

**UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION**

**Western District
Metal and Nonmetal Mine Safety and Health**

**Accident Investigation Report
Surface Sand and Gravel Mine**

Fatal Machinery Accident

**May Tire Company Contractor I.D. ZSY
at
Eagle Valley Quarry (I.D. No. 04-04758)
Blue Diamond Materials/Livingston Graham
Corona, Riverside County, California**

March 15, 1997

by

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GENERAL INFORMATION

Santiago Cortez, tire company serviceman, age 49, was fatally injured about 3:30 p.m., March 15, 1997, when he was struck by a tire he was mounting on a front-end loader. Cortez had worked in the tire service business as an employee for 17 years, and had 11 months mine related experience. He had not received training in accordance with Part 48, but was task trained in April of 1996.

Mark Long, operations manager for Blue Diamond Materials/Livingston Graham, notified MSHA of the accident at 5:12 p.m., March 15, 1997. An investigation was started the following day.

The Eagle Valley Quarry was a single bench sand and gravel mine located in Corona, Riverside County, California. A total of 14 employees worked two 8-hour shifts, 5 days per week. Sand and gravel were mined, processed, and stockpiled using conventional mining methods. The material was used for road base and asphalt aggregate in road construction.

The principal operating official for May Tire Company was Edwin May, president. It was a small company of less than 20 employees that provided a variety of tire services to industry in the Southern California area. May Tire Company also provided similar services to other quarries in the Eagle Valley Quarry area.

MSHA's last regular safety and health inspection of the Eagle Valley Quarry was conducted from August 23, through August 28, 1996. Another regular inspection was conducted after the fatal investigation.

PHYSICAL FACTORS INVOLVED

A specially designed service truck (company no. 956) was being used by Cortez to change tires on three front-end loaders at the mine. The truck was a 1995 Ford Model LN8000 equipped with a Iowa Mold Tooling Co., Inc., (IMT) Model 12916 hydraulic knuckle boom crane which was attached at the midpoint of the truck with a flat bed comprising the rear of the vehicle. The articulated, telescopic extension-knuckle boom had dual independent hydraulic controls with eight levers controlling hoisting, lowering, booming out, or turning functions. The controls were located outside and immediately behind the cab on both the driver's and passenger's side of the vehicle. The bed of the truck was approximately 4 1/2 feet off ground level.

The service truck was purchased new from IMT by May Tire Co., and placed into operation on August 29, 1995. The victim was hired by the contractor on March 29, 1996, and began operating the truck on April 1, 1996.

After the accident, the service truck was found with the outriggers almost totally extended and firmly placed on the ground. The Fuller 9-speed transmission was in neutral, the engine was running, and the parking brake was set. The vehicle was parked on almost level ground at the repair shop ready-line parking area of the mine. It was 6 feet away from, and parallel to the Caterpillar 988 front-end loader Cortez was working on. The work space was cramped and there was no clear exit because of the close proximity of the loader and truck. The two front tires on the loader had been removed.

Two hydraulic outriggers, one on each side of the vehicle, were positioned directly behind the cab. Hydraulic power to the hoist and outriggers was generated by a conventional Power Take-Off (PTO) unit which was operated with the transmission of the vehicle in neutral.

The safety latch on the crane hook had been removed by the tire company service manager on August 29, 1995, and had not been replaced. The manager removed the latch because he believed its presence made it difficult to attach the bead hook (hitch) to the crane hook. It was later determined that the lack of a safety latch did not contribute to the accident. This defect was not reported or recorded by the manager. Citations were issued for the lack of a safety latch and for the failure to record this defect on a miscellaneous MSHA inspection.

The crane had a rated lift capacity of 14,000 pounds at the minimum 7 feet of boom extension and 8,000 pounds at its maximum reach of 16 feet, 2 inches. The "J" shaped bead hook used to attach tires to the IMT knuckle boom hook appeared to be shop made. The bead hook, constructed of 5/8-inch heavy gauge metal, measured 6 inches at its widest point, had a 2-inch lip to hold the tire, and had a 2 1/2-inch hole where the hoist hook attached. The bead hook required almost perfect placement on the tire to ensure that the maximum bite of 2 inches was obtained and the tire was not secured to prevent it from falling or being knocked off the bead hook.

