- Rule 611** - Adequate and suitable equipment, in accordance with requirement from appropriate government agency, shall be provided to ensure the safety of the helicopter operations.
- Rule 612** - Where a helicopter landing area is provided, it shall be located and constructed in conformity with standard required by the appropriate government agency.

Rule 613 - Where by reason of the scale of helicopter movements it is necessary in order to avoid danger, the manager shall appoint a competent employee as helicopter landing officer to be responsible for the control of helicopter operations in relation to the dredge.

Rule 614 - All employees engaged in the helicopter operations on the dredge or who may be near the helicopter landing area shall be subject to the immediate and effective control of the helicopter landing officer.

E. Alarms, Means of Escape and Fire Fighting Equipment

Rule 615 - General alarm and public address systems shall be provided and maintained on the dredge.

Rule 616 - The manager shall institute a system of signals and warning to be used in the event of an emergency and shall take adequate steps to ensure that all employees are familiar with all signals.

Rule 617 - The manager shall adopt a sufficient and suitable safe means of escape to abandonment areas which shall be provided with :

- a. the survival craft launching areas;
- b. an attendant vessel; and
- c. helicopter deck

Rule 618 - Fire protection devices, fire extinguishing appliances, breathing apparatus and other safety equipment shall be provided in the dredge and escape vessels.

Rule 619 - All supervisors and sufficient number of workers shall be trained in the use of fire extinguishing equipment.

Rule 620 - An adequate number of employees trained to use the fire extinguishing equipment shall be readily available during all working periods.

F. Living Accommodations

Rule 621 - The accommodation shall be provided with adequate protection from the weather and is constructed of suitable fire resisting material.

Rule 622 - The accommodation shall be located so as to minimize noise and special attention shall be given to noise reduction in sleeping quarters.

Rule 623 - Sufficient beds or bunks for the number of employees expected on the dredge shall be provided.

Rule 624 - An adequate space for employees to hang up their personal clothing and each employee shall be provided with one lockable drawer or locker.

Rule 625 - For every bunk, there shall be in each room at least one properly stowed lifejacket.

Rule 626 - The employee shall be provided with a separate facility for the storage of working clothes outside the sleeping area.

Rule 627 - The manager shall ensure that the employees are provided with a mess hall and galley to cater for at least half the number of employees likely to use the mess hall in any given time.

Rule 628 - A sufficient number of receptacles shall be provided at suitable places for the disposal of garbage and other waste.

Rule 629 - A sufficient number of toilets and bathrooms shall be provided in the vessel.

G. Health and First Aid

Rule 630 - A suitable provision shall be made for the effective treatment of injured and ill employees.

Rule 631 - The manager shall ensure that a sick bay is provided in the dredge to serve the employees who suffered injury or sickness.

Rule 632 - Except where medical advice is to the contrary, all employees suffering from other than minor injuries and illness shall be transferred on shore for treatment. Provided further, pending transfer on shore, employees who suffered injuries and illness shall be placed in a sick bay or medical treatment room.

Rule 633 - Necessary equipment, such as suitable stretchers, shall always be kept readily available to ensure that the transfer may safely be undertaken.

Rule 634 - The manager shall ensure that the dredge has an adequate number of trained first aider in every shift of the mining operation.

Rule 635 - An adequate first aid kit shall always be readily available to be used by the first aider.

Rule 636 - The manager shall ensure that the employees are informed of, notices shall be posted in appropriate languages indicating the arrangements for obtaining, first aid treatment, the means of identifying first aid personnel and the location of first aid equipment and facilities.

CHAPTER X

SECTION 49 : PREPARATION OF AN EMERGENCY RESPONSE AND PREPAREDNESS PROGRAM

Rule 637 - The employer shall ensure the preparation of an emergency response preparedness program prior to commencement of any mining operation which shall contain, among others, the following :

- a. identification of hazards that might disrupt or cause an emergency at the mine;
- b. assess every perceivable risks that may constitute an emergency;
- c. controlling measures that have to be undertaken to prevent or deal with the emergency which shall include,
 - i. organization of crisis management group;
 - ii. the provision of appropriate facilities, vehicles and equipment;
 - iii. the provision of effective alarm systems;
 - iv. the development of procedures or protocols to deal with emergencies;
 - v. the training of employees in emergency procedures;

- vi. the training of employees in fire fighting, mine rescue and recovery and other relevant emergency response functions;
- vii. regular scenario simulation to test the response capability;
- viii. the continuous review of procedures, monitoring and maintenance of facilities and equipment;
- ix. provisions for update and revision of the program in view of any change in mining operation, conditions and rules and regulations.

Rule 638 - The employer shall ensure that an emergency drill be conducted quarterly, in order to test the effectiveness of the program.

Rule 639 - The employer shall be required to submit to the Bureau, copy furnished the Regional Office, a report on the conduct of the emergency drill as required in Rule 638.

CHAPTER XI EXPLOSIVES

SECTION 50 : MINE BLASTER FOREMAN

Rule 640 - All applicable provisions of the revised implementing rules and regulations of the Explosives Law should also form part of this order.

Rule 641 - A blaster shall be duly registered and currently licensed mining engineer; or a Professional Regulation Commission registered mine/quarry foreman.

Rule 642 - A blaster shall be required to comply with the following:

- a. conduct or direct the blasting operations which includes the preparation, fixing and firing of charges, and handling of misfires;
- b. take charge of the disposition and safety of explosives, its accessories and magazines;
- c. keep records on the daily consumption of explosives and submit to the Bureau a monthly consumption report in the prescribed PNP form; and
- d. strictly enforce the safety rules and regulations governing the storage, handling and usage of explosives.

SECTION 51 : CONSTRUCTION OF MAGAZINES

- Rule 643** - Magazines shall be constructed in accordance with the specifications shown in Appendix H. Location map and plans shall be approved first by the Bureau before any construction starts.
- Rule 644** - Magazine designed to accommodate fifty (50) kilograms or more of explosives shall be of permanent construction and shall be resistant to weather, fire, theft and bullet.
- Rule 645** - Contractor/Permit Holder/Permittee/Lessee who hired the services of drilling and blasting contractor shall be required to provide magazines for the use of the service contractor during the duration of the contract.
- Rule 646** - Portable magazines shall be designed to accommodate less than 50 kg. and resistant to elements and pilferage.

- Rule 647** - Portable magazine shall not be transferred to any location without authorization from the PNP and Regional Office.
- Rule 648** - Contractors/Permit Holder/Permittee/Lessee who hired the services of drilling and blasting contractor shall be required to provide magazine for the use of the service contractor during the duration of the contract.
- Rule 649** - Permanent magazines shall have no openings except for entrance and ventilation. Wall vents shall be of the "off-set" type and all vents shall be covered with metal screens or so constructed as to prevent the entrance of persons, animals, sparks and bullets.
- Rule 650** - A magazine shall always be kept securely locked with at least two (2) door padlocks, whose keys shall be separately kept by the blaster and representative/s from the Philippine National Police.
- Rule 651** - If a magazine is illuminated electrically, the lighting fixtures shall be of "vapor-proof" and "explosion proof" type, the wires shall be in conduit and the light switch shall be situated on the outside of the building.
- Rule 652** - Underground issuing magazines shall consist of a separate drive or chamber free from leaks and shall be made of fire-resistance materials. It shall be located in areas safe from all mining operations and far from mine exits.
- Rule 653** - Each magazine shall have the following additional fixtures:
- a. warning signs;
 - b. the interior shall be kept clean and dry;

- c. walls shall be painted white;
- d. the floor shall be provided with matting, preferably wood with no exposed metals;
- e. adequate ventilation;
- f. surface magazines shall be provided with lightning arresters, eave on door openings and meshed-wire fence at least 1.5 meters away from the magazine;
- g. adequate fire extinguishers shall be provided outside the fence for surface magazines and on the outside wall for the issuing magazine.
- h. deposit box outside the gate where the flammable materials such as lighters and matches could be deposited

Rule 654 - Magazine surroundings shall be kept clear of woods, grasses and other flammable and combustible materials for a distance of 1.5 meters.

SECTION 52 : STORING

Rule 655-Explosives and blasting accessories shall be stored separately in the following manner:

- a. Dynamite Magazine (Dynamite, detonating cord and Primer)
- b. Blasting Cap Magazine (Blasting Caps, connectors, delay connectors)
- c. Fuse Magazine (Safety Fuse)
- d. Ammonium Nitrate Magazine (Ammonium Nitrate and Slurry)

Rule 656 - Explosives shall be piled and issued on a first-in-first-out" (FIFO) basis.

- Rule 657** - All piles shall have at least fifteen (15) centimeters distance from the walls of the magazine and shall maintain an aisle along the door way.
- Rule 658** - Height of pile shall be maximized to an equivalent reach of a person.
- Rule 659** - Capacity of all magazines shall conform with the pre-computed floor area of the magazine.
- Rule 660** - A maximum of fifteen (15) days supply of explosives shall be stored in an issuing magazine and withdrawals shall only be administered by the blaster.
- Rule 661** - Fuses shall not be stored underground longer than seventy-two (72) hours unless the storage place is safe and dry.
- Rule 662** - In underground storage, explosives and accessories shall be stored above the level of the floor or in shelves.
- Rule 663** - Explosives which have deteriorated overtime shall be properly disposed of in accordance with the manufacturers instruction.
- Rule 664** - Loose explosives and blasting supplies shall be returned immediately to its proper container inside the magazine.
- Rule 665** - Underground magazines shall be :
- a. dry and flat flooring;
 - b. free from fire and any potential rock fall;
 - c. separated from other workplaces;
 - d. provided sufficient ventilation and airways.

e. Constructed on stable ground

Rule 666 - Underground magazines shall not be located within the radius of:

a. 100 meters from shafts or other underground magazines;

b. 25 meters from workplaces;

c. 10 meters from raise or winze which is used for personnel accessway; and

d. 50 meters from blasting area.

Rule 667 - A notice shall be posted at the entrance of every underground explosive magazine, stating the rate of burning of the fuse used.

SECTION 53 : TRANSPORTATION

Rule 668 - Vehicle transporting explosives shall not be overloaded and in no case shall boxes or packages be piled in such a position that these may easily fall- off.

Rule 669 - Vehicles containing explosives shall never be taken inside a garage or shop for repairs or other purposes and shall avoid unnecessary delays or stops during transport.

Rule 670 - Vehicles transporting explosives shall stop before crossing railroad tracks or main highways and then proceed with caution and conform to all other traffic safety measures.

Rule 671 - When vehicles containing explosives are stopped, the hand brake shall be applied, motor power shut-off, wheels properly blocked and shall never be left unattended.

- Rule 672** - Transporting of explosives shall be entrusted only to the blaster and all necessary precautions for the prevention of fire or explosion shall be observed.
- Rule 673** - Vehicles assigned to carry explosives shall be diesel driven and have the following fixtures and in good mechanical condition:
- a. Flat wooden flooring
 - b. Wood, tarpaulin or other suitable dunnage materials to cover all exposed metal especially the side of vehicles and to prevent the contact of explosives packages.
 - c. Adequate fire extinguishers
 - d. EXPLOSIVE signs shall be clearly marked on all sides of the conveyance.
 - e. Surface transport shall be provided by red flags while underground transport shall have red light (front and back).
- Rule 674** - Explosives shall be transported in a specifically designed vehicle, as in Rule 606, and shall be escorted only by the blaster and his blasting crew and the PNP representative. No other employee is allowed to ride on a vehicle transporting explosive.
- Rule 675** - No explosives shall be carried on electric locomotives or in a car next to an electric locomotive. Car loaded with explosives shall be pulled by means of a wooden or non-conducting drawbar.
- Rule 676** - Metals, metallic tools or inflammable substances or materials shall not be carried in the same vehicle transporting explosives.

- Rule 677 - Detonators shall not be carried in the same vehicle transporting explosives.**
- Rule 678 - Capped fuses shall be taken underground only in covered containers.**
- Rule 679 - Explosives which are transported by using Load-Haul-Dump/Low Profile Trucks shall be placed in a prescribed wooden box.**

SECTION 54 : HANDLING

- Rule 680 - Explosives shall not be allowed to become unnecessarily wet and be exposed to weather or rough treatment.**
- Rule 681 - No metal hooks or any metal tool shall be used in handling explosives except those prescribed by the explosive's manufacturer and approved by the Bureau.**
- Rule 682 - Detonators and other explosives shall not be carried inside pockets or clothings nor shall be left carelessly lying around.**
- Rule 683 - Packages or boxes of explosives shall not be opened, repacked or reboxed with any metal tool and in close proximity to other explosives.**
- Rule 684 - Proper tools and equipment shall be made available to the employees using and handling explosives.**
- Rule 685 - Detonators and other explosives shall be brought to working places in appropriate containers and in accordance with safety practices and shall remain in respective containers until ready for use.**

- Rule 686** - Only non-sparking tools shall be used in opening boxes of explosives. Explosive boxes or containers shall be entirely emptied before these are discarded. Boxes or packing materials showing stain shall be destroyed by burning in the designated disposal site.
- Rule 687** - Prime cartridges shall be exploded or utilized within twenty-four (24) hours after these are prepared.
- Rule 688** - Blasting cap shall not be removed from original containers except when capping fuses.
- Rule 689** - Fuses shall be capped in suitable places outside of the explosives magazine.
- Rule 690** - It shall be the responsibility of the supervisor to clear the blasting area of all unnecessary personnel and equipment that may be affected before any blast is undertaken. Guards shall be posted at all possible approaches to the blasting area.
- Rule 691** - Blasting area shall be clearly marked with appropriate signs which shall be put up when moving into an area to begin loading and left posted until the blast is ready to be fired.
- Rule 692** - Unauthorized persons shall not be allowed in the immediate vicinity of the area during loading and blasting operation.
- Rule 693** - The supervisor on duty shall give his signal to the blaster from a vantage position where he can see the entire blast area. The siren operator shall be at the siren when the guards are posted so that there shall be no unnecessary delay when the charged holes are ready for firing.

