

**UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION  
Metal and Nonmetal Mine Safety and Health**

**Report of Investigation**

**Surface Nonmetal Mine  
(Sand and Gravel)**

**Fatal Electrical Accident**

**July 22, 2003**

**Getchell Pit  
Concrete Nor'west  
Lake Stevens, Snohomish County, Washington  
Mine I.D. No. 45-03110**

**Investigators**

**Thomas J. Hunter  
Mine Safety and Health Inspector**

**Gary W. Hebel  
Mine Safety and Health Inspector**

**Robert Montoya  
Mine Safety and Health Specialist**

**Eric Johnson  
Mine Safety and Health Specialist**

**Originating Office  
Mine Safety and Health Administration  
Western District  
2060 Peabody Road, Suite 610  
Vacaville, California 95687  
Lee D. Ratliff, District Manager**



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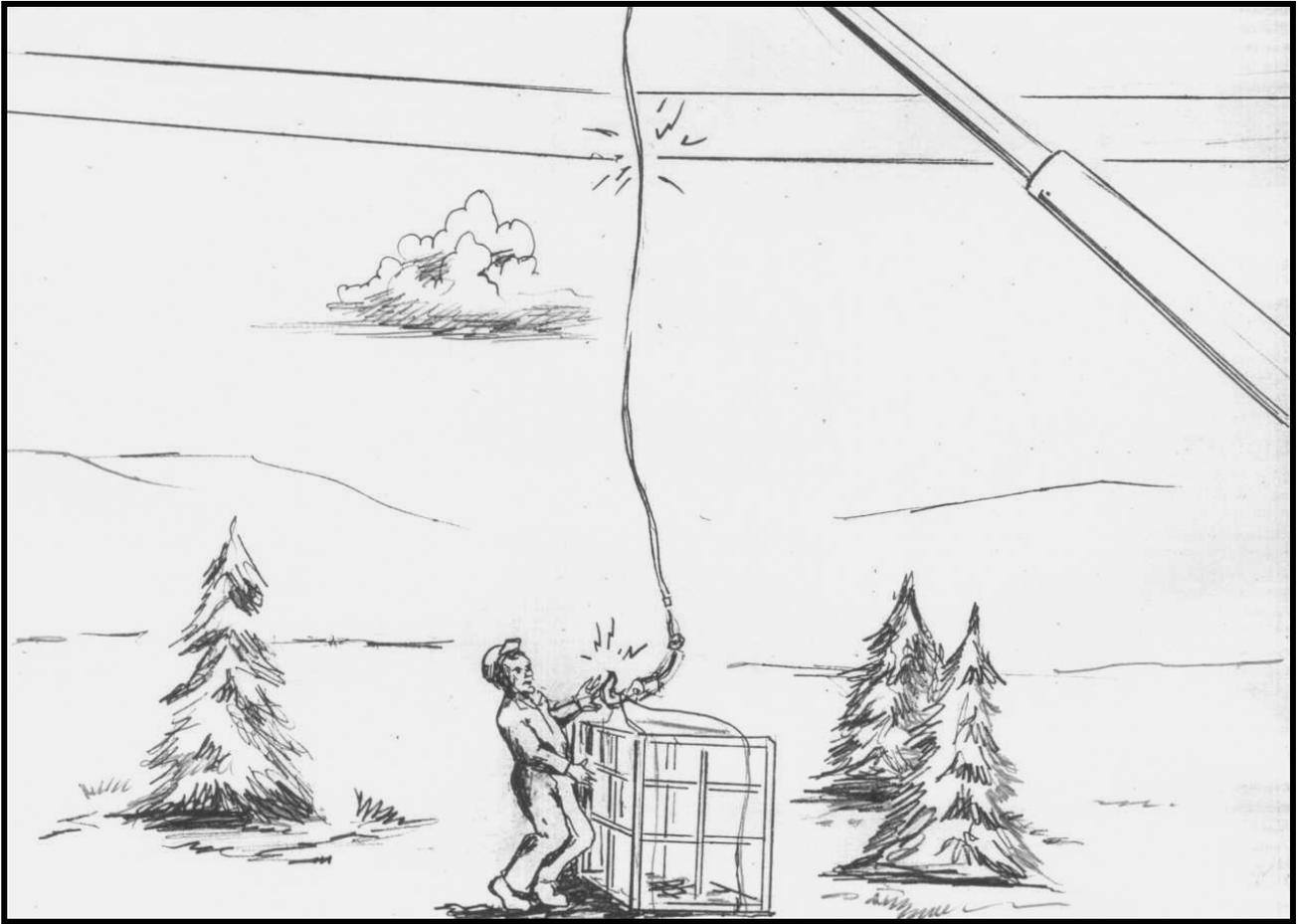
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## **OVERVIEW**

