COMMONWEALTH OF VIRGINIA
COAL MINE ELECTRICAL CERTIFICATION/QUALIFICATION PROGRAM

The following program for certifying and qualifying persons as coal mine electricians is administrated by the Virginia Department of Mines, Minerals, and Energy and the Virginia Board of Coal Mining Examiners, hereinafter referred to as the "Commonwealth of Virginia". This certification and qualification program, herein referred to as the "Virginia Certification Program", is approved by the Mine Safety and Health Administration (MSHA), United States Department of Labor.

1.0 General

(a) A number of MSHA mandatory safety standards applicable to underground and surface coal mining restrict the performance of electrical work to qualified persons. Under MSHA standards, one method for qualifying persons to perform electrical work is through a State certification program approved by MSHA.

(b) The Commonwealth of Virginia is responsible for the safety and health of the miners in the Commonwealth, and is required by the Coal Mine Safety Laws of Virginia to test and certify certain coal mine personnel, including electrical repairmen. The Commonwealth of Virginia prepares, administers, and grades examinations of applicants for electrical certification in the Commonwealth.

(c) Representatives of the Commonwealth of Virginia and MSHA shall confer as needed to maintain consistency with Commonwealth of Virginia and Federal requirements, and compliance with the provision of this program.

2.0 Categories of Certification

Electrical certification will be issued in the following categories:

(a) Underground electrical repairman.
This certification will allow electrical work to be performed at underground and surface areas of underground coal mines.

(b) Surface electrical repairman.
This certification will allow electrical work to be done at surface locations only.

3.0 Eligibility

To be eligible for certification as a coal mine electrical repairman, an applicant shall have a least one year of experience in installation and maintenance of electrical circuits and equipment in an underground coal mine, surface area of an underground coal mine, surface coal mine, noncoal mine, mine equipment manufacturing industry or similar equipment manufacturing industry. Partial credit for work experience, up to six months, may be obtained upon proof of completion of a two year program of related vocational training or a degree in electrical engineering.

4.0 Examinations

All applicants for electrical certification shall take an examination administered by the Commonwealth of Virginia for the category in which a certification is sought. MSHA shall be permitted to review and evaluate the examinations for the purpose of maintaining consistency with Federal requirements.

4.1 Frequency of Examinations

The Commonwealth of Virginia will schedule monthly examinations required for coal mining certification.

4.2 Examinations for Underground Electrical Repairman Certification

(a) Examinations for underground electrical repairman certification shall include the following written parts:

(1) Direct-current theory and application
(2) Alternating-current theory and application
(3) Low and medium voltage electric equipment and circuits
(4) Permissibility of electric equipment
(5) Commonwealth and Federal requirements (including 30 CFR Part 75, Subparts F, G, H, I, J, and K).
(6) Requirements of the National Electrical Code (NEC) at random within test.
(7) Cable Splicing
(8) Gas testing
(9) High-voltage theory and application
(10) First Aid

(b) Examinations for underground electrical repairman certification shall include practical demonstrations to test the skill of applicants in performing electrical work and maintaining electrical equipment. The following five practical testing stations will be incorporated into the underground electrical repairman examination. These stations will require applicants to demonstrate a practical, safe working knowledge of basic electrical testing and troubleshooting procedures. Applicants will be required to have knowledge of electrical schematics and demonstrate safe use of a volt-ohm meter on an energized circuit. A thirty-six volt (DC-direct current) circuit will be used and is an operationally safe voltage should accidental contact be made with the energized circuit. Each applicant will be allowed 25 minutes to complete each station.

STATION NO. 1 – Control Circuit Troubleshooting – Electrical Schematic Reading

This station will require applicants to be able to read a basic control circuit schematic and demonstrate safe testing/troubleshooting procedures on a thirty-six volt (DC) control circuit panel board with a standard Simpson 260 volt-ohm meter. Each applicant will be required to identify two discrepancies on the panel board that will include ability to read an electrical schematic and safely troubleshoot an energized circuit.

