SURFACE FOREMAN

CERTIFICATION STUDY GUIDE

2024 Edition

Commonwealth of Virginia

Virginia Department of Energy
Coal Mine Safety
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STUDY GUIDE DISCLAIMER

Article 1 of the **Coal Mine Safety Laws of Virginia** establishes requirements for certification of coal mine workers. The certification requirements are included in §45.2-515 through §45.2-534 in which the Board of Coal Mining Examiners is established for the purpose of administering the certification program. The Board has promulgated certification regulations 4 VAC 25-20, which set the minimum standards and procedures required for Virginia coal miner examinations and certifications.

The Virginia Department of Energy's Coal Mine Safety team developed this study guide to better assist coal miners seeking certifications. The material included is not all-inclusive and should only be considered an aid in obtaining knowledge of the mining practices, conditions, laws and regulations. This guide is based upon the Coal Mining Safety Laws of Virginia, Safety and Health Regulations for Coal Mines in Virginia, Title 30 Code of Federal Regulations (30 CFR), State and Federal Program Policy Manuals and other available publications. Nothing herein should be construed as recommending any manufacturer's products.

The study guide and materials are available through the Virginia Department of Energy. Each guide is available for download via the agency's website at www.energy.virginia.gov and printed copies are kept at Virginia Energy's Big Stone Gap office for purchase. Any questions concerning material in the study guide should be addressed to the Regulatory Boards Administrator at the Big Stone Gap Office.

TABLE OF CONTENTS

I - INTRODUCTION
SURFACE FOREMAN

The Surface Foreman certification study guide was written to include general surface mine laws and established safety practices. Specific distances, specifications and some laws/regulations have been purposely omitted to prevent such a lengthy study guide. The guide's sole purpose is to familiarize and prepare personnel to be certified as Surface Foreman. This guide will provide general safety standards for Surface Foremen; however, it is recommended that individuals self-studying a Surface Foreman course supplement information included in this guide with the Coal Mine Safety Laws of Virginia, Title 30 – Part 77, Code of Federal Regulations, and the Virginia Coal Surface Mining Control and Reclamation Regulations.

It is recommended that instructors teaching a Surface Foreman course provide students with supplemental information including on-shift examinations, the Coal Mine Safety Laws of Virginia, Title 30 – Part 77, Code of Federal Regulations, and the Virginia Coal Surface Mining Control and Reclamation Regulations.

Chapters 5 through 9 of the Coal Mine Safety Laws of Virginia relate directly to the mining industry and every foreman should be familiar with the general content of those laws. The purpose of mine safety laws and safe mining practices is to promote the safety and health of those engaged in the mining of coal and to provide for the protection and preservation of property.

The Virginia Coal Surface Mining Control and Reclamation Regulations outline the requirements for reclamation of mined lands. Knowledge of these requirements is essential to a surface mine foreman and are included in this study guide.

Within those laws are found official definitions of common terms, qualifications and duties of surface foreman, examination and certification requirements for various tasks, and certain rules and standards for areas such as surface equipment, explosives and blasting, and fire protection.

A surface foreman shall have a thorough knowledge of the theory and practice of surface coal mining. His primary objective should be a safe and healthy workplace incorporating a productive and efficient operation.

COAL MINE SAFETY

BOARD OF COAL MINING EXAMINERS CERTIFICATION REQUIREMENTS

Article 1 of the **Coal Mine Safety Laws of Virginia** establishes requirements for certification of coal mine workers. The certification requirements are included in §45.2-515 through §45.2-534 in which the Board of Coal Mining Examiners is established for the purpose of administering the certification program. The Board has promulgated certification regulations 4 VAC 25-20, which set the minimum standards and procedures required for Virginia coal miner examinations and certifications.

CERTIFICATION CLASSIFICATION: ***Surface Foreman (Coal)***

This certification authorizes the holder to:

- Perform all surface mine foreman and/or examiner duties required by State and Federal Laws and Code
- Record the findings of on-shift examinations

NOTE:

- This certification may be used at Prep Plants, Dock Facilities and Surface Facilities (labs, shops, warehouses)
- **This certification meets requirement for General Miner**.

APPLICATION/EXPERIENCE REQUIREMENTS:

- Application (BCME-1) and $40.00 fee 5 working days prior to examination
- Five years of surface coal mining experience at least two years experience must be at a surface mines
- Current first aid training (MSHA first aid 5000-23 acceptable)

EXAMINATION REQUIREMENTS: A score of 85% on each element of the examination

ELEMENTS OF EXAM	NUMBER OF QUESTIONS
Electrical & Equipment (EE)	20
Explosives (EX)	20
Mine Foremanship (MF)	25
General Mine Practices (MP)	50
Federal Regulations (FR)	20
Virginia Coal Surface Mining Reclamation Regulations (RL)	20
Gas Detection - practical demonstration	
Records – Pre-Shift/On-Shift (PO)	
Ground Control/Red Zone Practical	

RECOMMENDED REFERENCE/STUDY MATERIALS:

- Title 30 CFR Parts 48, 51, 77
- Coal Mine Safety Laws of Virginia
- *Mine Gases Packet
- *VA Coal Surface Mining Reclamation Regs. - MLR
- Surface Foreman Guide & Surface Rules & Regs.
- BCME Requirements
- *VA Ground Control Plan/Red Zones

(* Included in Study Guide)

The above mentioned study materials are available at the Virginia Department of Energy's Big Stone Gap Office, Customer Assistance Center (276) 523-8233.

Note: 4 hours biannual continuing education required to update certification.

II - DEFINITIONS

Accident - Means (i) a death of an individual at a mine; (ii) a serious personal injury; (iii) an entrapment of an individual for more than thirty minutes; (iv) an unplanned inundation of a mine by liquid or gas; (v) an unplanned ignition or explosion of gas or dust; (vi) an unplanned fire not extinguished within thirty minutes of discovery; (vii) an unplanned ignition or explosion of a blasting agent or an explosive; (viii) an unplanned roof fall at or above the anchorage zone in active workings where roof bolts are in use; or an unplanned roof or rib fall in active workings that impairs ventilation or impedes passage; (ix) a coal or rock outburst that causes withdrawal of miners or which disrupts regular mining activity for more than one hour; (x) an unstable condition at an impoundment, refuse pile, or culm bank which requires emergency action in order to prevent failure, or which causes individuals to evacuate an area; or, failure of an impoundment, refuse pile, or culm banks; (xi) damage to hoisting equipment in a shaft or slope which endangers an individual or which interferes with the use of the equipment for more than thirty minutes; (xii) an event at a mine which causes death or bodily injury to an individual not at a mine at the time the event occurs; and (xiii) the unintentional fall of highwall that entraps equipment for more than thirty minutes.

§45.2-501.

Active workings - Any place in a mine where miners are normally required to work or travel.

§45.2-501.

Actual distance - The distance in feet from the blast location to the nearest dwelling house, public housing, school, church, commercial or institutional building neither owned nor leased by the person conducting the blast.

Rules and Regulations Governing
Blasting in Surface Mining Operations

Agent - Any person charged by the operator with responsibility for the operation of all or a part of a mine or the supervision of the miners in a mine.

§45.2-501.

American Table of Distances - The current edition of "The American Table of Distances for Storage of Explosives" published by the Institute of Makers of Explosives.

30 CFR 77.2

Approved - A device, apparatus, equipment, condition, method, course or practice approved in writing by the Chief or Director.

§45.2-501.

Authorized person - A person assigned by the operator or agent to perform a specific type of duty or duties or to be at a specific location or locations in the mine who is trained and has demonstrated the ability to perform such duty or duties safely and effectively.

§45.2-501.

Barricade - Natural features of the ground such as hills, timber of sufficient density that surround exposures which cannot be seen when the trees are bare of leaves, or an efficient artificial barricade consisting of an artificial mound or properly revetted wall of earth not less than three feet thick at the top.

Coal Mining Dictionary

Berm - A pile or mound of material capable of restraining a vehicle.

30 CFR 77.2

Blasting agent - Any material consisting of a mixture of a fuel and oxidizer which –

a) is used or intended for use in blasting
b) is not classified as an explosive by the Department of Transportation; and
c) contains no ingredient classified as an explosive by the Department of Transportation; and
d) cannot be detonated by a Number 8 blasting cap when tested as recommended in Bureau of Mines Information Circular 8179.

30 CFR 77.2

Blasting area - The area near blasting operations in which concussion of flying material can reasonably be expected to cause injury.

30 CFR 77.2 (f)

Blasting cap - A detonator containing a charge of detonating compound, which is ignited by electrical current or the spark of a fuse. Used for detonating explosives.

30 CFR 77.2 (g)

Blasting circuit - Electric circuits used to fire electric detonators or to ignite cord by means of an electric starter.

30 CFR 77.2 (h)

Blasting switch - A switch used to connect a power source to a blasting circuit.

30 CFR 77.2 (i)

Box type magazine - A small, portable magazine used to store limited quantities of explosives or detonators for short periods of time in locations at the mine, which are convenient to the blasting sites at which they will be used.

30 CFR 77.2 (j)

Cable - A stranded conductor (single-conductor cable) or a combination of conductors insulated from one another (multiple-conductor cable).

§45.2-501.

Capped primer - A package or cartridge of explosives which is designed to transmit detonation to other explosives, and which contains a detonator.

30 CFR 77.2 (l)

Certified person - A person holding a valid certification from the Board of Coal Mining Examiners authorizing him to perform the task to which he is assigned.

§45.2-501.

Charge weight - The weight in pounds of an explosive charge.

Rules and Regulations Governing
Blasting in Surface Mining Operations

Circuit - A conducting part or a system of conducting parts through which an electric current is intended to flow.

§45.2-501.

Circuit breaker - A device for interrupting a circuit between separable contacts under normal or abnormal conditions.

§45.2-501.

Coal mine - A surface coal mine or an underground coal mine.

§45.2-501.

Delay interval - The time interval in milliseconds between successive detonations of the delay devices used.

Rules and Regulations Governing
Blasting in Surface Mining Operations

Detonating cord - "Detonating fuse" means a flexible cord containing a core of high explosive.

30 CFR 77.2 (n)

Detonator - 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.

30 CFR 77.2 (o)

Electric grounding - To connect with the ground to make the earth part of the circuit.

30 CFR 77.2 (p)

Experienced surface miner - A person with more than six months experience working at a surface mine or the surface area of an underground mine.

§45.2-501.

Explosive - 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.

30 CFR 77.2 (q)

Federal Mine Safety Law - The Federal Mine Safety and Health Act of 1977 (P.L. 95-164) and regulations promulgated thereunder.

§45.2-501.

Flyrock - Blasted material that travels beyond the blast area. Such material shall not be cast from the blasting vicinity more than half the distance to the nearest dwelling or other occupied structure and in no case beyond the line of property owned or leased by the operator.

Rules and Regulations Governing
Blasting in Surface Mining Operations

Ground - A conducting connection between an electric circuit or equipment and earth or to some conducting body, which serves in place of earth.

§45.2-501.

Grounded - A connection to earth or to some connecting body, which serves in place of the earth.

§45.2-501.

Hazardous condition - Conditions that are likely to cause death or serious personal injury to persons exposed to such conditions.

§45.2-501.

Imminent danger - The existence of any condition or practice in a mine which could reasonably be expected to cause death or serious personal injury before such condition or practice can be abated.

§45.2-501.

Inactive mine - A mine (i) at which coal or minerals have not been excavated or processed, or work, other than examinations by a certified person or emergency work to preserve the mine, has not been performed at an underground mine for a period of thirty days, or at a surface mine for a period of sixty days, (ii) for which a valid license is in effect, and (iii) at which reclamation activities have not been completed.

§45.2-501.

Interested person - Members of the Mine Safety Committee and other duly authorized representatives of the employees at a mine; Federal Mine and Safety and Health Administration employees; mine inspectors; and, to the extent required by this Act, any other person.

§45.2-501.

Magazine - A building or structure, other than a factory building, designed to be used exclusively for the storage of explosives.

Rules and Regulations Governing
Blasting in Surface Mining Operations

Mine - Any underground coal mine or surface coal mine. Mines that are adjacent to each other and under the same management and which are administered as distinct units shall be considered as separate mines. A site shall not be a mine unless the coal extracted or excavated therefrom is offered for sale or exchange or used for any other commercial purposes.

§45.2-501.

Mine fire - An unplanned fire not extinguished within thirty minutes of discovery.

§45.2-501.

Mine foreman - A person holding a valid certificate of qualification as a foreman duly issued by action of the Board of Coal Mining Examiners.

§45.2-501.

Mine inspector - A public employee assigned by the Chief or the Director to make mine inspections as required by this Act and other applicable laws.

§45.2-501.

Mine Safety Act - Or Act shall mean this chapter and Chapter 5 (§45.2-500 et seq.) through Chapter 9 (§45.2-900 et seq.) of this title, and shall include any regulations promulgated thereunder, where applicable.

Miner - Any individual working in a mine.

§45.2-501.

Misfire - The complete or partial failure of a blasting charge to explode as planned.

30 CFR 77.2 (s)

Operator - Any person who operates, controls or supervises a mine or any independent contractor performing services or construction at such mine.

§45.2-501.

Primer - Or booster means a package or cartridge of explosives which is designed specifically to transmit detonation to other explosives.

30 CFR 77.2 (u)

Rollover protection - A framework, safety canopy, or similar protection for the operator when equipment overturns.

30 CFR 77.2 (w)

Safety can - An approved container of not over 5 gallons capacity having a spring closing lid and spout cover.

30 CFR 77.2 (x)

Safety switch - A sectionalizing switch that also provides shunt protection in blasting circuits between the blasting switch and the shot area.

30 CFR 77.2 (z)

Scaled distance (D_s) - The actual distance (D) in feet divided by the square root of the maximum explosive weight (W) in pounds that is detonated per delay period for delay intervals of eight milliseconds or greater; or the total weight of explosive in pounds that is detonated within an interval less than eight milliseconds.

This means

That $W = \left(\frac{D}{D_s}\right)^2$

Scaled Distance = $\frac{\text{Actual Distance}}{\text{Charge Wt. per Delay Period}}$

Thus: $(Ds)^2 = \frac{D}{W}$ or $D_s = \sqrt{\frac{D}{W}}$

Rules and Regulations Governing
Blasting in Surface Mining Operations

Serious personal injury – Any injury which has a reasonable potential to cause death or an injury other than a sprain or strain which requires an admission to a hospital for twenty-four hours or more for medical treatment.

§45.2-501.

Stemming - Inert materials placed in a borehole after the explosive charge for the purpose of confining the explosive gases in the borehole or that inert material used to separate the explosive charges (decks) in decked holes.

Rules and Regulations Governing
Blasting in Surface Mining Operations

Substation - An electrical installation containing generating or power-conversion equipment and associated electrical equipment and parts, such as switchboards, switches, wiring, fuses, circuit breakers, compensators and transformers.

§45.2-501.

Surface coal mine - Means (i) the pit and other active and inactive areas of surface extraction of coal; (ii) on-site preparation plants, shops, tipples, and related facilities appurtenant to the extraction and processing of coal; (iii) surface areas for the transportation and storage of coal extracted at the site; (iv) impoundments, retention dams, tailing ponds, and refuse disposal areas appurtenant to the extraction of coal from the site; (v) equipment, machinery, tools, and other property used in, or to be used in, the extraction at the site; (vi) private ways and roads appurtenant to such areas; (vii) the areas used to prepare a site for surface coal extraction activities. A site shall commence being a surface coal mine upon the beginning of any site preparation activity other than exploratory drilling or other exploration activity that does not disturb the surface and shall cease to be a surface coal mine upon completion of initial reclamation activities.

§45.2-501

Travelway - A passage, walk or way regularly used and designated for persons to go from one place to another.

§45.2-501.

Underground coal mine - The working face and other active and inactive areas of underground excavation of coal; (ii) underground passageways, shafts, slopes, drifts, inclines, and tunnels connected to such areas; (iii) on-site preparation plants, shops, tipples, and related facilities appurtenant to excavation and processing of coal; (iv) on-site surface areas for the transportation and storage of coal excavated at the site; (v) impoundment retention dams, and tailing ponds appurtenant to the excavation of coal from the site; (vi) equipment, machinery, tools, and other property, on the surface and underground, used in, or to be used in, the excavation of coal from the site; (vii) private ways and roads appurtenant to such area; (viii) the areas used to prepare for underground coal excavation activities; (ix) areas used for the drilling of vertical ventilation holes. A site shall commence being an underground coal mine upon the beginning of any site preparation activity other than exploratory drilling or other exploration activity and shall cease to be an underground mine upon completion of initial reclamation activities.

§45.2-501.

Work area - As used in Chapter 5 (§45.2-502 et seq.) of this title, means those areas of a surface coal mine in production or being prepared for production and those areas of the mine, which may pose a danger to miners in such areas.

§45.2-501.

III - QUALIFICATIONS AND RESPONSIBILITIES OF THE SURFACE FOREMAN

4 VAC 25-20-70. Surface Foreman.

A. Applicants shall possess five years of surface coal mining experience.

B. Applicants shall pass the surface foreman, first aid, and gas detection examinations.

C. Beginning August 20, 1997, certified persons shall complete the continuing education requirements in this section within two years from the date of their certification and every two years thereafter. The holder of the certificate shall submit documentation to Coal Mine Safety indicating the required continuing education has been completed.

D. The holder of the certificate, in order to receive continuing education credit, shall satisfactorily complete a surface foreman continuing education course approved by the chief and taught by a certified instructor or other instructor approved by the chief.

E. The surface foreman shall complete at least four hours of continuing education every two years.

F. The content of the continuing education course shall include, but is not limited to, the:

a. Coal Mine Safety Act, Chapter 5 (§45.2-500 et seq.) of Title 45.2 Code of Virginia;
2. Virginia Coal Mine Safety Regulations;
3. Responsibilities of Surface Foreman;
4. Virginia Coal Mine Safety policies and Coal Mine Safety operators' memos; and
5. Review of fatalities and accident trends in Virginia surface coal mines.

G. A maximum of four hours in excess of the required hours may be carried over the next continuing education period.

H. Failure to complete continuing education requirements shall result in suspension of a person's certification pending completion of continuing education. If the continuing education requirement is not met within two years from the suspension date, the certification shall be revoked by the Board of Coal Mining Examiners.

I. Coal Mine Safety shall send notice of any suspension to the last known address of the certified person reported to the division in accordance with 4 VAC 25-20-20 and to the last employer address reported to the division.

A. A. GENERAL KNOWLEDGE OF LAW

Surface Foreman must prove he is qualified:

Each applicant for a surface foreman certificate shall prove to the Board of Coal Mining Examiners by written examination, that he has a thorough knowledge of the theory and practice of surface coal mining and that he is otherwise qualified by the law.

§45.2-532.

Requirements for qualification:

A surface foreman shall be at least 23 years of age, have at least five years' experience at a surface coal mine, and score at least 85% on each section of the certification examination.

§45.2-532.

First Aid and gas detection examination:

All applicants for a surface foreman certificate shall pass an examination in first aid and gas detection.

§45.2-532. A.

Personnel must not perform duties that they are not certified to perform:

Mine operators, mine agents, and surface foreman shall not allow any persons to perform any duty requiring certification until the person has been certified. Violating this provision is a misdemeanor (Class I), and each day of operation without certification is a separate offense.

§45.2-522.

Certification may be revoked:

Failure to comply with continuing education requirements, for intoxication while on duty status, neglect of duty, violation of the coal mining laws of this State, use of any controlled substance without the prescription of a licensed physician or other sufficient cause may result in revocation of certification.

§45.2-528. A.

Knowledge of and compliance with Coal Mine Safety Laws of Virginia:

A surface foreman must ensure that the Coal Mine Safety Laws of Virginia pertaining to his duties and health and safety are complied with at all times.

§45.2-507. B.

Competency of a Surface Foreman:

The Board of Coal Mining Examiners requires surface foremen to have the competency, skills, and knowledge in order to preserve and protect the health and safety of persons and property.

§45.2-520.

The surface foreman shall ensure that a person certified as a surface foreman is placed in charge during his absence.

§45.2-911. A.

Hazardous condition:

Defined as a condition or conditions that are likely to cause death or serious personal injury to persons exposed to such conditions. A hazardous condition, which is an imminent danger shall be reported to the Chief, Coal Mine Safety by the quickest available means: Example: Deteriorated explosives have been found in the back of the magazine and needs to be destroyed. The explosive distributor cannot pick up the deteriorated explosives today. This condition must be reported to the Chief.

§ 45.2-905.

Operators' reporting of accidents:

Each operator will report promptly to the Department (Coal Mine Safety) the occurrence of any accident. The scene of the accident shall not be disturbed pending an investigation, except to the extent necessary to rescue or recover a person, prevent or eliminate an imminent danger, prevent destruction of mining equipment, or prevent suspension of use of a slope, entry or facility vital to the operation of a section or a mine. In cases where reasonable doubt exists as to whether to leave the scene unchanged, the operator will secure prior approval from the Department before any changes are made. What constitutes a reportable accident?

"Accident" means (i) a death of an individual at a mine; (ii) a serious personal injury; (iii) an entrapment of an individual for more than thirty minutes; (iv) an unplanned inundation of a mine by liquid or gas; (v) an unplanned ignition or explosion of gas or dust; (vi) an unplanned fire not extinguished within thirty minutes of discovery; (vii) an unplanned ignition or explosion of a blasting agent or an explosive; (viii) an unplanned roof fall at or above the anchorage zone in active workings where roof bolts are in use; or an unplanned roof or rib fall in active workings that impairs ventilation or impedes passage; (ix) a coal or rock outburst that causes withdrawal of miners or which disrupts regular mining activity for more than one hour; (x) an unstable condition at an impoundment, refuse pile, or culm bank which requires emergency action in order to prevent failure, or which causes individuals to excavate an area; or failure of an impoundment, refuse pile or culm bank; (xi) damage to hoisting equipment in a shaft or slope which endangers an individual or which interferes with use of the equipment for more than thirty minutes; (xii) an event at a mine which causes death or bodily injury to an individual not at a

mine at the time the event occurs; and (xiii) the unintentional fall of highwall that entraps equipment for more than thirty minutes.

§45.2-556.

Coal Mine Safety Laws of Virginia provided to employees:

The operator of every mine, or his agent, shall deliver a copy of the Coal Mine Safety Laws of Virginia to every miner upon the commencement of his employment at the mine, unless the miner is already in possession of a copy.

§45.575. A.

B. SAFETY REPORTS AND RECORDS FOR SURFACE OPERATIONS

Responsibility for reports and records for surface operations:

The surface foreman is responsible for mine and equipment examination records required for surface operations.

§45.2-904. C.

Pre-shift and On-shift examinations:

The results of these examinations shall be recorded by the certified person (surface foreman) performing the examination in a mine record book provided for that purpose.

§45.2-904. A.

On-shift examinations of the work area including pit, auger, thin seam and highwall miner operations shall be conducted by a certified person (surface foreman) once every production shift and at such other times or frequency as the Chief designates necessary for hazardous conditions.

§45.2-903. A.

Pre-shift examinations shall be conducted by a certified person (surface foreman) for certain hazardous conditions designated by the Chief.

§45.2.-903. C.

Fire prevention inspection:

Fire extinguishers shall be examined at least once every six months and results of this examination shall be recorded on a permanent tag attached to the extinguisher.

§§45.2-903. I. and 45.2-904. A.

Daily examination record of silt-retaining dams and refuse piles:

Silt-retaining dams and mine-refuse piles shall be inspected daily by an authorized person. The results of these examinations shall be recorded in a mine record book by the certified person (surface foreman) performing the examination.

§45.2-903. D.

The location of all natural gas pipelines on permitted surface mine areas shall be identified and conspicuously marked. Pre-shift examinations shall be conducted of the location of pipelines whenever active workings are approaching within 500 feet unless otherwise approved by the Chief.

§45.2-903. E.

Records of inspections:

All records of inspections shall be maintained at the mine site for at least one year.

§45.2-904. E.

Electrical wiring and equipment:

Electrical equipment and wiring shall be inspected as often as necessary but at least once a month. The results of this examination shall be recorded in a mine record book by the certified person performing the examination.

§§45.2-903. H. and 45.2-904. A.

Weekly examination of water, sediment or slurry impoundment:

Impoundments and impounding structures shall be examined weekly and the results should be recorded promptly.

30 CFR 77.216-3 and §45.2-619. A.

Blasting records:

A record of each blast shall be kept for three years and should be available for inspection by the Coal Mine Safety personnel.

Rules and Regulations Governing
Blasting in Surface Mining Operations

Mobile equipment pre-operational examinations:

Pre-operational examinations of all mobile equipment shall be conducted by an authorized or a competent person.

§45.2-903. B.

Loading and haulage equipment:

Mobile loading and haulage equipment shall be inspected by a competent person before such equipment is placed into operation.

30 CFR 77.1606 (a)

Maintenance of training and retraining records of mine personnel:

Training records for each miner should be available at the mine office or site and shall be kept for two years or for 60 days after termination of employment.

30 CFR 48.29

Training plans:

Each operator shall have an approved training plan containing training for new miners, newly employed experienced miners, task training, annual refresher training, and hazard training.

30 CFR 48.3

Posting special safety rules:

Special safety rules shall be posted in a conspicuous place at the mine site where the rules can be seen by all miners or the operator shall furnish a printed copy of such rules to each miner.

§45.2-503

Air quality examinations:

A qualified person shall, using approved devices, test for methane and deficiency of oxygen when an auger hole penetrates a worked out area of an underground mine. If methane is detected or a deficiency of oxygen is found to exist, no further work shall be performed until the atmosphere has been made safe.

§§45.2-937. A. and 45.2-937. B.

C. QUESTIONS FOR REVIEW

1. Q. What action shall be taken by the surface foreman when a mine inspector declares a condition, practice or equipment defect to be an "imminent danger"?
   A. The surface foreman shall clear the area or remove equipment from service as identified by the mine inspector.

§§45.2-565. C. and 45.2-507. A.

2. Q.- How shall a person applying for a Surface Foreman certificate prove to the board of Coal Mining Examiners or Chief that he/she is qualified by Law?
   A. That he/she has a thorough knowledge of the theory and practice of surface coal mining and scores at least 85% on each section of a written examination.

§45.2-532.

3. Q. Who has the authority to revoke a Surface Foreman certification?
   A. The Board of Coal Mining Examiners (BCME).

§45.2-528. A.

4. Q. For what reasons may a Surface Foreman certification be revoked?
   A. Failure to comply with continuing education requirements, intoxication while on duty status, neglect of duty, violation of the coal mining laws of this State, use of any controlled substance without the prescription of a licensed physician, or other sufficient cause.

§45.2.-528. A.

5. Q. How much surface mining experience is required for certification as a Surface Foreman?
   A. Five years.

§45.2-532.

6. Q. What is the minimum percent required to pass a Surface Foreman certification examination?
   A. Eighty-five percent (85%).

§45.2-532.

7. Q. Who is responsible for providing a safe and healthy work place during surface mining?
   A. The Surface Foreman.

§45.2-520. A.

8. Q. How old must a person be to become a Surface Foreman?
   A. Not less than twenty-three years old.

§45.2-532

9. Q. What is the requirement of a Surface Foreman pertaining to the Coal Mine Safety Laws of Virginia?
   A. That the mining laws are fully complied with at all times.

§45.2-507. B.

10. Q. How long shall records of examinations be maintained at the mine site?
    A. One year.

§45.2-904. E.

11. Q. Who must take charge in the event that the Surface Foreman is absent?
    A. Another person certified as a Surface Foreman is required to be placed in charge.

§45.2-911. A.

12. Q. Who shall provide all employees with a copy of the Coal Mine Safety Laws of Virginia?
    A. The mine operator or his agent.

§45.2-575. A.

13. Q. Who has the responsibility to ensure that all machinery is operated and maintained in safe working condition, that employees work in a safe manner, and that mining laws are complied with at all times?
    A. The Surface Foreman, Mine Operator or his agent.

§45.2-507. B.

14. Q. What action shall be taken by a Surface Foreman if a serious or fatal accident occurs?
    A. Report promptly to the Coal Mine Safety and the scene shall be left unchanged until an investigation has been conducted.

§45.2-556. A.

15. Q. What action shall be taken by a Surface Foreman when a hazardous condition exist that cannot be corrected?
    A. The workers shall be withdrawn from that area and the area dangered off.

§45.2-905. A.

16. Q. What action shall be taken by a Surface Foreman should a mine inspector order a withdrawal resulting from an imminent danger situation?
    A. Immediately withdraw as the mine inspector requires.

§45.2-569. A.

17. Q. What is the Surface Foreman's responsibility in relation to ground control and a general safe working area?
    A. The Surface Foreman shall ensure the safe control of highwalls, pit areas, and spoil banks and provide an overall safe working environment.

§45.2-934. A.

18. Q. Who shall designate an "authorized person"?
    A. The mine operator or operator's agent.

§45.2-501

19. Q. What events or conditions shall be reported immediately to the Chief or his designated representative?
    A. Imminent danger conditions which cannot be removed within a reasonable Time and accidents including serious personal injury or death.

§§45.2-905. and 45.2-556. A.

20. Q. How often shall on-shift examinations of the work area including the pit, auger, thin seam, and highwall miner operations be conducted?
    A. At least once every production shift and at such other times or frequency as the Chief designates necessary for hazardous conditions.

§45.2-903. A.

21. Q. Who is authorized to conduct “on-shift examinations” of the work area?
    A. A person certified as a Surface Foreman.

§45.2-903. A.

22. Q. Who is allowed to conduct pre-operational examinations of all mobile equipment?
    A. An “authorized person”.

§45.2-903. B.

23. Q. Who shall conduct pre-shift examinations for certain hazardous conditions designated by the Chief?
    A. A person certified as a Surface Foreman.

§45.2-903. C.

24. Q. Who shall conduct air quality examinations when a surface mining operation intersects an underground mine, auger hole or other underground workings?
    A. A person certified as a “Surface Foreman”.

§45.2-903. F.

IV - GENERAL MINE PRACTICE AND SAFETY

A Surface Foreman has overall responsibilities to provide reasonable safe work areas pursuant to State and Federal requirements.

His general duties include a broad range of areas over an entire job site, and he must insist that all applicable safety laws be complied with at all times.

A Surface Foreman must provide guidance, leadership, and safety motivation to all workers. Safety attitudes and safety behaviors must be encouraged and endorsed by the Surface Foreman. Through his safety consciousness, work hazards are recognized and eliminated to further protect the employees from death or injury.

Also, a Surface Foreman shall ensure compliance of all laws; that all machinery is maintained in a safe working condition; that blasting operations are conducted safely; and that employee's work in a safe manner.

General mining practices must be compatible with both applicable State and Federal regulations while assigning the Surface Foreman the demanding task of promoting safety.

Condition of highwall, pit area, and spoil bank:

The highwall, pit area, and spoil bank shall be kept free of any overhanging earth, stone or other material that could affect the safety of workers.

§45.2-934. B.

Machinery starting signals:

Signals or other means shall be used to warn all persons of an operator's intention to operate equipment.

§45.2-916. D.

Machinery and Equipment Guards:

All exposed gears, belt drives, drive shafts, fans, etc. shall be guarded and maintained.

§45.2-920. A.

Repairs to machinery:

After making repairs to machinery, all guards and shields shall be replaced before machinery is placed back in operation.

§45.2-920. C.

Raising machinery for repairs:

Machinery raised for repairs shall be securely blocked prior to persons positioning themselves where the falling of such equipment could create a hazardous condition.

§45.2-917. H.

Safety protection equipment:

Protective equipment (gloves and safety glasses) should be worn when workers are required to do welding, grinding, stone breaking, oxyacetylene cutting, etc.

§45.2-906.

Blade position of a shovel, loader, dragline or bulldozer when not in use:

The blade or bucket of a shovel, loader, dragline or bulldozer should be lowered to the ground when not in use.

§45.2-924. B.

Control of dust:

When mining operations raise an excessive amount of dust into the air, water or other effective method shall be used to allay such dust at its source.

Drilling in rock shall be done wet, or other means of dust control shall be used.

Coal dust shall not be permitted to accumulate excessively on surface equipment.

§45.2-925. A. B. C.

Employees working in a hazardous area:

Employees working in a hazardous area shall be removed immediately and the area dangered off until it is made safe.

§45.2-904. A.

Safety precautions when danger of falling exists:

Any task exposing a worker to a possible fall requires the use of a safety belt and lifeline.

30 CFR 77.1710 g

Seasonal highwall danger:

Due to freezing and thawing conditions, winter and spring are the most dangerous times for surface mining.

30 CFR 77.1004 a

First aid training:

All operations should have working personnel qualified to administer emergency first aid until more advanced help is available. Surface Foreman are required to attend supervisory retraining (first aid) annually.

30 CFR §77.107

Head and foot protection:

Hard hats and hard toed footwear shall be worn when entering a surface coal mine.

§45.2-906

Maintenance and repair of equipment:

All equipment should be stopped and blocked to prevent unexpected movement before attempting to do any lubrication, maintenance or repair work.

30 CFR 77.405 b.

Travel ways, stairways, platforms, railways, and walkways:

Handrails or guardrails and toe boards shall be provided on stairways, elevated platforms, floor openings, and elevated runways.

§45.2-922. C.

Oxygen and acetylene tank storage:

Tanks shall be stored in racks designated for such purpose, with caps in place, standing upright, secured to prevent falling and “No Smoking” signs posted.

§45.2-914. L.

Belt and conveyor crossover facilities:

When necessary to cross belts or conveyors, suitable crossing facilities shall be provided for safety.

§45.2-915. C.

Minimum age requirement in or about a mine:

Eighteen is the minimum legal age for employment in or around a mine.

§45.2-504. A.

Duty of Surface Foreman in relation to employees:

All employees must be instructed about the safety rules, safe work procedures, and the dangers relative to their particular job occupation.

§§45.507. A. and 45.2-703. B.

New miner training:

Each new miner shall receive training in accordance with Part 48, Code of Federal Regulations.

30 CFR 48.21

Scene of serious or fatal accident:

The accident scene shall be left unchanged until an investigation has been completed.

§45.2-556. A.

Starting machinery where people work:

Signals must be given where people work to alert everyone that the machinery is ready to operate.

§45.2-916. D.

Machinery maintenance:

Oil, grease, and other combustible material shall not be allowed to accumulate on machinery.

§45.2-914. H.

Defective machinery or equipment shall be removed from service until repaired.

30 CFR 77.404(a)

Stairways, platforms, and walkways:

Stairways, platforms, and walkways shall be kept free of oil, grease, ice, debris, or other possible stumbling and slipping - falling hazards.

§45.2-922. C.

Company safety rules:

All company safety rules shall be posted at some conspicuous place or a printed copy provided to all miners.

§45.2-503

A certified surface foreman shall be in charge at all times when employees are working.

§45.2-911. A.

Employees assigned to work in a hazardous area:

No employee shall be allowed to work in a hazardous area unless he can communicate with others, can be seen or heard through sight or sound.

30 CFR 77.1700

Emergency communication equipment:

All surface operations shall maintain a communication system with the nearest point of medical assistance for use in an emergency.

30 CFR 77.1701 (a)

First aid training and equipment:

All employees shall attend training and retraining classes and mine operators shall maintain an adequate supply of first aid equipment at each mine site.

30 CFR 48.12

Eye protection:

All persons shall wear safety glasses, goggles, face shields or other suitable protective devices in all areas where eye hazards exists.

§45.906. A.3

Snug-fitting clothing:

Snug-fitting clothing shall be worn around moving equipment parts and machinery.

§45.2-906. A.5

Good housekeeping:

Good housekeeping shall be practiced in and around buildings, shafts, slopes, yards, and other areas of the mine.

§45.2-907. A.

Intoxicating beverages or controlled drugs:

Intoxicating beverages and drugs shall not be permitted or used around any work area. No person under the influence of alcohol or drugs shall be permitted on the job.

§45.2-505. A.

Stairways, elevated platforms, and elevated runways:

Stairways, elevated platforms, and elevated runways shall be equipped with suitable handrails or guardrails.

§45.2-922. B.

Walkways, ramps, stairways, and ladders:

Elevated stairways, elevated ramps, stairways, and ladders shall be of substantial construction and toe boards shall be provided.

§45.2-922. C.

Proximity of mining to gas and oil wells and vertical ventilation holes:

Any operator who plans to remove coal or extend mining within 500 feet to any gas or oil well and vertical ventilation hole shall file with the Chief notice of mining to take place. The operator shall not extend or remove any coal in any mine closer than 200 feet to any gas or oil well or a vertical ventilation hole. A petition must be filed for approval of the Chief to conduct mining activities closer than 200 feet to a well or a vertical ventilation hole.

§45.2-939.

A. QUESTIONS FOR REVIEW

1. Q. What is an "agent"?
   A. Any person assigned by the operator with the responsibility for the operation of all or part of a mine or the supervision of the miners in the mine.

§45.2-501.

2. Q. Who authorizes certified persons to hold a certificate to perform certain tasks?
   A. Board of Coal Mining Examiners.

§45.2-522.

3. Q. What is an "operator"?
   A. Any person who operates, controls, or supervises a mine or any independent contractor performing services or construction at such mine.

§45.2-501.

4. Q. What is a surface coal mine?
   A. Surface coal mine - Means (i) the pit and other active and inactive areas of surface extraction of coal; (ii) on-site preparation plants, shops, tipples, and related facilities appurtenant to the extraction and processing of coal; (iii) surface areas for the transportation and storage of coal extracted at the site; (iv) impoundments, retention dams, tailing ponds, and refuse disposal areas appurtenant to the extraction of coal from the site; (v) equipment, machinery, tools, and other property used in, or to be used in, the extraction at the site; (vi) private ways and roads appurtenant to such area; (vii) the areas used to prepare a site for surface coal extraction activities. A site shall commence being a surface coal mine upon the beginning of any site preparation activity other than exploratory drilling or other exploration activity that does not disturb the surface, and shall cease to be a surface coal mine upon completion of initial reclamation activities.

§45.2-501.

5. Q. In what condition shall the highwall be maintained during mining operations?
   A. Free from overhanging material or loose rock.

30 CFR 77.1004 (b)

6. Q. What is the danger when gasoline is used to clean machinery?
   A. Danger of fire or explosion. A non-explosive cleaning agent should be used.

30 CFR 77.1112

7. Q. What parts of machinery and equipment shall be guarded?
   A. All exposed gears, belts, drive shafts, fans, etc. that are within seven feet of the floor.

§45.2-920. A.

8. Q. What shall a person do before getting on or off equipment?
   A. Any person getting on or departing equipment should notify the equipment operator to assure the equipment is stopped.

§45.2-915.D. E.

9. Q. What shall be provided on all stairs, walkways, and elevated platforms?
   A. Hand or guard rails and toe boards.

§45.2-922. B.

10. Q. What precaution shall be taken when men are required to work at the foot of a highwall?
    A. The highwall face shall be trimmed of all loose material.

30 CFR 77.1005(a)

11. Q. What shall be done before starting machinery?
    A. Signals or other means shall be used to make certain all persons are clear.

§45.2-916. D.

12. Q. What action shall be taken by the Surface Foreman when he discovers a fire that cannot be extinguished within thirty minutes?
    A. Notify the Chief by the quickest available means, providing all known information regarding the fire.

§45.2-913. B.

13. Q. After making repairs to machinery, what shall be done?
    A. All guards and shields shall be replaced before machinery is placed back into operation.

§45.2-920. C.

14. Q. When any machinery is raised for repairs, what shall be done?
    A. It shall be securely blocked.

30 CFR 77.405 A

15. Q. When men are required to do welding, torch cutting, grinding, breaking stones, etc., what precaution shall be taken?
    A. Safety goggles, face shields, or other effective eye protection shall be worn.

§45.2-906. A.

16. Q. How shall the bucket or blade of a shovel, dragline, bulldozer, or front-end loader be positioned when not operating?
    A. Shall be secured or lowered to the ground.

§45.2-924. B.

17. Q. What shall be done when you find men working in a hazardous area?
    A. Remove the men immediately, have the hazardous area roped off and marked with "Danger" signs until made safe.

§45.2-903. A.

18. Q. What time of year presents the greatest danger from highwalls?
    A. Winter and spring, due to freezing and thawing.

30 CFR 77.1004(a)

19. Q. What must an operator do before extending any workings closer than 500 feet to any gas or oil well or vertical ventilation hole?
    A. A notice shall be filed with the Chief to indicate that mining will take place within 500 feet of such areas.

§45.2-939. A.

20. Q. What must an operator do prior to extending any workings closer than 200 feet of any gas or oil well or vertical ventilation hole?
    A. A petition prescribing the procedures to be followed shall be submitted to and approved by the Chief.

§45.2-939.

21. Q. What are the duties of a Surface Foreman?
    A. Ensure compliance of all mining laws, that all machinery is operated and maintained in a safe working condition, and that employees work in a safe manner.

§45.2-703. A. B.

22. Q. What should be done before welding on tanks which have contained a flammable or combustible material?
    A. Precautions shall be taken such as, fill with water or render non-explosive by other means.

§45.2-914. K.

23. Q. Who requires certification of a Surface Foreman?
    A. Board of Coal Mining Examiners.

§45.2-520. A.

24. Q. What are the disadvantages of poor drainage in a surface coal mine?
    A. Roadways - haulage ways are harder to maintain and safe operation of equipment is difficult to maintain. Also, it increases the shock hazard where electricity is used.

§45.2-915. H.

25. Q. Should Surface Foremen be trained in first aid?
    A. Yes,-the surface foreman must receive a minimum of two hours first aid training during annual refresher training and at least three hours of first aid training during supervisory retraining.

§45.2-910

26. Q. What type of protection for the head and feet shall be worn by employees?
    A. Hard hats and hard-toed footwear.

§45.2-906. A.

27. Q. How should preparation plants, shops, and machinery be kept?
    A. Clean and orderly.

§45.2-907.

28. Q. What shall men wear where a danger of falling exists?
    A. Safety harness, lanyards, or lifelines.

30 CFR 77.1710

29. Q. What shall be done before performing maintenance work on equipment?
    A. Equipment shall be stopped and blocked against motion.

30 CFR 77.405

30. Q. What shall be done before working in a crusher?
A. The crusher shall be stopped and incoming power shall be de-energized, locked out and tagged.

§45.2-927. E.

31. Q. What must be done where mining operations raise an excessive amount of dust?
A. Water or other effective agent shall be used to allay the dust at its source.

§45.925. A.