- Rule 694** - Unused explosive shall be returned to the proper storage magazine.
- Rule 695** - Spilled explosive containers and blasting agents shall be cleaned up properly and disposed of thoroughly.
- Rule 696** - Misfires found in blasted areas shall not be touched or disturbed except by competent persons.
- Rule 697** - Two-way radios shall be turned off within 100 meters from electrical blasting cables or when entering an explosive magazine area.
- Rule 698** - In case where debris from blasting is generated in surface mining, the manager shall cause to institute the following necessary precautionary measures to prevent injury to persons or damage to property within or outside of the tenement.
- a. Blasting mats are used and secured in a manner which will contain the debris during blasting operation;
 - b. If the nature of blasting in which case the mats may not be effective, proper blast design shall be effected to minimize the risk of fly rock.
- Rule 699** - Whenever blasting is to be undertaken in hot material the manager shall adopt charging and firing precautions and shall take the necessary precautions in accordance with the relevant procedure.
- Rule 700** - Explosives shall not be taken to the face or immediate vicinity of the blasting site until all drilling work has been completed.

- Rule 701** - Holes to be blasted shall be charged as near to blasting time as practicable as possible and shall be blasted as soon as possible after charging has been completed.
- Rule 702** - Blasting shall be done only at specified times preferably at the end of a shift or at lunch break. Blasting at other times shall only be done by special arrangement with shift boss or an authority of the manager or the Officer-In-Charge/duty. All charged holes shall be detonated immediately.
- Rule 703** - Before loading, all drill holes shall be thoroughly cleaned with compressed air through a blowpipe.
- Rule 704** - Every newly opened box or can of fuse shall be tested for burning rate.
- Rule 705** - Only standard fuse shall be used in the mines with burning rate not less than one hundred (100) seconds nor more than one hundred eighty (180) seconds per meter.
- Rule 706** - Only an approved broad-jawed crimper in satisfactory working condition shall be used for crimping caps.
- Rule 707** - It shall be prohibited to use a fuse that has been tampered or damaged.
- Rule 708** - Priming an explosive cartridge shall be made only in the blasting area.
- Rule 709** - Only non-sparking material puncher shall be used in priming.

- Rule 710** - When priming, the cap shall be securely buried in and surrounded by the powder of the explosive cartridge.
- Rule 711** - Only explosive cartridges and not the primer cartridges shall be slit for loading.
- Rule 712** - Only non-spark producing materials shall be used for tamping cartridges in a hole.
- Rule 713** - Only direct and moderate pressure without pounding or punching shall be applied when placing the primer cartridge.
- Rule 714** - Fuse lengths used in blasting shall be long enough to allow ample time before lighting or spitting all holes and retreating to a safe place.
- Rule 715** - The minimum length of the fuse for a single charge or loaded shot shall be one (1) meter provided that it is the only charge to be fired at one time in the same working place.
- Rule 716** - In addition to the desired length of fuse required to give the proper sequence to the holes, all fuses shall be extended at least one half (1/2) meter in length. Hence, the extending length of fuse from the collar of the hole is equal to the desired sequence length plus 1/2 meter.
- Rule 717** - As far as is practicable, when not using igniter cords and beanhole connectors, fuse ends shall be grouped for bunch lighting.

- Rule 718** - A maximum of twenty-five (25) holes can be individually lighted by two (2) men but for larger rounds, igniter cord and beanhole connectors shall be used.
- Rule 719** - No work of any kind shall be done at the blasting area after totally charging the hole.
- Rule 720** - A fuse timer shall be provided for every blast which shall be lighted simultaneously or before the first fuse in the hole is spitted except when blasting rounds using igniter cords and beanhole connectors.
- Rule 721** - The length of the fuse timer shall be one (1) meter less than the total length of the fuse in one hole.
- Rule 722** - Detonators of different brands shall not be used in the same round.
- Rule 723** - When rock temperature exceeds 65° C, holes shall be blasted with high temperature explosives.
- Rule 724** - Sufficient blasting shelters shall be provided to protect all employees endangered by flyrocks from blasting.
- Rule 725** - At least fifteen (15) minutes before blasting, warning horns shall be sounded, adjoining workings that can be affected by the blast shall be cleared of equipment and personnel and all approaches to the blasting area shall be fully guarded.
- Rule 726** - Guards posted at entrances and/or approaches to the blasting area shall be informed of and count the number of blast and shall remain at their stations until the blasting operation is finished.

- Rule 727** - It shall be prohibited for a miner to blast holes alone. Two (2) men shall always be at the face when fuses are lighted.
- Rule 728** - Fuses shall be ignited only with hot wire lighters, lead spitter, igniter cord, or other such device designed for this purpose.
- Rule 729** - It shall be prohibited to:
- a. use empty explosives cases for kindling.
 - b. possess any paper product used in the packing of explosives left after blasting. Accumulations of fiber board cases, paper case linens, cartons or cartridge paper shall be destroyed by burning after these have been carefully examined to make sure these are empty.
 - c. spring a borehole near another hole loaded with explosives.
 - d. load a springed borehole with another charge of explosives until it has cooled sufficiently.
 - e. store cases of dynamite in such a way that cartridges stand on end.
 - f. use fuse and blasting caps in wet holes without having a thoroughly waterproofed joint between the fuse and the cap.
 - g. kink fuse in making up primers or in tamping a charge.
 - h. light fuse in any borehole unless the hole contains sufficient stemming to protect explosives from sparks coming from the lighted fuse.
 - i. try to light fuse with burning papers, other inflammable fuse or improvised torches.

SECTION 55 : ELECTRIC BLASTING

- Rule 730** - All previously cited rules on fuse blasting which apply to electric blasting shall be hereby embodied.
- Rule 731** - Electric blasting shall be used in those working places where fuse blasting endangers the safety of the employees.
- Rule 732** - Entrances to places where electric blasting is to be undertaken shall be guarded from the time the connection to the power circuit is made until the round is fired.
- Rule 733** - Only duly licensed blaster shall be allowed to conduct electric blasting.
- Rule 734** - If electric blasting is controlled from the outside of a mine, a complete check for the number of men shall be done before firing.
- Rule 735** - Leg wires of electric blasting caps shall be kept shunted until ready to connect the lead or bus wires.
- Rule 736** - Permanent lead wires and leg wires shall be insulated. There shall be no breaks or bare place in the main lines and connections shall be taped where necessary to prevent short circuits or leaks.
- Rule 737** - Wires shall not touch each other or any object that might carry an electric current.
- Rule 738** - Blasting switches, interrupter switches or their equivalent boxes shall be locked and the keys kept by the blaster.

- Rule 739** - When blasting, switches shall be locked in the open position except when closed to fire the blast. Lead wires shall not be connected to the blasting switch until the shot is ready to be fired.
- Rule 740** - Check the circuit for continuity before firing the shots using only approved Blasters Ohmmeter.
- Rule 741** - Upon returning to the face after blasting, the blaster shall place shunts in permanent blasting line, disconnect, and shorts the blasting cable or lead wires and roll up the blasting cable when approaching the face.
- Rule 742** - The blasting switch shall be at a reasonably safe distance from the blast.
- Rule 743** - Blasting lines shall be kept clear from all power and lighting lines and from all grounded pipes, rails, etc.
- Rule 744** - When electric blasting caps are used and all of the holes fail to explode, the wires shall be disconnected from the power source and other safety precautions shall be done before going back to investigate the trouble.
- Rule 745** - Electric blasting on or near the surface shall cease during thunderstorms and during the approach of storm. All persons shall retreat to a safe place.
- Rule 746** - Charging or loading of explosives shall be stopped immediately when the presence of static electricity or stray current is detected. The condition shall be remedied before charging or loading is resumed.

Electric blasting caps shall not be connected to loaded blastholes during thunderstorms.

- Rule 747 - If branch circuits are used when blast are fixed from power circuit, safety switches located at safe distance from the blast areas shall be provided in addition to the main blasting switch.
- Rule 748 - Safety switches and blasting switches shall be labelled, encased in boxes, and arranged so that the covers of the boxes cannot be closed with switch in closed position.
- Rule 749 - Where electric blasting is to be performed, electric circuits of equipment in the immediate area to be blasted shall be de-energized, before explosives are brought into the area. The power shall not be turned on again until after the shots are fired.
- Rule 750 - Power sources shall be suitable for the number of electric detonators to be fired and for the type of circuit used.
- Rule 751 - Electric blasting cap shall remain shunted until these are being wired into the blasting circuit. Main lines, wired rounds shall be kept shunted until immediately before blasting.
- Rule 752 - Electric blasting cap shall only be connected to the blasting line after unnecessary personnel and equipment are removed from the area and immediately before the shot is to be fired.
- Rule 753 - Before the layout is connected to the blasting line, the blaster shall obtain a signal from the foreman indicating that the area is ready for blasting; that the

area is already cordoned at strategic locations; and that all other personnel are properly notified.

- Rule 754 - During firing, the blaster shall be required to be at a safe distance from the blast with ample cover to protect him from flying rocks.
- Rule 755 - An all-clear signal shall be sounded off every successful blast.

SECTION 56 : BOOTLEGS AND MISFIRES

- Rule 756 - Before drilling in any working place, the face, walls, back and floor shall be carefully examined to locate any remaining portions of holes left after the previous firing. This examination shall first include wetting down of the working area and shall extend three (3) meters back from face to be drilled.
- Rule 757 - Where any remaining part of a hole is found, it shall be washed out properly to check whether the hole contains any explosives.
- Rule 758 - If the remaining part of any blasted hole which has been fired contains explosive, it shall be called and treated as "misfire".
- Rule 759 - When the remaining part of a blast hole does not contain explosive, it shall be called and treated as a "bootleg".
- Rule 760 - Drilling shall not be done in or within fifteen (15) centimeters of old holes or bootlegs as some explosives may still remain at the bottom or crevices of the hole.

Rule 761 - In case of a misfire, or a suspected misfire, no employees shall be allowed to return into the place where the blasting is done until the expiry of thirty (30) minutes from the time of the lighting of the last fuse, or until the expiry of twice the number of minutes that there are meters in the longest fuse used, whichever is longer.

Rule 762 - Every hole in which a charge has misfired shall be marked by the insertion of a wooden marker or some other conspicuous charge or parts thereof. Misfired charges shall be re-blasted. If an additional hole and charge are necessary for the blasting of the misfired charge, the blaster shall be responsible for directing the angle of the hole and the depth to which it shall be drilled, but no drilling shall be done within a distance of sixty (60) centimeters from a misfired charge.

**SECTION 57 : SPECIAL RULES FOR THE
TRANSPORTATION, STORAGE AND USE OF
AMMONIUM NITRATE AND ANFO**

A. Ammonium Nitrate

Rule 763 - Since ammonium nitrate is an oxidizing material, it shall not be transported along with explosives.

Rule 764 - Ammonium nitrate shall not be transported together with organic or contaminating substances such as inflammable liquids, acids, corrosive liquids, compressed gases, metal powder, bleaching powder, cotton or burlap bags, caustic soda, lime chloride, coal, cork, baled cotton, hydrated lime, sawdust or the like.

- Rule 765** - Ammonium nitrate shall be stored in well-ventilated buildings, if possible of non-combustible materials with solid floors to facilitate sweeping.
- Rule 766** - Ammonium nitrate storage building shall be properly identified and "No Smoking" sign shall be conspicuously placed.
- Rule 767** - During transporting or at storage places, portable fire extinguishers shall be provided. Fire fighting device shall be provided for extinguishing fire involving ammonium nitrate.
- Rule 768** - The storage area shall be kept clean of rubbish and trash.
- Rule 769** - Lower tier of drums or bags shall be protected from possible dampness of floor by placing lower tier on wooden planks or matting.
- Rule 770** - Every employee who helps in extinguishing ammonium nitrate fires shall be protected with oxygen-breathing apparatus.
- Rule 771** - Water trapped under a pool of molten ammonium nitrate shall be avoided.
- Rule 772** - Once a fire has been extinguished, all loose or contaminated ammonium nitrate shall be disposed of by dissolving in water. Floors shall be thoroughly hosed or scrubbed.
- Rule 773** - In the case of bag storage, damaged bags shall be burned, a few at a time, in an isolated area.

B. Ammonium Nitrate and Fuel Oil

- Rule 774** - AN-FO and other blasting agents shall be treated as explosives at all times.
- Rule 775** - All rules and regulations pertaining to the safe use of dynamite and other explosive shall be applied to AN-FO.
- Rule 776** - AN-FO bags and drums when being handled shall not be dropped or thrown.
- Rule 777** - Smoking or open flames shall not be allowed when handling AN-FO.
- Rule 778** - Good ventilation shall be required when using AN-FO as a blasting agent underground.
- Rule 779** - Adequate safeguard against nitrogen dioxide gas shall be made.
- Rule 780** - Upon entering a newly blasted working place, the face and muck shall be wetted thoroughly. Wetting shall be done several times during the mucking cycle.
- Rule 781** - In case of misfires, AN-FO shall be washed with water and a new primer shall be placed to reblast the hole provided, no unnecessary force shall be applied to extract the old or first primer.

Rule 782 - If a misfire contains more sensitive explosives or if the AN-FO can not be washed out, it shall be marked and reblasted immediately.

Rule 783 - If the collar of the hole is not accessible for re-blasting, both sides of the hole shall be carefully dug until the collar is exposed and accessible. Such work shall be under the direction of the supervisor.

**CHAPTER XII
OCCUPATIONAL HEALTH**

SECTION 58 : NOISE CONTROL

Rule 784 - The manager shall ensure that the noise emitted at the workplace in the mine is reduced as practicable as possible.

Rule 785 - In cases where the noise received by the employees in the workplace is above the prescribed standard, the company shall ensure that :

- a. appropriate engineering noise control is introduced to reduce the noise level or peak noise level, or;
- b. If such is not practical, limit the exposure of employees receiving the noise according to its standard.

