Identification No. 03003-0[illegible]-04-009

INTRODUCTION

This report is based on an inspection made pursuant to 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; Federal Register, Vol. 35, No. 38, Wednesday, February 25, 1970; and Federal Register, Vol. 35, No. 237, Tuesday, December 8, 1970.

The following men were injured fatally about 7:15 a.m., January 5, 1971, when the cage they were riding plunged about 600 feet to the bottom of the shaft, El Dorado Mine, El Dorado Limestone Company, Shingle Springs, El Dorado County, California:

1. William R. Wollett, mining engineer, Social Security number 4405, age 33. This was Mr. Wollett's first shift at this mine. He is survived by his wife and two dependent children.

2. Fred J. Davidson, skip tender, Social Security number 6316, age 26. Mr. Davidson had worked at this mine 4½ years. He is survived by his wife and one dependent child.

3. John Owens, mechanic, Social Security number 8457, age 50. Mr. Owens had worked at this mine for 1½ years. He is survived by his wife and four dependent children.

4. Ronald Warner, skip tender, Social Security number 9130, age 32. Mr. Warner had worked at this mine periodically for 7 years. He is survived by his wife and two dependent children.

The Bureau of Mines Alameda office was advised of the accident by a telephone call from John C. Franz, senior safety engineer, Division of Industrial Safety, State of California, at 8:40 a.m., January 5, 1971. A Federal investigation was made January 5-6, 12-13, and 17, 1971. Information for this report was obtained from Walter A. Stinson, president, El Dorado Limestone Company, and S. Capouch, hoistman on duty at the time of the accident, and by inspecting the accident scene and examining the hoisting equipment.

GENERAL INFORMATION

The El Dorado Limestone Company owned and operated the El Dorado underground limestone mine and surface mill. The property is located in Section 11, Township 9 North, Range 9 East, Mt. Diablo Base and Meridian, near Shingle Springs, El Dorado County, California. Employment totaled 65 men, 38 of whom worked underground. The work schedule consisted of two 8-hour shifts daily, 5 days weekly.

The mining and milling operations, started in 1925 by the present operator, had been continuous.

Mining was by shrinkage stoping on the 950 and 1130 levels. Hoisting was done through two compartments of a three-compartment shaft. The third compartment contained a manway and utilities. The normal operating depth of the shaft was 1,225 feet. Shaft sinking operations, discontinued November 1, 1970, had extended the depth to 1,325 feet. A sinking bulkhead was located at 1,225 feet.

The hoist, a Lane friction-band type, was reported to have been built in 1916 and used in Arizona where it was operated by steampower. It was brought to the El Dorado mine in 1940 and converted to electric power. The hoist had two drums, designated as the north and south drums, and each was equipped with a brake. Brakeshoes were of wood. Hoisting was done with the cages in balance. The hoist drums were driven by a 200-horsepower synchronous motor bearing a nameplate which listed the voltage as 2,200 volts ac. The hoisting cable was 1 1/8-inches in diameter. The cages were equipped with safety catches, and secondary safety connections were provided.

A shaft driven directly by the motor, transmitted power to a large gear located between the two drums. The gear, through a drum drive shaft, drove spiders on the outer end of each drum. A clutch-band anchor (fixed arm) and a movable arm were attached to each spider. The fixed arm anchored one end of the clutch band. To engage a clutch, the hoistman activated the movable arm, which tightened the wooden clutch-blocks against a friction ring on the hoist drum. When both clutches were engaged, two brakes were available for braking both drums.

