UNITED STATES
DEPARTMENT OF THE INTERIOR

MINING ENFORCEMENT AND SAFETY ADMINISTRATION

UNITED STATES DEPARTMENT OF THE INTERIOR
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Mining Enforcement and Safety Administration

HEALTH AND SAFETY REPORT

REPORT OF TRIPLE FATAL MACHINERY (FRONT-END LOADER) ACCIDENT
EL PASO QUARRY
EL PASO ROCK QUARRIES, INC.
EL PASO, EL PASO COUNTY, TEXAS

February 15, 1975

By

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Metal and Nonmetal Mine Inspector
and
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Metal and Nonmetal Mine Inspector

METAL AND NONMETAL MINE SAFETY
SOUTH CENTRAL DISTRICT

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Subdistrict Manager

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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).

Roberto R. Sosa, Trinidad R. Reyes, and Andres Escobedo died from injuries suffered when the front-end loader in which they were riding turned over at approximately 10:30 a.m. on Saturday, February 15, 1975. The decedents were pronounced dead at a nearby hospital at 1:20 p.m. the same day.

Sosa, SSN [redacted], driller, age 46, was married and had 6 dependent children; he had a total of 17 years mining experience, 4 of which were on this job. Reyes, SSN [redacted], driller, age 46, was married and had 6 dependent children; he had a total of 14 years mining experience, 4 of which were on this job. Escobedo, SSN [redacted], laborer, age 41, was married and had 6 dependent children; he had 1 year experience on this job but his total mining experience was unknown.

The El Paso, Texas field office of the Mining Enforcement and Safety Administration was notified of the accident by a telephone call from Don McCoy, vice president, El Paso Rock Quarries, Inc., on February 15, 1975. The investigation was started the same day. Information for this report was obtained by visiting the scene of the accident and by interviewing company officials and employees, equipment representatives, insurance investigators, and representatives of the El Paso Police Department.

In addition to this investigation, a special investigation was conducted concerning the mechanical aspects of the equipment involved. Any pertinent information obtained as a result of this special investigation will be transmitted, as appropriate.

The operation was last inspected under P.L. 89-577 on January 16, 1975.

GENERAL INFORMATION

The El Paso quarry was a multiple bench operation located in a limestone formation within the city limits of El Paso, El Paso County, Texas. It was owned and operated by the El Paso Rock Quarries, Inc., and the principal operating official was Don McCoy, vice president. An average of 36 employees worked one 10-hour shift a day, 5-1/2 days a week. Previous to this accident, the operation had not experienced a fatal accident nor a serious nonfatal accident.

Persons participating in this investigation were:

El Paso Rock Quarries, Inc.
Don McCoy, Vice President
S. H. Leyva, Quarry Vice President
D. Tirre, Maintenance Superintendent
Martin Armendariz, Foreman

Mining Enforcement and Safety Administration
Donald K. Morris, Metal and Nonmetal Mine Inspector
Charles F. Hoine, Metal and Nonmetal Mine Inspector
Walter R. Schell, Mining Engineer
Donald Hutchinson, Chief, Industrial Safety Group

PHYSICAL FACTORS INVOLVED

The front-end loader involved in this accident was a 1972, Michigan, Model 125A, articulated loader which weighed approximately 40,000 pounds. This loader was equipped with a factory manufactured Roll-Over Protective Structure (ROPS) which had a certification plate attached to it.