The tire being mounted was a 35/65x33 Goodyear, 24-ply rated retread with an L5 standard gear lug. The tire was approximately 34 inches wide, 80 inches high, and showed signs of some tread wear. Total weight of the assembly was approximately 2,660 pounds. Several deep cuts were observed in the inner side of the tire lip. A layer of grease, applied to ease mounting, was also observed on the inner lip of the tire. One other loader tire was lying on the bed of the service truck.

Rocky Williams, operations manager for May Tire Company, scheduled tire rotations on three loaders at the site on Saturday, March 15, 1997, so that mine production would not be disrupted. Four mine employees were conducting various mining and maintenance activities at the rip-rap and crusher areas, approximately 300 yards from the accident site. Crew members occasionally passed Cortez before they left the site at about 2:30 p.m., when their work was completed.

May Tire Co. management personnel had seen a 90-minute videotape entitled "National Tire Dealers and Retreaders Association's Complete Off the Road (OTR) Mount/Demount Training Program" on June 4, 1994. Reportedly, Cortez and the other employees saw this same videotape shortly after being hired on March 29, 1996, and prior to starting work activities. Accompanying this videotape was a 5-module study guide which MSHA was told had been completed by all participants. The guide indicated that:

"A variety of slings are available for the safe lifting and handling of tire and wheel assemblies. Industry standards and tire manufacturers do not recommend lifting tires in the bead areas, unless you have a sling specifically designed for this purpose. Some companies do use a tapered bead hook lifting device. . . to lift scrap tires. Be sure to follow the tire manufacturer's recommendations when lifting tires and rim assemblies."

The study guide and the crane operations manual also stated that personnel should not work under suspended loads.

Safety defects were not found on the truck, crane, or the hydraulic system by the investigation team after the accident, with the exception of the previously noted safety latch and failure to document the defects. Pre-operation inspection records for the truck were incomplete and safety defects regarding the crane boom tip and the safety latch were also not noted on the three pre-operational reports submitted by the victim. Only three inspection reports were completed by Cortez between January 1, and March 15, 1997, with the last report dated February 25, 1997.

Diversified Inspections of California, Inc., conducted an inspection of the crane and its hydraulic assembly on March 17, 1997. Their report indicated that the crane boom tip and the load hook assembly needed to be

replaced due to hook wear and the missing safety latch. It was noted on the last page of the report that the "boom passed the load test and the load hook is worn but did not fail."

Saturday, March 15, was sunny and clear with the temperature estimated at 70½ F with little or no wind.

Two employees of Heavy Equipment Repair, another contractor on site, were performing miscellaneous repairs on mine equipment approximately 200 feet from the accident site.

DESCRIPTION OF ACCIDENT

Santiago Cortez, serviceman, and his son, Jose Cortez, age 16, arrived at the May Tire Company shop in La Mirada, California, at approximately 6:30 a.m. They drove the Ford service truck to the Eagle Valley Quarry, arriving at approximately 7:30 a.m.

Cortez parked the truck parallel to the Michigan Model L320 front-end loader and began dismantling the old tires and mounting other tires on the loader. He was rotating the tires on three loaders. Work progressed without incident until about 3:30 p.m. when he had rotated the tires on two of the three loaders. He moved the service truck to a position parallel with the

Caterpillar front-end loader so he could change its tires. Two replacement tires were on the truck's flat bed.

At about 3:30 p.m., Cortez stood by the crane controls located between the truck and the loader and began lifting a tire off the bed of the truck with the crane. The tire slipped or fell off the bead hook and struck Cortez. His son was sitting in the truck cab and heard a loud thump, jumped out of the truck cab, and saw his father's head and neck under the tire. He yelled for help.

