

In The Matter of
General Chemical (Soda Ash) Partners
General Chemical Mine
Mine I.D. No. 48-00155

PETITION FOR MODIFICATION

Docket No. M-2009-001-M

PROPOSED DECISION AND ORDER

Background

On March 23, 2009, a petition under 30 U.S.C. § 811(c) and 30 Code of Federal Regulations (30 C.F.R.) part 44 was filed by General Chemical (Soda Ash) Partners seeking a modification of the application of 30 C.F.R. § 57.22305 and 30 C.F.R. § 18.35 to petitioner's General Chemical Mine located in Sweetwater County, Wyoming to increase the maximum lengths of the trailing cables for the bore miners.¹ The petitioner alleged that the alternative method outlined in the petition would at all times guarantee no less than the same measure of protection for miners as afforded by the standard.

30 CFR § 57.22305, Approved equipment (III mines), provides:

Equipment used in or beyond the last open crosscut and equipment used in areas where methane may enter the air current, such as pillar recovery workings, longwall faces and shortwall faces, shall be approved by MSHA under the applicable requirements of 30 C.F.R. parts 18 through 36. Equipment shall not be operated in atmospheres containing 1.0 percent or more methane.

The following MSHA approval regulations are also relevant to the petition. 30 C.F.R. § 18.35(a)(5)(i), Portable (trailing) cables and cords, provides:

Ordinarily the length of a portable (trailing) cable shall not exceed 500 feet. Where the method of mining requires the length of a portable (trailing) cable to be more than 500 feet, such length of cable shall be permitted only under the following prescribed conditions:

(i) The lengths of portable (trailing) cables shall not exceed those specified in Table 9, Appendix I, titled "Specifications for Portable Cables Longer Than 500 Feet."

¹ Section 101 (c) of the Mine Act provides for the modification of the application of any "mandatory safety standard" to a mine under certain conditions. The regulations in 30 C.F.R. Part 18 are not "mandatory safety standards." Rather, 30 C.F.R. Part 18 sets forth requirements to obtain MSHA approval of electrically operated equipment. Because the application of 30 C.F.R. § 18.35 is not a "mandatory safety standard" subject to modification under section 101 (c) of the Mine Act, MSHA is construing the petitioner's request only as a request to modify the application of 30 C.F.R. § 57.22305.

Under Table 9 of Appendix 1, the maximum allowable cable length for petitioner's bore miners is 850 feet. In addition, 30 C.F.R. § 18.35(a)(5)(ii) provides:

Short-circuit protection shall be provided by a protective device with an instantaneous trip setting as near as practicable to the maximum starting-current-inrush value, but the setting shall not exceed the trip value specified in MSHA approval for the equipment for which the portable (trailing) cable furnishes electric power.

The Petitioner alleges that the alternative method proposed in the petition regarding the length of the cables for the bore machines will at all times guarantee no less than the same measure of protection afforded by the standard. In support of its petition, the Petitioner states the following:

1. Mining practice at the Petitioner's Green River operation includes the use of a Flexible Conveyor Train (FCT) which follows behind the bore mining machine. The trailing cable, which distributes power to the bore mining machine, is routed in one of two ways; either on ground or hung off the side of the FCT leading up to the High Voltage Case on the rear of the boring machine. It is the Petitioner's contention that the safer method of routing the cable is to hang the cable along the FCT which minimizes both handling of the cable as well as alleviates a problem of the cable being in the path where the miners walk. As the name implies, the FCT is a flexible conveyor which flexes around corners in order to follow the boring machine. Due to the flexibility of the FCT, when the trailing cable is hung along side of the FCT it must be hung in a series of loops. The loops in the cable reduce the effective length of the cable in relation to the actual length and it becomes very difficult to reach the Load Center where the power for the boring machine is distributed using the maximum length set forth in 30 C.F.R., Appendix 1, Table 9.

2. The petitioner alleges that the bore mining machines are currently approved for use with #2 AWG trailing cable.

3. In lieu of MSHA approval under 30 C.F.R. § 18.35(a)(5)(i), Petitioner proposes the following:

- (a) Maximum length for portable (trailing) cables in regards to power distributed to its boring machines be 1,200 feet for the following cable sizes:

- (i) #2/0 AWG, #1/0 AWG, #1 AWG, and #2 AWG.

- (b) All instantaneous trip settings for over-current shall be maintained at a level not exceeding 75% of the minimum available fault current calculated using the MSHA short circuit program "Scwin".