Participating in this investigation were:

EL DORADO LIMESTONE COMPANY

Walter A. Stinson, President

STATE OF CALIFORNIA, DEPARTMENT OF INDUSTRIAL SAFETY

John C. Franz, Senior Safety Engineer
Andrew T. Brozik, Safety Engineer

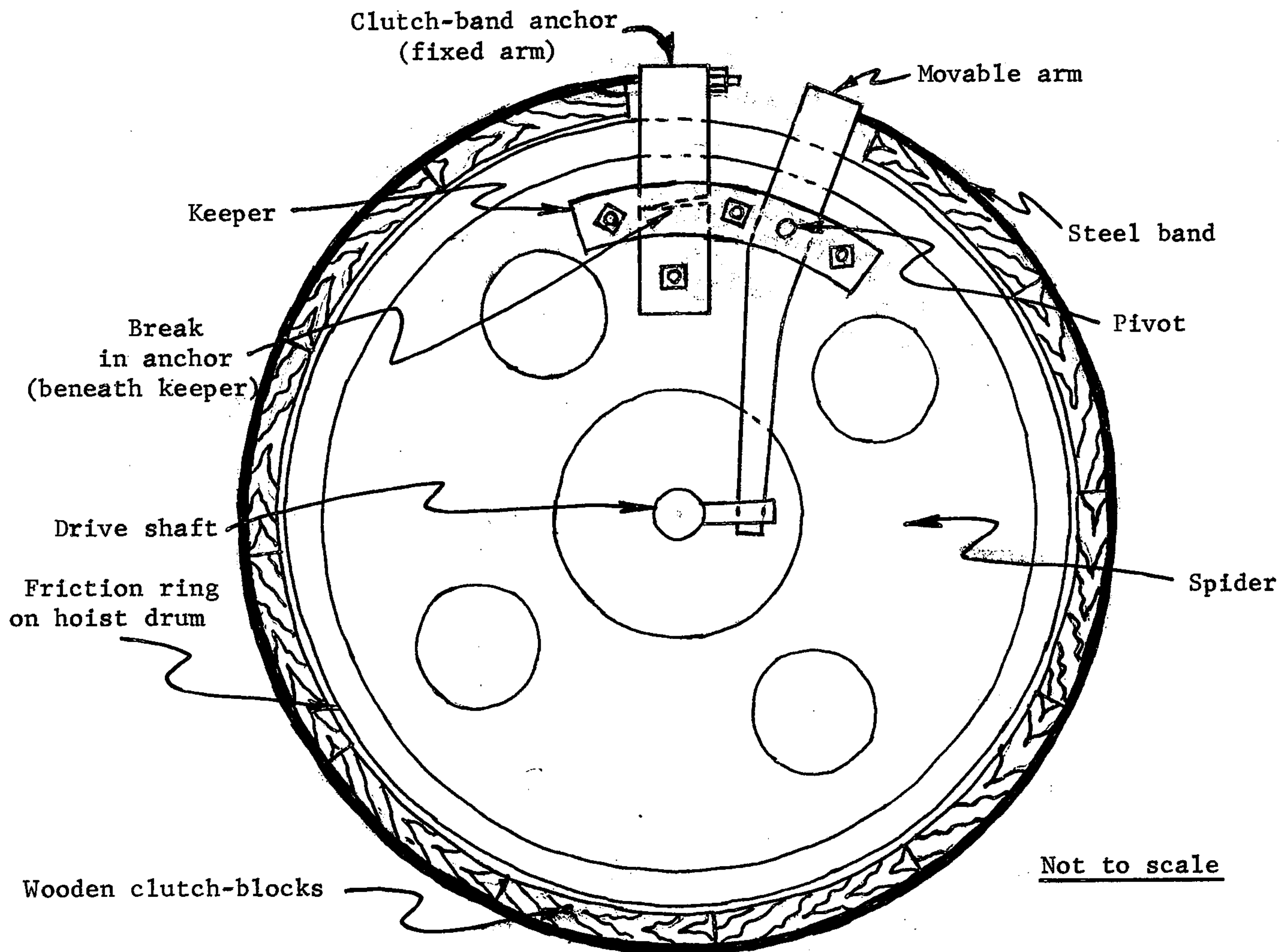
BUREAU OF MINES

Charles H. Schultz, Mining Engineer
Kenneth A. Tallmadge, Mining Engineer (Trainee)
Richard C. Anderson, Mining Engineer (Trainee)

The last Federal inspection of this property was made August 4-6, 1970.