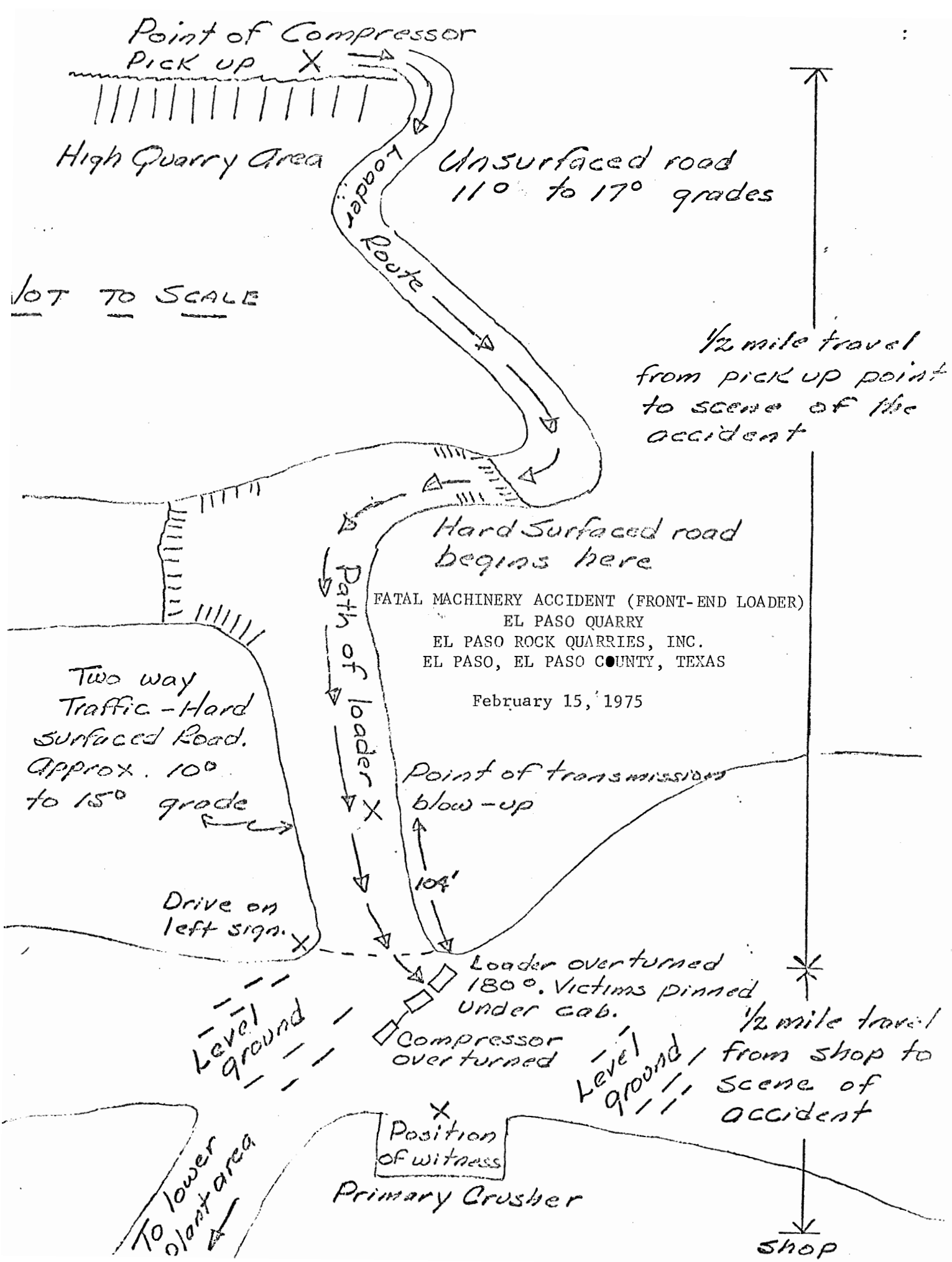
The company had an established daily equipment inspection program. The loader involved in this accident, in addition to the daily inspection, had been used on the shift prior to the accident and was reported by the operator to be in good operating condition at the end of the shift. Maintenance records indicated this loader had a complete brake overhaul in October 1974.

The other piece of equipment involved in this accident was a portable air compressor with a rated capacity of 900 c.f.m. and weighing about 13,500 pounds. The compressor was provided with a steel drawbar, equipped with a ring-type attachment which was utilized when transporting the compressor. In addition, safety chains were used during transportation.

The first portion of the roadway between the upper quarry area and the primary crusher was about 1/4 mile long, winding, unsurfaced, and on a grade which varied between 11 and 17 degrees. The next section of the roadway also was about 1/4 mile long but was hard surfaced and on a grade which varied between 10 and 15 degrees. Between the end of the latter section and the primary crusher, the roadway was essentially level.

DESCRIPTION OF ACCIDENT

On the day of the accident, Sosa, Reyes, and Escobedo began work at their regular starting time of 6:30 a.m. Their work assignment, for the half-day Saturday shift, was to dismantle the drilling equipment and to move the air compressor from the upper quarry drilling area to the lower shop. In addition, dust was to be blown off the large crusher motors located in the lower plant area.