32. Q. What shall not be permitted to accumulate excessively on equipment?
A. Coal dust and other combustible material.

§45.2-925. C.

33. Q. How should acetylene and oxygen cylinders be used and stored?
A. Handle cylinders carefully. It is extremely dangerous to allow gas cylinders to fall or be dropped. Cylinders should stand in a vertical position, well away from sparks and open flames. Cylinders should be kept in a storage rack and secured in place when not in use.

§45.2-914. L.

34. Q. How shall all mobile equipment be maintained?
A. In a safe operating condition.

§45.2-915. A.

35. Q. What shall be done before repairing or adjusting machinery?
A. Machinery should be stopped and blocked against movement.

30 CFR 77.405

36. Q. Where necessary to cross moving belts, conveyors, etc., what shall be provided?
A. Walkways properly guarded and secured, or other effective safe crossover facilities.

§45.2-915. C.

37. Q. After making repairs to machinery, what shall be done before being put back into operation?
A. All guards and shields which have been removed shall be put back into position.

§45.2-920. C.

38. Q. What safety equipment should be worn by jackhammer operators?
A. Hard-toed footwear, hard hats, eye and ear protection.

§45.2-906. A. and B.

39. Q. How should the employees of a mine be advised of company safety rules?
A. The rules should be explained at safety meetings and the employees should be instructed at the place of employment by the Surface Foreman, and a copy of the rules be posted in a conspicuous location or a copy provided to all miners.

§45.2-503

40. Q. How is an inexperienced person required to work until he is familiar with the dangers associated with his work?
A. Employees with less than six months of mining experience shall work with or under the direction of an experienced miner.

§45.2-501

41. Q. After an injury, what should be done before an injured person is moved?
A. First aid should be provided.

§45.2-911. A.

42. Q. How should the scene of a fatal accident be left?
A. Unchanged until an investigation is completed.

§45.2-556. A.

43. Q. Where should first aid equipment be kept?
A. In accessible places and in a dry and sanitary condition.

§45.2-909.

44. Q. What should be worn as head and foot protection?
A. Hard hats and hard-toe footwear.

§45.2-906. A.1.2.

45. Q. What protection shall be provided for the eyes when grinding, cutting, welding, or striking materials where particles may cause a hazard to the eyes?
A. Proper protective equipment such as safety glasses, goggles, welding helmet, etc.

§45.2-906. A.4

46. Q. What is the danger of loose clothing?
A. It may become caught in moving machinery.

§45.2-906. A.5

47. Q. How should illumination and signal lights be maintained?
A. In safe working condition.

30 CFR 77.207

48. Q. What protective devices should be used on gears, belts, and revolving parts of machinery?
A. Guards.

§45.2-920. A.1

49. Q. What protection shall be observed when reassembling a machine with dangerous or moving parts?
A. All guards and safety devices shall be replaced.

§45.2-920. C.

50. Q. What shall not be allowed to accumulate on machinery?
A. Oil, grease, and other combustible material.

§45.2-914. H.

51. Q. What shall be done with defective machinery or equipment?
A. It shall be removed from service until repaired.

§45.2-915

52. Q. What protective devices shall be provided for openings in floors or ground that present a falling hazard?
A. Guards or covers.

§45.2-922.

53. Q. How shall steps, landings, and platforms be maintained?
A. Free of oil, grease, ice, debris, coal and other stumbling hazards and maintained in good repair.

§45.2-922. C.

54. Q. Where should welders and torches not be used?
A. Where oil, grease, coal dust or other combustible material is present.

§45.2-914.

55. Q. What should mobile equipment operators do when starting a new work shift?
A. He should perform a pre-operational inspection while checking the mechanical condition of the truck especially the brakes, steering, lights, horn, tires, windshield wipers, and other safety devices.

§45.2-903.

56. Q. What kind of roadways should be provided in surface coal mines?
A. A hard, firm roadbed with sufficient clearance to allow passing where necessary.

§45.2-916.

57. Q. Where extremely dusty conditions are caused by equipment, what shall be done?
A. Water or other dust allaying agents shall be used to allay the dust.

§45.2-925.

58. Q. What dangers are encountered where extremely dusty conditions are permitted to exist along roadways and haulage roads?
A. Collision of equipment and equipment running over mine personnel.

§45.2-924.E

59. Q. What shall be installed where trucks are required to unload?
A. A-bumper block or guardrails of sufficient size to prevent the trucks from tipping over or other effective means to provide a safe dumping site.

§45.2-923. C.

60. Q. When approaching an extreme grade, what should truck drivers do?
A. He should bring his truck to a stop and shift into a lower gear so that he can keep his truck under full control at all times.

§45.2-916. C.

61. Q. What safety equipment shall be provided on all self-propelled mobile equipment?
A. Fire extinguisher.

§45.2-912

62. Q. What should be provided along roadways and haulage roads where embankments are located on one or both sides?
A. Adequate guardrails or berms shall be provided.

§45.2-923

63. Q. When necessary to raise truck beds for repairs, what shall be done?
A. The raised bed must be securely blocked.

30 CFR 77.405

64. Q. When necessary to dump material at a stockpile, what shall be done?
A. A means shall be provided so that the wheels of the truck cannot back over the edge of the stockpile or a person should be stationed at the stockpile to direct the equipment operator to prevent accidental backing over the edge of the stockpile.

§45.2-923

64. Q. When necessary to park trucks or other mobile equipment, what should be done?
A. Motor stopped, brakes set and parked in a manner to prevent accidental movement.

§45.2-915

65. Q. How shall mobile equipment brakes be maintained?
A. Mobile equipment brakes shall be maintained in a safe operating condition.

§45.2-915

66. Q. What equipment shall be provided on equipment when used at night?
A. When equipment is used on night shifts, they must be equipped with proper lights.

§45.2-917. F.

67. Q. What shall be done with company safety rules?
A. They shall be posted or each miner shall be provided a copy of such rules.

§45.2-503

68. Q. Who shall be in charge at all surface mines?
A. A certified Surface Foreman shall be in charge at all times when employees are working.

§45.2-520

69. Q. What is the requirement for emergency communications?
A. All surface operations shall maintain a communication system with the nearest point of medical assistance for use in emergency.

30 CFR 77.1701. A.

70. Q. What is the requirement concerning first aid training and first aid equipment?
A. All employees shall receive first aid training during annual retraining classes. Mine operators shall maintain an adequate supply of first aid equipment at the mine site.

§45.2-909

71. Q. How shall travelways at surface installations be designed?
A. A safe means of access shall be provided and maintained to all work areas.

§45.2-915

72. Q. What shall be worn when hazards to unprotected eyes exist?
A. Safety glasses, goggles, face shields, or other suitable eye protection shall be worn.

§45.2-906. A.3.

73. Q. What action must be taken by the Surface Foreman or mine operator when a serious accident or fatality occurs?
A. A report must be made to the Chief of Coal Mine Safety or his designated representative by the quickest available means.

§45.2-556

74. Q. What are the requirements concerning the use of alcohol, narcotics and drugs?
A. Intoxicating beverages and drugs shall not be permitted or used around any work area and any person under the influence of alcohol or drugs shall not be permitted on the mine site.

§45.2-505

75. Q. How shall crossovers, walkways, ramps, stairways, and ladders be constructed and maintained?
A. They shall be of substantial construction and maintained in good condition.

§45.2-922

76. Q. Should water and silt retaining dams that create a possible hazard to a surface work area require inspection?
    A. Yes. It must be assured that such dams are of substantial construction and require regular inspection when failure could present a hazard to a surface operation.

§45.2-619.A

77. Q. How must unattended or abandoned mine openings be guarded?
    A. The openings to unattended or abandoned mines shall be fenced off and posted with “No Trespassing” signs.

§45.2 -734

78. Q. When necessary to raise equipment for repairs, what shall be done?
    A. Equipment shall be securely blocked.

30 CFR 77.404. C.

79. Q. Who must examine the inactive areas of a surface mine immediately before employees are permitted to enter?
    A. A Surface Foreman

§45.2-903.J

80. Q. The Board of Coal Mining Examiners requires certification of persons whose duties and responsibilities require knowledge and skill in order to consistently protect:
    A. The health and safety of persons and property.

§45.2-520

V - EXAMINATIONS AND RECORD KEEPING FOR SURFACE OPERATIONS

Certain examinations at applicable surface operations must be made by a certified person. Three of the four examinations require testing for methane and oxygen deficiency. A person is deemed to be qualified if they are certified by the Board of Coal Mining Examiners as a Surface Foreman. The fourth is examining a surface work area at least once each shift by a certified foreman. A person certified as a Surface Foreman would be qualified to perform these tests.

A certified Surface Foreman is qualified to perform methane and oxygen deficiency tests when they have demonstrated and have been tested on these critical skills to Coal Mine Safety officials. Upon passing such examinations, a person is qualified to perform methane and low oxygen tests.

A person is qualified to make these four examinations if they have been tested and certified by the Board of Coal Mining Examiners.

Pre-operational examinations of all mobile equipment shall be conducted by an authorized person. Equipment defects affecting safety shall be recorded and reported to the mine operator or his agent.

GAS DETECTION TRAINING

When conducting gas detection training you are requested to do a thorough review with the individual the following:

- The properties of mine gases, including discussions on specific gravity & effects of temperature and pressure.
- The list of mine gases with emphasis on methane, oxygen, hydrogen, and carbon dioxide and carbon monoxide.
- Proper procedures for taking a gas test. NOTE: "Hands On" participation by student.
- When and where gas tests are required.
- Procedures when methane is detected in a working place.
- Calibration of gas detection instrument. NOTE: "Hands On" participation by students.
- Duties and responsibilities as a miner under Mine Safety Act.

 **§45.2-846**

 **§45.2-847**

 **§45.2-848**

 **§45.2-849**

PROPER PROCEDURES FOR TAKING A GAS TEST

√ Check instrument for mechanical condition. (per manufacturers recommendation)

√ Check battery for proper voltage level. (per manufacturer's recommendation)

√ Check mechanical "zero". (per manufacturer's recommendation)

√ Calibrate (per manufacturer's recommendation) – must be calibrated monthly and more often if needed.

√ Conduct test for methane by activating detector and reading concentrations 12" from mine roof, face, and floor in the area being examined.

√ Avoid holding methane detectors in a bleeder for extended periods of time as this will render the sensor defective.

√ When higher concentrations of methane have been encountered, calibrate your detector as soon as possible.

√ Avoid synthetic fuels when conducting methane checks since these materials can affect readings and damage sensors.

√ Protect methane detectors from water and other adverse environmental conditions.

METHANE TESTS ARE REQUIRED

Prior to energizing equipment in and in-by the last open crosscut

Prior to taking equipment into working place and at 20-minute intervals

Prior to cutting and welding and continuously during this activity

Prior to and after detonation of explosives

During required examinations:

1. Pre-shift and on-shift examinations of working places.
2. Required examinations of immediate returns.
3. Places where methane is likely to accumulate.
4. Return side of each set of seals.
5. Weekly examinations of ventilation and bleeder system.

NOTE: Oxygen Deficiency Tests are required during examinations. If oxygen is below 19.5% by volume, ventilation must be improved. Oxygen tests should be made frequently when approaching or around old works.

WHEN METHANE IS DETECTED IN YOUR WORKING PLACE!!

- At 1% - stop operations, de-energize at the machine breaker and improve ventilation to reduce below 1%.

- At 1.5% or greater – stop operations, de-energize at the source (power center) and withdraw personnel from affected area expect for those needed to improvements to reduce methane levels.

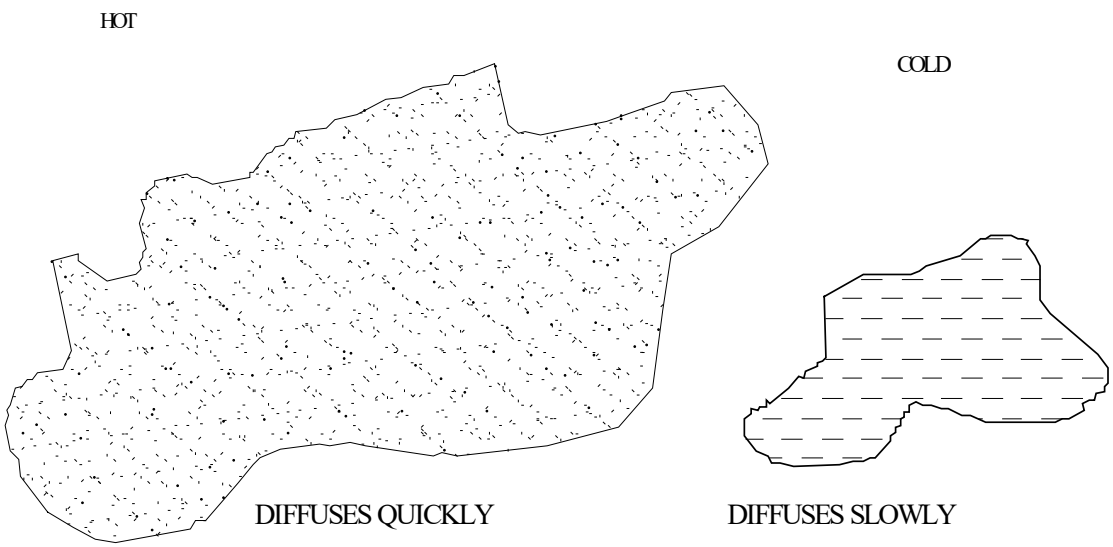
- At 5%+, notify your foreman promptly. This will be treated as an imminent danger situation which could require withdrawal from the mine. Do not attempt to move or ventilate high concentrations of methane unless you are designated to work to correct the problem and then only at the direction of certified persons and following precautions to avoid potential ignition sources.

Gas	Detection Methods	When to Test
Oxygen (O2)	Oxygen Indicator, Chemical Analysis	During any Examination
Nitrogen (N)	Gas Monitors, Chemical Analysis	Oxygen deficient atmosphere is suspected. Where Nitrogen is emitted from rock strata. Inactive areas where ventilation is inadequate.
Carbon Dioxide (CO_2)	Carbon Dioxide Detector, Multi-Gas Detector	After fire or explosion. Entering abandoned areas. Reopening sealed areas.
Methane (CH_4)	Methane Detector, Chemical Analysis	During any examination. When ventilation is disrupted. Entering abandoned works.
Carbon Monoxide (CO)	Carbon Monoxide Detector, Multi-gas Detector, Chemical Analysis	After fire or explosion. Entering abandoned areas. Reopening sealed areas.
Nitrogen Dioxide (NO_2)	Nitrogen Dioxide Detector, Multi-gas Detector, Chemical Analysis, Color	After mine fires or explosions. When diesel equipment is used. After detonation of explosives.
Hydrogen (H_2)	Multi-gas Detector, Chemical Analysis, Foam from Firefighting	After mine fire or explosion. Near battery charging stations. Water, steam, mist, or foam from firefighting.
Hydrogen Sulfide (H_2S)	Hydrogen Sulfide Detector	Poorly ventilated areas. During unsealing operations. Following mine fires or explosions.
Sulfur Dioxide (SO_2)	Multi-gas Detector, Chemical Analysis, Oder, Taste, Respiratory Tract Irritation.	When standing or stagnant water is disturbed
Heavy Hydrocarbons: Ethane (C_2H_6) Butane (C_2H_8) Propane(C_4H_{10})	Multi-gas Detector. Chemical Analysis	Following fires or explosions when methane is present. Following accidental penetration into adjacent oil or gas well casings.
Acetylene (C_2H_2)	Multi-gas Detector, Chemical Analysis, Odor.	Following a methane explosion in oxygen depleted air or from rupture/opening of acetylene tank.

Gas	Chemical Symbol	Specific Gravity	Explosive Range	Health Hazards	Solubility	Colors	Odor	Taste
Air	- -	1.000	- -	- -	- -	- -	- -	
Oxygen	0_2	1.1054	Supports combustion	Oxygen deficiency: 17% panting, 15% dizziness and headache, 9% unconsciousness, 6% death	Moderate	- -	- -	- -
Nitrogen		0.9674	- -	Asphyxiation (oxygen depletion)	Slight	- -	- -	- -
Carbon Dioxide	CO_2	1.5241	- -	Increases breathing rate. May cause death in high concentration.	Soluble	- -	- -	Acid in high concentration
Methane	CH_4	0.5545	5 to 15%	Asphyxiant (rare)	Slight	- -	- -	- -
Carbon Monoxide	CO	0.9672	12.5 to 74.2%	Highly toxic. Can be an asphyxiant.	Slight	- -	- -	- -
Nitrogen Dioxide	NO_2	1.5894	- -	Highly toxic. Corrosive effect on lungs.	Slight	Reddish brown	Blasting powder fumes	Blasting powder fumes
Hydrogen	H_2	0.0695	4.0 to 74.02%	May be asphyxiant. - - Highly explosive (oxygen depletion).	- -	- -	- -	
Hydrogen Sulfide	H_2S	1.1906	4.3 to 45.5%	Highly toxic. Can be an asphyxiant.	Soluble	- -	Rotten eggs	Sweetish
Sulfur Dioxide	SO_2	2.2678	- -	Highly toxic. Can be an asphyxiant.	Highly	- -	Sulfurous	Acid (bitter)
Ethane	C_2H_6	1.0193	3.0 to 12.5%	Asphyxiant (rare)	Slight	- -	- -	- -
Propane	C_3H_8	1.5625	2.12 to 9.35%	Asphyxiant (rare)	Slight	- -	"Carry" in high concentrations	- -
Butane	C_4H_{10}	2.0100	1.86 to 8.41%	Asphyxiant (rare)	Slight	- -	"Carry" in high concentrations	- -
Acetylene	C_2H_2	0.9107	2.5 to 80%	Only slightly toxic. Asphyxiant (rare)	Only slight	- -	- -	Garlic

Effects of Temperature and Pressure on Gas

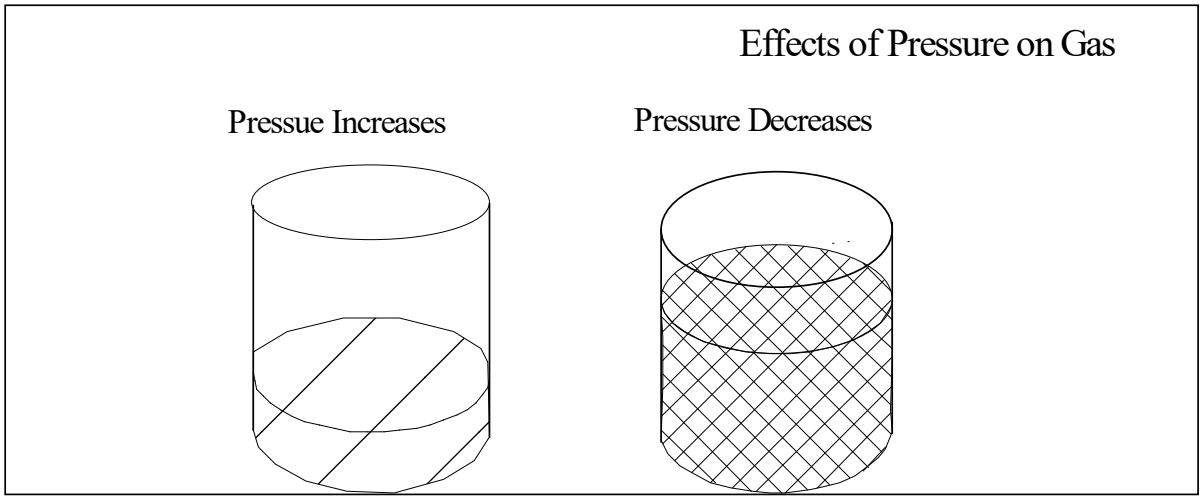
Effects of Temperature on Gas



temperature increases - gas expands
temperature decreases - gas contracts

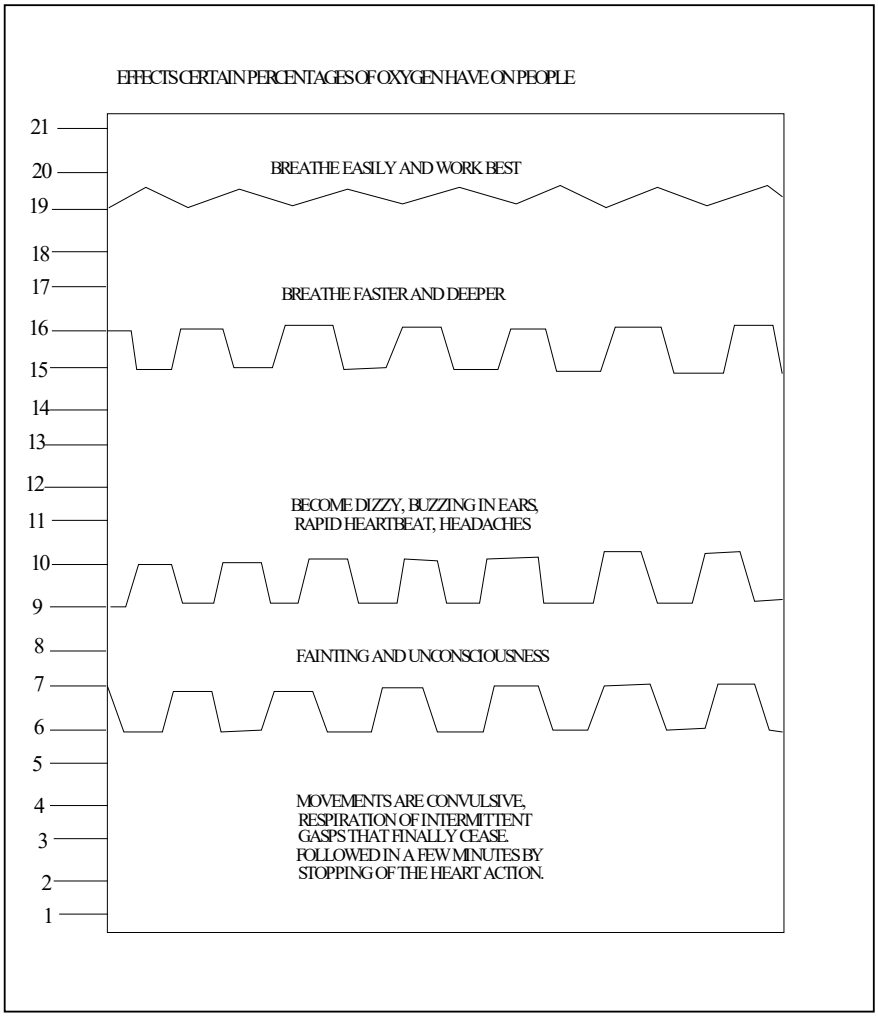
pressure increases - gas contracts
pressure decreases - gas expands

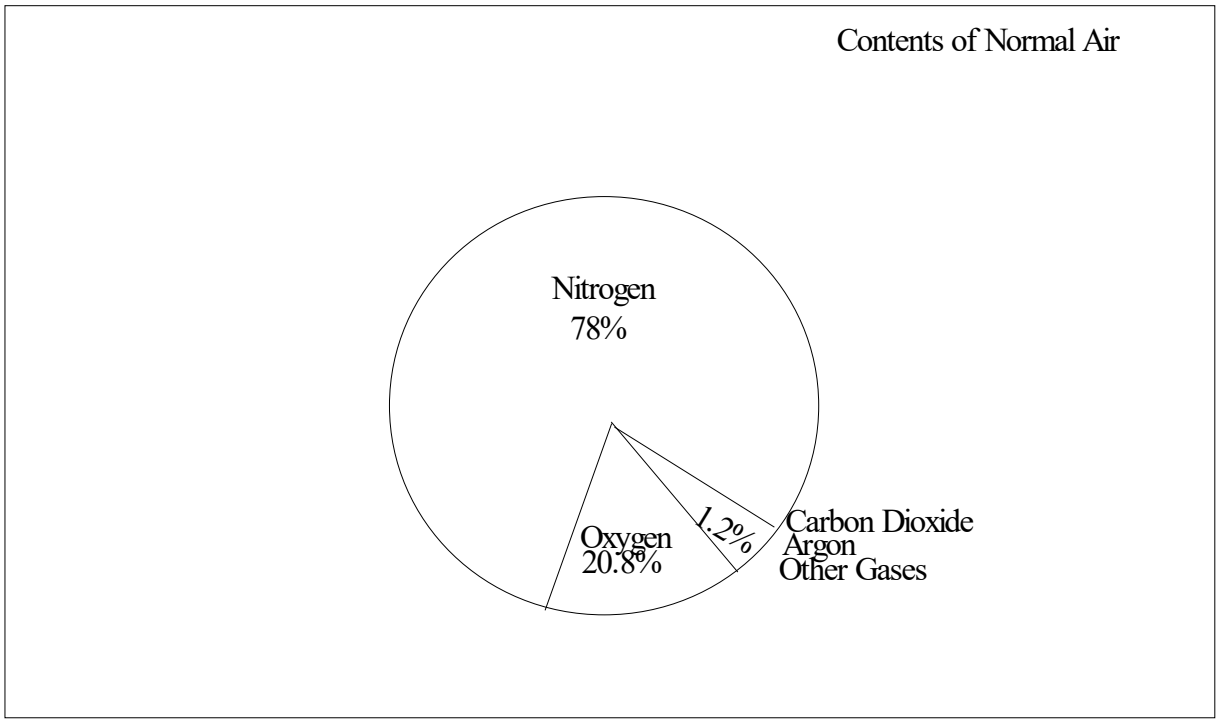
Effects of Pressure on Gas

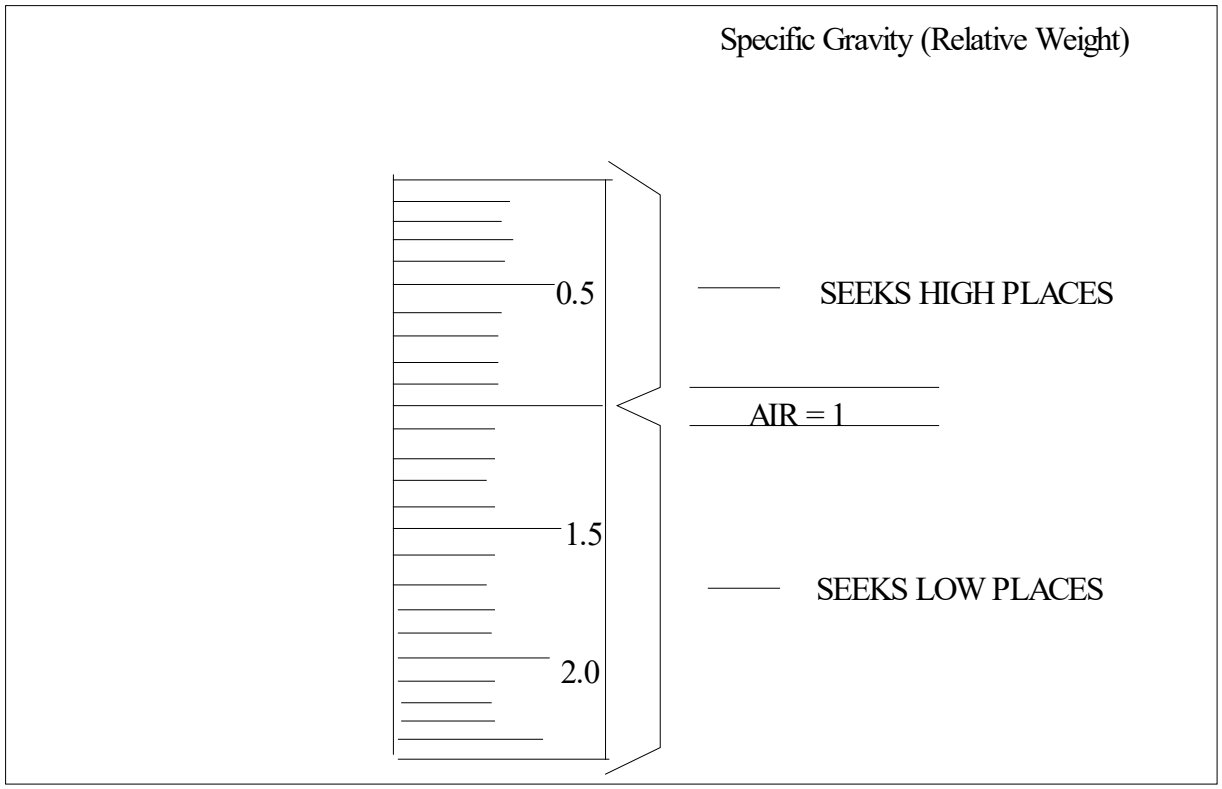


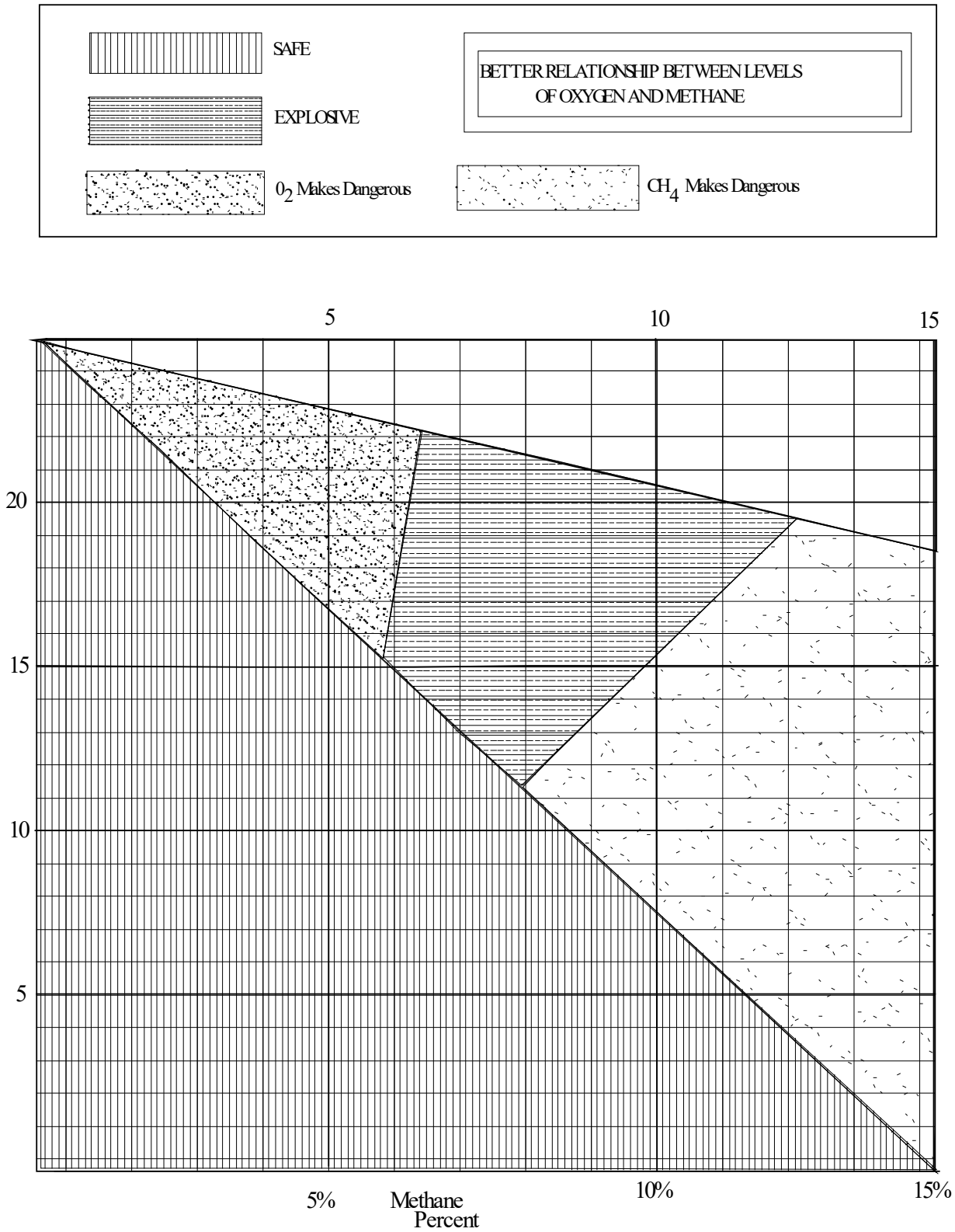
EFFECTS OF TOXIC GAS DEPEND ON:

1. CONCENTRATION
2. TOXICITY
3. LENGTH OF EXPOSURE




Contents of Normal Air
Nitrogen
78%
Oxygen
20.8%
1.2%
Carbon Dioxide
Argon
Other Gases


Specific Gravity (Relative Weight)
0.5
SEEKS HIGH PLACES
AIR = 1
1.5
SEEKS LOW PLACES
2.0


SAFE
EXPLOSIVE
0_2 Makes Dangerous
BETTER RELATIONSHIP BETWEEN LEVELS OF OXYGEN AND METHANE
CH_4 Makes Dangerous
5
10
15
20
15
10
5
5%
Methane Percent
10%
15%

B. TESTS FOR METHANE IN SURFACE INSTALLATIONS

Tests for methane in surface installations, enclosures or other facilities in which coal is handled or stored shall be conducted by a certified person using an approved device. These tests shall be made at least once each shift and immediately prior to any work in which welding, cutting, or open flame is used.

§45.2-903

C. TESTS FOR METHANE AND OXYGEN DEFICIENCY AT AUGER MINING OPERATIONS

1. Tests for methane and oxygen deficiency shall be made at the collar of the hole when an auger penetrates an abandoned or mined out area of an underground mine.

§45.2.-937. A.

2. A Pre-shift and at least once during each coal producing shift, a certified person shall inspect the face of all highwalls to at least twenty-five feet on both sides of the auger operation. Also, frequent checks shall be made after heavy rainfall and during freezing/ thawing conditions.

§45.2-936. A. B.

D. QUESTIONS FOR REVIEW

1. Q. What type of tests shall be made when an auger hole penetrates an abandoned or mined out area of an underground mine?
   A. Tests for the presence of methane and oxygen deficiency.

§45.2-903.

2. Q. What examinations shall be made during auger mining?
   A. The face of highwalls for a distance of twenty-five feet in both directions shall be pre-shift examined and at least one examination during each coal-producing shift.

§45.2-936.

3. Q. What precaution shall be taken by a Surface Foreman after a heavy rainfall or during the freezing-thawing season at an auger mining operation?
   A. Frequent examinations for a distance of 25 feet in both directions shall be conducted to detect loose material, an unstable highwall or other unsafe condition.

§45.2-936.

4. Q. What shall be the duty of Surface Foremen when a highwall with loose material exists within 25 feet from the auger?
   A. The workers shall be removed, and such hazard or unsafe condition shall be corrected before work is resumed.

§45.2-934.

5. Q. Who is authorized to make on-shift examinations of a surface coal mine?
   A. A certified Surface Foreman designated by the mine operator.

§45.2-903.

6. Q. The pre-shift and on-shift examination results, conditions found and corrective action taken shall be recorded in what type of book?
   A. The daily record book in which information is recorded with ink or indelible pencil.

§45.2-904.

7. Q. Who shall conduct on-shift examinations of work areas including pit, auger, thin seam, and highwall miner operations?
   A. Surface Foreman.

§45.2-903. A.

8. Q. Who shall conduct pre-shift examinations for certain hazardous conditions designated by the Chief?
   A. Surface Foreman.

§45.2-903. C.

9. Q. Who shall conduct pre-operational examinations of all mobile equipment?
   A. An authorized person.

§45.2-903. B.

10. Q. Who shall conduct daily examinations at mine refuse piles where miners are working?
    A. An authorized person.

§45.2-903.D

11. Q. Who shall conduct weekly examinations of silt retaining dams?
    A. A qualified person designated by the operator.

§45.2-619. A.

12. Q. How often shall methane tests be conducted in surface installations, enclosures or other facilities in which coal is handled or stored?
    A. Once each production shift.

§45.2-903. G.

13. Q. Who shall conduct methane tests in surface installations, enclosures, or other facilities in which coal is handled or stored?
    A. An authorized person certified to make gas tests.

§45.2-903.G

14. Q. What test must be conducted before any activity involving welding, cutting, or open flame is to be conducted in surface installations where coal is stored?
    A. Methane.

§45.2-903. G.

15. Q. How often shall electrical equipment and wiring be inspected for safe operating condition?
    A. Once a month.

§45.2-903. H.

16. Q. How often shall fire extinguishers be examined?
    A. At least once every six months.

§45.2-903. I.

17. Q. Who shall examine inactive areas of surface mines for hazardous conditions immediately before miners are permitted to enter such areas?
    A. Surface Foreman.

§45.2-903. I.

18. Q. Who shall inspect electric equipment and wiring?
    A. Certified electrical repairman.

§45.2-935.

19. Q. How often shall a certified electrical repairman inspect auger, highwall and thin seam mining electric equipment and wiring to assure safe operation condition?
    A. At least once each week.

§45.2-935.

20. Q. How often shall a functional check on methane monitors on equipment be made?
    A. Once each production shift.

§45.2-935.

21. Q. How often shall methane monitors on electrical face equipment be calibrated?
    A. Weekly.

§45.2-935.

22. Q. Who shall inspect the face or highwalls before auguring operations begin?
    A. A person certified as a Surface Foreman.

§45.2-936.

23. Q. What distance shall the Surface Foreman examine the face of highwalls during periods of heavy rainfall or freezing/thawing during auguring operations?
    A. Twenty-five (25) feet in both directions.

§45.2-936.

24. Q. Who shall record hazardous conditions detected during an on-shift examination of auguring operations?
    A. By the certified Surface Foreman performing the examination.

§45.2-903. A.

25.Q. Where shall the actual methane readings taken during an on-shift examination be recorded?
A. In a mine on-shift examination record book.

§45.2-904. B.

26. Q. Who shall maintain and sign the daily on-shift examinations record book?
A. The Surface Foreman that conducted the examinations.

§45.2-904. C.

27. Q. Who shall record, read and sign the reports entered into the daily on-shift examinations record book?
A. The Surface Foreman shall record and sign. The mine operator or his agent shall read and countersign the record book, if different than the Surface Foreman.

§45.2-904.

28. Q. What shall be done with natural gas pipelines on permitted surface mine areas?
A. The gas pipelines shall be identified and conspicuously marked.

§45.2-903. E.

29. Q. When shall pre-shift examinations be conducted of the locations of gas pipelines?
A. When active workings are approaching within 500 feet of such pipelines unless otherwise approved by the Chief.

§45.2-903. E.

VI - GROUND AND HIGHWALL CONTROL

A safe and efficient ground control plan must incorporate standards for the safe control of highwalls, pit areas, and spoil banks. All surface operations shall establish and follow a ground control plan to ensure a safe work area. These ground control standards shall be consistent with prudent engineering design to provide highwall and bank stability including benching to obtain a safe overall slope.

The Surface Foreman must be constantly alert for loose material or other unsafe conditions and take immediate action to correct these known hazards. A foreman must provide concentrated efforts for observing and correcting unsafe conditions that develop after blasting operations or unstable conditions that occur during the freezing-thawing time of year.

A major responsibility of a Surface Foreman is eliminating all unsafe ground conditions promptly or else the workers must be withdrawn and that area shall be posted with danger signs.

A. COAL MINE SAFETY LAWS OF VIRGINIA

Safe control of highwalls, pit areas and spoil banks:

All surface operators shall establish and follow a ground control plan for the safe control of all highwalls, pits, and spoil banks. The mining methods must utilize prudent engineering for work area design to ensure highwall and spoil bank stability.

§45.2-934.

Loose and unstable material:

Loose hazardous material shall be stripped for a safe distance from the top of pits or highwalls.

§45.2-934.

Scaling highwalls:

Hazardous areas shall be scaled from a safe location prior to performing any work in those areas. A safe means shall be provided to correct these hazards. Only those men necessary to correct unsafe conditions shall be allowed near or under dangerous highwalls. Special safety precautions shall be taken when correcting known hazards.

§45.2-934.

Benches:

The width and height of benches shall be governed by the type of equipment used and the operation to be performed.

30 CFR 77.1003

Ground control inspection and maintenance:

Highwalls, banks, benches, and terrain sloping into the working areas shall be examined after every rain, freeze or thaw and after blasting. Overhanging highwalls and banks shall be taken down and other unsafe ground conditions shall be corrected promptly or the area shall be dangered off.

§45.2-934.

Examinations of working areas:

The Surface Foreman should make various examinations including on-shift, post blasting and as frequently as necessary to provide safe working conditions.

§§45.2-903. and 45.2-936.

B. QUESTIONS FOR REVIEW

1. Q. During periods of heavy rainfall or intermittent freezing/thawing, how often shall the Surface Foreman examine the face of highwalls of auguring operations?
   A. As often as necessary to ensure safe work areas.

§45.2-936. A.

2. Q. For what distance shall the face of all auger mining highwalls be inspected by a Surface Foreman before any auguring operation is begun?
   A. Twenty-five feet in both directions.

§45.2-936. A.

3. Q. What must be done with loose material above the site of auger mining before any work is begun in the area?
   A. The loose material must be removed.

§45.2-936. B.

4. Q. Who shall not be allowed in areas where hazardous highwall or unsafe pit conditions exist?
   A. Employees and other persons **not** involved in correction of the condition shall be removed.

§45.2-934. C.

5. Q. Who is authorized to enter an auger hole?
   A. No person.

§45.2-938.

6. Q. What must be done before auger holes are abandoned?
   A. Auger holes must be blocked with highwall spoil or other suitable material.

§45.2-938. B.

7. Q. What must be provided on auger machines which are exposed to highwall hazards?
   A. Operator coverage capable of preventing injuries to workers from falling material.

§45.2-938. C.

8. Q. What is the purpose of a ground control plan?
   A. To provide standards for the safe control of all highwalls, pits, and spoil banks.

§45.2-934. A.

9. Q. What shall be done with loose material on a highwall?
   A. It shall be removed for a safe distance.

§45.2-934. A.

10. Q. How shall highwalls be scaled?
    A. Highwalls shall be scaled from a safe location.

§45.2-934. A.

11. Q. Who shall correct unsafe conditions?
    A. Only those personnel necessary to correct the unsafe condition under the direction of the Surface Foreman.

§45.2-934. C.

12. Q. What factors shall govern the width and height of benches?
    A. The mining method, type and size of equipment being used.

§45.2-934. A.

13. Q. Who shall examine the work areas for unsafe conditions?
    A. The Surface Foreman.

§45.2-903.

