Republic of the Philippines
DEPARTMENT OF ENERGY
Office of the Secretary
Bonifacio Global City, Taguig City

Department Circular No. DC2018-12-0028
Series of 2018

COAL MINE SAFETY AND HEALTH RULES AND REGULATIONS

To: ALL HOLDERS OF COAL OPERATING CONTRACTS UNDER THE "COAL DEVELOPMENT ACT OF 1976," AS AMENDED

In order to make the coal mine safety and health rules and regulations more applicable to the present local coal mining conditions, compatible with the provisions of the International Labor Organization Convention on Safety and Health in Mines (ILO C176), and pursuant to Section 5 of Republic Act No. 7638 or the "Department of Energy Act of 1992," as amended, in relation to Section 9 of Presidential Decree No. 972, otherwise known as the "Coal Development Act of 1976", which states in part that the holder of Coal Operating Contract shall:

> "Operate the area on behalf of the government in accordance with good coal mining practices using modern methods appropriate for the geological conditions of the area to enable maximum economic production of coal, avoiding hazards to life, health and property, avoiding pollution of air, land and waters, and pursuant to an efficient and economic program of operation x x x"

The Department of Energy has repealed the coal mines safety rules and regulations (Bureau of Energy Development Circular No. 1 series of 1978) and accordingly issues these Coal Mine Safety and Health Rules and Regulations.

All holders of Coal Operating Contract are directed to strictly comply with these coal mine safety and health rules and regulations.

These coal mine safety and health rules and regulations shall take effect fifteen (15) days after publication in at least two (2) newspapers of general circulation.

ALFONSO G. CUSI
Secretary
(Date) DEC 28 2018

Republic of the Philippines
DEPARTMENT OF ENERGY

SAFETY AND HEALTH POLICY STATEMENT

The Department of Energy (DOE) is committed to take all reasonably practical steps to ensure the safety and health of all workers involve in the coal mining operations in the Philippines.

In fulfilling this commitment, the DOE has issued the 2018 Coal Mine Safety and Health Rules and Regulations that shall govern the mandatory safety and health standards of coal mine workers.

The rules and regulations shall be reviewed periodically and revise accordingly as new knowledge, technology, processes or changes in legislations take place.

The personnel of Coal and Nuclear Minerals Division shall receive necessary trainings in coal mine safety and health, and shall be provided with safety devices and personal protective equipment in carrying out their regulatory and monitoring functions.

(Sgd.) **ALFONSO G. CUSI**
Secretary

28 Dec 2018

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COAL MINE SAFETY AND HEALTH RULES AND REGULATIONS

RESPONSIBILITY

The Energy Resource Development Bureau shall have the following responsibilities:

1. Monitor and regulate the various aspects of safety and health in the Philippine coal mining industry;
2. Undertake the overall supervision of safety and health in coal mines;
3. Conduct periodic inspection of coal mines;
4. Document the procedure for reporting and investigating fatal and serious accidents, dangerous occurrences and mine disasters;
5. Document the procedure for compilation and publication of statistics on accidents, occupational diseases and dangerous occurrences;
6. Suspend or restrict mining activities on safety and health grounds, until the condition giving rise to the suspension or restriction has been corrected;
7. Establish an effective procedure to ensure the implementation of the rights of workers and their representatives to be consulted on matters and to participate in measures relating to safety and health at the workplace.

SCOPE

This Circular shall apply to all Operators and workers involved in coal mining operations in the Philippines.

DEFINITIONS

In this Circular and in any regulations or rules made thereunder the term and definitions shall be as follows:

1. **Abandoned Areas** shall mean sections, panels, and other areas that are not ventilated, examined or worked out.

2. **Accident** shall mean any unplanned event that results to harm, injury or illness to personnel or damage to property.

3. **Active Workings** shall mean any place in a coal mine where workers are normally required to work or travel.

4. **Bureau** shall mean Energy Resource Development Bureau of the DOE.

5. **C176** shall mean the International Labor Organization Convention on Safety and Health in Mines, 1995 which was ratified on 27 February 1998 by the Philippine Senate (Senate Resolution No. 115, Resolution Concurring in the Ratification of the Safety and Health in Mines Convention).

6. **Competent Authority** shall refer to Energy Resource Development Bureau of the DOE.

7. **Department** shall mean the Department of Energy (DOE).

8. **Disabling injury** shall mean either a non-fatal injury or a fatal injury.

9. **Excavations or workings** shall mean any or all parts of a mine excavated or being excavated, including inclines, rooms, stopes, open-cuts and all other working places whether abandoned or in use.

10. **Fatal injury** shall mean any work injury resulting in death regardless of the time intervening between injury and death.

11. **Injury** shall mean any "fatal injury," "non-fatal injury," or "other injury" suffered by a person, which arises out of and in the course of his work.

12. **Lost-Time Accidents** shall include those that will prevent the injured person from performing his regular work on the working day following the day of injury and thereafter.

    The following shall be considered as lost-time accidents:

    a. When the injured person, after reporting to his regular work on the working day following the day of injury, fails to continue said work due to complications. Counting of days lost shall start from the time the injured person fails to report for work.

    b. When the injured person, after treatment by the company physician, is temporarily assigned to light work other than his regular work.

13. **Lost-Time Accident, Fatal** shall mean lost time accident that results in the death of the injured person.

14. **Lost-Time Accident, Non-Fatal** shall mean lost time accident that does not result in the death of the injured person.

15. **Mine** shall mean and include all excavations for the purpose of searching for or winning coal as well as the working of coal deposits, whether abandoned or actually being worked on the surface, from the surface downwards and underground, together with all buildings, premises, erections and appliances belonging or appertaining to winning coal.

16. **Non-fatal injury** shall mean any work injury which does not result in death but which either results in any permanent impairment to the injured person or causes the injured person to lose one full day or more from work after the day of injury. As used in this definition, "permanent impairment" means total incapacitation of the injured person for any gainful work, or total or partial loss of, or loss of use of, any member or function of the body.

17. **Non-Lost Time Accidents** shall mean those that will not prevent the injured person from performing his regular work on the working day following the day of injury and thereafter.

18. **Operator/Employer** shall mean the holder of Coal Operating Contract.

19. **Surface coal mine** shall mean a surface area of land, and all structures, facilities, machineries, tools, equipment, excavations, and other properties placed upon or above the surface of such land by any person, used in, or to be used in, or resulting from, the work of extracting coal in such area by any means or method and the work of preparing the coal so extracted, and includes coal preparation facilities.

20. **Surface installation** shall mean any structure in which workers work in the surface work areas of an underground coal mine or at a surface coal mine.

21. **Underground** shall mean, within the limits of a mine, workings beneath the surface of the ground.

22. **Working face** shall mean any part of the mine from which coal, rock or other minerals are being cut, removed, sheared or loosened and include any places on a roadway at which any brushing from the roof or floor is being done.

23. **Accident Severity Rate** shall represent the days lost per million man-hours worked and may be expressed in the following formula:

$$\text{Severity Rate} = \frac{\text{Days Lost x 1,000,000}}{\text{Man-hours worked}}$$

The scale of time losses for weighing death and permanent injuries is indicated in Appendix C of these regulations.

24. **Accident Frequency Rate** shall be defined as the total lost-time accidents, fatal and non-fatal, per million man-hours worked, and may be expressed in the following formula:

$$\text{Frequency Rate} = \frac{\text{No. of Lost-Time Accident x 1,000,000}}{\text{Man-hours worked}}$$

CHAPTER I

GENERAL PROVISIONS

Section 1: Accidents

Rule 1 The Resident Manager of a coal mine shall notify the Bureau within twenty-four (24) hours using the fastest available means of communication the occurrence of the following accidents:

a. A fatal injury or injury that results to death of the person injured;
b. A serious non-fatal injury that the Operator or a medical officer believes could result in the death of the injured person;
c. A mine fire;
d. A mine explosion;
e. A mine inundation;
f. A coal outburst of sufficient intensity that it appears likely that, had any persons been in the immediate area, death or injury could have occurred;
g. A fall of roof, face, or rib of sufficient magnitude to affect ventilation or the passage of worker on active working section;
h. An unintentional detonation of explosives, including blasting agents;
i. The entrapment of any person.

Rule 2 A formal report of the accident referred to in Rule 1 shall be forwarded to the Bureau within five (5) working days after the accident.

Rule 3 All accidents shall be investigated by the Operator to determine the cause and appropriate remedial action is taken to prevent a recurrence, and the information made available to the Bureau or its representative.

Rule 4 Written Record

The written record of each investigation of an accident shall contain:

a. An identification of, and correlation with, the record or records of the accident
b. The date and hour upon which the accident occurred
c. The date and hour the investigation was started
d. The name of the person or persons who made the investigation
e. The specific location of the accident and a description of the location
f. Names, occupations at the time of accidents, and pertinent occupational experiences of all the persons who received disabling injuries and other injuries
g. A narrative description of the accident including all pertinent related events prior to the accident; measurements of any dimensions or clearance; type of equipment or machinery; noise level, visibility, lighting (in general terms,

any identifiable human behavioral factors contributing to the accident; or any other working element contributing to or related to the accident).

h. A description of the steps taken, or to be taken in the future, including, where appropriate, suggestions for modification or improvement in operating procedures, working rules and regulations, safety standards, modification of equipment, training of personnel, or other changes needed to prevent recurrence of the accident.

Rule 5 The written records of investigation of accidents shall be maintained at the mine for a period of five (5) years from the date of the accident and shall be open for inspection by authorized representatives of the Bureau. A certified copy of the written record of each investigation of an accident made under Rule 3 shall be furnished to the Bureau.

Rule 6 The Operator of a coal mine shall maintain at the mine office a Coal Mine Accident Report on which shall be entered and recorded specified information with respect to each accident and each resulting injury by date of occurrence. The Coal Mine Accident Report is made to facilitate the recording and compilation of information for each occurrence. The Operator's copy shall be maintained at the mine for a period of 5 years from the date of occurrence and shall be open for inspection by authorized representatives of the Bureau.

Rule 7 Monthly coal mine accident reports shall be rendered within the first ten days of the subsequent month (sample form is indicated in Appendix A).

Section 2: Responsibilities

Rule 8 The Operator:

a. Shall formulate, carry-out and periodically review a coherent policy statement on safety and health.

b. Shall establish a hazard identification, risk assessment and control procedure involving its mine operation and shall assess the risk and deal with it in the following order of priority:

i. eliminate the risk;
ii. control the risk at source;
iii. minimize the risk by means that include the design of safe work systems; and,
iv. in so far as the risk remains, provide for the use of personal protective equipment,

having regard to what is reasonable, practicable and feasible, and to good practice and the exercise of due diligence;

c. Shall ensure that the mine is designed, constructed and provided with electrical, mechanical and other equipment, including a communication system, to provide conditions for safe operation and a healthy working environment;

d. Shall ensure that the mine is commissioned, operated, maintained and decommissioned in such a way that workers can perform the work assigned to them without endangering their safety and health or that of other persons;

e. Shall ensure the monitoring, assessment and regular inspection of the working environment to identify the various hazards to which the workers may be exposed and to assess their level of exposure;

f. In respect of zones susceptible to particular hazards, shall draw up and implement an operating plan and procedures to ensure a safe system of work and the protection of workers;

g. Shall ensure that when there is serious danger to the safety and health of workers, operations are stopped and workers are evacuated to a safe location.

h. Shall prepare an emergency response plan for reasonably foreseeable industrial and natural disasters.

i. Where workers are exposed to physical, chemical, biological or radiological hazards the Operator shall:

    i. Inform the workers, in a comprehensible manner, of the hazards associated with their work, the health risks involved and relevant preventive and protective measures;

    ii. Take appropriate measures to eliminate or minimize the risks resulting from exposure to those hazards;

    iii. Where adequate protection against risk of accident or injury to health including exposure to adverse conditions cannot be ensured by other means, provide and maintain at no cost to the worker suitable protective equipment, clothing as necessary and other facilities defined by national laws or regulations; and,

    iv. Provide workers who have suffered from an injury or illness at the workplace with first aid, appropriate transportation from the workplace and access to appropriate medical facilities.

j. Shall provide treatment, hospitalization, medical facilities, as well as transportation to the hospital for the injured workers;

k. Shall maintain a first-aid station or stations at central points in the mine. The station shall be equipped with the necessary first-aid kits as described in Chapter VI Rule 770 Section 2: First-Aid Equipment;

l. Shall allow a period for orientation of newly hired worker which may be in the form of lecture and/or actual observation of the working place where the newly-hired or re-hired worker is to be assigned;

m. Shall train, educate and stimulate its workers to follow safe working methods and show sincere interest in its workers' safety;

n. Shall establish a check-in and check-out system which will provide positive identification of every person underground, and will provide an accurate record of the persons in the mine. Such record shall bear a number identical to an identification check that is securely fastened to the lamp belt worn by the person underground.

o. Shall ensure full coordination with sub-contractors for the implementation of all measures concerning the safety and health of workers and shall be held primarily responsible for the safety of the operations.

p. Shall provide all necessary facilities for safe, sanitary and healthful working conditions including personal protective equipment appropriate to the nature of work;

q. Shall provide and maintain adequate self-rescue respiratory devices for workers in underground mines;

r. Shall make available the necessary safety equipment in accordance with the type of work performed as required by law;

s. Shall be responsible for the adoption and enforcement of a set of safety and health rules and regulations with translation in the dialect understandable by the majority of the workers of the mine or most common in the locality concerned, a printed copy of which shall be furnished to each worker and the Bureau or its representatives;

t. Shall take every reasonable precaution necessary to ensure the safety of the workers while on duty;

u. Shall safeguard machinery and shall place no machinery or equipment in operation unless full instructions have been given for its safe operations;

v. Shall formulate and implement a safety and health program duly approved by the DOE;

w. Shall investigate each and every accident with the aim of determining the best remedies to prevent its recurrence;

x. Shall maintain regular monthly safety meetings for its workers assigned at the surface and underground, and shall submit to the Bureau the minutes of the safety meeting within the first ten (10) days of the subsequent month.

Rule 9 The Resident Manager:

a. Shall strictly enforce all safety and health rules and regulations including the use of appropriate personal protective equipment;

b. Shall investigate or cause to be investigated immediately all reported unsafe and unsanitary conditions, and all reports thereof with the necessary actions taken, be recorded and filed;

c. Shall immediately take steps to correct the conditions whenever or wherever there are complaints;

d. Shall maintain a bulletin board in a conspicuous place accessible to the workers, whereon shall be posted all notices, etc. regarding safety, health and sanitation;

e. Shall be required to know the number of workers working underground at each shift;

f. Shall issue permits to private persons wishing to visit the mine and its premises, provided they enjoy the confidence of the company, and are accompanied by authorized personnel.

Rule 10 Shift Superintendent or Foreman

a. Shall be required to know, understand, apply and enforce all safety and health rules, regulations, and precautions pertaining to the assigned work including the use of personal protective equipment;

b. Shall immediately take steps to correct the conditions whenever complaints are found justified;

c. Shall be held responsible for the safety of his workers;

d. Shall see to it that the works under his supervision are being performed properly and safely;

e. Shall conduct safety meetings of his section as means of educating the workers regarding the proper and safe manner of working;

f. Shall be familiar and receive periodic trainings in mine rescue and first-aid;

g. Shall point out any unsafe act and help workers to form safe working habits;

h. Shall maintain discipline and forbid horseplay or practical joke;

i. Shall be familiar with and inspect working places as often as practicable.

Rule 11 Shift Supervisor

a. Shall be required to know, understand, apply and enforce all safety and health rules, regulations and precautions pertaining to the assigned work;

b. Shall be held responsible for the safety of his workers;

c. Shall not allow workers to work without the proper safety equipment;

d. Shall be accountable for checking in and checking out of the workers under his supervision;

e. Shall visit the working places under his supervision as often as possible;

f. Shall see to it that the working areas under his supervision are safe, clean and sanitary;

g. Shall not assign any worker to work alone underground in slopes, raises, and development workings where he cannot be seen, heard or cannot get proper and close supervision;

h. Shall report to his immediate superintendent any hazard that he may find in departments other than his own;

i. Shall, as his first duty in case of fire, look after the safety of his workers and report the incident at once;

j. Shall prior to the appointed time for each shift to enter the mine, examine carefully every working place, all places adjacent to live workings, every roadway, and every unfenced opening to abandoned workings and falls in the mine, but before proceeding with this examination, he shall see to it that the air current is traveling in its proper courses;

k. Shall use no light other than an approved safety lamp in conducting the examination mentioned above;

l. Shall mark at the face and side of every place examined the date of the examination as evidence that he has performed his duty;

m. Shall also examine the entrance or entrances to all worked-out and abandoned portions adjacent to the roadways and working places other than his assigned area where explosive gas is likely to accumulate, and he shall place a danger signal across each entrance to every working place and every other place, where explosive gas is discovered or immediate danger is found to exist from any other cause so that the said signal is sufficient warning for persons not to enter;

n. Shall enter in the Supervisor's Record Book kept at the mine office immediately after the examination mentioned in (l) and (m) of this rule, a record of such examination and sign same. This record shall show the time in making the examination, and also the nature and location of any danger that may have been discovered in any room or entry or other place in the mine, and if such danger or dangers have been discovered, he shall immediately report the location thereof to the mine foreman or resident manager; no person shall enter the mine until he returns to the mine office on the surface, or to a station located in the intake entry of the mine and report to the mine foreman or resident manager, that the mine is in safe condition for the workers to enter;

o. Shall make a second examination during the working hours of every working place where workers are employed and a report of said examination shall be made in the Supervisor's Record Book in the same manner as provided for in (n) of this rule;

p. Shall before commencing his shift, read the reports of the last preceding inspection and insert his initials thereto and note if gas or any other dangerous condition has been reported to be present in any part of the mine under his assigned area;

q. Shall keep a careful watch over all working places in the mine under his assigned area and in the event of danger he shall withdraw all persons who may be exposed to such danger and immediately fence off the place and report the same to the shift superintendent or resident manager;

r. Shall report to his immediate superior any change which might materially increase the hazards of the operations under his supervision and acquaint the workers under him of the changes.

Rule 12 The Worker

a. Shall faithfully observe all rules and notices pertaining to safety, health and sanitation;

b. Shall have the following rights:

i. To promptly report accidents, dangerous occurrences and hazards to his immediate supervisor and to the Bureau or its authorized representative;

ii. To request and obtain, where there is cause for concern on safety and health grounds, inspections and investigations to be conducted by the employer and the competent authority;

iii. To know and be informed of workplace hazards that may affect his safety or health;

iv. To obtain information relevant to his safety or health, held by the Operator or the Bureau;

v. To remove himself from any location at the mine when circumstances arise which appear, with reasonable justification, to pose a serious danger to his safety or health;

vi. Shall collectively select safety and health representatives.

c. Shall assist his fellow workers in the prevention of accident and warn them of dangerous conditions that he may come to know in any part of the mine;

d. Shall report for duty well-rested, sober and in such conditions as enable him to use all ordinary precautions to avoid accidents;

e. Shall submit himself to such physical examination as the employer may demand prior to and during employment and to vaccination or to any other treatment recommended by the company physician;

f. Shall follow the instructions given by the operating staff and the safety department representatives;

g. Shall immediately administer first aid, if qualified, to an injured fellow worker or notify company official who shall make the necessary steps for proper treatment of the injured worker;

h. Shall not enter areas known to be dangerous or pass through danger signs without proper authority;

i. Shall take reasonable care for his own safety and health, and that of other persons who may be affected by his acts or omissions at work;

j. Shall use latrine and other conveniences properly;

k. Shall deposit garbage, kitchen waste and other waste in proper receptacles provided for the purpose;

l. Shall take care of inflammable materials in such a way as to minimize fire hazard;

m. Shall immediately report to his immediate superior any injury he sustained while performing his regular duties with the company, no matter how light;

n. Shall not be permitted to enter any mine working and plant while under the influence of intoxicating liquor or drugs and shall not be allowed to carry intoxicating liquor or drugs into the same places;

o. Shall not be allowed to linger in any part of the plant or in the mine after the end of his shift, and shall not commit nuisance anywhere in the mine;

p. Shall upon entering the mine, go directly to the working place assigned to him and shall not loiter or go into abandoned parts of the mine during his shift;

q. Shall be prohibited to interfere with any method or process or remove, displace, damage or destroy any safety devices or other appliances furnished for his protection or the protection of others;

r. Shall cooperate with the Operator as to the discharge of duties and responsibilities stated in Rule 8.

Rule 13 Safety and Health Representative

a. Shall represent workers on all aspects of workplace safety and health;

b. Shall participate in inspections and investigations conducted by the Operator and by the Bureau at the workplace;

c. Shall monitor and investigate safety and health matters in coordination with the safety engineer;

d. Shall have recourse to advisers and independent experts;

e. Shall consult with the Operator in a timely fashion on safety and health matters, including policies and procedures;

f. Shall consult with the Bureau in coordination with the Operator; and,

g. Shall receive notice of accidents and dangerous occurrences.

Section 3: Organization of Safety Department

Rule 14 All coal mines must have a Safety Department headed by a safety engineer with safety inspectors as staff. All safety engineers and safety inspectors shall be duly registered with the Bureau.

Rule 15 The Safety Department shall be under the direct supervision of the Resident Manager of the mine.

Section 4: Qualifications of Safety Engineer and Safety Inspector

Rule 16 Qualifications of Safety Engineer

A person to be appointed as Permanent or Temporary Safety Engineer must possess the following minimum qualifications:

a. For permanent registration:

i. Must be duly registered and currently licensed mining engineer.

ii. With at least two (2) years working experience in underground mining operations for underground coal mines or surface mining operations for surface coal mines.

iii. Must have completed at least a cumulative eight (8) hours of training in general safety and health related to mining operations.

b. For temporary registration:

i. Duly registered and currently licensed mining engineer but does not possess the requirements in Rule 16 (a) ii and iii.

ii. Any other duly registered and currently licensed engineer, geologist, metallurgist, chemist, with at least one (1) year experience as safety inspector in an underground or surface coal mine.

NOTE: The temporary registration is valid only for one (1) year and renewable every year.

Rule 17 Who may be registered as Safety Inspector?

a. A graduate of a mining engineering course;

b. A graduate in any engineering, geology, metallurgy or chemistry course with at least one (1) year experience in safety work in mining operation;

c. Any undergraduate in any engineering, geology, metallurgy or chemistry course with at least three (3) years experiences in safety work in mining operation;

d. Any high school graduate with at least five (5) years experiences in safety work in mining operation;

e. Any high school undergraduate with at least ten (10) years experiences in safety work in mining operation.

NOTE: A Safety Inspector's permit is valid for one (1) year and renewable every year.

Section 5: Application for Safety Engineer's / Safety Inspector's Permit

Rule 18 Requirements for Application for Safety Engineer's / Safety Inspector's Permit:

a. Accomplished DOE application form (Appendix B)
b. Recent 2" x 2" I.D. pictures (2 copies)
c. Duly signed Resume
d. Photocopy of Philippine Regulatory Commission I.D (for Safety Engineer)
e. Endorsement (Letter of Recommendation) from the Company
f. Current Police Clearance
g. Payment of registration fee of PHP 550.00

Section 6: Duties of a Safety Engineer/Inspector

Rule 19 Duties of a Safety Engineer:

a. He shall make routine inspection of the mine and its premises;

b. He shall conduct examination for methane gas using a suitable methane gas detector and other noxious gases with an appropriate instrument;

c. He shall make a daily report to the Resident Manager of all places inspected as to:

i. Ground condition
ii. Condition of underground supports
iii. Activities of workers during inspection
iv. Housekeeping
v. Safe and/or unsafe conditions
vi. Ventilation
vii. Presence of noxious gases
viii. Recommendations

d. He shall see to it that steps are taken so that all dangerous places are properly fenced off and provided with conspicuous danger signboards;

e. He shall receive the oral and written reports of workers about unsafe conditions;

f. He shall instruct workers in accident prevention, first-aid, mine rescue, health, sanitation and underground ventilation;

g. He shall organize the safety and health committee;

h. He shall conduct meetings of the committee for the promotion of safety, health and underground sanitation;

i. He shall investigate all mine accidents and promulgate ways and means of preventing their recurrence;

j. He shall keep a record of all accidents and safety inspection reports;

k. He shall take the lead in implementing the safety and health program;

l. He shall see to it that all the company and the Bureau safety and health rules and regulations are complied with;

m. He shall conduct regular inspection of fire hydrants, fire extinguisher and other fire-fighting equipment.

n. He shall conduct a monthly inspection in coordination with mechanical, electrical department as to the condition and reliability of mechanical and electrical equipment of the mine operation.

Rule 20 Duties of the Safety Inspector:

The Safety Inspector shall assist the safety engineer in the performance of the duties enumerated in Rule 19.

Section 7: Training Programs

Rule 21 The Operator of coal mine shall make available to all newly-hired workers employed in the mine a minimum of eight (8) hours safety and health seminar related to mining operations conducted by the Operator or under the auspices of the Operator or a mining safety and health practitioner or consultant.

Rule 22 The Operator shall establish an adequate training and retraining programs and comprehensible instructions for all workers, at no cost to them, on first-aid, safety and health matters as well as on the work assigned to them.

