

## INTRODUCTION

This report is based on an investigation made pursuant to clause (1) of Section 4 of the Federal Metal and Nonmetallic Mine Safety Act (80 Stat. 772).

Reference numbers preceding recommendations identify mine safety standards published in the Federal Register, Vol. 34, No. 145, Thursday, July 31, 1969, and Federal Register, Vol. 35, No. 38, Wednesday, February 25, 1970, and reference numbers in parentheses identify proposed standards published in the Federal Register, Vol. 34, No. 11, Thursday, January 16, 1969, Part II. Mandatory standards are identified by (M) after the reference number.

Lester E. Benbow, schoolteacher, Foresthill Elementary School, SSN 550- , age 41, was asphyxiated in the early morning of June 20, 1970, when he attempted to rescue a miner who was overcome in an oxygen-deficient atmosphere. Benbow is survived by his wife and one dependent child. He had no mining experience.

The Bureau of Mines was notified of the accident by a telephone call at 2:10 p.m., June 20, 1970, from John Franz, senior safety engineer, California Division of Industrial Safety.

Representatives of the California Division of Forestry, the Placer County Sheriff's Department, the Iron Mine Conservation Camp, the Foresthill Safety Club, various fire departments, and the mine operators participated in the rescue. Information for this report was obtained from statements made by several of these persons, but due to the excitement that existed and the number of people involved, the information gained was inconclusive in some instances and contradictory in others. Observations were not made of the accident scene, because of the hazards involved.

## GENERAL INFORMATION

The Hazard underground gold mine is located near Volcano Creek 6 miles southeast of Foresthill, Placer County, California. The mine was owned by the Volcano Canyon Mining Company, and operated by Clifford A. Osborne, lessee, and Edward Alvey, Richard Ward, and Clifford J. Cox, partners in the mining venture.

The mine had been abandoned for 70 years. Osborne leased the property in 1964, and rehabilitated the shaft for 128 feet, the bedrock level. Osborne reportedly had previous mining experience, but his partners had only the knowledge gained since the shaft was reopened December 1969. The men were employed in other pursuits, and only worked the mine as free time permitted.

Osborne planned to remove fallen timber and caved ground in a drift through a gravel channel, then retimber the section. Past history and maps indicated that the drift extended about 2,900 feet from the shaft station. The miners had tested the drift atmosphere with candles and carbide lights, and knew that oxygen deficiency existed in the drift from a point about 1,900 feet inby the station.

Rehabilitation work had been confined to the two-compartment shaft and surface, with no effort made to clean and repair the drift. Intentions were to provide forced ventilation, but this had not been accomplished. Osborne reportedly had warned his partners against entering the mine when he was not present.

#### DESCRIPTION OF ACCIDENT

Ward and Cox obtained four "D" oxygen cylinders and some small plastic tubes from a supplier in Placerville, California. They climbed down the manway, and entered the drift about 8:30 p.m., June 19, 1970. They planned to prospect the drift, and hoped to reach the face.

The two men entered the oxygen-deficient atmosphere when about 1,900 feet from the station, and proceeded towards the face while breathing oxygen from the cylinders through a small plastic tube. Cox became exhausted about 2,600 feet from the station, and fell to the floor of the drift. Ward was weak, and realized he could not remove Cox to a fresh-air source. He instead returned for help, dropping his cylinders on the way out. He arrived on surface about 10:30 p.m., alerted Mrs. Alvey, and telephoned for assistance. Mrs. Alvey telephoned her husband and Osborne who were in Foresthill, and they both rushed to the mine.

Osborne summoned additional assistance and made preparations to rescue Cox. Alvey climbed down the manway and attempted to reach Cox, but was unable to do so. Alvey was returning to surface when he met Jack Campbell, an employee of the California Division of Forestry. Alvey continued to surface and Campbell proceeded toward Cox, but was unable to assist him. Campbell started towards the surface, and met Kenneth G. Hamilton and James C. Mower, California Division of Forestry, and cautioned them against rescue until additional help arrived. As Campbell continued towards surface he met Lester Benbow (victim) with some air cylinders and reportedly told him to wait for more men and additional compressed-air cylinders.

Mower, Hamilton, and Benbow (victim) with SurvivAir, Scott Air-Pacs, or scuba gear eventually met somewhere near the fresh-air source, and decided to continue to make an effort to rescue Cox. The three men put on their apparatus and traveled to him. They were able to move him about 25 feet when their apparatus air supply became exhausted. Benbow (victim) reportedly said he could breathe better without the mask, which he removed. He became unconscious almost immediately,

and Hamilton became incapacitated a short time later. Mower with great difficulty returned to the shaft station and telephoned Campbell on surface to report the events. Mower reportedly was not completely rational.

Gerald W. Quigley, California Division of Forestry, arrived at the mine in the meantime with two compressed-air cylinders attached to his equipment, and one spare. He reached the accident scene and was able to revive Hamilton, but could not return either Cox or Benbow (victim) to consciousness. Quigley assisted Hamilton to the surface, where they entered an ambulance about 6 a.m., June 20, 1970, and were transported to Auburn, California. Both Cox and Benbow (victim) reportedly were breathing when last seen by Quigley about 5 a.m.

Several men arrived at the mine from the Iron Mine Conservation Camp, and a decision was made to connect sections of fiber firehose to the mine compressor in order to force air into the drift to effect the rescue of Cox and Benbow (victim). The procedure worked satisfactorily, and Cox was brought to surface about 11:30 a.m., and Benbow (victim) about 1:30 p.m. Benbow (victim) was pronounced dead by a doctor at the shaft collar. Cox was transported to the hospital, and reportedly made a complete recovery.

#### CAUSE OF ACCIDENT

The direct cause of the accident was the victim advancing too far in an irrespirable atmosphere for the type of respiratory protective equipment in use. Contributing causes were not having a reserve team with adequate respiratory protective equipment at the nearest fresh-air base, and not having sufficient help to transport an injured person.

#### RECOMMENDATIONS COVERED BY PUBLISHED METAL AND NONMETAL MINE SAFETY STANDARDS

57.5-15 Atmospheres in all active areas should contain at least 20 percent oxygen.

(57.6-1) (M) Mines should be provided with mechanically induced primary ventilation.

57.5-28 (M) Unventilated areas should be sealed, or barricaded and posted against entry.

57.5-27 Flame safety lamps or other suitable devices should be used to test for acute oxygen deficiency.

Mine rescue equipment should be used only within a short distance of a fresh-air base, with at least one crew of five or six men equipped with self-contained breathing apparatus, preferably of the 2-hour type, in reserve at the fresh-air base.

Each of the rescue and reserve crews should be composed of at least five, and preferably six men.

A reliable means of communication should be established between those attempting the rescue and those in reserve at the fresh-air base.

Rescue personnel should be physically fit and well trained.

The following recommendation has no bearing on the accident but should be complied with:

Accidents in mines subject to the Federal Metal and Nonmetallic Mine Safety Act which cause death should be reported immediately by the quickest available means to the nearest Bureau of Mines Metal and Nonmetal Mine Health and Safety District or Subdistrict office.

Western District - Allen D. Look, District Manager, Bureau of Mines, 620 Central Avenue, Alameda, California 94501. Telephone (415) 273-7457.

/s/ E. F. Allen

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Safety Representative