VII - LOADING, HAULAGE, AND DUMPING

The safe use and operation of equipment requires thorough training and indoctrination. A lack of effective training and not being familiar with the operation of equipment are the most common causes of operator injuries. Employees should never be assigned to operate equipment or other job tasks until they have been thoroughly trained in safe operating procedures and informed of all hazards associated with that job.

The Surface Foreman must ensure that only trained, authorized persons are allowed to operate equipment.

All mobile equipment should be inspected for safety defects before such equipment is put into operation.

Most loading, haulage, and dumping accidents can be prevented by closer supervision by the foreman, compliance with all laws and safety rules, maintaining equipment in a safe operating condition, proper instruction of each employee about the dangers of his job, safety meetings, and safety motivation created among employees.

The safe operation of equipment requires operators to maintain full control of such equipment at all times. Speed and operational techniques must be consistent with roadways, grades, clearance, visibility and overall work area conditions.

The Surface Foreman must provide equipment maintained in safe operating condition and a safe work area to protect workers from injury.

Authorized persons to operate equipment:

Machinery and equipment shall be operated only by authorized persons.

§45.2-501.

Equipment operators must be thoroughly trained and indoctrinated:

Employees should not be assigned to operate equipment or perform any other job duties until they have been thoroughly trained in safe operation techniques and all the dangers associated with that particular job.

§45.2-501.

Traffic rules, signals, and warning signs posted:

Traffic rules, signals, and warning signs should be standardized and posted at each work site for the safety of all workers.

Equipment operating speeds, conditions and practices shall be prudent and consistent with conditions of the roadways, grades, clearance, visibility, traffic, type and use of equipment.

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

Mobile equipment shall be operated under full power control at all times and mobile equipment operators shall have full control of equipment while in motion.

Before starting or moving equipment, an equipment operator must be certain by signal or other means that all other persons are in the clear.

§§45.2-916. and 45.2-923.

Restriction of transportation of persons:

No person shall be permitted to ride or be otherwise transported on or in:

A. dippers, shovels, buckets, forks and clamshell.
B. the cargo space of dump trucks;
C. outside cabs or beds of heavy equipment.
D. chain, belt or bucket conveyors unless specifically designed to transport persons.

§45.2-918.

Transportation of persons:

Mantrip vehicles or other conveyors used to transport persons to and from work areas shall not be overcrowded so as to present a hazard. All persons must be able to ride in a safe position.

§45.2-915.

Loading and haulage equipment:

Loading and haulage equipment must have the following safety measures:

A. Cab windows shall be of safety design, kept in good condition, and clean for visibility.
B. Mobile equipment shall be equipped with adequate brakes and park brakes.
C. Mobile equipment shall be provided with an audible back-up warning device.
D. Mobile equipment shall be equipped with an audible warning device and headlights.
E. Seatbelts shall be maintained in all mobile equipment that is required to have rollover protective structures;
F. Rubber-tired or crawler mounted equipment shall have rollover protective structures as required by 30 CFR 77.403A.

§45.2-917.

Loading and haulage work area requirements:

A. Ramps and dumps shall be of solid construction, ample width, ample clearance and head room, and shall be kept reasonably free of spillage.
B. Berms or guards shall be provided on the outer bank of elevated haulage roads.
C. Berms, bumper blocks, safety hooks or other effective means shall be provided to prevent and overturning at dump locations.
D. Dumping locations and haulage roads shall be kept reasonably free of water, debris, and spillage. Water, debris or spilled material which create hazards to moving equipment shall be removed.

§45.2-923.

Inspection of all mobile equipment:

Pre-operational examinations of all mobile equipment shall be conducted by an authorized person.

§45.2-903.

Equipment safety defects:

Equipment defects affecting safety shall be corrected before the equipment is used.

§45.2-903.

Electrical equipment:

Electrical equipment and wiring shall be inspected as often as necessary but at least once a month.

§45.2-935.

Equipment safety defects recorded:

Equipment defects affecting safety shall be reported to and recorded by the surface foreman.

§45.2-904.

Loading and haulage equipment operation:

Equipment operating speeds, conditions and characteristics shall be prudent and consistent with conditions of the roadways, grades, clearance, visibility, traffic, type and use of equipment.

Safe operating guidelines:

A. Vehicles shall follow at a safe distance; passing shall be limited to areas of adequate clearance, and visibility.

B. Mobile equipment operators shall have full power control of the equipment while in motion.

C. Operators shall not get on or off moving equipment and shall sit facing the direction of travel.

D. Before starting or moving equipment, an equipment operator must be certain by signal or other means that all persons are in the clear.

E. Dust control measures shall be taken to ensure visibility of equipment operators.

F. Dippers, buckets, loading booms or other heavy loads shall not be swung over cabs of haulage equipment until the driver is out of the cab and in a safe location unless trucks are designed specifically to protect drivers from falling material.

G. Mobile equipment shall not be left running unattended; the wheels should always be turned into a bank or berm or blocked with the brakes set.

H. Lights, flares, or other warning devices shall be posted when parked equipment creates a hazard for other vehicles.

§45.2-916.

Position of dippers, buckets, scraper blades, and similar movable parts:

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

§45.2-924.

Equipment to be hauled:

Equipment which is to be hauled shall be loaded and protected so to prevent sliding and spilling.

§45.2-924.

Moving equipment between work areas:

Equipment which is to be hauled between work areas shall be loaded and protected to prevent sliding and spillage.

Equipment shall be secured in the travel position when moving between work areas.

§45.2-924.

Towing equipment:

Tow bars shall be used to tow equipment and a safety chain shall be used in conjunction with each tow bar.

§45.2-924.

Railroad operations safety:

Railroad cars shall be kept under full control at all times by the car dropper.

30 CFR 77.1607

Car droppers:

Persons shall wear safety belts when dropping railroad cars.

30 CFR 77.1607

Good housekeeping:

Good housekeeping shall be practiced in and around buildings, shafts, slopes, yards and other areas of the mine. Such practices include cleanliness, orderly storage of materials, and the removal of possible sources of injury, such as stumbling hazards, protruding nails, broken glass, and material that may potentially fall or roll.

§45.2-907.

Employees boarding moving equipment:

Employees shall not get on or off moving equipment except that trainmen may get on or off slowly moving trains.

§45.2-915.

Water, debris or spilled materials:

Water, debris or spilled material which create hazards to moving equipment shall be removed.

§45.2-915. H.

Public and permanent railroad crossings:

Public and permanent railroad crossings shall be posted with warning signs or signals or guarded when trains are passing.

4 VAC 25-40-1590.1

Defective equipment removed from service:

Defective equipment removed from service shall be tagged to prohibit further use until repairs are completed.

§45.2-904.

Dumping facilities:

Dumping locations and haulage roads shall be kept reasonably free of water, debris, and spillage.

§45.2-923. D.

Ground support at dumpling locations:

When the ground at dump locations could fail to support the weight of a loaded truck, trucks shall stop a safe distance back from the edge of the dump.

§45.2-923.

Danger from falling material at dump locations:

Adequate protection shall be provided at dumping locations where persons may be endangered by falling material.

§45.2-934.

Use of truck spotters:

If truck spotters are used, they shall be well in the clear while trucks are backing into position to dump.

§45.2-924.

Use of truck spotters at night:

Truck spotters shall use lights at night to direct backing, dumping operations.

§45.2-924.

Housekeeping:

Good housekeeping shall be practiced in and around buildings, shafts, slopes, yards, and other areas of a mine.

§45.2-907.

Noxious fumes:

Areas, where painting operations or other work tasks create noxious fumes, shall be well ventilated.

§45.2-908.

Fire-fighting equipment:

Each mine shall be provided with suitable fire-fighting equipment.

§45.2-912.

First aid equipment, training, and attention to injured persons:

Each mine shall have adequate first aid supplies as prescribed by the Chief and prompt attention shall be given to any injured person. Adequate facilities shall be made available for transporting injured persons to a hospital when necessary.

§§45.2-909. and 45.2-911.

A. QUESTIONS FOR REVIEW

1. Q. What is required prior to operating equipment?
   A. Employees shall be thoroughly trained in safe operation techniques and all dangers associated with that particular job.

§45.2-501.

2. Q. Who shall be the only employees assigned to operate equipment?
   A. Only trained and properly authorized persons.

§45.2-501.

3. Q. What shall be done with special safety rules?
   A. They shall be posted at each job site or a copy given to each employee.

§45.2-503.

4. Q. Who is allowed to ride in a dipper, bucket or outside the operator's compartment of equipment?
   A. No one is allowed to ride in these areas nor is anyone allowed to ride on a conveyor not designated to transport persons.

§45.2-918.

5. Q. What is required for equipment operators to maintain good visibility?

   A. Cab windows shall be of safety design, kept in good condition and clean.

§45.2-917.

6. Q. What type brakes shall mobile equipment be equipped with?
   A. Adequate brakes capable of stopping any vehicle under a full load and park brakes.

§45.2-917.

7. Q. What type of warning device shall be provided on mobile equipment?
   A. An audible automatic back-up warning device.

§45.2-917.

8. Q. What shall be used on mobile equipment when such equipment is used during periods of low visibility or darkness?
   A. Lights shall be provided on both ends.

§45.2-917.

9. Q. What shall be required of ramps and dump points?
   A. Ramps and dumps shall be of solid construction with ample clearance and shall be kept reasonably free of excess spillage.

§45.2-923.

10. Q. What is required at dump stations?
    A. Berms or guards shall be provided on the outer bank.

§45.2-923.

11. Q. What is required at dump stations?
    A. Berms, bumper blocks, safety hooks, or similar means shall be provided to prevent overtravel or overturning.

§45.2-923.

12. Q. Who shall inspect mobile equipment?
    A. Mobile equipment shall be inspected by an authorized person.

§45.2-903.

13. Q. What shall be done with equipment found to have safety defects?
    A. Equipment with safety defects shall be removed from service. All mobile equipment shall be maintained in a safe operating condition.

§45.2-915.

14. Q. What type of record is required for reporting equipment safety defects?
    A. Equipment defects shall be recorded in a book required for that purpose.

§45.2-904.

15. Q. What shall govern the speed and operating conditions of equipment?
    A. Condition of roadways, grades, clearance, visibility, traffic, type and use of equipment.

§45.2-916.

16. Q. How shall mobile equipment be operated?
    A. Mobile equipment operators shall maintain full power control of their equipment at all times.

§45.2-916. C.

17. Q. What precaution shall be taken prior to starting or moving equipment?
    A. An equipment operator must be certain by signal or other means that all persons are clear.

§45.29-16. D.

18. Q. What shall be done with excessive dust at surface operations?
    A. Dust control measures shall be taken so as not to obstruct the visibility of equipment operators.

§45.2-924. E.

19. Q. Where should firefighting equipment be located?
    A. At electrical stations, flammable material storage areas, fueling stations, and on all self-propelled mobile equipment.

§45.2-912. B.

20. Q. What safety precautions shall be taken for mobile equipment when left unattended?
    A. The engine should be off, wheels turned toward a bank or berm or wheels blocked and brakes set.

§45.2-915. F.

21. Q. What shall be provided on mobile equipment to ensure adequate stopping control?
    A. Adequate brakes and parking brakes.

§45.2-917. C.

22. Q. What shall be provided for rubber tired, or crawler mounted equipment to protect operators in the event of rollover?
    A. Rollover protective structure as required in 30 CFR 77.403.A. and §45.2-917. A.

23. Q. In what condition shall mobile equipment cab windows be maintained?
    A. Cab windows shall be of safety design, kept in good condition and clean.

§45.2-917. D.

24. Q. What shall be done when equipment is parked that may create a hazard for other passing vehicles?
    A. Lights, flares, or other warning devices shall be posted.

§45.2-924. G.

25. Q. What shall be the position of dippers, buckets, scraper blades or similar movable parts when the equipment is not in use?
    A. The dippers, buckets, etc. shall be secured or lowered to the ground.

§45.2-924. B.

26. Q. What safety precaution shall be taken when hauling equipment?
    A. Equipment shall be loaded and protected so as to prevent sliding or spillage.

§45.2-924. C.

27. Q. What safety precautions must be followed when moving equipment between work areas?
    A. The equipment shall be secured in the travel position.

§45.2-924. C.

28. Q. What safety devices shall be used when towing equipment?
    A. Tow bars and safety chains.

§45.2-924. D.

29. Q. What safety device shall railroad car droppers wear when dropping cars?
    A. Safety belts.

30 CFR 77.1607 X

30. Q. If an operator is planning to start a belt conveyor and cannot see the entire length of the conveyor, what are two ways that he must ensure everyone is clear?
    A. (1) Make a visual examination of the conveyor area or;
    (2) Sound an audible warning device designated to warn all persons that the conveyor is about to start.

30 CFR 77.1607 Z-BB

31. Q. What shall be done with water, debris, or spillage that could create a hazard to moving equipment?
    A. Such hazards shall be removed.

§45.2-923. D.

32. Q. What shall be done with defective equipment removed from service for repairs?
    A. It shall be tagged to prohibit further use until repairs have been completed. Equipment safety defects shall be corrected before the equipment is used.

§45.2-935.

33. Q. What safety precaution should be taken by haulage vehicle operators when approaching an extremely steep grade?
    A. Equipment operating speed shall be prudent and consistent with roadway conditions and equipment manufacturer recommendations.

§45.2-916. A.

34. Q. What action shall be taken by mobile equipment operators when approaching a steep curve?
    A. They shall maintain full power control of the equipment and sound the horn.

VIII - DRILLING AND DUST CONTROL

The drilling operation at surface operations can be very hazardous unless the equipment is operated and maintained in a safe operating condition. Employees should never be assigned to duties in a drill area until they have been thoroughly trained regarding the hazards of drilling.

Variations of different drilling equipment present unique operating conditions and circumstances. Even though different drilling operations have various safety procedures, most general drilling safety is very similar.

Drill site safety requires a very thorough inspection of the work area. In addition to a safe working area, the safety of drilling is also dependent upon equipment that is free of defects.

Inspection of the drilling area:

The drilling area shall be thoroughly inspected for hazards before starting drilling operations.

30 CFR 77.1009

Equipment defects:

Equipment defects affecting safety shall be reported to the Surface Foreman and such defects shall be corrected before the equipment is used.

30 CFR 77.1007

Equipment inspection:

Equipment that is to be used shall be inspected each shift by an authorized person that is usually the equipment operator.

§45.2-903.

Relocation of drills:

Drill steel, tools, and other equipment shall be secured, and they must be placed in a safe position when a drill is being moved from one drilling area to another.

30 CFR 77.1008

Location of drill helper:

A drill helper's location shall be known at all times when the drill is being moved.

30 CFR 77.1009

Augers and drill stems in motion:

Drill crews and others shall stay clear of augers or drill stems that are in motion. Persons shall not pass under or step over a moving stem or auger.

30 CFR 77.1009

Attendance of drill operator:

Drills shall be attended at all times while in operation.

30 CFR 77.1009

Location of drill operators:

Workers shall not drill from any position that could prevent their access to the control levers or from any location of insecure footing.

Workers shall not be on a mast while the drill bit is in operation unless a safe platform is provided, and safety belt is used.

30 CFR 77.1009

Large drill holes:

Drill holes large enough to constitute a hazard shall be covered or guarded.

§45.2-938

Use of vertical drills:

Drillers should not be permitted to work under suspended tools.

30 CFR 77.1009

Collaring holes with hand-held drill:

Starter steel shall be used when collaring holes with hand-held drills.

30 CFR 77.1010

Jackhammer or jackleg drill operation:

Workers operating or working near jackhammer or jackleg 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.

30 CFR 77.1012

Movement of hand-held air drill:

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

30 CFR 77.1012

Removal of detachable drill bits:

Bit wrenches or bit knockers shall be used to remove detachable bits.

30 CFR 77.1012

Fire-fighting device:

At least one portable fire extinguisher shall be located on the drilling machine.

§45.2-912.

A. QUESTIONS FOR REVIEW

1. Q. Who shall be assigned to operate a drilling machine?
   A. Only a properly trained and authorized person.

§45.2-501.

2. Q. Who shall inspect the drill area?
   A. A Surface Foreman.

§45.2-903.

3. Q. Who shall inspect a drilling machine?
   A. An authorized person, usually the drill operator that has been assigned this task by the operator or his agent.

§45.2-903.

4. Q. What shall be done with a defective drilling machine?
   A. It shall be taken out of service until the appropriate repairs have been made.

§45.2-903.

5. Q. Do safety defects discovered on a drilling machine have to be recorded?
   A. Yes. All equipment defects affecting safety must be reported to the operator
   or Surface Foreman and a permanent record made of this information.

§45.2-904.

6. Q. What safety precautions shall be taken when a drilling machine is being relocated to another area?
   A. Drill steel, tools, and other equipment shall be secured and they must be placed in a safe location.

30 CFR 77.1008

7. Q. Where should the drill machine helper be stationed while a drill machine is being moved?
   A. The drilling helper's position shall be known by the drill operator at all times.

30 CFR 77.1009

8. Q. Where shall drill crews and others station themselves while augers and drill stems are in motion?
   A. Drill crews and others shall stay clear of augers or drill stems that are in motion.

30 CFR 77.1009

9. Q. Should drilling machines be attended at all times while in operation?
   A. Yes. Drill machines must be attended at all times while operating.

30 CFR 77.1009

10. Q. Where shall a drill machine operator position himself while drilling?
    A. He shall not drill from any position that could prevent access to the control levers or any location of insecure footing.

30 CFR 77.1009

11. Q. What safety precaution shall be taken with large drill holes that constitute a hazard?
    A. The holes shall be covered or guarded

§45.2-938.

12. Q. What is required for safety when using a churn or vertical drill?
    A. Drillers should not be permitted to work under suspended tools.

30 CFR 77.1009

13. Q. What is required when collaring holes with hand-held drills?
    A. Starter steel must be used.

30 CFR 77.1010

14. Q. Shall drill operators attempt to steady their drill steel when collaring holes?
    A. Drill operators shall not hold the drill steel while collaring holes or rest their hands on the chuck or centralizer while drilling.

30 CFR 77.1010

15. Q. How shall jackhammer or jackleg operators position themselves while drilling?
    A. They shall position themselves so that they will not be struck by falling material or lose their balance if the drill steel breaks or sticks.

30 CFR 77.1012

16. Q. What safety precaution shall be taken when hand-held air drills are being moved?
A. Air shall be turned off and bled from the air hoses before hand-held air drills are moved.

30 CFR 77.1013

17. Q. What type of firefighting device is required to be on a drilling machine?
A. At least one portable fire extinguisher.

§45.2-912.

IX - FIRE PREVENTION AND CONTROL

There is nothing in the mining industry that is more dangerous and disastrous than fires; therefore, fire protection is a critical requirement of all mining regulatory agencies.

Proper fire protection requires a very conscientious effort by everyone from the employee all the way to top management. This is probably one of the more neglected areas for potential hazards; but should the need arise, there is nothing more important that a fire extinguisher that operates properly.

Adequate fire protection requires both training and personnel organization should a fire emergency occur. A great deal of emphasis should always be placed on fire prevention as "a pound of prevention is worth tons of cure" in this crucial emergency. There is nothing more important in safety training than where to obtain and how to operate a fire extinguisher.

Good "common sense safety" plays a major role in fire prevention and control. These common sense safety ideas could range from not using an open flame near known flammable material to not smoking near explosives.

Fire prevention is a part of everyone's job and deserves a part of safety training as does all the other required areas of safety training.

Fire protection training:

Employees shall be instructed and trained annually in the use of firefighting facilities and equipment.

30 CFR 77.1100

Fire-fighting equipment:

Surface mines shall provide a suitable supply of fire-fighting equipment adequate for the size of the mine.

§45.2-912.

Smoking or open flame:

No person shall smoke or use an open flame:

A. where flammable liquids or fluids are stored, transported, handled or used;
B. where oil or grease are stored, handled or transported; and
C. where an arc or open flame may cause a fire or explosion.

§45.2-914.

Warning signs:

Signs warning against smoking or open flame should be posted in plain sight where a fire or explosion hazard exists.

§45.2-914.

Flammable liquid storage:

Areas surrounding flammable liquid storage tanks, electrical substations and transformers shall be kept free of combustible material for twenty-five feet in all directions.

§45.2-914.

Accumulations of combustible material:

Combustible materials, grease, lubricants, paints or flammable liquids shall not be allowed to accumulate where they could create a fire hazard.

§45.2-914.

Fueling internal combustion engines:

Internal combustion engines, except diesels, shall be shut off and stopped before being refueled.

§45.2-914.

Oxygen and acetylene cylinder storage:

Oxygen and acetylene cylinders shall not be stored near oil, grease or other flammable material.

§45.2-914.

Oxygen and acetylene gauge safety:

Gauges and regulators shall be kept clean and free of oil, grease or other combustible material.

§45.2-914.

Ventilation of battery charging stations:

Battery-charging stations shall be located in well-ventilated areas.

§45.2-914.

Belt conveyor slippage:

Belt conveyors in locations where fire would create a hazard to personnel shall be provided with switches to stop the drive pulley automatically in the event of breakage or other accident.

§45.2-914.

Fire extinguisher requirements:

Fire extinguishers shall be:
A. Of the appropriate type for the type of fire.
B. Adequate in number.
C. Replaced immediately if any discharge is made from a fully charged extinguisher.
D. Approved by the Underwriters Laboratories.

30 CFR 77.1108

Quantity and location of fire-fighting equipment:

A. Surface structures such as preparation plants shall be provided with portable fire extinguishers equal to the potential fire hazard.

B. Mobile equipment including trucks, front-end loaders, bulldozers, portable welding units and augers shall be equipped with at least one portable fire extinguisher.

C. Portable drills, sweepers, and scrapers should also be equipped with a portable fire extinguisher.

D. Two portable fire extinguishers shall be provided:
1. accessible to each above ground or unburied combustible liquid storage station;
2. accessible to the transfer pump of each buried combustible liquid storage tank;
3. on each vehicle transporting explosives and blasting agents.

30 CFR 77.1109

Fire-fighting equipment examination and maintenance:

Fire-fighting equipment shall be maintained in a usable and operative condition.
Fire extinguishers shall be examined at least once every six months.
The month and date of examination shall be recorded on a permanent tag attached to the extinguisher.

30 CFR 77.1110

Fire extinguisher at welding, cutting or soldering location:

One portable fire extinguisher shall be provided at each location where welding, cutting or soldering with arc or flame is performed.

30 CFR 77.1112

Welding, cutting or soldering with arc or flame near combustible materials:

Suitable precautions shall be taken to ensure that smoldering metal, open flames, or sparks do not result in a fire.

30 CFR 77.1103

Flammable liquid storage:

Small quantities of flammable liquids shall be stored in appropriately labeled safety cans.

30 CFR 77.1103

A. QUESTIONS FOR REVIEW

1. Q. How often shall employees be instructed and trained in the use of fire-fighting equipment?
   A. Annually, usually conducted during annual retraining or a safety meeting.

30 CFR 77.1100

2. Q. How much fire-fighting equipment shall be available at surface operations?
   A. An adequate supply suitable to the size of the operation and suitable for the conditions present.

§45.2-912.

3. Q. Should surface operations establish an escape and evacuation plan in case of fire?
   A. Yes. All employees shall be instructed on escape and evacuation plans, fire alarm signals and procedures to follow in case of fire.

30 CFR 77.1101

4. Q. What type of signs shall be posted where a fire or explosion hazard exists?
   A. Warning signs against smoking or open flames shall be posted in plain sight.

30 CFR 77.1102

5. Q. How shall the area surrounding flammable liquid storage tanks, electrical substations, and transformers be kept?
   A. This area shall be kept free of combustible material for twenty-five feet in all directions.

§45.2-914.

6. Q. What safety precautions shall be taken for accumulations of combustible material such as grease, lubricants, paints or other flammable material?
   A. They shall not be allowed to accumulate where they could create a fire hazard.

§45.2-914.

7. Q. What restriction is required when refueling internal combustion engines?
   A. They shall be stopped and shut off except for diesel equipment.

§45.2-914.

8. Q. What safety precaution shall be observed when storing oxygen and acetylene cylinders?
   A. They shall not be stored near oil, grease or other flammable material.

§45.2-914.

9. Q. What is required when not using oxygen and acetylene gauges or regulators?
   A. Gauges or regulators shall be disconnected when not in use and they shall be kept free of oil, grease or combustible material.

§45.2-914.

10. Q. Why is it important to ventilate a battery charging station?
    A. Hydrogen, a very explosive gas, is liberated presenting both a fire and explosion hazard when adequate ventilation is not present.

§45.2-914.

11. Q. Why are belt conveyors required to have a slippage switch?
    A. So as to automatically stop the drive pulley in the event of excess slippage where a fire would create a hazard to personnel.

30 CFR 77.1107

12. Q. How many fire extinguishers are required to be kept at any surface operation?
    A. Adequate in number for the type of operation and equipment.

§45.2-912.

13. Q. How many fire extinguishers are required on mobile equipment?
    A. At least one portable fire extinguisher.

§45.2-912.

14. Q. What stations require two portable fire extinguishers?
    A. 1. Accessible to above ground or unburied combustible liquid storage station.
       2. Accessible to the transfer pump of each buried combustible liquid storage tank.
       3. On vehicles transporting explosives or blasting agents.

30 CFR 77.1109

15. Q. How often shall fire extinguishers be examined?
    A Once every six months.

30 CFR 77.1110

16. Q. What is required to be present at welding or cutting locations?
A. At least one portable fire extinguisher.

30 CFR 77.1112

17. Q. What safety precaution shall be taken when welding or cutting near combustible material?
A. Suitable precautions shall be taken to ensure that smoldering metal or sparks do not result in a fire or explosion.

30 CFR 77.1112

18. Q. Where shall small quantities of flammable liquids be stored?
A. In appropriately labeled safety cans.

30 CFR 77.1102

19. Q. What type of protection shall be provided for electric motors, switches, lighting fixtures and controls?
A. Dust-tight construction enclosures.

§45.2-914.

20. Q. What type examinations shall be made after every blasting operation?
A. Examinations for fire and other hazardous conditions that may have been created by the blast.

§45.2-914.

21. Q. Where shall fire hazard warning signs be posted?
A. At structures or areas used for storage of flammable materials.

§45.2-914.

22. Q. What must fuel lines be equipped with?
A. Shut-off valves at the source.

§45.2-914.

23. Q. Who shall report by the quickest available means a serious fire?
A. The operator or his agent.

§45.2-913.

24. Q. What must be provided at or near all electrical stations?
A. A fire extinguisher.

§45.2-912.

X - EXPLOSIVES AND BLASTING

The blasting segment of any operation can be dangerous unless all manufacturer warnings and instructions furnished with the appropriate products are complied with. In addition, all Federal, State and Local regulations shall be strictly complied with at all times.

Explosive materials are dangerous and must be handled following approved rules, regulations, and safety procedures. Explosives by themselves do not cause accidents but thoughtless or careless acts of people spell disaster. All explosive products should be treated with extreme care because improper treatment could result in serious injury from premature detonation.

Good blasting safety programs take time and careful planning if they are to achieve a goal of zero explosive accidents.

Blasting safety includes proper blasting practices that consist of safe storage, transportation, handling, and the use of explosives.

Personnel designated to handle explosives should be trained in the use of explosives. They must know “what is” and “is not” safe.

The Surface Foreman and Surface Blaster must jointly use their skills and judgment in promoting and supervising explosive safety. The most important ingredients of explosive safety are the quality of the people and the quality of their training.

The general precautions that apply to most blasting operations are covered under three major areas:

Personnel Training
Pre-blast Precautions
Returning to the Blast Area

Personnel

1. The most important ingredients in any good blasting safety program are the quality of the people handling explosives and the quality of their training.

2. A blaster's most important responsibility is safety, and the safety of every blasting operation depends on its people.

3. Personnel who use, handle or detonate explosives shall be experienced persons who understand the hazards involved. Trainees shall do work only under the direct supervision of and in the immediate presence of experienced persons.

4. Good habits are developed only by constant training in performing a task in the correct manner.

5. Blasting operations shall be under the direct control of the Surface Foreman and Surface Blaster.

6. The major safety factor for successful blasting depends on the attitude of the surface foreman who is in constant contact with the blasting crew.

7. Safety meetings provide an opportunity to convey knowledge and expertise to mining personnel.

8. It is important for management to actively promote safety.

9. Safety rules must be explained and enforced while rewarding publicly on outstanding safety performance.

10. The size of the blasting crew should always be as small as possible compatible with the size of the job.

11. The transportation of explosive products must be conducted in a safe and properly designed vehicle.

12. The total responsibility for "tying in" the blast, testing the blast system, and firing on a predetermined signal must rest with the Surface Blaster in cooperation with Surface Foreman.

13. "Clearing the Blast Area" must be the responsibility of the Surface Blaster and the Surface Foreman. The blast area should be cleared in an orderly manner based upon a predetermined plan to eliminate dangerous conditions. Ample warning shall be given before blasts are fired.

14. Only the proper attitude toward safety by every member of the crew will prevent accidents. Safety is the individual responsibility of every person for his personal safety and the safety of his co-workers.

30 CFR 77.1303

Preblast Precautions

1. Most explosive accidents that occur during loading are caused by excessive abuse of explosive materials.

You should always follow these safety rules when loading boreholes:

a. Never use drill steel to force explosives into a blocked borehole.

b. Never tamp a primer or booster.

c. Never use metal tamping poles.

d. Never use any techniques that generate heat, friction, galvanic current or impact which can initiate explosive charges.

e. Always avoid loading explosives and performing other work near the loaded holes when an electrical storm is approaching.

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f. Clear the blast area of all unnecessary personnel and place stemming in a convenient location in the blast area before any explosives are delivered for loading.

g. Clean out all boreholes before moving the drill and recheck all boreholes prior to loading explosives.

h. Always ensure that the initiator is embedded in the primer properly and cannot fall out.

i. Use the right explosive for the job.

j. Never load explosives in boreholes that may have become hot from drilling. Explosives may ignite and detonate upon contact with hot boreholes.

2. Guarding the blasting area:

a. A pre-determined plan should be used for clearing the blast area of mine personnel and equipment.

b. Precautions must be taken to ensure the safety of personnel and the general public.

c. When safeguarding a blast site, never assume that the blast area is clear; make absolutely certain that it is clear.

3. Important safeguards for surface blasts:

   a. Guards should be posted to block all roads to the blast area.

   b. Observe and avoid loose highwalls, even those out of the blast area.

   c. Never allow anyone to be in front of the blast.

   d. A signaling system known to all personnel shall be a part of the blasting program.

   e. All guards and personnel shall remain in their positions until the "all clear" signal is sounded.
   f. Be certain that the blaster and all mining personnel are in a safe location prior to firing any shot.

30 CFR 77.1303

Returning to the Blast Area

1. In all blasting operations, the Surface Foreman and Surface Blaster in charge shall jointly make certain that a shot did not produce any unforeseen hazards before returning equipment and personnel to the blast area.

2. The Surface Foreman and Surface Blaster must take the following precautions when returning to a recently blasted area:

   a. Wait at least 15 minutes or until the post blast fumes, dust, and smoke levels are safe.

   b. Inspect the blast area for undetonated explosives, especially in the broken rock pile or any boreholes which may have misfired.

   c. Recognize and correct any hazardous conditions created by the blast.

3. Blast sites should never be re-entered immediately after a blast because of dangerous noxious gases and dangerous rock or slide hazards until the area is thoroughly examined.

4. Misfires are unlikely if the blaster follows proper methods of preparing primers, priming, loading, stemming, and firing. General precautions for handling misfires are as follows:

   a. Do not allow unnecessary personnel to return to the blast area. Do not sound the all-clear signal and be certain that all guards remain at their positions. Disconnect the blasting unit and shunt the leads of the firing line, if applicable. Allow sufficient time, generally no less than sixty minutes, for burning

explosives to detonate.

b. Do not start any work in the area of misfires except work necessary to remove the misfire hazard.

c. Investigate and correct the misfire only with experienced personnel.

d. Carefully examine the misfire holes and the immediate area to determine how many holes and how much explosives misfired. All undetonated explosives lying in the shot area should be picked up, handled, and stored properly while awaiting manufacturer disposal.

e. Under most conditions, the safest way to dispose of a misfire is to detonate if there is sufficient rock burden around the boreholes to prevent flyrock hazards. If the misfire electrical detonator leg wires or other detonation circuitry is accessible, test with a blaster's galvanometer or explosive manufacturer recommended manner and fire if a complete circuit is shown. Never pull on the leg wires of electric blasting caps because vigorous pulling could detonate a detonator. If electric detonators fail again, if the wires cannot be reached or if non-electric initiators are being used, detonate the hole with a fresh primer.

f. If stemming must be removed, generally the safest way is with water or air. It is not safe to use a metal tool, spoon or auger for digging out stemming.

g. When all the stemming has been removed and it is not possible to remove the explosives, insert a new primer and fire the charge.

h. Never return to a reprimed and refired shot area for at least one hour to allow dangerous "hang fires" or burning explosives to detonate.

i. If repriming and refiring the misfire cannot be accomplished, the least dangerous method to remove the explosives from the borehole is with a water jet.

j. Never drill in or near a borehole that has previously been loaded with explosives.

5. The Surface Blaster and Surface Foreman should be the first people to return to a shot area to make a thorough inspection for any misfired holes and for falling rock hazards. A thorough inspection should be made of the face, bench, and muck pile for undetonated explosives and rock hazards or other unstable conditions that could create an unsafe workplace.

§45.2-934.
30 CFR 77.1303

Explosives and blasting:

Detonators and explosives other than blasting agents shall be stored in magazines.

Detonators shall not be stored in the same magazine with explosives.

Magazines other than box type shall be:

1. Located in accordance with the current American Table of Distances.
2. Located away from power lines, fuel storage and other possible sources of fire.
3. Constructed substantially of noncombustible material or covered with fire-resistant material.
4. Reasonably bullet-proof.
5. Electrically bonded and grounded if constructed of metal.
6. Made of non-sparking materials on the inside.
7. Provided with adequate and effectively screened ventilation openings.
8. Kept securely locked when unattended.
9. Posted with suitable danger signs so located that a bullet passing through the face of the sign will not strike the magazine.
10. Used exclusively for storage of explosives or detonators and kept free of extraneous material.
11. Kept clean and dry in the interior and in good repair.
12. Unheated, unless heated in a manner that does not create a fire or explosion hazard.

§45.2-931.

Box-type magazines:

Box-type magazines shall be constructed only with noncombustible material inside and equipped with covers or doors. Box-type magazines shall be constructed strongly of two-inch hardwood or equivalent.

§45.2-931.

Storage of explosives:

Cases or boxes containing explosives shall not be stored in magazines on their ends or sides, and not stacked more than six feet high.

30 CFR 77.1301 G

Storage of ANFO blasting agents:

ANFO blasting agents shall be physically separated from other explosives, safety fuse, or detonating cord approved for storage in the same magazine and stored in such manner that oil does not contaminate the other explosives, fuse or detonating cord.

30 CFR 77.1301 H

Vehicles used to transport explosives:

Vehicles used to transport explosives other than blasting agents shall have substantially constructed bodies, no sparking metal exposed in the cargo space, and shall be equipped with suitable sides and tail gates and explosives shall not be piled higher than the sides or end.

30 CFR 77.1302

Vehicles containing explosives or detonators:

1. Shall be maintained in good condition and shall be operated at a safe speed and in accordance with safe operating practices;

2. Shall be posted with proper warning signs;

3. Shall not transport materials or supplies in the cargo compartment except for secured non-sparking equipment used expressly for the handling of such explosives.

30 CFR 77.1302 B

Transportation of explosives and detonators:

1. Explosives and detonators shall be transported in separate vehicles unless separated by four inches of hardwood or the equivalent.

2. Explosives or detonators shall be transported promptly without undue delay in transit.

3. Explosives and detonators shall be transported at times and over routes that expose a minimum number of people;

4. Only the necessary attendants shall ride on or in vehicles containing explosives or detonators.

5. Vehicles shall be attended while loaded with explosives or detonators.

6. Parked vehicles containing explosives shall have brakes set, the motor shut off and blocked securely against rolling.

7. Vehicles containing explosives or detonators shall not be taken to a repair garage or shop for any purpose.

30 CFR 75.1311

Handling and use of explosives:

1. Explosives and detonators should be kept apart until the very last moment before use.

2. They shall always be handled carefully, kept dry, and protected from shock, friction, fire or sparks.

3. Wires of electric detonators shall be kept shunted and protected from electric currents or electrically charged surfaces.

4. All explosives and detonators unused at the end of each day shall be returned to proper storage.

30 CFR 77.1303

A. QUESTIONS FOR REVIEW

1. Q. Where shall detonators and explosives be stored?
   A. In separate approved magazines.

§45.2-931. A.

2. Q. How shall surface magazines be constructed?
   A. Constructed of noncombustible material, fire resistant, bullet proof, weather proof and equipped with screened ventilators and locked securely when not in use.

§45.2-931. B.

3. Q. Can tools or other extraneous material be stored in a magazine containing explosives or detonators?
   A. No, never store anything in an explosive magazine except explosives.

§45.2-931.- I.

4. Q. What type electrical circuit shall be provided for metal surface magazines?
   A. They must be grounded.

30 CFR 77.1301 C5

5. Q. What are the requirements for a box-type magazine?
   A. Constructed of two inch hardwood or the equivalent and equipped with covers or doors.

§45.2-931. D.

6. Q. How shall cases or boxes of explosives be stored in a magazine?
   A. Cases or boxes shall not be stored on their ends or sides nor stacked more than six feet high.

30 CFR 77.1301.G

7. Q. How shall ANFO blasting agents be stored?
   A. ANFO shall be physically separated from other explosives, fuse and detonating cord that is not classified as an explosive.

30 CFR 77.1301.H

8. Q. How shall vehicles used to transport explosives be constructed and maintained?
   A. Substantially constructed, well ventilated with no exposed metal in the cargo space and equipped with suitable sides and tail gate. Explosives shall never be piled higher than the sides or end of the vehicle.

30 CFR 77.1302

9. Q. What are other requirements for vehicles used in transporting explosives?
   A. Maintained in good condition, operated at a safe speed, posted with warning signs.

30 CFR 77.1302 B

10. Q. How shall explosives and detonators be separated when transported on the same vehicle?
    A. By four inches of hardwood or the equivalent.

30 CFR 77.1302 E

11. Q. What safety precaution must be taken when the transportation of explosives begins?
    A. They shall be transported promptly without undue delay in transit and transported over routes and at times that expose a minimum number of people.

30 CFR 77.1302 F

12. Q. Shall vehicles be attended while loaded with explosives?
    A. Yes, at all times.

30 CFR 77.1302 I

13. Q. Who is authorized to ride on vehicles transporting explosives?
    A. Only the necessary attendants.

30 CFR 77.1302 B

14. Q. What action shall be taken when parking vehicles carrying explosives?
    A. The motor must be shut off, brakes set and the wheels blocked securely against rolling.

30 CFR 77.1302 J

15. Q. When can a vehicle loaded with explosives stop at a gas station or repair shop?
    A. No. An explosives-carrying vehicle shall never stop at a gas station or repair shop.

30 CFR 77.1302 K

16. Q. Who is authorized to use or handle explosives?
    A. Only experienced persons who have been trained and understand the hazards of explosives.

30 CFR 77.1303 A

17. Q. What shall be done with damaged or deteriorated explosives?
    A. They shall be referred to the appropriate explosive manufacturer for proper disposal.

30 CFR 77.1303 D

18. Q. What shall be done with electric equipment before bringing explosives into the blast area?
    A. Electric equipment shall be de-energized.

30 CFR 77.1303 E

19. Q. When shall detonators and explosives be brought together during blasting operations?
    A. They shall be kept separated until charging of drill holes is started.

30 CFR 77.1303 F

20. Q. What shall be done to an area in which holes are ready to be fired?
    A. This area shall be guarded or barricaded and posted or flagged to prevent unauthorized entry.

30 CFR 77.1303 G

21. Q. What action shall be taken before blasts are fired?
    A. All personnel shall be accounted for and cleared from the blasting area and ample warning shall be given.

30 CFR 77.1303 H

22. Q. What special safety precautions shall be taken when blasting in close proximity to active underground operations?
    A. Mine officials shall be notified. The Surface Blaster and Surface Foreman shall observe all procedures necessary to secure the health and safety of the underground mine workers.

30 CFR 77.1303 J

23. Q. Shall drilling be conducted near a misfired hole?

A. Holes shall not be drilled where danger exists of drilling into (intersecting) a charged or misfired hole.

30 CFR 77.1303 K

24. Q. What tool shall be used to punch holes in an explosive cartridge?
A. Only wooden or other non-sparking tools.

30 CFR 77.1303 L

25. Q. What shall tamping poles be constructed of?
A. Wood or non-sparking material.

30 CFR 77.1303 M

26. Q. When and where shall primers be made up?
A. At the time of charging and as close to the blasting site as conditions allow.

30 CFR 77.1303 O

27. Q. What shall be done with detonating cord that has been kinked, bent or has other signs of physical damage?
A. It shall never be used.

30 CFR 77.1303 R

28. Q. What shall be done with fuses that have been kinked or bent sharply?
A. It shall never be used.

30 CFR 77.1303 S

29. Q. Are electric detonators from different manufacturers allowed to be used in the same shot?
A. No, this shall never be done.

30 CFR 77.1303 W

30. Q. What shall always be done with electric detonator leg wires until ready to hook up a shot?
A. They shall be kept shunted.

30 CFR 77.1303 Y

31. Q. How shall a completely wired electrical shot be checked before connecting to the blasting line?
A. They shall be tested with a blasting galvanometer and shall never be tested with an

electrician's volt-ohm meter.

30 CFR 77.1303 Z

32. Q. What is required for an electric blasting line?
A. They shall be properly supported, insulated, and kept in good repair.

30 CFR 77.1303 AA

33. Q. What shall be required for a blasting device?
A. They shall be suitable for the number of detonators to be fired.

30 CFR 77.1303 FF

34. Q. When shall the firing line be connected to the blasting unit?
A. Only when the shot is ready to be fired?

30 CFR 77.1303 Y-3

35. Q. What shall be done with misfires?
A. They shall be reported to the Surface Foreman immediately and shall be disposed of safely before any other work is performed in the blast area.

§45.2-932.

36. Q. How long should a person wait before re-entering a blast area where a misfire has occurred?
A. Always allow sufficient time for the detonation of burning explosives or in no case less than fifteen minutes.

§45.2-932. A.