Duration/day, hr. Sound levels, dBA, slow response

8	90
6	92
4	95
3	97
2	100
1 1/2	102

1	105
1/2	110
1/4	115

Ceiling value: No exposure in excess of 115 dBA shall be allowed.*

Rule 786 - The manager shall install appropriate mitigating measures against noise pollution in addition to personal protective equipment. Employees exposed to excessive noise level shall be required to wear suitable device to reduce the noise intensity to tolerable levels.

Rule 787 - Other factors that would determine the exposure of employees to noise shall be based on Section 1074.03 of the Occupational Safety and Health Standards of the DOLE, as amended.

SECTION 59 : ILLUMINATION

Rule 788 - Adequate illumination shall be provided to all workplaces.

Rule 789 - Places where winding, driving, pumping or other machinery are erected, in the proximity of which persons are working or moving about, shall also be lighted while in operation such that machinery can be distinguished clearly.

Rule 790 - Adequate stationary lights shall be provided during working hours at all stations, landing and loading places and other similar places such as vertical, inclined shafts and winzes and other places as for the time of actual use, provided, that the top of winzes need not be lighted when no hoisting is being carried out, and at night at all working places on the surface.

Rule 791 - Areas accessible to employees shall be lighted to no less than the minimum illumination intensities while any work is in progress as provided below :

Minimum Illumination Levels

Area of Operation	Foot candles
General site areas	5
Excavation and waste areas, accessways, active storage areas, loading platforms, refuelling and field maintenance areas .	3
Indoors : warehouses, corridors, hallways and exitways	5
Tunnels, shafts and general underground workareas, (exception : minimum of 10 foot candles is required at tunnel and shaft heading during drilling, mucking and scaling.)	5
General shops (e.g. mechanical and electrical equipment rooms, active store rooms, barracks or living quarters, locker or dressing rooms, dining areas, and indoor toilets and workrooms).	10
First aid stations, infirmaries and offices . .	30

Note : 1 foot candle = 10.75 lux or an equivalent of 10 lux for computation purposes.

Sources : Occupational safety and Health Administration Regulations (Standard -29CFR)
Occupational Safety and Health Standards (DOLE)

SECTION 60 : HYGIENE AND SANITATION

Rule 792 - Proper housekeeping shall always be maintained within the mine.

- a. All work areas, including walkways, underground passages, platforms shall be kept clean and free from obstructions at all times.
 - b. All non-hazardous wastes must be disposed in separate containers provided for.
- Rule 793** - Underground workers shall be required to use only the sanitary toilets which have been provided for.
- Rule 794** - The mine camp/area shall be provided with adequate sanitation facilities such as potable drinking water, clean eating areas washrooms, showers, toilets, changing rooms and first aid station/s.
- Rule 795** - The manager shall ensure that waste receptacles located underground shall be cleaned regularly.
- Rule 796** - The manager shall ensure that any sanitation and health facilities in the underground are located, used, maintained in order to prevent pollution of any workplace.
- Rule 797** - No waste timber and any other combustible or perishable material shall not be stored in the underground.
- Rule 798** - Accumulation of stagnant water shall not be allowed at any place in underground mine where employees work or travel and shall be drained or pumped away from such place.
- Rule 799** - Whenever stagnant water is drained or pumped away, precautionary measures shall be undertaken to protect employees from unnecessary risks from the emission of noxious gases.

**SECTION 61 : TOXIC AND HAZARDOUS
SUBSTANCE**

- Rule 800** - All applicable provisions of R. A. 6969 and its implementing rules and regulations shall be embodied in this Order.
- Rule 801** - The manager shall ensure that a Material Safety Data Sheet (MSDS) is provided for each toxic and hazardous substance used or produced in the workplace and shall be readily accessible and available to all employees which are potentially at risks from the hazardous substance.
- Rule 802** - Each toxic and hazardous substance container in the mine shall be properly labelled, covered and stored as such.
- Rule 803** - A risk assessment shall be conducted at the mine whenever there is a potential health hazard posed to employees from exposure to a hazardous/toxic substance and the result of assessment shall be submitted to the Bureau.
- Rule 804** - Wherever there is a possibility that employees may be exposed to a hazardous substance, the employer shall reduce so far as practicable as possible the exposure of the employees by the following means :
- a. Eliminating the use of the substance;
 - b. Substituting a less hazardous substance;
 - c. Limiting the exposure of the employees to the substance;
 - d. Using appropriate engineering and ventilation controls;
 - e. Adopting safe working practices; and

- f. Using appropriate personal protective equipment.

SECTION 62 : VENTILATION AND CONTROL OF DUST, FUMES, OPPRESIVE AIR AND CORROSIVE WATER

Rule 805 - The manager shall assign a ventilation engineer for the mine or may assign additional ventilation inspectors to assist the ventilation engineer to sufficiently inspect the various areas of the mine.

Rule 806 - The manager of the mine shall inform in writing the Regional Director of the appointment of the ventilation engineer and/or inspectors.

Rule 807 - The ventilation engineer for underground shall meet at least the following requirements :

- a. a licensed engineer in which mine ventilation was a substantial component of the curriculum; and
- b. a minimum of three (3) years experience in mine ventilation.

Rule 808 - Duties of a Ventilation Engineer

The ventilation engineer shall be responsible for :

1. regular inspection and testing workplaces, travelways and locations where persons may travel to determine whether
 - 1.1. atmospheric contaminants in the mine are maintained at levels as low as reasonably achieved; and

- 1.2. the mine ventilation system is providing adequate ventilation flows through those areas.
2. At three (3) months interval and after any substantial change to the primary ventilation circuits and volume flows, determining and recording the quantity and quality of ventilating air in the mine using correct procedures and using instruments and equipment suited to that purpose.
3. Operating, calibrating and maintaining any metering or monitoring device used to determine the level of emission of toxic or other atmospheric contaminants from any plant or equipment at the mine.
4. Ensuring that all atmospheric contaminants sampling is carried out and is recorded and reported accurately.
5. Correctly selecting and positioning auxiliary fans if required to ensure that the required volumes of air are provided in workplaces at the mine to meet the requirement.
6. Reading and recording the wet and dry bulb temperatures of all workplaces in the mine where it is suspected that temperatures or humid conditions may have potential for adverse effects on the health and safety of persons in the workplaces.
7. Having the pressure and volume readings of primary forms used in ventilating the mine taken and recorded at intervals not exceeding 3 months.

8. Having ventilation plans of the mine should be updated at all times and to ensure that the current ventilation and survey information is immediately available on special plans maintained for the use of rescue teams in the event of an underground emergency.
9. Inform the concern manager of any defect or deficiency in the ventilation at the mine; and any atmospheric contaminants level in a workplace at the mine that exceeds the exposure standard and immediately institute appropriate mitigating measures in the ventilation of the mine.
10. Providing technical advice and guidance to any ventilation technician.

Rule 809 - The employer shall provide and maintain in all active underground workings an adequate supply of fresh air.

Rule 810 - The quantity of fresh air, including compressed air, supplied underground in any ventilated district, area or system, at any time at which the number of employees employed is at its maximum shall not be less than two cubic meters per minute per man (2.0 cu. m./min./man) during the full period of work exclusive of the quantity requirement of equipment.

Rule 811 - Where toxic gases of any nature, whose concentration will endanger the workers, are found in mine workings, the Director or his duly authorized representative shall be immediately notified by the quickest means of communications. Further, the allowable limit of gases in a mine shall be provided by the Bureau through a supplementary order.

- Rule 812** - Emergency fire doors, bulkhead shall be placed where needed to prevent smoke and gases from cutting off the escape of employees working in the mine.
- Rule 813** - Bulkhead, door frames and fire doors shall be constructed airtight.
- Rule 814** - The vicinity of the collars of downcast shafts and portals of intake adits and tunnels shall be kept clear of fire hazards at a distance of fifteen (15) meters. Where fire hazards exist, an airtight door that can be easily closed shall be installed.
- Rule 815** - The ventilation current from the downcast or intake shall be suitably distributed to provide sufficient air to all working places.
- Rule 816** - In all portions of a mine or working where the natural ventilating current is insufficient, suitable mechanical equipment for ventilation shall be operated or provided. Mechanically produced and positively controlled air current shall be provided for each mine with more than three hundred (300) meters in depth (measured along the line of the shaft) unless it can be proven that mechanically produced air current would not be necessary.
- Rule 817** - Every door directly assisting or in any way affecting the ventilation of a mine shall be so adjusted as to be self-closing and shall remain closed in the event the ventilating current is reversed in an emergency.
- Rule 818** - A clear and fairly accurate, ventilation map of each district, working area or system of each mine showing

the direction of main air currents and position of doors, stopping, crossings and main ventilating equipment shall be kept up to date and shall be submitted to the Director or his representative upon request.

- Rule 819** - Active underground areas that cannot be supplied thru natural/mechanical ventilation shall be provided with compressed air. Airline shall be provided with two (2) air valves at the entrance and at the end of the pipe. The valve at the end pipe shall be open at all times.
- Rule 820** - The quantity and quality of air shall be determined and monitored daily or in every change of shift if necessary.
- Rule 821** - Sampling of the quantity of Carbon Monoxide (CO) in the air taken under normal working conditions shall be made by each mine with no less than five hundred (500) persons on the average employed underground at a time once in every three (3) months or as often as necessary on the following places, among others : All development headings, thirty (30) meters from face; all winzes and shafts, fifteen (15) meters from the face; bottom of up cast shaft and all stopes connected with only one entrance. The sampling report which may be opened by the Director or his representative shall be kept at the mine office and it shall include the sampling points, the amount of CO present, the time of sampling and the time of the last previous blast.
- Rule 822** - Quantity and size of suspended dust particles present shall be determined in working places as often as necessary but not less than once in six (6) months and recorded in a book in a manner similar to that

prescribed in Rule 753. The Director or his duly authorized representative may open the book for inspection.

Rule 823 - No employee shall be required to work or remain in a mine if the air contains dangerous concentration of dust, smoke or fumes.

Rule 824 - Every winze shall be provided with a separate airpipe and/or fan independent of the air supply to any machine drills used therein.

Rule 825 - No employee shall be permitted to stope above a level where there is no through connection from the stope to the level above, except in top slicing and other methods permitted by the Bureau on conditions that the ventilation is adequate, the number of persons working therein is limited and the machine drills used are provided with water feed.

Rule 826 - When fans are used, the principal fan or fans shall be installed on the surface and air ducts so arranged that the mine entrance can be used for rescue operation or other purposes.

Rule 827 - Surface fan casing and air ducts connecting with the mine openings and also the fan houses and other buildings shall be adequately protected from fire.

Rule 828 - The main intake and main return air currents in mines shall be in separate shafts, stopes, or drifts except in a single shaft properly designed to accommodate both intake and exhaust.

Rule 829 - Airways shall be kept clear to permit free passage of air.

- Rule 830** - Sufficient air shall be provided to dilute or remove blasting fumes with as little delay as possible.
- Rule 831** - Changes in ventilation that may adversely affect the safety of the employees shall be made only when the mine is idle and no employees are in the mine except those engage in changing the ventilation.
- Rule 832** - Bulkhead or stoppings in areas intended to be reopened shall be provided with pipes and valves for sampling purposes.
- Rule 833** - Any mine or portion of a mine shall be considered dangerous when inflammable or explosive gases are detected. Special precautions shall be taken to correct and prevent such conditions.
- Rule 834** - Dry drilling shall be prohibited. Permission shall be secured from the manager for isolated cases or from the Bureau for large scale dry drilling.
- Rule 835** - Ventilation fans shall not be stopped unless permission has been obtained from proper authorities.
- Rule 836** - Mine officials shall be notified at once regarding unusual changes in the ventilation circuits.
- Rule 837** - No employee shall be permitted to close any airways unless order is given by proper authorities.
- Rule 838** - Fans shall be provided with adequate guards or screen.
- Rule 839** - Long adits shall be provided with adequate mechanical ventilation system.

- Rule 840** - When drilling in mines where siliceous or other harmful dust are formed, only drill machines of water injection type shall be used.
- Rule 841** - The working water pressure at the drill machine shall be maintained at one (1) kilogram per square centimeter or more.
- Rule 842** - Working places that emits dust shall be sufficiently wetted from time to time during the duration of work.
- Rule 843** - The manager shall ensure that any water used for the purpose of suppressing dust has not been contaminated by any noxious substance.
- Rule 844** - No employee shall be allowed to enter a newly blasted working place unless the smoke and fumes from the blast have been cleared of sufficiently.
- Rule 845** - Where a place is likely to contain dangerous accumulation of noxious gases, workers shall maintain eight (8) meters boreholes in advance and such additional precautionary measures necessary to obviate the danger of a sudden breaking-through of gases. The working place shall not exceed two and half (2.5) meters in width.
- Rule 846** - Employees shall be protected from the corrosive action of underground water by providing adequate protective paraphernalia.
- Rule 847** - No tailings which may contain residual amounts of chemicals or reagents are used in filling stopes or voids in underground workings,

Rule 848 - In mines where the ambient temperature exceeds the normal body temperature and/or oppressive humidity exists, adequate means shall be provided to correct such conditions to tolerable level.

CHAPTER XIII

SECTION 63 : PERSONAL PROTECTIVE EQUIPMENT

Rule 849 - Adequate personal protective equipment shall be provided to all employees and shall be of a type and condition that will not expose the employee to any unnecessary and unavoidable hazards.

Rule 850 - Persons working in surface mining operations shall be required to wear safety non-metallic/non-conductive hard hats and safety rubber boots or safety shoes. All safety gadget i. e., head gears and footwears, and the like shall meet the requirements of the standardization test of the Bureau of Product Standards or concerned government agency.

Rule 851 - Persons going underground shall be required to wear miner's lamps and safety belts, hard hats and safety rubber boots that meets the requirements of the Bureau of Product Standards or as approved by concerned government agency.

Rule 852 - When working on live electrical circuit or when handling high tension wire/cables, appropriate high tension rubber gloves, rubber mats or other suitable insulated materials shall be used for protection.