On July 22, 2003, William R. Ross, truck driver/maintenance worker, age 51, was fatally injured while he attempted to unhook a sling attached to a section of conveyor catwalk. The catwalk that was being dismantled was attached to the boom of a crane that contacted a high voltage energized overhead power line. Ross was unaware that the hoisted structure had become energized. When he contacted the structure, he received a fatal electrical shock.

The accident occurred because hazards associated with this task were not identified and measures were not implemented to ensure that persons were properly protected. Precautionary measures had not been taken to ensure that the crane would not be operated near the energized over head power line.

## **GENERAL INFORMATION**

Getchell Pit, a sand and gravel operation, owned and operated by Concrete Nor'west, was located at 15415 84<sup>th</sup> St. N.E., Lake Stevens, Snohomish County, Washington. The principal operating official was Jerry Simmons, manager. The mine normally operated one 8-hour shift, 5 days a week. Total employment was eight persons.

Sand and gravel was mined using a dredge and floating conveyor systems. The mined material was crushed and conveyed to the main plant where it was stockpiled and used at the concrete plant.

The last regular inspection at this operation was completed on May 15, 2003.

## **DESCRIPTION OF ACCIDENT**

On the day of the accident, William R. Ross (victim) reported to work at about 7:00 a.m., his normal starting time. He began his normal scheduled work duties until he met Craig Miller, mechanic, who was working at the field tunnel conveyor. Ross assisted Miller at the field tunnel conveyor. At approximately 11:00 a.m., both men drove to the staging area at the pond where the dismantling of the conveyor systems was taking place. They were aware the truck mounted boom crane was at this location.

On this same day, a crew from Concrete Nor'west's, the Butler Pit, was at the Getchell Pit, disassembling a floating conveyor system at the pond. The conveyor had been used as part of the dredging operations that had been recently abandoned. Members of the Butler crew were Dale Broersma, who operated the boom crane, along with Terry Lovell, maintenance worker, and Brian Hanson, manager, who were dismantling sections of the floating conveyor and rigging them to the boom crane hoist line. Tacoma Screw Company's Bill Scott, sales representative and Terry Lally, supervisor, were also present.

When Ross and Miller arrived at the pond, Miller asked Hanson when the boom crane would be available for them to use at the plant. Hanson stated he needed the crane until the conveyor system was completely disassembled. Hanson rigged a section of the catwalk and signaled Broersma to make the lift. Broersma swung the boom to the right, past where he had previously laid the handrail on the ground. He then noticed sparks and smoke coming from the outriggers on the right side of the boom truck and let go of the controls as he tried to determine what was happening.

Apparently, Ross decided to assist the crane-operator and started to unhook the sling from the section of catwalk. Miller, Scott, and Lally, who were standing between the outriggers on the right side of the boom truck, also noticed the sparks and smoke. They all moved very quickly away from the outriggers and towards the front of the truck. Hanson and Lovell noticed a puff of dust coming from under the truck and saw sparks coming off the truck's rear outrigger. Lovell also noticed sparking coming from the

overhead power line. Scott saw the cables of the crane pressing into the power line and called to Broersma that the boom of the crane was in the power line. Broersma then swung the boom to the left, away from the power line. Lally saw Ross slumped over the catwalk and called for help. Broersma attended to Ross and administered CPR while Scott called 911. Emergency rescue personnel responded and transported Ross to a local hospital where he was pronounced dead. Death was attributed to electrocution.