CHAPTER II

UNDERGROUND MINING RULES

Section 1: General Provisions

Rule 23 All mines shall have at least two (2) exits to the surface. Vertical shaft dimension shall be at least 1.8 meters x 1.2 meters and for tunnel dimension shall be at least 1.5 meters x 2.1 meters.

Exception to this shall be:

a. Mines that have shafts, raises, or any opening in the process of being connected to the surface to comply with the above rule;

b. Shafts, winzes, raises, drifts, crosscuts, tunnels, inclines, grades, and slopes to prospect for and develop coal, but not for the extraction of coal except such as may be allowed with only one (1) outlet under such conditions with such precautions as the Bureau may require.

Rule 24 All underground openings shall be properly identified and marked in the mine map.

Rule 25 Routes, exits or outlets through the underground workings shall be established and shall be plainly marked with signboards showing the direction to be taken in case of emergency.

Rule 26 All routes leading to the exits or outlets shall be clean and free from obstructions which may hinder or delay the flow of workers at all times.

Rule 27 Two (2) separate and distinct travelable passage ways which are maintained to insure passage at all times of any person, including disabled persons, and which are to be designated as escapeways, at least one of which is ventilated with intake air, shall be provided from each working section continuous to the surface escape drift opening, or continuous to the escape shaft or slope facilities to the surface, as appropriate, and shall be maintained in safe condition and properly marked.

Rule 28 Mine openings shall be adequately protected to prevent the entrance into the underground area of the mine of surface fire, fume, smoke, and flood water.

Rule 29 No person shall use an assumed or fictitious name or represent another while working for a company. Likewise, no person shall deputize any other person to do his work without the approval of his superior; nor shall any person, without such approval, cease to supervise workers under his charge.

Rule 30 When first entering a working place, the ground shall be examined for any loose rock by all the workers. Loose rock or coal shall be barred down before any other

work is started. The walls and back of such working place shall be tested for loose rock several times during the shift.

Rule 31 No worker in the premises of the coal mine is permitted to fight, engage in horseplay, crowd or jest other workers or act in any other disorderly manner.

Rule 32 No worker shall be allowed to sleep underground.

Rule 33 Unauthorized persons shall be prohibited to ride on any moving equipment except on that which is especially designed for the transportation of workers.

Rule 34 Workers shall notify all others who might be endangered by the work they are doing. Similarly, when working one above the other, workers shall inform one another before work is started and see to it that the workers below are in the clear.

Rule 35 Safety belts with life line shall be worn where there is danger of falling or slipping.

Rule 36 Workers shall not expose themselves or any part of their bodies to the danger from suspended load.

Rule 37 Workers shall respect and observe all danger signs. Signs are there for their protection.

Section 2: Escapeways

Rule 38 Regardless of the height of the coal bed, the escapeway shall be maintained at the height of at least 1.5 meters (excluding necessary roof support) and the travelway in such escapeway shall be maintained at the width of at least 2.0 meters.

Rule 39 Stairways or ladders shall be installed in all escape shafts.

Rule 40 Ladders shall be substantially constructed, anchored securely and maintained in good condition.

Rule 41 All travelable passageways designated as escapeways shall be located to follow the safest direct practical route to the nearest mine opening suitable for the safe evacuation of workers.

Rule 42 All escapeways shall be examined in their entirety every fifteen (15) days by the safety engineer and a record of such inspection shall be maintained.

Rule 43 A map of the mine showing all escapeways shall be posted at the mine portal and other strategic locations for the information of workers.

Rule 44 All maps shall be up to date and any changes in routes of travel, location of doors, or direction of airflow shall be promptly shown on the maps and brought to the attention of all workers.

Rule 45 Practice escapeway drills shall be conducted at least twice a year so that all workers are kept informed of the route of escape, any necessary ventilation changes, the location of fire doors, or smoke retarding doors, and plans for diverting smoke from escapeways.

Section 3: Mine Maps

Rule 46 The Operator shall prepare an accurate and up to date maps of the coal mine at a scale of 1:1000 and supporting data which shall include:

a. The active workings;
b. All pillared, worked out, and abandoned areas;
c. Entries and air courses with the direction of airflow indicated by arrows;
d. Contour lines of all elevations;
e. Elevations of all main and cross or side entries;
f. Dip of the coal bed;
g. Escapeways;
h. Adjacent mine workings within 300 meters;
i. Mines above or below;
j. Water pools above;
k. All shaft, slope, drift, and tunnel openings and strip mined areas of the coal bed being mined;
l. The location of all surface mine ventilation fans; the location may be designated on the mine map by symbols;
m. The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown;
n. The elevations of tops and bottoms of shafts and slopes; and the floor at the entrance to drift and tunnel openings;
o. The elevation of the floor at intervals of not more than 50 meters in:

    i. At least one entry of each working section, and main and cross entries;
    ii. The last line of open crosscuts of each working section, and main and, cross entries which are abandoned;
    iii. Rooms advancing toward or adjacent to property or boundary lines or adjacent mines.

p. The elevation of any body of water dammed in the mine or held back in any portion of the mine;

q. Such other information as the Bureau may require.

Such map shall identify those areas of the mine which have been pillared, worked out, or abandoned, which are inaccessible or cannot be entered safely and on which no information is available.

Rule 47 Maps shall be duly certified by a registered mining engineer or a registered geodetic engineer.

Rule 48 Mine maps shall be updated and supplemented quarterly.

Rule 49 The mine maps including revision and supplement thereof shall be available for inspection by the Bureau or its authorized representative. The Operator shall submit to the Bureau a copy of the mine maps quarterly within fifteen (15) days after the end of each quarter.

Section 4: Ventilation

A. Main Fan

Rule 50 Where natural ventilation is inadequate, coal mines shall be ventilated by mechanical ventilation equipment.

Rule 51 Main fan shall be:

a. Installed on the surface;

b. Installed in fireproof housing and connected to the mine opening with fireproof air ducts;

c. Equipped with a pressure recording gauge and an automatic signal device designed to give alarm should the fan slows down or stops. The signal from this device shall be so placed that it will be seen or heard by a responsible person who is always on duty and can hear or will observe such alarm when workers are underground and who shall take appropriate action immediately.

Rule 52 To protect main fan from forces coming out of the mine should an explosion occur:

a. Main fan shall be offset not less than 4.5 meters from the nearest side of the mine opening, and explosion doors or a weak wall having a cross-sectional area equal to or greater than the connection entry shall be provided in direct line with possible explosion forces; or

b. Main fan may be installed in line with a diversion entry, slope, or shaft courses to the surface. The surface opening of the fan entry shall be no less than 4.5 meters nor more than 30 meters from the surface opening of the

connected mine air course (pressure relief entry). The pressure relief entry opening shall be provided with a weak wall or explosion doors in direct line with forces of an explosion originating underground and such weak wall or explosion doors shall have a cross-sectional area equal to or greater than the pressure relief entry and cross-sectional area of the pressure relief entry shall not be less than that of the fan entry. The underground intersection of the fan entry and pressure relief entry shall be no less than 4.5 meters nor more than 30 meters from the surface opening of the pressure relief entry. The pillar of coal between the pressure relief entry and the fan entry shall regardless of coal bed height, contain not less than 240 square meters.

Rule 53 Main fan may be driven either by electric motor or internal combustion engine:

a. When electric motor is used, it shall be provided with a separate power circuit independent of any other mine circuit;

b. When an internal combustion engine is used, the engine shall be installed in a fireproof housing, located so as to be protected from possible fuel supply fire or explosion and the engine and exhaust shall be located out of direct line with the airstream produced by the fan and be vented to the atmosphere in such a manner that the exhaust gases cannot contaminate the mine intake airstream or any enclosure.

Rule 54 In mines ventilated by multiple forced or multiple exhaust main fans, each main fan installation shall be equipped with fire proof doors so designed and positioned that in event of the failure of a main fan the doors at the fan will automatically close and prevent air reversal through the fan.

Rule 55 In mines ventilated by a combination of forced and exhaust main fans, fireproof automatic closing doors shall be installed so that in event of fan failure or stoppage, the doors will automatically close to prevent air reversal that would affect the safety of the workers.

Rule 56 The area surrounding all main fans shall be kept free of flammable material for at least 30 meters in all directions.

Rule 57 All main fans shall be kept in continuous operation except in the event of scheduled maintenance or uncontrolled fan stoppage/failure. All workers other than those performing maintenance or repair are withdrawn from the mine and the mine power is cut off.

Rule 58 All main fans shall be inspected daily by a person trained and designated by the Operator to make such inspections to ensure the electrical and mechanical reliability of such fans and a record shall be kept for reference.

Rule 59 Automatic closing doors as required in multiple fan systems shall be inspected at least once a month to ensure proper operation.

Rule 60 All active workings shall be ventilated by a current of air containing not less than 20.0 volume per centum of oxygen, not more than 0.5 volume per centum of carbon dioxide, and no harmful quantities of other noxious or poisonous gases; and the volume and velocity of the current of air shall at least be 1.0 m/sec. of air sufficient to dilute, render harmless, and to carry away, flammable, explosive, noxious, and harmful gases, dust, and smoke and explosive fumes.

B. Line Brattice

Rule 61 Line brattice or any other approved device used to provide ventilation to the working face from which coal is being cut, mined or loaded shall be installed at a distance no greater than three (3) meters from the area of deepest penetration to which any portion of the face has been advanced.

Rule 62 When line brattice is used:

a. The space between the line brattice and the nearest rib shall be sufficiently free of any obstructions such as supplies, equipment or debris to provide for the adequate coursing of air and permit necessary passage through such space; however, this does not exclude the use of auxiliary tubing or ventilation control devices in such space.

b. Check curtains required in conjunction with the line brattice shall be so installed to minimize air leakage and permit traffic to pass through without adversely affecting face ventilation.

Rule 63 When the line brattice or other ventilating device is damaged to an extent that ventilation of the working face is inadequate, production activities in the working place shall be stopped until necessary repairs are made and adequate ventilations are restored.

Rule 64 Brattice cloth (jute or any substitute) and ventilation tubing used underground, shall be flame resistant.

C. Auxiliary Fan

Rule 65 In the event that auxiliary fans and tubing are used in lieu of or in conjunction with a line brattice system to provide ventilation of the working face, the fan shall be of a permissible type, maintained in permissible condition, so located and operated to avoid any recirculation of air at any time, and inspected by a certified person when in use.

Rule 66 In places where auxiliary fans are used, accumulation of methane resulting from unscheduled stoppage of the main fan shall be removed after restoration of normal mine ventilation by conducting the air current into the place with line brattice or the equivalent. Auxiliary fans shall not be operated in such place during stoppage of normal mine ventilation, and until methane accumulations have been removed.

Rule 67 If the auxiliary fan is stopped or fails, the electrical equipment in the place shall be stopped and the power disconnected at the power source until ventilation in the working place is restored. During such stoppage, the ventilation shall be by means of the primary air current conducted into the place in a manner to prevent accumulation of methane.

Rule 68 In places where auxiliary fans are used, the ventilation during scheduled idle periods shall be by means of the primary air current directed into the place in a manner to prevent accumulation of methane. Prior to resumption of work in such places, auxiliary fans shall first be reactivated 15 to 20 minutes.

Rule 69 To ensure that an adequate volume and velocity of air is supplied continuously to the working face where auxiliary fan and tubing are used for face ventilation, a line brattice or other approved device shall be installed before the auxiliary fan is stopped.

D. Bleeders, Doors, Overcast and Undercasts

Rule 70 Permanent stoppings, overcast, undercast, and shaft partitions shall be constructed of substantial, incombustible material, such as concrete, concrete blocks, cinder block, brick or tile, or some other incombustible material having sufficient strength to serve the purpose for which the stopping or partition is intended. In heavy or caving areas, timbered laid longitudinally "skin to skin" may be used. Such permanent stoppings shall be erected between the intake and return air-courses in entries and shall be maintained to and including the third connecting crosscut outby the faces of the entries. Permanent stoppings shall be used to separate belt haulage entries used as intake and return air course.

Rule 71 A crosscut shall be provided at or near the face of each entry or room for interconnection with another entry before the place is abandoned.

Rule 72 Bleeder entries shall be defined as special air courses developed and maintained as part of the mine ventilation system and designed to continuously move air methane mixtures from the gob, away from active workings and deliver such mixtures to the mine return air courses. Bleeder entries shall be connected to those areas from which pillars have been wholly or partially extracted at strategic locations in such a way as to control airflow through such gob areas and to minimize the hazard from expansion of gob gases due to atmospheric pressure change.

Rule 73 Bleeder systems shall include any combination of bleeder entries, bleeder entry connections to any area from which pillars are wholly or partially extracted and all associated ventilation control devices. Such systems shall extend from active pillar line of such gob to the intersection of that bleeder split with any other split of air, and shall not include active workings.

Rule 74 The methane content of the air current in the bleeder split at the point where such split enters any other air split shall not exceed 1.0 volume per centum.

Rule 75 When the return air courses from all or part of the bleeder entries of a gob area and air other than that used to ventilate the gob area is passing through the return air courses, the bleeder connectors between the return air courses and the gob shall be considered as bleeder entries and the concentration of methane shall not exceed 1.0 volume per centum at the intersection of the bleeder connectors and the return air courses.

E. Mine Gases

Rule 76 The allowable limits of gases in the active workings shall not be in excess of the concentrations listed below:

a.	Methane	CH4	1.00%
b.	Carbon Monoxide	CO	0.01%
c.	Carbon Dioxide	CO2	0.50%
d.	Hydrogen Sulfide	H2S	0.10%
e.	Nitrous Oxide	NO2	0.0005%

Rule 77 Gas testing shall be undertaken before each shift by the Operator in each underground coal mine and a record of such shall be maintained.

Rule 78 Where explosive gases other than methane have been (a) accidentally or inadvertently released in excessive amounts, or (b) where other potential explosion hazards are known by the Operator to exist in the mine due to liberation or presence of an excessive amount of explosive gas other than methane, the Operator shall promptly institute ventilation or other control measures to reduce the accumulation of such gases.

Rule 79 Where the potential explosion hazards exist due to the presence of excessive amounts of explosive gas other than methane, the Operator shall promptly institute an air testing program which includes frequent periodic sampling to determine the concentration of explosive gas in any area of the mine where such gases are known to be present. The Operator shall implement corrective measures to eliminate the potential hazards.

Rule 80 The safety engineer shall inspect all active working areas within three (3) hours before the beginning of any shift. The safety engineer shall:

a. Examine accumulations of methane
b. Make tests for oxygen deficiency
c. Examine seals and doors to determine whether they are functioning properly
d. Examine and test the roof, face, and rib conditions
e. Examine for any hazard in all active roadways, travelways, approaches to abandoned areas, and belt conveyors on which workers are carried
f. Test by means of an anemometer to determine whether the air in each split is traveling in its proper course and in normal volume and velocity
g. Examine for such other hazards and violations of the mandatory safety and health standards, the Bureau may from time to time require.

The safety engineer shall post a "danger" sign in areas where hazardous conditions exist, and shall notify the Operator of the mine. Only authorized personnel shall enter the area and institute corrective measures to eliminate the hazardous condition before workers are allowed to enter.

Rule 81 During each shift, the safety engineer shall regularly inspect all working areas for hazardous conditions and implement corrective measures. If such conditions create an imminent danger, the safety engineer shall immediately notify the Operator, who shall withdraw all workers from the area affected by such conditions to a safe area, until the danger has been abated.

Rule 82 At least once each week or more often if necessary, the safety engineer shall examine for hazardous conditions including tests for methane in the return of each split of air where it enters the main return, on pillar falls, at seals, in the main return, at least one entry of each intake and return air course in its entirety, idle workings, and insofar as safety considerations permit, abandoned areas. Such weekly examinations need not be made during any week in which the mine is idle for the entire week, except that such examination shall be made before any other worker returns to the mine.

Any hazardous condition shall be corrected immediately. If such condition creates an imminent danger, the Operator shall withdraw all persons from the area affected by such condition to a safe area, until such danger has been abated.

Rule 83 At least once a week or more often if necessary, the safety engineer shall measure the volume of air entering the main intakes and leaving the main returns, the volume passing through the last open crosscut in any pair or set of rooms, the volume reaching each working face, the volume being delivered to the intake end of each pillar line, and the volume at the intake and return of each split of air.

Rule 84 At the start of each shift, the safety engineer shall test for methane at each working place immediately before electrically operated equipment is energized. If 1.0 volume per centum or more of methane is detected, electrical equipment shall not be energized, taken into, or operated in, such working place until the air therein contain less than 1.0 volume per centum of methane. Examinations for methane

shall be made during the operation of such equipment at intervals of not more than 20 minutes during each shift.

Rule 85 If at any time the air at any working place, when tested at a point not less than 30 centimeters from the roof, face, or rib, contains 1.0 volume per centum or more of methane, changes or adjustments shall be made at once in the ventilation so that such air shall contain less than 1.0 volume per centum of methane. While such changes or adjustments are underway and until they have been achieved, power to electric face equipment located in such place shall be cut off, no other work shall be permitted in such place, and due precautions shall be carried out under the direction of the Operator or the safety engineer.

Rule 86 If, when tested, a split of air returning from any working section contains 1.0 volume per centum or more of methane, changes or adjustments shall be made at once in the ventilation of the mine so that such returning air shall contain less than 1.0 volume per centum of methane. Test shall be made at 4-hour intervals during each shift by the safety engineer.

Rule 87 If when tested, a split of air returning from any working section contains 1.5 volume per centum or more of methane, all workers shall be withdrawn from the area and all electric power shall be cut off until the air in such split shall contain less than 1.0 volume per centum of methane.

Rule 88 Air which has passed through an opening of any abandoned area shall not be used to ventilate any working place in the coal mine.

Rule 89 Before an intentional roof fall is made, the safety engineer shall examine the pillar working to check for methane. If methane is found in amounts of 1.0 volume per centum or more, such roof fall shall not be made until changes or adjustments are made in the ventilation so that the air shall contain less than 1.0 volume per centum of methane.

F. Maintenance of Gas Detectors

Rule 90 The Operator shall provide for the proper maintenance of all approved devices for gas testing to ensure its permissibility by person trained in such job, and a record shall be kept for reference.

G. General Ventilation Systems

Rule 91 Where areas are being pillared without bleeder entries, or without bleeder systems or any equivalent means, pillar recovery may be completed in the area, if the edges or pillar lines adjacent to active workings are ventilated with sufficient air to keep the air in open areas along the pillar lines below 1.0 volume per centum of methane.

Rule 92 Each mechanized mining section shall be ventilated with a separate split of intake air directed by overcasts, undercasts, or any equivalent system.

Rule 93 In all underground areas of a coal mine, immediately before and after blasting operation, the safety engineer shall examine for methane. If methane is found in amounts of 1.0 volume per centum or more, changes or adjustment shall be made at once in the ventilation. No blasting shall be made until the air contains less than 1.0 volume per centum of methane.

Rule 94 The Operator shall adopt a standard operating procedure in the event that any mine fan stops and natural ventilation is insufficient. The Operator shall take the following immediate actions:

a. Withdraw all persons from the mine underground area and cut off the power in the mine;

b. Provide for the restoration of power and resumption of work if ventilation is restored and after the working places and other active workings where methane is likely to accumulate are re-examined by the safety engineer to determine if methane is less than 1.0 percent by volume.

Rule 95 Changes in ventilation which affect the main air current or any split thereof and which may affect the safety of persons in the coal mine shall be made only when the mine is idle. Only those persons conducting such changes shall be permitted in the mine. Power shall be cut off from areas affected by the changes and shall not be restored until the effect of the change has been ascertained and the affected areas determine to be safe by the safety engineer.

Rule 96 All active working areas where pillars have been partially extracted shall be properly ventilated. Conversely, all areas from which pillars have been wholly extracted and abandoned shall be sealed.

Rule 97 Explosion proof seals or bulkheads may be constructed of solid, substantial, and incombustible materials such as concrete, brick, cinder, block, or tile, sufficient to prevent an explosion which may occur in the atmosphere on the side of the seal or bulkhead from propagating to the atmosphere on the other side.

Rule 98 Flexible ducts shall be used for ventilation by either exhausting (suction) or blowing (forced) methods. When metal air ducts are used, they shall be properly grounded to remove static and other electrical charges.

Section 5: Coal and Rock Dust

Rule 99 A program for regular cleanup and removal of accumulations of coal, air borne coal dusts and other combustible materials shall be established and implemented.

Rule 100 In underground active workings that produce excessive amounts of dust, water or water with wetting agent or other effective methods shall be used to abate such dust. In working places, particularly in distances less than 12 meters from the face, water with or without a wetting agent, or other effective methods shall be applied to coal dust on the ribs, roof, and floor to reduce dispersibility and to minimize the explosion hazard.

Rule 101 All underground areas in which the dust is dry and in a combustible content to propagate an explosion shall be rock dusted to within 12 meters from all working faces, unless such areas are inaccessible or unsafe to enter. Crosscuts that are less than 12 meters from a working face shall also be rock dusted.

Rule 102 The Operator shall continuously maintain the average concentration of respirable dust in the intake air courses in the mine during each shift at or below 1 milligram of respirable dust per cubic meter of air.

Rule 103 The Operator shall maintain a supply of respiratory equipment adequate to deal with occurrences of concentrations of respirable dust in the mine atmosphere in excess of the levels required to be maintained under Rule 102. The use of respirators shall not be substituted for environmental control measures in the active workings.

Rule 104 The dust resulting from drilling in rocks shall be controlled by using permissible dust collectors, water, ventilation or any other suitable dust controlling method.

Rule 105 Water used to control dust from drilling rock shall be applied through a hollow drill steel or stem or by the flooding of vertical drill holes in the floor.

Rule 106 In order to control adequate dust from drilling rock, the air current shall be so directed that the dust is readily dispersed and carried away from the drill operator and any other worker in the area.

Rule 107 Adequate measures shall be taken to prevent methane and coal dust from accumulating in excessive concentrations in or on surface coal-handling facilities, but in no event shall methane be permitted to accumulate in excess of one (1.0) per centum by volume.

Rule 108 When coal is dumped at or near air-intake openings, provisions shall be made to avoid dust from entering the mine.

Section 6: Ground Support

A. General

Rule 109 The Operator shall adopt an adequate program for proper roof support system. The program shall include a ground control plan, assessment of ground hazards, evaluation of the roof control system, and related training of workers.

Rule 110 All underground workers shall be able to recognize signs of impending roof collapse or subsidence. In such cases, the workers shall immediately notify the supervisor who will determine the course of actions to be taken. In extreme cases of imminent collapse, alarm shall be sounded and all workers shall withdraw from the danger area.

Power line to the area shall be cut off immediately to eliminate the danger of fire or electrocution. Supervisors shall conduct physical count of their workers to establish positively that no one is caught in the subsidence.

Rule 111 The mine supervisor shall closely supervise mining in loose or heavy ground. The mining shall follow the standard spilling procedure, using substantial boards sufficient to hold the flow of the loose ground and prevent the collapse of the roof.

Rule 112 The Operator shall provide at or near each working face an adequate supply of suitable materials for safely securing the roof. Posts, jacks, or other similar devices shall be used to protect the workers when the following activities are being done:

a. Loose rocks are being barred down;
b. Crossbars are being installed;
c. Roof bolt holes are being installed; and,
d. In such other circumstances as may be appropriate.

Except in the case of recovery work, knocked-out supports shall be replaced promptly.

Rule 113 Recovery of roof bolts is prohibited under all circumstances.

Rule 114 Where there is a danger from fall of roof, face, and ribs the Operator shall take immediate action to correct such unsafe condition before any work or machine is started.

B. Conventional Roof Control

Rule 115 Conventional roof control plan involves the installation of materials other than roof bolts such as metal or wood posts, jacks or cribs in conjunction with wooden cap blocks (half headers), footers (sills), planks and beams as means of roof support.

The support materials used in this rule shall meet the following specifications:

a. Posts shall be solid, straight grain wood with the ends sawed square and free from defects which could affect their strength.

b. The diameter of round posts shall be twelve (12) centimeters or larger depending on the type of ground being supported.

c. Wooden cap blocks and footers shall have flat paralleled sides and be no less than 5 centimeters thick, 10 centimeters wide and 30 centimeters long.

d. Wooden crossbars (collar braces) and planks (top and side laggings) shall be straight and of solid wood. Crossbars shall have a minimum cross-sectional area of 155 square centimeters and the minimum thickness shall be 7.5 centimeters. Planks shall have a minimum cross-sectional area of 52 square centimeters and a minimum thickness of 2.5 centimeters.

e. Preferably cribbing material shall be of wood having parallel flat sides, round timbers may be used provided that it is securely tighten by appropriate wood wedges or other method to prevent dislodgement of cribs.

Rule 116 The following conventional support pattern shall be implemented:

a. Spacing of roadway supports shall not exceed 1.0 meters.

b. Width of roadways shall not exceed 4.0 meters on the straight and 5.0 meters on the curves.

c. Advance top laggings shall be installed to within 1.0 meters of the uncut face; however, the supports nearest the face may be removed to facilitate the operation of the face equipment if equivalent temporary support is installed prior to removal.

d. When an opening is no longer needed for storing supplies or travel of equipment, the roof at the entrance of all such openings along travelways shall be supported.

