

and hazard training for miners as follows:

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(o) Each operator engaged in shaft or slope construction shall have an MSHA-approved training plan, as outlined in this section, containing programs for training new miners, training experienced miners, training miners for new tasks, annual refresher training, and hazard training for miners as follows:

(1) In the case of an operator engaged in shaft or slope construction on December 30, 2005, the operator shall submit a plan for approval by May 1, 2006, unless extended by MSHA.

(2) In the case of a new shaft or slope construction operator after June 28, 2006, the operator shall have an approved plan prior to commencing shaft or slope construction.

■ 7. Paragraph (d) of § 48.28 is revised to read as follows:

**§ 48.8 Annual refresher training of miners; minimum courses of instruction; hours of instruction.**

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(d) All persons employed as shaft or slope construction workers on June 28, 2006 must receive annual refresher training within 12 months of June 2006.

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**DEPARTMENT OF LABOR**

**Mine Safety and Health Administration**

**30 CFR Part 75**

**RIN 1219-AA98**

**Low- and Medium-Voltage Diesel-Powered Electrical Generators**

**AGENCY:** Mine Safety and Health Administration (MSHA), Labor.

**ACTION:** Final rule.

**SUMMARY:** This final rule amends an existing safety standard to allow the use of low- and medium-voltage diesel-powered electrical generators as an alternative means of powering electrical equipment in underground coal mines. The final rule eliminates the need for mine operators to file petitions for modification to use these portable generators to power electrical equipment and does not reduce the protections afforded miners by the existing standards, in fact it increases protections.

**EFFECTIVE DATE:** February 28, 2006.

**FOR FURTHER INFORMATION CONTACT:** Rebecca J. Smith, Acting Director, Office

of Standards, Regulations and Variance, MSHA, 1100 Wilson Boulevard, Arlington, Virginia 22209-3939. Ms. Smith can be reached at *smith.rebecca@dol.gov* (Internet e-mail) (202-693-9443) (voice) or (202-693-9441) (facsimile). The final rule also is available on the Internet at *http://www.msha.gov/REGSINFO.HTM*.

**SUPPLEMENTARY INFORMATION:**

**I. Background Information**

We (MSHA) are amending § 75.901 to permit the use of low- and medium-voltage diesel-powered electrical generators as a means for providing a portable source of power to move equipment in, out, and around the mine and to perform work in areas where permissible equipment is not required. This final rule does not reduce the protections for miners in the current standards, but increases miner safety by updating the electrical requirements with new commercially-available technology so miners may use diesel-powered electrical generators as a source of power. The final rule provides protective systems and testing procedures to limit the amount of voltage and current that miners can be exposed to under ground fault conditions; thus, it reduces the possibility of a fire, shock, or burn hazard when miners use these generators.

Furthermore, by issuing this final rule, we are responding to the requirements of the Regulatory Flexibility Act and Executive Order 12866 that agencies review their regulations to determine their effectiveness and to implement any changes indicated by the review that will make the regulation more flexible and efficient for stakeholders and small businesses. In accordance with the requirements of the Mine Act, § 101(a)(9), this final rule does not reduce the protection afforded to miners by the existing standard.

Generally, power centers are the main means of supplying electricity in an underground mine. Power centers are placed underground to provide power to permanent or stationary electrical equipment, such as belt conveyor drives, and to mining equipment on working sections. Power centers in areas where permissible equipment is not required are generally stationary. Mine operators use various means to move electrical equipment and to perform work in areas where permissible equipment is not required. In these situations, they are unable to use power centers to energize the machines for the move because of the excessive length of

cable required to reach the power center. If longer trailing cables are installed in order to reach remote power centers, proper electrical protection for these low- and medium-voltage three-phase circuits may be compromised and overheating of, or damage to the cables may occur.

Over a 13-year period (1990-2003), through our petition for modification (PFM) process, mine operators have been using low- and medium-voltage diesel-powered electrical generators as an efficient means for providing a portable source of power to move and operate electrical equipment in areas where permissible equipment is not required. These portable diesel-powered electrical generators are easily taken to areas where power centers or other sources of electrical power are not available to move mobile equipment or supply power to other electric equipment needed to do work in outby areas. Proper electrical protection for these low- and medium-voltage three-phase circuits can safely be provided by portable diesel-powered electrical generators.

Existing mandatory safety standards § 75.701 (Grounding metallic frames, casings, and other enclosures of electric equipment) and § 75.901 (Protection of low- and medium-voltage three-phase circuits used underground), specify the grounding requirements for electrical equipment and low- and medium-voltage three-phase circuits. However, when using these generators, mine operators are unable to comply with the existing electrical protection requirements of § 75.901. Currently, § 75.901 requires a grounding circuit to originate from the grounded side of a grounding resistor located at a power center. In addition, § 75.901 does not address the use of a generator frame for the purpose of grounding.

To address their inability to comply with § 75.901, mine operators file PFMs under section 101(c) of the Federal Mine Safety and Health Act of 1977 (Mine Act). PFMs may be granted when the Secretary determines that an alternative method of achieving the result of a standard exists that will at all times guarantee the same measure of protection afforded to miners under a standard, or when the application of a standard to the mine will result in a diminution of safety to the miners at the mine. The PFM process results in safety requirements and procedures that are applicable only to an individual mine. Once a final written decision pertaining to a PFM has been issued, the governing terms and conditions contained in the decision become the mandatory standard at the individual mine. After

the PFM is issued, we continue to monitor compliance with its terms and conditions.

During the time period January 1990 through October 2003, we granted 63 PFMs that requested the use of diesel-powered electrical generators. These PFMs affected 56 mines.

The first petition granted for a modification of § 75.901 was submitted to us in 1990, requesting the use of a diesel-powered electrical generator. In 1996, we determined that it was necessary for a mine operator to petition both §§ 75.701 and 75.901 to allow the use of a diesel-powered electrical generator in underground coal mines. Petitioning both standards resulted in additional expense and paperwork burden for mine operators. To reduce the expense and paperwork burden for mine operators, we conducted a review of both standards in 2003 and determined that only a PFM of § 75.901 was necessary because conditions for grounding contained in the petition will satisfy the requirement of § 75.701 as an approved method of grounding.

On June 25, 2004, we published a proposed rule (69 FR 35992) to amend the existing electrical standard § 75.901 (Protection of low- and medium-voltage three-phase circuits used underground), which specifies the safety requirements for protecting low- and medium-voltage three-phase circuits. This standard was published in 1970 (35 FR 17890) and has not been changed.

During November 2004, we held four public hearings on the proposed rule in Salt Lake City, Utah; Birmingham, Alabama; Lexington, Kentucky; and Morgantown, West Virginia. The post-hearing comment period closed December 10, 2004. In response to the proposed rule we received three written comments and oral testimony presented at the public hearings.

## II. Discussion of Comments and Testimony Received

During the public hearings, we received many comments which were not directly related to specific proposed provisions of the low- and medium-voltage diesel-powered electrical generators standard. Most of the comments were directed at enhancing other health and safety issues of miners, rather than addressing the electrical safety of grounding circuits for diesel-powered electrical generators. These comments are beyond the scope of this rule and they are addressed by other existing standards. We also received two comments concerning the number of PFMs granted and the purpose behind the proposed rule.