Steven Downs and John Gauthier, Heavy Equipment Repair mechanics, were approximately 200 feet away when they heard Jose call for help. They ran to the accident scene, quickly lowered the crane boom, hooked the tire to the bead hook which was still attached to the crane hook, and lifted the tire off Cortez. They moved him from under the tire, then quickly drove the short distance to the plant scale house and dialed 911 on the pay telephone. Units of the Corona Police and Fire Departments arrived at the mine a few minutes later.

Cortez was pronounced dead at the scene by Bradley Birdsall, Riverside County Deputy Coroner. An autopsy indicated that the cause of death was craniocerebral injuries due to blunt force trauma.

CONCLUSION

The accident occurred because the shop-fabricated bead hook did not secure the tire from falling while it was being lifted and moved. Cortez was standing so that when the tire fell, it struck and fatally injured him.

VIOLATIONS

Order Number 4524335

Issued to Blue Diamond Materials/Livingston Graham on March 15, 1997, under provisions of section 103(k) of the Mine Act:

The mine has experienced a fatal tire maintenance accident at the shop area. This order is issued to assure the safety of any person in the mine until an examination or investigation is made to determine that the shop area is safe. Only those persons selected from company officials, state officials, the miner's representative, and other persons who are deemed by MSHA to have information relevant to the investigation may enter or remain in the affected area.

The order was terminated April 15, 1997, after the contractor corrected the tire-changing methods to eliminate employees from working under suspended loads, or working in areas where they could be struck by suspended loads. The mine operator reemphasized to his employees, safe work procedures while working around suspended loads.

Citation Number 4701022

Issued to May Tire Co., on April 15, 1997, under provisions of section 104(a) of the Mine Act, for a violation of 30 CFR 56.16009:

A May Tire Co. serviceman was fatally injured at about 3:30 p.m. on March 15, 1997, when the tire he was mounting on a Caterpillar front-end loader fell on him. The victim was operating a truck equipped with a tire-handling hydraulic hoist and shop made bead hook to mount the 35/65x33 tire on the loader. The tire weighed an estimated 2,660 pounds, including the rim and other parts.

During this activity, and for unknown reasons, the suspended tire fell off the bead hook and struck the employee who was not clear of the suspended load.

The citation was terminated on April 15, 1997, after the contractor changed procedures to preclude employees from working in or around suspended loads.

Order Number 4701023

Issued to May Tire Co., on April 15, 1997, under provisions of section 104(a) of the Mine Act, for a violation of 30 CFR 56.16007(b):

A May Tire Co. serviceman was fatally injured at about 3:30 p.m. on March 15, 1997, when the tire he was mounting on a Caterpillar front-end loader fell on him. During this activity, and for unknown reasons, the suspended tire fell off the "J" style bead hook (hitch) and struck the employee. The shop made hitch was not suitable for mounting or dismounting tires because a tire could not be secured to prevent it from slipping or falling off the bead hook (hitch).

The order was terminated on April 15, 1997, after the contractor changed procedures to preclude employees from working in or around suspended loads.

Citation Number 4701024

Issued to May Tire Co. On April 15, 1997, under provisions of section 104(a) of the Mine Act, for a violation of 30 CFR 56.15002:

A May Tire Co. serviceman was fatally injured at about 3:30 p.m. on March 15, 1997, when the tire he was mounting on a Caterpillar front-end loader fell on him. The tire weighed an estimated 2,660 pounds. As the employee was using a truck with a tire-handling hoist to mount the 35/65x33 tire, for unknown reasons the tire fell off the bead hook and struck the employee who was not clear of the suspended load. The employee was not wearing a hard hat to prevent head injuries. Cause of death was attributed to blunt force trauma to the head. The company has trained employees in the use of and instructed them to wear hard hats where a hazard to the head exists. This citation was issued on April 15, 1997, as a result of MSHA's accident investigation.

The citation was terminated on April 15, 1997, after the company reemphasized the use of hard hats when working in or around areas of the mine where hazards to the head exist.

/s/ William Wilson
Mine Safety and Health Inspector

Approved by: James M. Salois, District Manager

Related Fatal Alert Bulletin:

 [\[FAB97M17\]](#)