Rule 853 - Employees handling materials likely to puncture abrade, or irritate hands or arms shall be required to wear appropriate

protective equipment except when the use of these equipment introduce equal or greater hazards.

- Rule 854 - Appropriate eye protection equipment shall be worn whenever employees are exposed to the hazards of eye injury.**
- Rule 855 - Workers exposed to a risk of drowning shall be required to wear life saving apparels.**
- Rule 856 - Where there is harmful concentrations of gases, vapors, mists or dusts, or oxygen deficiency, workers shall be required to wear appropriate respiratory protective equipment.**
- Rule 857 - Personal protective equipment shall be maintained in good working and sanitary and hygienic condition.**
- Rule 858 - Safety belts, harness, straps or lifelines shall be worn by all (persons) employee working at elevations three (3) meters above or where there is hazard of falling or slipping from a dangerous heights.**
- Rule 859 - Employee who are assigned to work in a confined space shall be provided with the necessary and appropriate personal protective equipment.**

CHAPTER XIV

SECTION 64 : HEALTH HAZARD CONTROL

A. General Provisions

- Rule 860 - Pursuant to the Duties and Responsibilities mentioned in Chapter I, Section 5 of this Order, the employer shall provide for emergency and occupational**

health services and facilities in accordance with the previous Rules of this Order.

Rule 861 - In the case of a Service Contractors, they may enter into an agreement with its principal regarding the mutual use of emergency health services and facilities provided by the latter.

Rule 862 - The (A) medical practitioner or safety engineer shall conduct health and sanitary inspections in all work places on a regular basis.

Rule 863 - Every employer shall keep in his workplace at least the minimum quantity of medicines, medical supplies, equipment and medical facilities in accordance with the prescribed list in Chapter VII of Sanitation Code of the Philippines and medicines.

B. Emergency Medical and Dental Services

Rule 864 - Every employer shall provide his workers with emergency medical and dental services and facilities in the following cases and manner.

For Class D mines and service contractors, the employer shall provide:

- At least one (1) full time first aider for every shift who may be one of the workers.
- At least one (1) part time* Nurse
- At least one (1) part time doctor and dentist.
- "Emergency treatment room"

For Class C mines and Service Contractors, the employer shall provide:

- At least one (1) first aider in every shift
- At least one (1) full time** nurse
- At least one (1) part time doctor and dentist
- "Emergency Clinic"

For Class B mines and Service Contractors, the employer shall provide:

- At least one (1) first aid team in every shift
- At least one (1) full time nurse
- At least one (1) full time doctor and one (1) part time dentist
- "Emergency clinic"

For Class A mines and Service Contractors, the employee shall provide:

- At least one (1) first aid team in every shift
- At least one (1) full time nurse for every 250 workers for every shift
- At least one (1) full time doctor in every shift and one (1) full time dentist
- "Emergency Hospital"

* a part-time health personnel shall render service for a minimum of four hours a day

** a full time health personnel shall render service for a minimum of eight (8) a day

Rule 865 - An employer may not establish an emergency hospital and/or dental clinic in his workplace as required where there is a hospital or dental clinic located not more than five (5) kms. away from the workplace, or which can be reached in twenty five (25) minutes of travel. Appropriate

standby emergency transport vehicle shall be provided by the employer for the immediate transfer of the sick/injured worker to the hospital.

Rule 866 - The employer shall enter into a written contract with the nearest hospital and dental clinic for occupational health services to be rendered to its workers.

Rule 867 - The "Occupation Health Practitioner" shall maintain a monthly health record of each workers and shall prepare an annual medical report for submission to the Bureau copy furnished DOLE-BWC and Occupational Health Division-Department of Health.

CHAPTER XV

SECTION 65 : IDENTIFICATION OF PIPING SYSTEM

Rule 868 - All applicable rules governing the proper identification of materials in piping systems shall conform with the Occupational Safety and Health Standards, as amended, of the Department of Labor and Employment (DOLE).

CHAPTER XVI

SECTION 66 : PLANT OPERATIONS

A. General Provisions

Rule 869 - Other safety rules and regulations cited elsewhere in this Order, which are found applicable to plant operation, are hereby embodied.

- Rule 870** - Employees shall know the characteristics and the hazards involved in handling chemicals.
- Rule 871** - Employees who are assigned to handle hot or molten materials shall be required to wear fire proof apparel.
- Rule 872** - Employees assigned to work in the bin or tank shall be required to wear a safety belt with a lifeline attached to a permanent support.
- Rule 873** - No employee shall be allowed to look directly into the smelting furnace while in operation.
- Rule 874** - No digestion process shall be done outside of the digestion chamber.
- Rule 875** - Wearing of loose clothes shall be avoided and appropriate clothing shall be worn in specific areas.
- Rule 876** - Locations of all safety equipment, fire extinguishers, first aid kit and others shall be known to all at all times.
- Rule 877** - All mineral-processing plants shall be provided with appliances to control, suppress or dilute the emission of atmospheric contaminants.
- Rule 878** - Compressed air shall not be allowed in cleaning the body.
- Rule 879** - Proper housekeeping shall be practiced at all times in the plant.

B. Moving Equipment and Conveyor System

- Rule 880** - No employee shall be permitted to work or undertake repairs on any plant machinery while in operation.
- Rule 881** - Operations, adjustments, and repairs of plant machinery and equipment shall be restricted to trained and authorized personnel. Apprentices shall be allowed to operate, adjust and repair plant machinery and equipment provided that they are closely supervised.
- Rule 882** - Before starting any moving equipment within the plant, the operator shall ensure that the working areas are cleared of men, materials and other obstacles.
- Rule 883** - Conveyor system shall be provided with adequate protection such as screen, grills, or guards when constructed along passageways and working areas to protect employees to get contact into.
- Rule 884--** Ball mills shall be guarded/cordoned at all sides at least 1 meter away from the shell to prevent personnel from going near the rotating shell during milling.
- Rule 885** - Lock and tag procedure shall be implemented when doing repair works and internal inspection at mill and other equipment. All service contractors/employees shall secure permission from the plant manager or supervisor before starting any work.
- Rule 886** - No employee shall at any time stand or work under suspended crane load. Overhead crane shall be provided with buzzer or any other signal system to indicate its movement.

Rule 887 - Drives and belts shall be adequately guarded and the self-draining floor shall be washed frequently to prevent accumulation of oil and grease.

Rule 888 - Belt and chain drive units shall

- a. be free from excessive accumulation of dusts and other inflammable materials;
- b. be well lighted at loading and unloading points;
- c. be provided with warning or signal device at both ends;
- d. have no power conductors installed on the clearance side of the belt;
- e. be provided with circuit breakers and switch control; and
- f. have the frames of motor and metal cases of control well grounded.

Rule 889 - Elevated conveyors requiring frequent access shall be provided with footwalks or platforms along the entire length and equipped with standard railings.

Rule 890 - Walkways shall be cleared of ore spillage, machine parts and other materials.

Rule 891 - Conveyors shall only be used in transporting raw or finished materials.

Rule 892 - When a conveyor is in operation, all employees shall be prohibited to climb over or pass under unprotected conveyor belt, clean the deck, pulleys or rollers.

Rule 893 - Emergency trip cords or push button switches shall be installed on all conveyor systems and shall always be in

good working order. Any defects shall be repaired immediately.

Rule 894 - No repair or servicing shall be done on conveyors and its accessories while in operation.

Rule 895 - All plant personnel shall exercise extra precaution whenever passing beneath moving belts.

C. Non-Moving Equipment

Rule 896 - It shall be prohibited for any employee to enter through openings located below the bin containing hang-up materials. Adequate measures shall be provided for barring down hang-up materials.

Rule 897 - It shall be prohibited for any employee to bathe or swim in the mill water reservoir, head tanks, water reclamation thickeners or tailings pond.

Rule 898 - Platforms and railings shall be kept in safe conditions.

Rule 899 - It shall be prohibited to direct stream water to electric power lines, electric motor, switch gear, welding machine or piece of an electrical equipment.

Rule 900 - It shall be prohibited to store personal belongings on switch cabinets.

D. Leaching Operations

Rule 901 - Reagents for leaching plants shall be handled with reasonable precautions. Container labels and instructions shall be read and followed carefully. Stocks shall be stored separately in a dry place and under cover from heat and sunlight.

- Rule 902** - Slurries or solutions in leaching circuits shall be always treated as hazardous to health due to the presence of cyanide or other leachants or to hot and corrosive solutions at high temperature and pressure.
- Rule 903** - Whenever a ball/rod mill is stopped for inspection, any leachant feed shall be turned off and sufficient volume and pressure of compressed air shall be blown in for a sufficient period of time to cleanse/purge the toxic air inside the mill before entering.
- Rule 904** - Cyanide and other leachant spillage shall be removed/cleaned immediately.
- Rule 905** - Leachant shall be stored in a well kept and ventilated enclosures. Storage floors shall have drainage connected to the leaching circuit and kept in a manner that permits vacuuming and sweeping in case of major spills.
- Rule 906** - Food, drinks and tobacco shall be prohibited in the leachants storage and mixing areas. Warning signs of these restrictions shall be posted along these areas.
- Rule 907** - Extra precaution shall always be maintained in mixing leachants with water. Mixing tank shall be constructed to direct dusts and gas away from the operator. The feed water entry shall be provided with a positive means of preventing any back flow.
- Rule 908** - All working areas used for the collection of leachant solutions shall be provided with sufficient mechanical ventilation.
- Rule 909** - Areas where leachants and other chemicals/substances are mixed and handled shall be provided with a safety shower,

eyewash and hand wash facilities and fresh water wash-down hose.

- Rule 910 - Employees handling leachant solutions, or open containers during normal mixing, maintenance and in-situ leaching procedures shall wear the necessary personal protective equipment.
- Rule 911 - Leachant containers shall be washed clean or otherwise decontaminated before they are removed from the mixing area. Washed water shall be isolated or conducted to the mill or tailings circuit.
- Rule 912 - Inspection, cleaning and repairing of tanks and other equipment used for solutions of leachants shall be performed under careful supervision of properly trained workers and provided further that no personnel nor any items has been left inside the tank after undertaking maintenance job.
- Rule 913 - Monitoring wells or trenches shall be placed below an earth tanks, tailings pond, or leach pond containing cyanide and other deleterious chemicals in order to detect any possible solution loss that may contaminate groundwater. Water in the wells or trenches shall be sampled daily, analyzed and the results recorded.
- Rule 914 - Cyanide shall be stored to prevent it to be exposed to acid vapors, acid salts or acids liberated by spillage or leakage.
- Rule 915 - Aqueous cyanide and other deleterious solution shall not be mixed by air agitation method.
- Rule 916 - At all points in cyanide leaching operations, the pH level shall be monitored and maintained not lower than 9.5.

Rule 917 - Fire extinguishers containing carbon dioxide as fire extinguishing agents shall not be used on, in or near an area of cyanide storage.

Rule 918 - In heap leaching operation, this shall be governed by :

- a. the competence and stability of the heap materials such that the danger of sudden slide is avoided.
- b. leach pads are appropriately lined to avoid seepage of solution that may contaminate the ground water.
- c. unauthorized persons are prohibited from entering the heap leaching area.
- d. solution ponds are appropriately lined and enclosed with at least 2.4 meters perimeter fence.
- e. a hazard study shall be required to determine the best options for safe operation and its health impacts to the employees.

Rule 919 - In areas where cyanides and other toxic chemicals are used, appropriate warning signs shall be provided and posted.

Rule 920 - Monitoring devices so far as practicable as possible shall be provided to detect leakage in solution ponds.

Rule 921- Mill personnel shall be required to know the antidotes of cyanide and dangerous chemicals and antidote kits shall be provided in the area where they are handled. The instructions shall be posted.

E. Cement Plants

Rule 922 - Other safety rules and regulations cited elsewhere in this Order, which are found applicable to cement plant operation, are hereby embodied.

- Rule 923** - No employee shall be required to enter any hot and confined working area for any purpose unless the temperature inside has reasonably cooled and declared safe by the safety engineer for the said employee to enter and work.
- Rule 924** - Refractory bricks shall not be tossed by one worker to another during rebricking works.
- Rule 925** - Jack supports for uncompleted brickwork rings shall be properly secured before repositioning the kiln.
- Rule 926** - Adequate working spaces shall be provided for declogging works in the preheater cyclones, calciner, conditioning tones and the like to give sufficient area for mobility.
- Rule 927** - An appropriate device/material shall used in the inspection hole of the kiln for viewing purposes inside the kiln.
- Rule 928** - All cooler covers shall be securely fastened to prevent hot gas and dust from escaping the chamber.
- Rule 929** - Adequate ventilation shall be required in all confined working areas such as inside the kiln, ball mills, cooler, preheater, calciner and the like.
- Rule 930** - Filter bags used in the coal mill jet pulse dust collectors shall be of the carbon-impregnated type to prevent explosion due to static electricity.
- Rule 931** - Accumulated coal dust spillage shall be removed and properly disposed of immediately.

- Rule 932** - Minimum concentration of carbon monoxide (CO) shall be maintained in the kiln flue gas as per recommendation by the electrostatic precipitator (EP) manufacturer to prevent explosion.
- Rule 933** - No person, equipment and tools shall be allowed inside the kiln before rotating the kiln during repairs and maintenance.

F. Protection Against the Handling of Chemicals and Other Laboratory Hazards

- Rule 934** - Extra precautions shall be exercised in handling concentrated lime, pulp and reagent solution.
- Rule 935** - Any personnel handling and mixing mill reagents such as frothers, collectors, cyanide and other toxic chemicals shall be required to wear chemical respirators, gloves and other protective equipment.
- Rule 936** - Only trained and authorized personnel shall be allowed to handle chemicals.
- Rule 937** - Bottles containing acid or dangerous chemicals shall be clearly labeled and stored properly to prevent breakage or spillage.
- Rule 938** - When diluting an acid with water, the acid shall always be poured slowly into the water with constant stirring of the mixture. Water shall never be poured into the acid.
- Rule 939** - Before breaking any line or container that has held a liquid or gas under pressure, it shall be isolated on either side of the break and that the area shall be cleared of other persons.