- (c) Interrupt rating for all breakers in the distribution circuit shall be high enough to interrupt the maximum available fault current as calculated using the MSHA short circuit program "Scwin".
- (d) Power distribution circuits as pertaining to bore mining sections shall be maintained on a typical basis in reference to the typical power distribution in effect at the time of investigation pertaining to this modification, whereby cable lengths in the distribution circuit leading up to the Load Center at the bore section shall be maintained no longer than those proposed in the Short Circuit calculations using the MSHA program "Scwin" at the time of this petition.

4. Petitioner guarantees at all times to maintain an equal measure of protection as that afforded by the standard.

MSHA investigators conducted an investigation relevant to the merits of the petition and filed a report of their findings with the Administrator for Metal and Nonmetal Mine Safety and Health. After a careful review of the entire record, including the petition and MSHA's investigative report, this Proposed Decision and Order (PDO) is issued.

Findings of Fact and Conclusions of Law

MSHA's investigation found that General Chemical has been mining and processing Trona ore, the raw material of soda ash, since 1968, at its Green River complex. Operations are located 29 miles west of Green River, Wyoming. The underground Trona mine is associated with a surface refining plant that processes the ore into its finished product. The company mines more than 4.5 million tons per year of Trona ore with conventional room and pillar methods. Personnel and equipment enter the mine via a hoist that descends the 1,600 feet to the mine in two-and-a-half minutes. The mine has an underground tunnel network spanning 20-plus square miles. Miners are represented by the United Steel Workers of America.

Trona (trisodium hydrogencarbonate dihydrate); $\text{Na}_3\text{H}(\text{CO}_3)_2 \cdot 2\text{H}_2\text{O}$ is an evaporite mineral. The Trona near Green River, Wyoming is the largest known deposit in the world estimated at 67 billion tons and lies in layered evaporite deposits from 800 to 1600 feet below ground. Deposited in a lake during the Paleogene period, the reserves extend over 1,000 square miles in southwestern Wyoming.

The operation is classified by MSHA as a Category III under 30 C.F.R. 57.22003(a)(3) which states in part "Category III applies to mines in which noncombustible ore is extracted and which liberate a concentration of methane that is explosive, or is capable of forming explosive mixtures with air, or have the

potential to do so based on the history of the mine or the geological area in which the mine is located.” The mine liberated 1,315,473 ft³ concentrations of Ch₄, (methane), for an average 24 hour period based on MSHA analysis. The mine operates three shifts per day, seven days a week, 365 days per year, with an average underground employment of 243 miners for 2008.

Mine power is supplied through various shafts or bore holes. Primary power is three phased and ground, 500 MCM, at 13.8kv and transformed down to operating voltages by section transformers. Section equipment power is 4160 volts, 1000 volts, 480 volts, and 120 volts A.C., nominal, as applicable. Extraction mining is completed with two Sandvik 780® Boring Machines, approval number 2G-3792A-2, and one Eimco 780 ACD® bore miner, approval number 2G-3792A-0.

In tandem to each bore machine is a Joy Flexible Conveyor Train, model 3FCT04, (FCT). The FCT is a continuous haulage system from miner to section conveyor. The length of the FCT is approximately 420 feet before the section conveyor requires being advanced. The bore machines operate at 4160 volts, A.C. The bore machines' protection devices were manufactured by various companies with generally the same design parameters and function. The 2/0 AWG cables are three-phase power cables that are designed with two integrated ground conductors and one integrated pilot conductor. The ground monitoring system works in conjunction with cable protection.

Currently, with approved field modifications, the bore machine cable lengths total approximately 850 feet, from the bore miner entrance gland to the cable disconnect receptacle mounted on the power center, which is the maximum allowable length under 30 C.F.R. § 18.35(a)(5)(i) Table 9, Appendix 1, MSHA's approval regulation for portable trailing cables.

With extended length cables, the risk and exposure to potential injury is substantially reduced based on the proposed reduced frequency of handling the cables. In addition significant gain in safety is achieved with the conditions of this petition and the new operating procedures for the bore miner trailing cables previously mentioned. These conditions and procedures were not in place previously with the standard length trailing cables. The company will provide circuit breaker settings above and beyond what is normally provided with the standard length cables. Currently this operation is not required to be so meticulous and thorough in selecting and assuring circuit breaker trip points, calibrating the trip points, and sealing the set points from tampering. MSHA has experienced much success in underground coal mines with extended length trailing cable using these procedures and requirements.