37. Q. How long should a person wait to return to a blast area where a "burning hole" is suspected?
A. At least one hour and always allow sufficient time for burning holes to ignite.

30 CFR 77.1303 OO

38. Q. When shall a person enter an area where a blast has been initiated?
A. Only after concentrations of dust, fumes, and smoke have been reduced to safe limits.

30 CFR 77.1303 QQ

39. Q. What shall be done with unused explosives and detonators when charging operations are completed?
A. They shall be moved to a safe location.

30 CFR 77.1303 SS

40. Q. What shall be done when using electric detonators and the presence of static or stray current is suspected to be in the area?
    A. Charging shall be stopped immediately until these conditions are corrected.

30 CFR 77.1303 TT

41. Q. What shall be done when using electric detonators and you are warned of an approaching electrical storm?
    A. Charging shall be stopped and the workers withdrawn to a safe location.

30 CFR 77.1303 UU

XI - AUGER MINING

Auger mining must be planned and conducted by a mine operator to prevent hazards to underground mine workings located at or near such auger operations. Auger mining presents a serious hazard to underground operations located in the same area. The following are common underground safety hazards associated with auger mining:

Disruption of the ventilation system of an active underground mine.
Inundation hazards from surface water entering an active underground mine.
Damage to the roof and ribs of an active underground mine.
Intersection of auger holes with underground mine workings containing dangerous quantities of impounded water, methane or blackdamp (oxygen deficient air).

A Surface Foreman must always be alert for and correct all unsafe, unstable highwall conditions within close proximity to the auger site.

§45.2-936. B.

Auger equipment operation safety precautions:

All persons shall be kept clear of auger sections being swung into position.

No person, except when impractical to do otherwise, shall station themselves in direct line with a borehole during augering operations.

Adequate illumination shall be provided for night work.

§§45.2-919. and 45.2-938.

Blockage of abandoned auger holes:

Auger holes shall be blocked with highwall spoil or other suitable material before they are abandoned.

§45.2-938. B.

Inspection of highwalls near auger mining:

The face of all highwalls, for a distance of twenty-five feet in both directions, shall be inspected by a Surface Foreman before any augering operation is begun and at least once during each coal producing shift.

§45.2-936. A.- B.

Loose rock or unstable highwall condition:

All loose material shall be removed from above the auger site before anyone is allowed to begin work. Inspection results while observing and correcting these conditions shall be recorded daily.

§45.2-936. B.

Frequent inspection of highwall face during heavy rain or periods of freezing and thawing:

The face of all high walls, for twenty-five feet in both directions, shall be inspected frequently by a Surface Foreman during periods of heavy rainfall or intermittent freezing and thawing. These inspection results may be recorded.

§45.2-936. A.

Auger hole penetration of an abandoned or mined out area of an underground mine:

Tests for methane and oxygen deficiency shall be made by a competent person using approved devices when an auger hole penetrates an abandoned or mined out area of an underground mine.

If test results show evidence of methane or oxygen deficiency, then no further work shall be performed until the atmosphere has been made safe.

Internal combustion engines shall not be operated in the vicinity of an auger hole while methane and oxygen deficiency tests are being conducted.

§45.2-937.

Overhead protection for auger equipment:

Auger machines which are exposed to highwall hazards shall be provided with operator coverage to prevent injuries to workers from falling material.

§45.2-938.C

A. QUESTIONS FOR REVIEW

1. Q. Who shall inspect the highwall surrounding an auger operation?
   A. A Surface Foreman.

§45.2-936. A. – B.

2. Q. How far must the highwall on each side of an auger operation be inspected?
   A. At least twenty-five feet on both sides.

§45.2-936. A.

3. Q. When shall an auger operation be inspected?
   A. A Pre-shift examination must be conducted before any augering is begun and at least once during each coal production shift. These inspection results must be recorded.

§45.2-936. A.

4. Q. During what type special cases shall more frequent inspections be conducted?
   A. During periods of heavy rainfall or periods of intermittent freezing and thawing.

§45.2-936. A.

5. Q. When an auger penetrates an abandoned or mined out area of an underground mine, what type tests shall be made and by whom shall the tests be made?
   A. Tests for methane and oxygen deficiency shall be made at the collar of the hole by a qualified person using approved devices.

§45.2-937. A.

6. Q. What shall be provided for auger machine operators which are exposed to highwall hazards?
   A. Auger operator coverage which does not obstruct the view of the highwall and strong enough to prevent injuries from falling material.

§45.2-938. C.

7. Q. Who is allowed to work under an overhang or unstable highwall?
   A. No one is allowed to work in such hazardous location.

§45.2-936. B.

8. Q. What safety precaution shall be taken when connecting or disconnecting auger

sections under a highwall?
A. At least one person shall be assigned to observe for highwall movement.

§45.2-938. D.

9. Q. Who is allowed to pass under or over a moving auger where adequate crossing facilities are not provided?
A. No one.

§45.2-938. E.

10. Q. What safety precaution is required for visibility when augering at night?
A. Adequate illumination shall be provided for such work areas.

§45.2-919.

11. Q. What shall be done with auger holes before being abandoned?
A. They shall be blocked with highwall spoil or other suitable material.

§45.2-938. B.

12. Q. How long shall records of auger mining operations be kept?
A. One year.

§45.2-936. D.

13. Q. What should be done if oxygen deficiency is detected after penetrating an underground mine during auger operations?
A. No further work shall be performed until the atmosphere has been made safe.

§45.2-937. B.

14. Q. Who is allowed to enter an auger hole?
A. No person shall enter an auger hole.

§45.2-938. A.

15. Q. Where would internal combustion engines not be operated?
A. In the vicinity of an auger hole where methane and oxygen tests are being conducted or where methane or low oxygen has been detected.

§45.2-937. B.

XII – PERSONAL PROTECTION

This area deserves special attention because people have the most control over unsafe acts that result in damaging and sometimes disastrous personal injury. Personal protection covers a broad area that extends from safety training through emergency communications.

Safety programs, safety rules and safe work procedures all play a major role in the prevention of personal injury.

A Surface Foreman must always be constantly alert for unsafe conditions as well as unsafe acts and take the appropriate action in both areas. The foreman should particularly pay special attention to hazards in slips/falls and material storage/handling. These two areas account for the highest number of surface accidents.

Any safety program is only as good as the supervisor's safety performance and attitude. The foreman must always insist that the safe way is the best way and that a safe operation is an efficient, productive operation. A Surface Foreman must always make sure workers are equipped with, and use, proper protective equipment.

A safe operation will consist of sincere safety training, adequate safety equipment, and safety-oriented supervisors that provide the necessary personal protection equipment.

Safety instructions at surface operations:

Coal operators or agents should establish and maintain a safety program that includes training on safety regulations and work procedures to be followed at the mine site.

§45.2-503

Safety training:

New employees shall be thoroughly trained in safety regulations and safe work procedures. Inexperienced employees shall not be assigned to work duties until they have completed training in safe work procedures, company safety rules/policies and are familiar with State and Federal mine safety laws.

§§§45.2-503.; 45.2-522.; 45.2-910.

First aid training and equipment:

Each operator of a surface coal mine shall maintain an adequate supply of first aid equipment and ensure that mine personnel are trained to use such equipment.

§§45.2-909.; 45.2-910.

Company safety rules:

Company safety rules shall be posted for employee information, or a copy shall be provided to each employee.

§45.2-503.

Emergency communications:

Each operator of a surface operation shall establish and maintain a communication system from the mine to the nearest point of medical assistance.

30 CFR 77.1701 (a)

Emergency medical assistance:

Each operator of a surface operation shall make arrangements for medical assistance and emergency transportation for injured workers or persons in or around surface work areas.

§45.2-911.

Protective equipment and clothing requirements:

A. Suitable protective footwear shall be worn at surface coal mines.
B. A suitable hard hat shall be worn when in or around a plant or mine where falling objects may create a hazard.
C. Protective clothing, equipment, face shields, or goggles shall be worn when welding, cutting, breaking stone and at other times when hazards to the eyes exist.
D. Protective gloves shall be worn when handling materials that may cause injury to the hands; gauntlet cuffed gloves are prohibited from being used around moving parts of machinery.
E. Snug-fitting clothing shall be worn around moving parts or machinery.
F. Safety belts and lifelines shall be used where a danger of falling exists. A second person shall tend the lifeline.
G. A life jacket and lifeline shall be used where danger of falling into water exists.
H. Seat belts should be worn at all times when mobile equipment is in motion.

§45.2-906.

Training of newly employed inexperienced miners:

Employees with less than six months of mining experience should work under the direction of an experienced person.

§45.2-501.

Smoking prohibition:

No person shall smoke or use an open flame where a fire or explosion hazard could result.

§45.2-914.

Materials storage and handling safety precautions:

A. Materials shall be stored and stacked in a manner which minimizes stumbling or falling of materials hazards.
B. Hazardous materials shall be stored in approved and properly labeled containers.
C. Compressed oxygen and acetylene cylinders shall be secured in a safe manner.
D. Valves on gas cylinders shall be protected by covers when being transported and moved to a safe, secure location when not in use.
E. Workers shall stay clear of suspended loads.
F. Materials shall not be dropped from an elevator unless the drop area is guarded and sufficient warning has been given.
G. Workers shall not ride on loads being moved by cranes.
H. Substances that react violently or liberate dangerous fumes when mixed shall not be stored in a manner that they may come in contact with each other.
I. Fork-lift trucks shall be moved with the load in a low position, when possible and practical.

§§45.2-907. and 45.2-914

Newly employed, inexperienced miners:

Newly employed, inexperienced miners shall wear a distinctively colored hard hat (different in color than those hats worn by experienced miners). This distinctively colored hard hat shall be worn for at least one year from the initial date of employment.

30 CFR 77.1710

A. QUESTIONS FOR REVIEW

1. Q. What type of training shall newly employed, inexperienced employees receive?

   A. They shall be trained in state and federal laws and company safety rules/policies. Inexperienced employees shall also be trained in safe work procedures before being assigned to work duties.

   §§§4-2-503.; 45.2-522.; 45.2-910.

2. Q. Are surface operations required to have workers trained in first aid?
   A. Yes. First aid is a part of safety training, and an adequate supply of first aid equipment must be available for use in emergencies.

   §§45.2-909. and 45.2-910.

3. Q. Are surface operators required to provide emergency communications and emergency transportation should an employee become injured?
   A. Surface operators are required to maintain an emergency communication system and emergency transportation system.

   §45.2-911.

4. Q. Are persons required to wear protective footwear and hard hats when performing work where a falling object hazard exists?
   A. Yes.

   §45.2-906.

5. Q. What protective equipment shall be worn when welding, cutting, and when other eye hazards exist?
   A. Protective gloves, protective clothing, protective equipment, face shields or goggles.

   §45.2-906.

6. Q. What shall be worn when a person is working from an elevation where a fall hazard exists?
   A. Safety belt and lifeline with a second person tending the lifeline.

   §45.2-934. A.

7. Q. What shall be worn by equipment operators when mobile equipment is in motion?
   A. Seat belts.

§45.2-917. B.

8. Q. Why should good housekeeping be practiced with materials storage?
   A. To prevent stumbling and falling hazards.

§45.2-907.

9. Q. How shall oxygen and acetylene cylinders be stored?
   A. Secured in a safe manner with the gauges disconnected and protective covers in place.

§45.2-914. L.

10. Q. Should workers ever ride on loads moved by cranes or other equipment where a load is suspended?
    A. No.

§45.2-918.

11. Q. What type brakes shall be provided on mobile equipment?
    A. Park brakes and adequate braking systems to stop the equipment.

§45.2-917. C.

12. Q. What shall be done with locking rims on tires during inflation?
    A. An adequate means shall be provided to prevent hazards from the rims becoming loose and striking someone from the pressure of inflation.

§45.2-917. E.

13. Q. Should back up alarms be provided on mobile equipment?
    A. Yes, must be audible above surrounding noise.

§45.2-917. G.

14. Q. What shall be provided at surface structures, roads, paths, and walkways to provide illumination during night work?
    A. Lights.

§45.2-919. A. - B.

15. Q. What type hard hat shall be worn by newly employed, inexperienced miners?
    A. A distinctively colored hard hat that is different in color than those hats worn by experienced miners.

30 CFR 77.1710

16. Q. How long shall newly employed, inexperienced miners wear distinctively colored hard hats?
A. One year.

30 CFR 77.1710

17. Q. What should be done with equipment raised for repairs?
A. Equipment shall be securely blocked.

§45.2-917. H.

XIII - SAFEGUARDS FOR MACHINERY AND EQUIPMENT

The Surface Foreman must devote adequate safety training for machinery operators and equipment maintenance. The foreman must always ensure that only properly trained and skilled persons be allowed to operate and repair equipment. A lack of operational skills and maintenance knowledge account for many machinery accidents.

The foreman must always ensure that only properly trained, authorized personnel are allowed to operate equipment and that equipment is maintained in a safe operating condition. All unsafe equipment must be removed from service immediately until repairs have been completed.

Extra special safety awareness must be encouraged at surface operations where large size mine equipment is used. Operator visibility and maneuverability are restricted, thereby posing a hazard for employees working in close proximity to this type of equipment.

Safety rules and State/Federal regulations provide guidelines that should always be followed to ensure the safety for everyone located in the work area.

Equipment guards:

Exposed moving equipment parts that may cause personal injury such as gears, sprockets, chains, pulleys, shafts, etc. shall be guarded.

§45.2-920.

Guards at belt conveyor heads, drives and tail rollers:

Guards at belt conveyor heads, drives and tail rollers shall extend a sufficient distance to prevent a person from becoming caught between such equipment.

Except when testing, machinery guards shall be securely in place while machinery is being operated.

§45.2-920.

Stationary grinding machine protective devices:

Stationary grinding machines shall be equipped with tool rests and safety washers. Face shield or safety goggles shall be used when operating grinders.

§45.2-920.

Hand-held power tools:

Hand-held power tools shall be constructed so as to stop operation when hand or finger pressure is released (dead man switch).

30 CFR 77.402

FOPS - Falling object protective structures on mobile equipment:

FOPS is required on all rubber-tired or crawler-mounted equipment such as loaders, dozers, etc. when necessary to protect the operator from falling material.

30 CFR 77.403

ROPS - Rollover protective structures on mobile equipment:

ROPS is required on all rubber-tiled and crawler-mounted equipment such as loaders, dozers, etc. when necessary to protect the operator from rollover hazards.

§45.2-917.

Seat belt required on mobile equipment equipped with ROPS:

Seat belts shall be worn by the operator of mobile equipment equipped with ROPS.

§45.2-917. B.

Machinery and equipment maintenance:

Machinery and equipment maintenance shall not be performed on machinery until the machinery motor is cut off and wheels securely blocked to prevent unexpected movement.

§45.2-920.

Repairs or maintenance on machinery:

Lubrication and equipment maintenance shall not be performed on machinery until the machinery motor is cut off and wheels blocked to prevent unexpected movement.

§45.2-920.

Machinery raised for repairs:

Machinery raised for repairs shall be securely blocked before anyone is positioned under the machine or raised component.

30 CFR 77.404

Welding operations:

Welding operations shall be shielded when necessary for the safety of other workers and the area shall be well ventilated.

§§45.2-906. and 45.2-914. J.

Automatic reverse warning device:

All self-propelled mobile equipment such as trucks, forklifts, front-end loaders, tractors, drills, graders, etc., shall be equipped with a reverse audible warning alarm.

§45.2-917.

A. QUESTIONS FOR REVIEW

1. Q. Why should exposed moving equipment parts such as gears and chains be guarded?
   A. To prevent personal injury from entanglement.

§45.2-920. A.-1 A.-3

2. Q. Are belt conveyor drives, heads and tail rollers required to be guarded?
   A. Yes, guards must be installed to prevent a person from being caught between such equipment components.

§45.2-920. A.-3

3. Q. When are machine guards allowed to be left off?
   A. Never. Machine operation requires guards to be securely in place.

§45.2-920. C.

4. Q. Should stationary grinding wheels be equipped with a tool rest?
   A. Yes, and face shields or goggles must be worn when operating a grinder.

§45.2-920. D.

5. Q. What safety device shall hand-held power tools be equipped with?
   A. Electric equipment and circuits shall be provided with switches or other controls of a safe design and shall be equipped to stop operation when hand or finger pressure is released.

30 CFR 77.402

6. Q. What protective device is required on mobile equipment when necessary to provide rollover protection?
   A. Rollover protective structure (ROPS).

§45.2-917. A.

7. Q. What safety equipment must be used when operating equipment equipped with ROPS?
   A. Seat belts must be worn.

§45.2-917. B.

8. Q. How shall gears, sprockets, pulleys, fan blades or propellers be protected?
   A. With adequate guards that are properly maintained.

§45.2-920. A.-B.-C.

9. Q. What type warning device shall be provided on all self-propelled mobile equipment such as trucks, forklifts, front-end loaders, drills, tractors, graders, etc.?
   A. An audible reverse warning device.

§45.2-917. G.

XIV - ELECTRICITY

The specific electrical laws for different types of surface operations are so lengthy and extensive that this area of the guide only addresses general electrical hazards. Electricity has become more common at surface coal mine sites, in the form of high, low, and medium voltage, thin seam and highwall mining equipment. Working on such systems requires the skills of a certified electrical repairman in the field of electrical systems.

Unexpected contact with electrical circuits presents a potential hazardous situation that could result in severe injury or death.

As required in many areas, the Surface Foreman must train himself to be alert for such dangers and take the necessary corrective action to eliminate such hazards.

Electrical hazards from contact with overhead power wires:

Overhead power wires that pass over surface work areas present a potentially dangerous electrocution hazard when their presence is not observed.

Overhead power wires create hazards for equipment operators when booms, beds or masts could accidentally be raised resulting in direct contact with the wires.

Anyone standing on the ground and touching equipment that is in contact with power lines would be subject to electrocution the same as if he had direct contact with such lines.

The Surface Foreman must ensure that sufficient ground clearance exists in work areas where power lines pass over a work area. The foreman should constantly be alert for such hazards and impress upon equipment operators the importance of making absolutely certain that sufficient clearance exists before raising booms, beds and masts.

When equipment must be operated in close proximity to energized overhead power wires, equipment operators must always maintain a safe clearance distance.

The Surface Foreman, as well as all employees, should train themselves to be constantly alert for electrical hazards in work areas beneath overhead power wires.

§45.2-926.

Overhead high potential lines:

Overhead high potential power lines shall be placed at least fifteen feet above the ground and twenty feet above the driveways and haulage ways shall be installed on insulators and guarded to prevent contact with other circuits.

§45.926. A.

Danger signs:

Suitable danger signs shall be posted conspicuously at all transformer stations and high potential switchboard installations.

§45.2-927. C.

De-energizing, locking, and tagging out electrical circuits:

No electrical work shall be performed on low, medium or high voltage distribution circuits or equipment, except by a certified person or by a person trained to perform electrical work and to maintain electrical equipment under the direct supervision of a certified person. Disconnecting devices shall be locked out and suitably tagged by the persons who perform such work, except that in cases where locking out is not possible, such devices shall be opened and suitably tagged by such person. Locks and tags shall be removed only by the person who installed them or, if such persons are not available, by certified persons authorized by the operator or his agent.

§45.2-927. E.

Grounding:

All metal frames, casing, and other enclosures of stationary electric equipment that can become "alive" through failure of insulation or by contact with energized parts shall be grounded effectively or equivalent protection shall be provided.

§45.2-928. B.

Circuit breakers:

Automatic circuit breaking devices or fuses of the correct type and capacity shall be installed so as to protect all electric equipment and power circuits against excessive overload.

Wires or other conducting materials shall not be used as a substitute for properly designed fuses.

Circuit breaking devices shall be maintained in good operating condition.

§45.2-929.

Electric equipment and circuits:

Electric equipment and circuits shall be provided with switches or other controls of safe design, construction, and installation.

§45.2-929. C.

Insulating mats:

Dry wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at each switchboard, power control switch, and at stationary machinery where shock hazards exist.

§45.2-929. D.

Power wires and cables:

All power wires and cables shall have adequate current-carrying capacity and shall be guarded from mechanical injury.

§45.2-929. F.

Labeling of power circuits:

Power circuits shall be labeled to indicate the unit or circuit they control.

§45.2-929. G.

Safety precautions during electrical storms:

Persons shall stay clear of an electrically powered shovel and other similar heavy equipment during an electrical storm.

§45.2-929. H.

Electrical trailing cables:

Trailing cables shall be provided with suitable short circuit protection and means of disconnecting power from the cable.

§45.2-930. A.

Temporary cable splices:

Temporary splices in trailing cables shall be made in a workmanlike manner, mechanically strong, and well insulated. The number of temporary, unvulcanized splices on a trailing cable shall be limited to one.

§45.2-930. B. – C

Permanent cable splices:

Permanent splices in trailing cables shall be made as follows:

A. Mechanically strong with adequate electrical conductivity and flexibility.
B. Effectively insulated and sealed so as to exclude moisture.
C. The finished splice shall be vulcanized or otherwise treated with suitable materials to provide flame resistant properties.

§45.2-930. D.

XV - GENERAL FOREMAN INFORMATION

Surface Foremen and supervisors suffer more fatal injuries than could be expected from their numbers in the work force. Different supervisory jobs have widely different injury and fatality rates.

In recent years, fewer supervisory personnel have suffered fatal accidents in metal and nonmetal mining than in coal mining.

Most Surface Foremen fatalities occur while performing work such as equipment maintenance and repair, operating equipment, electrical work, blasting and handling materials.

Most often, the direct causes of supervisor fatal accidents are unsafe mining conditions and unsafe acts by the supervisor.

Unsafe acts have been performed when foremen placed themselves in a hazardous position or dangerous work area location, attempted to work on energized electrical equipment or moving machinery, failed to use safe equipment, failed to follow safety practices, or positioned themselves in a dangerous area of restricted visibility.

Management officials and Surface Foreman must work jointly through effective training and safety practices to prevent safety shortcuts and unsafe practices by all mining personnel.

How can supervisory deaths be reduced?

A. A supervisor cannot be an effective, efficient supervisor and a safe workman too.

B. Supervisors should receive continued training. Supervisors should receive intensive safety training necessary to constantly improve their technical knowledge and basic work skills.

C. Managers and supervisors must display a safety conscious attitude and safe work practices as well as safety demonstrations in all work areas. Safe work procedures must be established and followed.

A. FACTORS WHICH MAY CONTRIBUTE TO THE NATIONAL SUPERVISORY FOREMAN FATALITY RATE

Factors relating to supervisory job responsibilities and/or policies of higher management:

1. Fatigue

   Mine supervisors are frequently required to work much longer hours than non-supervisory miners. It is not unusual for some supervisors to work seven days a week for prolonged periods of time (many of these workdays may involve two shifts per day). A less cautious attitude and a more sluggish reaction to hazards which accompany fatigue and lack of sleep can attribute to supervisory fatalities.

2. Production pressure and expediency

   Supervisors' standing with higher management is often largely dependent upon the amount of production and the speed with which they handle problems resulting in down time. Production pressures, sometimes threatening job security or the supervisor's own ambitions, may be sufficient to cause them to take safety shortcuts for the sake of short term production increases or cost savings for the company. This problem is compounded if upper management condones or appears to condone unsafe conditions and practices.

3. Emergency situations

   Management personnel must take a leadership role in attempting to save lives and property in any emergency situation.

4. Lack of task training for supervisors:

   Regulatory agencies do not require task training for persons assigned to supervisory jobs, as it does for equipment operators. Although supervisors generally undergo extensive training to pass certification examinations, the training may not include certain hazards common with a particular operation. The certification process also does little to develop skills such as planning, coordinating, dealing effectively with people, etc. A supervisor may visit certain work areas only occasionally or may be called upon to supervise different work areas or different types of work outside their normal supervisory duties. A supervisor's knowledge and experience may

not be "well rounded" enough to deal with the different potential hazards encountered. The supervisor may be unable to foster the cooperation of the crew which is essential to everyone's safety.

5. Entering hazardous areas

   Persons who conduct required examinations for hazardous conditions are certified supervisors. They are the first to enter work areas to make safety examinations before employees are permitted to work in the area. Supervisors are the first to encounter many hazardous conditions.

6. Observing work for unsafe practices

   Part of the supervisor's job is to observe work in progress, routinely, and particularly where unusual hazards exist. Observation points in areas of restricted clearance, such as near equipment, may pose hazards for supervisors, especially when equipment operators are not accustomed to anyone being in such areas.

7. Transportation hazards

   Many supervisors spend a great deal of their work time in transit from one work area to another. Can part of the high supervisory fatality rate be attributed to transportation hazards?

<u>Factors relating to attitudes and work habits of accident victims:</u>

1. Supervisors may sometimes feel it would be quicker or easier for them to do a particular job than to get someone else to do it. They may operate a piece of equipment, for example, on which they have little or no training or experience. Even if they are experienced with the equipment, it may have been so long since they operated it that their skills are "lacking". Equipment operation in production operations may also be a job requirement for the supervisor.

2. Overconfidence

   A supervisor may have performed a dangerous job successfully so many times that the job seems to lose the element of danger and is performed without due caution.

3. Stubbornness

Supervisors may hate to be wrong on a safety issue and may place themselves in jeopardy to "prove" that something is safe.

4. "Macho" image/excessive pride

   The supervisor may feel, if there is a risk to be taken, the supervisor should be the one to take it. This approach of "not asking anyone to do what I won't do myself" may inspire the confidence of the crew, but can be carried to dangerous extreme. The supervisor should set an example that promotes safe work practices.

5. One-track mine/ "tunnel vision"/ thoughtlessness

   Supervisors may have a lot on their mind and may be so preoccupied with "major" problems that they forget immediate hazards or "routine" safe practices. They may be so concerned with "the job at hand" that they close their mind to immediate surroundings and associated hazards.

<u>Factors relating to possible underlying causes:</u>

Supervisors/foremen share a common problem - they are human. They cannot set this factor aside when they enter the production-oriented, mechanical, and hazardous environment of their workplace. And, not only must they manage themselves but they must manage others as well - keeping production up for management and keeping safety under control for their crews.

1. Are supervisors/foremen victims of circumstances?

   On one hand, are supervisors/foremen skilled (trained) in taking the time necessary to see more than a fragment of a particular situation in which they have become circumstantially enmeshed - hence losing sight of the big picture in order to keep production moving is only a small part of the picture?

   On the other hand, are circumstances beyond the supervisor/foreman control that set supervisors/foremen up for fatal outcomes? Example: if mine management does not address problems caused by absenteeism, does this create circumstances where supervisors/foremen assume non-supervisory tasks, get stretched too thin, lose their grasp of the big picture, etc.? Another example: if mine management pushes for production with lack of trained workers, lack of or unsafe equipment, lack of support for supervisors/foremen, etc., does this create potential supervisors/foremen problems?

2. Is it enough to say "they should have known better?" If a supervisor/foreman should have "known better," it is obvious the supervisor/foreman victim made a decision error. <u>Why</u> that decision was made, however, may rest more with management than with the individual supervisor/foreman. Example: could mine management have created external circumstances that led to a supervisor/foreman's accident or did the supervisor/foreman's attitude/work habits play the major role or did both supervisor/foreman and mine management share responsibility for the fatal decision?

3. Do supervisors/foremen have a firm grasp of <u>the difference between a supervisor</u>

and a miner?

Having been a miner (one of the boys), coming from a different area of the mine, coming back from a training course, may put the supervisor/foreman in a conflict situation between what the supervisors/foremen like to do and what the supervisors/foremen should do to keep themselves and others safe. Example: the supervisor/foreman jumps into a task because "I can do it faster", "I can do it safer". "I get bored watching others do this". "I like my hands in it", "I can't just stand there and watch them fumble around", "they could kill themselves", "it is easier to do it myself than wait around". etc.

In other words, are supervisors/foremen having difficulty coming to grips with the difference between a supervisor and a crew member in learning to distinguish this difference when making decisions, using judgment, establishing new work habits, etc.?

Conversely, is mine management supporting this difference or expecting its supervisors/ foremen personnel to "jump in", "keep production up", "solve the problem", etc.?

4. Where do supervisors/foremen go with their problems?

Management has production problems and miners have their problems. But management has the responsibility to address all problems to ensure a safe workplace. Is the supervisor/foreman caught in the middle? Are the supervisors/foremen solving everyone's problems but their own?

With the high fatality rate for supervisors/foremen personnel, it appears obvious supervisors/foremen are making ill-considered moves, perhaps based on not having time to think through a problem, based on lack of skills in seeing the big picture. Or are they preserving their status in the eyes of the crew members' attitudes, paycheck-oriented thinking, etc.

When interviewed or speaking with a training person, are supervisors/foremen reserving their true feelings for family and close friends (buddies)? Is mine management providing lip service to the needs of their supervisors/foremen? And, if so, have the complaints/problems been addressed?

5. How valued are supervisors/foremen personnel?

Can they be easily replaced? And, if so, is this a message from management? Or do supervisors/foremen see themselves as easily replaced? If so, this perception might lead to chance taking special efforts to keep production moving on schedule, shortcuts, macho behavior, etc.

6. Are management's expectations of supervisor/foreman realistic?

Is every supervisor/foreman really as proficient as they need to be in given situations? Or do they learn as they go along about supervising?

Are supervisors/foremen trained in how the mine works as a total system (how all the subsystems interrelate) and how each person's actions maintain the balance of that system- not just mechanically but by personal decisions?

XVI - 30 CFR LEGAL REQUIREMENTS

The Code of Federal Regulations (30 CFR) Legal Requirements sets forth safety standards for surface coal mines subject to the Federal Mine Safety and Health Act of 1977.

The Surface Foreman applicant shall have knowledge of the requirements of 30 CFR – Part 77. This section will only summarize general requirements of 30 CFR - Part 77 and will assist qualified applicants in preparing for the Virginia Surface Foreman's examination.

A. QUESTIONS FOR REVIEW

1. Q. Who is responsible for establishing a ground control plan?
   A. The mine operator.

   30 CFR 77.1000

2. Q. What shall be examined during a ground control examination?
   A. Highways, banks, benches, and terrain sloping into the working areas shall be examined after every rain, freeze, or thaw and before men work in such areas.

   30 CFR 77.1004(a)

3. Q. May repair work be conducted between immobilized equipment and the highwall or spoil bank?
   A. Yes, while taking special safety precautions.

   30 CFR 77.1006(c)

4. Q. How often shall employees be instructed and trained in the use of firefighting equipment?
   A. Annually

   30 CFR 77.1100

5. Q. What shall be posted concerning smoking and open flames and where?
   A. Signs warning against smoking and open flames shall be posted so they can be readily seen in areas or places where fire or explosion hazards exists.

30 CFR 77.1102

6. Q. What is the distance of the areas surrounding flammable liquid storage tanks, electric sub-stations, and transformers that shall be kept free from dry grass, weeds, under brush, and other materials?
   A. At least 25 feet in all directions.

30 CFR 77.1103(d)

7. Q. How often shall fire extinguishers be examined?
   A. Once every 6 months.

30 CFR 77.1110

8. Q. What shall be recorded on a permanent tag attached to the fire extinguisher?
   A. The date of the examination.

30 CFR 77.1110

9. Q. What type of examination shall be conducted prior to welding, cutting, or soldering with arch or flame?
   A. An examination for methane.

30 CFR 77.1112(b)

10. Q. What shall occur when methane is detected at 1.0 percent?
    A. Work shall not commence or continue.

30 CFR 77.1112(b)

11. Q. What tools may be transported on mantrips?
    A. Small hand tools.

30 CFR 77.1604(b)

12. Q. What are the requirements for a mantrip vehicle or other conveyance used to transport persons to and from work areas at surface coal mines?
    A. Vehicles or other conveyance used to transport persons shall not be overcrowded and personnel shall ride in a safe position.

30 CFR 77.1604(a)

13. Q. What are the requirements of cab windows of mobile equipment?
    A. Cab windows shall be of safety glass or equivalent, in good condition and shall be kept clean.

30 CFR 77.1605(a)

14. Q. What shall be required on all mobile equipment?
    A. Mobile equipment shall be equipped with: (a) adequate brakes, (b) audible warning devices, (c) lights, (d) seat belts.

30 CFR 77.1605(b) (d)

15. Q. Where are berms or guards required?
    A. They are required on the outer bank of elevated roadways.

30 CFR 77.1605(k)

16. Q. Who shall inspect mobile loading and haulage equipment?
    A. A competent person

30 CFR 77.1606(a)

17. Q. When shall mobile loading and haulage equipment be inspected?
    A. Before such equipment is placed in operation.

30 CFR 77.1606(a)

18. Q. What are equipment operators required to do before starting or moving equipment?
    A. Be certain, by signal or other means, that all persons are clear of the equipment.

30 CFR 77.1607(g)

19. Q. What shall be required when towing heavy equipment?
    A. A tow bar and a safety chain.

30 CFR 77.1607(u)

20. Q. What is required of an employee working alone in a hazardous area that would endanger his safety?
    A. He must be able to communicate with others, can be heard, or can be seen.

30 CFR 77.1700

21. Q. Where shall a person not be allowed to smoke or use an open flame on the surface of a mine?
    A. Where such practice may cause a fire or explosion.

30 CFR 77.1711

22. Q. When is a Surface Foreman considered certified by 30 CFR – Part 77?
A. Certified as a Surface Foreman by the State of Virginia.

30 CFR 77.100 (b)(1)

23. Q. When is a surface electrician considered qualified to perform electrical work as required by 30 CFR – Part 77?
A. Certified as an electrical repairman by the State of Virginia.

30 CFR 77.103 (a)(1)

24. Q. Who can perform electrical work on electrical circuits or equipment?
A. A person certified as an electrical repairman by the State of Virginia.

30 CFR 77.501

25. Q. How often shall circuit breakers and their auxiliary devices protecting high-voltage circuits be tested and examined?
A. Once each month by a certified electrical repairman.

30 CFR 77.800-1 (a)

26. Q. How shall mine structures, enclosures, or other surface facilities be maintained?
A. They shall be maintained in good repair to prevent accidents and injuries to employees.

30 CFR 77.200

27. Q. At what level of methane shall adjustments be made in ventilation when methane is detected in surface structures, enclosures, and other surface facilities?
A. When the air contains 1.0 volume per centum or more of methane, adjustments shall be made in the ventilation of such installations.

30 CFR 77.201-2

28. Q. What shall not be allowed to exist or accumulate in dangerous amounts in the air of, or in, or on structures, enclosures, or other surface facilities?
coal dust

30 CFR 77.202

XVII - Coal Mine Safety Laws of Virginia Surface Mapping Requirements

§45.2-542. Maps of mines required to be made; contents; extension and preservation; use by Department; release; posting of map.

A. Prior to commencing mining activity, the operator of a coal mine, or his agent, shall make, or cause to be made, unless already made and filed, an accurate map of such mine, on a scale to be stated thereon of 100 to 400 feet to the inch. At intervals not to exceed twelve months and when a coal mine is abandoned, the operator shall submit to the Chief three copies of an up-to-date map of the entire mine. A registered engineer or registered surveyor shall certify that the map of the mine workings is accurate. Such map shall show the mine name, company name, mine index number, legend identifying the scale of the map, symbols used and the name of the person responsible for the information on the map. The map shall contain information related to active and worked-out areas of the mine, projections for at least twelve months of anticipated development, location of gas wells and all known drill holes, the location of all known mine workings underlying, overlying, and adjacent to the mine property, the direction and quantity of air current, ventilation controls, escapeways, so much of the property lines and the outcrop of the coal of the tract of land on which the mine located as may be within 1000 feet of any part of the workings of such mine, and such other information related to underground and surface activities as deemed necessary by the Chief. If there are no changes in the information required by this section, an updated map shall not be required to be submitted to the Department.

B. The operator of any surface coal mine, or his agent, shall not be required to submit a map of such mine to the Department unless the mine may intersect (i) underground workings or (ii) workings from auger, thin seam, or highwall mining operations. The map shall be filed and preserved among the records of the Department and made available at a reasonable cost to all persons owning, leasing, or residing on or having an equitable interest in surface areas or coal or mineral interests within 1,000 feet of such mining operation upon written proof satisfactory to the Director and upon sworn affidavit that such person requesting a map has a proper legal or equitable interest; however, the Director shall provide to the person requesting a map only that portion of the map which abuts or is contiguous to the property in which such requesting party has a legal or equitable interest, In no case shall any copy of the same be made for any other person without the consent of the operator or his agent. The Director shall promptly deliver notice of such request to the operator of such mining operation.

C. The original map, or a true copy thereof, shall be kept by such operator at the active mine, open at all reasonable times for the examination and use of the mine inspector. For coal mines, such map shall be kept up to date by temporary notations and such map shall be revised and supplemented at intervals not to exceed six months. A registered engineer or registered surveyor shall certify that the revised map is accurate. Such certification shall not be required for temporary notations.

§45.2-939. Surface coal mining; distance from wells; requirements.

A. Any mine operator who plans to remove coal or extend any workings in any mine closer than 500 feet to any gas or oil well already drilled or in the process of being drilled shall file with the Chief a notice that mining is taking place or will take place, together with a copy of parts of the maps and plans required under §45.2-542 which show the mine workings and projected mine workings beneath the tract in question and within 500 feet of the well. Such mine operator shall simultaneously mail copies of such notice, maps and plans by certified mail, return receipt requested, to the well operator and the Gas and Oil Inspector. Each notice shall certify that the mine operator has complied with the provisions of this subsection.

B. Subsequent to the filing of the notice required by subsection A of this section, the mine operator may proceed with mining operations in accordance with the maps and plans; however, without the prior approval of the Chief, he shall not remove any coal or extend any workings in any mine closer than 200 feet to any gas or oil well already drilled or in the process of being drilled. The Chief shall promulgate regulations which prescribe the procedure to be followed by mine operators in petitioning the Chief for approval to conduct such activities closer than 200 feet to a well. A petition may include a request to mine through a plugged well or plugged vertical ventilation hole. Each mine operator who files a petition to remove coal or extend any workings closer than 200 feet to any gas or oil well shall mail copies of the petition, maps and plans by certified mail, return receipt requested, to the well operator and the Gas and Oil Inspector no later than the day of filing. The Gas and Oil Inspector and the well operator shall have standing to object to any petition filed under this section. Such objections shall be filed within ten days following the date such petition is filed. (1990, c 92, §45.2-1632; 1994, c. 28., 2021).

4VAC25-130-779.24. Maps; general requirements.

The permit application shall include maps showing:

(a) All boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the permit area;

(b) The boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin surface mining activities;

(c) The boundaries of all areas proposed to be affected over the estimated total life of the proposed surface mining activities, with a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought;

(d) The location of all buildings in and within 1,000 feet of the proposed permit area with identification of the current use of the buildings;

(e) The location of surface and subsurface man-made features within, passing through, or passing over the proposed permit area, including, but not limited to, major electric transmission lines, pipelines, and agricultural drainage tile fields;

(f) The location and boundaries of any proposed reference areas for determining the success of revegetation;

(g) The locations of water supply intakes for current users of surface water flowing into, out of, and within a hydrologic area defined by the division and those surface waters which will receive discharges from affected areas in the proposed permit area;

(h) Each public road located in or within 100 feet of the proposed permit area;

(i) The boundaries of any public park and locations of any cultural or historical resources listed or eligible for listing in the National Register of Historic Places and known archaeological sites within the permit and adjacent area;

(j) Each cemetery that is located in or within 100 feet of the proposed permit area;

(k) Any land within the proposed permit area which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System, including study rivers designated under section 5(a) of the Wild and Scenic Rivers Act; and

(l) Other relevant information required by the division.

30 CFR §77.1200 Mine map.

The operator shall maintain an accurate and up-to-date map of the mine, on a scale of not less than 100 nor more than 500 feet to the inch, at or near the mine, in an area chosen by the mine operator, with a duplicate copy on file at a separate and distinct location, to minimize the danger of destruction by fire or other hazard. The map shall show:

(a) Name and address of the mine;

(b) The property or boundary lines of the active areas of the mine;

(c) Contour lines passing through whole number elevations of the coalbed being mined. The spacing of such lines shall not exceed 25-foot elevation levels, except that a broader spacing of contour lines may be approved by the District Manager for steeply pitching coalbeds. Contour lines may be placed on overlays or tracings attached to mine maps;

(d) The general elevation of the coalbed or coalbeds being mined, and the general elevation of the surface;

(e) Either producing or abandoned oil and gas wells located on the mine property;

(f) The location and elevation of any body of water dammed or held back in any portion of the mine: Provided, however, such bodies of water may be shown on overlays or tracings attached to the mine maps;

(g) All prospect drill holes that penetrate the coalbed or coalbeds being mined on the mine property;

(h) All auger and strip mined areas of the coalbed or coalbeds being mined on the mine property together with the line of maximum depth of holes drilled during auger mining operations.

(i) All worked out and abandoned areas;

(j) The location of railroad tracks and public highways leading to the mine, and mine buildings of a permanent nature with identifying names shown;

(k) Underground mine workings underlying and within 1,000 feet of the active areas of the mine;

(l) The location and description of at least two permanent base line points, and the location and description of at least two permanent elevation bench marks used in connection with establishing or referencing mine elevation surveys; and

(m) The scale of the map

Mapping Requirements for Surface Coal Mines

Section 45.2-542 of the Coal Mine Safety Laws of Virginia require surface mine maps to be submitted if the mine may intersect underground workings or workings from auger, thin seam, or highwall mining operations. Surface mine maps must be submitted at intervals not to exceed 12 months. Annual maps must be up-to-date and certified by a registered engineer or registered surveyor. If there have been no changes since the last submittal, maps are not required, however, written notification that no changes have occurred should be forwarded to the Department.

Annual maps must include the following:

☐ Scale between 100 ft. and 400 ft. to 1 inch.

☐ Mine name, company name, and mine index No.

☐ Legend and symbols used;

- ☐ Delineate active and worked out areas of the mine;
- ☐ Mining projections for at least 12 months.
- ☐ Location of gas wells, gas lines, vertical ventilation holes and all known drill holes;
- ☐ The location of underground mine workings or workings from auger, thin seam, or highwall operations which may be intersected by the surface mine.
  - ❖ The Chief may require other information to be shown on the surface mine maps.

Recommended Safety Precautions for Surface Mining Within 200' of Gas Wells and Pipelines

1. All employees will be trained in the potential hazards associated with operating equipment around gas wells and pipelines and the contents of this plan. A record of the training will be kept at the mine site for one year.
2. All employees will be trained in proper emergency response procedures should a gas well or pipeline be accidentally damaged or ruptured. A record of the training will be kept at the mine site for one year.

