

**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 Powered Haulage Accident
July 24, 2007**

**Delta Pit & Plant
Delta Sand & Gravel Company
Eugene, Lane County, Oregon
Mine ID No. 35-00481**

Investigators

**Ronald J. Jacobsen
Supervisory Mine Inspector**

**Ronald L. Eastwood
Mine Safety and Health Inspector**

**F. Terry Marshall
Mechanical Engineer**

**M. Keith Palmer
Mine Safety and Health Specialist**

**Originating Office
Mine Safety and Health Administration
Western District
2060 Peabody Road, Suite 610
Vacaville, California 95687
Arthur L. Ellis, District Manager**

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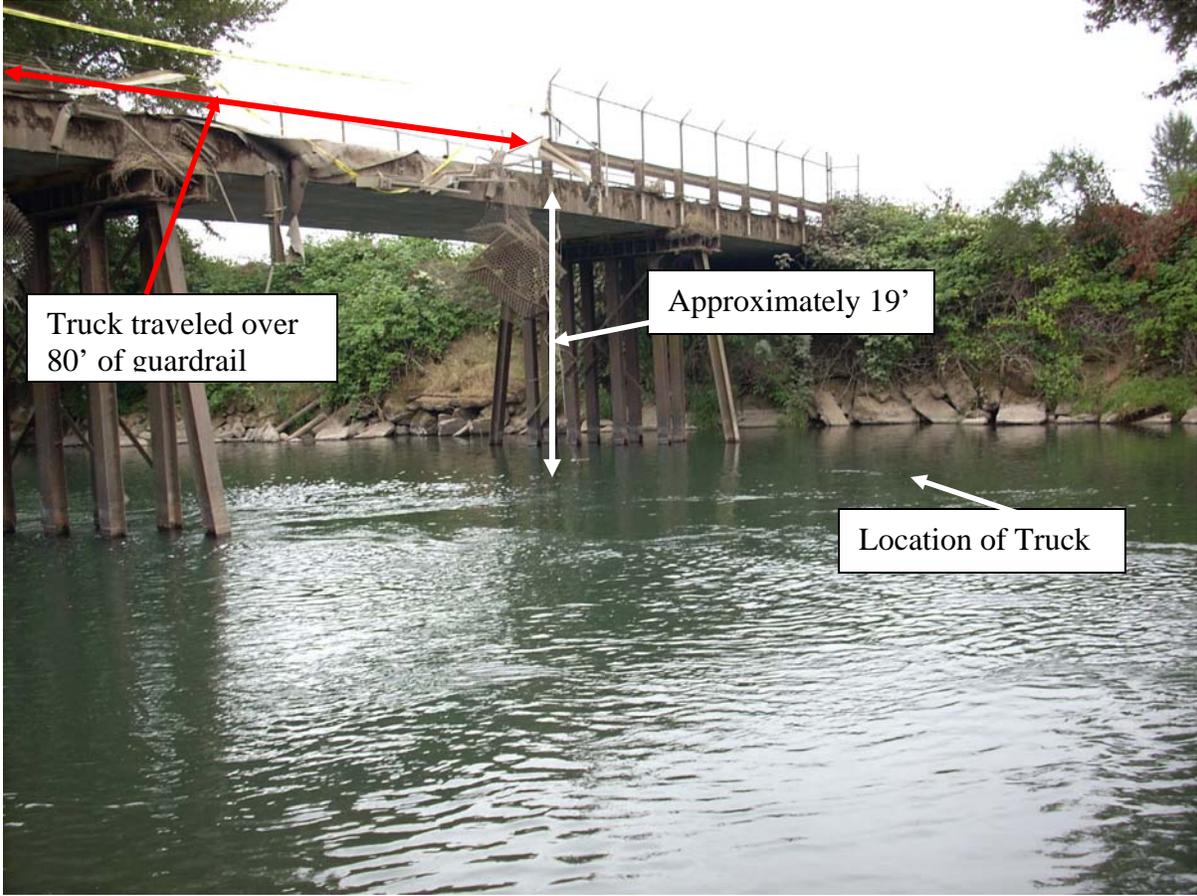
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OVERVIEW

Mark T. Slinker, plant superintendent, age 57, was fatally injured on July 24, 2007, when the haul truck he was operating crossed a bridge, struck a guard rail, and landed in the river below. The victim was wearing a seat belt at the time of the accident.

The accident occurred because the truck driver did not maintain control of the truck. The investigation determined that the right front tire struck the guard rail. The impact damaged the tire causing it to lose air and adversely affect the victim's ability to steer the truck.

GENERAL INFORMATION

Delta Pit & Plant, a surface sand and gravel operation, owned and operated by Delta Sand & Gravel Company, was located in Eugene, Lane County, Oregon. The principal operating official was Alan Babb, president. The mine operated one 12-hour shift per day, five days per week. Total employment was 28 persons.