El Dorado Limestone Company
Shingle Springs, El Dorado County, California

January 5, 1971



LANE BAND FRICTION CLUTCH

NOTE: - The cast-iron spider is keyed to the drum drive shaft. The movable arm moves about the pivot point when the clutch is engaged, thus tightening the steel band and wooden clutch-blocks against the friction ring on hoist drum. For details see Mining Engineers' Handbook, Vol. I, p. 12-16.

Clutch became disengaged when clutch-band anchor broke, thus permitting drum to rotate and cage to fall.

DESCRIPTION OF ACCIDENT

The miners started work at 7 a.m., the day of the accident, and three cages of men were lowered. The north cage had been lowered twice, and the south cage once. Six men had been transported in each cage. The four men remaining to be lowered entered the south cage while men debarked underground from the north cage. Lowering of the south cage was started, and at the same time, hoisting of the empty north cage was started.

The destination of the south cage was the 1130 level. The cage had been lowered about 600 feet in a normal and routine manner, when the hoist operator noticed that the drum of this descending cage was traveling faster than the ascending north cage. The hoistman immediately shutoff the power at the hoist controller, set the brake on the ascending north cage, and attempted to stop the descending south cage by applying the handbrake, using all his strength. He did not throw the emergency power switch, which would have automatically operated the brakes. The safety catches on the south cage did not operate, because tension was being maintained on the cable.

The south cage fell rapidly through the lower part of the shaft, and forcibly struck the bulkhead at the depth of 1,225 feet. The cage broke through the bulkhead, but was wedged in it. The cage bottom was broken out, and one of the victims fell to the shaft bottom. The other three victims were found lodged in the shaft timbers near the cage. All four victims had been killed by impact.

An imminent danger closure order was issued January 12, 1971, stating: "Broken clutch-band anchor on south hoist drum shall be replaced with an unbroken anchor." The order debarred persons from man-hoisting operations in the south compartment except those persons described in Sec. 8 (a)(1) and (b)(1) of Public Law 89-577, the Federal Metal and Nonmetallic Mine Safety Act. A copy of this order is appended to the report of a mine health and safety inspection made in conjunction with this investigation. The order was annulled January 17, 1971, following the installation of a new clutch-band anchor and a new movable arm on the south hoisting drum, and a thorough testing of the hoisting facilities.

A notice was issued requiring that an overspeed device be installed on the hoist. Another notice was issued requiring the clutch of each drum to be mechanically or electrically interlocked with the brake of each drum to prevent accidental withdrawal of the clutch. These notices were listed in the aforementioned inspection report. Also, recommendations were made in the inspection report concerning other aspects of the hoisting operation.

CAUSE OF ACCIDENT

The direct cause of this accident was the breaking of the clutch-band anchor on the south drum, which disengaged the clutch and permitted the

hoisting cable to unwind. Contributing to the seriousness of the accident was the lack of an automatic overspeed device on the drum.

RECOMMENDATIONS

Man hoisting

57.19-7 Man hoists shall be provided with devices to prevent overspeed.

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.

Alameda Subdistrict - Howard E. Poland, Acting Subdistrict Manager, 620 Central Avenue, Alameda, California 94501. Telephone (415) 273-7457.

/s/ Charles H. Schultz

Charles H. Schultz

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
620 Central Avenue
Alameda, California 94501

Metal and Nonmetal Mine Health and Safety
Western District

January 26, 1971

Memorandum

To: S. M. Jarrett, Assistant Director--Metal and Nonmetal Mine Health and Safety, Washington, D.C.

From: Howard E. Poland, Acting Subdistrict Manager, Alameda, California

Subject: Report of Multiple Fatal Hoisting Accident, El Dorado Mine and Mill, El Dorado Limestone Company, Shingle Springs, El Dorado County, California, January 5, 1971, by Charles H. Schultz.

Please change the date as stated on the cover sheet of the subject report from "January 5-6, 12-13, and 17, 1971" to "January 5, 1971".

Howard E. Poland

cc: Other Bureau of Mines recipients
of report.
Files

RECEIVED
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