Below is a discussion of the eight categories of comments we received and our general response to them.

### 1. Types of Diesel-Powered Generators

A commenter questioned whether these generators would be classified as heavy-duty diesel-powered equipment. This issue is beyond the scope of this rulemaking because it does not address the electrical safety of grounding circuits for diesel-powered electrical generators. Examples of standards that address the types of diesel generators are § 75.1908(b) (Nonpermissible diesel-powered equipment; categories) and § 72.501 (Emission limits for nonpermissible heavy-duty diesel-powered equipment, generators, and compressors).

### 2. Diesel Emissions and Particulates

Several commenters raised concerns that the proposed rule did not address any limits for diesel emissions and particulates emitted into the mine atmosphere as a health risk to miners. One commenter stated that the proposed rule should include carbon monoxide and nitrogen oxide monitoring on the inby equipment operator while the diesel generator was used to take equipment in and out of the mine. Another commented that the diesel particulate emitted into the mine atmosphere is detrimental to miner health. These issues are beyond the scope of this rulemaking which addresses the electrical safety of grounding circuits for diesel-powered electrical generators. These issues are addressed by other standards concerning emissions requirements of diesel-powered generators. Mine operators are reminded that they are still required to meet the requirements of § 70.1900, (Exhaust Gas Monitoring); and § 72.501 (Emission limits for nonpermissible heavy-duty diesel-powered equipment, generators and noncompressors).

### 3. Fire Hazards

One commenter stated that diesel-powered generators are fire hazards and could be placed in areas where smoke could overtake the miners. Another commented that diesel-powered generators are a fire hazard because the proposed rule failed to require a fire suppression system. We disagree with these commenters that the use of diesel-powered electrical generators is a fire hazard. We have found that any previous safety concerns such as explosion, fire, and shock hazards initially associated with the use of diesel-powered electrical generators have been sufficiently addressed by

advances in technology. Rather, we recognize that diesel-powered electrical generator equipment and circuit design improvements in combination with sensitive electrical circuit protections actually reduce fire, explosion, and shock hazards. Moreover, during the 13 years these diesel generators have been approved through the use of PFM for use in underground mines, and we have received no reported incidents of mine fires resulting from their use.

In addition, these issues are beyond the scope of this rulemaking—electrical safety of grounding circuits for diesel-powered electrical generators, and they are addressed by other existing safety standards. For example, § 75.380 (Escapeways; bituminous and lignite mines) requires two separate and distinct escapeways for miners to escape during emergency situations in an underground coal mine, to address any smoke hazard. Section 75.1909(j)(3) (Nonpermissible diesel-powered equipment; design and performance requirements) requires an automatic fire suppression system to address fire hazards. This fire suppression system for diesel-powered equipment applies to the diesel-powered equipment at issue here. Finally, all other examination requirements in 30 CFR part 75 for diesel-powered equipment apply.

In a matter related to fire hazards of diesel-powered generators, we received a comment on safe operating temperatures of equipment being powered by the diesel generators. This comment is beyond the scope of this rulemaking because it does not concern electrical safety of grounding circuits for diesel-powered electrical generators and is addressed generally by § 75.1725(c) (Machinery and equipment; operation and maintenance).

### 4. Moving Equipment

A commenter stated that when equipment is being moved in or out of the intake escapeway and the equipment breaks down, it blocks the intake escapeway, and an emergency vehicle is needed on the outby side to transport people in case of an emergency or an accident. This comment is beyond the scope of this rulemaking because it does not concern electrical safety of grounding circuits for diesel-powered electrical generators and is addressed by other existing standards. For example, § 75.380 (Escapeways; bituminous and lignite mines), requires that escapeways, both primary and alternate, be maintained in a travelable condition.

### 5. Maintenance of Equipment

A commenter stated that the diesel-powered generator "will be neglected and cause serious problems just like all the other outby equipment." This issue concerns every piece of underground equipment and not just diesel-powered generators. The comment, therefore, is beyond the scope of this rulemaking, because it does not specifically concern the electrical safety of grounding circuits for diesel-powered electrical generators, and is addressed by other existing standards under 30 CFR part 75.

### 6. Operation of Equipment

One commenter stated that leaving a piece of diesel-powered equipment unattended is unacceptable. We agree with this commenter that it is unacceptable to leave diesel-powered equipment unattended. Section 75.1916(e) requires diesel-powered equipment not be operated unattended. In addition, § 75.1908(c) defines the term "attended," for diesel-powered equipment (e.g., diesel-powered generators). This comment is beyond the scope of this rulemaking because it does not specifically concern the electrical safety of grounding circuits for diesel-powered electrical generators, and is addressed by these existing standards.

### 7. Petitions for Modification

One commenter stated that a difference exists between the number of PFMs that were granted as shown in the preamble to the proposed rule and the number the commenter received under his Freedom of Information Act (FOIA) request. We understand that a difference exists between these numbers stated in the preamble and the answer to his FOIA request. This difference is not significant for the rulemaking because we determined the number of petitions for this rulemaking by retrieving the files and hand-counted the number of granted PFMs. We stand by the number in the proposed rule and the final rule as the number of granted PFMs that this rulemaking concerns.

### 8. Purpose of the Rule

One commenter stated that it appears that we are more concerned about cost savings for the operators than safety for miners. We do not agree with this comment. This final rule does not reduce protections for miners concerning the use of electrical equipment, e.g., diesel-powered electrical generators. In fact, this final rule enhances miner safety by its required design systems and testing procedures that limit the amount of voltage and current to which miners can

be exposed under ground fault conditions. These enhancements reduce the possibility of fire, shock, or burn hazards.

Furthermore, while this final rule will eliminate the need for underground coal mine operators to file PFMs if they choose to use diesel-powered electrical generators, it does not reduce protections for miners. Some of the protections in this final rule involve the use of sensitive ground fault devices in conjunction with a grounding resistor that limits the ground fault current to 0.5 amps and trips the neutral grounding resistor when a fault current of not more than 90 milliamps is detected by the system. These requirements reduce the potential for shock hazards and prevent the neutral grounding resistor from overheating and becoming a fire hazard.

## III. Section-by-Section Discussion of the Final Rule

### Section 75.901 Protection of Low- and Medium-Voltage Three-Phase Circuits Used Underground

Existing § 75.901 contains the requirements for low- and medium-voltage three-phase alternating-current circuits used underground.

Final paragraph 75.901(b)(1) through (12) is new and is being added to § 75.901 to permit the use of diesel-powered electrical generators as an alternative to power centers for the purpose of moving equipment in, out, and around the mine, and for performing work in areas where permissible equipment is not required. Paragraphs 75.901(b)(1) through (12) are electrical safety standards applicable to low- and medium-voltage diesel-powered electrical generators and circuits.

In the proposed paragraph (b), we inadvertently omitted the word "and" from the phrase "for the purpose of moving equipment in, out, and around the mine," in the introductory paragraph for proposed paragraphs (b)(1) through (b)(12) as published on June 25, 2004 (69 FR 35998). The final rule corrects this omission and the final paragraph now reads correctly. We did not receive any comments on the proposed paragraph. Therefore, paragraph (b) of § 75.901 is finalized as corrected.