## **INVESTIGATION OF THE ACCIDENT**

MSHA was notified at 1:30 p.m., the same day, by a telephone call from Ken Coats, health and safety representative for Concrete Nor'west, to Lee Ratliff, district manager. An investigation was started the same day. An order was issued pursuant to Section 103(k) of the Mine Act to ensure the safety of the miners. MSHA's accident investigation team traveled to the mine, conducted a physical inspection of the accident site, interviewed a number of persons, and reviewed training records, physical conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, miners, and representatives of the Public Utility District of Snohomish County.

## **DISCUSSION**

### Location of the Accident

The accident occurred near the edge of the pond at the southwest corner of the mine property. The ground in this area had been leveled off. The distance from the edge of the pond to the overhead power lines was approximately 75 feet. The pond area was adequately bermed along the edge of the pond. The weather conditions were sunny and clear.

### Truck Chassis

The boom crane was mounted on a Peterbuilt truck chassis. Examination of the truck found the braking, lighting and hydraulic systems and outriggers operated properly.

### Boom Crane

The boom crane, Model number 30100, was manufactured by Manitex. It was assembled with the truck chassis by Western Peterbuilt of Tacoma, Washington. The crane was equipped with a 5/8-inch diameter wire rope that had a right-hand lay, an independent wire rope core, and a breaking strength of 22.7 tons. At the time of the accident, the boom was extended 68 feet at an angle of 26 degrees.

The crane had been inspected regularly. During the investigation, the crane operated smoothly in the travel and hoist modes with no apparent problems. The outriggers traveled smoothly and all of the controls worked properly.

All four outriggers showed glassing of the sand from the arcing that occurred when the crane cable made contact with the 7,200 volt power line. A chain that was hanging off the truck also showed glassing where it made contact with the ground.

The crane cable had a 2 inch burn mark, located 33 feet 6 inches from the center of the lifting block. It also had metal spatter for another 42 inches along the cable from the point of contact.

### 7200 Volt Power Lines

The overhead power lines were located approximately 75 feet from the edge of the pond. The power lines consisted of three 7,200 volt lines, and one static line. The power lines were owned by the Public Utility District (PUD) of Snohomish County, who was the main supplier of power to the Getchell Site. The lines averaged 42 feet in height through the area of the accident scene. The power lines were protected by one 100 amp slow burn fuse. PUD and MSHA investigators examined the fuse to determine the damage and found the 100 amp slow burn fuse had burnt completely through. They inspected the area of the power lines where contact was made. The power lines were not damaged enough to require replacement.

### Catwalk and Rigging

The catwalk structure measured 2 feet by 12 feet and weighed 198 lbs. Rigging consisted of a 4 part wire rope sling. Each rope was 10 feet long with a clevis grab hook on the end. There was evidence of glassing on the ground and burn marks on the structure where it made contact with the ground.

### Training and Experience

Ross had a total of 24 years and 16 weeks mining experience all at this mine. He had received training according to 30 CFR, Part 46. Broersma was an experienced crane operator and was task trained on operating the crane. Broersma had not received site specific hazard training for this mine prior to performing the assigned task of operating the boom crane to dismantle the conveyor.

## **ROOT CAUSE ANALYSIS**

A root cause analysis was conducted and the following causal factors were identified:

Causal Factor: The boom crane was positioned in a manner that allowed it to swing the load line within 10 feet of the energized overhead power lines. Prior to performing work near these power lines, steps had not been taken to de-energize the power or to ensure that the crane would not contact the power lines.

Corrective Action: Written procedures and policies should be formulated regarding work performed near energized overhead power lines. These procedures should include de-

energizing power lines when necessary or providing a means to ensure equipment or personnel are not located within ten feet of the energized overhead power conductors.

Causal Factor: The truck chassis was positioned parallel to the pond. The boom truck operator was positioned on the right side of the truck causing a restricted view of the area where the loads were being set down.

Corrective Action: Procedures should be established to ensure cranes are positioned to enable the crane operator to observe the load being lifted and include the area where the load will be placed. The plan or policy should address all areas that may prevent the operator from observing the load from the time of pick up to the time of set down.

Causal Factor: A risk assessment to determine possible hazards and establish safe work procedures was not conducted prior to conducting this task.

Corrective Action: Procedures should be established that require risk assessments to be conducted to identify and eliminate hazards prior to dismantling equipment and performing maintenance or repairs. These procedures should be communicated with all personnel, including contractors who may be exposed to the hazards associated with these tasks.