Rule 117 All working areas, escapeways, haulage ways and manways shall be kept properly timbered.

Rule118 In the absence of necessary mine supports all working areas shall be temporarily suspended until the necessary mine supports are available.

Rule 119 No person shall be allowed to install defective timbers for ground support.

Rule 120 All loose ground shall be barred down prior to the installation of ground support.

Rule 121 In running ground, booms, safety stulls and spilings projecting ahead from the last timber set shall be installed to protect workers from ground collapse.

Rule 122 Workers shall not remove mine supports for repair or replacement without first installing intermediate supports.

Rule 123 Posts shall be secured properly before placing the caps. Collar braces shall be installed as an integral part of the support system.

Rule 124 All mine supports shall be provided with collar braces, and shall be secured properly.

Rule 125 All caps shall be provided with timber blocks at both ends and shall be installed tightly and securely with the use of wooden wedges. No timber blocks shall be installed at the middle or in between the ends of the cap.

Rule 126 All wooden blocks and wedges shall be kept tight at all times.

Rule 127 Permanent staging constructed in a timber set shall be supported by two vertical cleats nailed to the post; or additional post support be installed close to the set posts.

Rule 128 Timber sets and stulls shall be placed at about right angles with the dip of the seam and shall be tilted a little backward on the upper side to allow for tightening when the hanging walls settle down.

Rule 129 All fractured and broken roof or back of mine workings shall be provided with closely installed laggings of at least five centimeters thick.

Rule 130 Back of slicing areas including gob area shall be inspected frequently and shall be properly supported.

Rule 131 Wooden slabs shall not be allowed to be installed as braces of timber sets.

C. Roof Bolting

Rule 132 The following roof bolting scheme shall be implemented:

a. Roof bolt spacing either lengthwise or crosswise shall not exceed 1.5 meters.

b. Roof bolts shall be installed as close as possible to, but not more than 1.5 meters from the face before starting a side cut or a conventional cutting or a continuous miner run.

c. Openings shall not exceed 6 meters in width where roof bolting is the sole means of roof support.

Rule 133 Roof bolt assemblies shall meet the following specifications:

a. The length of the bolt shall not be less than 75 centimeters.

b. Roof bolts that provide support by suspending the immediate roof from a stronger overlying strata shall be of a length that permits anchoring at least 30 centimeters in the stronger strata.

c. Bearing plates used directly against the mine roof shall be not less than 15 centimeters square. In exceptional cases where the mine roof is firm and not susceptible to sloughing, bearing plates 12 centimeters square may be used.

d. When wooden materials such as planks, header blocks, and crossbars are used between the bearing plate and the roof for additional bearing, the use shall be limited to short life openings (not to exceed 3 years) unless treated. Bearing plates used in conjunction with wooden materials shall be not less than 10 centimeters square.

e. When washers are used, the shape of washers shall conform to the shape of roof bolt head and the shape of the bearing plate and the washers shall be of sufficient strength to withstand loads up to the yield point of the roof bolt.

f. Torque ranges specified in the roof control plan shall be capable of providing roof bolt loads to within plus or minus 454 kilograms (1,000 pounds) of 50 percent of either the yield point of the roof bolt being used or the anchorage capacity of the strata, whichever is lesser.

Rule 134 For a plan where both roof bolts and conventional supports are used for roof control at the face, the criteria for full roof bolting plan and a conventional roof control plan shall apply with the following modifications:

a. Any place driven over 5 meters in width shall be supported by a combination roof control plan.

b. The roadway shall be limited to 5.0 meters in width on both the straight and the curves to within 3.0 meters of the uncut face.

c. A row of posts shall be set for each 1.5 meters of space between the roadway posts and the ribs.

d. Openings shall not exceed 9 meters in width.

D. Temporary Supports

Rule 135 The following criteria shall apply to the installation of temporary supports in faces:

a. In areas where permanent artificial support is required, temporary support shall be used until such permanent support is installed.

b. Only those workers installing temporary support shall be allowed to proceed beyond the last permanent support.

c. A minimum of two temporary supports shall be installed on not more than 1.5-meter centers and within 1.5 meters of the rib or face when work is being done between such support and the nearest rib or face. At least four temporary supports shall be installed on not more than 1.5-meter centers when work is being done in other areas on the face inby the last permanent support. No person shall be permitted to proceed beyond the temporary support in any direction unless such support is within 1.5 meters of the rib, face, or permanent support.

Rule 136 During rehabilitation work such as re-bolting, installing crossbars, or other permanent roof support, taking down loose roof and cleaning up falls of roof, temporary roof supports shall be installed and the following criteria shall apply:

a. Where re-bolting work is being done or crossbars are being installed, at least two rows of temporary supports on not more than 1.5-meter centers shall be installed across the place so that the work in progress is done between the installed temporary supports and permanent roof supports installed in sound roof. The distance between the permanent supports and the nearest temporary supports shall not exceed 1.5 meters.

b. Tools used to take down loose material shall be of a design that will enable workers to perform their duties from a safe position without exposure to falling material. Where loose material is being taken down, a minimum of two temporary supports on centers of not more than 1.5 meters shall be set between the workers and the material if such work cannot be done from an area supported by permanent roof supports.

c. Where roof falls have occurred, a minimum of four temporary supports shall be set before starting any work in and around the affected area. These supports shall be located so as to provide maximum protection for workers in the area.

E. Pillar and Support Recovery

Rule 137 Any reduction in pillar size during second mining shall be considered pillar recovery. Second mining is construed to be intentional retreat mining. The following criteria are applicable to pillar recovery roof control plan.

a. During development, the size and shape of pillars shall be dictated by the overburden, height of coal and other conditions associated with the coal bed. The smallest dimension of pillar shall be no less than four (4) meters.

b. Pillar splits and lifts shall not exceed six (6) meters.

c. A minimum of two rows of breaker posts shall be installed on not more than 1.0-meter centers across each opening leading into pillared areas and such posts shall be installed before production is started. Such posts shall be installed near the breaking line between the lift being started and the gob.

d. A row of roadside-radius (turn) posts shall be installed on not more than 1.0-meter centers leading into pillar splits.

e. The width of the roadway leading from the solid pillars to a final stump (push out) shall not exceed 4.2 meters. At least two (2) rows of posts of their equivalent shall be set on each side of the roadway on not more than 1.0 meter centers. Only one open roadway leading to a final stump (push out) shall be permitted.

Rule 138 Supplementary supports shall be installed prior to full pillar recovery in area where roof bolts are used as the sole means of roof support and openings are more than 5 meters wide. Supplementary supports shall consist of at least one (1) row of posts installed on either side on not more than 1.0 meter centers lengthwise and limit the width of all roadways to 5.0 meters. These supports shall be extended from the entrance to the split for at least one (1) full pillar outby the pillar in which the split is being made.

Rule 139 For recovery of roof supports, a detailed plan for such recovery shall be included in the roof control plan. The following criteria shall apply to recovery procedures:

a. Recovery shall be done only under the direct supervision of a mine foreman, assistant mine foreman, or mine supervisor.

b. Only experienced workers shall be assigned to the recovery work.

c. The person supervising recovery shall make a careful examination and evaluation of roof, face and ribs and determine each support to be recovered.

d. Supports shall not be recovered in the following areas:

i. Where roof fractures are present or there are other indications of the roof being structurally weak;
ii. Where any second mining has been done; and,
iii. Where torque readings on roof bolts or visual observations of conventional support indicate excessive loading.

e. Two (2) rows of temporary supports on not more than 1.0 meters centers, lengthwise and crosswise, shall be set across the place, beginning not more than 1.0 meters inby the support being recovered. In addition, at least one (1) temporary support shall be provided as close as practicable to the support being recovered.

f. Temporary supports used shall not be recovered unless recovery is done remotely from under roof where the permanent supports have not been disturbed and two (2) rows of temporary support, set across the place on 1.0 meter centers are maintained at all times between the workers and the unsupported area.

g. No one shall be permitted to enter area where supports have been recovered.

h. Entrances to the areas from which supports are being recovered shall be marked with danger signs placed at conspicuous locations. The danger signs will suffice as long as further support recovery work is being done in the area. If the recovery work is completed or suspended for three (3) or more days, the areas shall be barricaded.

Rule 140 The following shall apply to pillar recovery:

a. The overall pillar recovery system shall be designed to minimize the possibility of outbursts or squeezes.

b. Where full pillar recovery is being done, extraction shall allow total safe caving of the main roof in the pillared area.

c. During partial pillar recovery sufficient pillar shall be left in place to support the main roof and to minimize the possible pressure on the working areas.

d. A combination of full and partial pillar recovery shall not be conducted on the same pillar line.

e. Full or partial pillar recovery shall be prohibited where any of the following physical conditions exist: (i) standing water, (ii) adverse roof conditions, (iii) roof falls, or (iv) surface subsidence.

f. Where full recovery of pillars is planned, the design of the pillars shall be compatible with the planned method of extraction.

g. Pillaring methods shall eliminate pillar points and pillars that project towards the break line.

h. When recovering adjacent pillars left and right from the same opening, mining shall be completed in one (1) such pillar lift and the openings posted off with at least two (2) rows of breaker posts on not more than 1.0 meter centers before operations are started in the second pillar.

F. Open End Pillaring

Rule 141 The following criteria shall apply to open end pillaring:

a. At least two (2) rows of breaker posts shall be installed between the lift being started and the gob on not more than 1.0 meter centers before the initial cut is made and shall be extended to within 2.1 meters of the face. The width of the roadway shall not exceed 4.2 meters.

b. If the roof in open end pillaring has a tendency to hang, the roof shall be allowed to collapse, or cribs shall be installed in addition to the break line posts between the active lift and the hanging area. The cribs shall be set not more than 2.4 meters apart. Heavy duty hydraulic jacks installed at centers close enough to give equivalent support may be substituted for cribs, if such jacks are removed remotely.

G. Natural Arched Roof Support

Rule 142 The following criteria shall apply to mining systems employing continuous mining machines designed to give natural roof support by means of an arched roof:

a. Where coal roof other than that included in the arch is necessary for roof support, at least 15 centimeters of coal roof shall be maintained at all times. In the event that less than 15 centimeters of coal roof is encountered, all work in such places shall be suspended, the continuous miner withdrawn, and artificial roof support installed.

b. Prior to the development of the fourth entrance to a four-way intersection, artificial roof supports shall be installed in roof between the tangents of the arches in the entry.

c. Additional support shall be installed in area where the width of opening is to exceed the normal cutting width of the continuous mining machine.

d. All areas where arch is broken shall be considered as having unsupported roof. No work shall be done in these areas until artificial roof supports have been installed.

Section 7: Hoisting

A. Hoisting Operator

Rule 143 Only experienced hoisting operators and workers duly qualified by the employer shall be allowed to discharge the duties of hoistman or hoisting operator.

Rule 144 The hoisting operator shall comply with the following requirements:

a. Pass a physical and medical examination by the duly licensed physician of the employer showing that he is physically normal in heart, sight, hearing, lungs, mind, and that he has no physical or mental defects.

b. The examination shall be of recent date, not more than thirty (30)-days previous to his employment as hoisting operator.

c. Show competency in an actual test in handling the hoist and knowledge of hoisting procedure in its many phases.

d. Shall know and be able to carry out all hoisting signals or code.

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

Rule 145 Duties of the hoisting operator:

The hoisting operator shall comply with the following rules:

a. Physically and mentally fit.

b. Free from the influence of liquor, narcotics, prohibited drugs, or any substance that may cause intoxication.

c. Familiarize himself with and strictly comply with the requirements of all safety rules and regulations pertaining to the discharge of his duties.

d. At the beginning of each shift, examine and inspect the hoist and accessory hoisting apparatus and report immediately to his supervisor any part that is not functioning normally.

e. Do not run the hoist or hoisting apparatus if by doing so may endanger the safety of workers and/or may cause damage to the apparatus.

f. Be immediately in-charge of his engine at all times and not delegate any of his duties to any other person except to the trainee under his supervision and designated for this purpose by the company authorities.

g. Carefully watch his engine and all machinery under his charge.

h. Prohibit from conversation with any one or distract himself while his engine is in motion, or while attending to signals except when receiving orders or instructions.

i. Exclude anyone from the hoist room except those who are authorized.

j. Run his engine according to safe practices.

k. Do not answer any signal not included on the signal list.

l. Do not move a cage, skip or bucket unless a proper signal is received.

m. Always return or acknowledge the proper signal that he receives.

n. After returning the signal, wait for a while before finally hoisting or lowering the cage, skip or bucket.

o. Not accept hoisting instruction by telephone unless made by a person authorized to give instructions.

p. Cages or skips shall be placed in balance before hoisting workers.

q. Cages or skips carrying workers shall not be "on the brakes."

r. When the hoist has been shut down for a period of time, check all apparatus by operating the cage through the full length of the shaft before hoisting or lowering workers.

s. After any repair in the shaft, run an empty cage, skip or bucket or other apparatus up and down the shaft. No regular work shall be done through the shaft until it has been found to be in safe condition.

t. Before leaving the post, secure position of cage, skip or bucket or other hoisting conveyance at least three (3) meters above the collar of the shaft, or a level or station.

u. Prohibit oiler to oil the engine while in motion.

v. Periodically check the indicator or marker of the hoist cable with the actual level locations.

w. Report in details changes or adjustment in hoist equipment to the succeeding hoisting operator and record such adjustment in a log book duly noted by the immediate supervisor.

B. General Hoisting Rules

Rule 146 Maximum hoisting speeds, loading capacities and corresponding signal codes for materials and rocks shall be fixed by the Operator and shall be posted in the hoist room.

Rule 147 The maximum speed for hoisting or lowering workers shall not exceed the designed speed of the hoist equipment.

Rule 148 A log book of hoist equipment shall be maintained wherein all shift entries shall be made by the hoisting operator.

Rule 149 When hoisting of workers, and supplies and materials is done through a shaft or winze or raise more than twenty (20) meters deep, proper safety devices shall be installed to protect the hoisting apparatus from over-winding.

Rule 150 The Operator shall determine the number of workers allowed to ride at one time.

Rule 151 The maximum number of workers allowed to ride on a trip shall be posted at each landing place and the requirements shall be strictly enforced.

Rule 152 Hoisting or lowering workers through a vertical shaft or winze 30 meters or deeper shall not be permitted unless an iron-bonneted safety cage, skip or bucket is used, except when shaft or winze sinking operations are in progress.

Rule 153 No one shall get into or out of the cage, skip or bucket while it is in motion or after the signal to move has been given to the hoisting operator.

Rule 154 Hoisting and lowering of loose materials and supplies shall be securely fastened by any rigging equipment such as binders, safety cables and chains.

Rule 155 The end of tools, timber or other materials projecting out of the cage and handled through the shaft shall be securely fastened or lashed to the hoisting rope or upper part of the cage, skip or bucket.

Rule 156 Drill steel or other materials must be placed far enough from the collar of the shaft or other opening, to prevent it from falling down. The perimeter of the collar shall be provided with railings or fence.

Rule 157 No workers shall be allowed to ride on the bail of the skip.

Rule 158 Workers before riding on the cage shall properly line up without crowding or pushing one another and once on the cage they shall face the bell chord signal.

Rule 159 Workers shall not be allowed to ride on boards placed across the top skips. These boards shall be placed inside the skip.

Rule 160 Only the cage operator shall make the signal in a cage except in cases of emergency in which the loss of life is at stake.

Rule 161 All cages shall be designed and constructed with maximum safety considerations.

Rule 162 Only authorized persons shall be allowed to ride on a cage or skip when explosives, tools, equipment and other materials are being transported.

Rule 163 No open light is permitted in the cage.

Rule 164 Heavy machinery or equipment that is being loaded into or unloaded from the cage shall be secured with chains, landing gears, or other devices.

Rule 165 Emergency brakes shall be installed aside from the hoist brake. Both brakes shall be tested at every change of shift.

Rule 166 Only safety hooks, shackles or proper attachment shall be used for bucket, cage or skip or other conveyances.

Rule 167 All cages or skips shall be provided with an emergency cable or chain sling or any other safety device as an additional precaution to prevent the skip or cage from falling in the event of the failure of the clevis pin.

Rule 168 Safety catches or dogs of cages shall be inspected and drop tested at least once every three (3) months, under conditions similar to the failure of the rope or apparatus connecting the cage or skip and the hoisting rope.

Rule 169 Safety catches or dogs of cages or skips shall be provided except on cages or skips with three (3) or more cables are used.

Rule 170 Self-dumping cages, platforms, mine cars or other devices that may tilt shall not be used for transporting of workers.

Rule 171 An attendant shall be on duty at the surface when workers are being hoisted or lowered at the beginning or end of each operating shift.

Rule 172 Precautions shall be taken to protect workers working in shaft sumps.

Rule 173 The door of automatic elevators shall be equipped with interlocking switches so that the elevator car will be immovable while any door is opened or unlocked, and cannot be inadvertently opened when the elevator car is not at a landing.

Rule 174 A "Stop" switch shall be provided in the automatic elevator compartment that will permit the elevator to stop at any location in the shaft, in case of emergency.

Rule 175 A slack cable device shall be installed on automatic elevators which will automatically shut-off the power and engage the brakes in the event the elevator is obstructed while descending.

Rule 176 A platform for safe footing shall be provided during embarkation or disembarkation of workers from cage.

Rule 177 During the development of shaft, either a ladder or hoist shall be provided to allow workers to escape quickly in the event of an emergency.

C. Hoisting of Persons and Materials

Rule 178 The winding engine shall be such that:

a. When running at various speeds with light and heavy loads, it can be readily slowed and stopped, and can be immediately started again in either direction by the hoisting operator;

b. It can lift from the bottom to the top of the shaft or winze the maximum unbalanced load on one drum. This provision shall not apply in cases where other means can enable workers below to reach the top of shaft or winze;

c. Each winding drum when unclutched from the engine can be maintained in a position of rest by means of its own brake or brakes, with no more slipping greater than thirty centimeters when the conveyance is loaded to the maximum permitted weight of material or to double the maximum permitted weight of persons, whichever is greater. In calculating the total weight of a person for the purpose of this sub-regulation and of Rules 185 and 216, seventy (70) kilograms shall be allowed for each person;

d. Where no part of the rope is rigidly fixed to the winding drum or sheave, there shall be no dangerous slipping of the rope on such drum or sheave under any possible working conditions.

Rule 179 There shall be on the drum of the winding engine such flanges or horns, and also, if the drum is conical or spiral, such other devices as may be sufficient to prevent the rope from slipping off or coiling unevenly.

Rule 180 Every winding engine, shall, in addition to any marks on the rope, be provided with reliable depth indicators conveniently situated, which will clearly and accurately show 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 places in the shaft changes of gradient necessitate reduction in speed.

On any new engine erected 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 move or down.

In the case of Whiting hoists, single drum hoists and hoists having two (2) drums permanently fixed on one shaft only one indicator need be provided.

Rule 181 In every shaft exceeding one hundred meters in depth, adequate provision shall be made whereby the engine driver 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 revolutions of the drum or sheave of the winding engine.

Rule 182 To all engines operating in shafts, the following shall apply:

a. Where workers are regularly conveyed, there shall be fitted at least one efficient automatic overwinding prevention device;

b. Where winding is carried on in a shaft, 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. In the case of a winding drum system in a vertical shaft where the end of the winding rope 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 Bureau may grant exemption from the requirement of fitting detaching hooks in the case of winding system in a vertical shaft in the course of sinking;

d. In the case of winding system in a vertical shaft 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 devices so arranged that the overwound conveyance is retarded in order to minimize the risk of colliding with the rope sheave or the buffer stops in the headgear; 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 devices so arranged that an overwound

conveyance is retarded and arrested before it can collide with any fixed obstacle.

e. To all winding engines with a permitted speed of over three hundred (300) meters per minute, there shall be fitted and in use a tachograph and speed indicator shall be maintained in efficient working order. The speed indicator shall be situated that the winding speed can at all times be easily read by the engine driver from his driving seat.

Rule 183

a. The head frame shall, except in such cases as may be exempted in writing by the Bureau, 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 182.

b. The shaft shall, except in cases which may be exempted in writing by the Bureau be carried of such depth as to allow an over-run space of at least (8) meters in which the conveyance can travel below the lowest passenger landing place in case of an overwind before it collides with any fixed obstacle, excluding contact 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 a tail rope.

Rule 184 Requirements and procedures regarding examination, testing and use of hoist rope, tail rope or balance rope are as follows:

a. A winding rope, balance rope or tail rope newly put on, whether new or previously used and the attachments connecting any such rope to any conveyance or balance or counterweight shall be carefully examined by a competent person appointed for the purpose by the superintendent, and shall not be used in connection with the raising or lowering of persons until the conveyances 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 log book, termed the Rope Record Book, which shall be open to the Bureau or its authorized representative. The record shall be signed by the person who conducted the examination and test;

b. The Rope Record Book shall contain the following particulars:

i. Name of manufacturer of rope
Date of manufacture of rope

Date rope put on
Name and type of shaft
Name of compartment
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
Width and thickness 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 of each test
Dates of shortening rope
Dates of turning rope end for end
Date rope taken off
Dates of annealing or renewing rope connections

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

d. When a new winding rope, balance rope or tail rope to be used in connection with the raising or lowering of persons is put on, the particulars specified in paragraph (b) (i) above shall be forwarded to the Bureau in duplicate.

e. When a winding rope, balance rope or tail rope, which has previously been in use and which is to be used in connection with the raising or lowering of persons is put on anew, the particulars specified in paragraph (b) (i) and (b) (ii) above shall be forwarded to the Bureau in duplicate.

Rule 185 Where the winding system is such that it allows the periodical testing of the winding rope as required by Rule 200, 201, 202, and 203 and a balance rope or tail rope is

not used, no winding rope shall be used for the raising or lowering of persons or material if the breaking load at any point in the rope is lower than:

a. Ten times the effective load of the combined weight of the conveyance and its attachment and the maximum permitted number of persons or load of material, or

b. Nine times, the effective load of the combined weight of the conveyance and its attachments and the maximum permitted load of material, or

c. Five times the effective load of the combined weight of the rope between the headgear sheave and the lowest working point of the conveyance, the conveyance and its attachments and the maximum permitted number of persons or load of material, or

d. Four and one-half times the effective load of the combined weight of the rope between the headgear sheave and the lowest working point of the conveyance, the conveyance and its attachments and the maximum permitted load of material, or

e. Nine-tenths of the initial breaking load of the rope, whichever is the highest.

For purpose of this sub regulation: **"effective load"** shall be the static weight in the case of a winding rope operating in a vertical plane, and it shall be 1.05 times the vertical component of the static weight in the case of a winding rope operating in an inclined plane and **"attachments"** shall include everything suspended from or attached to the conveyance other than the winding rope.

Rule 186 Where the winding system is such that it allows the periodical testing of the winding rope as required by Rules 200, 201, 202 and 203 and a balance rope or tail rope is used, no winding rope shall be used on the winding engine for the raising or lowering of persons or materials, if the breaking load at any point in the rope is lower than that permitted in writing by the Bureau, or nine-tenths of the initial breaking load, whichever is the highest.

Rule 187 Where the winding system is such that it does not allow periodical testing of the winding rope, as required by Rules 200, 201, 202 and 203, no winding rope shall be used on the winding engine for the raising or lowering of persons or materials if the breaking load at any point in the rope is lower than one and one-half times that is specified in sub-paragraph (c) or in subparagraph (d) of rule 185, or nine tenths of the initial breaking load, whichever is the highest: Provided that the Bureau may in consideration of the depth of wind or the multiple system of winding ropes used, permit a winding rope to be used on such winding engine with such lower breaking load as he may specify.

Rule 188 Where a winding engine not used for the raising or lowering of persons or materials operates in a shaft or winze where persons are regularly conveyed, no winding rope shall be used on such winding engine if the breaking load at any point in the rope is lower than the minimum permitted for similar winding system in Rules 185, 186 and 187.

Rule 189 No balance rope or tail rope shall be used in any winding system in a shaft or winze where persons are regularly conveyed if the breaking load at any point in such rope is lower than six times the effective load of the combined weight of the rope and one-half the weight of the tail carriage, if any, or lower than nine-tenths of the initial breaking load of the rope, whichever is higher.

Rule 190 In case of winding engine erected before approval of this Circular, where the winding arrangements are such to render any provision of Rules 185, 186, 187, 188 or 189 onerous, the Bureau may grant exemption therefrom under such conditions as deem proper.

Rule 191 No trolley, trailer or other conveyance shall be attached to a conveyance operated by a winding engine in a shaft or winze where workers are regularly conveyed unless permission in writing has been obtained from the Bureau under such conditions as may be imposed.

Rule 192 No cage, skip or other conveyance not provided with proper roof or cover on the end nearest the surface and, if required by the Bureau with safety catches shall be used for the raising or lowering of persons in any vertical or steeply inclined shaft, other than persons engaged in sinking operations, conducting an examination, effecting repairs or doing work therein.