Final paragraph (b)(1) requires the diesel engine powering the electrical generator to satisfy the requirements of 30 CFR part 7, subpart E. The regulations in part 7 set out the requirements for diesel engines intended for use in underground coal mines. We did not receive any

comments on paragraph (b)(1). Therefore, paragraph (b)(1) is unchanged from the proposed rule.

Final paragraph (b)(2) requires a grounding resistor which is rated for the phase-to-phase voltage of the system to be provided to limit the ground-fault current to not more than 0.5 amperes. To meet these requirements, operators must use grounding resistor(s) in one of the three methods provided in (b)(2)(i), (ii) and (iii), and as illustrated in Appendix A to subpart J. The grounding resistor required by (b)(2)(i) must be located between the wye-connected generator neutral and the generator frame; or the grounding resistors required by (b)(2)(ii) must be located between the wye-connected generator, the transformer secondary and the transformer frame, when an isolation transformer is used; or the grounding resistor required by (b)(2)(iii) must be located between the wye-connected generator neutral and the generator frame when an auto-transformer is used.

Requiring a grounding resistor rated for the phase-to-phase voltage of the system will ensure that adequate insulating properties are provided for the grounding resistor. This is especially important when using auto-transformers. When using an auto-transformer, the grounding resistor is required to be located between the neutral of the wye-connected generator and the generator frame, and it must be rated for the highest output voltage of the auto-transformer. A wye connection provides a neutral grounding point in the system for the purpose of inserting a predetermined value resistor that would limit the current and voltage under a phase-to-ground fault condition. A phase-to-ground fault occurring on the secondary side of the auto-transformer would subject the grounding resistor to the output voltage of the autotransformer. This is because auto-transformers have only one winding-per-phase and do not provide the electrical isolation characteristics necessary to re-establish a different or new system voltage. A resistor that is subjected to a voltage higher than its rating can potentially explode, causing serious injury or death to persons nearby, or it can open from overcurrent, leaving the system ungrounded.

Limiting the ground-fault current to not more than 0.5 amperes, and providing the sensitive ground-fault protection set forth in paragraphs (b)(3) and (b)(4) (discussed below), provides increased protection against explosion, fire, and electrical shock. Because the voltage from a diesel-powered electrical generator may be increased or decreased by an isolation transformer, an

additional grounding resistor limiting the ground-fault current to 0.5 amperes would be required. The additional resistor is needed to re-establish the grounding circuit for the new power circuit derived by the isolation characteristics of the transformer.

For the purpose of establishing an acceptable grounding method for (b)(2)(ii) when an isolation transformer is used in conjunction with a generator, grounding resistors must be connected between the generator wye connection and the generator frame, and between the isolation transformer wye connection and the transformer frame.

The location of the grounding resistor is critical to prevent fire and shock hazards. Our experience has shown that the grounding resistor has been misplaced in some instances. Final paragraph (b)(2) addresses this concern.

One commenter stated that § 75.901(b)(2), which limits the ground fault current to 0.5 amperes, was too restrictive and that the requirements for diesel operation should be the same for low- and medium-voltage electrical equipment.

We disagree with the commenter. We acknowledge that under § 75.901, the present standard for low- and medium-voltage electrical equipment typically limits the ground fault current to 15 amps. However, when § 75.901 was published in 1970 (35 FR 17890, Nov. 20, 1970), these sensitive ground fault devices were not available. We have chosen to update our electrical standards by requiring the use of these sensitive ground-fault devices because the technology permits an enhanced level of safety compared with current standards. Also, this technology is commercially available and used widely in the mining industry and is an approved grounding method under § 75.701.

Since the mid-1980s, the mining industry has used grounding resistors in resistance grounded systems to limit the level of ground fault current in a circuit without any reported problems. The use of the sensitive ground fault limitation (0.5 amps) and tripping (90 milliamps) neutral grounding resistor in conjunction with the ground-fault devices specified in the proposed standard reduces the potential for shock hazards and prevents the neutral grounding resistor from overheating and becoming a fire hazard.

Under the granted PFMs, we have required these diesel-powered generators to have a resistor that limits the ground fault current to 0.5 amps and tripping at 90 milliamps. To the best of our knowledge, mine operators are able to acquire this technology. In addition,

we have required that all PFMs granted for high voltage continuous miners, high voltage longwalls, and diesel-powered generators have the required sensitive ground fault limitation and tripping.

In addition, the requirements for a sensitive ground fault limitation and tripping in neutral grounding systems were included in the final rule for the installation, use, and maintenance of high-voltage longwall mining systems used in underground mines (67 FR 11002), and it is a requirement in the high-voltage continuous miner proposed rule (69 FR 42835). We have evaluated the comment and determined that the technology is available, is used by the mining industry, provides enhanced safety protection, and does not reduce the protections afforded miners under the current standards. Therefore, we do not believe that the requirement is too restrictive and the final rule retains the proposed language except for the following grammatical changes.

We changed the word “and” to “or” in subparagraph (b)(2)(i), “Between the wye-connected generator neutral and the generator frame; (see Figure I in Appendix A to subpart J of this part), as published on June 25, 2004 (69 FR 35998) to clarify our intent that three methods exist to comply with the requirements in paragraph (b)(2). With this change, we are also changing subparagraph (b)(2)(ii) to “Between the wye-connected generator neutral and the generator frame and between the wye-connected transformer secondary and the transformer frame when an isolation transformer(s) is used and the generator is supplying power to other equipment;” (see Figure II in Appendix A to subpart J of this part). These changes are necessary to clarify our intent that two resistors are required for isolation transformers as stated in the proposed rule and illustrated in the Figure II of the proposed and final rules.

Also, in subparagraphs (b)(2)(i), (ii), and (iii), we added hyphens between the words “wye” and “connected” to clarify modifiers in the placement of the grounding resistor as published on June 25, 2004 (69 FR 35998).

Paragraph (b)(3) of the final rule requires each three-phase output circuit of the generator to be equipped with a sensitive ground fault relay set to cause the circuit interrupting device that supplies power to the primary windings of each transformer to trip and shut down the diesel engine when a phase-to-frame fault of not more than 90 milliamps occurs. This maximum current of 90 milliamps reduces the amount of voltage to which a miner is exposed under ground fault conditions because the miner is in parallel with the

grounding circuit conductors. When a transformer is used to increase or decrease the voltage provided by the diesel-powered generator, the circuit between the generator and the transformer would be required to be provided with grounded-phase protection. When used in conjunction with the grounding resistor required by paragraph (b)(2), the increased protection against electrical shock assists in providing a grounding system that satisfies the requirements of § 75.701.

One commenter stated that the requirement for activation of ground fault protective devices at 90 milliamps fault current is too restrictive. We disagree with the commenter. Our response to this comment is the same as our response above in (b)(2). The requirement is not too restrictive; the final rule retains the proposed language.

