

In The Matter of  
Revett Silver Company  
Troy Mine Inc.  
I.D. No. 24-01467

PETITION FOR MODIFICATION

Docket No. M-2011-004-M

**PROPOSED DECISION AND ORDER**

On April 29, 2011, a petition was filed Revett Silver Company seeking a modification of the application of 30 C.F.R. § 57.11052 to Troy Mine Inc. an underground mine located in Lincoln County, Montana. The petitioner alleged that the alternative method outlined in the petition would at all times guarantee no less than the same measure of protection afforded miners by the standard at 30 C.F.R. § 57.11052(d) concerning refuge areas.

Section 57.11052 (d) states that refuge areas shall be:

Provided with compressed air lines, waterlines, suitable handtools, and stopping materials.

The petitioner requests modification of the application of section 57.11052(d) to permit the use of compressed air or oxygen in canisters, cylinders, or bottles in lieu of compressed air lines and the use of sealed bottled water supply in lieu of waterlines in the mines. In support of the petition, the petitioner states that: (1) the reliability of the source of air and water would be enhanced by making the refuge area self-contained; (2) the source of water and air would not be dependent on the installation of external airlines or waterlines that would be susceptible to mechanical damage or restriction; and (3) permitting the use of compressed air (oxygen) and water improves the portability of the refuge area, allowing the flexibility of installing refuge areas in close proximity to the working areas in the mine.

The Petitioner states that there are no miners' representatives at its mine, that it has posted a copy of the petition on the mine bulletin boards at the affected mines which shall remain posted until the petition becomes final, and that a copy of the petition has been given to employees who typically participate in MSHA regular inspections.

MSHA investigators conducted an investigation, on June 28, 2011, 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.

## **FINDING OF FACT AND CONCLUSION OF LAW**

Troy Mine Inc. is an underground room and pillar mine with five strata bound copper/silver ore horizons dipping at approximately four degrees [7% grade] and is accessed through adits from the surface. The mine operates 24 hours a day, 7 days a week and employs 190 miners working on 4 to 15 person crews. It is located about 15 miles southwest of Troy, Montana.

Troy Mine Inc. seeks modification of 30 C.F.R. § 57.11052(d) so as not to use compressed air lines or waterlines to provide air or water to the refuge chamber. The alternative method will consist of a prefabricated metal mine refuge chamber designed to sustain 12 miners for 36 hours during a mine emergency. The unit is portable and will be relocated in the future. It has a battery backup system and will be inspected monthly. Compressed air is not in use underground except for a shop air compressor. Air will be provided for purging the air-lock of the chamber by four "T" sized air cylinders and oxygen will be supplied by oxygen cylinders within the chamber. The oxygen will be metered out by a CO<sub>2</sub> scrubber system.

Due to the positive elevation difference between the outside potable water tank and the mine adit a water line would not lend itself to gravity feed. The shortest haul route from the water tank to the refuge chamber is 11,495 feet and would be vulnerable to damage and pose a bacteria health threat to miners. Bottled water in sufficient quantity (72 oz miner/day) for twelve miners for 36 hours will be provided inside the chamber.

In support of the petition, the Petitioner states that it will supply each refuge area with oxygen and water sufficient for the number of miners for which the refuge area is designed, and training on the refuge area guidelines and instructions for affected personnel at least semi-annually.

Regarding the supply of water, the Petitioner will provide: commercially purchased bottled water in sealed bottles in each refuge area, consisting of 2.5 quarts of water for each person per day for at least 5 days (50 person capacity requires 28-gal/day or a total capacity of 140 gallons); a fresh supply of water with a maximum shelf life of 2 years; and packaged disposable drinking cups (at least 5 cups per person) will be maintained in the refuge area. In addition, the Petitioner states that the condition and quantity of stored water will be confirmed by inspection on a monthly basis and written instructions for conservation of water will be provided with the refuge supplies.

For compressed oxygen, the petitioner proposes to supply only medical or airline quality oxygen in refuge areas. It will supply not less than 550 liters of oxygen per day per person for a minimum of 5 days will be provided. The oxygen cylinders will be stored in a safe manner, in compliance with 30 C.F.R. § 57.16005 and 57.16006, and away from flammable and combustible materials. In addition, a system of regulating the flow of oxygen and monitoring the reserve available will be provided with the refuge area supplies.

The Petitioner further proposes to provide equipment designed for monitoring the oxygen and carbon dioxide level of the ambient air in the refuge area; a purge valve would be installed or provided for rapid installation; the condition of the cylinders will be inspected and pressure tested on a monthly basis; sufficient carbon dioxide absorbent material will be provided to maintain a carbon dioxide level below 2.0 percent for the duration and number of miners for which the refuge area is designed; and written instructions for monitoring and maintaining gas levels within the refuge area will be provided with the refuge supplies.

The potential contamination of the water by aging pipelines and the potential of damages to the pipelines due to aging, roof falls, or equipment damaging pipelines along with the terms and conditions of this Proposed Decision and Order, will at all times guarantee no less than the same measure of protection as afforded the miners under 30 C.F.R. § 57.11052.

On the basis of the petition and the findings of MSHA's investigation, Troy is hereby issued the following Order for a modification of the application of 30 C.F.R. § 57.11052(d) to Troy Mine Inc.