Sand and gravel was mined from a single bench open pit by front-end loaders and loaded into haul trucks. The material was hauled 1 ¼ miles to a crusher where it was crushed, sized, and stockpiled. The finished products were sold for construction aggregate.

The last regular inspection at this operation was completed on March 29, 2007.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Mark T. Slinker (victim) reported for work at 5:30 a.m., his normal starting time. Slinker checked the crew and then operated a haul truck to transport material from the pit because an employee was off that day.

Slinker's truck was loaded and traveling toward the plant at approximately 12:30 p.m. Joshua Taylor, truck driver, was operating the next truck loaded and traveled to the plant. He approached a bridge that was used to access the pit and noticed that the guard railing was damaged. Taylor got out of his truck and saw Slinker's truck in the river. James Boyles, another truck driver who arrived at the scene, radioed for help.

Taylor jumped into the water from the middle of the bridge in an attempt to rescue Slinker. Boyles also jumped in the river where he and Taylor attempted to remove Slinker's seatbelt. John Heideman, loader operator, heard the call for help and went to the scene to assist. John Miller, county sheriff, arrived and donned a dry suit and life jacket. He entered the water and assisted with extracting Slinker from the cab. Attempts were made to revive the victim but he was pronounced dead by the Lane County Sherriff. Death was attributed to drowning.

INVESTIGATION OF THE ACCIDENT

On the day of the accident, the Mine Safety and Health Administration (MSHA) was notified at 1:34 p.m., by a telephone call from Eric Buchanan, plant manager, to MSHA's National Call Center. John Pereza, acting assistant district manager, was notified and an investigation was started the same day.

An order was issued under the provisions of Section 103(k) of the Mine Act to ensure the safety of the miners. MSHA's accident investigation team traveled to the mine, made a physical inspection at the accident scene, interviewed employees, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, mine employees, and the local sheriff's office.

DISCUSSION

Location of the Accident

The accident occurred on the bridge that crossed the Chapman Arm of the Willamette River. This bridge provided access to the pit and was constructed in 1979. The mining company owned and maintained the bridge. The bridge was approximately 19 feet above the water. The bridge deck was approximately 150 feet long, 15 feet 7 inches wide and was located about 1,500 feet from the pit and about 1 mile from the plant.

Public highway type guard rails were installed on each side of the bridge and six foot chain link fencing was attached to the outside of the guard rail posts. The width between the vertical guard support beams was approximately 15 ½ feet, the height of the rail structures was approximately 12 inches, and the top of the guard rails were approximately 28 inches above the deck of the bridge. All four ends of the guard rail ended with the bridge structure.

Equipment

The haul truck involved in the accident was a 1994 Caterpillar model 769C that had a rigid frame equipped with a dump body and a tailgate. The engine was a Caterpillar model 3408 diesel coupled to a Caterpillar automatic transmission with seven forward speeds and one reverse speed.

The machine had a rollover protective structure (ROPS) which did not visually appear to sustain any permanent deflection and did not compromise the operator's work station. The ROPS certification tag indicated that the structure was certified for use on the model 769C and that the ROPS met SAE J231.

The truck weighed approximately 67,000 pounds and had a maximum gross vehicle weight of approximately 135,000 pounds. Reportedly the truck was loaded with four buckets of raw material (estimated weight 64,000 pounds) from two Caterpillar 980 front end loaders.

The supplemental and main steering systems were inspected, tested, and determined to be functional.

The truck was equipped with a dual circuit air over hydraulic service brake system (one circuit for the steering axle service brakes and one circuit for the drive axle service brakes). Caliper disc brakes were used on the steering axle (front brakes) and enclosed wet disc type brakes on the drive axle (rear brakes).

Visual inspection and testing of the braking systems, the steering systems, and the governor control system did not identify any defects that would have affected the ability of the driver to control the truck prior to the impact with the guard rail.

The truck had 18.00 R 33 XDT E4T tubeless tires on all six wheels. The mid-axle height of the truck was approximately 35 ½ inches above the ground. The right front tire was flat while the other five tires were inflated. A visual inspection of the right front tire indicated that a section of the tire liner approximately 20 inches long and 5 inches wide had been damaged. A piece of the tire was found in the area of the initial impact with the guard rail abutment which was consistent with the damage to the tire liner. This indicated that the right front tire experienced an abrupt loss of air during the initial impact and would have adversely affected the ability of the driver to steer the truck.

Seat Belt

After the accident, the victim was in the cab of the truck with his seatbelt buckled. Investigators found the seat belt still buckled with the webbing cut approximately 24 inches from the loop of the male end attachment. The seat belt was cut to extricate the victim.

Weather

On the day of the accident, the weather was sunny with clear skies and a temperature of approximately 90 degrees Fahrenheit. The weather was not a factor in the accident.