Final paragraph (b)(4) requires each three-phase output circuit that supplies power to equipment have an instantaneous sensitive ground-fault relay that will cause its respective circuit interrupting device(s) to trip and shutdown the diesel engine when a phase-to-frame fault occurs. The rule requires the grounded-phase protection to be set at not more than 90 milliamps. This protection would be provided for all three-phase equipment circuits. This applies to equipment receiving power directly from the diesel-powered electrical generator and from transformers used to change the generator voltage. When used in conjunction with the grounding resistor(s) addressed in paragraph (b)(2), the increased protection against electrical shock provides a grounding system that satisfies the requirements of § 75.701.

The final rule also requires a single window-type current transformer to encircle the three-phase conductors for ground-fault protection. The equipment safety grounding conductors would be prohibited from being passed through or connected in series with the ground-fault current transformers. This configuration could defeat the ground-fault protection and result in hazardous voltages on equipment frames which could potentially cause fatal electrical shocks.

We did not receive any comments on this proposed paragraph. Therefore, paragraph (b)(4) is unchanged from the proposed rule.

Final paragraph (b)(5) requires each three-phase circuit interrupting device to have a means to provide short-circuit, overcurrent, grounded-phase, undervoltage, and ground wire monitoring protection. When connected

to a piece of equipment, the instantaneous trip unit for the circuit interrupting device must be adjusted to trip at not more than 75 percent of the minimum available short circuit current at the point where the cable enters the equipment or the maximum allowable instantaneous settings specified in § 75.601-1, whichever is less. To determine the available short circuit current, calculations would be required which take into account all circuit parameters, including the size and length of the equipment cable. The minimum available short circuit current would be at the end of the maximum length cable where it enters the equipment. Small capacity generators may cause the minimum available short circuit current at the end of the maximum length cable to be lower than the maximum allowable settings specified in § 75.601-1. These requirements will ensure that proper protection is provided for all three-phase output circuits, whether at the generator, distribution box, or at a separate power center that receives its primary power from a diesel-powered electrical generator. We did not receive any comments on the proposed paragraph. Therefore, paragraph (b)(5) is unchanged from the proposed rule.

Final paragraph (b)(6) requires that the equipment portable cable length(s) not exceed the length(s) specified in 30 CFR part 18, Appendix I, Table 9, Specifications for Portable Cables Longer than 500 Feet. The purpose of this requirement is to limit the cable length, which ensures that the short circuit capacity of the generator is great enough to cause the circuit interrupting device to open, thereby preventing damage to the cables. We did not receive any comments on the proposed paragraph. Therefore, paragraph (b)(6) is unchanged from the proposed rule.

Final paragraph (b)(7) requires that permanent label(s) listing the maximum circuit interrupting device setting(s) and maximum portable cable length(s) be installed on each instantaneous trip unit or be maintained near each three-phase circuit interrupting device. This final rule requires that the permanent label(s) be maintained legibly. Because the maximum short circuit current is calculated using the minimum length cable allowed; the label ensures that adequate short circuit protection for each circuit is provided. In addition, other existing standards (§ 75.601 Short circuit protection of trailing cables and § 75.904 Identification of circuit breakers) require the circuit breaker, plug, and receptacle to be labeled to identify the equipment receiving power.

We did not receive any comments on the proposed paragraph. Therefore, paragraph (b)(7) is unchanged from the proposed rule.

Final paragraph (b)(8) requires that only one circuit interrupting device at a time be used when equipment is being moved in, out, and around a mine. This does not prevent the use of more than one circuit when equipment is used to perform work in areas where permissible equipment is not required. When multiple pieces of equipment are used, care must be taken to ensure that the circuit interrupting device settings are properly adjusted to protect the generator and the equipment being operated.

We did not receive any comments on the proposed paragraph. However, the term "device" was inadvertently omitted from the phrase "circuit interrupting device" in proposed paragraph (b)(8) as published on June 25, 2004 (69 FR 35998). The final rule corrects this omission and final paragraph (b)(8) now reads correctly. Therefore, paragraph (b)(8) is finalized as corrected.

Final paragraph (b)(9) refers to existing § 75.902 (Low- and medium-voltage ground check monitor circuits). Section 75.902 requires the grounding system to include an MSHA-accepted ground wire monitor system, or other no less effective device approved by the Secretary or an authorized representative of the Secretary, to assure ground continuity between the frame of the generator and the equipment being moved or used, or have a No. 1/0 or larger external grounding conductor to bond and ground the frames of all equipment to the frame of the generator. The final paragraph also requires bonding the frame of transformers and metallic cable coupler shells back to the frame of the generator. Grounding equipment in this manner limits the amount of voltage and current to which a miner would be exposed under an electrical fault condition and provides a good path for current flow to activate protective devices.

A commenter stated there was nothing in the standards that requires checking for loose ground connections during the shift the generator is used. We disagree. The final rule, like the proposed rule, requires the use of an MSHA-accepted ground wire monitor system that would detect a loose ground and cause the circuit breaker to open the circuit and shut down the generator.

Another commenter stated that an electric shock hazard exists in grounding to the frame if the ground wire to the equipment became open. We disagree. No hazard exists because the

proposed standard requires the use of an MSHA-accepted ground wire monitor system that would detect an open grounding conductor, cause the circuit breaker supplying power to that circuit to open, and shut down the generator.

Lastly, two commenters stated that while the system is a closed circuit system, it is not a grounded system since it is not grounded to earth. We recognize that the system is not intentionally connected to earth. However, additional safety features have been incorporated, such as sensitive ground fault systems and ground wire monitoring that provide equivalent protection to assure that the standard would provide at least the same measure of protection as the existing standards.

Based on the above discussion, no changes have been made to paragraph (b)(9). Therefore, paragraph (b)(9) is unchanged from the proposed rule.

Final paragraph (b)(10) requires all trailing cables extending from the generator to equipment to comply with § 75.907 (Design of trailing cables for medium-voltage circuits). Section 75.907 specifies the trailing cable design requirements for medium voltage circuits and also specifies that on equipment employing cable reels, cables without shields may be used if the insulation is rated 2000 volts or more. Both type cables have been used in the coal mining industry for over 30 years and have been proven to provide the required protection when properly maintained.

A commenter recommended revising proposed § 75.901(b)(10) to allow the use of un-shielded trailing cables from the generator to supply approved low voltage permissible pumps because the packing glands the pumps were approved with would not accommodate the shielded cables. The final rule, as well as the proposed rule, does not permit diesel-powered electric generators to be used where permissible equipment is required. To do so could reduce the protections afforded miners under the current standards. Therefore, paragraph (b)(10) is unchanged from the proposed rule.

Final paragraph (b)(11) requires a strain relief device on each end of the trailing cable(s) that extends between the generator and the piece of equipment being powered. Although requirements for strain relief or clamping of cables are covered by other standards, they are specifically required here because the cables are likely to be pulled to the extent of their length during movement of equipment. This final paragraph also applies to the cable(s) between the diesel-powered

generator, transformer, distribution box and equipment. Some mobile equipment may be capable of pulling the distribution box when the limit of the cable has been reached and further pulling would strain connections of the generator cable. This could result in electrical arcs and faults which may result in flash burns, or fire. We did not receive any comments on this proposed paragraph. Therefore, paragraph (b)(11) of § 75.901 is unchanged from the proposed rule.