Rule 193 The cage used for raising or lowering of persons shall be designed such that any portion of a person's body shall not extend outside the cage to prevent an accidental contact with the timbering or other equipment or the sides of the shaft. Floors or doors shall be so fitted that they cannot accidentally open.

Rule 194 The Operator shall fix the maximum duration of the shift to be worked by the hoisting operator.

Rule 195 The Resident Manager shall appoint in writing 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 connections referred to in Rule 202, the conveyances and any safety catches attached thereto, the pulley wheels and sheaves, the brakes, the depth indicators, the safety devices and all external parts of the winding equipment upon the proper working of which the safety of persons depend;

b. At least once a week, the signaling arrangements and the safety devices used in connections 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 devices 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 a view to ascertaining the amount of deterioration thereof. For the purpose of this examination, the rope shall be thoroughly cleansed at place to be selected by the person 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 features of the wire which, although not constituting sufficient reason for condemning the rope, call for more than usual attention the examination required under the 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 drum and the connection referred to in Rule 202.

Rule 196 If any weakness or defect is discovered during an examination as required under Rule 195, the person conducting examination shall immediately submit a written report to the Resident Manager. Until such weakness or defect is remedied, the winding plant shall not be used except as may be necessary while making the repair.

Rule 197 The Resident Manager shall keep or cause to be kept at the mine the following:

a. A Machinery Record Book in which shall contain the name and duties of each appointed person under Rule 195 to perform the duties mentioned in paragraphs (a) or (b) of Rule 195. A report of every examination referred to in said paragraphs shall be recorded and signed immediately in the Machinery Record Book by the person making the examination. This book shall be inspected and the reports therein countersigned at least once a week by the appointed person under Rules 143 and 144.

b. A Shaft Log Book which shall contain the name and duties of each appointed person under Rule 195 to perform the duties mentioned in paragraph (c) of Rule 195. A report of every examination referred to in said paragraph shall be recorded and signed immediately in the Shaft Log Book by the person making the examination. This book shall be inspected and the reports therein countersigned at least once a week by the superintendent.

Rule 198 The superintendent or his duly designated person shall keep in the hoist room a Hoistman's Log Book, in which shall be recorded in duplicate the following:

a. A 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 report of the condition of arrangements together with a record of signals received by the driver 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 driver. Such entry shall be signed by the person giving instruction and countersigned by the hoisting operator.

Rule 199 Entries on the Hoistman's Log Book shall be inspected and countersigned daily by the persons appointed to carry out the duties specified in Rule 195. The duplicate shall be inspected and signed daily by the person appointed in terms of Rule 143 and 144.

Rule 200 Unless the winding system is such that it does not allow the shortening of the winding rope, a portion of the rope shall be cut from the end attached to the conveyance, the balance weight or the counter-weight, as the case may be, at intervals not exceeding six months and the rope recapped. The portion so cut off shall be of a length of at least four meters or such shorter length as the Bureau may permit in writing.

Rule 201 From the portion of the rope cut off in Rule 200, an acceptable specimen shall without delay be sent to the proper authorities for testing. The test shall be at the expense of the Operator. A certificate showing the result of such test shall be furnished to the superintendent and made available to the Bureau.

Rule 202 At intervals of not more than six (6) months, the connections:

a. Between the conveyance and the winding rope,
b. Between the conveyance and any 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 Bureau in the case of connection 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 203 A proper record shall be kept of the heat treatment of the connections referred to in Rule 202 and the person appointed in terms of Rule 143 and 144 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 204 In no case shall a winding rope be used from which a weak or defective portion has been cut and the cut ends spliced.

Rule 205 No winding rope which has previously been in use in any place beyond the control of the Resident Manager shall be put on anew except with the permission of the Bureau, upon application made in writing to the Bureau.

Rule 206 At least one spare winding rope suitable for each winding engine in use shall be kept in reserve on every mine, and shall be at all times ready for use, except when there are two engines for the same shaft or when the Bureau has in writing granted exemption from the requirements of this section.

Rule 207 No person shall travel in a conveyance operated by winding engine if such conveyance is loaded or partially loaded with rocks or coal, and no person shall travel in a conveyance operated by a winding engine which is simultaneously used for the winding of rocks or coal: Provided that if authorized by the Resident Manager, persons engaged in sinking operations in a vertical shaft or winze may descend such shaft or winze in a conveyance operated by a winding engine which is simultaneously used for the raising of coal and other materials underground.

D. Signal

Rule 208 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.

Rule 209 All signals shall be made distinctly, as follows:

a. When the shaft is "ready to shoot", a five (5) bell signal is given to the hoist operator. He shall acknowledge that he is ready to hoist by returning the same signal.

b. After acknowledgement is made the hoist operator under no circumstances shall acknowledge any other signal given to him.

Rule 210 Signaling devices shall be protected from falling objects.

Rule 211 Signaling devices in shafts or winzes or stations shall be safe and within easy reach of the person inside the bucket, cage or skip.

Rule 212 The signal code in use in the mine shall be posted conspicuously in hoist room, at all shaft stations, and at all places where signals are required. The signal code shall be plainly printed and of such size as to be easily read at all times.

Rule 213 All signals must be given according to the signal code as determined by the Resident Manager.

Rule 214 In addition to posting the full signal code at the required locations, there shall be placed a separate sign board on which must be displayed in large legible letters the designation of the station and the corresponding bell signal.

Rule 215 There shall be at least two effective methods of signaling between each of the shaft station and the hoist room, one of which shall be a telephone or speaking tube.

E. Hoisting Ropes or Cables

Rule 216 The factor of safety 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 217 The minimum safety factors shall not be less than those shown in the following:

Table I: Safety Factors of Hoisting Rope

Depth in Meters	Minimum Safety Factor of New Rope	Minimum Safety Factor when rope must be Discarded
150 or less	8	6.4
151 to 300	7	5.8
301 to 600	6	5.0
601 to 900	5	4.3
901 or more	4	3.6

Excerpt from U.S. Bureau of Mines Bulletin No. 75

F. Attachment of Hoisting Ropes

Rule 218 A rope may be attached by means of zinc-filled socket or rope clips or clamps.

Rule 219 **Socketing.** The method of connecting sockets to cables shall meet the detailed specifications of the American Standard Association Pamphlet M-11 (pp.29-30).

Rule 220 **Rope clips.** The standard 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 221 The number of clips required to develop approximately 80% of the strength of a 6 by 19 plow steel rope is shown in the accompanying tabulations:

Table II. Spacing and Number of Clips for Different Size of Hoisting Ropes

Diameter of Rope (mm)	Number of Clips	Spacing Between Clips (cm)	Efficiency of Fastening (%)	Length of Wrench to use (cm)
6.35	5	11	77.4	45
22.22	5	14	79.1	60
28.57	5	18	80.0	60
25.4	5	15	79.9	60
31.8	6	20	82.1	60
34.92	7	23	-	60
37.65	8	25	-	60
41.27	8	25	-	60
44.45	8	28	-	60
47.60	8	30	-	60
37.65	8	30	-	60

Excerpt from U.S. Bureau of Mines Bulletin

Rule 222 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 rope diameter in width.

Rule 223 Every hoisting cable shall be securely fastened.

Rule 224 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 225 Not less than 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 the installation has been made.

G. Discarding of Hoisting Rope

Rule 226 The rope shall be replaced and discarded on any of the following conditions:

a. Has six (6) broken wires
b. Wires on the crown are worn out to sixty (60) percent of their original diameter
c. Sudden decrease in rope diameter
d. Appearance of marked corrosion
e. The actual factor of safety is less than the prescribed minimum factor of safety of such rope as shown in Table 1.
f. Evidence of undue weakness or other conditions that indicate failure.

H. Sheave and Drums

Rule 227 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

Type of Rope	Diameter of Drums or Sheaves
For ropes of 6x7 construction	96 times the rope diameter
For ropes of 6x19 construction	60 times the rope diameter
For ropes of 8x19 construction	30 times the rope diameter
For ropes of 6x37 construction	30 times the rope diameter

U.S. Bureau of Mines Publication (Miner's Circular No. 54, 1965)

Rule 228 Fleet angles of one and half (l 1/2) degrees or less shall be used.

Rule 229 Proper lubrication of the rope shall be done.

Section 8: Shafts and Slopes

A. General Provisions

Rule 230 All shafts shall be provided with shaft doors, gates, guard rails and other protection as may be necessary and shall be kept closed at all times when not in use.

Rule 231 No stoping shall be done closer than fifteen (15) meters from any active main shaft.

Rule 232 All shafts and winzes shall be provided with ladder ways when the inclination from the horizontal exceeds twenty degrees.

Rule 233 All shafts stations, loading and landing places shall be kept clean at all times.

Rule 234 All inflammable materials including gasoline, diesel oil and other petroleum products shall not be stored at shaft stations or less than fifteen (15) meters radius from shaft.

Rule 235 In general, the regulations applicable to shafts and are applicable to winzes shall be adopted as rules for winzes.

Rule 236 When any work is to be done in a shaft, the hoistman shall be notified and informed as to the nature of the work to be done. Upon completion of the work, a clearance shall be given to the hoistman by the person in charge of the work.

Rule 237 Workers working in a shaft or winze with an excess of six (6) meters of open space below them shall wear safety belts with the safety lines secured firmly.

Rule 238 It is prohibited to inspect or work in a shaft alone.

Rule 239 It is prohibited to commence work in shaft until the hoistman has been duly advised and has turned over the signaling responsibility of the shaft to the repair workers.

Rule 240 No hoisting shall be done in a hoisting compartment while the said compartment is under repair or inspection. In making shaft repairs, hoisting may be allowed if required in making such repairs or inspections.

Rule 241 When necessary hoisting shall be done above workers working in a shaft or winze; double deck bulkheads shall be placed above the working chamber so as to give adequate protection to workers.

Rule 242 A sign conspicuously marked "WORKERS WORKING IN SHAFT" shall be placed where necessary or guards shall be placed where required during the time the workers are at work in the shaft.

Rule 243 All materials lowered or hoisted in shafts shall be properly secured in place.

Rule 244 All shaft timbers shall be cleaned above the point of repair starting at the top and working down.

Rule 245 Repair work in shaft equipped with cage or skip shall be done from an adequate platform bolted to the cage or skip with a steel or iron bonnet securely clamped on the hoisting cable, or a cage with a stationary platform of sufficient strength shall be used.

Rule 246 When changing skip or cage or doing any other work in shaft, it shall be the duty of the person in charge of the work to see that appropriate materials are used for

platform. A wooden platform shall not be less than ten (10) millimeters thick and with an opening of not more than five (5) centimeters in width.

Rule 247 When workers are working in shaft, a suitable covering shall be provided to prevent materials from falling down the shaft. It is prohibited to place tools or materials near shaft where they are likely to fall.

Rule 248 When workers are working at the bottom of a shaft or winze, the cage, skip, bucket or other appliances shall never be lowered directly to the bottom but always stopped about 4.5 meters above until a signal is given to lower them.

Rule 249 If electrical work has to be done in or adjacent to the hoisting compartment of any shaft, the work shall be done from a cage or skip. If said cage or skip hangs up and cannot be used, a good bulkhead above the working platform must be provided before proceeding with the work.

Rule 250 If work has to be done on top of muck in loading pocket, it shall be the duty of the repairman to notify the station tender who shall then guard against loading while such work is in progress.

Rule 251 After completion of repair in the shaft, a trial run shall be made of the empty cage or skip to ascertain whether the shaft is safe and clear.

Rule 252 The Safety Engineer shall conduct examinations of slope and shaft areas for hazardous conditions, including tests for methane and oxygen deficiency:

a. Within 90 minutes before each shift;
b. At least once on any shift during which workers are employed inside any slope or shaft during development; and,
c. Both before and after blasting.

Rule 253 All hazards found during any pre-shift or on-shift inspections shall be corrected before workers are allowed to enter, or continue to work in such slope or shaft. If hazardous conditions cannot be corrected, or excessive methane concentrations cannot be diluted, the area shall be vacated and no workers shall be permitted to re-enter the slope or shaft until the hazardous conditions have been abated.

Rule 254 No work shall be performed in any slope or shaft, no drilling equipment shall be started, and no electrical equipment shall be energized if the methane content in such slope or shaft is 1.0 volume per centum or more.

Rule 255 Diesel-powered equipment used in the drilling, mucking, or other excavation of any slope or shaft shall be permissible, and such equipment shall be operated in a permissible manner and shall be maintained in a permissible condition.

B. Shafts or Winze Sinking

Rule 256 Hoistman shall always stop bucket about one (1) meter from the shaft bottom and wait for signal to lower it.

Rule 257 Riding on cross-head or bucket rims shall not be allowed.

Rule 258 When it is necessary to blast in shaft bottom or shaft station, the hoistman upon receiving the blasting signal shall raise the bucket or skip about one (1) meter and lower back to former position to acknowledge the signal. He shall not answer any other signal after this except the signal to hoist workers.

Rule 259 Shaft workers shall stand in the clear when hoisting or lowering bucket in shaft.

Rule 260 Shaft timbers shall be cleaned after each blasting operation and guides and timbers inspected before doing any other work.

Rule 261 It is prohibited to use open hooks in buckets cage or skip in hoisting.

Rule 262 No bucket or other means of conveyance shall be allowed to leave the top or bottom of the shaft or winze unless the worker in charge thereof has steadied it.

Rule 263 In shaft or winze sinking, the bucket or other means of conveyance shall not be filled with loose rock or ground above the level of the brim.

Rule 264 No person shall be allowed to work at the bottom of the shaft unless protected by an adequate covering extending over the whole area of the shaft, sufficient space only being left therein for the passage of any sinking cage, skip or other means of conveyance. In case of vertical shafts, such covering shall be situated not more than eighteen (18) meters from the shaft bottom. In case of inclined shafts, such covering shall be situated not more than twenty-seven (27) meters from the shaft bottom.

Rule 265 In the course of sinking a shaft or winze, the ladderway shall be provided within such minimum distance from the bottom of the said shaft or winze that will secure the ladderway from damage during blasting. From the lower end of such ladderway to the bottom of the shaft or winze there shall be provided:

a. Chains, chain ladders or wire rope ladders where the inclination is more than thirty-five (35) degrees and less than seventy (70) degrees.

b. Chain ladders or wire rope ladders where the inclination is seventy (70) degrees or more.

Rule 266 Before drilling is commenced in any shaft in the course of sinking, the worker shall thoroughly wash over all the ground within one (1) meter of any hole to be drilled with water under a pressure of not less than 2.0 kgs/sq. m or, if the ground to be

examined is under water, he shall blow it over by compressed air so as to expose the presence of all mis-fires and pockets. Washing or blowing over and the preparation of the sketch shall be done under the immediate supervision of the shift supervisor or any other duly appointed official.

C. Slope Rope Haulage

Rule 267 All slopes or inclines over forty-five (45) meters in depth must comply with the following (Rule 268-279) regulations in addition to the previously cited rule on hoisting that may apply to slope rope haulage.

Rule 268 The maximum safe working load must not be more than one-fifth (1/5) of the breaking load as given in the schedule of the cable manufacturers up to 915 meters and not more than one-fourth (1/4) for over 915 meters.

Rule 269 Safety switch or other equally efficient derail devices shall be installed on all inclines and slopes.

Rule 270 A retreat to safety in case of runaway trips shall be provided for.

Rule 271 Worker shall not be allowed to walk on slope or incline while hoisting is in progress unless properly authorized to do so to perform a specific assignment.

Rule 272 Worker shall not be allowed to ride in or on cars or platforms of any slopes or inclines without proper authorization from his supervisor.

Rule 273 Hoist shall be situated so that operator has a full view of the trip at all times. Where this is impracticable, the hoisting apparatus shall be provided with a suitable indicating device showing at all times the position of cars or trips.

Rule 274 All workers working in conjunction with the operation of the hoisting equipment shall be competent to carry out their duties as such.

Rule 275 Rollers shall be spaced at unequal intervals to prevent rhythmical vibration of ropes.

Rule 276 Rollers for carrying wire ropes in inclined shafts or slopes shall not be spaced over thirty (30) meters apart.

Rule 277 Bare signal wires shall not be placed on the same side of a slope with power line.

Rule 278 The voltage used in electric signaling with bare wires shall not exceed twenty-four (24) volts.

Rule 279 The signal wires shall be suspended on insulators to avoid contacts.

Section 9: Chutes and Raises

Rule 280 Air for ventilation in raises shall be provided such that the flow can be controlled from the valve at the foot of the raise. All development raises shall be provided with two air valves, one at the foot of the raise and one at the end of the steel pipe inside. If necessary, one independent air line with a valve at the bottom of the raise shall be provided.

Rule 281 All development raises must be provided with at least one pinch bar and that loose rocks from all sides and roof shall be taken down immediately before any other kind of work is started.

Rule 282 Safety precautions must be taken when a raise is within six (6) meters of connection with a level. These precautions shall be taken until the raise has been connected.

Rule 283 Handles of chute gates shall project away from the dead end of haulageways.

Rule 284 Only sufficient rock shall be withdrawn from the chute to allow enough space for the round. The broken rock shall not be over three (3) meters below the drilling platform, except when repair is to be made in the chute which requires withdrawal of the rock.

Rule 285 When a chute gate cannot be pulled in standing position on the level, a safety platform shall be provided.

Rule 286 Bars used for punching a chute shall have a blunt end and a hand grip.

Rule 287 It is prohibited to leave a pile of rock or muck under chutes and below manways.

Rule 288 No person shall stand near any car being loaded at a pocket or chute unless assigned to work there. Rocks frequently fly out over the side of the car.

Rule 289 Workers are prohibited to stand in front of the chute while drawing broken rock or muck. Workers are also prohibited to stand on a car barring the chutes as they may be struck by flying rock or be overcome by an onrushing big volume of muck.

Rule 290 Chutes shall not be drawn empty and shall have a few cars of rock left in the bottom to prevent rocks from flying out when coal or waste is being dumped from above.

Rule 291 Workers working inside the chute compartment or pockets shall be provided with safety belts, safety ropes and provided with working signs.

Section 10: Manways and Ladderways

Rule 292 All ladders shall project at least sixty (60) centimeters above every platform.

Rule 293 If possible all ladders shall be installed at an angle not greater than seventy (70) degrees from the horizontal.

Rule 294 All ladderways shall have substantial and adequate landing platforms for every 5 meters vertical distance from each other if the ladder is near to vertical and nine (9) meters if ladder is not greater than seventy (70) degrees from the horizontal.

Rule 295 All ladders shall be staggered so that no section of a ladder is directly in line with the next adjacent section.

Rule 296 All ladders shall be constructed of adequate strong materials.

Rule 297 All ladders shall be constructed with rungs placed at equal intervals of 35 centimeters apart.

Rule 298 All ladders shall be securely fastened.

Rule 299 No platform openings shall be of such size or dimension as to retard the passing through thereof of injured workers carried in stretchers.

Rule 300 It is prohibited to drop drill steel, tools, or any materials down a manway or a chute.

Rule 301 No ladder shall be installed inclined backward from the vertical.

Rule 302 Before climbing a manway, when there are workers working above it or there is only enough passage for one man at a time, tap or strike any metal or pipe three times. The workers working above shall acknowledge the signal by three taps or strikes for clear and two strikes or tap for not clear. A man climbing up shall make at least four signals and when there is no acknowledgement received, he shall climb with caution.

Rule 303 Wooden ladders shall not be painted.

Rule 304 Always face the ladder when climbing and descending ladders.

Rule 305 It is prohibited to follow a man up a ladder who is carrying tools, timber or drill steel.

Rule 306 All manway openings located on level shall be provided with cover and a stopper board shall be installed between the chute and the manway compartments to prevent broken rocks or mucks from rolling or falling down the manway.

Rule 307 Water and air pipes shall not be installed at the middle of ladderways. Pipes shall be installed at one side of ladderways so as not to be an obstruction to the workers.

Rule 308 All manway compartment supported by square set timbers and exceeding forty-five (45) meters in height shall be provided with center and cross bracings.

Rule 309 All manway compartments shall be maintained in good condition.

Section 11: Haulage Levels and Tramming

Rule 310 When necessary, all working places and travelways shall be kept securely timbered.

Rule 311 It is prohibited to use defective timbers.

Rule 312 All timber drift sets shall be provided with collar braces nailed at each end with posts and caps, blocks placed at both ends of the caps and closely spaced top and side laggings.

Rule 313 Shelter holes shall be provided on track haulage roads at intervals of not more than fifty (50)-meters apart (except crosscuts used as shelter holes).

Rule 314 It is strictly prohibited to use at any time gasoline or other inflammable or explosive liquids to drive locomotive in underground workings or tunnels.

Rule 315 Motorman and his helpers must be duly instructed in their duties and must be competent to discharge their work.

Rule 316 Motorman are in charge of their crews and trains, and shall assume responsibility for the operations of haulage work in accordance with all operating and safety rule.

Rule 317 Only motorman or authorized personnel shall be permitted to operate locomotive.

Rule 318 No worker shall be allowed to ride on locomotives or trains except for the brakeman and other haulage crews authorized by the Operator.

Rule 319 When it is necessary to push the trains, the brakeman shall stay inside the car second to the front car.

Rule 320 The motorman on duty shall be supplied with and shall carry at all times an independent light for use in case of power interruption.

Rule 321 Motorman shall be in his proper place in the locomotive before power is turned on.

Rule 322 Motorman shall sound their gongs or warning signals when starting, backing and approaching curves or intersections. Brakeman shall be provided with whistles and

shall be sounded when approaching curves or cross-drifts or when working workers are along the haulage tracks.

Rule 323 Motorman shall not take signals from, or allow cars to be coupled or uncoupled or rails switched by anyone but the braking crew.

Rule 324 The rear end of trains shall be provided with a suitable light or reflector.

Rule 325 Trains shall be pulled and not pushed by locomotive except when unfeasible to do.

Rule 326 Platform cars when attached to a train shall not be pushed ahead of the locomotive, except to a near-by switch. In this case, the locomotive must travel slowly.

Rule 327 Flying switches shall not be allowed. Switches in a mine shall be made uniform and from designs with full consideration of safety in haulage.

Rule 328 Tracks shall be well-laid and well-ballasted.

Rule 329 The motorman shall not leave the locomotive unless it is at full stop, the control of which is in neutral position, the brake fully engaged.

Rule 330 When taking over a train, the train crew shall inspect it to see that it is in proper running order, including headlights and brakes. Defects and deficiencies shall be reported immediately to the supervisor.

Rule 331 A motorman shall keep his train under 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 332 It is prohibited to reverse the motor for braking train except for protection of life or property. Train speeds must conform to the local mine orders.

Rule 333 The brakeman who is authorized to run a motor is subject to the same rules as if he is a regular motorman.

Rule 334 Train shall not be moved if the motorman is in doubt of the signals.

Rule 335 When using light as signal, the train crew shall use the following signals:

a. To stop train in motion, wave light horizontally
b. To move train towards source of signal swing light in circular motion
c. To move train away from source of signal, wave light in vertical direction

Rule 336 All brakemen shall carry police whistle and the following code signals shall be adopted:

a. One blast of whistle to stop train in motion

b. One blast of whistle to start a train forward
c. Two blasts of whistle, to move train back
d. Three blasts of whistle, to move train forward slowly
e. Four blasts of whistle, to move train back slowly

Rule 337 Cars and trains shall not be left standing where these will endanger workers on other trains or where these will materially obstruct the ventilating current.

Rule 338 It is prohibited for a motorman to allow worker to ride on his train unless the worker has permission from the supervisor.

Rule 339 Train crews shall not ride between cars, or on top of loaded cars, or pass from one side to another while the train is in motion.

Rule 340 Motorman shall not allow anyone to get on or off the train or allow brakeman to make flying switches or to walk or run alongside a train while the train is in motion.

Rule 341 When the power goes off, the motorman shall bring his train to a stop at once and not allow his train to glide.

Rule 342 Coupling hook shall be used in coupling and uncoupling cars. It is prohibited to use the bare hands.

Rule 343 Special cars designed and made for transporting explosives underground shall be used in transporting same.

Rule 344 Cars loaded with explosives shall be pulled and not pushed.

Rule 345 Haulage level shall be kept free of spillage and debris.

Rule 346 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 347 On haulage levels, rail joints shall be connected with plates or welded, and rails shall be well supported by ties.

Rule 348 The tracks shall be well aligned and free from high or low joints, broken rails, defective switches and switch joints, and improperly aligned frogs.

Rule 349 Tracks shall be kept well-drained and surfaced.

Rule 350 Track haulage roads shall have a continuous clearance on one side of at least 75 centimeters from the farthest projection of normal traffic. Where it is necessary to change the side on which clearance is provided, 75 centimeters of clearance shall be provided on both sides for a distance of not less than 30 meters and warning signs shall be posted at such locations.

Rule 351 Track haulage roads shall have minimum clearance on the "tight" side of at least 30 centimeters from the farthest projection of normal traffic.

Rule 352 Warning lights or reflective signs or tapes shall be installed along haulage roads at locations of abrupt or sudden change in the overhead clearance.

Rule 353 A total of at least 90 centimeters of unobstructed side clearance (both sides combined) shall be provided for all rubber-tired haulage equipment where such equipment is used.