3. No smoking or open flames will be permitted near gas wells or pipelines at any time.

4. Properly maintained and calibrated gas detection equipment will be available where work around gas wells or pipelines is planned.

5. Gas wells will be marked with flagging or florescent painted signs placed at a height of at least six (6) feet above the ground level. If equipment is operated at night or at other times of poor visibility, strobe lights or other effective means will be used in addition to the flagging. If conditions will allow, a four (4) foot high earthen berm will be provided between the equipment work area and no closer than 25 feet to the gas well.

6. Pipelines will be marked at intervals not to exceed 30 feet with flagging or florescent painted signs placed at a height of at least six (6) feet above the ground level. If equipment is operated at night or at other times of poor visibility, then strobe lights or other effective means will be used in addition to the flagging. If conditions will allow, then a four (4) foot high earthen berm will be provided between the equipment work area and no closer than 10 feet to the pipeline.

7. If the Surface Foreman determines during pre-shift examinations that equipment to be operated will approach gas wells or pipelines such that a potential hazardous condition could exist, then the foreman will instruct equipment operators to dismount and familiarize himself with the location of these structures prior to beginning work.

8. Before any blasting, gas wells and pipelines will be adequately protected from damage from "fly rock" or other material. Only those engaged in installing or removing protective measures will be in the vicinity of a gas well or pipeline while those measures are being installed or removed. A Surface Foreman will supervise the installation and removal of protective measures.

9. Pipelines may be purged and disconnected or covered with protective material or other no less effective means to protect from the effects of blasting.

10. Before any blasting, wellheads and associated piping will be protected with a substantial cover that is lined with non-sparking material. The cover will have ample clearance when being placed

on or removed from over the wellhead. The cover will be provided with vents to prevent accumulation of an explosive or flammable mixture of gasses. The cover will be provided with at least four (4) eyelets or other substantial means to facilitate placing and removing. Equipment used to place or remove the covering over the wellhead will be capable of lifting the cover and equipped with hooks or other substantial means to prevent the load from shifting during installation or removal. A substantial berm of spoil material will be placed around the cover to at least the height of the cover. In the event it becomes necessary to leave the wellhead covered for and extended period of time, a sign identifying the location of the wellhead will be placed in near proximity to the wellhead location.

§45.2-903. Safety examinations.

A. On-shift examinations of the work area including pit, auger, thin seam and highwall operations shall be conducted by certified persons once every production shift and at such other times or frequency as the Chief designates necessary for hazardous conditions.

B. Pre-operational examinations of all mobile equipment shall be conducted by an authorized person.

C. Pre-shift examinations shall be conducted by a certified person for certain hazardous conditions designated by the Chief.

D. Mine refuse piles shall be examined daily by an authorized person on any day on which a person works at such location.

E. The location of all natural gas pipelines on permitted surface mine areas shall be identified and conspicuously marked. Pre-shift examinations shall be conducted of the location of pipelines whenever active workings are approaching within 500 feet unless otherwise approved by the Chief.

F. Air quality examinations shall be conducted by a certified person (Surface Foreman) when a surface coal mining operation intersects an underground mine, auger hole or other underground workings.

G. Examinations for methane shall be conducted in surface installations, enclosures or other facilities in which coal is handled or stored once each production shift. Such areas shall also be tested for methane before any activity involving welding, cutting or an open flame. Examinations pursuant to this subsection shall be made by an authorized person certified to make gas tests.

H. Electrical equipment and wiring shall be inspected as often as necessary but at least once a month.

I. Fire extinguishers shall be examined at least once every six months.

J. Areas of inactive surface coal mines shall be examined for hazardous conditions by a mine foreman immediately before miners are permitted to enter into such areas to take emergency actions to preserve a mine.

4VAC25-130-816.79. Protection of underground mining.

No surface mining activities shall be conducted closer than 500 feet to any point of either an active or abandoned underground mine, except to the extent that-

(a) The activities result in improved resource recovery, abatement of water pollution, or elimination of hazards to the health and safety of the public, and

(b) (1) The nature, timing, and sequence of the activities proposed to be conducted closer than 500 feet to an abandoned underground mine are approved by the division; and

(2) The nature, timing and sequence of the activities proposed to be conducted closer than 500 feet to an active underground mine are jointly approved by the division, the Mine Safety and Health Administration, and Virginia Coal Mine Safety.

XVIII – PRE-OPERATIONAL EXAMINATION OF SURFACE MOBILE EQUIPMENT

Pre-operational examinations of all surface mobile equipment shall be conducted to identify defects which could create a hazardous condition. The examination is required to be performed by an authorized person on any shift the equipment is operated. Documentation of examinations and testing shall be recorded in a mine record book provided for that purpose.

Examinations and testing should be consistent with training provided by the mine operator, and in accordance with all recommended procedures of the manufacturer of the equipment being examined.

PRE-OPERATIONAL INSPECTION

Pre-operational inspections are conducted to identify equipment defects which could create hazardous conditions.

All equipment operators should be properly trained on how to conduct a thorough, pre-operational inspection necessary to identify, correct and report equipment defects.

Equipment operators should always perform complete pre-operational inspections of equipment prior to operation. This will ensure that equipment is maintained in safe operating condition.

Safety is everyone's responsibility, equipment operators as well as mine officials.

COAL MINE SAFETY LAWS OF VIRGINIA:

§45.2-903 (B) Pre-operational examinations of all mobile equipment shall be conducted by an authorized person.

§45.2-904 (A) Documentation of examinations and testing conducted, pursuant to §45.2-903 shall be recorded in a mine record book provided for that purpose.

CODE OF FEDERAL REGULATIONS (30 CFR):

77.1606 (A) (C) Mobile loading and haulage equipment shall be inspected by a competent person before such equipment is placed in operation. Equipment defects affecting safety shall be recorded and reported to the mine operator. Equipment defects affecting safety shall be corrected before the equipment is used.

Maintain a copy of records of mobile equipment inspections at the mine for one year available for inspections by MSHA, CMS and other interested parties.

Both State and Federal laws impose severe civil and criminal penalties for falsifying or misrepresenting any mine safety records.

RECOMMENDED
PRE-OPERATIONAL INSPECTION PROCEDURES

The following represent generally recommended procedures for conducting pre-operational inspections of surface mobile equipment.

In all cases, inspections should be conducted by authorized persons consistent with training provided by the mine operator, and in accordance with any and all recommended procedures of the manufacturer of the equipment being inspected.

Normally the equipment operator is authorized to perform pre-operational inspections of the equipment he is assigned to operate. This record for pre-operational inspections has been developed to provide guidance for proper inspections and recording of inspection activities.

In addition to general information concerning pre-operational inspection requirements, the record book contains general check lists and recommended pre-operational inspection procedures. The check lists are provided in duplex and it is recommended that the detachable copy of the inspection record be provided to the mine foreman during his on-shift activities. The original record should remain with the record book and be maintained on the equipment.

Where equipment is operated on multiple shifts, operators should review the records of previous inspections.

REMEMBER: Always position vehicle on level ground in a secure area prior to performing a pre-operational inspection.

1. **PARK BRAKE**

Stop vehicle on level ground in a secure area. Set the park brake and attempt to move the vehicle in a low to mid range gear based on gear characteristics. Manufacturer recommendations should always be followed.

2. **SERVICE BRAKE**

Position unloaded vehicle on level ground in a secure area.

A. Apply foot brake and observe air pressure gauge for normal pressure.
B. Start the vehicle in motion and apply foot brake while traveling in both a forward and a reverse direction to ensure vehicle will stop under normal operating conditions.

3. **ENGINE BRAKE**

Stop vehicle on level ground in a secure area.

A. Start vehicle and set the park brake. Place transmission in neutral.
B. Turn master control engine brake switch to the "on" position. If equipped with multiple settings, select the lowest setting to prevent stalling the engine.
C. Accelerate fuel pedal and then release fuel pedal to determine if the fuel pump microswitch is operating properly. Equipment operator should now hear and feel the effects of the engine brake if operating properly.
D. To check engine brake – clutch switch, depress clutch pedal with engine brake operating. Engine brake should stop operating with clutch pedal depressed.
E. If engine brake fails to operate properly, check the following:
   1. Clutch switch and wiring
   2. Fuel pedal pump switch (microswitch) and wiring
   3. Master control switch
   4. Fuse panel

4. **CAB CONDITIONS**

Check doors and door latches, windows and window controls, check cab for extraneous/unsecured materials such as bucket, jacks, fire extinguishers and all other material that may be hauled.

5. **FIRE HAZARDS**

Check the following areas for fire hazards:

A. Fuel tank compartments
B. Battery storage compartments
C. Engine compartment
D. Cab compartment

Check for accumulation of all materials such as leaks of diesel fuel, oil, grease, and other combustible materials.

6. **FIRE EXTINGUISHER/FIRE SUPPRESSION SYSTEM**

Check the following:

A. Location and accessibility
B. General condition – charged or discharged, discharge safety pin, hose and nozzle, handles
C. Examination date tag

7. **EXHAUST SYSTEM**

Conduct a visual examination of the exhaust system for leaks, cracks, holes and deterioration that could allow exhaust fumes to enter the cab compartment.

8. **WIPERS/WINDSHIELD**

A. Conduct a visual examination of the wiper arms, blades and observe for proper operation.
B. Check all mechanical components for deterioration of rubber and plastic parts.
C. Check windshield glass for cracks, proper installation, condition and adequate visibility.

9. **LIGHTS**
Check lens, mounting and proper operation.

10. **GLASS WINDOWS**
Check windows for cracks, proper installation, condition, adequate visibility and proper operation.

11. **MIRRORS**
Check for secure installation, properly adjusted, and visibility.

12. **HORN/FRONT**
Check for proper operation.

13. **GAUGES AND INSTRUMENTS**
Check all gauges and instruments for proper operating ranges.

14. **BACK-UP ALARM – Check for proper operation**
With ignition switch on, put transmission in reverse and listen for back up alarm that must be audible above surrounding noise.

15. **STEPS/LADDERS/RAILS**
Check steps, ladders and rails for secure installation and slipping/falling hazards. *Ex: Mud, ice, grease, etc.*

16. **AIR SYSTEMS - PROPER OPERATION**
   A. Start vehicle and allow air pressure to build to proper operating range.
   B. Check air gauges for proper operating range to insure the air system is charged properly and that the air compressor and governor are operating properly.
   C. Check all master control valves and all other air control valves for leaks and proper position.
   D. Depress air brake pedal and keep depressed while observing air gauge for excessive loss of air pressure.
   E. Walk around the vehicle while looking and listening for air leaks in hoses, valves and all air connections.

17. **SEAT BELTS**
Check for proper installation, proper operation and check for worn/damaged parts.

18. **BED PINS/SAFETY PROPS/CATCHES**
Check for availability and substantial bracket installation.

19. **ROPS/FOPS**
Check for proper installation, construction and design as required by the manufacturer.

20. **GUARDS**
Fans, belts, pulleys, power take off, sprockets and couplings. Check for proper installation, construction and design as required by the manufacturer.

21. **TIRES/TRACKS**
   A. Check tires for proper mounting, cuts, broken beads and sidewalls, excessive wear and proper inflation.
   B. Check tracks for excessive wear, excessively worn or broken pads, defective idlers and pulleys, gear drives and improperly adjusted tracks.

22. **FLUID LEVELS/LEAKS**
Check around and under equipment for leaks. Always follow manufacturer recommendations with regard to proper fluid levels.

23. **RIMS/RINGS/LUGS/SPACERS/SPOKES**
Observe proper mounting and general condition of required components. Check for missing bolts, cracks in rings, missing or defective wheel studs. Check rims for cracks, broken stop mechanisms, keeper and retainer rings and evidence of wheel slippage.

24. **STEERING COMPONENTS**
Check steering wheel sector linkage, fluid levels, hoses, drag links, pitman linkage, tie rod linkage, spindle linkage, sector gear mounts, keeper pins and steering connections.

25. **FRONT SUSPENSION/STEERING AXLE/SPRINGS/HANGERS/PINS/ CENTER BOLTS**
Check for proper mounting and for missing and defective components including U bolts, springs, spring pins and keepers, hangers, struts and brackets.

26. **REAR SUSPENSION/DRIVE AXLES/SPRINGS/HANGERS/SPRING PINS/ KEEPERS/BOGIE ARMS AND BUSHINGS**
Check for proper mounting and for missing and defective components including U bolts, springs, spring pins and keepers, hangers and brackets.

27. **TRANSMISSION**
Check for proper operation to detect any slippage, flying out of gear or other improper shifting under normal operating conditions. **If equipped with retarders – test for proper operation.**

28. **FRAME/CROSS MEMBERS**
Examine main frame and cross members for cracks and worn or defective components.

29. **COMMUNICATIONS/RADIOS**
If used or applicable – Maintain CB in proper operating condition and be familiar with the channel being monitored for the affected area. **Observe and comply with all traffic and communication signs.**

PRE-OPERATIONAL CHECKLIST
FOR
SURFACE MOBILE EQUIPMENT

Company Name: _____ **Mine Number:** _____
Date: _____ **Shift:** 1st ☐ 2nd ☐ 3rd ☐
Equipment or Company Number: _____
Type of Equipment: _____
Hour Meter Reading: _____

	O.K.	Description of Repairs Required	Reported	Corrected	Time	Date
1.		**Park Brake**				
2.		**Service Brake**				
3.		**Engine Brake**				
4.		**Cab Conditions**				
5.		**Fire Hazards**				
6.		**Fire Extinguisher**				
7.		**Exhaust System**				
8.		**Wipers/Windshield**				
9.		**Lights**				
10.		**Glass Windows**				
11.		**Mirrors**				
12.		**Horn/Front**				
13.		**Gauges and Instruments**				
14.		**Back-up Alarm**				
15.		**Steps/Ladders/Rails**				
16.		**Air Systems Proper Operation**				
17.		**Seat Belts**				
18.		**Bed Pins/Safety Props/Catches**				
19.		**ROPS/FOPS**				
20.		**Guards**				
21.		**Tires/Tracks**				
22.		**Fluid Levels/Leaks**				
23.		**Rims/Rings/Lugs/Spacers**				
24.		**Steering Components**				
25.		**Front Suspension**				
26.		**Rear Suspension**				
27.		**Transmission**				
28.		**Frame/Components**				
29.		***Communications/Radios**				

Comments: _____
_____
Signature of Operator: _____

*** Not Required by State or Federal Laws**

Surface Foreman Certification
Pre-shift/On-shift Exercise Instructions Example 1

Exam Instructions: You are required to read the following scenario and complete the required attached forms as part of your examination.

You are a surface foreman, certification no. 00501, employed at the Hard Rock Coal Company No. 1 Auger mine, completed his pre-shift examination by 6:00 A.M. and began his on-shift examination at 6:00 A.M., and completed it by 4:00 P.M. on Friday, April 11, 2018. The weather conditions were cloudy and foggy. The temperature was 50° F. The auger works dayshift only from 6:00 A.M. to 4:00 P.M. You had traveled to the No. 2 East Strip where uncovered coal had been removed. The roadways were wet. Berms are in good condition. A 36-inch auger had been moved into position to begin auger operations. The highwall had some loose material, about 50 feet from where augering was taking place, near a hollow. You noticed the auger operator canopy had been removed for welding repairs. Water had accumulated six inches deep in front of the auger. One of the four lights on the auger did not work properly. After examination of the highwall, above the auger, you noticed mud seepage near the top of the wall 25 foot highwall and a separation in the highwall was observed and potential highwall collapse was evident above the auger. You and the employees moved the auger to a safe location and you "dangered off" this area. Loose material was removed from the highwall. Welding repairs on the operator canopy were completed and were re-installed and augering began. The auger mined approximately 50 feet and cut into an underground mine cavity. You stopped augering operations immediately, cleared all personnel from the area and tested for methane gas and low oxygen. The multi-gas instrument indicated 3.8% CH4 and 16.0% oxygen. After waiting 30 minutes, the condition cleared, the auger was moved over 25 feet to a safe location and augering operations continued undisturbed. The No. 1 coal truck driver indicated to you that his service horn did not operate properly. The fire extinguishers on the auger and in the No. 2 coal truck were shown to be discharged. On your way to the mine office to record your examination, you observed that dry grass had accumulated within 50 feet of the explosives magazine. At 2:15 P.M., the surface blaster informed you that a misfire had occurred 100 feet in advance of the augering operation. All mining personnel were removed from the blast area. The blast circuit was tested, corrected and the shot was detonated.

Surface Foreman Certification
Pre-shift/On-shift Exercise Instructions Example 1

- Read the exercise statement provided
- Identify hazardous conditions by marking the appropriate boxes. **(Note: A hazardous condition is defined as a condition that is likely to cause death or serious personal injury to persons exposed to such conditions.)**
- All conditions identified as hazardous conditions shall require corrective action to be taken.
- Any condition marked below that is **not** a hazardous condition will be discounted. **All** hazardous conditions marked below must be entered in the Pre-shift/On-shift examination records.
- If student marks conditions other than those identified by DM as hazardous conditions, then they WILL NOT be discounted if they record such hazardous conditions and corrective action taken in the record book.
- Complete Pre-shift/On-shift examination records attached.

[ ] Weather conditions were cloudy and foggy

[**X**] The operator canopy on the auger had been removed for welding repairs

[ ] All lights on the auger did operate properly

[ ] Water had accumulated six inches deep in front of the auger

[**X**] The highwall was observed to be separated and near collapse

[**X**] During augering operations, an underground mining cavity was cut into which released 3.8% CH4 and 16.0% oxygen

[ ] The service horn on the No. 1 coal truck did not operate properly

[ ] Fire extinguishers on the auger and No. 2 coal truck were shown to be discharged

[ ] Dry grass had accumulated within 50 feet of the explosives magazine

[**X**] A misfire occurred 100 feet in advance of the augering operation

Surface Foreman Certification
Pre-shift/On-shift Exercise Report Example 1

Date of Examination**:** 4/11/18 Surface Operation Examined: Hard Rock Coal Co.- #1 Auger

Time of Examination: :6:00AM-4:00 PM. Day Shift X Evening Shift _____Midnight Shift _____

Weather Conditions**:** Cloudy/Foggy

RESULTS OF ONSHIFT EXAMINATIONS

Location	Hazardous Condition	Action Taken	CH4
1. No.1 Auger	Auger operator canopy had been removed for welding repairs	The canopy was repaired and re-installed	
2. No. 1 Auger	Highwall above the auger was separated and potential collapse was evident	The auger was removed to a safe location and the potential highwall collapse area was dangered off	
3. No. 1 Auger	Auger cut into and underground mine cavity and 3.8% Ch4. 16.0% oxygen was detected	All personnel were removed from the area and after mine gases cleared, the auger was moved to a safe location	3.8% (Optional– may be put under hazardous condition)
4. 100' in advance of augering operation	Misfire occurred at 2:15PM 100' in advance of the auger operation	All personnel were removed from the blast area. The blast circuit was tested, corrected and the shot was detonated	

* Pit * Auger *Thin seam/Highwall *Surface Installations/Enclosures (where coal is handled/stored)

Condition of Equipment (Onshift)

The No.1 coal truck service horn needs repairing. (Optional)

Functional Check of Methane Monitor (Onshift Highwall and Thin Seam Mining)

N/A

Conditions of Retraining Dams and Refuse Piles (Daily)

N/A

Conditions of Haulroads and Dump areas (Daily)

Roadways are wet. Berms are in good condition (Optional)

Conditions of Drill Benches (Daily)

A misfire occurred at 2:15PM, the condition was corrected (Optional)

Condition of Fire Fighting Equipment

The fire extinguishers need replacing on the No.2 coal truck and No.1 auger (Optional)

Storage of Explosives (Daily)

Dry grass had accumulated within 50 feet of the explosives magazine (Optional)

Face of Highwall (Preshift//Onshift – 25' in both directions from Auger Operation)

Time	Time	Time	Time	Time
6:00AM or before	1 other time between 6:00am and 4:00pm			

Highwalls must be examined before any augering operation is begun and at least once during each coal production shift.

Condition of Pipelines within 500 ft. of active areas (Preshift)

N/A

(Student Name) 04/11/18 00501

Surface Foreman Date Certification Number

(Student Name) (Optional) 04/11/18 (Optional)

Signed by Operator/Agent Date

Virginia Coal Surface Mining Control and Reclamation Act of 1979

The following are provisions of the "Virginia Coal Surface Mining Control and Reclamation Act of 1979" as required by the Federal Surface Mining Control and Reclamation Act of 1977 and which are enforced by the Mined Land Repurposing (MLR).

4 VAC 25-130-780.13 Operation Plan: Blasting

(a) Blasting plan. Each application shall contain a blasting plan for the proposed permit area, explaining how the applicant will comply with the requirements of 4 VAC 25-130-816.61, 4 VAC 25-130-816.68. This plan shall include, at a minimum, information setting forth the limitations the permittee will meet with regard to ground vibration and air blast, the basis for those limitations, and the methods to be applied in controlling the adverse effects of blasting operations.

(b) Monitoring system. Each application shall contain a description of any system to be used to monitor compliance with the standards of 4 VAC 25-130-816.67 including the type, capability, and sensitivity of any blast-monitoring equipment and proposed procedures and locations of monitoring.

(c) Blasting near underground mines. Blasting operations within 500 feet of active underground mines require approval of the State and Federal regulatory authorities concerned with the health and safety of underground miners.

4 VAC 25-130-780.14 Operational Plan: Maps and Plans

Each application shall contain maps and plans as follows:

(a) The maps and plans shall show the land proposed to be affected throughout the operation and any change in a facility or feature to be caused by the proposed operations, if the facility or feature was shown under 4 VAC 25-130-779.24 through 4 VAC 25-130-779.25.

(b) The following shall be shown for the proposed permit area:

(1) Buildings, utility corridors and facilities to be used.

(2) The area of land to be affected within the proposed permit area, according to the sequence of mining and reclamation.

(3) Each area of land for which a performance bond or other equivalent guarantee will be posted under Subchapter VJ.

(4) Each coal storage, cleaning and loading area.

(5) Each topsoil, spoil, coal waste, and non-coal waste storage area.

(6) Each water diversion, collection, conveyance, treatment storage, and discharge facility to be Used.

(7) Each source of waste and each waste disposal facility relating to coal processing or pollution Control.

(8) Each facility to be used to protect and enhance fish and wildlife and related environmental Values.

(9) Each explosive storage and handling facility.

(10) Location of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing waste dam and embankment, in accordance with 4 VAC 25-130-780.25 and fill area for the disposal of excess spoil in accordance with 4 VAC 25-130-780.35.

(c) Maps, plans, and cross sections required under Paragraphs (b)(4), (5), (6), (9) and (10), shall be prepared by, or under the direction of, and certified by a qualified registered professional engineer, or certified professional geologist, with the assistance from experts in related fields, such as land surveying and landscape architecture, except that -

(1) Maps, plans, and cross sections for sedimentation ponds may only be prepared by a qualified registered professional engineer; and

(2) Maps, plans, and cross sections of spoil disposal facilities may only be prepared by a qualified registered professional engineer.

4 VAC 25-130-816.61 Use of Explosives: General Requirements

(a) Compliance with other laws. Each permittee shall comply with all applicable State and Federal laws and regulations in the use of explosives.

(b) Blasting schedule. Blasts that use more than 5 pounds of explosive or blasting agent shall be conducted according to the schedule required under 4 VAC 25-130-816.64.

(c) Blasters.

(1) All blasting operations in the State shall be conducted under the direction of a certified blaster certified in accordance with Part 4 VAC 25-130-850.

(2) Certificates of blasters certification shall be carried by blasters or shall be on file at the permit area during blasting operations.

(3) A blaster and at least one other person shall be present at the firing of a blast.

(4) Persons responsible for blasting operations at a blasting site shall be familiar with the blasting plan and site-specific performance standards.

(d) Blast design.

(1) An anticipated blast design shall be submitted if blasting operations will be conducted within -

(i) 1000 feet of any building used as a dwelling, public building, school, church, or community or

(ii) institutional building outside the permit area; or

(iii)500 feet of an active or abandoned underground mine.

(2) The blast design may be presented as a part of a permit application or at a time, before the blast, proposed in the application and approved by the Division.

(3) The blast design shall contain sketches of the drill patterns, delay periods, and decking and shall indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of structures to be protected, as well as a discussion of design factors to be used, which protect the public and meet the applicable air blast, fly rock, and ground-vibration standards in 4 VAC 25-130-816.67.

(4) The blast design shall be prepared and signed by a certified blaster.

(5) MLR may require changes to the design submitted.

4 VAC 25-130-816.62 Use of Explosives: Pre-blasting Survey

(a) At least thirty days before initiation of blasting, the permittee shall notify, in writing, all residents or owners of dwellings or other structures located within 1/2 mile of the permit area how to request a pre-blasting survey.

(b) A resident or owner of a dwelling or structure within 1/2 mile of any part of the permit area may request a pre-blasting survey. This request shall be made, in writing, directly to the permittee or to the Division, who shall promptly notify the permittee. The permittee shall promptly conduct a pre-blasting survey of the dwelling or structure and promptly prepare a written report of the survey. An updated survey of any additions, modifications, or renovations shall be performed by the permittee if requested by the resident or owner. The request for an updated survey shall be in writing and describe the additions, modifications, or renovations which are to be surveyed.

(c) The permittee shall determine the condition of the dwelling or structure and shall document any Pre-blasting damage and other physical factors that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines, and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.

(d) The written report of the survey shall be signed by the person who conducted the survey. Copies of the report shall be promptly provided to the Division and to the person requesting the survey. If the person requesting the survey disagrees with the contents and/or recommendations contained therein, he may submit to both the permittee and the Division a detailed description of the specific areas of disagreement.

(e) Any surveys requested more than 10 days before the planned initiation of blasting shall be completed by the permittee before the initiation of blasting. Any surveys requested after permit approval but less than 10 days before the planned initiation of blasting shall be completed by the permittee within 30 days of the request, except that reasonable time extensions may be approved by the Division.

4 VAC 25-130-816.64 Use of Explosives: Blasting Schedule

(a) General requirements.

(1) The permittee shall conduct blasting operations at times approved by the Division and announced in the blasting schedule. The Division may limit the area covered, timing, and sequence of blasting as listed in the schedule if such limitations are necessary and reasonable in order to protect the public health and safety or welfare.

(2) All blasting shall be conducted during daylight hours. The Division may specify more restrictive time periods for blasting.

(3) Unscheduled blasts may be conducted only where public or permittee health and safety so require and for emergency blasting actions. When a permittee conducts an unscheduled blast, the permittee, using audible signals, shall notify residents within 1/2 mile of the blasting site and document the reason for the unscheduled blast in accordance with 4 VAC 25-130-816.68(p).

(b) Blasting schedule publication and distribution.

(1) The permittee shall publish the blasting schedule in a newspaper of general circulation in the locality of the blasting site at least 10 days, but not more than 30 days, before beginning a blasting program.

(2) The permittee shall distribute copies of the schedule to local governments and public utilities and to each local residence within 1/2 mile of the proposed blasting site described in the schedule.

(3) The permittee shall republish and redistribute the schedule at least every 12 months and revise and republish the schedule at least 10 days, but not more than 30 days, before blasting whenever the area covered by the schedule changes or actual time periods for blasting significantly differ from the prior announcement.

(c) Blasting schedule contents. The blasting schedule shall contain, at a minimum:

(1) Name, address, and telephone number of the permittee.

(2) Identification of the specified areas in which blasting will take place.

(3) Dates and time periods when explosives are to be detonated.

(4) Methods to be used to control access to the blasting area.

(5) Type and patterns of audible warning and all-clear signals to be used before and after blasting.

4 VAC 25-130-816.66 Use of Explosives: Blasting Signs, Warning, and Access Control

(a) Blasting signs. Blasting signs shall meet the specifications of 4 VAC 25-130-816.11:

a. Specifications. Signs and markers required in this Part shall:

1. Be posted, maintained, and removed by the person who conducts the surface mining activities.

2. Be of a uniform design throughout the operation that can be easily seen and read.

3. Be made of durable material.

4. Conform to local ordinances and codes.

b. Maintenance. Signs and markers shall be maintained during the conduct of all activities to which they pertain.

c. Mine and permit identification signs.

1. Identification signs shall be displayed at each point of access to the permit area from public roads.

2. Signs shall show the name, business address, and telephone number of the permittee and the identification number of the current permit authorizing surface coal mining activities.

3. Signs shall be retained and maintained until after the release of all bonds for the permit area.

d. Perimeter markers. The perimeter of a permit area shall be clearly marked prior to the permit review conducted by the division's field enforcement personnel. The boundaries shall be clearly marked by flagging, stakes or signs as required under 4 VAC 25-130-816.57. All markers shall be easily visible from adjacent markers. The approximate outer perimeter of the solid portion of any pre-existing bench shall be closely marked prior to permit review.

e. Buffer zone markers. Buffer zones shall be marked along their boundaries, prior to permit review conducted by the division's field enforcement personnel. The boundaries shall be clearly marked by flagging, stakes, or signs. All markers shall be easily visible from adjacent markers. The approximate outer perimeter of the solid portion of any pre-existing bench shall be closely marked prior to permit review.

f. Blasting signs. If blasting is conducted incident to surface mining activities, the person who conducts these activities shall:

1. Conspicuously place signs reading "Blasting Area" along the edge of any blasting area that comes within 100 feet of any public road right of way, and at the point where any other road provides access to the blasting area.

2. At all entrances to the permit area from public roads or highways place conspicuous sings which state "Warning! Explosives in Use" which clearly list and describe the meaning of the audible blast warning and all clear signals that are in use, and which explain the marking of blasting areas and charged holes awaiting firing within the permit area.

g. Topsoil markers. Where topsoil or other vegetation – supporting material is segregated and stockpiled as required under 4 VAC 25-130-816.22, the stockpiled material shall be clearly marked.

h. Incremental bonding markers. When the permittee elects to increment the amount of performance bond during the term of the permit, he shall, if required by the division, identify the initial and successive incremental areas for bonding by clearly marking such areas (with markers different from the perimeter markers) prior to disturbing the incremental area(s).

(b) Warnings. Warnings and all-clear signals of different character or pattern that are audible within a range of ½ mile from the point of the blast shall be given. Each person within the permit area and each person who resides or regularly works within ½ mile of the permit area shall be notified of the meaning of the signals in the blasting schedule.

(c) Access control. Access within the blasting area shall be controlled to prevent presence of livestock or unauthorized person during blasting and until an authorized representative of the permittee has reasonably determined that -

(1) No unusual hazards, such as imminent slides or undetonated charges, exist; and

(2) Access to and travel within the blasting area can be safely resumed.

4 VAC 25-130-816.67 Use of Explosives: Control of Adverse Effects

(a) General requirements. Blasting shall be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel, or availability of surface or ground water outside the permit area.

(b) Air blast.

(1) Limits.

(i) Air blast shall not exceed the maximum limits listed below at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area, except as provided in Paragraph (e) of this Section.

Lower frequency limit of measuring System, in Hz (+3 dB)	Maximum level, in db
0.1 Hz or lower – flat response[1]	.134 peak
2 Hz or lower – flat response	.133 peak
6 Hz or lower – flat response	.129 peak
C – Weighted – slow response[1]	.105 peak

1 Only when approved by the Division

(ii) If necessary to prevent damage, the Division shall specify lower maximum allowable air blast levels than those of Paragraph (b)(l)(i) of this Section for use in the vicinity of a specific blasting operation.

(2) Monitoring.

(i) The permittee shall conduct periodic monitoring to ensure compliance with the airblast (ii)
standards. The Division may require air blast measurement of any or all blasts and may specify the locations at which such measurements are taken.

(ii) The measuring systems shall have an upper-end flat-frequency response of at least 200 Hz.

(c) Fly rock. Fly rock traveling in the air or along the ground shall not be cast from the blasting site -

(1) More than one-half of the distance to the nearest dwelling or other occupied structure;

(2) Beyond the area of control required under 480-03-19.816.66(c); or

(3) Beyond the permit boundary.

(d) Ground vibration.

(1) General. In all blasting operations, except as otherwise authorized in Paragraph (e) of this Section, the maximum ground vibration shall not exceed the values approved in the blasting plan required under 480-03-19.780.13. The maximum ground vibration for protected structures listed in Paragraph (d)(2)(i) of this Section shall be established in accordance with either the maximum peak-particle-velocity limits of Paragraph (d)(2), the scaled distance equation of Paragraph (d)(3), the blasting-level chart of Paragraph (d)(4), or by the Division under Paragraph (d)(5) of this Section. All structures in the vicinity of the blasting area, not listed in Paragraph (d)(2)(i) of this Section, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines, shall be protected from damage by establishment of a maximum allowable limit on the ground vibration, submitted by the permittee in the blasting plan and approved by the Division.

(2) Maximum peak particle velocity.

(i) The maximum ground vibration shall not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area:

Distance (D), from the Blasting site, in feet	Maximum allowable peak particle Velocity (Vmax) for ground vibration, in inches/second[1]	Scaled distance factor to be applied without seismic monitoring[2] (Ds)
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

(1) Ground vibration shall be measured as the particle velocity. Particle velocity shall be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the three measurements.

(2) Applicable to the scaled-distance equation of Paragraph (d)(3)(i) of this Section.

(ii) A seismographic record shall be provided for each blast.

(3). Scale-distance equation.

(i) The permittee may use the scaled distance equation, $W = (D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring; where W = the maximum weight of explosives, in pounds; D = the distance, in feet, from the blasting site to the nearest protected structure; and Ds = the scaled-distance factor, which may initially be approved by the Division using the values for scaled-distance factor listed in Paragraph (d)(2)(i) of this Section.

(ii) The development of a modified scaled-distance factor may be authorized by the Division on receipt of a written request by the permittee, supported by seismographic records of blasting at the mine site. The modified scale-distance factor shall be determined such that the particle velocity of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of Paragraph (d)(2)(l) of this Section at a 95-percent confidence level.

(4) Blasting-level chart.

(i) The permittee may use the ground-vibration limits in Figure 1 to determine the maximum allowable ground vibration.

(ii) If the Figure 1 limits are used, a seismographic record including both particle velocity and vibration-frequency levels shall be provided for each blast. The method for the analysis of the predominant frequency contained in the blasting records shall be approved by the Division before application of this alternative blasting criterion.

(5) The maximum allowable ground vibration shall be reduced by the Division below the limits otherwise provided by this Section, if determined necessary to provide damage protection.

(6) The Division may require the permittee to conduct seismic monitoring of any or all blasts or may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

(e) The maximum air blast and ground vibration standards of Paragraphs (b) and (d) of this Section shall not apply at the following locations:

(1) At structures owned by the permittee and not leased to another person.

(2) At structures owned by the permittee and leased to another person, if a written waiver by the lessee is submitted to the Division before blasting.

4 VAC 25-130-816.68 Use of Explosives: Records of Blasting Operations

The permittee shall retain a record of all blasts for at least 3 years. Upon request, copies of these records shall be made available to the Division and to the public for inspection. Such records shall contain the following data:

(a) Name of the permittee conducting the blast.

(b) Location, date, and time of the blast.

(c) Name, signature, and certification number of the blaster conducting the blast.

(d) Identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community, or institutional building outside the permit area, except those described in 480-03-19.816.67(e).

(d) Weather conditions, including those which may cause possible adverse blasting effects.

(e) Type of material blasted.

(f) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern.

(g) Diameter and depth of holes.

(h) Types of explosives used.

(i) Total weight of explosives used per hole.

(j) The maximum weight of explosives detonated in an 8-millisecond period.

(1) Initiation system.

(m) Type and length of stemming.

(n) Mats or other protections used.

(o) Seismographic and air blast records, if required, which shall include:
- (1) Type of instrument, sensitivity, and calibration signal or certification of annual calibration.
- (2) Exact location of instrument and the date, time, and distance from the blast.
- (3) Name of the person and firm taking the reading.

(4) Name of the person and firm analyzing the seismographic record; and
(5) The vibration and/or air blast level recorded.

(p) Reasons and conditions for each unscheduled blast.

4 VAC 25-130-817.61 Use of Explosives: General Requirements

(a) Applicability. 4 VAC 25-130-817.61 through 4 VAC 25-130-817.68 apply to surface blasting activities incident to underground coal mining, including, but not limited to, initial rounds of slopes and shafts.

(b) Compliance with other laws. Each permittee shall comply with all applicable State and Federal laws and regulations in the use of explosives.

(c) Blasters.

(1) All surface blasting operations incident to underground mining in the State shall be conducted under the direction of a certified blaster, certified in accordance with Part 4 VAC 25-130-850.

(2) Certificates of blaster certification shall be carried by blasters or shall be on file at the permit area during blasting operations.

(3) A blaster and at least one other person shall be present at the firing of a blast.

(4) Persons responsible for blasting operations at a blasting site shall be familiar with the blasting plan and site-specific performance standards.

(d) Blast design.

(1) An anticipated blast design shall be submitted if blasting operations will be conducted within:

(i) 1,000 feet of any building used as a dwelling, public building, school, church or community or institutional building; or

(ii) 500 feet of active or abandoned underground mines.

(2)The blast design may be presented as a part of a permit application or at a time, before the blast, proposed in the application and approved by the Division.

(3)The blast design shall contain sketches of the drill patterns, delay periods, and decking and shall indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of structures to be protected, as well as a discussion of design factors to be used, which protect the public and meet the applicable air blast, fly rock, and ground vibration standards in 4 VAC 25-130-817.67.

(4) The blast design shall be prepared and signed by a certified blaster.

(5) The Division may require changes to the design submitted.

4 VAC 25-130-817.62 Use of Explosives: Pre-blasting Survey

(a) At least 30 days before initiation of blasting, the permittee shall notify, in writing, all residents or owners of dwellings or other structures located within 1/2 mile of the permit area on how to request a pre-blast survey.

(b) A resident or owner of a dwelling or structure within 1/2 mile of any part of the permit area may request a pre-blasting survey. This request shall be made, in writing, directly to the permittee or to the Division, who shall promptly notify the permittee. The permittee shall promptly conduct a pre-blasting survey of the dwelling or structure and promptly prepare a written report of the survey. An updated survey of any additions, modifications, or renovations shall be performed by the permittee if requested by the resident or owner. The request for an updated survey shall be in writing and describe the additions, modifications, or renovations which are to be surveyed.

(c) The permittee shall determine the condition of the dwelling or structure and shall document any Pre-blasting damage and other physical factors that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines, cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.

(d) The written report of the survey shall be signed by the person who conducted the survey. Copies of the report shall be promptly provided to the Division and to the person requesting the survey. If the person requesting the survey disagrees with the contents and/or recommendations contained therein, he may submit to both the permittee and the Division and detailed description of the specific areas of disagreement.

(e) Any surveys requested more than 10 days before the planned initiation of blasting shall be completed by the permittee before the initiation of blasting. Any surveys requested after permit approval but less than 10 days before the planned initiation of blasting shall be completed by the permittee within 30 days of the request, except that reasonable time extensions may be approved by the Division.

4 VAC 25-130-817.64 Use of Explosives: General Performance Standards

(a) The permittee shall notify, in writing, residents within 1/2 mile of the blasting site and local governments of the proposed times and locations of blasting operations. Such notice of times that blasting is to be conducted may be announced weekly, but in no case less than 24 hours before blasting will occur.

(b) Unscheduled blasts may be conducted only where public or permittee health and' safety so requires and for emergency blasting actions. When a permittee conducts an unscheduled surface blast incidental to underground coal mining operations, the permittee, using audible signals, shall notify residents

within 1/2 mile of the blasting site and document the reason in accordance with 4 VAC 25-130-817.68(P).

c) All blasting shall be conducted during daylight hours. The Division may specify more restrictive time periods for blasting.

4 VAC 25-130-817.66 Use of Explosives: Blasting Signs, Warnings, And Access Control

(a) B1asting signs. Blasting signs shall meet the specifications of 4 VAC 25-130-816.11, as described under 4 VAC 25-130-816.66.

(d) Warnings. Warnings and all clear signals of different character or pattern that are audible within a range of 1/2 mile from the point of the blast shall be given. Each person within the permit area and each person who resides or regularly works within 1/2 mile of the permit area shall be notified of the meaning of the signals in the blasting notification required in 4 VAC 25-130-817.64(a).

(e) Access control. Access within the blasting area shall be controlled to prevent presence of livestock or unauthorized persons during blasting, and until an authorized representative of the permittee has reasonably determined that:

(1) No unusual hazards, such as imminent slides or undetonated charges, exist; and

(2) Access to and travel within the blasting area can be safely resumed.

4 VAC 25-130-817.67 Use of Explosives: Control of Adverse Effects

(a) General requirements. Blasting shall be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel, or availability of surface or ground water outside the permit area.

(b) Air blast.

(1) Limits.

(i) Air blast shall not exceed the maximum limits listed below at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area, except as provided in Paragraph (e) of this Section.

Lower frequency limit of measuring System, in Hz (±3 dB)	Maximum level, in dB
0.1 Hz or lower – flat response	134 peak
2 Hz or lower – flat response	133 peak
6 Hz or lower – flat response	129 peak
C-weighted – slow response	105 peak

[1] Only when approved by the Division.

(ii) If necessary to prevent damage, the Division shall specify lower maximum allowable air blast levels than those of Paragraph (b)(l)(i) of this Section for use in the vicinity of a specific blasting operation.

4 VAC 25-130-817.67 Use of Explosives: Control of Adverse Effects (Cont.)

(2) Monitoring.

(i) The permittee shall conduct periodic monitoring to ensure compliance with the air blast standards. The Division may require air blast measurement of any or all blasts and may specify the locations at which such measurements are taken.

(ii) The measuring systems shall have an upper-end flat-frequency response of at least 200 Hz.

(c) Fly rock. Fly rock traveling in the air or along the ground shall not be cast from the blasting site:

(l) More than one-half of the distance to the nearest dwelling or other occupied structure;

(2)Beyond the area of control required under 480-03-19.816.66(c); or

(3)Beyond the permit boundary.

(d) Ground vibration.

(1) General. In all blasting operations, except as otherwise authorized in Paragraph (e) of this Section, the maximum ground vibration shall not exceed the values approved by the Division. The maximum ground vibration for protected structures listed in Paragraph (d)(2)(i) of this Section shall be established in accordance with either the maximum peak-particle velocity limits of Paragraph (d)(2), the scaled distance equation of Paragraph (d)(3), the blasting-level chart of Paragraph (d)(4), or by the Division under Paragraph (d)(5) of this Section. All structures in the vicinity of the blasting area, not listed in Paragraph (d)(2)(i) of this Section, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines, shall be protected from damage by establishment of a maximum allowable limit on the ground vibration, submitted by the permittee in the blasting plan and approved by the Division before the initiation of blasting.