- Rule 940** - Containers, pipes or hoses which had been used in handling and conveying toxic materials shall either be properly disposed/destroyed or clearly marked.
- Rule 941** - In area where corrosive liquid, gases, fumes, mists or vapours occur, adequate measures shall be taken to prevent damage to structural parts and equipment or apparatus.
- Rule 942** - Handling, using and transporting of corrosive or hot liquids in bulk shall be done by means of gravity, compressed air or inert gas displacement or pressure pumps with the respective system extending to the point of use.
- Rule 943** - In emptying receptacles containing corrosive or hot liquids which are not equipped with drain cocks, the employees shall be required to use pumps, tipping appliances or the like.
- Rule 944** - Where portable receptacles are used in transporting corrosive liquids inside buildings, care shall be taken to prevent the escape of fumes or mist and shall be done preferably by means of conveyors or by special conveyances.
- Rule 945** - Receptacles shall be kept securely closed except during extraction of the contents.
- Rule 946** - Floor of rooms where corrosive liquids are handled or used shall be maintained as dry as possible.
- Rule 947** - Spillage of corrosive liquids shall be cordoned until removed.

- Rule 948** - Spillage or escaping corrosive acid and alkalis shall never be allowed to be absorbed by sawdust, waste or other organic materials but instead shall be flushed out with water or neutralized with appropriate solution.
- Rule 949** - Where corrosive liquids are handled or used, clear running water shall be readily accessible to all employees.
- Rule 950** - Red label chemicals, like chlorates, nitrate and peroxides which are apt to cause violent explosions and produce fire shall be handled with caution and such chemicals shall be covered with a Permit for Possession and Purchase issued by the Philippine National Police upon proper indorsement of the Regional Offices.
- Rule 951** - Storing of liquid ammonia shall not exceed three quarter full.
- Rule 952** - Flammable liquids and gases shall be stored in a cool and well-ventilated area.
- Rule 953** - Containers of flammable materials shall be opened and thoroughly drained and washed before cutting or welding.
- Rule 954** - Smoking or open flames shall be prohibited near storage tanks holding reagents.
- Rule 956** - Fume hoods shall be installed over hot plates and analyzers where toxic gases may emit.
- Rule 957** - All vessels used for chemical treatment of minerals or mineral substances at the mine shall be fitted with hoods or other appliances to prevent harmful fumes,

mists or vapours from entering the air breathed by employees.

- Rule 958 - Fire assay room shall be properly ventilated.**
- Rule 959 - Mixing chemicals shall only be done by trained and authorized personnel.**
- Rule 960 - Fuel systems of furnaces and burners shall be properly located and proper shut-off valves shall be installed.**
- Rule 961 - Assay furnace shall be provided with appropriate chimney connector pipes for its entire length.**
- Rule 962 - Water installation or the like shall be prohibited within the immediate vicinity where molten metals are handled.**
- Rule 963 - Floor area shall always be kept dean and clear of obstruction if working near or carrying molten metal.**
- Rule 964 - Quenching hot material shall be done carefully.**
- Rule 965 - Molds for molten metals shall be kept dry before using.**
- Rule 966 - Reagents and chemicals shall be properly segregated and labeled and stored separately.**
- Rule 967 - Chemical containers shall not be exposed or left opened. Emptied containers shall be decontaminated, neutralized or diluted before disposal.**

Rule 968 - Eating and smoking shall be prohibited after handling said materials unless materials unless employees have properly washed hands and face.

Rule 969 - Acids and chemical containers shall always be inspected for any leakage before transport.

Rule 970 - During transport, acids shall be separated from cyanides.

CHAPTER XVII

SECTION 67 : RADIATION SAFETY

Rule 971 - All applicable rules and regulations of PNRI standards shall be included in this Order.

Rule 972 - Radioactive materials used in plant operations shall be maintained and properly shielded for protection of employees against ionizing radiation.

Rule 973 - Any personnel suspected of being contaminated in view of accidental exposure to radiation shall undergo decontamination procedures.

Rule 974 - Any material used in the decontamination procedures and materials which are not fully decontaminated shall be kept in prescribed storage room.

Rule 975 - After working on radioactive material, the Radiological Safety and Health Officer shall ensure that all employees being exposed into and materials used have properly undergone monitoring and decontamination.

- Rule 976** - The Radiological Safety and Health Officer shall prepare a radiation management plan which shall form part of its safety and health program. It shall contain the following measures, which shall be undertaken to control the exposure of employees;
- a. the equipment, facilities and operational procedures used at the mine;
 - b. monitoring programs;
 - c. procedures for the assessment of dose;
 - d. procedures for reporting incidents.
- Rule 977** - No employee shall be allowed to enter or work in an area suspected of contamination until declared safe and clear.
- Rule 978** - If any defect or malfunction of the nuclear device occurred in the mine that cause doses of radiation in excess of dose constraint or contamination levels in excess of authorized limits, the Radiological Safety and Health Officer shall cause the investigation and take remedial action to correct the defect of malfunction. In which case, notification shall be served to the Bureau and the PNRI.

CHAPTER XVIII

SECTION 68 : ELECTRICAL AND MECHANICAL RULES

A. General Provisions

- Rule 979** - For all electrical installations operations and maintenance, the provisions of the latest edition of the Philippine Electrical Code, Parts I and II as approved

by the Institute of Integrated Electrical Engineers shall be followed unless otherwise specified.

- Rule 980** - For all mechanical installations the latest provisions of the Philippine Mechanical Engineering Code shall be followed unless otherwise specified.
- Rule 981** - Operations and maintenance of mechanical and electrical machinery and equipment shall, in all cases, be done by duly authorized persons.
- Rule 982** - Necessary inspection, test and maintenance records of mechanical and electrical machines shall be compiled and kept in a form prescribed by the Bureau.
- Rule 983** - Safety device, tools and other apparatus used on any electrical or mechanical equipment or machinery shall be of the approved standard.
- Rule 984** - Machinery, equipment and tools shall be maintained in such condition that employees shall not be endangered.
- Rule 985** - Safety valves, governors, overspeed trips, automatic cut-outs, fuses and other similar safety protective device shall be installed to protect equipment from damage. Such device shall not be tampered with or altered and shall not be repaired or adjusted at any time without authorization.
- Rule 986** - Machinery and equipment shall be equipped with appropriate guards to provide adequate protection for employees against contact with moving parts, or which prevent access by employees to the dangerous areas during operation.

- Rule 987** - Loose clothing, long sleeves shall not be worn near or around revolving/rotating machinery, equipment and parts.
- Rule 988** - A plan shall be kept at the mine showing the location of all permanently installed electrical machinery and apparatus in connection with the mine electrical system including cables, conductors, lights, motors, switches, trolley lines and transformers. This plan shall be updated as often as necessary.
- Rule 989** - Where electricity is used in underground mine, a systematic inspection and reporting of all wiring and equipment shall be made at least once a month.
- Rule 990** - The rating of each piece of electrical equipment shall be stamped on it or inscribed on a metal plate suitably mounted and maintained upon the equipment. The inscription on the plate shall indicate voltage, capacity, full load current, speed and duty.
- Rule 991** - No person shall be allowed to work on or with electrical equipment of any kind unless he has been previously instructed by an authorized person in connection with the performance of his duties.
- Rule 992** - Care shall be taken to ensure good mechanical construction and neat workmanship in connection with all wiring installation of equipment.
- Rule 993** - Warning signs shall be posted at points where there are possibilities of contact with live or moving parts. Only authorized employees shall be allowed to operate the electrical apparatus.

SECTION 69 : ELECTRICAL SAFETY RULES

A. General Safety Precautions

- Rule 994** - Ground circuit shall be regularly checked at reasonable intervals. Records of the same shall be kept as part of the mine records.
- Rule 995** - Power lines that are no longer in use shall be removed or disconnected and properly secured from accidental connection.
- Rule 996** - All electrical apparatus shall have adequate safeguard against fire and electrical shocks in case of failure of insulations.
- Rule 997** - The operation and setting of instantaneous relays shall be checked regularly and the records therefrom shall be maintained as part of mine records.
- Rule 998** - Parts of electrical equipment which produce arcs, sparks, flames or molten metals in normal operation shall be enclosed unless separated and isolated from combustible materials.
- Rule 999** - In hazardous jobs such as working with or close to live conductors, at least two men shall work together. When it is necessary for an employee to leave his companion, the person left behind shall work only outside the hazardous area.

B. Electrical Construction and/or Installations

- Rule 1000** - Electrical construction and/or installations shall be made in accordance with the approved plan and shall be under the direct supervision of a Professional Electrical Engineer or Registered Electrical Engineer.

Rule 1001- Temporary installations of electrical equipment, device, controllers, instruments and wiring shall be done under the direct supervision of an authorized person and the materials used shall conform with the approved specifications.

Rule 1002 - Installations of generators, motors, control equipment conductors, exposed live wires and moving parts shall be properly insulated and guarded.

Rule 1003 - Temporary covers, guards, warning signs and other safety devices shall be provided before leaving unfinished jobs.

C. Substations

Rule 1004 - Transformer station shall be kept locked against unauthorized entry and warning signs shall be posted. Locks shall be accessible and can be opened from the inside.

Rule 1005 - Surface transformers shall be installed at least two (2) meters above the ground or enclosed in a vault, or by substantial fence at least 1.5 meters in height.

Rule 1006 - Underground substations shall be placed in a vault or fire proof rooms properly ventilated and arranged to permit easy escape of employees in case of fire or explosion.

Rule 1007 - Substations within thirty-five (35) meters from any mine opening shall be in vault or fire resistant rooms.

Rule 1008 - Surface substations containing oil-filled apparatus shall be isolated or separated from other equipment and buildings by fire resistant barriers.

Rule 1009 - The area immediately surrounding a substation shall be kept free from grass, weeds and other combustible materials.

Rule 1010 - Adequate and appropriate fire protection equipment shall be provided in every substation.

D. Switchboards and Control Centers

Rule 1011 - Adequate illumination shall be provided both at the front and rear side of switchboards.

Rule 1012 - Entrances to the backspace of any switchboards with exposed live parts shall be provided with barriers that are kept locked.

Rule 1013 - Insulating mats or platform shall be provided in front of switchboards.

Rule 1014 - Only duly authorized persons shall be allowed to work on switchboards and control rooms and warning signs shall be posted.

E. Motors, Generators and Controlling Devices

Rule 1015 - Switch control shall be installed within sight of the motor operator and the equipment he operates.

Rule 1016 - The control device of motors shall be placed at a safe distance from combustible materials.

Rule 1017 - Motors shall be of the type approved in accordance with the conditions where these are installed.

Rule 1018 - Overload device, starting controls and compensators shall not be used as circuit breakers.

Rule 1019 - Controls shall be identified or labeled and shall be equipped with indicating lights or meters to show when the motor loads are energized.

F. Working on Energized Equipment

Rule 1020 - Rubber gloves, shield and other necessary safety equipment shall be used by employees working on energized electrical conductors or equipment operating at more than one hundred fifty (150) volts to ground.

Rule 1021 - No work shall be done on energized electrical equipment or conductor operating at seven hundred fifty (750) volts, unless two or more experienced employees are present.

Rule 1022 - In tunnels and manholes, no work shall be done on any energized electrical conductor operating at one hundred fifty (150) volts to ground unless two or more experienced employees are present.

Rule 1023 - Metal ladders shall not be used while working in proximity to energized electrical equipment.

G. Testing and Energizing Electrical Equipment

Rule 1024 - Before starting to test-run electrical equipment, branch circuit protective device and circuit grounding system shall be checked if properly installed and any waste materials and tools removed.

Rule 1025 - Before energizing the power line of equipment, the protective device and the controller shall first be

energized and checked for proper setting and operation.

- Rule 1026 - Testing and energizing shall be carried out with proper instruments and tools such as megger, ammeter, volt meter, insulating stick, insulation gloves and the like for protection against electrical hazard, accidental damage or injury.
- Rule 1027 - The circuit shall be checked completely before power is applied for the first time by an authorized supervisor.
- Rule 1028 - Motors and testing instruments shall be checked of its capacity before using.
- Rule 1029 - High voltage circuit on the primary side shall be tested on the low voltage side of an instrument transformer.
- Rule 1030 - Approved tester shall be used in testing ground or faulted windings and commutator segment assembly.
- Rule 1031 - Circuits shall be tested with approved testing equipment before energizing.
- Rule 1032 - Before breaking the circuit of current transformer secondaries, the loads shall be grounded and effectively short-circuited between the transformer coil and the points at which the circuit is to be broken.
- Rule 1033 - Before power is applied for the first time to potential transformer, portable meters and the like whether connected temporarily or permanently, all necessary checks shall be undertaken.

H. Repairs and Maintenance

- Rule 1034 - Power shall be shut off when making examinations, repairs or alterations of electrical installations. When this is impractical, the approval of the supervisor shall be obtained and all necessary precautions shall be taken.**
- Rule 1035 - Employee shall be required to “lock-out or block open” the control device, disconnect open type switches, and remove fuses before examining, repairing or working on circuits, electrical equipment and other electrical installations. Lock shall remain in an open position and shall be removed only after a thorough investigation by the supervisor-in-charge.**
- Rule 1036 - If motors are running, safety switch shall not be opened. The magnetic controller shall be de-energized first before opening.**
- Rule 1037 - Repairs and maintenance shall be made according to standard procedures and manufacturers specifications.**
- Rule 1038 - Removal and replacement of fuses shall be done with a fuse holder or with approved rubber gloves. Fuses and disconnectors shall not be pulled unless loads on the circuit are de-energized. Only fuse in a cartridge shall be used.**
- Rule 1039 - During storm, it shall be prohibited to work or stay under any high voltage distribution lines or transmission lines.**

Rule 1040 - Employees shall be prohibited to wear rings, jewelries, watches or metal chains and such other articles which may be caught in by moving parts of machineries of which may come in contact with electrical circuits.