Final paragraph (b)(12) requires that, prior to moving each piece of equipment or performing work, a functional test of each ground fault and ground wire monitor system be performed by a qualified electrician who meets the requirements of § 75.153 (Electrical work; qualified person). The ground-fault circuit is tested without subjecting the circuit to an actual grounded phase condition. This paragraph requires a record of each test to be maintained by the mine operator and made available to authorized representatives of the Secretary and to the miners in the mine. This paragraph requires that functional tests be performed before the equipment begins its move from the surface to underground, and from underground to the surface, and movement from one area of a mine to another, and before work is performed by equipment in other areas of the mine where permissible equipment is not required. It does not require a functional test after momentary or incidental stoppage during the moving process, or repositioning of equipment while performing work. Manufacturers of ground fault relay devices already provide circuitry and test methods for their devices that allow testing to be conducted without subjecting the power system to an actual ground fault condition. This method of testing enhances safety by preventing miners from being exposed to energized circuits while performing the test. The functional tests required by this paragraph do not relieve the mine operator of responsibility for performing examinations and tests required by other sections of 30 CFR part 75.

Two commenters stated that a functional test as required by § 75.901(b)(12) would be necessary only at the start of each project even if there was a shift or multiple shifts break before starting to use the generator again and would be no different than a momentary stoppage. They further stated that the generator will be checked on a weekly basis and required to be maintained in a safe operating condition. Therefore, they commented that we should change the paragraph to

require a functional test at the start of each project.

We disagree with these comments. Testing the protective devices prior to moving equipment, except for momentary stoppages, ensures that the devices are functioning properly. If the movement of the equipment is halted for a period of time (multiple shifts), the project has stopped and the protective devices should be tested again when the project is resumed. These tests take a minimal amount of time to conduct (minutes) and delays are negligible when compared to the shifts or days that the equipment has been idled. This requirement assures that any problems, e.g., loose grounding wire, which may arise during movement or stoppage will be identified and corrected so that miners are not exposed to hazards.

Further, paragraph (b)(2) updates the electrical requirements by providing these protective devices to provide an enhanced level of safety. As part of our longstanding policy to require these sensitive ground-fault devices, we have included requirements to use the manufacturers' installed test equipment each time these devices are activated prior to movement of equipment or performing work. Reducing the number of functional tests would reduce the protections afforded miners under the current standards.

For these reasons, we made no changes to paragraph (b)(12) and the paragraph is unchanged from the proposed rule.

Appendix A to subpart J consists of three figures applicable to § 75.901(b)(2)(i), (ii) and (iii). Figure I, applicable to § 75.901(b)(2)(i), shows the neutral grounding resistor connected between the wye-connected generator neutral and the generator frame; Figure II, applicable to § 75.901(b)(2)(ii), shows the neutral grounding resistors connected between the wye-connected generator and the transformer secondary and the transformer frame when an isolation transformer is used. We did not receive any comments on Figures I and II in the proposed appendix; therefore, Figures I and II in Appendix A to subpart J are unchanged from the proposed rule. Figure III, applicable to § 75.901(b)(iii), shows the neutral grounding resistor connected between the wye-connected generator neutral and the generator frame when an auto-transformer is used. We discovered an error in Figure III, in Appendix A to Subpart J, after the proposed rule was published in the **Federal Register**. However, this final rule corrects the error and Figure III is correct. We did not receive any comments on proposed Figure III and therefore, Figure III in

Appendix A to Subpart J is finalized as corrected.

#### **IV. Executive Order 12866 (Regulatory Planning and Review and Regulatory Flexibility Act)**

Executive Order (E.O.) 12866 as amended by E.O. 13258 requires that regulatory agencies assess both the costs and benefits of intended regulations. We have fulfilled this requirement for the final rule, and have determined that the final rule will not have an annual effect of \$100 million or more on the economy. Therefore, it is not an economically significant regulatory action pursuant to section 3(f)(1) of E.O. 12866.

The final rule will eliminate the need for underground coal mine operators who choose to use diesel-powered electrical generators to file PFMs and thereby will generate cost savings.

From January 1990 to October 2003, 63 petitions were filed to modify §§ 75.701 and 75.901 (Grounding requirements and protection of low- and medium-voltage three-phase circuits used underground). On average, approximately five petitions were filed during each of these years.

#### *Mining Sectors Affected*

This final rule applies to all underground coal mines. However, based on already filed PFMs under § 75.901 and § 75.701, we estimate that an average of five underground coal mines per year would choose to use diesel-powered electrical generators in their mines.

#### *Benefits*

Diesel-powered electrical generators provide an efficient portable source of power to move electrical equipment. These diesel-powered electrical generators are easily taken to areas where power centers or other sources of electrical power are not available to move mobile equipment or to supply power to other electrical equipment needed to do work in outby areas. The likelihood of electrical accidents will be decreased by (1) the protective design features associated with the diesel-powered electrical generator protective devices, such as requiring the grounding resistor to limit ground fault current to 0.5 amperes under a ground fault condition; (2) requiring the sensitive grounded phase protection device to cause the circuit interrupting device protecting the electrical circuits to open and shut down the diesel-powered generator when a fault current of not more than 90 milliamperes is detected by the system; and (3) equipment testing devices and procedures that are

designed to facilitate safe testing of the diesel-powered electrical circuit. Miner safety is increased with the protective systems and testing procedures required by the rule because they limit the amount of voltage and current that miners can be exposed to under a ground fault condition and also because they reduce the possibility of a fire, shock, or burn hazard. Finally, the rule contains all the necessary electrical safety requirements developed in the

PFMs to use diesel-powered electrical generators.

*Compliance Cost Savings*

Annual cost savings from the final rule will accrue to underground coal mine operators who choose to use diesel-powered electrical generators because they will no longer have to file an average of five PFMs per year. We project that all five affected mines will employ between 20 to 500 workers.

The annual cost savings were derived by using the following: a mine supervisor, earning \$57.70 per hour, taking 8 hours to prepare a petition; a clerical worker earning \$21.82 per hour taking 0.1 hours to copy and mail a petition; photocopying five pages per petition at a cost of \$0.15 per page; and postage of \$1 to send the petition to MSHA. Based on the above, underground coal mine operators will incur cost savings of \$2,328. These savings are derived as follows:

5 petitions × 8.0 hrs. × \$57.70 per hr. ....	=	\$2,308
5 petitions × 0.1 hrs. × \$21.82 per hr. ....	=	\$11
5 petitions × ((\$0.15 photocopy cost per page × 5 pages) + \$1 postage per petition) .....	=	\$9
	=	<u>\$2,328</u>

There are no substantive changes in the final rule that apply to underground coal mines that choose not to use diesel-powered electrical generators. Thus, such mines will not incur costs nor generate cost savings as a result of the final rule.

*Feasibility*

MSHA has concluded that the requirements of the proposed rule are both technologically and economically feasible.

This final rule is not a technology-forcing standard and does not involve activities on the frontiers of scientific knowledge. The requirements of this rulemaking are based on the terms and conditions in granted petitions.