STATION NO. 2 – Electrical Examinations – Record Keeping

This station will require applicants to identify electrical examination deficiencies and correctly complete weekly and monthly electrical examination records. A scenario of examinations, tests and deficiencies will be provided, and using this information, applicants will complete the required records.

STATION NO. 3 – Cable Troubleshooting

This station will require applicants to identify all of the following with a standard Simpson 260 volt-ohm meter in a de-energized section of cable: open phase, phase to phase, open ground, phase to ground, open ground monitor, ground to ground monitor fault. Two cables will be used to design these circuits, and instructions will be given to each applicant to detect the required circuits.

STATION NO. 4 – Circuit Breaker Troubleshooting

This station will require applicants to safely examine, test and trouble shoot a circuit breaker panel. Applicants will be required to identify those visual examinations required to be conducted, troubleshoot a basic ground

or ground monitor circuit discrepancy and adjust a circuit breaker for a specified short circuit setting.

STATION NO. 5 – Permissibility

This station will require applicants to identify ten permissibility discrepancies that have been created on four permissible panel board enclosures. Discrepancies may include: enclosure flange opening, bolt or bolt hole noncompliance, enclosure cover, packing gland installation, conduit maintenance and installation.

STATION NO. 6 – High Voltage Power Move

This station will require applicants to use proper electrical safety equipment and identify the proper sequence for disconnecting, moving and reconnecting power in an underground environment. After the move, applicants will properly energize the high voltage power and test for proper high voltage phase polarity.

4.3 Examinations for Surface Electrical Repairman Certification

(a) Examinations for surface electrical repairman certification shall include the following written parts:

(1) Direct-current theory and application
(3) Low and medium-voltage electric equipment and circuits
(4) Commonwealth of Virginia and Federal requirements, including 30 CFR part 77, Subparts F, G, H, I, J, and S
(5) Cable splicing
(6) Requirements of the National Electric Code (NEC) at random within test.
(7) Gas testing
(8) High-voltage theory and application
(9) First Aid

(b) Examinations for surface electrical repairman certification shall include practical demonstrations to test the skill of applicants in performing electrical work and maintaining electrical equipment. The following four practical testing stations will be incorporated into the surface electrical repairman certification. These stations will require applicants to demonstrate a practical, safe working knowledge of basic electrical testing and troubleshooting procedures. Applicants will be required to have knowledge of electrical schematics and demonstrate safe use of a volt-ohm meter on an energized volt circuit. A thirty-six volt (DC-direct current) circuit will be used and is an operationally safe

voltage should accidental contact be made with the energized circuit. Each applicant will be allowed 25 minutes to complete each station.

STATION NO. 1 – Control Circuit Troubleshooting – Electrical Schematic Reading

This station will require applicants to be able to read a basic control circuit schematic and demonstrate safe testing/troubleshooting procedures on a thirty-six volt (DC) control circuit panel board with a standard Simpson 260 volt-ohm meter. Each applicant will be required to identify two discrepancies on the panel board that will include ability to read an electrical schematic and safely troubleshoot an energized circuit.

STATION NO. 2 – Electrical Examinations – Record Keeping

This station will require applicants to identify electrical examination deficiencies and correctly complete weekly and monthly electrical examination records. A scenario of examinations, test and deficiencies will be provided and using this information, applicant will complete the required records.

STATION NO. 3 – Cable Troubleshooting

This station will require applicants to identify all of the following with a standard Simpson 260 volt-ohm meter in a de-energized section of cable: open phase, phase to phase, open ground, phase to ground, open ground monitor, ground to ground monitor fault. Two cables will be used to design these circuits and instructions will be given to each student to detect the required circuits.

STATION NO. 4 – Circuit Breaker Troubleshooting

This station will require applicants to safely examine, test and trouble shoot a circuit breaker panel. Applicants will be required to identify those visual examinations required to be conducted, troubleshoot a basic ground or ground monitor circuit discrepancy and adjust a circuit breaker for a specified short circuit setting.