(2) Maximum peak particle velocity.

(i) The maximum ground vibration shall not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area:

Distance (D), from the Blasting site, in feet	Maximum allowable peak particle Velocity (Vmax) for ground vibration, in inches/second[1]	Scaled distance factor to be applied without seismic monitoring[2] (Ds)
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

1. Ground vibration shall be measured as the particle velocity. Particle velocity shall be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the three measurements.

2. Applicable to the scaled-distance equation of Paragraph (d)(3)(i) of this Section (ii) A seismographic record shall be provided for each blast.

(3) Scaled-distance equation.

(i) The permittee may use the scaled-distance equation, $W=(D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring; where W = the maximum weight of explosives, in pounds; D = the distance, in feet, from the blasting site to the nearest protected structure; and Ds = the scaled-distance factor, which may initially be approved by the division using the values for scaled-distance factor listed in Paragraph (d)(2)(i) of this Section.

(ii) The development of a modified scale-distance factor may be authorized by the Division on receipt of a written request by the permittee, supported by seismographic records of blasting at the mine site. The modified scale-distance factor shall be determined such that the particle

velocity of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of Paragraph (d)(2)(i) of this Section, at a 95-percent confidence level.

(4) Blasting-level chart.

(i) The permittee may use the ground vibration limits in Figure 1 to determine the maximum allowable ground vibration.

(ii) If the Figure 1 limits are used, a seismographic record including both particle velocity and vibration-frequency levels shall be provided for each blast. The method for the analysis of the predominant frequency contained in the blasting records shall be approved by the Division before application of this alternative blasting criterion.

(5) The maximum allowable ground vibration shall be reduced by the Division below the limits otherwise provided by this Section, if determined necessary to provide damage protection.

(6) The Division may require the permittee to conduct seismic monitoring of any or all blasts and may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

(e) The maximum air blast and ground-vibration standards of Paragraphs (b) and (d) of this Section shall not apply at the following locations:

(1) At structures owned by the permittee and not leased to another person.

(2) At structures owned by the permittee and leased' to another person, if a written waiver by the lessee is submitted to the Division before blasting.

4 VAC 25-130-817.68 Use of Explosives: Records of Blasting Operations

The permittee shall retain a record of all blasts for at least 3 years. Upon request, copies of these records shall be made available to the Division and to the public for inspection. Such records shall contain the following data:

(a) Name of the permittee conducting the blast.

(b) Location, date, and time of the blast.

(c) Name, signature, and certification number of the blaster conducting the blast.

(d) Identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area, except those described in 480-03-19.816.67(e).

(e) Weather conditions, including those which may cause possible adverse blasting effects.

(f) Type of material blasted

(g) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay Pattern.

(h) Diameter and depth of holes.

(i) Types of explosives used.

(j) Total weight of explosives used per hole.

(k) The maximum weight of explosives detonated in an 8-millisecond period.

(l) Initiation system.

(m) Type and length of stemming.

(n) Mats or other protections used.

(o) Seismographic and air blast records, if required, which shall include:

(l) Type of instrument, sensitivity, and calibration signal or certification of annual calibration
(2) Exact location of instrument and the date, time, and distance from the blast.
(3) Name of the person and firm taking the reading.

(4) Name of the person and firm analyzing the seismographic record.
(5) The vibration and/or air blast level recorded.

(p) Reasons and conditions for each unscheduled blast.

4 VAC 25-130-850 -- TRAINING, EXAMINATIONS, AND CERTIFICATION OF BLASTERS

4 VAC 25-130-850.1 Scope

This part establishes the procedures for training, examination, and certification of persons engaged in or directly responsible for the use of explosives in surface coal mining operations.

A person who desires to become a certified blaster and receive a Mined Land Repurposing (MLR) endorsement certification must receive training that is approved by MLR.

The Office of Surface Mining (OSM) requires this training that is regulated and approved by MLR.

4 VAC 25-130-850.5 Definition

As used in this Part, Blaster means a person directly responsible for the use of explosives in surface coal mining operations who is certified under this Part.

4 VAC 25-130-850.12 Effective Date

Not later than twelve months following the approval by the Secretary of this Sub-chapter, all blasting operations shall be conducted under the direction of a certified blaster. Before that time, all such blasting operations shall be conducted by competent, experienced persons who understand the hazards involved, who are certified by the Coal Mine Safety.

4 VAC 25-130-850.13 Training

(a) Persons seeking to become certified as blasters may receive training by contacting the Coal Mine Safety office in Big Stone Gap. The training includes, but is not limited to, the technical aspects of blasting operations and State and Federal laws governing the storage, transportation, and use of explosives.

(b) Persons who are not certified and who are assigned to a blasting crew or assist in the use of explosives shall receive direction and on-the-job training from a blaster.

(c) The CMS course shall provide training and discuss practical applications of:

(l) Explosives, including:

(i) Selection of the type of explosive to be used.
(ii) Determination of the properties of explosives which will produce desired results at an acceptable level of risk.
(iii) Handling, transportation, and storage.

(2) Blasting designs, including:

(i) Geologic and topographic considerations.
(ii) Design of a blast hole, with critical dimensions.
(iii) Pattern design, field layout, and timing of blast holes.
(iv) Field applications.

(3) Loading blast holes, including priming and boosting.

(4) Initiation systems and blasting machines.

(5) Blasting vibrations, air blasts, and fly rock, including:
(i) Monitoring techniques.
(ii) Methods to control adverse affects.

(6) Secondary blasting applications.

(7) Current Federal and State rules applicable to the use of explosives.

(8) Blast records.

(9) Schedules.

(10) Pre-blasting surveys including:

(i) Availability
(ii) Coverage
(iii) Use of in-blast designs

4 VAC 25-130-850.13 Training-(Cont.)

(11) Blast plan requirements.

(12) Certification and training.

(13) Signs, warning signals, and site control.

(14) Unpredictable hazards, including:

(i) Lightning
(ii) Stray current
(iii) Radio waves
(iv) Misfires.

4 VAC 25-130-850.14 Examination

(a) The Division shall insure that candidates for blaster certification are examined by reviewing and verifying:

(l) The person has passed the CMS written examination covering blasting practices, transportation and storage of explosives, CMS rules and regulations, and blasting controls; and

(2) The person has also passed the Division's Blaster's Coal Surface Mining Endorsement Test covering Part 4 VAC 25-130-850, 4 VAC 25-130-816.61 through 4 VAC 25-130-816.68 and 4 VAC 25-130-817.61 through 4 VAC 25-130-817.68; and

(3) The person must file an application and furnish proof of experience to the CMS' Board of Mine Examiners. The minimum experience shall be at least one year of practical blasting field experience.

(b) Applicants for blasters certification shall be examined by both the Division and CMS at a minimum, in the topics set forth in 4 VAC 25-130-850.13(c).

4 VAC 25-130-850.15 Certification

(a) The Division shall issue the blaster's coal surface mining endorsement for a period of five years to those candidates examined and found to be competent and has met the requirements as described in 480-03-19.850.13 and 480-03-19.850.14.

(b) Suspension and revocation:

(1)The Division, when practicable, following written notice and opportunity for a hearing may, and upon finding of willful conduct by the CMS Board of Mine Examiners, shall suspend or revoke the blaster's coal surface mining endorsement certification during the term of the certification or take other necessary action for any of the following reasons:

(i) Non-compliance with any blasting related orders issued by the Division or CMS.

(ii) Unlawful use in the workplace of, or current addiction to, alcohol, narcotics, or other dangerous drugs.

(iii) Violation of any provision of the State or Federal explosives laws or regulations.

(iv) Providing false information or a misrepresentation to obtain certification.

(2) If advance notice and opportunity for a hearing cannot be provided, an opportunity for a hearing shall be provided as soon as practical following the suspension, revocation, or other adverse action.

(c) Recertification. Any person certified as a blaster must be recertified every five years by:

(l) Presenting written proof that the individual has worked in a capacity which demonstrates the blaster's competency during two of the last three years immediately preceding the expiration date

(2) Retaking the MLR Division's endorsement exam and achieving the required scores on the exam. Anyone who fails to achieve the required score on the exam must take or retake the training prior to retaking both the Division's and CMS' exam.

(d) Protection of certification. Certified blasters shall take every reasonable precaution to protect their certificates from loss, theft, or unauthorized duplication. Any such occurrence shall be reported immediately to the Division.

(e) Conditions:

(l) A blaster shall immediately exhibit upon request his or her certificate to any authorized representative of the Division, CMS, or the Office of Surface Mining.

(2) Blaster's certification shall not be assigned or transferred.

(3) Blasters shall not delegate their responsibility to any individual who is not a certified blaster.

(f) Petitions for recertification.
An individual whose certification has been revoked may petition the MLR for recertification. The MLR shall not accept a petition for recertification any sooner than one year from the effective date of revocation. Such petitions shall show valid reasons why the Division should consider the request for recertification. The Division may require retesting prior to recertification.

(g) Appeals Procedures.

Appeals for review of certification including suspension and revocation decisions shall be made to the MLR. Appeals not resolved by the MLR may be heard pursuant to the provisions for administrative and judicial review under Chapter 19, Title 45.2 of the Code.

Virginia Reclamation Regulations
4VAC25-130-700.5. Definitions.

"Downslope" means the land surface between the projected outcrop of the lowest coal bed being mined along each highwall and a valley floor.

"Previously mined area" means land affected by surface coal mining operations prior to August 3, 1977, that has not been reclaimed to the standards of this chapter.

"Steep slope" means any slope of more than 20 degrees or such lesser slope as may be designated by the division after consideration of soil, climate, and other characteristics of a region or the state.

4VAC25-130-761.11. Areas where mining is prohibited or limited.

Subject to valid existing rights, no surface coal mining operations shall be conducted after August 3, 1977, unless those operations existed on the date of enactment:

(a) On any lands within the boundaries of the National Park System, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers Systems including, for study rivers designated under section 5(a) of the Wild and Scenic Rivers Act (16 USC §1276(a)), a corridor extending at least one-quarter mile from each bank for the length of the segment being studied, and National Recreation Areas designated by Act of Congress;

(b) On any Federal lands within the boundaries of any national forest; provided, however, that surface coal mining operations may be permitted on such lands, if the Secretary finds that there are no significant recreational, timber, economic, or other values which may be incompatible with surface coal mining operations; and surface operations and impacts are incident to an underground coal mine.

(c) On any lands where mining will adversely affect any publicly owned park or any place included in the National Register of Historic Places, unless approved jointly by the division and the Federal, State, or local agency with jurisdiction over the park or place.

(d) Within 100 feet, measured horizontally, of the outside right-of-way line of any public road, except:

(1) Where mine access roads or haulage roads join such right-of-way line.

(2) Where the division or the appropriate public road authority, pursuant to being designated as the responsible agency by the Director, allows the public road to be relocated, closed, or the area affected to be within 100 feet of such road, after

(i) Public notice and opportunity for a public hearing in accordance with 4VAC25-130-761.12(d).

(ii) Making a written finding that the interests of the affected public and landowners will be Protected.

4VAC25-130-761.11. Areas where mining is prohibited or limited. (Cont.)

(e) Within 300 feet, measured horizontally, of any occupied dwelling, except when:

(1) The owner of the dwelling has provided a written waiver consenting to surface coal mining operations closer than 300 feet.

(2) The part of the mining operation which is within 300 feet of the dwelling is a haul road or access road which connects with an existing public road on the side of the public road opposite the dwelling.

(f) Within 300 feet measured horizontally of any public building, school, church, community or institutional building or public park.

(g) Within 100 feet measured horizontally of a cemetery.

(h) There will be no surface coal mining, permitting, licensing or exploration of Federal Lands in the National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, Wild and Scenic Rivers System, or National Recreation Areas, unless called for by Acts of Congress.

4VAC25-130-800.60. Terms and conditions for liability insurance.

(a) The division shall require the applicant to submit prior to permit issuance a certificate issued by an insurance company licensed to do business in the Commonwealth certifying that the applicant has a public liability insurance policy in force for the surface coal mining and reclamation operations for which the permit is sought. Such policy shall provide for personal injury and property damage protection in an amount adequate to compensate any persons injured or property damaged as a result of the surface coal mining and reclamation operations, including the use of explosives, and who are entitled to compensation under the applicable provisions of Virginia law. Minimum insurance coverage under split limit for bodily injury and property damage shall be $300,000 for each occurrence and $500,000 aggregate. Minimum insurance coverage for bodily injury and property damage combined shall be $1,000,000 for each occurrence and $1,000,000 aggregate.

(b) The policy shall be maintained in full force during the life of the permit or any renewal thereof, including the liability period necessary to complete all reclamation operations under this chapter.

(c) The policy shall include a rider requiring that the insurer notify the division whenever substantive changes are made in the policy including any termination or failure to renew.

4VAC25-130-801.18. Criteria for release of bond.

(a) The division shall release the bond applicable to the permit area following completion of all reclamation, restoration, and abatement work required of the permittee by the approved plans, this chapter, and the Act.

(b) The minimum period of bond liability for the entire permit shall continue for not less than five years following completion of all reclamation work. This period of liability shall be in accordance with the provisions of 4VAC25-130-800.13 and 4VAC25-130-800.17(b). The total amount of bond for the permit area following this period of liability shall be as provided in Paragraph (c) of this section.

(c) The division may choose to release portions of the bond, if the areas sought for release are capable of supporting the proposed postmining land use independent of the successful completion of the reclamation of portions of the permit area still under bond or not yet initially disturbed. A minimum of two full growing seasons must have elapsed before the division will consider any bond release for the permit area. Reclamation shall be deemed to be adequate when:

(1) Revegetation has been established in accordance with the approved reclamation plan and the standards for the success of revegetation are met.
(2) The lands are not contributing suspended solids to stream flow or runoff outside the permit area in excess of the requirements of Subchapter VK or the approved permit plans.
(3) With respect to prime farmlands, soil productivity has been returned to the level of yield as required by 4VAC25-130-785.17 and Part 823 when compared with non-mined prime farmland in the surrounding areas as determined from the soil survey performed under the plan approved under 4VAC25-130-785.17.
(4) The provisions of a plan approved by the division for the sound future management of any permanent impoundment by the permittee or landowner have been implemented to the satisfaction of the division.

(d) In the event a forfeiture occurs after partial bond release the division may, after utilizing the available bond monies, utilize the Fund as necessary to complete reclamation liabilities for the permit area.

4VAC25-130-816.11. Signs and markers.

(a) Specifications. Signs and markers required under this Part shall:
(1) Be posted, maintained, and removed by the person who conducts the surface mining activities.
(2) Be of a uniform design throughout the operation that can be easily seen and read.
(3) Be made of durable material.
(4) Conform to local ordinances and codes.

(b) Maintenance. Signs and markers shall be maintained during the conduct of all activities to which they pertain.

(c) Mine and permit identification signs.
(1) Identification signs shall be displayed at each point of access to the permit area from public roads.
(2) Signs shall show the name, business address, and telephone number of the permittee and the identification number of the current permit authorizing surface coal mining activities.
(3) Signs shall be retained and maintained until after the release of all bonds for the permit area.

(d) Perimeter markers. The perimeter of a permit area shall be clearly marked prior to the permit review conducted by the division's field enforcement personnel. The perimeter shall be clearly marked by flagging, stakes or signs. All markers shall be easily visible from adjacent markers. The approximate outer perimeter of the solid portion of any pre-existing bench shall be closely marked prior to permit review.

(e) Buffer zone markers. Buffer zones shall be marked along their boundaries, prior to permit review conducted by the division's field enforcement personnel. The boundaries shall be clearly marked by flagging, stakes or signs as required under 4VAC25-130-816.57. All markers of the buffer zone shall be easily visible from adjacent markers.

(f) Blasting signs. If blasting is conducted incident to surface mining activities, the person who conducts these activities shall:
(1) Conspicuously place signs reading "Blasting Area" along the edge of any blasting area that comes within 100 feet of any public road right of way, and at the point where any other road provides access to the blasting area; and

(2) At all entrances to the permit area from public roads or highways place conspicuous signs which state "Warning! Explosives In Use" which clearly list and describe the meaning of the audible blast warning and all clear signals that are in use, and which explain the marking of blasting areas and charged holes awaiting firing within the permit area.

(g) Topsoil markers. Where topsoil or other vegetation- supporting material is segregated and stockpiled as required under 4VAC25-130-816.22, the stockpiled material shall be clearly marked.

(h) Incremental bonding markers. When the permittee elects to increment the amount of performance bond during the term of the permit, he shall, if required by the division, identify the initial and successive incremental areas for bonding by clearly marking such areas (with markers different from the perimeter markers) prior to disturbing the incremental area(s).

Emergency Regulation

The Department of Mines, Minerals and Energy adopted an emergency regulation amending section 4VAC25-130-816.11 which requires coal mine permit boundary markers located on steep slopes above private dwellings or other occupied buildings to be made or marked with fluorescent or reflective paint or material.

4VAC25-130-816.22. Topsoil and subsoil.

(a) Removal.

(1)(i) All topsoil shall be removed as a separate layer from the area to be disturbed, and segregated.
(ii) Where the topsoil is of insufficient quantity or poor quality for sustaining vegetation, the materials approved by the division in accordance with Paragraph (b) of this section shall be removed as a separate layer from the area to be disturbed and segregated.

(2) If topsoil is less than 6 inches thick, the permittee may remove the topsoil and the unconsolidated materials immediately below the topsoil and treat the mixture as topsoil.

(3) The division may choose not to require the removal of topsoil for minor disturbances which--

(i) Occur at the site of small structures, such as power poles, signs, or fence lines; or

(ii) Will not destroy the existing vegetation and will not cause erosion.

(4) Timing. All material to be removed under this section shall be removed after the vegetative cover that would interfere with its salvage is cleared from the area to be disturbed, but before any drilling, blasting, mining, or other surface disturbance takes place.

(b) Substitutes and supplements.

(1) Selected overburden materials may be substituted for, or used as a supplement to topsoil if the

permittee demonstrates to the division, in accordance with 4VAC25-130-780.18, that the resulting soil medium is equal to, or more suitable for sustaining vegetation than, the existing topsoil, and the resulting soil medium is the best available in the permit area to support revegetation.

(2) Substituted or supplemental material shall be removed, segregated, and replaced in compliance with the requirements of this section for topsoil.

(3) Selected overburden materials may be substituted for or used as a supplement to topsoil, if the slope of the land containing the topsoil is greater than 60 percent (3v:5h) and the selected overburden materials satisfy the following criteria:

(i) The results of the analyses of the overburden required in 4VAC25-130-780.18 demonstrates the feasibility of using the overburden materials.

(ii) The substitute material has a pH greater than 5.0, has a net acidity of less than five tons per 1,000 tons of material or a net alkalinity, and is suitable for sustaining vegetation consistent with the standards for vegetation in 4VAC25-130-816.111 through 4VAC25-130-816.116, and the approved postmining land use.

(c) Storage.

(1) Materials removed under Paragraph (a) of this section shall be segregated and stockpiled when it is impractical to redistribute such materials promptly on regraded areas.

(2) Stockpiled materials shall--

(i) Be selectively placed on a stable site within the permit area;

(ii) Be protected from contaminants and unnecessary compaction that would interfere with revegetation;

(iii) Be protected from wind and water erosion through prompt establishment and maintenance of an effective, quick growing vegetative cover or through other measures approved by the division; and

(iv) Not be moved until required for redistribution unless approved by the division.

(3) When long-term surface disturbances will result from facilities such as support facilities and preparation plants and where stockpiling of materials removed under Paragraph (a)(1) of this section would be detrimental to the quality or quantity of those materials, the division may approve the temporary distribution of the soil materials so removed to an approved site within the permit area to enhance the current use of that site until the materials are needed for later reclamation, provided that--

(i) Such action will not permanently diminish the capability of the topsoil of the host site; and

(ii) The material will be retained in a condition more suitable for redistribution than if stockpiled.

(d) Redistribution.

(1) Topsoil materials removed under Paragraph (a) of this section shall be redistributed in a manner that—

(i) Achieves an approximately uniform, stable thickness consistent with the approved postmining land use, contours, and surface-water drainage systems;

(ii) Prevents excess compaction of the materials; and

(iii) Protects the materials from wind and water erosion before and after seeding and planting.

(2) Before redistribution of the material removed under Paragraph (a) of this section, the regraded land shall be treated if necessary to reduce potential slippage of the redistributed material and to promote root penetration. If no harm will be caused to the redistributed material and reestablished vegetation, such treatment may be conducted after such material is replaced.

(3) The division may choose not to require the redistribution of topsoil or topsoil substitutes on the approved postmining embankments of permanent impoundments or of roads if it determines that--

(i) Placement of topsoil or topsoil substitutes on such embankments is inconsistent with the requirement to use the best technology currently available to prevent sedimentation; and

(ii) Such embankments will be otherwise stabilized.

(4) Nutrients and soil amendments shall be applied to the initially redistributed material when necessary to establish the vegetative cover. The types and amounts of nutrients and soil amendments shall be determined by soil tests performed by a qualified laboratory using standard methods which are approved by the division. If seeding is done without a site specific soil test--

(i) Fertilization rates of 300 pounds of 16-27-14 or 500 pounds of 10-20-10 or equivalents per acre shall be used.

(ii) Liming rates shall be in accordance with the following table:

Mine Tons of Lime Needed per Acre to Increase pH to:

	Spoil pH					
	5.1 - 5.5			5.6 - 6.2		
Test	Sandstone	Shale	Mixed	Sandstone	Shale	Mixed
4.0 - 4.5	2	3	2	3	5	4
4.6 - 5.0	1	3	2	2	4	3
5.1 - 5.5	0	2	1	1	3	2
5.6 - 6.0	0	1	0	0	2	1

(iii) Soil tests shall be performed promptly after topsoiling but before application of any supplementary nutrients and any additional lime and fertilizer applied as necessary.

(e) Subsoil segregation. The division may require that the B horizon, C horizon, or other underlying strata, or portions thereof, be removed and segregated, stockpiled, and redistributed as subsoil in accordance with the requirements of Paragraphs (c) and (d) of this section if it finds that such subsoil layers are necessary to comply with the revegetation requirements of 4VAC25-130-816.111, 4VAC25-130-816.113, 4VAC25-130-816.114 and 4VAC25-130-816.116.

4VAC25-130-816.42. Hydrologic balance; water quality standards and effluent limitations.

Discharges of water from areas disturbed by surface mining activities shall be made in compliance with all applicable State and Federal water quality laws, standards and regulations and with the effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR 434.

4VAC25-130-816.43. Diversions.

(a) General requirements.

(1) With the approval of the division, any flow from mined areas abandoned before May 3, 1978, and any flow from undisturbed areas or reclaimed areas, after meeting the criteria of 4VAC25-130-816.46 for siltation structure removal, may be diverted from disturbed areas by means of temporary or permanent diversions. All diversions shall be designed to minimize adverse impacts to the hydrologic balance within the permit and adjacent areas, to prevent material damage outside the permit area and to assure the safety of the public. Diversions shall not be used to divert water into underground mines without approval of the division under 4VAC25-130-816.41(i).

(2) The diversion and its appurtenant structures shall be designed, located, constructed, maintained, and used to:

(i) Be stable.

(ii) Provide protection against flooding and resultant damage to life and property.

(iii) Prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to streamflow outside the permit area.

(iv) Comply with all applicable local, State and Federal laws and regulations.

(3) Temporary diversions shall be removed promptly when no longer needed to achieve the purpose for which they were authorized. The land disturbed by the removal process shall be restored in accordance with this Part. Before diversions are removed, downstream water-treatment facilities previously protected by the diversion shall be modified or removed, as necessary, to prevent overtopping or failure of the facilities. This requirement shall not relieve the permittee from

maintaining water-treatment facilities as otherwise required. A permanent diversion or a stream channel reclaimed after the removal of a temporary diversion shall be designed and constructed so as to restore or approximate the pre-mining characteristics of the original stream channel including the natural riparian vegetation to promote the recovery and the enhancement of the aquatic habitat.

(4) Diversions which convey water continuously or frequently shall be lined with rock rip rap to at least the normal flow depth, including an allowance for freeboard. Diversions constructed in competent bedrock and portions of channels above normal flow depth shall comply with the velocity limitations of Paragraph (5) below.

(5) The maximum permissible velocity for the following methods of stabilization are:

Vegetated channel constructed in soil	3.5 feet per second
Vegetated channel with jute netting	5.0 feet per second
Rock rip rap lined channel	16.0 feet per second
Channel constructed in competent bedrock	No limit

(6) Channel side slopes shall be no steeper than 1.5h:1v in soil.

(7) Adequate freeboard shall be provided to prevent overtopping. A minimum of 0.3 feet shall be included, with additional freeboard provided at curves, transitions, and other critical sections as required.

(8) When rock rip rap lining is used, consideration shall be given to rip rap size, bedding, and filter material. Rock used for rip rap shall be non-degradable, and non-acid forming such as natural sand and gravel, sandstone or limestone. No clay, shale, or coal shall be used.

(9) Sediment and other debris shall be removed and the diversion maintained to provide the design requirements throughout its operation.

(10) The division may specify other criteria for diversions to meet the requirements of this section.

(b) Diversion of perennial and intermittent streams.

(1) Diversion of perennial and intermittent streams within the permit area may be approved by the division after making the finding relating to stream buffer zones called for in 4VAC25-130-816.57 that the diversion will not adversely affect the water quantity and quality and related environmental resources of the stream.

(2) The design capacity of channels for temporary and permanent stream channel diversions shall be at least equal to the capacity of the unmodified stream channel immediately upstream and downstream from the diversion.

(3) The requirements of Paragraph (a)(2)(ii) of this section shall be met when the temporary and permanent diversions for perennial and intermittent streams are designed so that the combination of channel, bank and flood-plain configuration is adequate to pass safely the peak runoff of a 10-year, 6-hour precipitation event for a temporary diversion and a 100-year, 6-hour precipitation event for a permanent diversion.

(4) The design and construction of all stream channel diversions of perennial and intermittent streams shall be certified by a qualified registered professional engineer as meeting the standards of this Part and any other criteria set by the division.

(5) Channels which are constructed in backfilled material shall be formed during the backfilling and grading of the area. Unless the backfill material is of sufficiently low permeability, the channel shall be lined to prevent saturation of the backfill, loss of stream flow, or degradation of groundwater quality.

(6) Rock rip rap lining shall be placed in the channels of all diversions of perennial and intermittent streams to the normal flow depth, including adequate freeboard. Channels constructed in competent bedrock need not be rip rap lined.

(c) Diversion of miscellaneous flows.

(1) Miscellaneous flows, which consist of all flows except for perennial and intermittent streams, may be diverted away from disturbed areas if required or approved by the division. Miscellaneous flows shall include ground-water discharges and ephemeral streams.

(2) The design, location, construction, maintenance, and removal of diversions of miscellaneous flows shall meet all of the performance standards set forth in Paragraph (a) of this section.

(3) The requirements of Paragraph (a)(2)(ii) of this section shall be met when the temporary and permanent diversions for miscellaneous flows are designed to pass safely the peak runoff of a 2-year, 6-hour precipitation event for a temporary diversion and a 10-year, 6-hour precipitation event for a permanent diversion.

(d) Steep slope conveyances.

(1) A steep slope conveyance, including but not limited to a rock rip rap flume, concrete flume, or a pipe, shall be used to convey water down steep slopes to stable natural or constructed drain ways. Steep slope conveyances shall be constructed at locations where concentrated flows may cause erosion.

(2) The capacity of the conveyance shall be equal to or greater than the capacity of the inlet ditch or drainage structure associated with it.

4VAC25-130-816.46. Hydrologic balance; siltation structures.

(a) For the purposes of this section only, "disturbed area" shall not include those areas—

(1) In which the only surface mining activities include diversion ditches, siltation structures, or roads that are designed, constructed and maintained in accordance with this Part; and

(2) For which the upstream area is not otherwise disturbed by the operator.

(b) General requirements.

(1) Additional contributions of sediment to streamflow or runoff outside the permit area shall be prevented to the extent possible using the best technology currently available.

(2) All surface drainage from the disturbed area shall be passed through a siltation structure before leaving the permit area, except as provided in paragraph (b)(5) or (e) of this section.

(3) Siltation structures for an area shall be constructed before beginning any surface mining activities in that area and, upon construction, shall be certified by a qualified registered professional engineer to be constructed as designed and as approved in the reclamation plan.

(4) Any siltation structure which impounds water shall be designed, constructed and maintained in accordance with 4VAC25-130-816.49.

(5) Siltation structures shall be maintained until removal is authorized by the division and the disturbed area has been stabilized and revegetated. In no case shall the structure be removed sooner than two years after the last augmented seeding.

(6) When a siltation structure is removed, any embankment material and all accumulated sediment shall be placed in designated disposal areas, and the land on which the siltation structure was located shall be regraded and revegetated in accordance with the reclamation plan and 4VAC25-

130-816.111 through 4VAC25-130-816.116. Sedimentation ponds approved by the division for retention as permanent impoundments may be exempted from this requirement.

(c) Sedimentation ponds.

(1) When used, sedimentation ponds shall--

(i) Be used individually or in series.

(ii) Be located as near as possible to the disturbed area and out of perennial streams unless such location is approved by the division.

(iii) Be designed, constructed, and maintained to:

(A) Provide adequate sediment storage volume and provide adequate detention time to allow the effluent from the ponds to meet state and federal effluent limitations.

(B) Have a minimum volume of 0.125 acre-feet per acre of disturbed area draining to it, of which 0.075 acre-feet per acre disturbed shall be sediment storage volume and the remainder shall be detention storage volume.

(C) Treat the 10-year, 24-hour precipitation event ("design event") unless a lesser design event is approved by the division based on terrain, climate, other site-specific conditions and on a demonstration by the permittee that the effluent limitations of 4VAC25-130-816.42 will be met.

(D) Provide a non-clogging dewatering device adequate to maintain the detention time required under paragraphs (c)(1)(iii)(A) and (B) of this section.

(E) Minimize, to the extent possible, short circuiting.

(F) Provide periodic sediment removal sufficient to maintain adequate volume for the design event. The elevation corresponding to the sediment storage volume shall be determined and a benchmark set in the field from which this elevation can readily be established. Sediment shall be removed when its accumulation reaches the cleanout level or more frequently if the operation of the structure is impaired. Sediment removed shall be placed only in disposal areas identified and approved in the reclamation plan.

(G) Ensure against excessive settlement.

(H) Be free of sod, large roots, frozen soil, and acid or toxic-forming coal-process waste and

(1) Be compacted properly.

(2) Spillways. A sedimentation pond shall include either a combination of principal and emergency spillways or a single spillway configured as specified in 4VAC25-130-816.49(a)(9).

(d) Other treatment facilities.

(1) Other treatment facilities shall be designed to treat the 10-year, 24-hour precipitation event unless a lesser design event is approved by the division based on terrain, climate, other site-specific conditions and a demonstration by the permittee that the effluent limitations of 4VAC25-130-816.42 will be met.

(2) Other treatment facilities shall be designed in accordance with the applicable requirements of paragraph (c) of this section.

(e) Exemptions. Exemptions to the requirements of this section may be granted if--

(1) The disturbed drainage area within the total disturbed area is small; and

(2) The permittee demonstrates that siltation structures and alternate sediment control measures are not necessary for drainage from the disturbed area to meet the effluent limitations under 4VAC25-130-816.42 and the applicable state and federal water quality standards for the receiving waters.

4VAC25-130-816.49. Impoundments.

(a) General requirements. The requirements of this subsection apply to both temporary and permanent impoundments.

(1) Impoundments meeting the Class B or C criteria for dams in the U.S. Department of Agriculture, Soil Conservation Service Technical Release No. 60 (210-VI-TR60, Oct. 1985), "Earth Dams and Reservoirs," shall comply with the "Minimum Emergency Spillway Hydrologic Criteria" table in TR-60 and the requirements of this section. The technical release is hereby incorporated by reference. Copies may be obtained from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161, Order No. PB87-157509/AS. Copies can be inspected at the OSM Headquarters Office, Office of Surface Mining Reclamation and

Enforcement, Administrative Record, Room 660, 800 North Capitol Street, Washington, D.C., or at the Office of the Federal Register, 800 North Capitol Street, NW, Suite 700, Washington, D.C.

(2) An impoundment meeting the size or other criteria of 30 CFR 77.216(a) shall comply with the requirements of 30 CFR 77.216 and this section.

(3) Design certification. The design of impoundments shall be certified by a qualified registered professional engineer as designed to meet the requirements of this Part using current, prudent engineering practices, and any other criteria established by the division. The qualified registered professional engineer shall be experienced in the design and construction of impoundments.

(4) Stability.

(i) An impoundment meeting the Class B or C criteria for dams in TR-60, or the size or other criteria of 30 CFR 77.216(a) shall have a minimum static safety factor of 1.5 for a normal pool with steady state seepage saturation conditions, and a seismic safety factor of at least 1.2.

(ii) Impoundments not included in paragraph (a)(4)(i) of this section, except for a coal mine waste impounding structure shall have a minimum static safety factor of 1.3 for a normal pool with steady state seepage saturation conditions. In lieu of engineering tests to establish compliance with the minimum static safety factor of 1.3, earth embankments whose top widths are no less than 10 feet and whose embankment slopes are 2h:1v or flatter may be used provided that the permittee documents that a minimum static safety factor of 1.3 can be met using the graphical solution methods outlined in the "Bureau of Mines Report of Investigations/1981, RI 8564, Factor of Safety Charts for Estimating the Stability of Saturated and Unsaturated Tailings Pond Embankments, United States Department of Interior."

(5) Freeboard. Impoundments shall have adequate freeboard to resist overtopping by waves and by sudden increases in storage volume. The minimum freeboard shall be one foot. Impoundments meeting the Class B or C criteria for dams in TR-60 shall comply with the freeboard hydrograph criteria in the "Minimum Emergency Spillway Hydrologic Criteria" table in TR-60.

(6) Foundation.

(i) Foundations and abutments for an impounding structure shall be stable during all phases of construction and operation and shall be designed based on adequate and accurate information on the foundation conditions. For an impoundment meeting the Class B or C criteria for dams in TR-60, or the size or other criteria of 30 CFR 77.216(a), foundation investigations, as well as any necessary laboratory testing of foundation material shall be performed to determine the design requirements for foundation stability.

(ii) All vegetative and organic materials shall be removed and foundations excavated and prepared to resist failure. Cutoff trenches shall be installed if necessary to ensure stability and

minimize seepage. The pool area shall be cleared of all brush and trees unless the requirement is waived by the division.

(iii) The most impervious material available shall be used in the cutoff trench and center portion of the dam. If sandy or gravelly material is encountered, it shall be placed in the outer shell, preferably in the downstream portion of the dam.

(7) Slope protection. Slope protection shall be provided to protect against surface erosion at the site and protect against sudden drawdown.

(8) Vegetation. Faces of embankments and surrounding areas shall be vegetated, except that faces where water is impounded may be riprapped or otherwise stabilized in accordance with accepted design practices.

(9) Spillways. An impoundment shall include either a combination of principal and emergency spillways or a single spillway configured as specified in paragraph (a)(9)(i) of this section, designed and constructed to safely pass the applicable design precipitation event specified in paragraph (a)(9)(ii) of this section, except as set forth in paragraph (c)(2) of this section.

(i)(A) The division may approve a single open-channel spillway that is:

(1) Of non-erodable construction and designed to carry sustained flows; or

(2) Earth- or grass-lined and designed to carry short-term, infrequent flows at non-erosive velocities where sustained flows are not expected.

(B) Temporary ponds that do not meet the size or other criteria of 30 CFR 77.216(a) and located where failure would not be expected to cause loss of life or serious property damage, may use a single spillway of the pipe and riser design if the riser is no less than 15 inches in diameter, the barrel is no less than 12 inches in diameter, and a properly designed anti-vortex device and trash rack are securely installed on top of the riser.

(ii) Except as specified in paragraph (c)(2) of this section, the required design precipitation event for an impoundment meeting the spillway requirements of paragraph (a)(9) of this section is:

(A) For an impoundment meeting the SCS Class B or C criteria for dams in TR-60, the emergency spillway hydrograph criteria in the "Minimum Emergency Spillway Hydrologic Criteria" table in TR-60 or greater event as specified by the division.
(B) For an impoundment meeting or exceeding the size or other criteria of 30 CFR 77.216(a), a 100-year six-hour event, or greater event as specified by the division.
(C) For an impoundment included in paragraphs (a)(9(ii)(A) and (B) of this section, a 25-year six-hour event, or greater event as specified by the division.

(10) Inspections. A qualified registered professional engineer or other qualified professional specialist under the direction of a professional engineer, shall inspect each impoundment as

provided in paragraph (a)(10)(i) of this section. The professional engineer or specialist shall be experienced in the construction of impoundments.

(i) Inspections shall be made regularly during construction, upon completion of construction, and at least yearly until removal of the structure or release of the performance bond.

(ii) The qualified registered professional engineer shall, within two weeks after each inspection required in paragraph (a)(10)(i) of this section, provide to the division a certified report that the impoundment has been constructed and/or maintained as designed and in accordance with the approved plan and this chapter. Construction certified in previous reports need not be recertified after each annual inspection. The report shall include discussion of any appearance of instability, structural weakness or other hazardous condition, depth and elevation of any impounded waters, existing storage capacity, any existing or required monitoring procedures and instrumentation, and any other aspects of the structure affecting stability.

(iii) A copy of the report shall be retained at or near the mine site.

(11) Examinations. Impoundments meeting the SCS Class B or C criteria for dams in TR-60, or the size or other criteria of 30 CFR 77.216 must be examined in accordance with 30 CFR 77.216-3. Impoundments not meeting the Class B or C criteria for dams in TR-60, or subject to 30 CFR 77.216 shall be examined at least quarterly. A qualified person designated by the operator shall examine impoundments for appearance of structural weakness and other hazardous conditions.

(12) Emergency procedures. If any examination or inspection discloses that a potential hazard exists, the permittee shall promptly inform the division of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the division shall be notified immediately. Notification shall be by the fastest available means and followed in writing. The division shall then notify the appropriate agencies that other emergency procedures are required to protect the public.

(b) Permanent impoundments. A permanent impoundment of water may be created, if authorized by the division in the approved permit based upon the following demonstration:

(1) The size and configuration of such impoundment will be adequate for its intended purposes.

(2) The quality of impounded water will be suitable on a permanent basis for its intended use and, after reclamation, will meet applicable state and federal water quality standards, and discharges from the impoundment will meet applicable effluent limitations and will not degrade the quality of receiving water below applicable state and federal water quality standards.

(3) The water level will be sufficiently stable and be capable of supporting the intended use.

(4) Final grading will provide for adequate safety and access for proposed water users.

(5) The impoundment will not result in the diminution of the quality and quantity of water utilized by adjacent or surrounding landowners for agricultural, industrial, recreational, or domestic uses.

(6) The impoundment will be suitable for the approved postmining land use.

(c) Temporary impoundments.

(1) The division may authorize the construction of temporary impoundments as part of a surface coal mining operation.

(2) In lieu of meeting the requirements in paragraph (a)(9)(i) of this section, the division may approve an impoundment that relies primarily on storage to control the runoff from the design precipitation event when it is demonstrated by the operator and certified by a qualified registered professional engineer or qualified registered professional land surveyor in accordance with 4VAC25-130-780.25(a) that the impoundment will safely control the design precipitation event, the water from which shall be safely removed in accordance with current, prudent, engineering practices. Such an impoundment shall be located where failure would not be expected to cause loss of life or serious property damage, except where:

(i) Impoundments meeting the SCS Class B or C criteria for dams in TR-60 or the size or other criteria of 30 CFR 77.216(a), shall be designed to control the precipitation of the probable maximum precipitation of a six-hour event, or greater event as specified by the division; or

(ii) Impoundments not included in paragraph (c)(2)(i) of this section shall be designed to control the precipitation of a 100-year six-hour event, or greater event as specified by the division.

4VAC25-130-816.57. Hydrologic balance; stream buffer zones.

(a) No land within 100 feet of a perennial stream or an intermittent stream shall be disturbed by surface mining activities, unless the division specifically authorizes surface mining activities closer to, or through, such a stream. The division may authorize such activities only upon finding that:
(1) Surface mining activities will not cause or contribute to the violation of applicable State or Federal water quality standards, and will not adversely affect the water quantity and quality or other environmental resources of the stream; and
(2) If there will be a temporary or permanent stream-channel diversion, it will comply with 4VAC25-130-816.43.

(b) The area not to be disturbed shall be designated as a buffer zone, and the permittee shall mark it as specified in 4VAC25-130-816.11.

4VAC25-130-816.62. Use of explosives; pre-blasting survey.

(a) At least 30 days before initiation of blasting, the permittee shall notify, in writing, all residents or owners of dwellings or other structures located within ½ mile of the permit area how to request a pre-blasting survey.

(b) A resident or owner of a dwelling or structure within ½ mile of any part of the permit area may request a pre-blasting survey. This request shall be made, in writing, directly to the permittee or to the division, who shall promptly notify the permittee. The permittee shall promptly conduct a preblasting survey of the dwelling or structure and promptly prepare a written report of the survey. An updated survey of any additions, modifications, or renovations shall be performed by the permittee if requested by the resident or owner. The request for an updated survey shall be in writing and describe the additions, modifications, or renovations which are to be surveyed.

(c) The permittee shall determine the condition of the dwelling or structure and shall document any pre-blasting damage and other physical factors that could reasonably be affected by the blasting. Structures such as pipelines, cables, transmission lines, and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.

(d) The written report of the survey shall be signed by the person who conducted the survey. Copies of the report shall be promptly provided to the division and to the person requesting the survey. If the person requesting the survey disagrees with the contents and/or recommendations contained therein, he may submit to both the permittee and the division a detailed description of the specific areas of disagreement.

(e) Any surveys requested more than 10 days before the planned initiation of blasting shall be completed by the permittee before the initiation of blasting. Any surveys requested after permit approval but less than 10 days before the planned initiation of blasting shall be completed by the permittee within 30 days of the request, except that reasonable time extensions may be approved by the division.

4VAC25-130-816.64. Use of explosives; blasting schedule.

(a) General requirements.