Rule 354 Off track haulage roadways shall be maintained as free as practicable from bottom irregularities, debris, and wet or muddy conditions that affect the control of the equipment.

Rule 355 All self-propelled electric face equipment, including shuttle cars, which is employed in the active workings of each underground coal mine, shall be equipped with substantially constructed canopies or cabs, located and installed in such a manner that when the operator is at the operating controls of such equipment, he shall be protected from falls of roof, face, or rib, or from rib and face rolls.

Rule 356 The operator of self-propelled equipment shall face in the direction of travel.

Rule 357 Mechanical steering and control devices shall be maintained so as to provide positive control at all times.

Rule 358 All self-propelled rubber-tired haulage equipment shall be equipped with well-maintained brakes, lights, and a warning device.

Rule 359 Manual switches complete with parallel throws and bridle bars shall be provided.

Rule 360 Where two or more locomotives or other self-propelled track mounted equipment are operated independently on the same track, a light, or telephone signal system shall be used to control their movement.

Rule 361 Locomotives shall be provided with adequate headlights and warning devices.

Rule 362 Car railers, jacks and other necessary tools for re-railing car and locomotive shall be on the locomotive at all times.

Rule 363 Locomotive shall be slowed down when workers are alongside the track; when train is passing chutes or rounding curves; when passing places where workers are known to be working; when passing switches, and when passing through ventilating or other doors.

Rule 364 Cars shall be securely blocked before leaving them on a grade.

Rule 365 One or more cars shall be placed between locomotive and a car hauling rails, pipes or similar materials, except when loaded in flat cars.

Rule 366 Train crews shall not attempt to make electrical repairs on the locomotives. The need for repairs shall be reported to the foreman or the electrician.

Rule 367 It is prohibited to stand in front of the chute or on top of the car while drawing coal from the chute.

Rule 368 Train crews shall clean that portion of the haulage level under the chutes.

Rule 369 Trammers shall make sure that the working place has been properly cleared of gas. If necessary, trammers shall have the working place air blown before entering.

Rule 370 Tramming under loose or drummy ground is not allowed.

Rule 371 Trammers and muckers shall inspect the muck for loose dynamite before shoveling it into the car.

Rule 372 Trammers and muckers shall keep muck pile at an inclination such that the rock boulders and muck from top of the pile shall not roll down to the bottom or base.

Rule 373 Hand trammers shall push the car and shall never attempt to pull it.

Rule 374 Suitable wedges shall be used in blocking mine cars.

Rule 375 Trammers shall not place their hands on top of the car when pushing it. Mine cars shall be provided with handles welded below the top of the mine car.

Rule 376 Timbers or other materials shall be piled so as to leave ample room for clearance between the pile and the train.

Rule 377 All covers for chutes must be kept in place at all times except when dumping cars.

Rule 378 Muck in mine cars shall be properly leveled to prevent rocks from sliding or rolling against the hands before starting to push the car.

Rule 379 Picks shall not be used to take down loose rocks. Bars with chisel shape at one end, pointed at the other end, and of sufficient length shall be used.

Rule 380 Muck piles shall be wetted down before loading into mine cars in order to diminish the dust, to remove the hazards from oxide of nitrogen, and to entrain any carbon monoxide so that it will be liberated slowly during mucking operations.

Section 12: Air Hoist

Rule 381 Air hoist used for hoisting in raise shall be kept in proper working condition at all times, and pulley guards shall be provided. Skip or bucket when not in use shall be placed down on the level.

Rule 382 Air hoist shall be so placed that neither the machine nor the operator are exposed to material falling down the raise.

Rule 383 In shaft sinking operation or in place where there is constant danger of electrocution due to wet condition of the working compartment, air hoist and other compressed air apparatus shall be used.

Section 13: Mucking Machine

Rule 384 Only authorized worker shall be allowed to operate a mucking machine.

Rule 385 When not in use, the compressed air or power running the machine shall always be closed or turned off.

Rule 386 Safety pin or bar or any other safety device 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 387 While re-railing a mucking machine or whenever it becomes necessary to do some work in front of the machine, the safety pin or bar or similar device shall be used.

Rule 388 The operator's knuckle guard and platform shall be provided and shall be in its proper place when machine is in operation.

Section 14: Miscellaneous Underground Rules

Rule 389 No dry drilling is allowed underground, unless urgently necessary and with the permission of the Bureau.

Rule 390 No worker shall be assigned to work in a working place that has been stoped or abandoned for a considerable length of time unless accompanied by the supervisor. A "DANGER" sign shall be posted in the said place and every precaution must be taken to prevent the possibility of asphyxiation.

Rule 391 All openings on the floor shall be either covered or protected by grizzlies or boards to prevent workers from falling accidentally into them.

Rule 392 All materials shall be piled neatly at a safe distance from any track or passageway so as not to impede or endanger the traffic.

Rule 393 Oil, waste, old timber or refuse of any kind shall not be allowed to accumulate underground.

Rule 394 Tools and other metallic materials shall not be carried on one's shoulder especially in close proximity to exposed electrical wires.

Rule 395 All defects of, or damage or injury to, machinery or timbering, or to apparatus and equipment in general, in or about the mine which are of dangerous nature, and all unsafe or dangerous conditions in the course of mine operation, even though not resulting in personal injury, shall be promptly reported to the immediate supervisor in charge by the worker observing them.

Rule 396 When drilling or when striking or breaking any boulder or slab with hammer or pick, examine the same before starting the work to see whether it contains a drill hole containing dynamite or caps or both.

Rule 397 Safety goggles shall be worm when breaking boulders with a pick or hammer.

Rule 398 No flooring, roofing, matting, lagging or timbering of any kind whatsoever will be removed if it will make an opening dangerous except when proper precautions of guarding such opening are taken.

Rule 399 All spikes or nails or other protruding objects with or without points projecting from timbers and other places shall be bent down or removed.

Rule 400 No worker shall be assigned, allowed, or be required to perform work alone in any area where hazardous conditions exist that would endanger his safety, unless he can communicate with others, can be heard or can be seen.

Rule 401 Shelter holes shall be kept free of refuse and other obstructions. Crosscuts used as shelter holes shall be kept free of refuse or other materials to a depth of 4.50 meters.

Rule 402 Shelter holes shall be provided at all manually operated doors and at switch throws except; (a) at room switches, or (b) at switches where more than 1.8 meters of side clearance is provided. Exemption of this requirement is allowed if such shelter holes create a hazardous roof condition.

Rule 403 At each underground slope landing where workers pass and cars are handled, a shelter hole at least 3 meters in depth, 1.20 meters in width, and 1.80 meters in height shall be provided. Rescue chambers, properly sealed and ventilated, shall be erected at suitable locations in the mine to which workers may go in case of an emergency for protection against hazards. Such chambers shall be properly equipped with first aid materials, an adequate supply of air and self-contained

breathing equipment, an independent communication system to the surface, and proper accommodations for workers while awaiting the rescue.

Rule 404 When new coal mines are opened, not more than twenty (20) workers shall be allowed at any one time in any mine until a connection has been made between the two openings, and such connections shall be made as soon as possible.

Rule 405 When only one mine opening is available, owing to final mining of pillars, not more than twenty (20) workers shall be allowed in such mine at any one time and the distances between the mine openings and working face shall not exceed 150 meters.

Rule 406 Mine opening declared inactive, or permanently closed, or abandoned shall be properly sealed by the Operator. Other mine openings shall be adequately protected to prevent entrance by unauthorized workers.

Rule 407 A permit shall be obtained from the Bureau by a coal mine that requires the construction, operation, and maintenance of tunnels under any river, stream, lake, or other body of water, sufficiently large to constitute a hazard to workers. The permit shall include terms and conditions to appropriately ensure the safety of workers working or passing through the tunnels. The permit shall require, in accordance with a plan to be approved by the Bureau that a safety zone be established beneath and adjacent to the body of water. No plan shall be approved unless there is a minimum of cover to be determined based on test holes drilled by the Operator in a manner to be prescribed by the Bureau.

Rule 408 Whenever any working place approaches within fifteen (15) meters of abandoned area in the mine as shown by surveys made and certified by a registered geodetic engineer, or within sixty (60) meters of any other abandoned areas of the mine which cannot be inspected and which may contain dangerous accumulations of water or gas, or within sixty (60) meters of any working of an adjacent mine, a borehole or boreholes shall be drilled to a distance of at least six (6) meters in advance of the working face of such working place and shall be continually maintained to a distance of at least three (3) meters in advance of the advancing working face. When there is more than one borehole, they shall be drilled sufficiently close to each other to insure that the advancing working face will not accidentally hole through into abandoned areas or adjacent mines. Boreholes shall also be drilled not more than 2.90 meters apart in the rib of each working place to a distance of at least six (6) meters and at an angle of 45 degrees. Such rib holes shall be drilled in one or both ribs in such working place as may necessary for adequate protection of workers in such place.

Section 15: Mine Rescue Organization

Rule 409 Producing underground coal mines employing one hundred (100) or more workers 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 410 Underground coal mines employing less than one hundred (100) workers underground at any one time shall cluster with other underground mines located within the same region and shall establish a common mine rescue team. A Memorandum of Agreement shall be established among the underground coal mines in order to operationalize the mine rescue team.

Rule 411 A mine initiating a mine rescue organization shall provide and maintain Mine Rescue Station with a minimum of 5-units self-contained oxygen breathing apparatus of at least two (2) hours duration and adequate auxiliary apparatus, equipment and other maintenance facilities.

Rule 412 A mine rescue apparatus team shall maintain at least a minimum of twelve (12) trained members.

Rule 413 A regular member of a mine rescue team shall possess the following qualifications:

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 414 A mine maintaining a Mine Rescue Organization shall prepare and make available an emergency flow chart that defines the course of action in case of an emergency.

Rule 415 If feasible, all neighboring mines shall initiate to organize a Mutual-Aid Mine Rescue Emergency Program.

CHAPTER III

RULES ON SURFACE OPERATIONS

Section 1: General Provisions

Rule 416 All safety rules and regulations previously cited for underground mines which are applicable to surface mines are hereby embodied on Rules on Surface Operations.

Rule 417 The Operator of the coal mine shall establish a ground control plan for the safe control of all highwalls, pits, and spoil banks.

Rule 418 The width and height of working benches shall be governed by the type and size of equipment to be used. The slope of benches shall be kept at an angle of flatness that minimizes the danger of sudden slide.

Rule 419 The vertical height of working benches shall be kept at a maximum of one and a half (1.5) meters above the maximum reach of the shovel or loader being used. If the bench height exceeds three-fourths (3/4) of the maximum reach of the shovel or loader; the track shoes of the shovel or wheels of the loader shall be positioned diagonally with respect to the toe of the bench at an angle not to exceed 30^0 so that the shovel or loader can easily retreat from the bank if the wall gives way.

Rule 420 In the event that the width of the working berm is inadequate, the shovel or the loader shall be positioned diagonally with respect to the toe of the bench at an angle not to exceed 30° so that the shovel/loader can easily retreat from the bank if the wall gives way.

Rule 421 No person shall be allowed to work near moving machinery or equipment. Unless the job so requires such as spotters, conveyor tenders and sorters, every precaution shall be taken to avoid accidents.

Rule 422 A spotter in every shift shall report to the equipment operator any unsafe condition, such as soft and bad ground, presence of misfires, impounded water and other abnormal conditions that can endanger or hamper operations.

Rule 423 A spotter or person directing the movement of an equipment during nighttime shall be provided with illuminating device such as flashlight, miner's lamp, reflectorized vest and gloves or any combination thereof.

Rule 424 Adequate illumination shall be provided when working at night including cloudy or foggy condition during the day.

Rule 425 It shall be prohibited to work on or under any overhanging bank/crest or boulders. The overhanging bank/crest shall be loosened or cut down while the overhanging boulders shall be knocked down first before any kind of work is started.

Rule 426 Workers, other than those necessary to correct unsafe conditions shall not work near or under dangerous high walls or banks.

Rule 427 Whenever it becomes necessary for safety to remove hazardous material from high walls by hand, the hazardous material shall be approached from a safe direction and the material removed from a safe location.

Rule 428 Hazardous areas/conditions shall be corrected before any other work is performed.

Rule 429 Safety precautions shall be taken when doing repair work between immobilized equipment and the high wall or spoil bank, such that the equipment may hinder escape from rock falls or slides.

Rule 430 Two-way radios or cell phones shall be turned off within 70 meters from electrical blasting cables or when entering an explosives magazine area.

Rule 431 Only duly authorized workers shall be allowed to operate any machine or equipment. Equipment operators shall be made responsible for the protection of workers and equipment within their scope of jurisdiction.

Rule 432 In coming near or working around operating equipment, one shall make known to the equipment operator of his presence in the area or shall stay within the lines of sight of the equipment operator.

Rule 433 It shall be prohibited to get on or off any moving vehicles or equipment.

Rule 434 On-the-ground and on-the-cab inspections shall be conducted prior to starting and operating the unit.

Rule 435 It shall be prohibited to clean and to apply oil and grease, adjust or repair any equipment while it is in operation. Adjustments and repairs of any parts of the equipment shall be done by authorized persons only.

Rule 436 Equipment shall be locked-out during repair to prevent it from being set in motion.

Rule 437 Inspection of the conditions of all visible machine parts shall be done by an authorized personnel preferably when the machine is not in motion.

Rule 438 Machines shall not be operated unless safeguards are in place and are in good working condition as certified by a mechanic.

Rule 439 The rules, regulations and precautions pertaining to loading, unloading and transporting explosives shall be strictly complied with.

Rule 440 Open flame shall be prohibited within 16 meters during refueling of any equipment and vehicle.

Rule 441 Drivers shall not exceed the speed limit set by the Safety Department of the coal Operator.

Rule 442 Drivers shall not overtake or pass a vehicle at curves. If a disabled vehicle is blocking the lane, the driver of the incoming vehicle shall slow down and pass with extreme caution.

Rule 443 Give right of way to loaded and ascending trucks.

Rule 444 Maintain a safe distance from vehicle in front while ascending or descending in the same lane.

Rule 445 Personnel of other departments servicing in the pit area shall be required to coordinate with the mine supervisor on duty. Servicing of any equipment shall be conducted in area not affected by operation or free from other moving equipment.

Rule 446 Tourists, sightseers and other visitors shall be properly authorized before entering the pit area. There shall be one safety escort for the group.

Rule 447 While traveling along the ramps within the mine open pit, safe distance shall be maintained from the vehicle in front.

Section 2: Drilling

Rule 448 Mobilization and demobilization procedures shall be established taking into account the terrain and conditions likely to be encountered during travel.

Rule 449 Gradients, slopes and means of working on steep or difficult terrain shall be discussed with workers before starting work. Special work platform shall be provided in steep terrain.

Rule 450 Appropriate access for support trucks and service vehicles shall be developed, particularly if the rig will operate at night. Drainage for the site and access tracks shall be developed.

Rule 451 Potential hazards such as power lines, flood paths, unstable ground, road and weather conditions, among others shall be identified and assessed before commencement of drilling activities.

Rule 452 Procedures for traffic management around work areas and camp sites, including parking areas shall be established and implemented.

Rule 453 Wherever possible, biodegradable mud and non-toxic additives shall be used.

Rule 454 Fuels, muds, lubricants and chemicals shall be safely and conveniently stored.

Rule 455 Drilling fluids and water shall be channeled away from the hole, collar and around the rig. Muddy or slippery walkways, working platforms and ladders cause slips, falls and inefficient work practices.

Rule 456 Adequate closed-circuit system shall be utilized for potentially harmful drilling mud and other drilling additives.

Rule 457 When a drill is to be moved from one drilling area to another, drill steel, tools and other equipment shall be secured and the mast placed at a safe position.

Rule 458 The drill helper's location shall be made known to the drilling operator at all times when the drill is being moved.

Rule 459 When in operation, drills shall be attended to at all times.

Rule 460 Drill operator shall maintain a position that would not hinder his access to the control levers, or from insecure footing or staging.

Rule 461 Workers shall not be on the mast while the drill bit is in operation unless a safe platform is provided and safety belts are used.

Rule 462 Drill crews shall stay clear of drill stems that are in motion. Workers shall not pass under or step over a moving stem or auger.

Rule 463 In the event of power failure, drill controls shall be placed in the neutral position until power is restored.

Rule 464 When churn drills or vertical rotary drills are used, drillers shall not be allowed to work under suspended tools and when collaring holes, inspecting or during any operation in which tools are removed from the hole, all tools shall be lowered to the ground or platform.

Rule 465 Workers shall not hold the drill steel while collaring holes or rest their hands on the chuck or centralizer while drilling.

Rule 466 Drill hole large enough to constitute a hazard shall be covered or guarded.

Rule 467 Workers operating or working near jack-hammers, jacking drills or other drilling machines shall position themselves so that they will not be struck or lose their balance if the drill steel breaks or sticks.

Rule 468 Air shall be turned off and bled from the air hoses before hand-held air drills are moved from one working area to another.

Rule 469 When it is necessary for both the drilling operator and helper to leave the equipment, the machine shall be shut down.

Rule 470 When drilling near the crest of a bank, the drill shall be oriented at right angle and not parallel to the bank.

Rule 471 Unauthorized persons shall not be allowed within the immediate vicinity of the drilling area.

Rule 472 Drilling crew shall be prohibited from staying or resting under the drill at any time.

Rule 473 The drill shall not be re-positioned when no communication is established between the drill operator and his helper.

Rule 474 The drilling machine and its mast or derrick shall not be posted closer than 6 meters horizontally and 1.5 meters vertically from power lines.

Rule 475 Drill operator shall inspect the drilling machine, accessories, tools, hoisting cables, hoses, derricks and platforms before the start of the drilling operation. Any defects shall be reported immediately to the drill supervisor.

Rule 476 Workers shall not be allowed near the rotating or moving accessories or drill parts or climb the mast while drilling operation is in progress.

Rule 477 Railings shall be installed around platform otherwise workers shall use safety belts.

Rule 478 Workers shall not hold the wrench at the gripping tip when tightening or loosening accessories particularly rods or casings.

Rule 479 Drilling machine shall always be anchored when moving up or down slope to prevent from falling.

Rule 480 The noise emission threshold shall be set to maintain the lowest possible level of noise exposure.

Rule 481 Where the noise exposure standard is exceeded, hearing protection shall be provided that still enables effective communication.

Rule 482 Workers shall be trained to recognize when and where hearing protection is required. Signage shall be posted in areas where hearing protection is required.

Rule 483 Noise reduction measures shall be implemented where drilling operation is within seventy-five (75) meters away from occupied dwellings.

Rule 484 Core samples shall be stored in durable standard core boxes and safely stacked.

Rule 485 Upon completion of the program, drill holes must be sealed to eliminate any physical hazard which may result from an open hole in the ground.

Section 3: Loading and Haulage

Rule 486 Only authorized persons shall be allowed at loading or dumping locations.

Rule 487 Where side or overhead clearances on any haulage road on or at any loading or dumping locations at the mine are hazardous to mine workers, such areas shall be conspicuously marked and warning devices shall be installed when necessary to insure safety of the workers.

Rule 488 No person shall be allowed to ride or be otherwise transported on or in the following equipment whether loaded or empty:

a. Dippers, shovels, buckets, forks and clamshells;
b. Cargo space of dump trucks or haulage equipment used to transport coal or other material;
c. Outside the cabs and beds of mobile equipment;
d. Chain, belts, or bucket conveyor except where such conveyors are specifically designed to transport persons;
e. Buckets on aerial tramways.

Rule 489 No man-trip vehicle or other conveyance used to transport workers to and from work areas at surface coal mines shall be overcrowded, and all workers shall ride in a safe position.

Rule 490 Mobile equipment shall be equipped with adequate brakes, and trucks and front-end loaders shall also be equipped with parking brakes.

Rule 491 Ramps and dumps shall be of solid construction, of ample width, have ample clearance and headroom, and be kept reasonably free of spillage.

Rule 492 Berms or guards shall be provided on the other bank of elevated roadways.

Rule 493 Stockpiles of muck, bumper blocks, safety hooks, or similar means shall be provided to prevent over travel and overturning at dumping locations.

Rule 494 Vehicles shall follow at a safe distance while passing shall be limited to areas of adequate clearance and visibility.

Rule 495 Mobile equipment operators shall have full control of the equipment while it is in motion.

Rule 496 Equipment operating speeds shall be prudent and consistent with conditions of roadway, grades, clearance, visibility, traffic, and the type of equipment used.

Rule 497 Cabs of mobile equipment shall be kept free of extraneous materials.

Rule 498 Equipment operators shall sit facing the direction of travel while operating the equipment with dual controls.

Rule 499 Workers shall notify equipment operator when getting on or off equipment.

Rule 500 Dust control measures shall be taken where dust significantly reduces visibility of equipment operators.

Rule 501 Dippers, buckets, loading booms of heavy suspended loads shall not be swung over the cab of haulage vehicle until the driver is out of the cab in safe location, unless the truck is designed specifically to protect the driver from falling materials.

Rule 502 Workers shall not work or pass under the buckets or booms of loaders in operation.

Rule 503 Tires shall be deflated before starting repairs and adequate means shall be provided to prevent wheel locking rims from creating hazard during tire inflation.

Rule 504 Electrically powered equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

Rule 505 Mobile equipment shall not be left unattended unless the brakes are set. The wheels shall be turned towards the toe of the berm, and fully blocked, when such equipment is parked on a grade.

Rule 506 Early warning devices shall be provided when parked equipment creates hazard to vehicular traffic.

Rule 507 Dippers, buckets, scraper blades, and similar movable parts shall be secured or lowered to the ground when not in use.

Rule 508 Shovel trailing cables shall not be moved with the shovel dipper unless cable slings or sleds are used.

Rule 509 Bulldozer, back hoe, crane and other heavy equipment loaded on a trailer truck shall be properly secured when hauled on a level ground. At the mine pit area, the equipment shall travel by itself downhill or uphill.

Rule 510 Materials which are to be hauled shall be provided with necessary steel cables, chains, binders, and or other rigging materials into the trailer truck to prevent sliding or falling.

Rule 511 Any load extending beyond the rear of the vehicle body shall be marked clearly with a red flag by day and red light at night.

Rule 512 Rigid tow bars or safety chain shall be used to tow heavy equipment.

Rule 513 Parked railcars shall be blocked securely.

Rule 514 Over loading shall not be allowed at all times.

Rule 515 Haulage roads shall be kept reasonably free of water, debris and spillage.

Rule 516 Where the ground at dumping site may fail to support the weight of a loaded dump truck, dumping shall be done at a safe distance back from the edge of the bank.

Rule 517 Adequate protection shall be provided at dumping locations where workers may be endangered by falling materials.

Rule 518 Grizzlies, grates, and other sizing devices at dump and transfer points shall be anchored securely in place.

Rule 519 Spotters shall be well positioned in the clear sight of the equipment operator while trucks and equipment shall be equipped with appropriate backing lights and horns.

Section 4: Truck Haulage

Rule 520 Trucks shall be inspected at the beginning of each shift and during service periods. Defects shall be reported immediately to the supervisor.

Rule 521 Gauges shall be in good operating condition and these shall be monitored during operation by the driver.

Rule 522 When travelling, all drivers shall check road conditions and report any hazard to the supervisor.

Rule 523 The road shall be cleared of any obstructions before the truck is moved. The driver shall not move his unit unless clear signal is given.

Rule 524 A minimum distance of 30 meters shall be observed in following another truck on downgrade or upslope.

Rule 525 When loading and dumping, trucks shall not be parked closer than 20 meters behind or in front or 5 meters beside other trucks.

Rule 526 Right-lane traffic shall always be maintained unless otherwise directed and safely warranted.

Rule 527 It shall be prohibited to run over electric cables, boulders or other obstructing materials.

Rule 528 Headlights shall be dimmed when approaching vehicles during nighttime.

Rule 529 Parked vehicles shall apply parking brakes at all times. When on a downgrade, the front wheels shall be directed to the toe with the tires properly blocked.

Rule 530 It shall be prohibited for driver to enter or leave the cab while it is being loaded.

Rule 531 Dumping over a bank shall be provided with protective ridge and guided by a spotter. Dumping area shall be elevated at least 1% towards the crest.

Rule 532 During dumping, 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 crest. After dumping, the driver shall not start to travel unless the dumping carriage is completely down.

Rule 533 Driver shall be required to watch the swing radius of the shovel when backing up for loading position. The driver shall wait for the signal of the spotter.

Rule 534 Loaded trucks shall not be used to push or pull other vehicles.

Rule 535 Empty trucks shall yield the right of way to loaded units.

Rule 536 Overtaking or passing a vehicle at curves and intersections shall be prohibited.

Rule 537 Width of permanent two (2) lanes haulage road shall not be less than 3 times the width of the widest hauling truck.

Rule 538 Crest along haulage road shall be provided with stockpile or blocks with a height not less than the height of the cam or hub.

Rule 539 Spotter shall be required to pose himself not less than 4 meters away normal to the cab before giving the signal to dump.

Section 5: Operation of Bulldozer, Grader and Loader

Rule 540 When the units are not in use, the blade, buckets or rippers shall be lowered on the ground.