STATION NO. 5 – Permissibility

This station will require applicants to identify ten permissibility discrepancies that have been created on four permissible panel board enclosures. Discrepancies may include: enclosure flange opening, bolt or bolt hole noncompliance, enclosure cover, packing gland installation, conduit maintenance and installation.

4.4 Administration of Examinations

(a) Individual Examinations will be computer generated from an approved bank of questions, and provided to eligible applicants for electrical certification. An examination file for each applicant will be developed and maintained as a record of the examination taken.

(b) No notes or books, with the exception of materials provided by the examiners, may be used during the examination. Scratch paper will be provided during the examination, to be turned in with each applicant's examination.

(c) The use of pocket calculators will be permitted. These calculators will be provided by the Division of Mines.

(d) All examinations shall be administered by a representative of the Division of Mines. No person other than Division of Mines representatives and MSHA officials shall act as monitors in the examination room with the applicants.

(e) Monitors shall take necessary measures to ensure that applicants do not discuss the examination or share information. Appropriate measures shall be taken to prevent unauthorized dissemination of examinations or examination answers.

(f) MSHA shall be permitted to monitor the examination and grading of applicants examination for electrical certification.

(g) To facilitate MSHA monitoring, the Division of Mines shall notify the District Manager of the MSHA Coal Mine Safety and Health District in which the examinations will be administered of the date, time, and location of scheduled examination sessions. Notice shall be given at least 15 days in advance of examination.

4.5 Scoring of Examinations

(a) A grade of 80% or above is required on any examination or section of examination.

(b) A fee is required for any examination taken or any portion of the examination that must be retaken.

(c) Test Retaking Procedures

(1) Applicants receiving a failing score on the entire test or any section thereof, shall be given the opportunity to be retested on the failed section/sections of the test. The applicant shall wait at least 10 working days after the notification letter has been sent before retaking the failed section or sections.

(2) If a section of the examination is failed a second time, then the applicant shall wait at least 10 working days after the notification letter has been sent before retaking the entire examination.

(3) If the examination is failed on the third try, then the applicant shall wait the greater of one year from the date of the first examination or 10 working days after the notification letter has been sent before he will begin the examination cycle again.

5.0 Certification/Qualification Cards

(a) Upon receipt of documentation from the Commonwealth of Virginia denoting certification, MSHA will issue qualification cards for the following types of certifications:

VIRGINIA	MSHA
Underground electrical Repairman (GT)	Coal mine electrician for surface and underground areas of underground coal mines
Surface electrical repairman (GT)	Coal mine electrician for surface coal mines

(b) Initial certification and qualification cards will expire on December 31st of the year following initial issue. MSHA and DMME will issue renewal cards each year thereafter upon proof of retraining received during that calendar year in a program approved by MSHA.

5.1 Annual Renewal

An electrical repairman certification shall remain valid if the certified person meets the annual retraining requirements as required by 30 CFR 75.153 (g).

5.2 Reinstatement

Any certified electrical repairman who fails to comply with the annual retraining requirements may be reinstated. The reinstatement will require the applicant to retake the applicable electrical certification examination and successfully pass all examination sections.

6.0 Approval Period

The approval period for the Commonwealth of Virginia electrical certification program shall be indefinite, unless terminated or revised by MSHA or the Commonwealth of Virginia with at least three months written notice. Any termination or revision notice shall include, in full detail, the reason for such action. MSHA and the Commonwealth shall evaluate the program on a continuing basis and make necessary change, agreeable to both parties, to prevent electrical accidents and remain current with technological development.

Date: 3/22/02

O. Gene Dishner
Director
Department of Mines, Minerals and
Energy
Commonwealth of Virginia

Date: 4/28/02

David D. Lauriski
Assistant Secretary of Labor for
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