(1) The permittee shall conduct blasting operations at times approved by the division and announced in the blasting schedule. The division may limit the area covered, timing, and sequence of blasting as listed in the schedule, if such limitations are necessary and reasonable in order to protect the public health and safety or welfare.
(2) All blasting shall be conducted during daylight hours. The division may specify more restrictive time periods for blasting.

(3) Unscheduled blasts may be conducted only where public or permittee health and safety so require and for emergency blasting actions. When a permittee conducts an unscheduled blast, the permittee, using audible signals, shall notify residents within ½ mile of the blasting site and document the reason for the unscheduled blast in accordance with 4VAC25-130-816.68(p).

(b) Blasting schedule publication and distribution.

(1) The permittee shall publish the blasting schedule in a newspaper of general circulation in the locality of the blasting site at least 10 days, but not more than 30 days, before beginning a blasting program.

(2) The permittee shall distribute copies of the schedule to local governments and public utilities and to each local residence within ½ mile of the proposed blasting site described in the schedule.

(3) The permittee shall republish and redistribute the schedule at least every 12 months and revise and republish the schedule at least 10 days, but not more than 30 days, before blasting whenever the area covered by the schedule changes or actual time periods for blasting significantly differ from the prior announcement.

(c) Blasting schedule contents. The blasting schedule shall contain, at a minimum:

(1) Name, address, and telephone number of the permittee.

(2) Identification of the specific areas in which blasting will take place.

(3) Dates and time periods when explosives are to be detonated.

(4) Methods to be used to control access to the blasting area.

(5) Type and patterns of audible warning and all-clear signals to be used before and after blasting.

Emergency Regulation:

The Department of Mines, Minerals and Energy adopted an emergency regulation amending section 4VAC25-130-816.64 which requires all persons conducting blasting operations on coal mines occurring within 1,000 feet of a private dwelling or occupied building to conduct seismic monitoring of the blasting."

4VAC25-130-816.66. Use of explosives; blasting signs, warnings, and access control.

(a) Blasting signs. Blasting signs shall meet the specifications of 4VAC25-130-816.11.

(b) Warnings. Warning and all-clear signals of different character or pattern that are audible within a range of ½ mile from the point of the blast shall be given. Each person within the permit area and each person who resides or regularly works within ½ mile of the permit area shall be notified of the meaning of the signals in the blasting schedule.

(c) Access control. Access within the blasting area shall be controlled to prevent presence of livestock or unauthorized persons during blasting and until an authorized representative of the permittee has reasonably determined that-

(1) No unusual hazards, such as imminent slides or undetonated charges, exist; and

(2) Access to and travel within the blasting area can be safely resumed.

4VAC25-130-816.67. Use of explosives; control of adverse effects.

(a) General requirements. Blasting shall be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel, or availability of surface or ground water outside the permit area.

(b) Air blast.

(1) Limits.

(i) Air blast shall not exceed the maximum limits listed below at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area, except as provided in Paragraph (e) of this section.

Lower frequency limit of measuring system, in Hz (+- 3 dB)	Maximum level, in dB
0.1 Hz or lower - flat response1	134 peak
2 Hz or lower - flat response	133 peak
6 Hz or lower - flat response	129 peak
C-weighted-slow response1	105 peak dBC

FN1 Only when approved by the division

(ii) If necessary to prevent damage, the division shall specify lower maximum allowable air Blast levels than those of Paragraph (b)(1)(i) of this section for use in the vicinity of a specific blasting operation.

(2) Monitoring.

(i) The permittee shall conduct periodic monitoring to ensure compliance with the air blast standards. The division may require air blast measurement of any or all blasts and may specify the locations at which such measurements are taken.

(ii) The measuring systems shall have an upper-end flat-frequency response of at least 200 Hz.

(c) Fly rock travelling in the air or along the ground shall not be cast from the blasting site-

(1) More than one-half the distance to the nearest dwelling or other occupied structure;

(2) Beyond the area of control required under 4VAC25-130-816.66(c); or

(3) Beyond the permit boundary.

(d) Ground vibration.

(1) General. In all blasting operations, except as otherwise authorized in Paragraph (e) of this section, the maximum ground vibration shall not exceed the values approved in the blasting plan required under 4VAC25-130-780.13. The maximum ground vibration for protected structures listed in Paragraph (d)(2)(i) of this section shall be established in accordance with either the maximum peak-particle-velocity limits of Paragraph (d)(2), the scaled distance equation of Paragraph (d)(3), the blasting-level chart of Paragraph (d)(4), or by the division under Paragraph (d)(5) of this section. All structures in the vicinity of the blasting area, not listed in Paragraph (d)(2)(i) of this section, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines, shall be protected from damage by establishment of a maximum allowable limit on the ground vibration, submitted by the permittee in the blasting plan and approved by the division.

(2) Maximum peak particle velocity.

(i) The maximum ground vibration shall not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area:

Distance (D), from the blasting site, in feet	Maximum allowable peak particle velocity (Vmax) for ground vibration in inches/second (1)	Scaled distance to be applied without seismic monitoring (2)
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

FN1 Ground vibration shall be measured as the particle velocity. Particle velocity shall be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the three measurements.

FN2 Applicable to the scaled-distance equation of Paragraph (d)(3)(i) of this section.

(ii) A seismographic record shall be provided for each blast.

(3) Scale-distance equation.

(i) The permittee may use the scaled distance equation, $W=(D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring; where W=the maximum weight of explosives, in pounds; D=the distance, in feet, from the blasting site to the nearest protected structure; and Ds=the scaled-distance factor, which may initially be approved by the division using the values for scaled-distance factor listed in Paragraph (d)(2)(i) of this section.

(ii) The development of a modified scaled-distance factor may be authorized by the division on receipt of a written request by the permittee, supported by seismographic records of blasting at the mine site. The modified scaled-distance factor shall be determined such that the particle velocity of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of Paragraph (d)(2)(i) of this section, at a 95-percent confidence level.

(4) Blasting-level chart.

(i) The permittee may use the ground-vibration limits in Figure 1 to determine the maximum allowable ground vibration.

(ii) If the Figure 1 limits are used, a seismographic record including both particle velocity and vibration-frequency levels shall be provided for each blast. The method for the analysis of the predominant frequency contained in the blasting records shall be approved by the division before application of this alternative blasting criterion.

(5) The maximum allowable ground vibration shall be reduced by the division below the limits otherwise provided by this section, if determined necessary to provide damage protection.

(6) The division may require the permittee to conduct seismic monitoring of any or all blasts or may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

(e) The maximum air blast and ground-vibration standards of Paragraphs (b) and (d) of this section shall not apply at the following locations:

(1) At structures owned by the permittee and not leased to another person.

(2) At structures owned by the permittee and leased to another person, if a written waiver by the lessee is submitted to the division before blasting.

4VAC25-130-816.68. Use of explosives; records of blasting operations.

The permittee shall retain a record of all blasts for at least three years. Upon request, copies of these records shall be made available to the division and to the public for inspection. Such records shall contain the following data:

(a) Name of the permittee conducting the blast.

(b) Location, date, and time of the blast.

(c) Name, signature, and certification number of the blaster conducting the blast.

(d) Identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area, except those described in 4VAC25-130-816.67(e).

(e) Weather conditions, including those which may cause possible adverse blasting effects.

(f) Type of material blasted.

(g) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern.

(h) Diameter and depth of holes.

(i) Types of explosives used.

(j) Total weight of explosives used per hole.

(k) The maximum weight of explosives detonated in an 8-millisecond period.

(l) Initiation system.

(m) Type and length of stemming.

(n) Mats or other protections used.

(o) Seismographic and air blast records, if required, which shall include:

(1) Type of instrument, sensitivity, and calibration signal or certification of annual calibration.

(2) Exact location of instrument and the date, time, and distance from the blast.

(3) Name of the person and firm taking the reading.

(4) Name of the person and firm analyzing the seismographic record.

(5) The vibration and/or air blast level recorded.

(p) Reasons and conditions for each unscheduled blast.

4VAC25-130-816.71. Disposal of excess spoil; general requirements.

(a) General. Excess spoil shall be placed in designated disposal areas within the permit area, in a controlled manner to:

(1) Minimize the adverse effects of leachate and surface water runoff from the fill on surface and ground waters.
(2) Ensure mass stability and prevent mass movement during and after construction.
(3) Ensure that the final fill is suitable for reclamation and revegetation compatible with the natural surroundings and the approved postmining land use.

(b) Design certification.

(1) The fill and appurtenant structures shall be designed using current, prudent engineering practices and any criteria established by the division as necessary to achieve the standards of this Part. A qualified registered professional engineer experienced in the design of earth and rock fills shall certify the design of the fill and appurtenant structures.
(2) The fill shall be designed to attain a minimum long-term static safety factor of 1.5. The foundation and abutments of the fill must be stable under all conditions of construction.

(c) Location. The disposal area shall be located on the most moderately sloping and naturally stable

areas available, as approved by the division, and shall be placed, where possible, upon or above a natural terrace, bench, or berm, if such placement provides additional stability and prevents mass movement.

(d) Foundation.

(1) Sufficient foundation investigations, as well as any necessary laboratory testing of foundation material, shall be performed in order to determine the design requirements for foundation stability. The analyses of foundation conditions shall take into consideration the effect of underground mine workings, if any, upon the stability of the fill and appurtenant structures.

(2) Where the slope in the disposal area is in excess of 2.8h:1v (36 percent), or such lesser slope as may be designated by the division based on local conditions, keyway cuts (excavations to stable bedrock) or rock toe buttresses shall be constructed to ensure stability of the fill. Where the toe of the spoil rests on a downslope, stability analyses shall be performed in accordance with 4VAC25-130-780.35(c) to determine the size of rock toe buttresses and keyway cuts.

(d) Placement of excess spoil.

(1) All vegetative and organic materials shall be removed from the disposal area prior to placement of the excess spoil. Topsoil shall be removed, segregated, and stored or redistributed in accordance with 4VAC25-130-816.22. If approved by the division, organic material may be used as mulch or may be included in the topsoil to control erosion, promote growth of vegetation or increase the moisture retention of the soil.

(2) Excess spoil shall be transported and placed in a controlled manner in horizontal lifts not exceeding four feet in thickness; concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after construction; graded so that surface and subsurface drainage is compatible with the natural surroundings; and covered with topsoil or substitute material in accordance with 4VAC25-130-816.22. The division may approve a design which incorporates placement of excess spoil in horizontal lifts greater than four feet in thickness when it is demonstrated by the permittee and certified by a qualified registered professional engineer that the design will ensure the stability of the fill and will meet all other applicable requirements.

(3) The final configuration of the fill shall be suitable for the approved postmining land use. Terraces may be constructed on the outslope of the fill if required for stability, control of erosion, to conserve soil moisture, or to facilitate the approved postmining land use. The grade of the outslope between terrace benches shall not be steeper than 2h:1v (50 percent). Terraces, if constructed, shall

be no less than 20 feet in width and the vertical distance between terraces shall not exceed 50 feet. Terraces on the fill shall be graded with a minimum 3.0% grade toward the fill and a minimum 1.0% slope toward the drainage control system.

(4) No permanent impoundments are allowed on the completed fill. Small depressions may be allowed by the division if they are needed to retain moisture, minimize erosion, create and enhance wildlife habitat or assist revegetation; and if they are not incompatible with the stability of the fill.

(5) Excess spoil that is acid- or toxic-forming or combustible shall be adequately covered with nonacid, nontoxic and noncombustible material, or treated, to control the impact on surface and ground water in accordance with 4VAC25-130-816.41, to prevent sustained combustion, and to minimize adverse effects on plant growth and the approved postmining land use.

(f) Drainage control.

(1) If the disposal area contains springs, natural or manmade water courses, or wet weather seeps, the fill design shall include diversions and underdrains as necessary to control erosion, prevent water infiltration into the fill and ensure stability.

(2) Diversions shall comply with the requirements of 4VAC25-130-816.43.

(3) Underdrains shall consist of durable rock or pipe, be designed, and constructed using current, prudent engineering practices and any criteria established by the division as necessary to achieve the standards of this Part. The underdrain system shall be designed to carry the anticipated seepage of water due to rainfall away from the excess spoil fill and from seeps and springs in the foundation of the disposal area and shall be protected from piping and contamination by an adequate filter. Rock underdrains shall be constructed of durable, nonacid-, nontoxic-forming rock (e.g., natural sand and gravel, sandstone, limestone, or other durable rock) that does not slake in water or degrade to soil material, and which is free of coal, clay or other nondurable material. Perforated pipe underdrains shall be corrosion resistant and shall have characteristics consistent with the long-term life of the fill.

(g) Surface area stabilization. Slope protection shall be provided to minimize surface erosion at the site. All disturbed areas, including diversion channels that are not riprapped or otherwise protected, shall be revegetated upon completion of construction.

(h) Inspections. A qualified registered professional engineer, or other qualified professional specialist under the direction of the professional engineer, shall periodically inspect the fill during construction. The professional engineer and specialist shall be experienced in the construction of earth and rock fills.

(1) Such inspections shall be made at least quarterly throughout construction and during critical

construction periods. Critical construction periods shall include at a minimum: (i) Foundation preparation, including the removal of all organic material and topsoil; (ii) placement of under drains and protective filter systems; (iii) installation of final surface drainage systems; and (iv) the final graded and revegetated fill. Regular inspections by the engineer or specialist shall also be conducted during placement and compaction of fill materials.

(2) The qualified registered professional engineer shall provide a certified report to the division within two weeks after each inspection that the fill has been constructed and maintained as designed and in accordance with the approved plan and this chapter. The report shall include appearances of instability, structural weakness, and other hazardous conditions.

(3)(i) The certified report on the drainage system and protective filters shall include color photographs taken during and after construction, but before underdrains are covered with excess spoil. If the underdrain system is constructed in phases, each phase shall be certified separately.

(ii) Where excess durable rock spoil is placed in single or multiple lifts such that the underdrain system is constructed simultaneously with excess spoil placement by the natural segregation of dumped materials, in accordance with 4VAC25-130-816.73, color photographs shall be taken of the underdrain as the underdrain system is being formed.

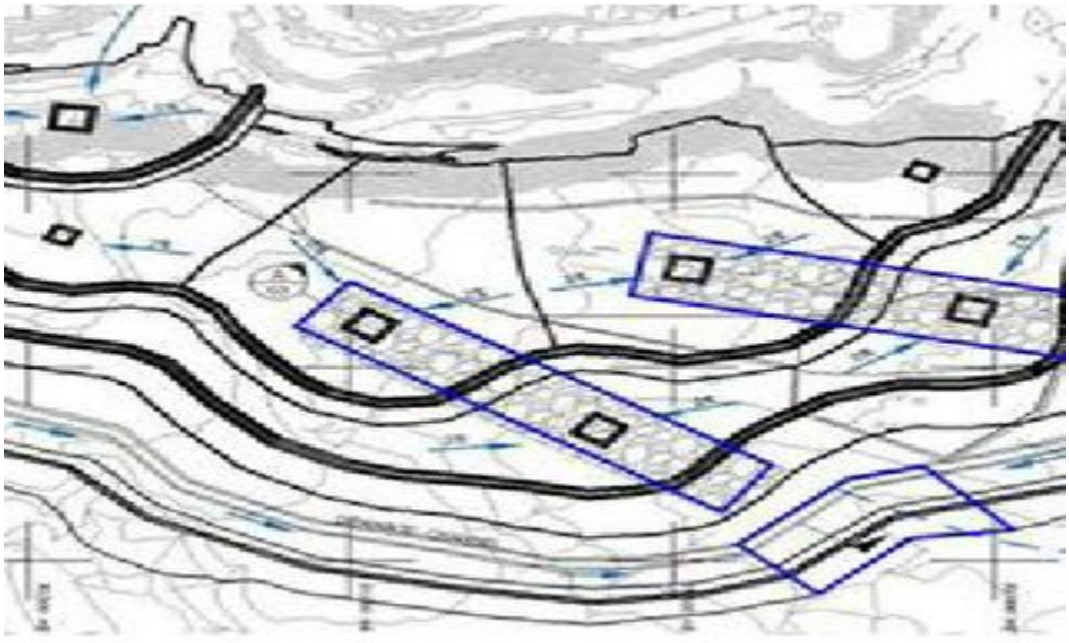
(iii) The photographs accompanying each certified report shall be taken in adequate size and number with enough terrain or other physical features of the site shown to provide a relative scale to the photographs and to specifically and clearly identify the site.

(4) A copy of each inspection report shall be retained at or near the mine site.

(i) Coal mine waste. Coal mine waste may be disposed of in excess spoil fills if approved by the division and, if such waste is:

(1) Placed in accordance with 4VAC25-130-816.83;
(2) Nontoxic and nonacid forming; and
(3) Of the proper characteristics to be consistent with the design stability of the fill.

(j) Underground disposal. Excess spoil may be disposed of in underground mine workings, but only in accordance with a plan approved by the division and MSHA under 4VAC25-130-784.25.



4VAC25-130-816.72. Disposal of excess spoil; valley fills/head-of-hollow fills.

Valley fills and head-of-hollow fills shall meet the requirements of 4VAC25-130-816.71 and the additional requirements of this section.

(a) Drainage control.

(1) The top surface of the completed fill shall be graded such that the final slope after settlement will be toward properly designed drainage channels. Uncontrolled surface drainage may not be directed over the outslope of the fill. The maximum slope of the top of the fill shall be 20h:1v (5.0%).

(2) Runoff from areas above the fill and runoff from the surface of the fill shall be diverted into stabilized diversion channels designed to meet the requirements of 4VAC25-130-816.43 and, in addition, to safely pass the runoff from a 100-year, 6-hour precipitation event. The appropriate surface drainage system shall be installed prior to placement of excess spoil in the fill area. Temporary diversions may be approved by the division for use during fill construction provided that erosion is minimized and no threat to the public or the environment results.

(3)(i) A subdrainage system, constructed in accordance with 4VAC25-130-816.71(f)(3), shall be installed along the natural drainage system, extending from the toe to the head of the fill. The division may approve a lesser distance provided the standards of 4VAC25-130-816.71(f)(3) are met. A system of lateral underdrains shall connect this core to each area of potential drainage or seepage in the disposal area.

(ii) A filter system to ensure the proper long-term functioning of the subdrainage system shall be designed and constructed using current, prudent engineering practices.

(iii) The minimum size of the main underdrain shall be:

Total Amount of Material	Fill Predominant Type of Fill	Minimum Size of Drain, in Feet	
		Width	Height
Less than 1,000,000 Cubic Yards	Sandstone	10	4
Do:	Shale	16	8
More than 1,000,000 Cubic Yards	Sandstone	16	8
Do:	Shale	16	16

(iv) No more than 10 percent of the rock used in the underdrains may be less than 12 inches in size and no single rock may be larger than 25 percent of the width of the drain.

(v) Alternatives to the minimum sizes may be approved by the division provided the alternative is shown to convey, using accepted engineering analyses, the maximum anticipated discharge, including an appropriate factor of safety.

(b) Rock-core chimney drains. A rock-core chimney drain may be used in a head-of-hollow fill, instead of the underdrain and surface diversion system normally required, as long as the fill is not located in an area containing intermittent or perennial streams. A rock-core chimney drain may be used in a valley fill if the fill does not exceed 250,000 cubic yards of material and upstream drainage is diverted around the fill. The alternative rock-core chimney drain system shall be incorporated into the design and construction of the fill as follows:

(1) The fill shall have, along the vertical projection of the main buried stream channel or rill, a vertical core of durable rock at least 16 feet thick which shall extend from the toe of the fill to the head of the fill, and from the base of the fill to the surface of the fill. A system of lateral rock underdrains shall connect this rock core to each area of potential drainage or seepage in the disposal area. The underdrain system and rock core shall be designed to carry the anticipated seepage of water due to rainfall away from the excess spoil fill and from seeps and springs in the foundation of the disposal area. Rocks used in the rock core and underdrains shall meet the requirements of 4VAC25-130-816.71(f).

(2) A filter system to ensure the proper long-term functioning of the rock core shall be designed and constructed using current, prudent engineering practices.

(3) Grading may drain surface water away from the outslope of the fill and toward the rock core. In no case, however, may intermittent or perennial streams be diverted into the rock core. The maximum slope of the top of the fill shall be 33h:1v (3.0%). A drainage pocket may be maintained at the head of the fill during and after construction, to intercept surface runoff and discharge the runoff through or over the rock drain, if stability of the fill is not impaired. In no case shall this pocket or sump have a potential capacity for impounding more than 10,000 cubic feet of water. Terraces on the fill shall be graded with a minimum 3.0% grade toward the fill and a minimum 1.0% slope toward the rock core.

4VAC25-130-816.79. Protection of underground mining.

No surface mining activities shall be conducted closer than 500 feet to any point of either an active or abandoned underground mine, except to the extent that-

(a) The activities result in improved resource recovery, abatement of water pollution, or elimination of hazards to the health and safety of the public; and

(b) (1) The nature, timing, and sequence of the activities proposed to be conducted closer than 500 feet to an abandoned underground mine are approved by the division; and

(2) The nature, timing, and sequence of the activities proposed to be conducted closer than 500 feet to an active underground mine are jointly approved by the division, the Mine Safety and Health Administration, and the Virginia Coal Mine Safety.

4VAC25-130-816.89. Disposal of noncoal mine wastes.

(a) Noncoal mine wastes including, but not limited to grease, lubricants, paints, flammable liquids, garbage, abandoned mining machinery, lumber and other combustible materials generated during mining activities shall be placed and stored in a controlled manner in a designated portion of the permit area. Placement and storage shall ensure that leachate and surface runoff do not degrade surface or ground water, that fires are prevented, and that the area remains stable and suitable for reclamation and revegetation compatible with the natural surroundings.

(b) Final disposal of noncoal mine wastes shall be in a designated disposal site in the permit area or a state-approved solid waste disposal area. Disposal sites in the permit area shall be designed and constructed to ensure that leachate and drainage from the noncoal mine waste area does not degrade surface or underground water. Wastes shall be routinely compacted and covered to prevent combustion and wind-borne waste. When the disposal is completed, a minimum of two feet of soil cover shall be placed over the site, slopes stabilized, and revegetation accomplished in accordance with 4VAC25-130-816.111 through 4VAC25-130-816.116. Operation of the disposal site shall be conducted in accordance with all local, state, and federal requirements.

(c) At no time shall any noncoal mine waste be deposited in a refuse pile or impounding structure, nor shall a noncoal mine waste disposal site be located within eight feet of any coal outcrop or coal storage area.

4VAC25-130-816.99. Slides and other damage.

(a) An undisturbed natural barrier shall be provided beginning at the elevation of the lowest coal seam to be mined and extended from the outslope for such distance as may be determined by the division as is needed to assure stability. The barrier shall be retained in place to prevent slides and erosion.

(b) At any time a slide occurs which may have a potential adverse effect on public property, health, safety, or the environment, the person who conducts the surface mining activities shall notify the division by the fastest available means and comply with any remedial measures required by the division.

4VAC25-130-816.107. Backfilling and grading; steep slopes.

(a) Surface mining activities on steep slopes shall be conducted so as to meet the requirements of 4VAC25-130-816.102 through 4VAC25-130-816.106, and the requirements of this section except where mining is conducted on flatter gently rolling terrain with an occasional steep slope through which the mining proceeds and leaves a plain or predominantly flat area or where operations are conducted in accordance with Part 824.

(b) The following materials shall not be placed or allowed to remain on the downslope:

(1) Spoil.

(2) Waste materials of any type.

(3) Debris, including that from clearing and grubbing.

(4) Abandoned or disabled equipment.

(c) Land above the highwall shall not be disturbed unless the division finds that this disturbance will facilitate compliance with the environmental protection standards of this Subchapter and the disturbance is limited to that necessary to facilitate compliance.

(d) Woody materials shall not be buried in the backfilled area unless the division determines that the proposed method for placing woody material within the backfill will not deteriorate the stable condition of the backfilled area.

(e) The permittee must demonstrate to the division, using standard geotechnical analysis, that the minimum static factor of safety for the stability of all portions of the reclaimed land is at least 1.3. A lower or higher factor of safety may be specified by the division upon a finding that the backfilled area will not present any actual or probable hazard to public property, health, safety, and the environment. The factor of safety specified shall be based on accepted geotechnical engineering analyses. A lower factor of safety shall be approved only upon a demonstration that:

(i) The degree of uncertainty in the calculation has been reduced through the use of thorough geotechnical testing and analyses. Sufficient investigation and laboratory testing shall be

conducted to determine the design requirements for stability of the backfilled area. The testing and analyses shall include at a minimum consideration of the properties of the spoil to be backfilled, foundation conditions, and surface and groundwater flows.

(ii) The backfilled area will not present any actual or probable hazard to public health and safety or the environment.

(iii) A system of underdrains is utilized to assure that the phreatic surface within the backfilled area is controlled. The underdrains shall be constructed of non-degradable, non-acid or toxic-forming material such as natural sand and gravel, sandstone, or other durable rock that will not slake in water and which is essentially free of coal, clay, or shale. The internal drainage system must ensure continued free drainage of anticipated seepage from precipitation and from springs or wet weather seeps. The drain size shall be designed to safely route the anticipated seepage flows over the long-term life of the backfilled area.

(iv) The design shall be certified by a qualified registered professional engineer experienced in the construction of earth and rockfill embankments as being in conformance with accepted professional standards.

(v) The backfilled area shall be inspected by a qualified registered professional engineer or other qualified professional specialist experienced in the construction of earth and rock-fill embankments during critical construction periods. The registered engineer shall provide to the program a certified report within two weeks after each inspection that the backfilled area has been constructed as specified in the design approved by the program.

(f) Drainage channels or roads which are approved under 4VAC25-130-816.133 for the postmining land use and which are to be located in the uppermost portion of the backfilled area shall be approved by the program only upon a finding that the highwall shall be completely covered. The division may approve incorporating the drainage channel or road as an integral part of the backfilled area with the requirements to blend or shave the highwall into the natural terrain, if the standards of this section are satisfied.

4VAC25-130-816.113. Revegetation; timing.

Disturbed areas shall be planted during the first normal period for favorable planting conditions after replacement of the plant-growth medium. The normal period for favorable planting is that planting time generally accepted locally for the type of plant materials selected. When necessary to effectively control erosion, disturbed areas shall be planted, as contemporaneously as practicable with the completion of backfilling and grading, with a temporary cover of small grains, grasses, or legumes until a permanent cover is established.

4VAC25-130-816.116. Revegetation; standards for success.

(a) Success of revegetation shall be judged on the effectiveness of the vegetation for the approved postmining land use, the extent of cover compared to the cover occurring in natural vegetation of the area, and the general requirements of 4VAC25-130-816.111.

(1) Statistically valid sampling techniques shall be used for measuring success.

(2) Ground cover, production, or stocking shall be considered equal to the approved success standard when they are not less than 90% of the success standard. The sampling techniques for measuring success shall use a 90% statistical confidence interval (i.e., one-sided test with a 0.10 alpha error). Sampling techniques for measuring woody plant stocking, ground cover, and production shall be in accordance with techniques approved by the program.

(b) Standards for success shall be applied in accordance with the approved postmining land use and, at a minimum, the following conditions:

(1) For areas developed for use as grazing land or pastureland, the ground cover and production of living plants on the revegetated area shall be at least equal to that of a reference area or if approved by the program, a vegetative ground cover of 90% for areas planted only in herbaceous species and productivity at least equal to the productivity of the pre-mining soils may be achieved. Pre-mining productivity shall be based upon data of the U.S. Natural Resources Conservation Service and measured in such units as weight of material produced per acre or animal units supported.

(2) For areas developed for use as cropland, crop production on the revegetated area shall be at least equal to that of a reference area or if approved by the program, crop yields shall be at least equal to the yields for reference crops from unmined lands. Reference crop yields shall be determined from the current yield records of representative local farms in the surrounding area or from the average county yields recognized by the U.S. Department of Agriculture.

(3) For areas to be developed for fish and wildlife habitat, recreation, shelter belts, or forest products, success of vegetation shall be determined on the basis of tree and shrub stocking and vegetative ground cover. Such parameters are described as follows:

(i) Minimum stocking and planting arrangements shall be specified by the division on the basis of local and regional conditions and after consultation with and approval by the state agencies responsible for the administration of forestry and wildlife programs. Consultation and approval may occur on either a program wide or a permit specific basis.

(ii) Trees and shrubs that will be used in determining the success of stocking and the adequacy of the plant arrangement shall have utility for the approved postmining land use. Trees and shrubs counted in determining such success shall be healthy and have been in place for not less than two growing seasons. At the time of bond release, at least 80% of the trees and shrubs used to determine such success shall have been in place for at least three years. Root crown or sprouts over one foot in height shall count as one toward meeting the stocking requirements. Where multiple stems occur, only the tallest stem will be counted.

(iii) Vegetative ground cover shall not be less than that required to control erosion and achieve

the approved postmining land use.

(iv) Where commercial forest land is the approved postmining land use:

(A) The area shall have a minimum stocking of 400 trees per acre.

(B) All countable trees shall be commercial species and shall be well distributed over each acre stocked.

(C)Additionally, the area shall have an average of at least 40 wildlife food-producing shrubs per acre. The shrubs shall be suitably located for wildlife enhancement and may be distributed or clustered.

(v) Where woody plants are used for wildlife management, recreation, shelter belts, or forest uses other than commercial forest land:

(A) The stocking of trees, shrubs, half-shrubs and the ground cover established on the revegetated area shall approximate the stocking and ground cover on the surrounding unmined area and shall utilize local and regional recommendations regarding species composition, spacing and planting arrangement.

(B) Areas planted only in herbaceous species shall sustain a vegetative ground cover of 90%;

(C) Areas planted with a mixture of herbaceous and woody species shall sustain a herbaceous vegetative ground cover of 90% and an average of 400 woody plants per acre. At least 40 of the woody plants for each acre shall be wildlife food-producing shrubs located suitably for wildlife enhancement, which may be distributed or clustered on the area.

(4) For areas to be developed for industrial, commercial, or residential use less than two years after regrading is completed, the vegetative ground cover shall not be less than that required to control erosion.

(5) For areas previously disturbed by mining that were not reclaimed to the requirements of this subchapter and that are remined or otherwise redisturbed by surface coal mining operations, as a minimum, the vegetative ground cover shall be not less than the ground cover existing before redisturbance and shall be adequate to control erosion.

(c) (1) The period of extended responsibility for successful revegetation shall begin after the last year of augmented seeding, fertilizing, irrigation, or other work, excluding husbandry practices that are approved by the program in accordance with subdivision (c)(3) of this section.

(2) The period of responsibility shall continue for a period of not less than:

(i) Five full years except as provided in subdivision (c)(2)(ii) of this section. The vegetation parameters identified in subsection (b) of this section for grazing land or pastureland and cropland shall equal or exceed the approved success standard during the growing seasons of

any two years of the responsibility period, except the first year. Areas approved for the other uses identified in subsection (b) of this section shall equal or exceed the applicable success standard during the growing season of the last year of the responsibility period.

(ii) Two full years for lands eligible for remining included in permits issued before September 30, 2004, or any renewals thereof. To the extent that the success standards are established by subdivision (b)(5) of this section, the lands shall equal or exceed the standards during the growing season of the last year of the responsibility period.

(3) The program may approve selective husbandry practices, excluding augmented seeding, fertilization, or irrigation, without extending the period of responsibility for revegetation success and bond liability, if such practices can be expected to continue as part of the postmining land use or if discontinuance of the practices after the liability period expires will not reduce the probability of permanent revegetation success. Approved practices shall be normal conservation practices within the region for unmined lands having land uses similar to the approved postmining land use of the disturbed area, including such practices as disease, pest, and vermin control: and any pruning, reseeding and/or transplanting specifically necessitated by such actions.

4VAC25-130-817.121. Subsidence control.

(a) Measures to prevent or minimize damage.

(1) The permittee shall either adopt measures consistent with known technology which prevent subsidence from causing material damage to the extent technologically and economically feasible, maximize mine stability, and maintain the value and reasonably foreseeable use of surface lands: or adopt mining technology which provides for planned subsidence in a predictable and controlled manner. Nothing in this part shall be construed to prohibit the standard method of room-and-pillar mining.

(2) If a permittee employs mining technology that provides for planned subsidence in a predictable and controlled manner, the permittee must take necessary and prudent measures, consistent with the mining method employed, to minimize material damage to the extent technologically and economically feasible to noncommercial buildings and occupied residential dwellings and

structures related thereto except those measures required to minimize material damage to such structures are not required if:

(i) The permittee has the written consent of the structure owners;

(ii) Unless the anticipated damage would constitute a threat to health or safety, the costs of such measures exceed the anticipated costs of repair; or

(iii) The structure owners have denied the permittee access to implement the measures specified in subdivision (a)(2) of this section and the permittee has provided written evidence of his good faith efforts to obtain access. The good faith effort shall include documentation apprising the structure owners that such measures are intended to lessen the potential for property damages or personal injury and that denial of access will not prevent mining.

(b) The permittee shall comply with all provisions of the approved subsidence control plan prepared pursuant to 4VAC25-130-784.20.

(c) Repair of damage.

(1) Repair of damage to surface lands. The permittee must correct any material damage resulting from subsidence caused to surface lands, to the extent technologically and economically feasible, by restoring the land to a condition capable of maintaining the value and reasonably foreseeable uses that it was capable of supporting before subsidence damage.

(2) Repair or compensation for damage to noncommercial buildings and dwellings and related structures. The permittee must promptly repair, or compensate the owner for, material damage resulting from subsidence caused to any noncommercial building or occupied residential dwelling or structure related thereto that existed at the time of mining. If repair option is selected, the permittee must fully rehabilitate, restore, or replace the damaged structure. If compensation is selected, the permittee must compensate the owner of the damaged structure for the full amount of the decrease in value resulting from the subsidence related damage. The permittee may provide compensation by the purchase, before mining, of a noncancelable premium-prepaid insurance policy. The requirements of this subdivision apply only to subsidence related damage caused by underground mining activities conducted after October 24,1992.

(3) Repair or compensation for damage to other structures. The permittee must, to the extent required under applicable provisions of state law, either correct material damage resulting from subsidence caused to any structures or facilities not protected by subdivision (c)(2) of this section

by repairing the damage or compensate the owner of the structures or facilities for the full amount of the decrease in value resulting from the subsidence. Repair of damage includes rehabilitation, restoration, or replacement of damaged structures or facilities. Compensation may be accomplished by the purchase before mining of a noncancelable premium-prepaid insurance policy.

(4) Rebuttable presumption of causation by subsidence.

(i) Rebuttable presumption of causation for damage within angle-of- draw. If damage to any noncommercial building or occupied residential dwelling or structure related thereto occurs as a result of earth movement within an area determined by projecting a specified angle-of-draw from the outermost boundary of any underground mine workings to the surface of the land, a rebuttable presumption exists that the permittee caused the damage. The presumption will normally apply to a 28-degree angle-of-draw.

(ii) Approval of site-specific angle-of-draw. A permittee or permit applicant may request that the presumption apply to an angle-of-draw different from that established in the state program. The program may approve application of the presumption to a site-specific angle-of-draw different from that contained in the state program based on a site-specific analysis submitted by an applicant. To establish a site-specific angle-of-draw, an applicant must demonstrate and the program must determine in writing that the proposed angle-of-draw has a more reasonable basis than the standard set forth in the state program, based on a site-specific geotechnical analysis of the potential surface impacts of the mining operation.

(iii) No presumption where access for pre-subsidence survey is denied. If the permittee was denied access to the land or property for the purpose of conducting the pre-subsidence survey in accordance with 4VAC25-130-784.20(a) of this chapter, no rebuttable presumption will exist.

(iv) Rebuttal of presumption. The presumption will be rebutted if, for example, the evidence establishes that the damage predated the mining in question, the damage was proximately caused by some other factor or factors and was not proximately caused by subsidence, or the damage occurred outside the surface area within which subsidence was actually caused by the mining in question.

(v) Information to be considered in determination of causation. In a determination whether damage to protected structures was caused by subsidence from underground mining, all relevant and reasonably available information will be considered by the program.

(5) Adjustment of bond amount for subsidence damage. When subsidence related material damage to land, structures, or facilities protected under subdivisions (c)(1) through (c)(3) of this section occurs, or when contamination, diminution, or interruption to a water supply protected under 4VAC25-130-817.41(j) occurs, the permittee shall provide additional performance bond in the

amount of the estimated cost of the repairs if the permittee will be repairing, or in the amount of the decrease in value if the permittee will be compensating the owner, or in the amount of the estimated cost to replace the protected water supply if the permittee will be replacing the water supply, until the repair, compensation, or replacement is completed. If repair, compensation or replacement is completed within 90 days of the occurrence of damage or if the permittee demonstrates that the liability insurance required under 4VAC25-130-800.60 provides applicable coverage, no additional bond is required. The program may extend the 90-day time frame, but not to exceed one year, if the permittee demonstrates and the program finds in writing that subsidence is not complete, that not all probable subsidence related material damage has occurred to lands or protected structures, or that not all reasonably anticipated changes have occurred affecting the protected water supply, and that, therefore, it would be unreasonable to complete within 90 days the repair of the subsidence related material damage to lands or protected structures, or the replacement of protected water supply.

(d) Underground mining activities shall not be conducted beneath or adjacent to:

(1) Public buildings and facilities.

(2) Churches, schools, and hospitals.

(3) Impoundments with a storage capacity of 20 acre-feet or more or bodies of water with a volume of 20 acre-feet or more, unless the subsidence control plan demonstrates that subsidence will not cause material damage to, or reduce the reasonably foreseeable use of, such features or facilities. If the program determines that it is necessary in order to minimize the potential for material damage to the features or facilities described above or to any aquifer or body of water that serves as a significant water source for any public water supply system, it may limit the percentage of coal extracted under or adjacent thereto.

(d) If subsidence causes material damage to any of the features or facilities covered by subsection (d) of this section, the program may suspend mining under or adjacent to such features or facilities until the subsidence control plan is modified to ensure prevention of further material damage to such features or facilities.

(f) The division shall suspend underground mining activities under urbanized areas, cities, towns, and communities, and adjacent to industrial or commercial buildings, major impoundments, or perennial streams, if imminent danger is found to inhabitants of the urbanized areas, cities, towns, or communities.

(g) Within a schedule approved by the division, the permittee shall submit a detailed plan of the underground workings. The detailed plan shall include maps and descriptions, as appropriate, of significant features of the underground mine, including the size, configuration, and approximate location of pillars and entries, extraction ratios, measures taken to prevent or minimize subsidence and related damage, areas of full extraction, and other information required by the program. Upon request of the permittee, information submitted with the detailed plan may be held as confidential, in accordance with the requirements of 4VAC25-130-773.13(d).

4VAC25-130-817.122. Subsidence control; notice.

At least six months prior to mining, or within that period if approved by the division, the permittee shall mail a notification to all owners and occupants of surface property and structures above the underground workings. The notification shall include, at a minimum, identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the permittee's subsidence control plan may be examined.

4VAC25-130-816.131. Cessation of operations; temporary.

(a) The permittee shall effectively secure surface facilities in areas in which there are no current operations, but in which operations are to be resumed under an approved permit. Temporary abandonment shall not relieve a permittee of his obligation to comply with any provisions of the approved permit.

(b) Before temporary cessation of mining and reclamation operations for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, the permittee shall submit to the dprogram a notice of intention to cease or abandon mining and reclamation operations. This notice shall include a statement of the exact number of acres which will have been affected in the permit area, prior to such temporary cessation, the extent and kind of reclamation of those areas which will have been accomplished, identification of the backfilling, regrading, revegetation, environmental monitoring, and water treatment activities that will continue during the temporary cessation, and the anticipated time period for which the temporary cessation of mining and reclamation operations will be in effect.

4VAC25-130-816.150. Roads; general.

(a) Road classification system.

(1) Each road, as defined in 4VAC25-130-700.5, shall be classified as either a primary road or an ancillary road.

(2) A primary road is any road which is--

(i) Used for transporting coal or spoil;

(ii) Frequently used for access or other purposes for a period in excess of six months; or

(iii) To be retained for an approved postmining land use.

(3) An ancillary road is any road not classified as a primary road.

(b) Performance standards. Each road shall be located, designed, constructed, reconstructed, used, maintained and reclaimed so as to:

(1) Control or prevent erosion, siltation, and the air pollution attendant to erosion, including road dust as well as dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing all exposed surfaces in accordance with current, prudent engineering practices;

(2) Control or prevent damage to fish, wildlife or their habitat and related environmental values;

(3) Control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area;

(4) Neither cause nor contribute to, directly or indirectly, the violation of State or Federal water quality standards applicable to receiving waters;

(5) Refrain from significantly altering the normal flow of water in streambeds or drainage channels;

(6) Prevent or control damage to public or private property including the prevention or mitigation of adverse effects on lands within the boundaries of units of The National Park System, The National Wildlife Refuge System, The National System of Trails, The National Wilderness Preservation System, The Wild and Scenic Rivers System, including designated study rivers, and national recreation areas designated by Act of Congress; and

(7) Use non-acid and non-toxic-forming substances in road surfacing.

(c) Design and construction limits and establishment of design criteria. To ensure environmental protection appropriate for their planned duration and use, including consideration of the type and size of equipment used, the design and construction or reconstruction of roads shall incorporate appropriate limits for grade, width, surface materials, surface drainage control, culvert placement, and culvert size, in accordance with current, prudent engineering practices, and any necessary design criteria established by the program.

(d) Location.

(1) No part of any road shall be located in the channel of an intermittent or perennial stream unless specifically approved by the program in accordance with the applicable portions of 4VAC25-130-816.41 through 4VAC25-130-816.43 and 4VAC25-130-816.57.

(2) Roads shall be located to minimize downstream sedimentation and flooding.

(e) Maintenance.

(1) A road shall be maintained to meet the performance standards of this Part and any additional criteria specified by the program.

(2) A road damaged by a catastrophic event, such as a flood or earthquake, shall be repaired as soon as practical after the damage has occurred.

(f) Reclamation.