Rule 541 Equipment operator shall be alert on danger of slide or falling rocks when cleaning a toe.

Rule 542 Back-up lights shall be in good condition when operating at night.

Rule 543 The foot brake in tractors and hand brakes on graders and loaders shall be engaged when parked on an incline.

Rule 544 When maneuvering on inclined ground, the blade or bucket shall be kept as low as possible.

Rule 545 Whenever possible, grader shall be operated in the same direction as traffic flow.

Rule 546 All units shall be parked in an area free from unstable banks/slopes.

Rule 547 Unauthorized persons shall be prohibited to ride on dozers, graders, dump trucks, loaders and other heavy equipment other than a trainee as equipment operator.

Section 6: Coal and Refuse Piles

Rule 548 Coal stockpile shall be built up on open, clean, well-drained hard ground, remote from sources of heat.

Rule 549 Every precaution shall be taken to exclude air by packing the coal uniformly and avoiding segregation of different sizes. To avoid undue force ventilation, the stock shall be elongated and shall be oriented to receive minimum effect from the prevailing wind.

Rule 550 Refuse piles shall be located in areas which are a safe distance from all underground mine shafts, preparation plants, tipples, or other surface installations and such piles shall not be located over abandoned openings.

Rule 551 Where new refuse piles are constructed over exposed coal beds, the exposed coal shall be covered with clay or other inert material as the piles are constructed.

Rule 552 A fire-proof barrier of clay or inert material shall be constructed between old and new refuse piles.

Rule 553 Refuse deposited on a pile shall be spread in layers and compacted in such a manner so as to minimize the flow of air through the pile.

Rule 554 Refuse shall not be deposited on a burning pile except for the purpose of controlling or extinguishing a fire.

Rule 555 Clay or other sealant shall be used to seal the surface of any refuse pile in which a spontaneous combustion has occurred.

Rule 556 Refuse piles shall not be constructed in such a manner as to prevent accidental sliding and shifting of materials.

Rule 557 No extraneous combustible materials shall be deposited on refuse piles.

Rule 558 New refuse piles and additions to existing refuse piles, shall be constructed in compacted layers not exceeding 60 centimeters in thickness and shall not have any slope exceeding 2 horizontal to 1 vertical (approximately 27°); however, construction of a refuse pile in compacted layers exceeding 60 centimeters in

thickness with slopes exceeding 27° may be allowed, where engineering data substantiates that a minimum safety factor of 1.5 for the refuse pile will be attained.

Rule 559 Foundations for new refuse piles and additions to existing refuse piles shall be cleared of all vegetation and undesirable material that may adversely affect the stability of the refuse pile.

Rule 560 All fires in refuse piles shall be extinguished, and only those persons authorized by the Operator, and who have an understanding of the procedure to be used, shall be involved in the extinguishing operation.

Rule 561 No person shall be permitted to walk or stand immediately above a reclaiming area or in any other area at or near a surge or storage pile where the reclaiming operation may expose him to a hazard.

Section 7: Bucket Wheel Excavator (BWE)

Rule 562 Only persons properly trained and familiar with the equipment and mining conditions are allowed to operate a BWE.

Rule 563 The BWE operator's cab shall be kept clean at all times. All safety devices shall be in good operating condition.

Rule 564 Any damage at the steel structure of the BWE such as deformation, peeling off paint, cracks or loose bolts must be reported immediately to the supervisor.

Rule 565 The BWE operator shall not leave his equipment until properly relieved by another qualified operator, otherwise, the supervisor is informed accordingly.

Rule 566 During an emergency, the BWE operator shall press the stop button or pull a rip cord. All BWE workers shall familiarize themselves with various locations of emergency stop buttons and rip cords.

Rule 567 All BWE workers shall report immediately to supervisor any safety device that is out of order and report the same to the immediate Safety Supervisor.

Rule 568 All "defective" safety devices shall be restored into operation immediately.

Rule 569 Before starting each conveyor belt, alarm signal shall be given.

Rule 570 Occurrence of surface cracks on the berm and any slope instability observed shall be reported to the supervisor for immediate action.

Rule 571 During night time the active BWE pit shall be sufficiently illuminated.

Rule 572 If there is a danger of slope failure, the BWE must be moved to a safe location immediately.

Rule 573 Maintenance, repair works and troubleshooting shall not be allowed if BWE is in operation.

Rule 574 Prior to welding and cutting works, all flammable materials must be removed or covered. Fire extinguishing device shall be readily available.

Rule 575 Any deviation from the original design of the BWE shall be allowed only upon approval of the manufacturer.

Rule 576 During operation, no worker shall pass or stay below the bucket wheel boom or the discharge boom, in front of the hopper car grizzly and near the bucket wheel.

Rule 577 A warning signal shall be given before removing any stock up material from the BWE. Rocks and boulders shall be dropped down and no worker shall be within the designated dropping area.

Rule 578 Workers shall not be allowed to stay in-front or behind the crawler track.

Rule 579 Only authorized personnel are allowed to enter the electrical room of BWE.

Rule 580 All BWE personnel must familiarize themselves on the location of firefighting equipment.

Rule 581 During lifting, slewing and traveling motion of BWE the bucket wheel boom shall not touch the slopes.

Rule 582 BWE shall be prohibited to travel over rocks, lumps, wood, open trenches, holes, unstable ground and other obstacles.

Rule 583 During operation of the BWE, the air conditioning system of the cabin shall be turned on to prevent electric equipment breakdown. The door to the operator's cabin and to the electrical room shall be locked to prevent unauthorized entry.

Rule 584 All belt conveyors shall be emptied before shut down of BWE.

Rule 585 The BWE shall be parked at a safe distance from slope failures and water.

Rule 586 The BWE operator shall lower the bucket wheel to about 1 m above ground level and shall engage the brakes of the crawler machine before leaving the BWE.

Rule 587 All regulations stated in other chapters of this Circular that are applicable to this type of operation shall be followed accordingly.

CHAPTER IV

FIRE PROTECTION

Section 1: Underground Fire Protection

Rule 588 No person shall smoke, carry smoking materials, matches or lighters underground, or smoke in or around oil houses, explosive magazines, or other surface areas where such practice may cause a fire or explosion. The Operator shall institute a program to insure that any person entering the underground area of the mine does not carry smoking materials, matches or lighters.

Rule 589 Underground workers shall use only permissible cap lamps for portable illumination. No open flame shall be allowed underground.

Rule 590 Warning signs prohibiting smoking and the use of open flame shall be posted to be readily seen in areas or places where fire or explosion hazard exists.

Rule 591 Each coal mine shall be provided with suitable firefighting equipment adapted for the size and conditions of the mine and in accordance with the standards of the Bureau of Fire Protection.

Rule 592 Portable fire extinguishers used underground shall be either:

a. Multi-purpose dry chemical type containing a nominal weight of 5 pounds (2.2 kgs.) of dry powder or,

b. Foam-producing liquids with enough expellant to supply the foam. All portable fire extinguishers acquired for use in a coal mine shall have a 2A 10BC or higher rating.

Rule 593 At least one portable fire extinguisher shall be provided at each permanent electrical installation whether on the surface or underground.

Rule 594 At least one portable fire extinguisher and suitable amount of rock dust shall be provided at each permanent underground oil storage station.

Rule 595 Welding, cutting, or soldering underground shall not be allowed.

Rule 596 A supply of dry chemical supplemented by one or more fire extinguishers shall be located at strategic points for all electrical equipment underground such as motors, transformers, etc.

Rule 597 Fire hydrant with standard length of hose connected to the main water supply system shall be provided at all mine openings where flammable structures exist.

Rule 598 All equipment intended solely for firefighting purposes shall be tested or carefully inspected at monthly intervals, and defective chemical fire extinguishers shall be refilled at least every six (6) months but not more than a year, and the date of the last refill shall be recorded and attached to the fire extinguishers.

Rule 599 Each mine shall maintain a second exit to the surface which shall not be too far from the entrance. Underground workers shall be protected against the hazard of all exits becoming impassable through fire or fire gases by one or more of the following methods:

a. By fire-proofing the main shaft and shaft stations provided that where there is no fire hazard sufficient to interrupt the use of the main shaft hoist for rescue purposes, such conditions shall be of sufficient compliance;

b. By such mechanical control of the air currents as will permit the supply of good air through any shaft or escape by way of reversal of air currents, if necessary;

c. By the installation of fire, smoke or gas-proof control door.

Rule 600 "Good housekeeping" shall be enforced at all times.

Rule 601 Underground transformer stations, battery-charging stations, substations, compressor stations, shops, and permanent pumps shall be housed in fireproof structures or areas. Air currents used to ventilate structures or areas enclosing electrical installations shall be coursed directly into the return. Other underground structures installed in a coal mine as the Bureau may prescribe shall be of fireproof construction.

Rule 602 The Operator of an underground coal mine shall adopt a program for the instruction of all workers in the location and use of firefighting equipment, location of escapeways, exits, and routes of travel to the surface, and proper evacuation procedures to be followed in the event of an emergency.

Rule 603 A team consisting of at least five (5) members for each working shift shall be trained in firefighting operations. Fire drills shall be held once a year.

Rule 604 As means of informing underground workers of fire, the Operator shall install an approved method of fire alarm warning, and in addition, shall establish a general danger signal by flashes of light bulb or distinct interruptions of the electrical lighting current, or by telephone if such is installed. The same method will be used to advise workers underground of any fire on the surface upon hearing fire alarm siren provided for the purpose.

Rule 605 A well-planned evacuation procedure shall be adopted and shall be followed by underground workers when the fire alarm warning is given.

Rule 606 A copy of the fire rules and emergency measures/plans of evacuation routes for firefighting and evacuation shall be posted at strategic locations in both surface and underground.

Rule 607 In case of fire, the first consideration shall be the safety of all workers.

Section 2: Surface Fire Protection

Rule 608 Buildings, plants, infrastructure and facilities shall be provided with adequate firefighting facilities and equipment.

Rule 609 Fire-fighting equipment shall be readily accessible, unobstructed and the location of such equipment shall be conspicuously marked.

Rule 610 Fire hydrants shall be placed at a safe distance from buildings in order that a fire could not render them useless.

Rule 611 Fire hydrants and water lines shall be tested regularly to insure that they are in proper working condition. Each test shall be recorded and maintained in a log book.

Rule 612 The area immediately surrounding an electrical substation shall be kept free from grass, weeds, and brushes which might be set on fire accidentally or intentionally.

Rule 613 Fire extinguishers of ABC type shall be provided where inflammable liquids are stored or handled.

Rule 614 Fire-fighting equipment shall not be used for any purpose except for that it is intended.

Rule 615 Adequate fire alarm devices shall be provided.

Rule 616 All equipment such as trucks, power shovels, front-end loaders, bulldozers, etc., shall be equipped with at least one portable fire extinguisher.

Rule 617 Fire extinguishers shall be provided at permanent surface electrical installations commensurate with the potential fire hazard at such installation in accordance with the recommendations of the Bureau of Fire Protection.

Rule 618 Gasoline or other highly inflammable liquids shall not be used for cleaning machinery parts and grease spots where danger of ignition exists.

Rule 619 Flammable liquids shall be stored in accordance with standards of the Bureau of Fire Protection. Small quantities of flammable liquids drawn from storage shall be kept in properly identified safety cans.

CHAPTER V

EXPLOSIVES

Definitions

For the purpose of this Chapter the term:

1. **"Active workings"** mean any place in a coal mine where workers are normally required to work or travel.
2. **"Barricaded"** means to obstruct passage of persons, vehicle, or flying materials.
3. **"Berm"** means a pile or mound of material capable of restraining a vehicle.
4. **"Blasting agent"** means any material consisting of a mixture of a fuel and oxidizer which is used or intended for use in blasting, and cannot be detonated by a No. 8 blasting cap when tested as recommended in U.S. Bureau of Mines Information Circular 8179.
5. **"Blasting area"** means the area near blasting operation in which concussion or flying materials can reasonably be expected to cause injury.
6. **"Blasting Cap"** means a detonator containing a charge of detonating compound, which is ignited by electric current, or the spark of a fuse. Used for detonating explosives.
7. **"Blasting circuit"** means electric circuits used to fire electric detonators.
8. **"Blasting switch"** means a switch used to connect a power source to a blasting circuit.
9. **"Box-type magazine"** means a small, portable magazine used to store quantities of explosives or detonators for short period of time in locations at the mine which are convenient to the blasting sites where they will be used.
10. **"Capped fuse"** means a length of safety fuse to which a detonator has been attached.
11. **"Capped primer"** means a package or cartridge of explosives which is specifically designed to transmit detonation to other explosives and which contains a detonator.
12. **"Detonating cord"** or "detonating fuse" means a flexible cord containing a core of high explosive.
13. **"Detonator"** means a device containing a small detonating charge that is used for detonating an explosive, including but not limited to blasting caps, exploders, electric detonators, and delay electric blasting caps.
14. **"Electrical Grounding"** means to connect with the ground to make the earth part of the circuit.
15. **"Explosives"** mean any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion. Explosives include, but are not limited to black powder, dynamite, nitroglycerin, fulminate, ammonium nitrate when mixed with a hydrocarbon, and other blasting agents.
16. "**Flash point**" means the minimum temperature at which sufficient vapor is released by a liquid or solid to form a flammable vapor-air mixture at atmospheric pressure.
17. **"Gassy Mine"** means any coal mine where methane accumulations or emissions of 0.25% have been detected within 30 centimeters from any open mine workings.
18. **"Misfire"** means the complete or partial failure of a blasting charge to explode as planned.

19. **"Permissible Explosives"** mean explosives which have been tested and approved by U.S. Bureau of Mines or the Mine Enforcement and Safety Administration (MESA) as safe for blasting in coal mines provided they are stored, handled and used in accordance with these Rules and Regulations.
20. **"Primer"** or **"Booster"** means a package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator.
21. "**Safety can**" means an approved container, of not over 5 gallons (18.93 liters), having a spring-closing lid and spout cover.
22. **"Safety fuse"** means a train of powder enclosed in cotton, jute yarn and waterproofing compounds, which burns at a uniform rate; used for firing a cap containing the detonating compound which in turn sets off the explosive charge.
23. **"Safety Switch"** means a sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

Section 1: General Provisions

Rule 620 The Operator shall strictly comply with republic laws, city or local ordinances in transporting, storing, handling, and using explosives and blasting supplies.

Rule 621 Authorization or license from the Philippine National Police (PNP) or other proper authorities shall be required to possess and acquire explosives.

Rule 622 The storage, transport and use of explosives and initiating devices at the mine shall be carried out by or under the direct supervision of competent and authorized or licensed person, notably the holder of Foreman/Blaster License.

Rule 623 The person in charge of explosives and blasting supplies shall keep the magazine keys and he shall see to it that all proper safety precautions are taken.

Rule 624 Only permissible explosives shall be used underground.

Rule 625 Explosives and detonators shall be kept in separate containers.

Rule 626 Mudcaps or other unconfined shots shall not be fired underground.

Rule 627 If lighting is needed inside magazines, only battery flashlight or other approved electric light shall be used. In cases where electric bulbs are used, the same shall be protected with guards.

Rule 628 Under no circumstances shall burning oil or chemical lamps, lanterns, candles, torches, matches or any open flames lighting apparatus be used in or around magazines or near explosives.

Rule 629 Unauthorized persons shall not be allowed to loiter near explosives and magazines.

Rule 630 Smoking and carrying flammable materials shall be strictly prohibited during transport, handling and storing of explosives, detonators and other blasting accessories.

Rule 631 No metal hooks or any metal tool shall be used in handling explosives, except those prescribed by the explosive manufacturer.

Rule 632 Shooting or carrying of firearms by unauthorized persons in or around magazines or near explosives shall be prohibited.

Rule 633 Explosive shall not be allowed to become wet or be exposed to the weather, or to rough treatment.

Rule 634 Detonators or other explosives shall not be carried inside pockets, boots or clothing nor shall they be left carelessly lying around.

Rule 635 Packages or boxes of explosives shall not be opened or repacked or re-boxed with any metal tool and in close proximity to other explosives.

Rule 636 Explosives or detonators carried anywhere underground in a coal mine by any person shall be in containers constructed of nonconductive material, maintained in good condition, and kept closed.

Rule 637 Explosives or detonators shall be transported in special containers;

a. In cars moved by means of a locomotive or rope;
b. On belts;
c. In shuttle cars;
d. In others used to transport such explosives or detonators.

Rule 638 A quarterly Inventory of Explosive and Blasting Accessories Report shall be submitted to the Bureau within the first ten (10) days following the end of each quarter.

Rule 639 In case where a sub-contractor performs the handling, transport, storage and use of explosive, the Operator shall seek the approval of the Bureau of the sub-contract agreement in accordance with applicable Department circulars on sub-contracting.

Rule 640 The Operator shall be responsible and accountable for the safety and performance of the sub-contractor, as well as compliance to this Circular.

Section 2: Surface Storage

Rule 641 Storage magazine in which more than fifty-seven (57) kilograms of explosives are kept shall be of permanent construction and shall:

a. Have no openings except for entrance and ventilation. Ventilation and wall vents shall be of the offset type, and all vents shall be protected with metal screening, constructed to protect from sparks or bullets as well as to prevent the entrance of persons and animals;
b. Be constructed in conformity with plan and detailed specifications obtainable from the manufacturer of explosive;
c. Be made of non-sparking materials on the inside, including floors;
d. Be located in accordance with applicable PNP guidelines on distances for storage of explosive;
e. Be detached structures and located away from power lines, fuel storage areas, and other possible sources of fire;
f. Be constructed substantially of non-combustible material or covered with fire-resistant material;
g. Be reasonably bullet resistant;
h. Be electrically bonded and grounded if constructed of metal;
i. Be provided with adequate and effectively screened ventilation openings near the floor and ceiling;
j. Be kept locked securely when unattended;
k. Be posted with suitable and conspicuously marked with a bold and reflectorized warning sign of "DANGER EXPLOSIVES";
l. Be used exclusively for storage of explosives or detonators and kept free of all extraneous materials;
m. Be kept clean and dry in the interior, and shall be maintained properly;
n. Be unheated, unless heated in a manner that does not create a fire or explosion hazard;
o. Be of "vapor-proof" light fixture type, if illuminated electrically and wiring shall be in conduit, and the light switch is located outside of the building.

Rule 642 Explosives in amounts of fifty-seven (57) kilograms or less may be stored as provided in Rule 641 or in box type magazine which shall be of strong construction or in metal magazine which shall be lined with non-sparking materials.

Rule 643 Permanent magazine shall not be located closer than sixty (60) meters from any structure or from any mine shaft tunnel or slope opening.

Rule 644 Box-type magazine shall not be placed in a building containing highly inflammable materials of which location is less than six (6) meters from open flame or less than two (2) maters from other sources of heat.

Rule 645 Magazine used for the storage of detonators shall be of permanent type resistant to weather, fire, theft and bullet.

Rule 646 The area surrounding the magazine for a distance of twelve (12) meters shall be cleared of dry grass or leaves, wood, trash or other readily flammable materials.

Rule 647 New explosives shall be piled in a magazine in such manner that the older explosives are used first.

Rule 648 The floor of explosives magazines shall be constructed of non-sparking materials, preferably wood, with no exposed metal.

Rule 649 Loose explosive or blasting supplies shall not be left exposed inside the magazine.

Rule 650 Fuse shall be stored in a cool and dry place. Detonating cord shall be stored in an explosives magazine.

Rule 651 All explosive magazines shall be provided with double steel doors with strong, double pad locks which are protected with a metallic cover.

Rule 652 Explosive magazine shall be provided with double fence of at least 2.4 meters high. The immediate surroundings of explosive magazines shall be provided with electric lights during night time.

Rule 653 Only non-sparking tools shall be used in opening boxes of explosives. Explosive boxes or containers shall be entirely emptied of packing materials and paper before they are discarded. Boxes or packing materials showing stains shall be destroyed by burning in the open.

Rule 654 Cases or boxes containing explosives shall not be stored in magazines on their ends or sides or stacked more than two (2) meters high.

Rule 655 Ammonium nitrate-fuel oil blasting agents shall be stored in a separate explosive magazine.

Section 3: Surface Handling and Use of Explosives

Rule 656 Explosives shall not be stored or handled in or near residential houses. Explosives shall not be place near "live" electric wires.

Rule 657 Vehicle transporting explosives shall comply with the following:

a. Inspected to determine if they are suitable for the task from the safety as well as mechanical standpoint;
b. Maintained in good condition and shall be operated at a safe speed and in accordance with all safe operating practices;
c. Clearly marked with "EXPLOSIVES" sign;
d. Provided with a red flag to denote danger and caution;

e. Not be overloaded, and in no case shall boxes of explosives be piled higher than the body;
f. Be properly grounded;
g. Provided with wooden floorings;
h. Not be left unattended;
i. Avoid unnecessary delays or stops;
j. Not be taken inside a garage or shop for repairs and other purposes;
k. Stop before crossing railroad tracks or main highways and then proceed with caution and conform to all other traffic safety measures;
l. Not keep the engine idling unnecessarily while they are not moving. The brakes shall be applied.

Rule 658 Detonators shall not be transported in the same vehicle where other explosives are carried.

Rule 659 Metal, metal tools or inflammable substances or materials shall not be carried in the same vehicle transporting explosives.

Rule 660 The transportation of explosives shall be entrusted to competent workers only.

Rule 661 No explosive shall be carried on electric locomotives or in a car next to an electric locomotive.

Rule 662 Explosives and detonators shall be kept and brought to working places in approved completely separate containers in accordance with safety practices.

Rule 663 Capped fuse shall be brought to the working places in separate covered insulated containers distinct from those containing explosives.

Rule 664 When vehicles loaded with explosives are parked, the parking brakes shall be applied and the wheels properly blocked.

Rule 665 Explosives or detonators shall be transported at times and over routes that expose a minimum number or person.

Rule 666 Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

Rule 667 Blasting operations shall be under the direct control of authorized persons only.

Rule 668 Areas with charged holes awaiting firing shall be guarded, or barricaded and posted, or flagged against unauthorized entry.

Rule 669 Ample warning shall be given before blasts are fired. All workers shall be cleared and removed from the blasting area unless suitable blasting shelters are provided to protect workers endangered by concussion or fly rock from blasting.

Rule 670 Lead wires and blasting lines shall not be strung across power conductors, pipelines, railroads tracks or within six (6) meters of bare power lines. They shall be protected from static or other electrical contact.

Rule 671 Substantial non-conductive closed containers shall be used to carry explosives, other than blasting agents to the blasting site.

Rule 672 Blasted areas shall be examined for undetonated explosives after each blast and undetonated explosive found shall be disposed of safely.

Rule 673 Blasted areas shall not be re-entered by any worker after firing until such time as concentrations of smoke, dust, or fumes have been reduced to safety limits.

Rule 674 In secondary blasting, if more than one shot is to be fired at one time, blasting shall be done electrically or with detonating cord.

Rule 675 Unused explosives and detonators shall be moved to a safe location as soon as charging operations are completed.

Rule 676 When pneumatic loading is employed, before any type of blasting operation using blasting agents is put into effect, an evaluation of the potential hazard of static electricity shall be made. Adequate steps, including the grounding and bonding of the conductive parts of pneumatic loading equipment, shall be taken to eliminate the hazard of static electricity before blasting agent use is commenced.

Rule 677 Pneumatic loading equipment shall not be grounded to waterlines, airlines, rails, or the permanent electrical grounding systems.

Section 4: Underground Storage and Use of Explosives

Rule 678 Underground safety precautions in magazines, handling and use of explosives shall conform to the general rule.

Rule 679 All explosives, detonators, blasting caps and fuses shall be stored above the level of the floor.

Rule 680 Underground magazines shall be located in such parts of the mine where they are safe from all mining operation and where accidental explosion shall not prejudice the workers in the mine.

Rule 681 Detonators shall be kept separate from the dynamite and in such location that their accidental explosion shall not cause the detonation of the powder.

Rule 682 Issuing magazines shall consist of a separate drive or chamber, the walls of which shall be of fireproof material.

Rule 683 Magazines shall be kept securely locked except when it has to be entered by the person in charge.

Rule 684 Dynamite and caps must be handled separately when being hoisted or lowered.

Rule 685 The supervisors shall see to it that the workers who have duties in connection with the fuse blasting are instructed in proper use of fuses, detonators, the timing and spitting or lighting procedures, and such supervisors shall be duly licensed to handle explosives by proper authorities.

Rule 686 No explosives shall be carried at any place within the mine where accidental discharge would cut off the escape of workers working underground.

Rule 687 All primers shall be exploded or utilized with in twenty-four (24) hours after they are made.

Rule 688 It is prohibited to hang fuse on nails or other projection which cause a sharp bend to be formed in it.

Rule 689 Blasting caps shall not be removed from the original containers except when capping the fuses.

Rule 690 When supplies of explosives or fuses are removed from a magazine, those that have been stored longest shall be taken first.

Rule 691 Inflammable materials shall not be stored with explosives.

Rule 692 Explosives shall not be placed near tracks or less than two (2) meters from electric wires or lights.

Rule 693 Fuses shall be capped in suitable places outside of the explosives magazine and away from explosives.