This rulemaking provides an annual cost savings of \$2,328 to underground coal and metal and nonmetal mine operators whose yearly revenues are in the billions of dollars.

**V. Regulatory Flexibility Act Certification**

Pursuant to the Regulatory Flexibility Act (RFA) of 1980 as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA), we have analyzed the impact of the final rule on small businesses. Further, we have made a determination with respect to whether or not we can certify that the final rule will not have a significant economic impact on a substantial number of small entities that are covered by this rulemaking. Under the SBREFA amendments to the RFA, we must include in the rule a factual basis for this certification. If the final rule will have a significant economic impact on a substantial number of small entities, we must develop a regulatory flexibility analysis.

*Definition of a Small Mine*

Under the RFA, in analyzing the impact of a rule on small entities, we must use the SBA definition for a small entity or, after consultation with the SBA Office of Advocacy, establish an alternative definition for the mining industry by publishing that definition in the **Federal Register** for notice and comment. We have not taken such an action and hence are required to use the SBA definition.

The SBA defines a small entity in the mining industry as an establishment with 500 or fewer employees. All mines affected by this rulemaking fall into this category and hence can be viewed as sharing the special regulatory concerns which the RFA was designed to address.

We have looked at the impacts of our rules on a subset of mines with 500 or fewer employees—those with fewer than 20 employees, which we and the mining community have traditionally referred to as “small mines.” These small mines differ from larger mines not only in the number of employees, but also in economies of scale in material produced, in the type and amount of production equipment, and in supply inventory. Therefore, their costs of complying with MSHA rules and the impact of MSHA rules on them will also tend to be different. It is for this reason that “small mines,” as traditionally defined by MSHA, are of special concern to us.

This analysis complies with the legal requirements of the RFA for an analysis of the impacts on “small entities” while continuing our traditional definition of “small mines.” We conclude that we can certify that the final rule will not have a significant economic impact on a substantial number of small entities that are covered by this rulemaking. We have determined that this is the case both for mines affected by this

rulemaking with fewer than 20 employees and for mines affected by this rulemaking with 500 or fewer employees.

*Factual Basis for Certification*

Our analysis of impacts on “small entities” begins with a “screening” analysis. The screening compares the estimated compliance costs of a rule for small entities in the sector affected by the rule to the estimated revenues for those small entities. When estimated compliance costs are less than one percent of the estimated revenues or are negative (*i.e.*, cost savings) we believe it is generally appropriate to conclude that there is no significant economic impact on a substantial number of small entities. When estimated compliance costs exceed one percent of revenues, it tends to indicate that further analysis may be warranted. Since underground coal mine operators employing fewer than 20 workers have not filed for a petition to use low- and medium-voltage diesel-powered electrical generators, we do not expect the final rule to have any impact on them. Therefore, the analysis of the final rule on small entities is based only on SBA’s small mine definition (those having 500 or fewer employees). Using SBA’s definition of a small mine (those having 500 or fewer employees) the final rule results in cost savings of \$2,328. We therefore conclude that the final rule will not have a significant economic impact on a substantial number of small entities.

**VI. Paperwork Reduction Act of 1995**

The amendments to § 75.901 do not introduce new paperwork requirements on the mine operator; however, the existing information collection requirements are still subject to Office of Management and Budget (OMB) approval under the Paperwork



Reduction Act (PRA), 44 U.S.C. 3502(13)(A). As a result of this rule, all PFM's for § 75.901 will be superseded, and the information collection request for petitions for modification approved by OMB under 1219-0065 will be reduced. We will submit to OMB a new information collection request for this rule and transfer the recordkeeping paperwork burden hours and costs.

**Burden Reduction**

Due to this rulemaking, mine operators will no longer have to petition for modification of existing § 75.901 in order to use diesel-powered electrical generators. Existing OMB paperwork

package 1219-0065 includes annual burden hours and costs related to the time it takes mine operators to prepare and file petitions with us, including petitions for modifications to use diesel-powered generators. As a result of this rulemaking, the burden hours and costs in OMB paperwork package 1219-0065 that relate to the time it takes operators to prepare and file petitions will need to be reduced to reflect the fact that PFM's to use diesel-powered electrical generators will no longer be needed. Therefore, the burden hours and costs in OMB paperwork package 1219-0065 should be reduced by 40.5 hours and

\$2,328 annually. This reduction was derived in the following manner.

On average, five underground coal mines are estimated to begin to use diesel-powered electrical generators annually. A mine supervisor, earning \$57.70 per hour, is estimated to take 8 hours to prepare a petition. On average, a clerical worker, earning \$21.82 per hour, is estimated to take 0.1 hours to copy and mail a petition. Each petition is estimated to be five pages in length, photocopy costs are \$0.15 per page, and postage is \$1 for each petition. The annual burden hour reduction and cost savings related to preparing and filing petitions are:

<b>Burden Hour Reduction:</b>		
5 petitions × 8 hrs. per petition .....	=	40.0 hours
5 petitions × 0.1 hrs. per petition .....	=	0.5 hours
	=	40.5 hours
<b>Burden Cost Savings:</b>		
40 hours × \$57.70 wage per hr. ....	=	\$2,308
0.5 hrs. × \$21.82 wage per hr. ....	=	\$11
5 petitions × ((5 pgs. × \$0.15 per page) + (\$1 postage) .....	=	\$9
.....	=	\$2,328

**Burden Transfer**

Also included in existing PFM's of § 75.901 to use diesel-powered electrical generators are operators' recordkeeping requirements related to performing ground fault and ground wire monitor system tests and making a record of these tests. Such tests must be conducted and records made prior to moving each piece of equipment or performing work. The burden hours and costs related to such tests and records are also included in OMB paperwork package 1219-0065. There are 38 burden hours and \$1,064 of burden costs in the first year, 42 burden hours and \$1,176 of burden costs in the second year, and 46 burden hours and \$1,289 of burden costs in the third year that would be related to these tests and records which would need to be removed from OMB paperwork package 1219-0065 and transferred to the paperwork package related to this rule. The burden hours and costs were derived as follows.

There were 16 mines operating in 2003 that have petitions to use diesel-powered electrical generators. We assume that although five mines annually are estimated to begin using diesel-powered generators, there would, on average, be three existing mines using such equipment that would close. Thus, each year there would be a net of two more mines using diesel-powered electrical generators. A mine electrician earning \$28.01 per hour, is estimated to

take 0.25 hours to perform the ground fault and ground wire monitor system tests. Such tests are estimated to be conducted six times annually. On average, it is estimated to take the mine electrician 0.1 hours to make a record each time tests are conducted.