## **CONCLUSION**

The accident occurred because the hazards associated with performing work in the vicinity of a high voltage energized overhead power lines were not identified. No risk assessment that would have identified possible hazards was conducted prior to performing the task. No procedures were taken to deenergize the power lines or to ensure the safety of all persons present at the work site.

## **ENFORCEMENT ACTIONS**

Order No. 6344103 was issued on July 22, 2003, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on July 22, 2003, when a truck driver/maintenance worker was removing the slings from a floating conveyor belt which had been hoisted by a crane, when the crane made contact with a 7,200 volt power line. This order is issued to ensure the safety of all persons at this operation. It prohibits all activity at the floating conveyor area until MSHA has determined that it is safe to resume normal mining operations in the area. The mine operator shall obtain prior approval from an authorized representative to recover and/or restore operations to the affected area.

This order was terminated on July 25, 2003. The conditions that contributed to the accident have been corrected and normal mining operations can resume.

Citation No. 6338768 was issued on July 23, 2003, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 56.12071:

A fatal accident occurred at this mine on July 22, 2003, when a truck driver/maintenance worker received a fatal electrical shock. A truck mounted crane was being used to lift sections of a floating conveyor structure that was being dismantled. As the crane boom was swung to position the hoisted structure to a staging area on land, electric current arced between an energized 7,200 volt overhead power line and the load line of the crane. The worker, who was unaware that the hoisted structure had become energized, attempted to unhook the wire rope sling attachment and received a fatal electrical shock. Precautionary measures had not been taken to ensure that the crane would not be operated near the energized high-voltage power line.

This citation was terminated on July 25, 2003. The mine operator has developed and implemented procedures on working around power lines with cranes or other mobile equipment.

Citation No. 6338769 was issued on July 23, 2003, under the provision of Section 104(a) of the Mine Act for violation of 30 CFR 46.11:

A fatal accident occurred at this mine on July 22, 2003, when a truck driver/maintenance worker received a fatal electrical shock. A truck mounted crane was being used to lift sections of a floating conveyor structure that was being dismantled. As the crane boom was swung to position the hoisted structure to a staging area on land, electric current arced between an energized 7,200 volt overhead power line and the load line of the crane. The worker, who was unaware that the hoisted structure had become energized, attempted to unhook the wire rope sling attachment and received a fatal electrical shock. The employee assigned to operate the crane did not normally work at this mine. He was assigned to this mine to assist with dismantling and loading this conveyor structure and had not received site specific hazard awareness training regarding the location of the overhead high-voltage power line.

This citation was terminated on July 25, 2003. Miners who were visiting from the company's other mine site have received site-specific hazard awareness training for this mine location, including the location of overhead high-voltage power lines.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
Lee Ratliff  
District Manager

## **APPENDICES**

- A. Persons Participating in the Investigation
- B. Persons Interviewed

## APPENDIX A

### Persons Participating in the Investigation

#### Concrete Nor'west

Brad Barton	vice president/general manager
Kenneth P. Coats	health and safety representative
Jerry P. Simmons	site manager (Getchell Pit)
Brian D. Hanson	site manager (Butler Pit)
Arlo Dale Broersma	operator/maintenance (Butler Pit)
Craig L. Miller	mechanic (Getchell Pit)
Terry H. Lovell	maintenance worker (Butler Pit)

#### Tacoma Screw Company

Bill Scott	salesman
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#### Snohomish County Public Utility District No. 1

Greg Milne	safety manager
Teresa Jewell	senior safety specialist
Janet E. Barnes	risk management & security

#### Mine Safety and Health Administration

Thomas J. Hunter	mine safety and health inspector
Gary W. Hebel	mine safety and health inspector
Robert Montoya	mine safety and health specialist
Eric Johnson	mine safety and health specialist

## APPENDIX B

### Persons Interviewed:

#### Concrete Nor'west

Jerry P. Simmons	plant manager (Getchell Pit)
Brian D. Hanson	plant manager (Butler Pit)
Arlo Dale Broersma	boom truck operator/maintenance (Butler Pit)
Craig L. Miller	mechanic (Getchell Pit)
Terry H. Lovell	maintenance worker (Butler Pit)

#### Tacoma Screw Company

Bill Scott	salesman
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