Rule 694 Any dynamite found in the muck pile shall be placed in a suitable safe place and the matter reported immediately to the supervisor.

Rule 695 Where explosives are not used immediately when brought to the working place the same shall be placed in suitable wooden container with hinged tops.

Rule 696 It shall be prohibited to issue at any one time more than the sufficient amount of explosives, caps and fuses needed for the blast.

Rule 697 Only electric blasting cap shall be used in the mines.

Rule 698 The proper tools and equipment shall be made available to the workers using and handling explosives.

Rule 699 The use of oil, grease, or other unapproved substances to waterproof joints between cap and fuse is prohibited. A suitable compound for this purpose can be obtained from the manufacturers of explosives.

Rule 700 Primers or primed cartridges shall be made only as recommended by manufacturers of explosives and when in the place of usage.

Rule 701 Only non-sparking material puncher shall be used in making primers.

Rule 702 Before loading, all drill holes shall be thoroughly cleaned with blow pipe.

Rule 703 Only wooden stick shall be used for tamping cartridges in a hole.

Rule 704 Only direct and moderate pressure without pounding or punching shall be applied when placing the explosive.

Rule 705 At least one (1) blasting cap cartridge inserted in a dynamite stick shall be tamped in the bottom of the hole before loading in other dynamite sticks.

Rule 706 At least two (2) workers shall always be at the face when preparing for blasting.

Rule 707 No work of any kind shall be done at the blasting area after completion of firing.

Rule 708 Before blasting, warnings shall be given to all adjoining workings and guards shall be stationed at all safety branches and approaches to the area.

Rule 709 Guards manning the entrance of approaches to a blast area must remain at their posts until blasting is finished.

Rule 710 Guards must be informed and shall count the number of blasts.

Rule 711 Blasting shall be done only at specified times, preferably at the end of shift or at lunch periods. Blasting at other times shall only be done by special permission of the supervisor in charge of the work.

Rule 712 It shall be the duty of the superintendent or the man in charge of the mine to specify and post and instruct the authorized workers regarding the regular blasting hours.

Rule 713 Missed holes or suspected missed holes shall be reported to the supervisor who shall in turn report them to the supervisor of the next shift.

Rule 714 Blasted faces shall be examined carefully for missed holes and bootlegs containing explosives shall be blasted, before any other work is done in that face.

Rule 715 Holes shall not be drilled in or near a known or suspected missed holes or old holes or bootlegs as explosives may still remain at the bottom or crevices of the holes.

Rule 716 It shall be prohibited to extract the charge from a missed hole. It shall be re-blasted.

Rule 717 In case it is impractical to shoot a missed hole, report it to the supervisor who shall determine whether he can safely unload it with water.

Rule 718 The following "Don'ts" in the use of explosives shall be strictly followed:

a. Don't use empty explosives cases for kindling.
b. Don't permit any paper product used in the packing of explosives to leave your possession. Accumulation of fiber board cases, paper case linens, cartons, or cartridge paper shall be destroyed by burning after they have been carefully examined to make sure they are empty.
c. Don't drill a borehole near another hole loaded with explosives.
d. Don't load a sprung borehole with another charge of explosives until it has cooled sufficiently.
e. Don't store cases of dynamite in such a way that cartridges stand on end.

Rule 719 A maximum of seven (7) days' supply of explosives shall be stored in an issuing magazine, from where required supplies for immediate use shall be distributed by an authorized and competent person.

Rule 720 When supplies of explosives and detonators for use in one or more working sections are stored underground, they shall be kept in section boxes or magazines of substantial construction with no metal exposed on the inside, located at least eight (8) meters from the roadways and power lines, in a dry, well rock dusted location protected from the roof falls, except in pitching beds, where it is not possible to comply with the location requirements, such boxes shall be placed in niches cut into solid coal or rock.

Rule 721 Explosives and detonators stored in the working places shall be kept in separate closed containers which shall be located out of the line of blast and not less than 15 meters from the working face and 5 meters from any pipeline, power line, rail, or conveyor, except that, if kept in niches in the rib, the distance from any pipeline, power line, rail, or conveyor, shall be at least 2 meters. Such explosives and detonators, when stored, shall be separated by a distance of at least 2 meters.

Rule 722 After every blasting operation, an examination shall be made to determine whether fires have been started.

Rule 723 Delay connectors for firing detonating cord shall be treated and handled with the same safety precautions as blasting caps and electric detonators.

Rule 724 Detonators of different brands shall not be used in the same round.

Rule 725 Light and power circuits shall be disconnected or removed from the blasting area before charging and blasting.

Section 5: Underground Transportation of Explosives

Rule 726 Any conveyance transporting explosives underground shall be clearly marked with word "EXPLOSIVES."

Rule 727 Cases of explosives delivered underground shall be in flat cars provided with wooden floorings.

Rule 728 A train of cars containing explosives shall be provided with red light in front and at the rear.

Rule 729 Electric blasting cap shall be taken underground only in covered, padded and insulated containers.

Rule 730 No detonators shall be transported with other explosives except when being carried in a proper container to the face for immediate use.

Rule 731 When carrying dynamites and electric blasting caps to the face for immediate use, they shall be placed and carried in separate containers or bags.

Rule 732 When explosives are transported on flat carts, adequate protection shall be provided to avoid collision or derailment.

Rule 733 Where special insulated cars are provided for transporting explosives by locomotives, they shall be pulled and not pushed.

Section 6: Electric Blasting

Rule 734 Only electric blasting shall be used in underground operation.

Rule 735 Fuse blasting shall only be used in initial development such as:

a. Driving along rock tunneling
b. Shaft sinking along rock face

Rule 736 All entrances to places where blasting is being done by electricity must be guarded from the time the connection to the power circuit is made until the round is fired, if firing is done by underground switch.

Rule 737 It shall be strictly prohibited for anyone to blast electrically, unless he has been instructed in the safe standard practice of electric blasting and has qualifications to perform electric blasting and is duly licensed by proper authorities.

Rule 738 If electric blasting is controlled from the outside of a mine, a complete check for the number of workers shall be done before firing.

Rule 739 Leg wires of electric blasting caps shall be kept shunted until ready to connect the lead or bus wires.

Rule 740 Permanent wiring lead wires and leg wires shall be insulated. There shall be no breaks or bare places in the main lines and connections shall be taped where necessary to prevent short circuits or leak.

Rule 741 Wire shall not touch each other or any object that might carry an electric current.

Rule 742 Blasting switches, interrupter switches or their equivalent boxes shall be locked and the keys kept by the blaster.

Rule 743 Blasting machine shall be kept locked at all times except when shots are to be fired.

Rule 744 Before blasting, the blaster shall use an approved circuit tester to check whether the blasting circuit is closed and in the proper condition for the blast, or whether it is open, because of faulty connections or broken wires.

Rule 745 Upon returning to the face after blasting, the blaster shall place shunts in permanent blasting line, disconnect, and short the blasting cable or lead wires and roll up the blasting cable when approaching the face.

Rule 746 The point of contact with the firing line shall be at a reasonably safe distance from the blast.

Rule 747 Blasting lines shall be kept clear from all power and lighting lines and from all grounded pipes, rails, etc.

Rule 748 When electric blasting caps are used and all the holes fail to explode, the wires shall be disconnected from the power source and all other safety precautions shall be done before going back to investigate the trouble.

Rule 749 All wire connections for electric blasting shall be mechanically and electrically strong to ensure good results.

Rule 750 All electric blasting on or near the surface shall cease during thunderstorms and during the approach of an electrical storm. All persons shall retire to a safe place.

Rule 751 Adequate priming shall be employed to guard against misfires, increase toxic fumes, and poor performance.

Rule 752 At least a two (2) meter air gaps shall be provided between the blasting circuit and power circuit.

Rule 753 Power sources shall be suitable for the number of electrical detonators to be fired and for the type of circuits used.

Rule 754 Electric circuits from the blasting switches to the blast area shall not be grounded.

Rule 755 Safety switches and blasting switches shall be labeled, encased in boxes, and arranged so that the covers of the boxes cannot be closed with the switches in the trough-circuit or firing position.

Rule 756 Blasting switches shall be locked in the open position, except when closed to fire the blast. Lead wire shall not be connected to the blasting switch until the shot is ready to be fired.

Rule 757 The key or other control to an electrical firing device shall be entrusted only to the person designated to fire the round or rounds.

Rule 758 When electric detonators are used, charging shall be stopped immediately when the presence of static electricity or stray currents is detected; the condition shall be remedied before charging is resumed.

Rule 759 When electric detonators are used, charging shall be suspended and workers withdrawn to a safe location upon the approach of an electrical storm.

Rule 760 Blasted areas shall not be re-entered by any person after firing until such time as concentrations of smoke, dust or fumes have been reduced to safe limits.

CHAPTER VI

HEALTH AND SANITATION

Section 1: General Provisions

Rule 761 The coal Operator shall ensure the provision of regular health surveillance of workers exposed to occupational health hazards in the mining operation.

Rule 762 The coal Operator shall provide bathing facilities, clothing change rooms and sanitary facilities, for the use of the workers in the mine.

Rule 763 Bath houses, change rooms, and sanitary toilet facilities shall be in a location convenient for the use of the workers. Where such facilities are designed to serve more than one mine, they shall be centrally located for the convenient use of the workers in all the mines served by such facilities.

Rule 764 All bathing facilities, change rooms, and sanitary toilet facilities shall be provided with adequate light, heat, and ventilation so as to maintain a comfortable air temperature and to minimize the accumulation of moisture and odors, and such facilities shall be maintained in a clean and sanitary condition.

Rule 765 The Operator of a coal mine shall make arrangements with a licensed physician, medical service, medical clinic or hospital to provide 24-hours emergency medical assistance for person injured at the mine.

Rule 766 The Operator of a coal mine shall make arrangements with an ambulance service, or otherwise provide, for 24-hours emergency transportation for any person injured at the mine.

Rule 767 An adequate supply of potable water shall be provided for drinking purposes in the active workings of the mine, and such water shall be carried, stored, and otherwise protected in sanitary containers.

Rule 768 Workers in an underground coal mine shall be required to wear the following protective clothing and devices:

a. Protective clothing or equipment and face-shield or goggles when welding, cutting, or when other hazards to the eyes exist from flying particles;

b. Suitable protective clothing to cover those parts of the body exposed to injury when handling corrosive or toxic substances or other materials which might cause injury to the skin;

c. Protective gloves when handling materials or performing work which might cause injury to the hands; however, gloves shall not be worn where they

would create a greater hazard by becoming entangled in the moving parts of equipment;

d. A suitable hard hat or hard cap. If a hard hat or hard cap is painted, non-metallic based shall be used;

e. Suitable protective footwear.

Section 2: First - Aid Equipment

Rule 769 The Operator of an underground coal mine shall maintain a supply of the first-aid equipment set forth in Rule 770 at each of the following locations:

a. At the mine dispatcher's office or other appropriate work area on the surface in close proximity of the mine entry;

b. At the bottom of each regularly traveled slope or shaft; however, where the bottom of such slope or shaft, is not more than 300 meters from the surface, such first-aid supplies may be maintained on the surface at the entrance to the mine; and,

c. 150 meters from other strategic locations in the mine.

Rule 770 The first-aid equipment required to be maintained under Rule 769 shall include at least the following:

a. One stretcher
b. One broken-back board. If splint stretcher combination is used it will satisfy the requirements of both (a) and (b);
c. 24 triangular bandages (15 if a splint-stretcher combination is used)
d. Eight 10-centimeter bandage compresses
e. Eight 5-centimeter bandage compresses
f. Twelve 25-millimeter adhesive compresses
g. Two blankets
h. The necessary complements of arm and leg splints
i. A self-rescue device
j. Betadine
k. Portable oxygen cylinder or equivalent

Rule 771 All first-aid supplies required to be maintained under the provisions of Rule 770 shall be stored in suitable, sanitary, dust tight, moisture proof containers.

CHAPTER VII

ELECTRICITY

All electrical installations, constructions and equipment shall be in accordance with the provisions of the latest edition of the Philippine Electrical Engineering Code. Operations, maintenance and repair works of electrical equipment or machinery shall be done by qualified and duly authorized workers.

Definitions

For the purpose of this Chapter, the term:

1. **"Permissible equipment"** means equipment used in coal operations designed to assure that such equipment will not cause a mine fire or explosion.
2. **"Low voltage"** means up to and including 660 volts; "medium voltage" means voltages from 661 to 1,000 volts; and "high voltage" means more than 1,000 volts.
3. **"Circuit Breaker"** means a device devised to open and close a circuit by non-automatic means and to open up the circuit automatically on a pre-determined over-current setting without injury to itself when properly applied to its rating.
4. **"Conductor"** means a material, usually in the form of a wire, cable, or bus bar, capable of carrying an electric current.
5. **"Insulation"** means a dielectric substance offering a high resistance to the passage of current and to disruptive discharge through the substance.
6. **"Over-current"** means an abnormal connection of relatively low resistance, whether made accidentally or intentionally, between two points of different potential in a circuit.
7. **"Electrical work"** means the construction, inspection, testing, calibrating, maintenance, or alteration of an electrical installation that is or will be located underground.

Section 1: General Provisions

Rule 772 All electrical works shall be covered by safe work permits issued by the safety department.

Rule 773 Only qualified and authorized workers shall supervise and conduct electrical works. The materials to be used shall conform to the established electrical codes.

Rule 774 Only qualified persons shall perform electrical works on low-, medium-, or high-voltage distribution circuits or equipment. Disconnecting devices shall be locked out and suitably tagged by such persons. Locks or tags shall be removed only by the person who installed them or, if such person is not available, by person authorized by the Operator.

Rule 775 All permissible power connection points shall be in the air intake.

Rule 776 All junction or distribution boxes for making multiple power connections inby the last open crosscut shall be permissible.

Rule 777 Standard cap lamps, flame safety lamps, portable methane detectors, telephones, signaling devices, lighting equipment for illuminating underground mines, methane monitoring systems, electrical tools and equipment shall be permissible.

Rule 778 The location and electric rating of all stationary electric apparatus in connection with the mine electric system, including permanent cables, switchgears, rectifying substations, transformers, and permanent pumps shall be shown on a mine map. The map shall be updated immediately when changes have been made in location, electric rating, or setting.

Rule 779 All power circuits and electric equipment shall be de-energized before work is done on such circuits and equipment, except when necessary for trouble shooting or testing. Appropriate lock-out and tag-out procedures shall be implemented.

Rule 780 All electrical equipment shall be regularly examined, tested, and maintained by a qualified person to assure safe operating conditions. When a potentially dangerous condition exists, the equipment shall be removed from service until such condition is corrected.

Rule 781 All electrical conductors shall be in standard size and current carrying capacity to prevent overloading.

Rule 782 All electrical connections or splices in conductors shall be mechanically and electrically efficient. All electrical connections or splices in insulated wire shall be reinsulated at least to the same degree of protection as the remainder of the wire.

Rule 783 Cables shall be installed in the metal frames of motors, splices boxes, and electrical connections through standard and accepted fittings. When insulated wires other than cables pass through metal frames, the holes shall be substantially bushed with insulated bushing.

Rule 784 All power wires (except trailing wires cables on mobile equipment, especially designed cables conducting high-voltage power to underground rectifying equipment or transformers, or bare or insulated ground and return wires) shall be supported on well-insulated insulators and shall not contact combustible materials, roof, or ribs.

Rule 785 Power wires and cables, except trolley wires, trolley feeder wires, and bare signal wires, shall be insulated adequately and fully protected.

Rule 786 All main power circuits shall be installed at the surface. Substation installed underground shall be housed in explosion proof enclosure and located in well-ventilated area.

Rule 787 All electric equipment shall be provided with appropriate switches or controls that are safely designed, constructed, and installed.

Rule 788 Automatic circuit breaker or fuse shall be installed to protect all electrical equipment and circuits against short circuit and overloads.

Rule 789 Three-phase motors on all electric equipment shall be provided with overload protection that will de-energize all three phases in case any phase is overloaded.

Rule 790 Dry wooded platforms, insulating mats, or other electrically nonconductive materials shall be placed at all switchboards and power-control switches.

Rule 791 Switchboards shall be installed with passageways or lanes of travel to allow access to the back of the switchboard from both ends for inspection, adjustment or repair.

Rule 792 Lighting arresters shall be connected to a low resistance-grounding medium on the surface which shall be separated from neutral grounds by a distance of not less than eight (8) meters.

Rule 793 Switches controlling lighting circuits shall be of permissible type approved for use in explosive atmosphere.

Rule 794 Permissible lamps shall be of vapor proof type.

Rule 795 The voltage on bare signal or control wires accessible to personal contact shall not exceed forty (40) volts.

Rule 796 Transformers shall be of enclosed type, or shall be placed at least 2.4 meters above the ground, or installed in a transformer house, or surrounded by a substantial fence at least 1.8 meters and at least 90 centimeters from any energized parts, casings, or wirings.

Rule 797 Transformer stations shall be enclosed to prevent persons from unauthorized entry.

Rule 798 Resistors, heaters, and rheostats shall be safely located to prevent fire and shall be provided with guards to avoid personal contact.

Rule 799 Danger signs shall be posted at all major electrical installations.

Rule 800 Cover plates on electrical equipment shall be kept in place at all times except during testing or repairs.

Section 2: Grounding

Rule 801 All metallic sheaths, armors, and conduits enclosing power conductors shall be electrically continuous throughout and shall be electrically grounded.

Rule 802 Grounding shall be used to ensure against a difference in potential between metallic sheaths, armors and conduits, enclosing power conductors and frames, casings and metal enclosures of electric equipment, and the earth.

Rule 803 The frames of all off track direct current machines and the enclosures of related detached components shall be effectively grounded.

Rule 804 Lock-out –Tag-out policy shall be enforced in all electrical repairs.

Rule 805 Energized high-voltage surface line may be repaired only when the Operator has determined that:

a. Such repairs cannot be scheduled during a period when the power circuit can be properly de-energized and grounded;
b. Such repairs will be performed on power circuits with a phase-to-phase nominal voltage no greater than 15,000 volts;
c. Such repairs on circuits with a phase-to-phase nominal voltage of 5,000 volts or more will be performed only with the use of live line tools;
d. Weather conditions will not interfere with such repairs or expose those workers assigned to such work to an imminent danger.

Rule 806 When two or more workers are working on an energized high-voltage surface line simultaneously, and any one of them is within reach of another, such workers shall not be allowed to work on different phases or equipment with different potentials.

Rule 807 Before repair work on energized high-voltage surface lines is started, protective equipment shall be used to cover all bare conductors, ground wires, guys, telephone lines, and other attachments in proximity to the area of planned repairs. Such protective equipment shall be installed from a safe position below the conductors or other apparatus being covered. Each rubber protective device employed in the making of repairs shall have a dielectric strength of 20,000 volts, or more.

Rule 808 All underground high-voltage transmissions cables shall be installed only in regularly inspected air courses and haulageways and shall be covered or placed so as to afford protection against damage, guarded where workers regularly work or pass under them unless they are two (2) meters or more above the floor or rail, securely anchored, properly insulated, or placed to prevent contact with other voltage circuits.

Rule 809 All rubber protective equipment used on work on energized high-voltage surface lines shall be electrically tested by the operator of the equipment in accordance with

ASTM standards, Part 28, published February 1968 and such testing shall be conducted in accordance with the following schedule:

a. Rubber gloves, once each month;
b. Rubber sleeves, once every three months;
c. Rubber blankets, once every six months;
d. Insulator hoods and line hose, once a year; and,
e. Other electric protective equipment, once a year.

Rule 810 Rubber gloves shall not be used and stored wrong side out. Blankets shall be rolled when not in use, and line hose and insulator hoods shall be stored in their normal position and shape.

Rule 811 Disconnecting or cutout switches on energized high-voltage surface lines shall be operated only with insulated sticks, fuse tongs, or pullers which are adequately insulated and maintained to protect the operator from the voltage to which he is exposed. When such switches are operated from the ground, the person operating such devices shall wear protective rubber gloves.

Rule 812 When not in use, power circuits underground shall be de-energized on idle days and idle shifts, except that rectifiers and transformers may remain energized.

Rule 813 The Operator of the coal mine shall maintain a written record of each test, examination, repair, or adjustment of all circuit breakers.

Rule 814 Guy wires from poles supporting high-voltage transmission lines shall be securely connected to the system ground or be provided with insulators installed near the pole end.

Section 3: Underground Low and Medium Voltage Lines

Rule 815 Low and medium voltage power circuits serving three-phase alternating current equipment shall be protected by suitable circuit breakers of adequate interrupting capacity which are properly tested and maintained. Such breakers shall be equipped with devices to provide protection against under-voltage, grounded phase, short circuit, and overcurrent.

Rule 816 Low and medium voltage three phase alternating current circuits used underground shall contain either a direct or derived neutral which shall be grounded through a suitable resistor at the power center, and a grounding circuit, originating at the grounded side of the grounding resistor, shall extend along with the power conductors and serve as a grounding conductor for the frames of all electrical equipment supplied power from that circuit, except that the Operator may permit ungrounded low-and medium-voltage circuits to be used underground to feed such stationary electrical equipment if such circuits are either steel armored or installed

in grounded rigid steel conduit throughout their entire length. The grounding resistor, where required, shall be of the proper ohmic value to limit the ground fault current to 25 amperes. The grounding resistor shall be rated for maximum fault current continuously and insulated from ground for a voltage equal to the phase-to-phase voltage of the system.

Rule 817 Low and medium voltage resistance grounded systems shall include a fail-safe ground check circuit to monitor continuously the grounding circuit to assure continuity which ground check circuit shall cause the circuit breaker to open when either the ground or pilot check wire is broken or other no less effective device to assure continuity. Cable couplers shall be constructed so that the ground check continuity conductor shall be broken last when the coupler is being uncoupled.

Rule 818 The maximum voltage used for the ground check circuits shall not exceed 40 volts.

Rule 819 Disconnecting devices shall be installed in conjunction with the circuit breaker to provide visual evidence that the power is disconnected.

Rule 820 Circuit breakers shall be marked for identification.

Rule 821 Single phase loads shall be connected phase-to-phase.

Rule 822 Trailing cables for mobile equipment shall contain one or more ground conductors having a cross-sectional area of not less than one-half the power conductor.

Section 4: Trailing Cables

Rule 823 Circuit breakers providing short circuit protection for trailing cables shall be set so as not to exceed the maximum allowable instantaneous settings specified in this section:

Conductor Size AWG or MGM	Maximum Allowable Circuit Breaker Instantaneous Setting (Amperes)
14	50
12	75
10	150
8	200
6	300
4	500
3	600
2	800
1	1,000
1/0	1,250

2/0	1,500
3/0	2,000
4/0	2,500
250	2,500
300	2,500
350	2,500
400	2,500
450	2,500
500	2,500

Rule 824 Dual element fuses having adequate current-interrupting capacity shall meet the requirements for short circuit protection of trailing cables, however, the current ratings of fuses shall not exceed the maximum values specified in this section:

Conductor Size (AWG or MGM)	Single Conductor Cable Maximum		Two Conductor Cable Maximum	
	Ampacity	Fuse Rating	Ampacity	Fuse Rating
14			15	15
12			20	20
10			25	25
8	60	60	50	50
6	85	90	65	70
4	110	110	90	90
3	130	110	105	110
2	150	150	120	125
1	170	175	140	150
1/0	200	200	170	175
2/0	235	250	195	200
3/0	275	300	225	225
4/0	315	350	260	300
250	350	350	285	300
300	395	400	310	350
350	445	450	335	350
400	480	500	360	300
450	515	600	385	400
500	545	600	415	450

Rule 825 When two or more trailing cables junction to the same distribution center, means shall be provided to assure against connecting a trailing cable to the wrong size circuit breaker.

Rule 826 One temporary splice may be made in any trailing cable. Such trailing cable may only be used for the next 24-hour period. No temporary splice shall be made in trailing cable within eight (8) meters of the machine, except cable reel equipment. Temporary splices in trailing cables shall be made in a workmanlike manner and

shall be mechanically strong and well insulated. Trailing cables or hand cables which have exposed wires or which have splices that heat or spark under load shall not be used.

Rule 827 When permanent splices in trailing cables are made, they shall be:

a. Mechanically strong with adequate electrical conductivity and flexibility;
b. Effectively insulated and sealed so as to exclude moisture; and,
c. Vulcanized or otherwise treated with suitable materials to provide flame-resistant qualities and good bonding to the outer jacket.

Rule 828 Trailing cables shall be clamped to machines in a manner to protect the cables from damage by mobile equipment, and to prevent strain on the electrical connections.

Rule 829 Short-circuit protection for trailing cables shall be provided by an automatic circuit breaker or other no less effective device, of adequate current-interrupting capacity in each grounded conductor. Disconnecting devices used to disconnect power from trailing cables shall be plainly marked and identified, and such devices shall be equipped or designed in a manner that it can be determined by visual observation that the power is disconnected.

Rule 830 Energized medium and high-voltage trailing cables shall be handled only by persons wearing protective rubber gloves, and with other protective devices as necessary and appropriate under the circumstances.