A physical inspection of the three bore miners, associated FCT systems, and related power distribution centers was conducted on April 21-22, 2009, and July 7-8, 2009, with the assistance of an Approval and Certification Center, (A&CC) representative. The petitioner's analysis used the MSHA short circuit program "Scwin" on the power distribution for each bore miner with a separate analysis included for each cable diameter.

The MSHA staff at A&CC conducted reviews of the petitioner's results and focused on confirming those cable values listed as approved under the 2-G approval process. The petitioner's analysis was based on parameters that changed the breaker protective allowances and concluded with higher allowable values than 30 C.F.R. § 18.35, Table 8 in Appendix I, would allow. The petition is for cable lengths and does not allow for protection values to be increased.

The petitioner contracted with Mine Systems Co., a Utah company, to perform a primary injection test on the 4160 volt A.C. circuit on the load centers. The testing commenced on July 16, 2009. Due to time constraints and equipment malfunction, only one of three load centers was tested. Tests were completed on July 30, 2009, with the results forwarded to MSHA on August 3, 2009. Those results were reviewed by A&CC. A copy of the contractor's result is attached to this report. Cable ampacity values provided did not have sources listed which were necessary to fully reconcile the petitioner's calculations. The petitioner updated the values and forwarded them to A&CC.

On October 26, 2009, a final report was issued by MSHA regarding the fault analysis of the short circuit study submitted by the petitioner. MSHA concluded that the system could successfully provide the necessary current for correct circuit breaker operation with longer length trailing cables without any adverse effects.

MSHA is granting the Petitioner's requested alternative method to extend the length of the trailing cables that supply power to the 4160 volt Eimco Corporation Bore Miners 780 ACD Boring Machine and the 2 Sandvik Corporation Bore Miners 780 (Bore Miners) provided that certain safety requirements discussed below are followed.

Item 2 of the petition stated that the bore mining machines are currently approved for use with #2 AWG trailing cables. MSHA found that if the two Sandvik bore miners were currently using #2 AWG cables, they would not be in compliance with the 2G approval parameters, i.e. currently using a #2 AWG cable when only a number 2/0 AWG is allowed. For this reason, during the investigation all bore miners were equipped with 2/0 AWG cables. Bore machines must use 2/0 AWG cables as identified in Items 1, 2 and 3 of the Order.

Item 3 (a) of the petition requested approval for trailing cables to be extended to a length of 1,200 feet for the cable sizes of #2/0 AWG; #1/0 AWG; #1 AWG; and #2 AWG. MSHA found that the 2-G records of approval limited the cable sizes for the Eimco, 2G-3792A-0, to a 2/0 and #2 AWG trailing cables and the Sandvik, 2G-3792A-2, to only a 2/0 AWG trailing cable. MSHA is granting the Petitioner's request to extend the cable lengths to 1,200 feet on the condition that all the bore machines affected by this petition are equipped with 2/0 AWG cables.

Item 3 (b) of the petition requested that all instantaneous trip settings for over-current shall be maintained at a level not exceeding 75% of minimum available fault current calculated using the MSHA short circuit program "Scwin". MSHA agrees with this condition and has included this language in Section 4 (A) 1.3 breaker settings and overload settings are listed in Items 1, 2, and 3, of the Order.

Item 3 (c) of the petition requested that interrupt rating for all breakers in the distribution circuit shall be high enough to interrupt the maximum available fault current as calculated using the MSHA short circuit program "Scwin". MSHA agrees with this condition and has included this language in Section 4 (B) 2.1 under Trip Unit Settings of the Order. The instantaneous circuit breaker settings and overload settings are listed in Items 1, 2, and 3, of the Order.

Item 3 (d) of the petition requested that power distribution circuits pertaining to bore mining sections shall be maintained on a typical basis in reference to the typical power distribution in effect at the time of investigation pertaining to this modification, whereby cable lengths in the distribution circuit leading up to the Load Center at the bore section shall be maintained no longer than those proposed in the short circuit calculations using the MSHA program "Scwin" at the time of this petition. MSHA agrees with this condition and has included this language in Section 4 (A) 1.5 under Maintenance of Short Circuit Devices of the Order.