The first year burden hours and costs related to performing ground fault and ground wire monitor system tests and making a record are:

$$18 \text{ mines} \times (0.25 \text{ hrs.} + 0.1 \text{ hrs. for tests and record}) \times 6 \text{ times per year} = 38 \text{ hours}$$

$$38 \text{ hours} \times \$28.01 \text{ wage per hour} = \$1,064$$

The second year burden hours and costs related to performing ground fault and ground wire monitor system tests and making a record are:

$$20 \text{ mines} \times (0.25 \text{ hrs.} + 0.1 \text{ hrs. for tests and record}) \times 6 \text{ times per year} = 42 \text{ hours}$$

$$42 \text{ hours} \times \$28.01 \text{ wage per hr.} = \$1,176$$

The third year burden hours and costs related to performing ground fault and ground wire monitor system tests and making a record are:

$$22 \text{ mines} \times (0.25 \text{ hrs.} + 0.1 \text{ hrs. for tests and record}) \times 6 \text{ times per year} = 46 \text{ hours}$$

$$46 \text{ hours} \times \$28.01 \text{ wage per hr.} = \$1,289$$

**VII. Other Regulatory Considerations**

**A. The Unfunded Mandates Reform Act**

This final rule does not include any Federal mandate that may result in increased expenditures by State, local,

or tribal governments; nor does it increase private sector expenditures by more than \$100 million annually; nor does it significantly or uniquely affect small governments. Accordingly, the Unfunded Mandates Reform Act of 1995 (2 U.S.C. 1501 *et seq.*) requires no further agency action or analysis.

**B. The Treasury and General Government Appropriations Act of 1999: Assessment of Federal Regulations and Policies on Families**

This final rule has no affect on family well-being or stability, marital commitment, parental rights or authority, or income or poverty of families and children. Accordingly, section 654 of the Treasury and General Government Appropriations Act of 1999 (5 U.S.C. 601 note) requires no further agency action, analysis, or assessment.

**C. Executive Order 12630: Government Actions and Interference With Constitutionally Protected Property Rights**

This final rule does not implement a policy with takings implications. Accordingly, Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights, requires no further agency action or analysis.

**D. Executive Order 12988: Civil Justice Reform**

This final rule was written to provide a clear legal standard for affected



conduct and was carefully reviewed to eliminate drafting errors and ambiguities, so as to minimize litigation and undue burden on the Federal court system. Accordingly, this final rule meets the applicable standards provided in section 3 of Executive Order 12988, Civil Justice Reform.

*E. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks*

This final rule has no adverse impact on children. Accordingly, Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, as amended by Executive Orders 13229 and 13296, requires no further agency action or analysis.

*F. Executive Order 13132: Federalism*

This final rule does not have "federalism implications," because it does not "have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Accordingly, Executive Order 13132, Federalism, requires no further agency action or analysis.

*G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

This final rule does not have "tribal implications," because it does not "have substantial direct effects on one or more Indian tribes, on the relationship between the Federal government and Indian tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes." Accordingly, Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, requires no further agency action or analysis.

*H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy, Supply, Distribution, or Use*

We have reviewed this final rule for its impact on the supply, distribution, and use of energy because it applies to the underground coal mining sector. Because this final rule will result in yearly cost savings to the coal mining industry, this final rule will neither reduce the supply of coal nor increase its price.

This final rule is not a "significantly energy action," because it is not "likely to have a significant adverse effect on the supply, distribution, or use of energy (including a shortfall in supply, price increases, and increased use of foreign supplies). Accordingly,

Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use, requires no further agency action or analysis."

*I. Executive Order 13272: Proper Consideration of Small Entities in Agency Rulemaking*

We have thoroughly reviewed this final rule to assess and take appropriate account of its potential impact on small businesses, small governmental jurisdictions, and small organizations. We have determined and certified that this final rule will not have a significant economic impact on a substantial number of small entities. We solicited public comments concerning the accuracy and completeness of this potential impact when the rule was proposed. We took appropriate account of comments received relevant to the rule's potential impact on small entities. Accordingly, Executive Order 13272, Proper Consideration of Small Entities in Agency Rulemaking, requires no further action or analysis by us.

**VIII. Petitions for Modification**

On the effective date of this final rule, all existing PFMs for diesel-powered electrical generators granted under § 75.901 and/or § 75.701 will be superseded.

**List of Subjects in 30 CFR Part 75**

Mine safety and health, Underground coal mining.

Dated: December 23, 2005.

**David G. Dye,**

*Acting Assistant Secretary of Labor for Mine Safety and Health.*

■ For the reasons set out in the preamble, and under the authority of the Federal Mine Safety and Health Act of 1977, we are amending chapter I, subchapter O, part 75 of title 30 of the Code of Federal Regulations as follows:

**PART 75—MANDATORY SAFETY STANDARDS—UNDERGROUND COAL MINES**

■ 1. The authority citation for part 75 continues to read as follows:

**Authority:** 30 U.S.C. 811.

**SUBCHAPTER O—[AMENDED]**

■ 2. Section 75.901 is amended by adding paragraph (b) to read as follows:

**§ 75.901 Protection of low- and medium-voltage three-phase circuits used underground.**

\* \* \* \* \*

(b) Diesel-powered electrical generators used as an alternative to power centers for the purpose of moving

equipment in, out, and around the mine, and to perform work in areas where permissible equipment is not required, must comply with the following:

(1) The diesel engine powering the electrical generator must be approved under 30 CFR part 7, subpart E.

(2) A grounding resistor rated for the phase-to-phase voltage of the system must be provided to limit the ground-fault current to not more than 0.5 amperes. The grounding resistor(s) must be located:

(i) Between the wye-connected generator neutral and the generator frame; (see Figure I in Appendix A to subpart J of this part) or

(ii) Between the wye-connected generator neutral and the generator frame and between the wye-connected transformer secondary and the transformer frame when an isolation transformer(s) is used and the generator is supplying power to the other equipment; (see Figure II in Appendix A to subpart J of this part) or

(iii) Between the wye-connected generator neutral and the generator frame when an auto-transformer is used. (see Figure III in Appendix A to subpart J of this part)

(3) Each three-phase output circuit of the generator must be equipped with a sensitive ground fault relay. The protective relay must be set to cause the circuit interrupting device that supplies power to the primary windings of each transformer to trip and shut down the diesel engine when a phase-to-frame fault of not more than 90 milliamperes occurs.

(4) Each three-phase output circuit that supplies power to equipment must be equipped with an instantaneous sensitive ground-fault relay that will cause its respective circuit interrupting device(s) to trip and cause shutdown of the diesel engine when a phase-to-frame fault occurs. The grounded-phase protection must be set at not more than 90 milliamps. Current transformers used for the ground-fault protection must be single window-type and must be installed to encircle all three phase conductors. Equipment safety grounding conductors must not pass through or be connected in series with ground-fault current transformers.

(5) Each three-phase circuit interrupting device must be provided with a means to provide short-circuit, overcurrent, grounded-phase, undervoltage, and ground wire monitoring protection. The instantaneous only trip unit for the circuit interrupting device(s) in use must be adjusted to trip at not more than 75 percent of the minimum available short circuit current at the

point where the portable cable enters the equipment or the maximum allowable instantaneous settings specified in § 75.601-1, whichever is less.

(6) The equipment portable cable length(s) must not exceed the length(s) specified in 30 CFR part 18, appendix I, table 9, Specifications for Cables Longer than 500 Feet.

(7) Permanent label(s) listing the maximum circuit interrupting device setting(s) and maximum portable cable length(s) must be installed on each instantaneous trip unit or be maintained near each three-phase circuit interrupting device. The permanent label(s) must be maintained legibly.