Rule 1041 - Covers of protective device of electrical circuit breakers and starters shall always be closed before switching in “on” position.

I. Working on Electric Posts or Poles

Rule 1042 - Posts shall be free of any defects. Defective posts shall be supported until replacement is made.

Rule 1043 - Before starting to work on live circuits in electric posts, rubber blankets or shields shall be placed over adjacent ground wires for protection while working on defective wires.

J. Trolley and Bare Fed Wires

Rule 1044 - Trolley and bare feed wires shall be suspended at least two (2) meters above the rail and shall be kept reasonably tight at all times. These shall be equipped with lightning arresters of the approved type at the point of entrance to the mine and shall be properly guarded at main trip stations.

Rule 1045 - Each power circuit shall be provided with circuit breakers or switches at the mine entrance, at each point of a major division in the circuit and at practical intervals in main haulageways.

Rule 1046 - Underground feeder wires shall be properly guarded or adequately insulated and shall be free from

contacts with coal, timber, roof or inflammable materials.

K. Tracks

Rule 1047 - Cross hands shall be used at intervals not exceeding sixty (60) meters of rail.

Rule 1048 - Special provisions shall be made for bonding around switches, frogs or openings in the track in order to ensure a continuous electric circuit.

Rule 1049 - On secondary tracks, at least one rail shall be bonded or welded and cross bond installed at least every sixty (60) meters.

L. Underground Installations of High Voltage Cables Transmitting 2300 Volts or more

Rule 1050 - High voltage cables shall not be installed in any mine without the approval of the concerned MGB Regional Office.

Rule 1051 - High voltage cables shall be provided with circuit breakers or other load limiting device as they enter a mine.

Rule 1052 - Voltage exceeding 600 volts shall not be used underground, except under the following conditions:

- a. circuits shall be carried inside metallic sheaths or;
- b. the sheath or covering shall be permanently grounded; and

c. these voltages shall be applied only to transformers or to motors in which the high-voltage winding are a part of the stationary element.

Rule 1053 - Transformer placed underground shall be air-cooled with non-flammable liquid.

Rule 1054 - Transformers filled with inflammable oil placed underground shall be housed in a fire-resistant rooms equipped with some means of confining the oil in the event of leakage.

M. Battery Rooms and Storage Battery Handling

Rule 1055 - Smoking, welding and the use of open flames and sparks shall be prohibited in battery charging rooms. Warning signs shall be posted.

Rule 1056 - Battery rooms or charging areas shall be provided with adequate ventilation.

Rule 1057 - The control switch shall be opened first before connecting or disconnecting battery charging cords or loads.

Rule 1058 - Rubber gloves, eye and face protection shall be worn when handling electrolyte solution.

SECTION 70 : MECHANICAL SAFETY RULES

A. General Safety Precautions

Rule 1059 - Machine having a grinding, shearing, punching, cutting, rolling, mixing or similar action in which a person might

accidentally come in contact with shall be properly guarded.

Rule 1060 - Machines shall not be operated unless these are in good order and all safeguards and safety devices are in place and in good working condition.

Rule 1061 - Safety and indicating device shall be properly maintained and checked periodically from damage and deterioration.

B. Workshop Equipment

Rule 1062 - On milling machines :

- a. the table shall be moved with the work as far away from the cutter as possible while setting up;
- b. **heavy cut or feed shall be avoided when using cutter in a vertical milling machine;**
- c. **the speed shall be checked and feeding shall be done against the direction in which the cutter is rotating;**
- d. **hands shall be kept away from the cutter when machining;**
- e. **the operator shall never reach over a revolving cutter, especially at the side of the cutter which cuts into the work; and**
- f. **brush shall not be used in removing chips.**

Rule 1063 - The drill press operator shall be required to comply with the following :

- a. **inspect all drilling machines and similar equipment and see to it that these are properly installed;**

- b. remove chuck wrenches from the drill chucks before starting the machine;
- c. clamp the work on the table;
- d. run the drill only at proper speed;
- e. change belt for speed regulation only when power is "OFF" and machine has come to a dead stop;
- f. scrap all chips from drilled holes; and
- g. refrain from wearing gloves while operating a drill.

Rule 1064 - The planer operator shall be required to comply with the following:

- a. check that the planer clears the cross-rails after the work is fastened and that stop pegs are in proper places and safety dogs are secured in position.;
- b. have the plane(s)r idle when adjusting the length of the bed stroke and speed of the machine to suit work;
- c. clear the passageways of any kind of tools;
- d. hold the tool with one hand or place a wooden support under it when loosening the toolholder.

Rule 1065 - On lathes, the operator shall be required to comply with the following:

- a. check that the tailstock, toolholder and the job is properly clamped before turning on the power;
- b. use the hands only and never to use the power that operates the lathe when assembling or removing the chuck of face plate. A board shall be placed on ways;
- c. remove chuck wrench or any other tool in the chuck;

- d. switch off the power before measuring any revolving work or parts;
- e. minimize heavy cuts on slender work;
- f. stand to one side so that if the file is forced upward, it will go past the body rather than against it. It is advisable to file left-handed;

Rule 1066 - The power saw operator shall be required to comply with the following:

- a. stand on one side of the saw frame when adjusting the speed.
- b. mount the work piece only when the saw is at stop.
- c. keep fingers from projecting beyond the end when using the sliding stock guide.
- d. ensure that the blades for both circular and band saws are in good condition before using.
- e. shut off the power and shall never attempt to disengage the blade from its position until the machine has come to a dead stop if the blade breaks during operation.

Rule 1067 - The pedestal grinder operator shall be required to comply with the following:

- a. stand to one side of the wheel when starting it up, especially if the wheel is new;
- b. check that the face of the wheel is flat and free from any grooves;
- c. feed the work slowly and gradually;
- d. make sure that the tool rest is only 3 mm from the face of the wheel. This distance shall be checked carefully;
- e. use the face of the wheel only, unless it is designated for grinding on the side. The entire

face of the wheel shall be used whenever possible;

- f. never use loose grinding wheel;
- g. stop the wheel if it vibrates excessively. Keep the wheel properly balanced and securely attached to the spindle;
- h. hold the work against the wheel firmly;
- i. use clamps or other suitable holding device for grinding short pieces;
- j. always use face shield or goggles if a grinder is not provided with protective glass shield; and
- k. Never use portable grinders as substitutes unless properly adapted for this purposes.
- l. replace the grinding wheel when the maximum wear limit is reached.

C. Pumps, Air Compressors and Other Stationary Equipment

Rule 1068 - On pumps :

Exposed rotating couplings of pumps shall be adequately guarded and when guards are removed for oiling or repairing these shall be placed before the pumps are put in operation.

Rule 1069 - On compressors :

- a. where a gasoline or diesel engine is used to drive a compressor, pipe of suitable length shall be provided to divert exhaust gases away from the compressor unit.
- b. if repairs or adjustment are to be made on a compressor, header valves shall be closed and

that no air pressure remains in the cylinder and all relief valves shall be opened. Controller shall be tagged and locked out.

Rule 1070 - On other stationary equipment:

Repairs or adjustments shall not be made on any machinery until the power has been shut off and the machinery blocked securely against all motion.

D. Boilers and Pressure Vessels

Rule 1071 - The following codes shall govern the inspection, checking, testing and other consideration prior to the approval of installation of any boiler or pressure vessel:

- a. ASME code for boiler and pressure vessels.
- b. ASME Code for pressure piping.
- c. API-ASME Codes for unfired pressure vessels for petroleum, liquid and gases.
- d. Philippine Mechanical Engineering Code.

E. Internal Combustion Engine

Rule 1072 - The ASME and Philippine Mechanical Engineering Codes shall govern the inspection and installation of internal combustion engines.

F. Standard Railing Guards, ToeBoards

Rule 1073 - On construction:

1. Railing guards:

- a. railing guards shall be constructed in a permanent and substantial manner of wood, pipe metal structure or other material of sufficient strength;
- b. the dimensions of railings, posts, anchoring and framing of members shall be such that the completed structure is capable of withstanding a load of at least one hundred (100) kilograms applied in any direction at any point of the top rail;
- c. sharp corners of railing guards shall be rounded and smoothed;
- d. standard railing guards shall be at least one (1) meter in height; and
- e. standard railing guards shall have posts not more than two (2) meters apart and an intermediate rail halfway between top rail and the floor.

2. Toeboards:

Toeboards shall be at least fifteen (15) centimeters in height, made of wood, steel or other suitable materials and securely fastened in place

Rule 1074 - On locations and equipment :

Standard railings and toeboards provided for in the preceding rule thereof shall be placed in proper locations or in such other locations as may be prescribed by the enforcing authorities.

1. Floor and wall openings
 - a. Ladderway and stairway floor openings shall be guarded on all exposed sides, except at the

entrance to the opening, by permanent railings and toeboards.

- b. Hatchway, chute, pit and trap floor openings shall be guarded by removable rails with toeboards on all exposed sides; or by flush hinged cover of adequate strength.
- c. Manhole of floor openings shall be guarded by covers of adequate strength which need not be hinged.
- d. Floor openings into which persons may accidentally walk on account of fixed machinery, equipment, or walls shall be guarded by covers securely held in place and leaving no opening more than two and a half (2.5) cm. in width.
- e. Wall openings less than one (1) meter from the floor having a height of at least seventy-five (75) cm. and forty-five (45) cm. Wide from which there is drop of more than two (2) meters shall be solidly enclosed or guarded by fixed or removable rails.

2. Overhead walks, runways and platforms :

- a. walkways, runways, working platforms and open side floor two (2) meters or more above floor or ground level, except small platform used for motors and similar equipment which do not afford standing space for persons, shall be guarded on all open sides by standard railings and toeboards; and
- b. where railings may induce workers to take “shortcuts” from long detour, additional railing

components shall be provided where stairway is not possible.

3. Prime Movers

- a. Cranks, crossheads, connecting rods and tail rods shall be guarded with standard railings.**
- b. Passageways over journal or bearing of any prime movers shall be guarded with standard railings and toeboards.**

4. Mechanical Transmission equipment

- a. Power transmission elements which are exposed to possible personal contact shall be adequately guarded with standard railings or cover plates if these are located less than two hundred forty (240) cms. Above floor level.**
- b. vertical or inclined drives, rope or link drives shall be enclosed up to upper pulley or to a height not less than two hundred forty (240) cms. above the floor or platforms or shall be guarded with standard railings.**

5. Agitators, Mixing Machines and Drum Mixers

- a. When the top of an open agitator tank, heater tank or paddle tank is less than one (1) meter above the floor or working level, adequate standard railings shall be installed on all open sides.**
- b. Service walkways for access drives or valves, or for taking samples shall be provided on**

both sides with standard railings and toeboards.

6. Crushers, Grinding Mills and Pulverizers

Where enclosures are not practicable on moving parts of crushers, grinding mills and pulverizers which constitute a hazard, such parts shall be surrounded by standard railings.

7. Ball, Rod, Tube, Compartment and other Tumbling Mills

Standards machinery guards or standard railings shall be provided on both sides of the ball, rod, tube or compartment mills with bottom less than two hundred forty (240) centimeters above the floor level.

8. Vats and Tanks

Vats, pans and open tanks containing hot, corrosive or poisonous liquid with openings on top less than one (1) meter above the floor or working level shall be guarded on all sides by enclosure or standard railings.

9. Furnace, Kilns and Ovens

Pits or floor openings in furnaces, kilns and ovens shall be provided with standard railings and toeboards on all sides.

10. Travelling cranes

Footwalks or platforms on travelling cranes shall be provided with standard railings on all open sides.

11. Other machines not especially mentioned such as classifier, flotation cells, etc. shall be properly guarded to prevent employees and materials from accidentally falling into it or getting in contact with the moving parts of the machine.

G. Explosive-Actuated Tools

Rule 1075 - Only qualified and trained employee duly authorized by his employer or supervisor shall operate an explosive-actuated tools. He shall be proficient in the safe and proper operation of the specific make and model of the tool.

Rule 1076 - Explosive tools and their explosives charges, when not in use, shall be kept in a secured place of storage, inaccessible to unauthorized persons.

Rule 1077 - Projectiles shall not be discharged so close to corners or edges as to cause the material to break off, or where the guard or shield would not be effective.

Rule 1078 - No explosive-actuated tool shall be used to drive a fastener into a receiving material of cast iron, glazed brick or tile, marble, granite, slate, glass or any other unusually hard or brittle material or into a steel surface with greater hardness than the fastener being used.

Rule 1079 - When the hardness of the receiving material or surface is not known, it shall be tested by using a hand-hammer to drive the point of the fastener into a material. If the point

of the fastener does not penetrate the surface, no attempt shall be made to use the tool on that surface.

Rule 1080 - Explosive-actuated tools shall not be used where flammable or explosive gases, vapors dusts, or substances are present.

Rule 1081 - If a misfire occurs, the operator shall continue to hold the tool in the firing position for not less than fifteen (15) seconds and shall, until the cartridge has been ejected, keep the tool pointed in a direction which will not cause injury should an explosion takes place.

CHAPTER XIX

SECTION 71 : FIRE PROTECTION

A. General Provisions

Rule 1082 - For fire protection, all existing provisions of PD 1185, the Fire Code of the Philippine shall be followed.

Rule 1083 - The employer shall provide and maintain a sound fire protection program.

Rule 1084 - Extra efforts shall be exerted by all employees to prevent the inception of any unnecessary fire in any part of the property.

Rule 1085 - Adequate fire escape of approved design shall conform with specific provision of PD 1185 in all working places and in other places where people converge.

Rule 1086 - All places shall be provided with approved fire fighting equipment of adequate number and suitable

types. Fire fighting equipment shall be frequently inspected/tested, properly maintained and used exclusively for fighting fire only.