Rule 831 Rubber gloves (lineman's gloves) worn while handling high voltage trailing cables shall be rated at least 20,000 volts.

Rule 832 Rubber gloves (wireman's gloves) worn while handling trailing cables energized by 660 to 1,000 volts shall be rated at least 1,000 volts and shall not be worn inside out or without protective leather gloves.

Section 5: Surface High Voltage Distribution

Rule 833 High voltage circuits supplying power to portable or mobile equipment shall be installed with circuit breakers.

Rule 834 The grounding resistor shall be rated for maximum fault current continuously and insulated from ground for a voltage equal to the phase-to-phase voltage of the system.

Rule 835 All high voltage, resistance grounded systems shall be installed with a fail-safe ground check circuit to monitor continuously the grounding circuit to assure continuity. The fail-safe ground check circuit shall cause the circuit breaker to open when either the ground or ground check wire is broken.

Rule 836 Cable connection boxes shall be of substantial construction and designed to guard all energized parts from personal contact.

Rule 837 High voltage transmission cables shall be installed so as to prevent contact with low voltage or communication circuits.

Rule 838 Circuit breakers and disconnecting switches shall be labeled to show which units they control.

CHAPTER VIII

MECHANICAL SAFETY RULES

Section 1: Safeguards for Mechanical Equipment

"Mechanical work" means the construction, inspection, testing, calibrating, maintenance, or alteration of mechanical equipment in accordance with the latest edition of the Philippine Society of Mechanical Engineering Code.

Rule 839 Gears; sprockets; chains; drive, head, tail, and take-up pulleys; flywheels; coupling; shafts; saw blades; fan inlets; and similar exposed moving machine parts shall be properly guarded.

Rule 840 Guards at conveyor-drive, conveyor-head, and conveyor-tail pulleys shall extend to a distance sufficient to prevent a worker from reaching behind the guard and becoming caught in between the belt and the pulley.

Rule 841 Except when testing the machinery, guards shall be secured in place while machinery is being operated.

Rule 842 Mobile and stationary machinery and equipment shall be maintained in safe operating condition and machinery or equipment in unsafe condition shall be removed from service immediately.

Rule 843 Only authorized persons shall operate machinery and equipment.

Rule 844 Repairs or maintenance shall not be performed on machinery until power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

Rule 845 Machinery shall not be lubricated manually while in motion, unless equipped with extended fittings or cups.

Rule 846 Workers shall not work on or from a piece of mobile equipment in a raised position until it has been blocked in place securely.

Rule 847 No work shall be performed under machinery or equipment that has been raised until such machinery or equipment has been securely blocked in position.

Rule 848 Repairs involving the pressure system of compressors, receivers, or compressed air-powered equipment shall not be started until de-pressurized.

Rule 849 Compressed air shall not be directed toward a person.

Rule 850 Safety chains, suitable locking devices, or automatic cut-off valves shall be used at connections to machines of high pressure hose lines of three-fourths of an inch diameter inside or larger, and between high pressure holes lines of three-fourths of an inch inside or larger, where a connection failure will create a hazard. For purposes of this paragraph, high pressure means pressure of 100 psi or more.

Section 2: Pressure Vessels (Compressed Gas)

Rule 851 Gas cylinder shall be chained/supported in an upright position at all times.

Rule 852 Compressed gas cylinder shall be prohibited inside confined spaces.

Rule 853 Gas cylinders shall be labeled, appropriately stored and secured in designated areas.

Rule 854 Liquefied and non-liquefied gas cylinders used on the surface shall be:

a. Governed by the specifications and recommendations set forth by the Code for Pressure Vessels or the Philippine Mechanical Engineering Code;
b. Cylinder shall be properly secured during transit on self-propelled equipment or belt conveyors;
c. Disconnected from all hoses and gauges after use;
d. Equipped with a metal cap or "headband" (fence type metal protector around the valve stem) to protect the cylinder valve during transit; and,
e. Clearly labeled "empty" or "MT" when the cylinder tank is empty.

Rule 855 When liquefied compressed gas cylinders are transported, the cylinders shall be placed in well insulated and substantially constructed containers which are specifically designed for holding the cylinders.

Rule 856 When not in use, the valves of liquefied and non-liquefied compressed gas cylinders shall be in the closed position, and all hoses shall be removed from the cylinder.

Rule 857 The Operator shall designate qualified persons to use and work with liquefied and non-liquefied compressed gas. The qualified persons shall be trained and specifically instructed with respect to the dangers inherent in the use of the gases.

Rule 858 Workers who perform welding, cutting, or burning operations shall wear proper personal protective equipment, and clothing free from excessive oil or grease.

Rule 859 Liquefied and non-liquefied compressed gas shall be used only in well-ventilated areas.

Rule 860 When working with liquefied and non-liquefied compressed gas, the area shall be free from oil, grease, or coal dust.

Rule 861 Only one set of liquefied and non-liquefied compressed gas cylinder shall be used to repair any equipment at a time.

Rule 862 Liquefied and non-liquefied compressed gas cylinders shall be located no less than three (3) meters from the worksite, and they shall be placed in an upright position and chained or otherwise secured against falling.

Rule 863 Liquefied and non-liquefied compress gas shall not be used under direct pressure from the cylinder, and where the gases are used under reduced pressure, the pressure level shall not exceed the pressure recommended by the manufacturer.

Rule 864 Hose lines, gauges, and other cylinder accessories, shall be maintained in a safe operating condition.

Rule 865 Defective cylinders, cylinder accessories, torches, and other welding, cutting, and burning equipment shall be labeled "Defective" and taken out of service.

Rule 866 A wrench specifically designed for use with liquefied and non-liquefied compressed gas cylinders and a suitable torch tip cleaner to maintain torches in a safe operating condition shall be used in performing welding, cutting or burning.

Rule 867 Tests for leaks on the hose or gauges of liquefied and non-liquefied compressed gas cylinders shall only be made with a soft brush and soapy water or soap suds.

Section 3: Safeguards on Surface Installations

Rule 868 All mine structures, enclosures, or other facilities shall be properly maintained to prevent accidents and injuries to workers.

Rule 869 The methane content in the air of any structure, enclosures or other facility shall be less than 1.0% by volume. If the methane content is 1.0% by volume or more, changes or adjustments in the ventilation of the facility shall be made at once.

Rule 870 Rock dusting, water spraying or other suitable technology shall be used to prevent the accumulation of coal dust in the air or on the surfaces of structures, enclosures, or other facilities.

Rule 871 Where overhead repairs are being made adequate protection shall be provided for all workers in or passing below the overhead work area.

Rule 872 Openings in surface installations through which workers or material may fall shall be protected by railings, barriers, covers or other protective devices.

Rule 873 Safe means of entrance to and exit from all working areas shall be provided.

Rule 874 Travel ways and platforms or other means of access where workers are required to travel or work, shall be cleared of all obstructions or slipping hazards.

Rule 875 Crossovers, elevated walkways, elevated ramps and stairways shall be constructed substantially, provided with handrails, and maintained in good condition.

Rule 876 Crossovers shall be provided where it is necessary to cross conveyors.

Rule 877 Adequate illumination shall be provided in all passageways and working areas.

Rule 878 Materials shall be stored and stocked in a manner that minimizes stumbling or fall-of-materials hazards.

Rule 879 All hazardous waste/substances shall be properly managed (handling, storage, transport and disposal) in accordance with Republic Act No. 6969 or the "Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990."

Rule 880 Hitches, hooks and slings used to hoist materials shall be suitable for handling the type of materials being hoisted.

Rule 881 Workers shall not be allowed to stay under suspended loads.

Rule 882 Taglines shall be used to steady or guide hoisted materials.

Rule 883 When necessary to protect the operator of the equipment, all rubber-tired or crawler-mounted self-propelled scrapers, front-end loaders, and tractors, with or without attachments, that are used in surface coal mines or at the surface work areas of underground coal mines shall be provided with substantial falling object protective structures (FOPS).

Rule 884 Sounding device shall be activated by the equipment operator prior to starting operation of shovels and draglines.

Rule 885 Shovels and draglines shall be equipped with handrails along and around all walkways and platforms.

Rule 886 Mobile equipment, such as trucks, front-end loaders, tractors and graders, shall be equipped with an adequate automatic warning device which shall give an audible alarm when the equipment is in reverse movement.

CHAPTER IX

EXPLORATION

Section 1: General Provisions

Rule 887 The Operator shall conduct the following safety orientation and training prior to implementation of exploration work program:

a. Peculiarities of each exploration activity that will be implemented
b. Relevant company health and safety policy, and safety management systems
c. Relevant standard work procedures
d. Assessment of hazards in the field
e. Use of all types of personal protective equipment (PPE) such as sun protection, sun and safety glasses, and safety footwear
f. Safe use of hand and power tools
g. Safe practices around drill rigs and heavy equipment
h. Housekeeping and basic hygiene while camping
i. The need to carry or at least have access to potable water
j. Ensuring work plans and itineraries are known by others
k. Advising companions of allergies, illnesses, etc.
l. Correct practices for manual handling of equipment
m. Hazards associated with petrol, diesel fuel, liquefied petroleum gas (LPG), other flammables and chemicals
n. Fire prevention, firefighting and bush fires
o. Company policy on drug and alcohol usage
p. General communications with companions
q. Reporting safety incidents
r. Emergency procedures during natural disasters such as typhoons, earthquakes, etc.

Rule 888 The Operator shall have qualified first aiders.

Rule 889 The Operator shall maintain the necessary first aid equipment and paraphernalia. First aid kits shall be available for each field party.

Rule 890 The Operator shall have sufficient communication facility for emergency cases.

Rule 891 Personnel involved in first aid shall coordinate with local community health center for medical and emergency services.

Rule 892 All field staff, including sub-contractors' staff, shall hold at least a basic first aid certificate and receive basic refresher training at least once a year.

Rule 893 Only authorized personnel shall have access or utilize first aid kits in the field.

Rule 894 The Operator shall formulate emergency response and evacuation procedures.

Rule 895 The Operator shall conduct emergency drills at least once a year to train all workers to respond to emergency cases in accordance with the emergency response and evacuation procedures.

Section 2: Abandoned Surface and Underground Mine Workings

Rule 896 The Operator shall have a map indicating the locations and extent of all previous surface and underground mine workings in the area. A local mapper familiar with the abandoned mine workings shall be hired.

Rule 897 Prior to conduct of geological survey in abandoned mine workings, assessment and evaluation shall be conducted to determine the hazards in the area.

Rule 898 After assessment and evaluation of the abandoned mine workings, necessary corrective measures shall be conducted, such as installation of adequate mine support and restoration of ventilation.

Section 3: Exploration Trenches and Test Pits

Rule 899 Standard work procedures on excavation shall be in accordance with applicable rules and regulations in Section 3: Civil Works of Chapter X: Miscellaneous Safety Rules.

Rule 900 Unstable ground which can cause collapse, particularly during rainy season shall be monitored.

Rule 901 Completed trenches and test pits which are no longer needed shall be properly rehabilitated.

Section 4: Exploration Shafts, Adits and Crosscuts

Rule 902 All applicable rules and regulations pertaining to underground mine openings shall be complied with.

CHAPTER X

MISCELLANEOUS SAFETY RULES

Section 1: Communications

Rule 903 Two-way communication system shall be provided between the surface and each underground mine workings and shall be maintained in good operating condition at all times.

Rule 904 In the event of any failure in the system that results in loss of communication, repairs shall be started immediately, and the system restored to operating condition as soon as possible.

Section 2: Use and Care of Hand Tools

Rule 905 Defective tools shall not be used. They shall be repaired or replaced.

Rule 906 Only approved and suitable tool or tools for a certain job shall be used.

Rule 907 Tools shall be stored properly during or after use and shall not be left lying around the working place to avoid tripping or slipping hazards.

Section 3: Civil Works

Rule 908 The following shall govern excavation:

a. Excavations with depth of one and a half (1.5) meters or more shall be properly supported and braced to prevent cave-ins;
b. Surface clearing shall be conducted within the vicinity of planned excavation activity;
c. Where there is a danger of undermining adjacent foundations, excavation works shall be done in short sections and the building walls effectively shored up or braced;
d. Power machines used for excavating shall be positioned such that the machine operator is on the side away from the bank;
e. Excavation shall be guarded by substantial railings and adequately illuminated during night time;
f. Workers shall wear appropriate personal protective equipment within the workplace at all times;
g. Proper crosswalks or double planks shall be used to get across excavations;
h. Trenches over two (2) meters in depth shall be provided with a ladder extending from the trench bottom to at least 0.6 meter above ground level;

i. Ramps entering excavations shall be wide enough for workers or vehicles. They shall be substantially constructed and provided with adequate braces, supports and railings;
j. If derricks or other heavy objects are placed close to the edge of an excavation, additional bracing shall be installed to support the extra pressure due to increased load.

Section 4: Storage and Use of Chemicals and Hazardous Materials

Rule 909 Chemicals and hazardous materials shall be safely managed, used and stored in accordance with relevant standards and codes.

Rule 910 Inventory of chemicals and hazardous materials shall be maintained and reviewed regularly. All chemicals and hazardous materials shall be clearly labeled.

Rule 911 The safety engineer shall regularly check all storage and handling systems.

Rule 912 The Operator of coal mine shall establish and implement standard work procedures in the safe usage, handling and storage of chemicals and hazardous materials. An emergency response procedure shall also be established and implemented.

Rule 913 Spills of chemical and hazardous materials shall be cleaned up and the cleaning aids used shall be dispose of properly.

Rule 914 Workers shall use appropriate personal protective equipment in handling and using chemicals and hazardous materials.

Rule 915 Petrol and other flammable liquids shall be stored in areas away from heat sources and clear of dry grasses and bushes.

Rule 916 Appropriate fire-fighting equipment shall be provided and readily available where flammable materials are used and/or stored on site.

CHAPTER XI

POWERS AND DUTIES

Rule 917 The Director of the Energy Resource Development Bureau shall have the power and duty to enforce this Circular and all rules and regulations that may hereafter be promulgated concerning the safe and healthy operation of the coal mines, as well as pollution control laws and regulations.

Rule 918 The Director of the Energy Resource Development Bureau shall have the power and authority to suspend any particular activity or operation when such activity or operation causes or will cause imminent danger, or recommend the suspension of the Coal Operating Contract until necessary actions are taken.

Rule 919 The Director of the Energy Resource Development Bureau, at reasonable hours of the day or night and in a manner which will not impede or obstruct work in progress may inquire into or inspect the activities of the coal Operator regarding safety and health of all installations, surface or underground within the mining area, issue on pollution and compliance with the terms and conditions of the Coal Operating Contract.

Rule 920 The Director of the Energy Resource Development Bureau shall have the power and authority to administer oaths, summons company officials, workers, or other persons having knowledge on the subject or 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 921 The Director of the Energy Resource Development Bureau may grant relief or exemption from compliance with any of the rules in this Circular upon written request or application by the coal mining company concerned, after proper investigation and favorable recommendation of the Coal and Nuclear Minerals Division's engineers, and under such terms and conditions that may be imposed by the Director.

CHAPTER XII

PENAL PROVISIONS

Rule 922 Pursuant to Chapter XI of this Circular, the Director shall impose administrative fines and penalties for the following violations:

a. Failure to notify the Bureau within twenty-four (24) hours using the fastest available means of communication the occurrence of any accident set forth in Rule 1, Section 1, Chapter I of this Circular:

Fine of P20,000.00

b. Failure to submit to the Bureau the formal report of the accident set forth in Rule 1, Section 1, Chapter I of this Circular within five (5) working days after the accident:

Fine of P20,000.00

c. Failure or late submission of monthly accident report and minutes of monthly safety meeting within the first ten (10) days of the succeeding month:

i. First offense	-	Fine of P20,000.00
ii. Second offense	-	Fine of P50,000.00 with warning of cancellation of Contract
iii. Third offense	-	Cancellation of contract

d. Failure to register or renew permit for permanent or temporary safety engineer or safety inspector:

i. Within one (1) month after signing of Coal Operating Contract

Fine of P20,000.00

ii. Within one (1) month after expiration of previous permit

Fine of P20,000.00

iii. After one (1) month after expiration of previous permit – Fine of P40,000.00 and additional fine of P20,000.00 per month on the succeeding months

e. Failure to submit quarterly a copy of the mine maps within fifteen (15) days following the end of each quarter as set forth in Rule 49, Section 3, Chapter II of this Circular:

i. First offense	-	Fine of P20,000.00
ii. Second offense	-	Fine of P50,000.00 with warning of cancellation of Contract
iii. Third offense	-	Cancellation of contract

f. Failure to correct unsafe conditions or non-compliance with any of the provisions of this Circular noted during inspection of Bureau's authorized representative without justifiable reasons during the next inspection:

i. First offense	-	Fine of P20,000.00
ii. Second offense	-	Fine of P50,000.00 with warning of cancellation of Contract
iii. Third offense	-	Cancellation of contract

g. Failure to appear when summoned during official DOE investigation without justifiable reason, five (5) working days after notification:

Fine of P20,000.00

h. Failure to submit quarterly Inventory of Explosive and Blasting Accessories Report within the first ten (10) days following the end of each quarter:

i. First offense	-	Fine of P20,000.00
ii. Second offense	-	Fine of P50,000.00 with warning of cancellation of Contract
iii. Third offense	-	Cancellation of contract

CHAPTER XIII

FINAL PROVISIONS

If any rule of this Circular is held or declared unconstitutional or invalid by a competent court, the other rules hereof shall continue to be enforced as if the rules so annulled or voided had never been incorporated in this Circular.

All rules and regulations, orders, circulars or part thereof, pertaining to safety and health in the Philippine coal mining operations, which are inconsistent with or contrary to this Circular are hereby repealed, amended or modified accordingly.

Prepared by:

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(Sgd.) **Alfonso G. Cusi**
Secretary
Department of Energy

NCJ; MSL
October 2018

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2. Handbook of Fire Protection, 9th edition, 1941, by the US National Fire Protection Association

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4. Mine Administrative Order No. V-4-1a: Coal Mine Safety Rules and Regulations Supplementary to MAO No. V-4-1, Bureau of Mines, Philippines

5. Mines Safety Rules and Regulations, 1968, Department of Agriculture and Natural Resources, Bureau of Mines, Philippines

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7. Safety Manual for Geophysical Field Operations, 1974 by the International Association of Geophysical Contractors

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Appendix A

Republic of the Philippines
DEPARTMENT of ENERGY
Energy Resource Development Bureau
Bonifacio Global City, Taguig City

Date _____

MONTHLY COAL MINE ACCIDENT REPORT

A. SUMMARY

For the month of _____, 20_____, a total of _____ accidents have been accounted. The following is an analysis of these accidents:

No. of Lost Time Accident, Fatal	_____
No. of Lost Time Accident, Non-Fatal	_____
No. of Non-Lost Time Accident	_____
No. of Mine Fire	_____
No. of Mine Explosion	_____
No. of Unintentional Roof Fall	_____
No. of Entrapment	_____
No. of Mine Inundation	_____
Total Days Lost	_____
Man Hours Worked	_____
Frequency Rate	_____
Severity Rate	_____
Number of Employees	_____

Submitted by:

_____
Resident Manager

B. Comparison of Accidents with the Same Period Last Year

PERIOD	ACCIDENTS						TOTAL		DAYS LOST		TOTAL MAN HOURS		FREQUENCY RATE		SEVERITY RATE	
	NLTA		Lost Time													
			Fatal		Non-Fatal											
	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date

C. Distribution of Accidents

C-1 By Department

	ACCIDENTS						TOTAL		DAYS LOST		TOTAL MAN HOURS		FREQUENCY RATE		SEVERITY RATE	
	NLTA		Lost Time													
			Fatal		Non-Fatal											
	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date
Mine																
Electrical																
Mechanical																
Administration																
Engineering																
Transportation																

C-2 By Kind of Labor

	ACCIDENTS						TOTAL		PERCENTAGE	
	NLTA		Lost Time							
			Fatal		Non-Fatal					
	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Da
Miners										
Muckers										
Blasters										
Plumbers										
Electricians										
Equipment Operators										
Carpenters										
Drivers										
Helpers										

C-3 By Places

Face Area										
Entry										
Shaft										
Room										
Slope										
Drift										
Intersection										
Motorpool										
Power House										

	ACCIDENTS						TOTAL		PERCENTAGE	
	NLTA		Lost Time							
			Fatal		Non-Fatal					
	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To Date	This Month	To D

C-4 By Causes

Burns										
Hoisting										
Rock Fall										
Machinery										
Slippage										
Sliding										
Handling of Materials										
Hand Tools										
Haulage										
Blasting										

Note: These classifications may be amended to conform to Operator's organization

D. DETAILS OF LOST TIME ACCIDENT

Name of Operator _____

Address _____

Location of Mine _____

Method of Mining _____

Name of Injured _____

Age _____ Sex _____ Civil Status _____

Date Employed _____ Years of Service _____

Title/Occupation _____ Department _____

Date of Accident _____ Time of Accident _____

Place of Accident _____

Accident Category (Put a check mark)

Mine Fire _____ Mine Explosion _____

Entrapment _____ Unintentional Roof Fall _____

Inundation _____ Motor Vehicle _____

Property Damage _____ Others _____

Severity of Injury (Put a check mark)

Lost Time, Fatal _____ Lost Time, Non-Fatal _____

Nature of Injury _____ Part of Body Affected _____

Degree of Disability (Put a check Mark)

Temporary Total _____ Permanent Total _____ Permanent Partial _____

Treatment Made _____

Attended By _____

Duration of Disability _____ Date Returned to Work _____

Agent directly related to accident

(object, materials, machinery, equipment, conditions)

_____

Unsafe conditions at the time of accident

(mechanical, physical, environment)

_____

_____

Unsafe act by the injured and/or others contributing to the accident _____

_____

_____

Unsafe personal factors _____

_____

Personal protective equipment needed _____

Was injured using required personal protective equipment? _____

Brief description of accident _____

_____

_____

_____

_____

Things to be done to avoid similar accident _____

_____

_____

_____

Witnesses to the accidents _____

_____

_____

Statement of witnesses _____

_____

_____

_____

Date of investigation _____

Submitted by:

_____
Name

_____
Position

Note: All lost time accidents
shall be reported separately.
Submit as many forms as required.

Republic of the Philippines
DEPARTMENT of ENERGY
Energy Resource Development Bureau
Bonifacio Global City, Taguig City

APPLICATION FOR SAFETY ENGINEER'S / SAFETY INSPECTOR'S PERMIT

A. Personal Data

Name _____ Permit Applied for _____
Residence _____
Date of Birth _____ Place of Birth _____
Civil Status _____ Gender _____
Employer _____
Address _____

B. Educational Background

	School / University	Year Attended	Degree Completed
Elementary			
Secondary			
College			
Vocational			
Post Graduate			

C. Work Experience (Attach additional sheet as necessary)

Name of Employer and Address	Date of Employment	Position Held

D. Trainings / Seminars Attended (Attach additional sheet as necessary)

Title of Training / Seminar	Date / No. of Hours	Conducted By

E. Other Qualifications / Special Skills

_____
_____

I hereby certify that statements given above are true and correct to the best of my knowledge.

_____ _____
Date Signature of Applicant

Scale of Time Losses for Weighting Deaths and Permanent Injuries so as to Show Severity of Injuries

Nature of Injury (Dismemberment means severance of any part of the bone)	Degree of Disability in % of Permanent Total Disability	Days Lost
Death	100	6,000
Permanent total disability	100	6,000
Arm above elbow, dismemberment or loss of use of	75	4,500
Arm at or below elbow, dismemberment or loss of use of	60	3,600
Hand, dismemberment or loss of use of	50	3,000
Thumb, dismemberment or loss of use of	10	600
Any one finger, dismemberment or loss of use of	5	300
2 fingers, dismemberment or loss of use of	12 ½	750
3 fingers, dismemberment or loss of use of	20	1,200
4 fingers, dismemberment or loss of use of	30	1,800
Thumb and 1 finger, dismemberment or loss of use of	20	1,200
Thumb and 2 fingers, dismemberment or loss of use of	25	1,500
Thumb and 3 fingers, dismemberment or loss of use of	33 1/3	2,000
Thumb and 4 fingers, dismemberment or loss of use of	40	2,400
Leg above knee, dismemberment or loss of use of	75	4,500
Foot, dismemberment or loss of use of	40	2,400
Leg at or below knee, dismemberment or loss of use of	50	3,000
Great toe or any 2 or more toes, dismemberment or loss of use of	5	300
1 toe, other than great toe, dismemberment or loss of use of	0	-
1 eye, loss of sight	30	1,800
Both eyes, loss of sight	100	6,000
1 ear, loss of hearing	10	600
Both ears, loss of hearing	50	3,000

Notes:

Temporary disabilities are weighted according to the actual number of calendar days of disability, including Sundays and holidays. Hernia classed as temporary disability is to be charged with the actual number of calendar days during which the worker was unable to work.

Permanent disability resulting in partial loss of use of a part of the body is charged with the percent of the days lost shown in the scale.

For loss of use without amputation, use a percentage of the scheduled charge corresponding to the loss of use as determined by the physician to treat the case. If the bone is not involved, use actual days lost and classify as temporary total disability.