(8) The circuit interrupting device that supplies three-phase power

circuit(s) to the equipment being powered must be limited to the use of only one circuit interrupting device at a time when equipment is being moved in, out, and around the mine.

(9) The grounding system must include an MSHA-accepted ground wire monitor system that satisfies the requirements of § 75.902; or have a No. 1/0 or larger external grounding conductor to bond and ground the frames of all equipment to the frame of the generator.

(10) All trailing cables extending from the generator to equipment must comply with § 75.907.

(11) A strain relief device must be provided on each end of the trailing cables that extends between the

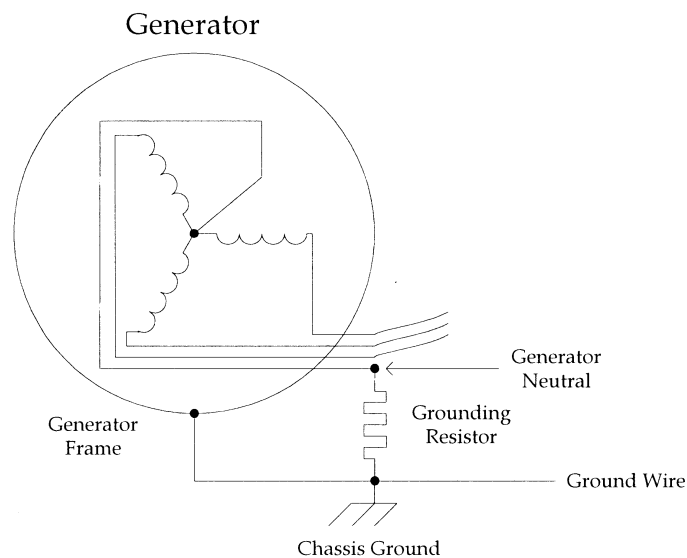
generator and the piece of equipment being powered.

(12) Prior to moving each piece of equipment or performing work, a functional test of each ground fault and ground wire monitor system must be performed by a qualified electrician who meets the requirements of § 75.153. The ground-fault circuit must be tested without subjecting the circuit to an actual grounded phase condition. A record of each test must be maintained and made available to authorized representatives of the Secretary and to the miners in such mine.

■ 3. Appendix A to subpart J is added to read as follows:

**BILLING CODE 4510-43-P**

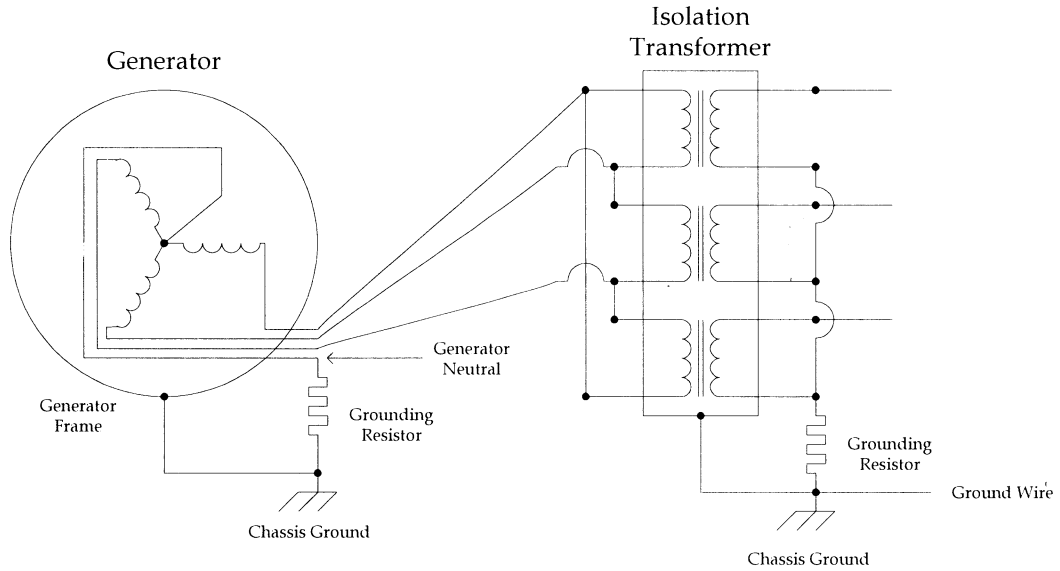
### Appendix A to Subpart J



**Note that grounding resistor must be mounted on the same frame with the generator.**

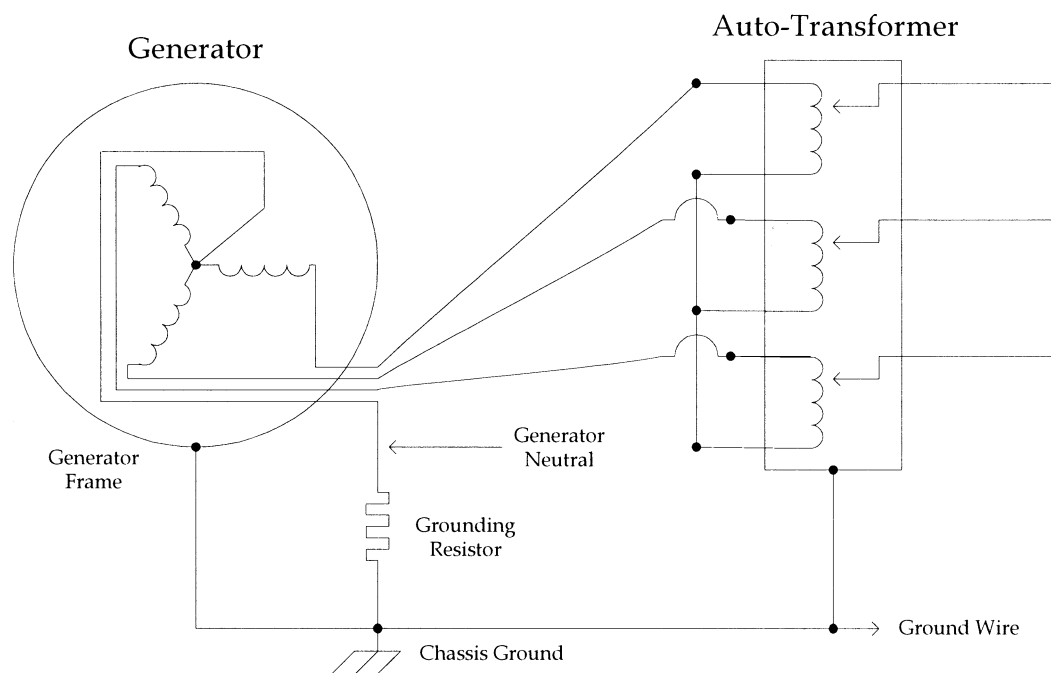
**Figure No. I**

Appendix A to Subpart J



Note that the grounding resistor must be mounted on the same frame with the generator.

Figure No. II



**Note that the grounding resistor must be mounted on the same frame with the generator.**

**Figure No. III**

[FR Doc. 05-24625 Filed 12-29-05; 8:45 am]

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