The alternative method, with the previously mentioned conditions, set forth in this Proposed Decision and Order will at all times guarantee no less than the same-measure of protection afforded the miners under 30 C.F.R. § 57.22305 in that the safety features installed on the bore mining machines and associated electrical circuits allow the bore mining machines to safely operate in this underground mine. Compliance with this Order entitles General Chemical (Soda Ash) Partners to a modification of the application of 30 C.F.R. § 57.22305 to its General Chemical Mine.

Order

Wherefore, pursuant to the authority delegated by the Secretary of Labor to the Administrator for Metal and Nonmetal Mine Safety and Health, and pursuant to Section 101(c) of the Federal Mine Safety and Health Act of 1977, 30 U.S.C., sec. 811(c), it is ordered that General Chemical (Soda Ash) Partner's Petition for Modification of the application of 30 C.F.R. § 57. 22305 in the General Chemical Mine is hereby:

GRANTED, for the three Bore Miners at petitioner's General Chemical Mine, conditioned upon compliance with the following terms and conditions:

1. 4160-volt Bore Miner No.1, Eimco Corporation Model 780 ACD, Approval No. 2G-3792A0, Serial No. 71107974:

Cable No. 1 Maximum Trailing Cable Length = 1,200 feet
 Cable = 2/0 A.W.G. 3-Conductor 90 degree C SHD-GC
 Maximum instantaneous circuit breaker setting = 1060 Amperes
 Maximum overload setting = 287 Amperes.

2. 4160-volt Bore Miner No.2, Sandvik Corporation Model 780, Approval No. 2G-3-792A-2, Serial No. 6850R :

Cable No. 1 Maximum Trailing Cable Length = 1,200 feet
 Cable = 2/0 A.W.G. 3-Conductor 90 degree C SHD-GC
 Maximum instantaneous circuit breaker setting = 955 Amperes
 Maximum overload setting = 287 Amperes

3. 4160-volt Bore Miner No.3, Sandvik Corporation Model 780, Approval No. 2G-3792A-2, Serial No. 71107989 :

Cable No. 1 Maximum Trailing Cable Length = 1,200 feet
 Cable = 2/0 A.W.G. 3-Conductor 90 degree C SHD-GC
 Maximum instantaneous circuit breaker setting = 1480 Amperes
 Maximum overload setting = 287 Amperes

4. Operating Procedure for Bore Miner Trailing Cables:

A. Maintenance of Short Circuit Devices:

1.1. Short circuit devices will be maintained in accordance with manufacturer specifications.

1.2. Testing procedure will be as follows:

1.2.1. An over-current relay testing device or a test circuit shall be used to test overcurrent relay devices to determine that trip levels and trip times are accurate and within manufacturer specified tolerances. Testing procedure and testing intervals will be tested immediately after installation, repair, and modification; and annually thereafter. A record of the calibration results as measured during the most recent test shall be made available on a request by the Secretary or her/his duly authorized representative.

1.3. If the over-current relay is not within specified tolerances for either trip levels or trip times, then the over-current relay shall be replaced with a calibrated unit or calibrated in place. Units will not be placed in service until calibration is completed. All instantaneous trip settings for over-current shall be maintained at a level below the minimum available fault current calculated using the MSHA short circuit program "Scwin".

1.4. Testing using the Primary Injection Method where current is injected directly through the primary of the current transformers associated with the circuit shall be performed to establish a base line for each load center.

1.5. Power distribution circuits as pertaining to bore mining sections shall be maintained in accordance with established MSHA policy, regulations and procedures in reference to the power distribution, whereby cable lengths in the distribution circuit leading up to the Load Center at the bore section shall be maintained no longer than those proposed in the Short Circuit calculations using the MSHA program "Scwin".

B. Trip Unit Settings:

2.1. After calibration, the correct settings for the circuit shall be indicated on the unit, inside of the cover in a manner that is clear and unambiguous. Trip unit covers shall be installed and maintained so that the trip settings can be clearly viewed through the cover. Interrupt rating for all breakers in the distribution circuit shall be high enough to interrupt the maximum available fault current as calculated using the MSHA short circuit program "Scwin".

2.2. Cover shall be sealed, locked or provided with a tamper resistant seal and shall be installed on trip unit covers to indicate the integrity of the trip settings.

2.3. A person designated by the operator shall visually inspect the trip settings and tamper seal each production day to ensure proper settings.

2.4. Seals will be available only to qualified persons. Controlling accessibility to the seals removes tampering potentials.