- Rule 1087 - Adequate fire alarm device shall be provided.**
- Rule 1088 - Approved methods of storage, handling, and usage of combustible and flammable materials shall be strictly observed.**
- Rule 1089 - The “No Smoking” regulation at specific designated areas shall be strictly complied with at all times.**
- Rule 1090 - Water shall never be used on any electrical fire.**
- Rule 1091 - Welding and cutting torches shall be turned off when not in use.**
- Rule 1092 - Welding close to highly flammable materials such as paint, oil, gasoline, and the like, if unavoidable, shall be done only under close supervision and that appropriate fire extinguishers and stationary or portable screen of non-combustible materials shall be available for immediate use.**
- Rule 1093 - Any leak, breakage, or any defect on any part of the fire protection system like the hydrant line, sprinkler system, hydrants, fire extinguishers, and the like shall be reported and repaired at once.**
- Rule 1094 - Every mining company shall have a properly trained central fire fighting brigades and fire drill shall be conducted at least once in three (3) months.**
- Rule 1095 - Main door of building where people converge, whether inside or outside, shall open outward and shall**

not be locked or bolted, especially those leading to fire escape, when there are people inside.

- Rule 1096 - In the event of a fire, employees shall call for assistance immediately and shall extinguish the fire with any available fire extinguishing device until the fire fighting crew arrives.
- Rule 1097 - It shall be prohibited for anybody to tamper and/or play with any fire protection equipment.
- Rule 1098 - Gate valves for fire waterlines from the source or reservoir leading to hydrants and sprinkle system shall be locked to the open positions.
- Rule 1099 - Fire plans showing positions of the different fire fighting equipment shall be conspicuously posted at strategic places.
- Rule 1100 - The employer shall provide and adopt a fire alarm code signal which when sounded shall be audible over large area and easily understood by all personnel.
- Rule 1101 - Fire fighting equipment shall be conspicuously located in such a way that these are easily accessible and can be used with full effectivity in time of emergency.
- Rule 1102 - Electrical cords shall never be allowed to run under rugs.
- Rule 1103 - Combustible and other flimsy materials shall not be placed near bulbs that can raise the temperature of proximate objects to such degree as to cause spontaneous combustion.

Rule 1104 - No employee shall be permitted to use welding, oxy-acetylene cutting or other hot work equipment at the mine if there is any risk of personal injury or damage to plant or facilities from fire or explosion unless the employees have a hot work permit to undertake such task which is signed by authorized person.

Rule 1105 - All electrical installations shall be checked regularly and have all frayed wirings, damaged sockets, switches, and other defective electrical fixtures changed or repaired promptly.

B. Prevention of Mobile Equipment Fire

Rule 1106 - No open flame shall be permitted when inspecting the gas tank, the radiator or the battery.

Rule 1107 - No employee shall be allowed to operate mobile vehicles unless the unit is properly checked for any mechanical and electrical defect.

Rule 1108 - Loose or broken gaskets, exhaust pipes and mufflers shall be repaired without delay.

CHAPTER XX

SECTION 72 : TRAFFIC, DRIVING AND TRANSPORTATION

Rule 1109 - The company shall ensure that an effective means of traffic control and management are implemented in the mine.

Rule 1110 - Traffic control procedures shall conform with the current regulations of the following:

- a. Land Transportation Office – R. A. 4136
- b. municipality controlled areas - Municipal authorities having jurisdiction; and
- c. mine areas-to be promulgated by the management to conform with the Mine Safety Rules and Regulations.

Rule 1111 - Responsible flagmen, signalmen or spotters shall be employed to direct traffic and aid drivers/operators in dangerous and poor visibility areas and where heavy traffic exists.

Rule 1112 - All vehicles shall be road worthy.

Rule 1113 - No person shall be allowed to get on or off a moving vehicle.

Rule 1114 - Drivers shall observe road courtesy and speed limits at all times.

Rule 1115 - Trucks used for the transportation of personnel should be provided with seats and proper railing or tailgate.

Rule 1116 - When transporting long material, the load should be ~~ted~~ properly secured to avoid shifting. Any material extending from truck should be provided with a warning device.

Rule 1117 - The employer shall ensure that all drivers/operators:

- a. be required to undergo an annual physical checkup. Rejection or approval slips from the Medical Department shall be forwarded to the supervisor concerned;
- b. hold a valid driver's license;
- c. not permitted to carry passengers without proper authorization;

- d. are allowed to drive under the influence of liquor or drugs;
- e. be thoroughly acquainted with the vehicle's maximum safe capacity, in order to avoid overloading.

Rule 1118 - The driver shall stop when there is need to use hand held radio, cellular phone and other similar communication devices.

CHAPTER XXI MATERIALS STORAGE AND HANDLING

SECTION 73 : WAREHOUSING

Rule 1119 - Smoking shall be absolutely prohibited in storage areas where flammable materials are stored and a sign to that effect shall be conspicuously displayed.

Rule 1120- Employee shall use only properly designed bin ladders.

Rule 1121 - Aisles shall be of appropriate width and free from obstructions.

Rule 1122 - Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage, vegetation control shall be exercised when necessary.

Rule 1123 - Highly combustible materials such as paints, lacquers, chemicals and the like shall be stored in separate building.

SECTION 74 : STORAGE

- Rule 1124 - Heavy, slender objects if stored upright shall be well secured against toppling down.**
- Rule 1125 - Rolling objects when stored on open shelves shall be properly blocked or wedged.**
- Rule 1126 - In multiple decking, heavier material shall be stored on the lower levels. Small and easily handled objects shall be in the upper decks.**
- Rule 1127 - Bagged materials not palletized and strapped shall be piled cross-tied with the bag mouths towards the center of the pile.**
- Rule 1128 - Materials shall not obstruct fire alarm boxes, sprinkler system controls, fire extinguishers, first-aid equipment, lights, and electric switches and fuse boxes.**
- Rule 1129 - In storing compressed gas cylinder:**
- a. cylinders shall be stored in a safe, dry, well-ventilated place prepared and reserved for the purpose. Flammable substances, such as oil volatile liquids, shall not be stored in the same area.**
 - b. cylinders of oxygen shall not be stored in rooms close to cylinders containing flammable gases. Unless these are stored apart, oxygen cylinders and flammable gas cylinders shall be separated by a fire resistant partition.**
 - c. acetylene and liquefied fuel gas cylinders shall be stored with the valve end up.**
 - d. acetylene storage rooms and buildings shall be well ventilated and open flames shall be**

prohibited. Storage room shall have no other occupancy.

- e. cylinders shall not be stored near sources of heat, such as radiators or furnaces or near highly flammable substances like gasoline.
- f. A direct flame or electric arc shall never be permitted to come in contact with any part of a compressed gas cylinder.

Rule 1130 - Flammable liquids

- a. Storage of flammable liquids in open container shall not be permitted. Approved containers for flammable liquid shall be closed after each use.
- b. Specification limiting the quantity of each class of flammable liquids that may be stored in various locations on plant premises, together with data describing the required conditions and procedures relating to such storage shall conform with NFPA Standard No. 30.

SECTION 75 : HANDLING

Rule 1131 - Proper method of lifting and carrying shall be used. Assistance for heavy load shall be obtained.

Rule 1132 - When two or more men are lifting objects together, one man shall give the signal to lift or lower in unison. They shall keep in step when carrying.

Rule 1133 - Heavy hand trucks or dolly up on incline shall be pulled and not pushed.

Rule 1134 - Wheelbarrows shall be pushed, not pulled.

Rule 1135 - Powered industrial trucks in handling :

- a. lift trucks when used in handling materials shall have substantial overhead guards and load back rest extension. Lift trucks shall be equipped with mechanical hoist and tilt mechanism.
- b. a crane truck used in material handling shall be equipped with a load limiting device and its operation shall be governed by a standard code signals.
- c. tractors and trailers used in material handling shall carry a nameplate showing the weight of the truck and its rated capacity. Exposed moving parts shall always be guarded.
- d. gasoline trucks shall be filled at designated locations, preferably in the open air with the filling hose and equipment properly grounded.

Rule 1136 - Rope, chains and slings

Specific safety precautions shall apply to using and steering rope, rope slings, wire rope, chain and chain slings.

Rule 1137 - Flammable and combustible liquids

- a. Only trained employees shall load or unload tanks containing flammable liquids.
- b. Tank trucks, tank trailers and tank semi-trailers used for transportation of flammable liquids shall be constructed and operated according to standard.

Rule 1138 - Compressed Gas Cylinders

- a. No person shall remove or change numbers or mark stamped on cylinders.
- b. Cylinders shall be rolled on bottom edge but never dragged.
- c. Cylinders shall be protected from cuts or abrasions and shall not be subjected to hot works.
- d. Compressed gas cylinders shall not be lifted by an electro-magnetic. Where cylinders must be handled by a crane or derricks, these shall be carried in a cradle or similar device.
- e. Cylinders shall not be dropped nor be made to strike against each other.
- f. Cylinders shall not be used as rollers, supports or for any purposes other than to contain gas.
- g. No person shall tamper with safety device of cylinders.
- h. all cylinder gas shall always be considered as full and shall be handled with care.
- i. No oil or grease shall be applied on the valve set of compressed gas cylinders

Rule 1139 - Objects with specific shapes

- a. Boxes shall be handled by grasping the alternate top and bottom corners and draw a corner between the legs.
- b. Locked materials shall be grasped at opposite corners.
- c. Sheet metal shall be handled with leather gloves, hand leathers, or gloves with metal inserts. Bundles of sheet metal shall be handled with power equipment.
- d. Window glass or other sheet glass shall be handled with gloves or hard leathers while the

wrists and forearms shall be covered with long leathered sleeves.

- e. Long objects, like pipe, bar stock, or lumber shall be carried over padded shoulder, with the fronthand held as high as possible except when passing under low power lines.
- f. Heavy circular flat objects (such as car wheels or tank covers) shall be handled by power equipment designed for the purpose.
- g. Smoking is prohibited allowed while lifting heavy objects or carrying or assisting to lift or carry objects.

Rule 1140 - Clearance limits

Appropriate clearance signs to warn of clearance limits shall be provided.

Rule 1141 - Bottled chemicals should be crated and palletized before shipment. Cushion materials must be used to avoid jarring movements during transportation. As much as possible chemicals and reagents must be covered with plastics inside the crate for protection from the rain. (to be incorporated in section 6 of Materials Storage and Handling Chapter)

Rule 1142 - Drivers of transport vehicle must be properly informed of the kind of cargo and its risks.

**CHAPTER XXII
COAL**

SECTION 76 : STORAGE

- Rule 1143 - Coal stockpile shall be built on open, clean, well drained ground, far from sources of heat and kept three (3) meters within acceptable height of pile.**
- Rule 1144 - Foreign matters, such as woods, stones, metals or other combustible materials shall be kept away from the stockpile.**
- Rule 1145 - Regular monitoring of coal temperature at stockpile shall be carried out at points not more than four (4) meters apart, giving special attention to the corners of the stockpile.**
- Rule 1146 - Smouldering coal shall be segregated immediately from the rest of the stockpile and shall be drenched with water until the smouldering stops.**
- Rule 1147 - Necessary precaution shall be taken to exclude air by compacting the coal uniformly and avoiding segregation of different sizes.**
- Rule 1148 - Firebreaks of at least three (3) meters wide shall be kept between stockpile.**
- Rule 1149 - Unauthorized persons shall not be permitted to climb or roam in and around the stockpile.**

SECTION 77 : HANDLING

Rule 1150 - The First-In-First-Out (FIFO) basis in receiving/issuing uniform quality coal to/from storage area shall be observed.

Rule 1151 - Coal deliveries with unusually high volatile and combustible matters (VCM) shall be segregated and shall be used ahead of others.

Rule 1152 - Dry, crushed, and fine coal shall be protected from the wind as well as from rain.

Rule 1153 - To prevent coal dust explosion, the following conditions shall be strictly observed:

- a. coal dust concentration in the air space shall not be more than 40 grams per cubic meters of air.**
- b. oxygen concentration in the air space shall not be more than 12% free oxygen by volume.**
- c. coal temperature shall not exceed 200° C.**

CHAPTER XXIII CONSTRUCTION SAFETY

SECTION 78 : USE AND CARE OF HAND TOOLS

Rule 1154 - Defective tools shall never be used.

Rule 1155 - Only suitable tools for a certain job shall be used.

SECTION 79 : CONSTRUCTION AND INSTALLATION OF LADDERS

Rule 1156 - Portable ladder shall:

- a. be placed on secured footing, steadied by a man or secured with a rope.
- b. be placed on a position such that the footing is approximately one-fourth the length of the ladder from the vertical plane of the support.
- c. not be used as walkway or as scaffold.
- d. never be installed in front of door/s that open towards the ladder unless the door is locked, blocked or guarded.
- e. not be placed near live electric wiring installation or against any operational piping where damage may be done.
- f. not be used when defective. It shall be tagged, or marked so that it will be replaced or discarded.
- g. be kept clean and free of grease.

Rule 1157 - Fixed ladder shall :

- a. project at least 60 centimeters above any platform unless convenient and sufficient handholds are provided.
- b. be installed at an angle not greater than seventy (70) degrees from the horizontal.
- c. be staggered so that no section of the ladder is directly in line with the next adjacent section.
- d. be constructed with rungs placed at equal intervals of 35 cm.
- e. be clean or free of obstructions.
- f. be provided with appropriate guards e.g. ring guards, above 3 meters from the ground, if vertical.

SECTION 80 : WORKING ON TOP PLATFORM AND SCAFFOLDS

Rule 1158 - Employees shall not work directly above other workers except in cases of absolute necessity and in such case, all precautions shall be taken to ensure the safety of the employees working below.

Rule 1159 - When men are working overhead:

- a. no person shall be permitted to pass or stay underneath.**
- b. materials and tools shall never be thrown or freely dropped. These shall be lowered with a rope.**

Rule 1160 - It shall be prohibited to leave loose materials such as bottles, cans, metals and wood scraps along passageways, platforms or scaffolds.