### **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. Section 811(c), it is ordered that a modification of the application of 30 C.F.R. § 57.11052 to the Troy Mine Inc. as it pertains to utilizing bottle water and oxygen cylinders to replace compressed air lines, waterlines in these respective mines' refuge chambers.

**GRANTED**, conditioned upon compliance with the following terms and conditions:

1. Each Refuge Chamber shall be supplied with oxygen and water sufficient for the number of miners for which the refuge chamber is designed, up to 96 hours.
2. Training on the refuge chamber guidelines and instructions shall be provided for affected personnel at least semi-annually. Training must include the hazards associated with the carbon dioxide scrubbing process and use of the gas detector(s) to monitor concentrations of carbon dioxide, carbon monoxide, oxygen, and other harmful gases specific to either mine.
3. Bottled Water Supply:
  - A) Water shall be commercially purchased bottled water in sealed bottles.
  - B) Sufficient water shall be provided in each refuge chamber to provide 2.5 quarts of water for each person per day for at least 4 days.

C) Water shall have a maximum shelf life of 2 years.

D) The condition and quantity of stored water shall be confirmed by inspection on a monthly basis.

E) Written instructions for conservation of water shall be provided with the refuge supplies.

4. A minimum of 2,000 calories of food per person per day sufficient for the number of miners for which the refuge chamber is designed, to sustain life for a period of no less than 96 hours shall be provided.

5. Compressed Oxygen:

A) Only medical or airline quality (United States Pharmacopeia) oxygen shall be supplied in refuge chambers.

B) A supply of no less than 550 liters of oxygen per day per person for a minimum of 4 days shall be provided.-

(i) Oxygen cylinders shall be stored in a safe manner and in compliance with MSHA standards 30 C.F.R. § 57.16005 and § 57.16006, and away from flammable and combustible materials.

(ii) A manifold system for regulating the flow of oxygen and monitoring the reserve available shall be provided with the refuge chamber supplies.

(iii) Equipment designed for monitoring the oxygen and carbon dioxide level of the ambient air in the refuge chamber shall be provided with the refuge chamber supplies. Oxygen levels shall not exceed 23% inside the refuge chamber.

(iv) The condition and pressure of the cylinders shall be inspected on a monthly basis.

(v) An extra oxygen regulator shall be kept within the refuge chamber.

(vi) Tools and any repair parts recommended by the manufacturer for the compressed oxygen system shall be kept within the refuge chamber.

(vii) Sufficient carbon dioxide absorbent material shall be provided to maintain a carbon dioxide level below 1.0 % over the rated duration of the refuge chamber with excursions not to exceed 2.5%.

(viii) The chemical(s) used to scrub carbon dioxide must be contained such that when stored or used it cannot come in contact with persons and

cannot release airborne particles. Manufacturer’s instructions on the deployment and use of the chemicals and the curtains or cartridges shall be provided and kept in the refuge chamber.

(ix) The amount of chemical needed to scrub carbon dioxide shall be at the rate of 1.08 cubic feet per person per hour for the full 4 days.

(x) Written instructions for monitoring and maintaining gas levels within the refuge chambers shall be provided with the refuge supplies.

6. Applicable revisions or appropriate changes to the MSHA 30 C.F.R. Part 48 training plan regarding the conditions in this PDO shall be submitted to the MSHA District Manager for revision and approval prior to implementation of the training plan by the Petitioner.

7. Refuge chambers shall provide at least 15 square feet of floor space per person and at a minimum of 30 - 60 cubic feet of volume per person according to the following chart. The number of occupants and these minimum areas affect the temperatures in the refuge chamber. Plans regarding the internal temperature ratings and maximum mine temperature should be submitted to the district manager. The internal temperature rating must consider the maximum mine temperature. The maximum temperature in the refuge chamber shall not exceed 84 degrees (wet bulb measurement). In the event an air-lock is used, the air-lock can be included in the space and volume if waste is disposed outside the refuge chamber.

Mining height (inches)	Unrestricted Minimum volume (cubic feet) per person*
36 or less.....	30
>36-<=42.....	37.5
>42-<=48.....	45
>48-<=54.....	52.5
>54.....	60

\* Includes an adjustment of 12 inches for clearances.

8. Refuge chambers shall accommodate the maximum number of persons that can be expected to be working in the area at any time.

9. Each refuge chamber shall be conspicuously identified with a sign or marker as follows:

A) A sign or marker made of a reflective material with the word “REFUGE” shall be posted conspicuously at each refuge chamber.

B) Directional signs made of a reflective material shall be posted leading to each refuge chamber location.

C) The refuge chamber shall be equipped with a means to indicate unauthorized entry or tampering.

10. Refuge chambers shall contain a fire extinguisher

11. Refuge chambers shall contain gas detection equipment capable of monitoring concentrations of carbon dioxide, carbon monoxide, oxygen, and if necessary, other harmful gases specific to either mine. The detection equipment needs to be functional for up to 96 hours.

12. Refuge chambers shall be located within 1000 feet or a 10-minute walking distance from where miners work.

13. An airlock and purge device shall be provided. The airlock will be purged four times with compressed air, as miners enter the airlock and before entering the refuge chamber.

Any party to this action desiring a hearing shall 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 upon 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 thereof, this Proposed Decision and Order will become final and shall be posted by the operator on the mine bulletin board at the mine.

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