Point of Compressor Pick up
High Quarry Area
Loader Route
Unsurfaced road 11° to 17° grades
NOT TO SCALE
½ mile travel from pick up point to scene of the accident
Hard Surfaced road begins here
FATAL MACHINERY ACCIDENT (FRONT-END LOADER)
EL PASO QUARRY
EL PASO ROCK QUARRIES, INC.
EL PASO, EL PASO COUNTY, TEXAS
February 15, 1975
Path of loader
Two way Traffic - Hard surfaced Road. Approx. 10° to 15° grade
Point of transmission blow-up
104'
Drive on left sign.
Loader overturned 180°. Victims pinned under cab.
Compressor overturned
Level ground
Level ground
½ mile travel from shop to scene of accident
Position of witness
Primary Crusher
To lower plant area
Shop

Prior to the accident, Mr. Sosa, who was an experienced loader operator, drove the front-end loader from the lower shop area to the upper quarry area. After the compressor was attached to the loader, the approximate one-mile trip to the shop was started. The loader, with the three men in the cab and with the compressor in tow, was driven down the unsurfaced portion of the roadway without incident. It then began the descent down the surfaced portion of the roadway (see sketch).

Edwardo Baltier, a witness whose truck was parked at the primary crusher, stated that when he noticed the loader coming down the inclined roadway it appeared to be traveling at a faster than normal speed. The loader was traveling in a straight line and did not appear to be swaying. He also felt sure that the doors on the cab of the loader were closed.

Mr. Baltier further stated that at a point a short distance above the bottom of the inclined roadway, the loader started to gain speed. The loader, with an estimated speed of 30 m.p.h., started to make a turn to the left when it reached the level ground at the bottom of the incline. At this point, the compressor turned over and then the loader overturned 180 degrees, coming to rest on its top. Mr. Baltier, who was approximately 175 feet away, stated that when he reached the scene of the accident, the loader engine was still running and all three men apparently were crushed within the collapsed cab.

A large crane was brought to the scene to lift the loader off the victims who were entangled in the structural members of the ROPS protection that had failed.

Reasons could not be established why Reyes and Escobedo violated a company rule by riding in the loader with Sosa. Conceivably, the two men were going to assist Sosa in blowing the dust off the crusher motors.

This investigation determined that the transmission of the loader disintegrated approximately 104 feet up the inclined roadway. At this point, tire skid marks were observed and from this point down to the overturned loader various parts from the transmission, transmission oil, and hydraulic fluid were in evidence on the roadway. It is assumed that the loader operator, in an attempt to slow the loader, changed the travel position from forward to reverse; thereby, causing the transmission to disintegrate. Some time during the accident, the ring-type attachment on the drawbar broke; however, the safety chains remained attached. An examination of the loader revealed the two front brake lines had been severed, possibly by flying metal; however, the power steering and bucket cylinder mechanisms were still operable. The brake linings were intact and were neither scorched nor glazed.

CAUSE OF ACCIDENT

The direct cause of this accident was excessive speed which resulted in the operator losing control of the loader. Restricted movement and inattention of the operator due to overcrowding in the cab of the loader,

an attempt to expedite completion of work assignments, and the failure to realize the effect the towing of the compressor could have on controlling the loader may have been contributing factors.

Failure of the Roll-Over Protective Structure (ROPS) undoubtedly contributed to the severity of the accident.

ORDERS AND NOTICES

56.9-23(M); Notice No. 89 Trackless haulage equipment shall be operated under power control at all times.

56.9-24(M); Notice No. 90 Mobile equipment operators shall have full control of the equipment while it is in motion.

56.9-67(M); Notice No. 91 Facilities used to transport men to and from work areas shall not be overcrowded.

RECOMMENDATIONS

56.9-81 Trucks, shuttlecars, and front-end loaders should be equipped with emergency brakes separate and independent of the regular braking system when generally available for a particular class of equipment.

60.9 The company should continue the program they have initiated for inspecting all ROPS installed on their equipment. This program should be continuing in nature and on a regular basis.

ACKNOWLEDGMENT

The courtesy and cooperation of company personnel and others contacted during this investigation are gratefully acknowledged.

/s/ Donald K. Morris

Donald K. Morris
Metal and Nonmetal Mine Inspector

/s/ Charles F. Hoine

Charles F. Hoine
Metal and Nonmetal Mine Inspector

Approved By:

Hugh D. Graham
Subdistrict Manager