Rule 1161 - Before working on a scaffold or platform of any description, (one) employee shall personally see that the supports are properly erected and in safe condition.

Rule 1162 - Platforms and scaffolds of permanent construction and installation shall be provided with adequate guardrails.

Rule 1163 - Openings along passageways shall be adequately guarded, barricaded off and conspicuously marked.

SECTION 81 : CIVIL WORKS

Rule 1164 - The following shall govern excavation:

- a. excavations with depth of one and one-half (1.5) meters or more shall be properly shored and braced, otherwise these shall be retained to prevent cave-ins.
- b. trees, boulders or other surface encumbrances located within or contiguous to the area to be excavated shall be removed sufficiently ahead of excavating work.
- c. excavated materials shall be kept away at a safe distance from the edge of the excavation.
- d. wherever there is danger of undermining adjacent foundations, excavation works shall be done in short sections and the building walls effectively shored up or braced.
- e. wherever possible, power machines used for excavating shall be placed so that the operator is on the side away from the bank.
- f. excavations shall be adequately guarded by railings. During the hours of darkness, exposed sides of excavations shall be adequately illuminated.
- g. proper crosswalks or double planks shall be used to get across excavations.
- h. excavations over two (2) meters in depth shall be supplied with at least one ladder for every three (3) meters or fraction thereof. A ladder shall extend at least 60 cm. from the trench bottom to ground level.
- i. ramps and walkways entering excavations shall be wide enough for men or vehicles. These shall be substantially constructed with proper braces and supports and shall be provided with guardrails. When inclined to a grade of one is to six (1:6), walkways shall be properly secured.
- j. employees engaged in scaling, sloping or trimming works shall use safety ropes.

- k. if derricks or other heavy objects are placed close to the edge of an excavation, additional bracing shall be installed.

Rule 1165 - The following shall govern road works:

- a. adequate warning signs shall be provided at approaches of at least fifty (50) meters from the working areas.
- b. adequate detour signs shall be provided when road is under repair or is not passable.
- c. railings shall be installed when weather conditions create a hazard.

SECTION 82 : DEMOLITION

Rule 1166 - Before demolishing a building, a definite plan, based on a careful study of the structure that is to be demolished and of its surroundings shall be worked out.

Rule 1167 - When necessary, adjoining buildings shall be promptly and thoroughly shored.

Rule 1168 - Gas pipes shall be disconnected and all electric wires shall be de-energized.

Rule 1169 - Demolition shall be carried out in a regular and orderly manner from top to bottom of the structure. All materials displaced shall be transported immediately to the ground unless required for reconstruction. No material shall be stored on any portion of a structure in excess of its safe carrying capacity. All glasses and sashes shall be removed before any other demolition is started.

- Rule 1170 - Chutes shall be provided for the removal of bricks or other loose debris and these chutes shall be completely enclosed. Chutes shall not extend in an unbroken line for more than two (2) storeys, and gates or stops shall be placed at the bottom of each chute. Danger signs shall be placed at chute outlets.**
- Rule 1171 - The space where torn material falls shall be provided by a fence.**
- Rule 1172 - Old materials and rubbish shall be removed immediately and shall not be allowed to accumulate on floors nor on the ground just outside the building.**
- Rule 1173 - Before demolishing any interior or exterior wall which is within three (3) meters of any opening in the floor immediately below it, such opening shall be substantially covered unless all workmen are removed from all floors below and access to such floors is positively prevented.**
- Rule 1174 - Walls shall be left stable with no danger of being overturned at the end of each working day.**
- Rule 1175 - Constructional sheds and toolboxes shall be so located as to protect employees from the danger of falling objects.**
- Rule 1176 - Openings into which employees may fall or slip from a floor, platform, passageway or working level shall be covered or protected by a standard railing and toeboard.**
- Rule 1177 - Steel structure shall be demolished column length by column length and tier by tier. Every structural member being dismembered shall not be under any**

stress other than its own weight and such member shall be chained or lashed in place to prevent any uncontrolled swinging or dropping from the building and shall be lowered carefully.

SECTION 83 : PAINTING

Rule 1178 - The following shall govern painting works:

- a. food shall be kept away from spray painting sites.
- b. unless clearly impracticable, ventilation shall be provided while painting is carried on in a confined space.
- c. painting shall not be done where the paint will contaminate the air breathed by other employees.
- d. paints which contain materials injurious to expose parts of the body shall not be applied by spray-gun.
- e. when acid is used in washing buildings, goggles, rubber gloves, rubber suits, or other suitable protective equipment shall be worn by the building-washer.

SECTION 84 : WELDING AND CUTTING OPERATIONS

Rule 1179 - Only authorized persons shall operate and use welding and cutting equipment. Any welding or cutting job shall be with the knowledge and consent of the supervisor.

Rule 1180 - Welding or cutting operations on containers filled with explosives or flammable substances is strictly prohibited. For closed containers that contain explosives or flammable substances, said operations shall only be undertaken after these have been

opened, emptied and thoroughly cleaned and freed from combustible gases or vapors. If applicable, the container shall be filled with inert gas or water.

- Rule 1181 - Employees directly engaged or assisting in welding or cutting operation shall be provided with proper and adequate personal protective equipment.**
- Rule 1182 - Welding and cutting operations that are carried out or done in places where persons other than the welders are working shall be enclosed in a suitable, stationary or portable screen of non-combustible material.**
- Rule 1183 - When welding or cutting operations are performed in a confined space where there is danger of inhalation of any toxic fumes, gases, or dust, adequate ventilation shall be provided and appropriate respiratory protective equipment shall be used.**
- Rule 1184 - Torch shall not be lighted or be struck when combustible gases or vapors are present.**
- Rule 1185 - Welders shall always be equipped with appropriate portable fire extinguishers when assigned to perform welding or cutting jobs.**
- Rule 1186 - Welding machines shall be located at a safe distance from any tank or wash tank containing oil.**
- Rule 1187 - Defective welding machine shall never be used in welding jobs.**
- Rule 1188 - Only torch lighter shall only be used for lighting gas cutting and welding equipment.**

Rule 1189 - Every motor generator set or transformer used for arc welding and cutting operations shall be provided with an electrical safety disconnect-switch of adequate ampere rating readily accessible in case of emergency. Portable welding machine shall have quick detaching plug.

Rule 1190 - The conditions surrounding the work performed by arc welding and cutting process shall be properly checked to prevent the hazard of electric shock by:

- a. keeping the floor or ground surface dry if conditions under the foot are wet, a dry electrical non-conducting platform shall be used.**
- b. instructing the operator to keep exposed parts of his body away from contact with the work, the electrode and holder or any part of structure that is electrically grounded.**
- c. requiring the operators to keep their clothing, gloves and feet as dry as possible.**

Rule 1191 - In case of emergencies where it is necessary to do arc welding or cutting under wet conditions, rubber boots and rubber gloves shall be worn.

Rule 1192 - Electrode holder shall be insulated. When electrode holder is not in use, the electrode shall be removed from the holder and the electrode holder hang or laid on a dry, non-conducting surface to prevent contact with workers or electrically-conducting materials.

SECTION 85 : WHARVES AND DOCKS

- Rule 1193 - Floats, wharves, and other places where employees work on or above water shall be provided with life jackets and lifebuoys equipped with line.**
- Rule 1194 - Floats, docks, wharves and all elevated vehicular thoroughfares shall be equipped with a substantial guardrail.**
- Rule 1195 - Docks and wharves shall be provided with one ladder for every seventeen (17) meters of length of wharf. Such ladder shall extend from the dock to normal low water level.**
- Rule 1196 - Maximum load capacity must be indicated or posted at any conspicuous place at the entrance to the pier.**
- Rule 1197 - Unauthorized persons and vehicles shall be prohibited at the pier during the loading or unloading time. Other excess materials shall not be allowed to be scattered.**
- Rule 1198 - All wharves and docks shall conform with the rules and regulations provided for by concerned government agencies such as PPA, Coastguard and Customs.**

CHAPTER XXIV

SECTION 86 : LIQUEFIED PETROLEUM GAS

- Rule 1199 - All safety rules and regulations of the Department of Trade and Industry on storage and handling of liquefied petroleum gas shall also be embodied in this order.**

CHAPTER XXV

SECTION 87 : POWERS AND DUTIES

- Rule 1200 -** The Director or his duly authorized representatives shall have the power and duty to enforce this Order and all rules and regulations that may hereafter be promulgated concerning the safe and sanitary upkeep of the mine.
- Rule 1201 -** Only the Regional Director or his duly authorized representatives shall have exclusive jurisdiction over the conduct of safety inspection of all installations, surface or underground, in mining/quarrying operations and safety practices in a manner that will not impede or obstruct work in progress of an employer and shall submit to the Director a quarterly report of their inspections and/or monitoring activities. Provided further that the Director or his duly authorized representative/s shall undertake safety and health audit annually or as often as may be necessary to assess the effectivity of the Safety and Health Program of the employer.
- Rule 1202 -** The Regional Director reserves the right to inspect the mine/quarry explosive magazine and audit records of explosives transaction at the expense of the Purchaser's License Holder and at specified rates as may be deemed necessary. Provided, that failure to immediately implement, without justifiable reasons, the recommendation/s to ensure the proper safe keeping and maintenance of explosive and its magazines shall cause for the imposition of administrative sanctions as provided for in the penal provisions of this Order.

Rule 1203 - The Director or his duly authorized representatives shall have the power and authority to administer oaths, summon company officials, employees, lessees or other persons having knowledge on the subject of inquiry, inspection or investigation, issue subpoena and subpoena *duces tecum* requiring the attendance and take testimonies of witnesses or the production of such books, papers, records and other pertinent documents as may be material to a just determination of the matter under investigation inspection or inquiry.

Rule 1204 The Director/Regional Director or his/her authorized representative during the course of safety inspection, investigation and audit may inspect any article, substance, plant or machinery, which is or was on or in the premises, or any work performed on or in the premises or any condition prevalent on or in the premises or remove for examination or analysis, any article, substance, plant or machinery or a part or sample thereof: Provided, That when the Director/Regional Director or his/her duly representative removes any article, substance, plant or machinery or a part or sample thereof, he/she shall issue a receipt to the Contractor/Permittee/Lessee/Permit Holder or person in control thereof.

Rule 1205 The Director/Regional Director or his/her authorized representative may inhibit the Contractor/Permittee/Lessee/ Permit Holder or its employee from continuing or commencing in performing an act or operating an equipment or machinery, which in the opinion of the Director/Regional Director or his/her duly authorized representative threatens or is likely to threaten the health or safety of any person.

Rule 1206 - The Director or his duly authorized representatives shall require the employer to remedy any practice connected with mining operations, which is not in accordance with the provisions of this Order.

The same may summarily suspend, wholly or partially any activity related to mining operations, in case of imminent danger to life or property, until the danger is removed, or until appropriate measures are taken by the employer.

Rule 1207 - The Director or his duly authorized representatives may grant relief or exemption from compliance with any of the rules in this Order upon written request or application by the employer concerned, after proper investigation and favorable recommendation of the Bureau engineers, and under such terms and conditions that may be issued by the Director.

CHAPTER XVI

SECTION 88 : PENAL PROVISIONS

Rule 1208 - Any employee who violates any of the provisions of this Order or commits any unsafe act or cause condition that will endanger himself, other persons and/or company property shall, on the initiative of his employer or upon recommendation of the Director or Regional Director, be subject to disciplinary action. In case of refusal by the employer, the Director shall act on the matter accordingly.

Rule 1209 - Any employer who violates any of the provisions of this Order shall be subject to corresponding penalties

prescribed hereunder, pursuant to Section 109 and 110 of R. A. 7942.

Schedule of Penalties on the following Offences:	Penalty	
1. Failure of the company to install corrective measures to mitigate unsafe condition as defined in the annual safety and health program.	5,000.00	
2. Failure to submit/report fatal and serious accidents to concerned RO within 15 days after the date of the accident.	10,000.00	
3. Failure to give notice to the concerned RD within 24 hours of any fatal and non-fatal serious injuries.	5,000.00	
4. Late submission of monthly accident reports or Safety and Health Program	Basic Fine	Daily
1 st Violation	1,000.00	10.00
2 nd Violation	2,000.00	20.00
3 rd Violation	3,000.00	30.00
5. Submission of monthly accident reports after one (1) month from the prescribed reporting period.		
1 st Violation	2,000.00	20.00
2 nd Violation	3,000.00	30.00
3 rd Violation	4,000.00	40.00
6. Any violation of other provisions not mentioned above	1,000.00	
7. Repeat violation of the same provisions as based on inspection reports.	2,000.00	
<p>Provided, that a late report classified under non-submission category shall not pay the accumulated fine in (4) but instead pay the fines imposed in (5) above. Provided further, that the total fine for non-submission of any of the required reports at any one time shall not exceed Five thousand pesos (5,000.00).</p>		

CHAPTER XV

SECTION 89 : FINAL PROVISIONS

If any rule of this Order is held or declared unconstitutional or invalid by a competent court, the remaining parts of this Order shall continue to be in force as if the rules so annulled or voided had never been incorporated in this Order. All rules applicable elsewhere in this Order shall also apply.

Mines Administrative Order No. MRD-51, Series of 1991 and all rules and regulations or parts thereof in conflict or inconsistent with any of the rules of this Order are hereby repealed or modified accordingly. The Secretary shall have the authority, *inter alia*, to amend, revise, add to, clarify, supplement, interpret, delete or make exemptions (to the extent not contrary to this Order) to any provision of these Order with the end in view of ensuring that the Order is appropriately implemented, enforced and achieved. The guidelines, standards and other documents to be incorporated in this Order shall be promulgated by the Director.

This Order shall take effect fifteen (15) days following its complete publication in a newspaper of general circulation.

(Sgd.) ANTONIO H. CERILLES
Secretary

Recommended for Approval by:

(Sgd.) HORACIO C. RAMOS
Director
Mines and Geosciences