(1) A road not to be retained under an approved post-mining land use shall be reclaimed in accordance with the approved reclamation plan as soon as practicable after it is no longer needed for mining and reclamation operations. This reclamation shall include:

(i) Closing the road to traffic;

(ii) Removing all bridges and culverts unless approved as part of the postmining land use;

(iii) Removing or otherwise disposing of road-surfacing materials that are incompatible with the postmining land use and revegetation requirements;

(iv) Reshaping cut and fill slopes as necessary to be compatible with the post-mining land use and to complement the drainage pattern of the surrounding terrain;

(v) Protecting the natural drainage patterns by installing dikes or cross drains as necessary to control surface runoff and erosion. A water bar shall be placed at the head of all pitched grades regardless of other spacing. Water bars shall cross the road at approximately a 30 degree angle. Water bars of the ditch and earth berm type shall be installed according to the following provisions:

Percent of Road Grade	Spacing of Water Bars in Feet
0 - 2	250
3 - 5	135
6 - 10	80
11 - 15	60
15 + 20	40

(vi) Scarifying or ripping the roadbed; replacing topsoil or substitute material, and revegetating disturbed surfaces in accordance with 4VAC25-130-816.22 and 4VAC25-130-816.111 through 4VAC25-130-816.116.

(2) Roads which are to be retained as part of an approved post-mining land use shall be constructed or reconstructed to be compatible with that use. Construction or reconstruction shall include:

(i) Restoring an existing road to a condition equal to or better than its pre-mining condition; and

(ii) Meeting the requirements of 4VAC25-130-816.151 as appropriate.

(g) The program may approve alternative specifications if they are demonstrated to result in performance equal to or better than that resulting from roads complying with 4VAC25-130-816.150 and 4VAC25-130-816.151.

4VAC25-130-816.151. Primary roads.

Primary roads shall meet the requirements of 4VAC25-130-816.150 and the additional requirements of this section.

(a) Certification and construction.

(1) The construction or reconstruction of primary roads shall be certified in a report to the program by a qualified registered professional engineer. The report shall indicate that the primary road has been constructed or reconstructed as designed and in accordance with the approved plan.

(2) The centerline of a proposed road shall be flagged prior to field inspection.

(3) All road grades shall be subject to a tolerance of plus or minus 2.0% grade.

(4) Grading. The grade of a road shall not exceed 10% unless a steeper grade is justified by site conditions and topography.

(i) The grade shall be controlled to minimize erosion and sedimentation.

(ii) The road surface shall be sloped toward the ditch line at the minimum rate of ½ inch per

foot of width or crowned at the minimum rate of ½ inch per foot of width as measured from the centerline of the road.

(5) Cuts. Cut slopes shall not be steeper than 1v:1.5h in unconsolidated materials, 1v:1h in shale, or 1v:0.25h in sandstone. Steeper slopes may be specifically authorized by the program based on the geotechnical analysis.

(6) Revegetation. All disturbed areas shall be seeded and mulched immediately after construction. If construction occurs during the non-seeding period of November 1 through February 15, the permittee may use alternate methods upon approval by the program for control of erosion. Adequate vegetation to control erosion shall be maintained.

(7) Excess or unsuitable material from excavations shall be disposed of in accordance with 4VAC25-130-816.71. Acid- and toxic-forming material shall be disposed of in accordance with 4VAC25-130-816.41, 4VAC25-130-816.81, and 4VAC25-130-816.102.

(8) Temporary erosion-control measures shall be implemented during construction to minimize sedimentation and erosion until permanent control measures can be established.

(b) Safety factor. The following specifications shall be utilized for embankment construction. The division may specifically authorize alternate specifications if the geotechnical analysis demonstrates that a minimum safety factor of 1.3 can be maintained.

(1) All organic material and topsoil shall be removed from the embankment foundation and no organic material, topsoil, or other unsuitable material shall be placed beneath or in any embankment.

(2) Where an embankment is to be placed on side slopes less than 36%, the following conditions shall be required:

(i) The embankment shall be constructed in uniform, compacted layers not exceeding 4 feet in thickness.

(ii) The embankment slopes shall not be steeper than 1v:1.5h.

(3) Where an embankment is to be placed on side slopes exceeding 36% the following additional conditions shall be required:

(i) A keyway cut shall be constructed at the toe of the fill to ensure stability; the keyway cut shall be at least 10 feet in width and shall be sloped inward.

(ii) The embankment shall be constructed in uniform compacted layers not exceeding two feet in thickness.

(4) Acid-producing materials may be used in the embankments of only those roads constructed or reconstructed on coal mine waste disposal facilities, if it is demonstrated that no additional acid will leave the confines of the facility. In no case shall acid-producing refuse material be used outside the confines of the coal mine waste disposal facility. Restoration of the road shall be in accordance with the requirements of 4VAC25-130-816.102 through 4VAC25-130-816.116.

(c) Location.

(1) To minimize erosion, a primary road shall be located, insofar as practical, on the most stable

available surface.

(2) Fords of perennial or intermittent streams by primary roads are prohibited unless they are specifically approved by the program as temporary routes during periods of road construction.

(d) Drainage control. In accordance with the approved plan.

(1) Each primary road shall be constructed or reconstructed, and maintained to have adequate drainage control, using structures such as, but not limited to, bridges, ditches, cross drains, and ditch relief drains. The drainage control system shall be designed to safely pass the peak runoff from a 10-year, six-hour precipitation event, or greater event as specified by the program.

(2) Drainage pipes and culverts shall be installed as designed, and maintained in a free and operating condition and to prevent or control erosion at inlets and outlets.

(i) Sufficient culverts shall be installed to limit erosion in ditchlines. Additional culverts may be required by the division if excessive erosion or sedimentation is anticipated or observed.

(ii) Culverts shall cross the road at not less than a 30° angle downgrade, except if risers are used. Culverts placed in intermittent or perennial streams shall be straight and coincide with normal flow.

(iii) Culverts shall be placed on a minimum 4.0% grade.

(iv) Culverts shall be at least 12 inches in diameter.

(3) Drainage ditches shall be designed to prevent uncontrolled drainage over the road surface and embankment. Trash racks and debris basins shall be installed in the drainage ditches where debris from the drainage area may impair the functions of the drainage and sediment control structures. A ditch shall be provided on both sides of a through-cut and on the inside shoulder of a cut and fill section. Water shall be intercepted before reaching a switch back or large fill and drained safely away. Water from a fill or switchback shall be released below the fill through conduits or in rip rapped channels and shall not be discharged onto the fill. Ditches shall have a minimum constructed depth of one foot, measured from the lowest point in the road surface adjacent to the ditch.

(4) Culverts shall be installed and maintained to sustain the vertical soil pressure, the passive resistance of the foundation, and the weight of vehicles using the road.

(5) Natural stream channels shall not be altered or relocated without the prior approval of the program in accordance with the applicable portions of 4VAC25-130-816.41 through 4VAC25-130-816.43 and 4VAC25-130-816.57.

(6) Except as provided in subdivision (c)(2) of this section, structures for perennial or intermittent stream channel crossings shall be made using bridges, culverts, low-water crossings, or other structures designed, constructed, and maintained using current, prudent engineering practice. The drainage structure itself can be at least equal to or greater than the stream channel capacity immediately upstream and downstream of the crossing. Low-water crossings shall be designed, constructed, and maintained to prevent erosion of the structure or streambed and additional contributions of suspended solids to streamflow.

(7)(i) Sediment control shall be provided as part of the road drainage system unless runoff is diverted to other approved drainage/sediment control structures.

(ii) Sediment control structures along a road shall be designed to provide 0.025 acre-feet of sediment storage capacity for each acre of disturbed area draining to the structure if the structure is the final discharge point for effluent from the permit area. Other capacities may be required by the program.

(e) Surfacing. Primary roads shall be surfaced with rock, crushed stone, gravel, asphalt, or other material approved by the program as being sufficiently durable for the anticipated volume of traffic and the weight and speed of vehicles using the road.

(f) Maintenance. Routine maintenance for primary roads shall include repairs to the road surface, blading, filling potholes and adding replacement gravel or asphalt. Sediment control structures shall be cleaned regularly and when sediment accumulation may impair their functioning. Maintenance shall also include revegetation, brush removal, and minor reconstruction of road segments as necessary.

(g) Coal haulage. Any roads used for transporting coal shall have construction or reconstruction completed prior to the hauling of coal.

4VAC25-130-842.12. Citizens' requests for inspections.

(a) A person may request an inspection under 4VAC25-130-842.11(a), by furnishing to an authorized representative of the Director a signed, written statement (or an oral report followed by a signed, written statement) giving the authorized representative reason to believe that a violation, condition or practice referred to in 4VAC25-130-842.11(a) exists and setting forth a phone number and address where the person can be contacted.

(b) The identity of any person supplying information to the program relating to a possible violation or imminent danger or harm shall remain confidential with the program, if requested by that person, unless that person elects to accompany the inspector on the inspection, or unless disclosure is required under the Virginia Freedom of Information Act (Chapter 21 (§2.1-340 et seq.) of Title 2.1 of the Code of Virginia).

(c) If an inspection is conducted as a result of information provided to the division by a person as described in Paragraph (a) of this section, the person shall be notified as far in advance as practicable when the inspection is to occur and shall be allowed to accompany the authorized representative of the Director during the inspection. It shall be the responsibility of the person to provide any or all safety equipment needed to accompany the division's inspector during the mine site inspection. Such person has a right of entry to, upon and through the coal exploration or surface coal mining and reclamation operation about which he supplied information, but only if he is in the presence of and is under the control, direction, and supervision of the authorized representative while on the mine property. Such right of entry does not include a right to enter buildings without consent of the person in control of the building or without a search warrant.

(d) Within 10 days of the inspection or, if there is no inspection, within 15 days of receipt of the person's written statement, the program shall send the person the following:

(1) If an inspection was made, a description of the enforcement action taken, which may consist of copies of the inspection report and all notices of violation and cessation orders issued as a result of the inspection, or an explanation of why no enforcement action was taken;

(2) If no inspection was conducted, an explanation of the reason why; and

(3) An explanation of the person's right, if any, to informal review of the action or inaction of the division under 4VAC25-130-842.15.

(e) The division shall give copies of all materials in Paragraphs (d)(1) and (d)(2) of this section within the time limits specified in those Paragraphs to the person alleged to be in violation, except that the name of the person supplying information shall be removed unless disclosure of the person's identity is permitted under Paragraph (b) of this section.

4VAC25-130-845.2. Objective.

Civil penalties are assessed under §45.2-1021 of the Act and this Part to deter violations and to ensure maximum compliance with the terms and purposes of the Act on the part of the coal mining industry.

4VAC25-130-845.12. When a penalty will be assessed.

(a) The program shall assess a penalty for each cessation order.

(b) The program may assess a penalty for each notice of violation. In determining whether to assess a penalty, the division shall consider the seriousness of the violation, the permittee's previous history of violations, the degree of negligence, and the permittee's good faith in attempting to achieve rapid compliance after notification of the violation, as described in 4VAC25-130-845.13.

Review Questions

Surface Foreman (Mined Land Repurposing) – Study Guide

1. Q. Surface mining permit signs must be displayed at:
   A. Each entrance to the permit area from the public road

4 VAC-25-130-816.11 (c)(1)

2. Q. Permit boundary markers for areas located on steep slopes above private dwellings or other occupied buildings shall be made of or marked with:
   A. Fluorescent or reflective paint or material

4 VAC-25-130-816.11 (c)(1)

3. Q. A manufactured home has been set-up within the one-half mile radius and after mining blasting has begun. The permittee shall:
   A. Promptly distribute blasting schedule and notice of how to request a preblast survey

4 VAC-25-130-816.62 (a) & 816.64 (b)

4. Q. Blast signals shall sound before and after each blast. They shall be audible to at least a range of:
   A. One-half mile

4 VAC-25-130-816.66 (b)

5. Q. Seismic monitoring shall be conducted when blasting operations are conducted within what distance in feet of a private dwelling or other occupied building?
   A. 1,000 feet

4 VAC-25-130-816.64 (a)(4) 5

6. Q. Sediment control structures are required to be cleaned:
   A. When function is impaired and/or when sediment is nearing or above benchmark cleanout level

4 VAC-25-130-816.46(c)(1)(iii)(F)

7. Q. At what point are drainage control structures (ponds and diversion ditches) required to be constructed on a permit?
   A. Prior to any land disturbing activity in the watershed they control

4 VAC-25-130-816.46 (b)(3)

8. Q. A sediment pond is considered to be completed and mining allowed to take place in the area controlled by the sediment pond:
   A. When the pond has been completed and certified by a professional engineer

4 VAC-25-130-816.46 (b)(3)

9. Q. When rock riprap lining is used in diversions, what type of bedding material may be , used?
   A. Non-degradable and non-toxic forming stone such as gravel, sandstone or limestone

4 VAC-25-130-816.43 (a)(8)

10. Q. In reference to topsoil and subsoil substitutes, when can alternate material be used?
    A. Selected overburden material identified in the permit plans may be used as a substitute for topsoil

4 VAC-25-130-816.22 (b)(1)

11. Q. When should re-vegetation take place?
    A. During the first favorable planting conditions after replacement of plant growth medium

4 VAC-25-130-816.113

12. Q. How many trees or shrubs should be planted per acre for an unmanaged forestry land use?
    A. An average of 400 woody plants per acre

4 VAC-25-130-816.116 (b)(3)(v)(C)

13. Q. “Downslope” is defined as:
    A. The area below the outcrop of the lowest coal seam being mined

4 VAC-25-130-700.5

14. Q. Unless a variance distance is specified in the permit regarding stream buffer zones, how many feet can a disturbance get to a perennial or intermittent stream?
    A. 100 feet

4 VAC-25-130-816.57 (a)

15. Q. When can coal be transported on the haulroad and off the permit?
A. When the road construction is completed and certified by registered professional engineer

4 VAC-25-130-816.151 (a)(1)

16. Q. "Warning! Explosives in Use" signs must be conspicuously placed at all entrances to the permit area from public roads or highways. These signs must include:
A. The means of audible warning and all clear signals for blasting, explanation of marking blasting areas within the permit and charged holes within the permit

4 VAC-25-130-816.11 (f)(2)

17. Q. Flyrock traveling in the air or along the ground shall not be cast from the blasting site:
A. Beyond the permit boundary or half the distance to the nearest dwelling or occupied structure

4 VAC-25-130-816.67 (c)

18. Q. No surface mining activities shall be conducted closer than 500 feet to any point of either an active or abandoned underground mine, except to the extent that:
A. The nature, timing and sequence of the activities proposed to be conducted are jointly approved by Coal Mine Safety, Mined Land Repurposing and the Mine Safety and Health Administration

4 VAC-25-130-816.79 (b)(2)

19. Q. At any time, a slide occurs which may have a potential adverse affect on public property, health, safety, or the environment, the person who conducts the surface mining activities shall notify Mined Land Repurposing:
A. By the fastest available means and comply with any remedial measures required by Mined Land Repurposing.

4 VAC-25-130-816.99 (b)(2)

20. Q. Prior to temporary cessation of operations for 30 days or more, the permittee shall submit to Mined Land Repurposing:
A. A notice of intention to temporarily cease or abandon mining and reclamation with specific information regarding acreage, environmental compliance and expected duration of temporary cessation

4 VAC-25-130-816.131 (b)

21. Q. The top surface of the completed fill shall be graded such that the final slope after settlement will be toward properly designed drainage channels. Uncontrolled surface drainage may not be directed over the outslope of the fill. The maximum slope of the top of the fill shall be no greater than:
A. 20h:1v (5.0%)

4 VAC-25-130-816.72 (a)(1)

22. Q. Diversions which convey water continuously or frequently shall be lined with rock rip rap to at least:
A. The normal flow depth, including an allowance for freeboard

4 VAC-25-130-816.43 (a)(4)

23. Q. What type mining material shall be used in the cutoff trench and center portion of the impoundment dam?
A. The most impervious material available

4 VAC-25-130-816.49 (a)(6)(iii)

24. Q. A primary road is any road which is:
A. Used for transporting coal or spoil

4 VAC-25-130-816.150 (a)(2)

25. Q. What horizontal distance is required to be maintained when mining near a cemetery?
A. 100 feet

4 VAC-25-130-761.11 (g)

26. Q. What is the minimum culvert size for primary roads (haul roads)?
A. 12 inches diameter

4 VAC-25-130-816.151 (d)(iv)

27. Q. In lieu of engineering tests, what is the minimum top width of pond embankments?
A. 10 feet

4 VAC-25-130-816.49 (a)(ii)

28. Q. Any resident within one-half mile of planned blasting operations may request a preblast survey to assess the condition of the residence prior to blasting. Any survey requested more than 10 days prior to the initiation of blasting shall be completed:
A. Prior to initiation of blasting operations by the permittee

4 VAC-25-130-816.62 (e)

29. Q. The applicant is required to show proof of liability insurance prior to issuance of the permit and maintain a liability policy in force:
A. Only during the life of the permit or any renewal thereof

4 VAC-25-130-800.60 (b)

30. Q. On all permits, the minimum period of bond liability shall continue for a period of not less than how many years following the completion of all reclamation work?
A. 5 years

4 VAC-25-130-801.18 (b)

31. Q. Excess spoil fills must be inspected periodically by a qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer during construction of the fill. A certified report of these inspections must be provided to Mined Land Repurposing at least:
A. Quarterly

4 VAC-25-130-816.71 (h)(1)

32. Q. Inspections of impoundments must be made during construction and a certified by a qualified professional engineer upon completion of construction. Thereafter, impoundments must be certified how often for the life of the structure?
A. Annually

4 VAC-25-130-816.49 (a)(10)(ii)

33. Q. A citizen may accompany the Mined Land Repurposing on an inspection of a permit if they provide:
A. A written statement giving the inspector a reason to believe that a violation exists on the site

4 VAC-25-130-842.12 (a)

34. Q. The objective of Mined Land Repurposing civil penalty assessments for notices of violation and cessation orders is to:
A. Deter violations and ensure maximum compliance by the coal industry

4 VAC-25-130-845.2

35. Q. In determining whether to assess a civil penalty, the Mined Land Repurposing considers four factors: 1) Good faith in achieving compliance; 2) history of violations; 3) seriousness of the violation; and 4)_____.
A. Degree of negligence

4 VAC-25-130-845.12 (b)

36. Q. “Previously mined areas” mean land affected by surface coal mining operations prior to:
A. “The August 3, 1977 enactment of the Surface Mining Control and Reclamation Act.”

4 VAC-25-130-700.5

37. Q. Steep slope mining is considered terrain with a predominant slope that exceeds how many degrees?
A. 20

4 VAC-25-130-816.107(e)(ii)

38. Q. How much advance notice of underground mining must a mine operator provide to all owners and occupants of surface property and structures above the proposed mine workings?
A. 6 months

4 VAC-25-130-817.122

39. Q. The provisions of the subsidence control at 4 VAC 25-130-817.121 of the regulations apply only to subsidence related damage caused by underground mining activities conducted after:
A. October 24, 1992

4 VAC-25-130-817.121(c) (2)

40. Q. The maximum limit for total suspended solids (TSS) for an NPDES discharge structure (Sediment Pond) is how many milligrams/liter?
A. 70

4 VAC-25-130-816.42

41. Q. A range of 6-9 is an acceptable range for which of the following water quality parameters?
A. Negative logarithm of hydrogen ion concentration (pH)

4 VAC-25-130-816.42

42. Q. Blast records/logs of all blasts shall be maintained for at least:
A. 3 years

4 VAC-25-130-816.68

43. Q. A gas line and a water tank are located closer to a blast site than the closest dwelling. The line is 200 feet, the tank is 500 feet, and the dwelling is 900 feet from the blast site. The peak particle velocity established in the permit blast plans is 4 inches per second (IPS) for the line, 2 IPS for the tank, and 1 IPS for the dwelling. How many seismographs must be used in determining compliance with the Mined Land Repurposing Regulations?
A. 3 (1 at each structure)

4 VAC-25-130-816.67 (d)(1)(2)

44. Q. When may a surface mine operator dispose of non-coal waste in a refuse pile or

impounding structure?

A. At no time

4 VAC-25-130-816.89 (c)

45. Q. Cleaning of sediment structures located along haulroads shall be required:

A. Regularly and when accumulation may impair their function

4 VAC-25-130-816.151 (f)

46. Q. Whenever truck traffic creates visible dust on a haulroad:

A. Approved measures must be used to suppress the dust

4 VAC-25-130-816.150 (b)(1)

Surface Foreman Certification
Red Zone Map Exercise Instructions (SFSG)
Student Study Guide

The examiner must utilize the completed Mine Activity report form exercise provided to key grading of the Red Zone map section of the exam. Discretion may be used in evaluating how reporting mine activity is recorded. The score for this section of the examination includes discount totals from both identifying red zones and recording in the mine activity report portion of the exam. The following discounts will be given for each prescribed area listed:

Area	Discount Points
● Failure to identify area activity is to be conducted	3
● Failure to identify person or area and date of mining activity	3
● Failure to record type of mining activity to be conducted	2
● Failure to record other required information through description of work activity	2

Surface Foreman Certification
Red Zone Map Exercise (SFSG)
Student Study Guide

The Certification Exam contains both written questions and a practical Ground Control Red Zone exercise based on information in this Ground Control Plan.

Make-a-Mess Coal Company
No. 3
P.O. Box 5
Lebanon, Va. 24266

October 10, 2021

GROUND CONTROL PLAN

Marshall Moore, Chief
Coal Mine Safety

Director
Mined Land Repurposing
3405 Mountain Empire Road
Big Stone Gap, Virginia 24219

RE: Ground Control Plan, Make-a-Mess, Mine No. 3, Mine Index No. 17111AG, MSHA No. 44-00001, MLR Coal Surface Mining Permit No. 12000111

Dear Mr. Moore:

In compliance with Section §45.2-934. A. of the Coal Mine Safety Laws of Virginia, the following Ground Control Plan is submitted for the above referenced mine. Your prompt consideration and approval will be appreciated.

Sincerely:

_____
Name
Title

Ground Control Plan

1. **General Information:**

Make-a-Mess Coal Company	No. 3
Company Name	Mine Name or Number

44-00001	12000111	17111AG
MSHA Number	MLR Permit No.	Mine Index Number

2. **Auger/Highwall Miner General Information (if applicable):**

N/A	N/A
Company Name	Mine Name or Number
MSHA Number	Mine Index Number

3. **Type of Operation (check all that apply):**

☒ Surface Mine ☐ Auger ☐ Highwall Miner ☐ Face up for Deep Mine

4. **Seams to be Mined:**

Seam	Comments
Dorchester	
Eagle	
Blair	

Attached is a sketch showing a cross section of the highwall, coal seams being mined, bench widths, highwall angle, safety benches, and other pertinent information.

5. **Tree removal**

a. Highwalls, including existing highwalls, will be cleared of all trees, brush, and loose material that create a hazard to workers.

b. Persons having to work in close proximity to the top of a highwall to remove trees, brush, or loose material will be secured by a harness/belt and rope or similar device or work will be done utilizing equipment designed to do such work.

c. Trees that need to be removed that have a potential to contact energized power lines will be removed in a manner that does not expose workers to contact with such lines. This may include using cables, ropes or de-energizing the electrical power from the lines. The owner of the power line will be notified prior to work being performed and in the event of any damage to the power line.

6. **Highwall and Spoil Banks**

a. The foreman will coordinate with the driller and blaster to ensure that each highwall blast is planned in such a manner that would minimize any adverse effect to the highwall. This coordination will include results of the previous blast(s) and conditions found during drilling such as transitions of different types of rock, mud/hill seams and/or voids. This coordination will determine the pattern for the next blasting cycle relative to hole spacing, hole depth, explosive poundage, etc.

b. Pit widths will be designed in such a manner to allow for safe operation of all the equipment used in the pit.

c. The highwall will be sloped back at least 5 degrees past the vertical. Existing highwalls and pre-split highwalls are exempt from this standard.

d. Loose material will be removed, using appropriate equipment, from the highwall as it is exposed.

e. Safety benches and other no less effective control measures will be used where the highwall is susceptible to material sloughing.

f. Equipment operated where there are hazards from highwalls will have adequate protection from falling material.

g. When a machine, equipped with a side operator's cab (i.e. excavator, drill), is operating at the base of a highwall, the operator will position the equipment so that the operator's cab is not located between the machine and the highwall.

In isolated instances where it is not possible to keep the operator's cab of the machine away from the highwall, the machine will be positioned at an angle of at least 45 degrees from the highwall (the position of the tracks on the machine will determine the angle from the highwall). Additionally, prior to moving the machine into the area, the highwall will be evaluated to determine if a hazardous condition exists. If no hazard exists, a spotter will be positioned in a safe location away from the wall where the highwall can be monitored during the time the machine is being operated in this position. The spotter will be equipped with a means of communicating directly with the equipment operator.

h. Operating equipment near highwalls and spoil banks, such as loading haulers, will be performed in a manner so that exposure time near the highwall is minimized and that the equipment operator is positioned in the safest location away from the highwall.

i. Spoil banks will be moved in a manner that does not create an overhang that exposes workers to hazards from falling or sliding material. Dozers or other equipment will be used to break down the upper portion of spoil banks in order to prevent overhangs and other hazards.

j. Spoil banks adjacent to all active mining pits, where equipment and men are exposed, will be constructed on a safe slope and in such a manner to protect persons from falling or sliding material. Where spoil banks become so steep that hazardous conditions exist for equipment and men working under them, action will be taken immediately to correct the hazardous condition.

k. During the shift, the surface foreman will examine highwalls and spoil banks for hazardous conditions prior to maintenance personnel and other personnel such as blasters, surveyors, or coal samplers entering the assigned work area near a highwall or spoil bank.

l. All persons working in close proximity to highwalls will visually examine the wall prior to starting work and as frequently thereafter as may be necessary to ensure safety. If conditions prevent a visual examination of the wall, work will stop in the affected area and workers will consult with the foreman to discuss conditions and alternatives such as maintaining a safe distance from the wall (a minimum of 50') or working in alternate areas until such time as a visual examination can be made of the wall.

m. Adequate lighting will be provided during low light conditions to ensure that adequate examinations can be made of highwall and spoil bank areas where men are working or will be assigned to work**.**

n. Highwalls, spoil banks or other areas that may potentially be affected by a heavy rain, extended periods of rain or freeze/thaw conditions will be examined during and after such occurrences and prior to persons working in such areas. These examinations will be conducted and recorded in accordance with §45.2-903. A.

o. If a hazardous condition is found during any examination, the foreman will be notified immediately and the condition will be corrected or dangered off. If the condition is dangered off, a "Danger" sign or "Danger" tape that is readily visible in all conditions will be placed in a conspicuous place(s) to effectively prevent entrance into the area. This method of identifying areas where hazardous conditions exist will be reviewed with all employees and will be posted at the mine site.

p. Any hazardous condition found during the examinations of the mine will be recorded in the appropriate record book. It will be designated as "corrected or dangered off" by the examiner. The on-coming foreman will review the examinations by the preceding examiner prior to assigning work to employees. Any hazardous condition that has not been corrected will be reviewed with all affected employees.

q. Any hazardous condition that has been "dangered off" or not corrected will be recorded in the appropriate record book and carried forward by each foreman until such condition is corrected.

7. **Exposure**

a. All work will be done in a manner that minimizes unnecessary exposure time to highwalls.

b. Equipment in need of servicing, repairs, fuel, etc. will be moved away from the highwall to minimize exposure to employees from falling or sliding material. If it is not possible to move the equipment away from the highwall, the only work to be done is work that enables the equipment to be moved to a safe location away from the highwall. While the work to move the equipment is being done, a spotter will be used to observe the highwall for sliding or falling material.

c. Explosive trucks that are in the process of loading holes will incorporate the use of auger booms, remote operation, truck positioning or other no less effective method to maintain a safe distance from the highwall. Exposure time to ground personnel doing work in close proximity to the highwall will be limited. Only those persons necessary to perform work will be allowed in this area.

d. An authorized person will constantly observe the conditions of the highwall when ground personnel are working in high risk areas as determined by the condition and height of the wall. This will include but not be limited to workers backfilling blasting holes, preparing explosives for blasting, surveyors, equipment helpers, etc.

e. Explosives will not be loaded within a minimum of one hole on each side of the drill.

f. Equipment will not be parked or left unattended near the highwall where it is exposed to falling material.

8. **Roadways**

a. Haul roads, including roads used for the removal of coal from pits, to the extent possible, will be constructed a safe distance away from highwalls, to minimize exposure to falling or sliding materials.

b. Roadways that are exposed to upslope dumping or pushing of material will be protected by effective means utilized to ensure the safety of vehicles traveling on the roadway.

c. Spoil banks adjacent to active roads will be maintained in such a manner to protect persons from hazardous conditions.

9. **Mine Map**

a. A map will be maintained at the mine site showing residences, businesses, public buildings, and public or private roads that may be affected by mining activities.

b. Temporary notations to include updates of gas wells, gas lines, and other potentially mine affected changes will be updated on a map when they become known.

c. All red zone areas of the mine will be clearly identified on the map by highlighting or other no less effective means. Red zones are work areas that represent a potential hazard to the public safety. **Red zones are work areas where ground disturbing activities are being conducted or will be conducted that represent a potential hazard, from blasting or uncontrolled movement of material down slope, to the safety of persons (not under the control of the licensed mine operation) residing, working, or traveling in affected areas.**

d. All foremen will be familiar with the contents of the map, the outer perimeter boundaries of the permit area, and the red zones.

10. **Working In or Around Red Zones**

a. Warning signs, flagging, or other no less effective means will be used to mark work areas that are designated red zones. The method used to mark these work areas will be distinctively different from other warnings and markings utilized at the mine site.

b. Berms, fencing, or other barrier protection will be used to contain materials upslope from red zones. In locations where berms, fencing or other barrier protection cannot be used or is not practical, spotters will be used to control work such that all material is prevented from rolling, slipping, or sliding down slope. No work will be performed upslope in red zones without these precautions in place.

c. Work activity in red zone areas will be conducted in a safe manner using proper equipment for the work being performed.

d. Residents or occupants of other buildings, or other persons not under the control of the licensed mine operation, that could be affected by falling, sliding, or other uncontrolled movement of material down slope from red zones will be notified by personal contact or by written notice conspicuously attached to the residence or building at least three hours and no more than 24 hours prior to beginning ground disturbing activities in red zones. Thereafter, residents or occupants of other buildings will be notified at least monthly. This notification is to include the type of work that is planned, the length of time the work is expected to last, and the safety measures that will be used. A record of the notification will be recorded in the on-shift report of the mine or a record book designated for that purpose maintained at the mine site.

e. Residents or occupants of other buildings, or other persons not under control of the licensed mine operation, that could be affected by blasting in red zone areas will be given notification of the blast at least three hours and no more than 24 hours prior to the blast (At a minimum, residents or occupants of other buildings, or other persons not under the control of the mine operation, within 1,000 feet of any blast are deemed to be affected, however, each blast will be analyzed to determine maximum affected range.).

Thereafter, residents or occupants of other buildings will be notified at least weekly. This notification is to include the planned schedule of blasting activities, the safety

f. measures that will be used, blasting signals, and precautions the residents should take. A record of the notification will be recorded in the blaster's logbook or a record book designated for that purpose maintained at the mine site.

g. When blasting in red zone areas or other potentially critical areas such as around electrical transmission towers/lines, gas lines, etc., blasting procedures will be modified such as reducing poundage, reducing the number of shots, reducing the depth and size of drill holes, changing the free face direction, using electronic detonation or implementing other measures to control the potential for damage. Such safety measures will be documented in the blasting log book.

11. **Auger/highwall miner operation**

a. Type of Auger/Highwall Miner: N/A

i. Diameter/Width:

ii. Maximum Cut Depth:

iii. Minimum web width:

iv. Maximum number of holes between barriers (no auger holes)

v. Minimum barrier width (no auger holes)

vi. Maximum number of holes between barriers (with auger holes)

vii. Minimum barrier width (with auger holes)

viii. Maximum cover over highwall miner cuts

b. As the overburden and/or the height of the coal increases, the web and barrier pillar sizes shall increase accordingly.

c. If a hazardous condition exists in an area being augered or mined, the condition shall be corrected or the machine moved to a safe location.

d. Should a work area become fogged in or if other weather conditions exist to the degree that the highwall cannot be safely evaluated and monitored, work shall cease in that area or be moved to a safe area.

e. Where the potential exists for auger holes/highwall miner lifts to mine together, particularly on points, extra precautions will be taken to prevent caving. These precautions may include but not be limited to increasing the thickness of the web, leaving barrier pillars to prevent the transfer of load, leaving the coal seam in place under hill seams or mud seams to prevent collapse of the wall, etc.

f. Sketches are attached showing the details of the auger/highwall miner operation.

12. **Training/Documentation**

a. The contents of this plan and the mine map will be reviewed with all newly employed miners. The surface foreman will ensure that all newly employed miners are familiar with the contents of this plan prior to allowing them to work.

b. The contents of this plan and the mine map will be reviewed with all miners immediately after approval and during annual re-training.

c. The applicable contents of this plan will be reviewed with all employees immediately prior to starting work in red zones. The surface foreman will ensure that the employees are aware of the red zones and are familiar with the requirements of this plan and the contents of the mine map.

d. A record of the training required under this section will be maintained at the mine and open for inspection for a period of one year. A record of the training required under paragraphs a. and b. above will be recorded on the MSHA 5000-23 form by checking the "other" box and indicating the type of training provided. A record of training required by paragraph c. above will be recorded in the on-shift book or other equivalent record of the mine with the names of the employees receiving the training included.

13. **Management Control**

a. The surface foreman is responsible and accountable for the implementation of this ground control plan.

b. The surface foreman will ensure that work assignments and necessary precautions for red zone work is clearly communicated to all affected miners.

c. The surface foreman will provide direct monitoring and evaluation to ensure that effective control of work in the red zones is maintained in accordance with the ground control plan.

d. The person countersigning the on-shift report of the surface foreman will ensure that records reflect compliance with any record required by this plan and that any hazardous conditions recorded have been promptly corrected.

e. Should a situation arise where the mine management cannot comply with the contents of this plan, the surface foreman will consult with appropriate company management to seek alternative methods that offer an equal level of safety or greater. The Chief of Coal Mine Safety must approve any variance from this plan.

This plan will be incorporated into the MLR coal surface mining permit plan. Provisions of this plan will be jointly enforced by CMS and MLR.

Surface Foreman Certification
Red Zone Map Exercise Instructions (SFSG)
Student Study Guide

Exam Instructions: You are required to read the following scenario, view the enclosed map and complete the required attached form as part of your examination:

You are a surface foreman for Make-a-Mess Coal Company, Mine No. 3, located in the Hurricane Creek section of Buchanan County. Portions of the surface activities are being conducted near the community of Maxie in which several homes are located down slope of your operation.

Mining activities have been ongoing for the past year with little to no complaint from surrounding residences. On March 10, 2021, equipment is moved to a proposed pond site. Plans within the next week are to construct a road up to proposed Pond J which will require the construction of berms, clearing of trees, and pushing of earthen material. This work will involve the use of dozers, loaders and off-road trucks. Some of the earthen material will be moved up to the pond site as part of reclamation activities, but the pond itself will be constructed at a later date. Work will be conducted so as not to disturb protected areas around a private cemetery. Presently, no blasting is being considered. This work should take only 10 days.

Several homes along state route 601 are located down slope of the proposed work. Also located down slope from the Red Zone work area is a railroad owned by Norfork and Western. According to the mine map, numbers identify several homes that could be affected by the proposed work have been identified within Red Zone G.

According to your approved Ground Control Plan, any work area where mining activities could affect public or private property must be identified as “red zone” work areas. Notification must be given to those homeowners whose property could be affected along with a complete explanation of the type work being considered. Enclosed is a map of the affected area.

Note: Include everyone to be notified on one form.

Surface Foreman Certification
Red Zone Map Exercise Instructions (SFSG)
Student Study Guide

NOTICE OF MINING ACTIVITY

In accordance with section 45.2-934.A of the Coal Mine Safety Laws of Virginia, the following notice is given that mining activities will be conducted in the following area(s):

Hurricane Creek section of Buchanan County near Maxie community along route 601. Posted with this notice is a map indicating the group of homes to be affected by Red Zone G and portions of the Norfolk and Western railroad.

Notice is hereby given to all homeowners located in Red Zone G **or** homes 32, 33, 34, 35, 36, and 37 or entire group G **on this day,** March 10, 2021, **that mining activity will be conducted in an area that has the potential to affect your property. This work is expected to last for at least** 10 **days.**

The type mining activity that is to be conducted is marked below.

__X__ Clearing/grubbing work; construction of berms, ditches or other safety of environmental structures.

__X__ Surface mining activity to include the moving of earthen materials and the removal of coal.

_____ Blasting operations to include the moving of rock for development of surface mining and road construction

_____ Reclamation activities to include grading and back filling of previously mined areas.

Description of work activity:

Plans within the next week are to construct a road up to proposed Pond J which will require the construction of berms, clearing of trees, and pushing of earthen material. This work will involve the use of dozers, loaders and off-road trucks. Some of the earthen material will be moved up to the pond site as part of reclamation activities, but the pond itself will be constructed at a later date.

(Student's Name) (Optional) [redacted]

03/06

Surface Foreman Certification
Red Zone Map Exercise Instructions (SFSG)
Student Study Guide

NOTICE OF MINING ACTIVITY

In accordance with section 45.2-934. A. of the Coal Mine Safety Laws of Virginia, the following notice is given that mining activities will be conducted in the following area(s):

_____
_____
_____
_____
_____

Notice is hereby given to _____ on this day, _____ that mining activity will be conducted in an area that has the potential to affect your property. This work is expected to last for at least _____ days.

The type mining activity that is to be conducted is marked below.

_____ Clearing/grubbing work, construction of berms, ditches or other safety of environmental structures.

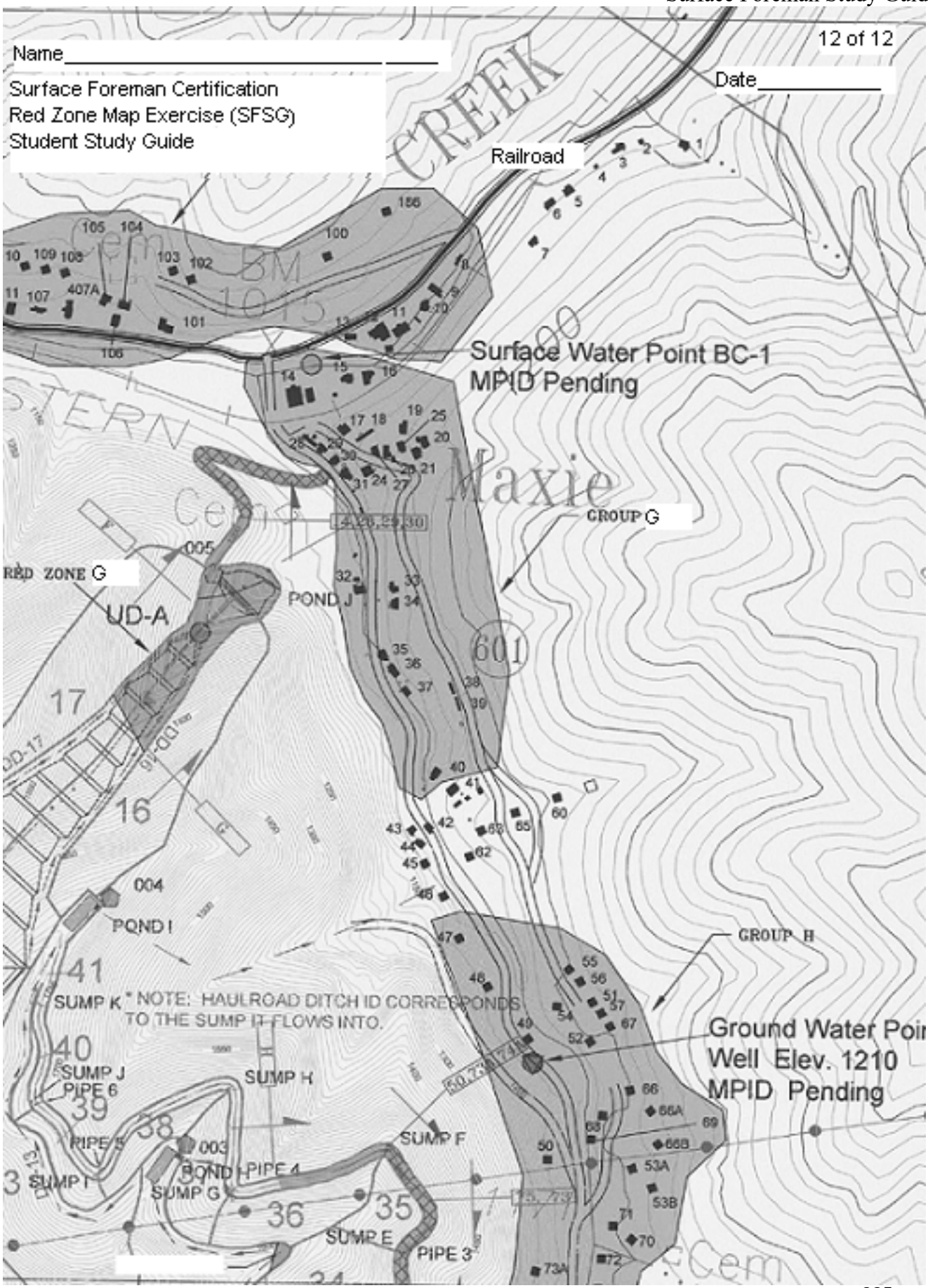
_____ Surface mining activity to include the moving of earthen materials and the removal of coal.

_____ Blasting operations to include the moving of rock for development of surface mining and road construction

_____ Reclamation activities to include grading and back filling of previously mined areas.
Description of work activity:

_____
_____
_____
_____
_____
_____
_____

[redacted]


Name_____
12 of 12
Surface Foreman Certification
Red Zone Map Exercise (SFSG)
Student Study Guide
Date_____
Railroad
Surface Water Point BC-1
MPID Pending
GROUP G
RED ZONE G
UD-A
POND J
005
004
POND I
GROUP H
SUMP K
NOTE: HAULROAD DITCH ID CORRESPONDS TO THE SUMP IT FLOWS INTO.
SUMP J
PIPE 6
SUMP H
PIPE 5
003
POND I PIPE 4
SUMP I
SUMP G
SUMP F
SUMP E
PIPE 3
Ground Water Poi
Well Elev. 1210
MPID Pending

REFERENCE LISTING

Coal Mine Safety Laws of Virginia – 2021 Edition

Coal Mining Dictionary, U.S. Department of Interior

Code of Federal Regulations – 30 CFR – Part 77

Rules and Regulations Governing Blasting in Surface Mining Operations

Safety Health Regulations for Mineral Mining 1998 (SHR – MM)