2.5. Upon inspection, if the tamper resistant seal is broken, or trip settings are improper, then a qualified person who is properly trained and authorized by the operator shall make the proper adjustment to the trip settings and install a new tamper seal prior to operation. A record of each event shall be kept and shall be made available on a request by the Secretary or her/his duly authorized representative.

C. Warning Labels:

3.1. A label shall be posted on the load center at all times and in a conspicuous location near the breaker and shall indicate the proper trip unit settings, as well as a warning of the potential hazard for modifying the trip settings. The label shall indicate that the cable may only be connected to a properly adjusted and sealed over-current device. These labels shall warn miners not to change or alter these sealed short-circuit settings.

D. Trailing Cable Inspections:

4.1. A person designated by the operator shall visually inspect trailing cables before the start of each production shift for any damage to the cable. If damage to the cable or cable jacket is found, then the cable shall be permanently spliced or repaired. All repairs and splices must meet the requirements of 30 C.F.R. § 57.12013, (a), (b), and (c), or if unable to repair, the cable shall be replaced prior to operation.

4.2. A record of the inspection shall be incorporated into the work places examine records and made available on a request by the Secretary or her/his duly authorized representative.

4.3. Repairs shall be made in a workmanlike manner and in accordance with the instructions from the manufacturer of the splice or repair kit. A record of each repair shall be kept and shall be made available on a request by the Secretary or her/his duly authorized representative.

4.4. The outer jacket of the splice or repair shall be flame resistant material that has been accepted by MSHA as flame resistant.

4.5. Miners handling high voltage cables will do so only in compliance with 30 C.F.R. § 57.12014. Any cable handling equipment requiring inspection and approval shall do so according to the manufacturer's inspection criteria. A record of the inspection or calibration results as measured during the most recent test shall be made available on a request by the Secretary or her or his duly authorized representative.

E. Training:

5.1. The petitioner shall, within 25 days after the petition is granted, revise as necessary, to include New Miner, Experienced Miner, Annual Refresher training, and Task training, as appropriate, the Part 48 training plan. The plan shall be submitted to the Rocky Mountain District Manager for his or her approval. Any additions regarding the disposition of the petition in regards to training shall follow the same criteria.

5.1.1. New task training shall be provided per MSHA approval to the mine training plan. Training shall be completed within 60 days of the approval of petition (M-2009-001-M), and shall be provided prior to installation of the longer trailing cable. The scope of the training shall include the following:

5.1.2. New task training shall be provided to all mine employees covering the importance of correct trip settings as well as the potential hazards of altering the trip settings. Notification will be made to all mine employees that only authorized persons shall make changes to trip unit settings and that any unauthorized changes to trip unit settings may yield higher than normal consequences.

5.1.3. New task training shall be provided to qualified personnel responsible for maintenance and replacement of over-current devices and contactors. This training shall include:

5.1.3.1. Proper maintenance routine and maintenance schedule for components.

5.1.3.2. Proper procedure for trip unit testing.

5.1.3.3. Proper procedure for setting trip units.

5.1.3.4. Proper trip settings for each cable size.

5.1.3.5. Method for installing and verifying integrity of the seals for trip unit covers.

5.1.4. New task training shall be provided to personnel responsible for daily inspections of trip settings and trailing cables. Training shall include:

5.1.4.1. How to determine if trip units are set accurately.

5.1.4.2. How to determine if trailing cable is damaged, or if the jacket needs repair.

5.1.4.3. How to determine the integrity of the seal on the trip unit cover. Over-current devices shall be set at the minimum level required to allow the miner to operate correctly, but shall be set no higher than the following maximum settings:

Any party to this action desiring a hearing must file a request for hearing within 30 days after service of the Proposed Decision and Order, in accordance with 30 C.F.R. § 44.14, with the Administrator for Metal and Nonmetal Mine Safety and Health, 1100 Wilson Boulevard, Arlington, Virginia 22209-3939. If a hearing is requested, the request shall contain a concise summary of position on the issues of fact or law desired to be raised

by the party requesting the hearing, including specific objections to the Proposed Decision and Order. A party other than the petitioner who has requested a hearing shall also comment on all issues of fact or law presented in the petition. Any party to this action requesting a hearing may indicate a desired hearing site. If no request for a hearing is filed within 30 days after service, this Proposed Decision and Order will become final and must be posted by the operator on the mine bulletin board at the mine.

/s/ Neal Merrifield

Neal H. Merrifield
Administrator for Metal and Nonmetal
Mine Safety and Health