Training and Experience

Mark Slinker had 27 years mining experience, all at this mine. He had operated heavy mobile equipment for 16 years and had received training in accordance with 30 CFR, Part 46.

ROOT CAUSE ANALYSIS

A root cause analysis was performed and the following root cause was identified:

Root Cause: Management policies and procedures were inadequate and failed to ensure that drivers maintained control of mobile equipment. The truck's tire struck the guard rail and lost air, causing the truck to leave the bridge.

Corrective Action: Management should implement policies and procedures to ensure truck drivers operate mobile equipment safely on the bridge without striking the guard rail. Guard rails should be constructed to aid a truck driver in maintaining control if the truck strikes a guard rail.

CONCLUSION

The accident occurred because the truck driver did not maintain control of the truck as he drove across the bridge. The right front tire struck the guard rail causing the tire to lose air and adversely affected the truck driver's ability to steer the truck. The examination of the truck did not identify any defects. The victim was wearing a seatbelt.

ENFORCMENT ACTIONS

Order No. 7968314 was issued on July 24, 2007, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on July 24, 2007, when an employee drove off a bridge into the water. This order is issued to ensure the safety of persons at this operation and prohibits any work in the affected area until MSHA determines that it is safe to resume normal operations as determined by an Authorized Representative of the Secretary of Labor. The mine operator shall obtain approval from an Authorized Representative for all actions to recover and/or restore operations in the affected area.

This order was terminated on August 29, 2007, after conditions that contributed to the accident no longer existed.

Citation No. 7975801 was issued on January 10, 2008, under the provisions of Section 104(a) of the Mine Act for a violation of 56.9101.

A fatal accident occurred at this mine on July 24, 2007, when a loaded haul truck crossed a bridge, struck a guard rail and landed in the river below the bridge. The truck operator did not maintain control of the truck while it was in motion.

This citation was terminated on January 10, 2008. The mine operator established a speed limit for mobile equipment on the bridge. Employees were instructed regarding the new policy.

Citation No. 6374608 was issued on November 20, 2007, under the provisions of Section 104(a) of the Mine Act for a violation of 56.9300a:

A miner operating a loaded haul truck was fatally injured on July 24, 2007 when his truck drove misaligned onto the roadway of a single-lane bridge and struck, and subsequently traveled through, a bridge guardrail. The truck plunged 19 feet into the river below the bridge. The road leading to the bridge lacked a berm or guardrail on the east side of the road for a 17-foot distance before the bridge, and lacked a berm or guardrail on the west side of the road for a 10-foot distance before the bridge, where drop-offs to the river existed of sufficient grade or depth to cause a vehicle to overturn or endanger persons in equipment. The bridge guardrail measured 28 inches in height, which was 7.5 inches lower than the 35.5-inch, mid-axle height of the haul truck; the 19-foot drop-off to the river was of sufficient depth to endanger persons in equipment. Where required, berms and/or guardrails must be of at least mid-axle height to: (1) ensure under-carriage contact with the restraint, (2) alert the equipment operator of the hazardous situation, (3) moderate the force of the equipment, (4) provide time for corrective action, and (5) assist the operator in regaining control of the equipment.

This citation was terminated on November 26, 2007. The operator provided additional guard railing which raised the guard rail to 42 inch on each side of the bridge; the operator also constructed concrete and earthen berms with a height greater than the mid axle height of the largest mobile equipment at the mine.

Approved By:

Arthur L. Ellis
District Manager

Date

APPENDIX A

Persons Participating in the Investigation

Delta Sand & Gravel Company

George Staples	risk manager
Steve Mote	safety supervisor
Mike McMurren	maintenance supervisor
Joshua Taylor	truck driver
James Boyles	truck driver

Lane County Sheriff's Office

John Miller	county sheriff
Kurt B. Jahnke	deputy sheriff

Mine Safety and Health Administration

Ronald J Jacobsen	supervisory mine safety and health inspector
Ronald L. Eastwood	mine safety and health inspector
F. Terry Marshall	mechanical engineer
M. Keith Palmer	mine safety and health specialist

APPENDIX B

Accident Investigation Data - Victim Information

U.S. Department of Labor
Mine Safety and Health Administration



Event Number: 1 1 3 5 1 0 1

Victim Information: 1											
1. Name of Injured/All Employee: <i>Mark T. Slinker</i>			2. Sex <i>M</i>	3. Victim's Age <i>57</i>		4. Last Four Digits of SSN:			5. Degree of Injury: <i>01 Fatal</i>		
6. Date (MM/DD/YY) and Time (24 Hr.) Of Death: <i>a. Date: 07/24/2007 b. Time: 13:00</i>						7. Date and Time Started: <i>a. Date: 07/24/2007 b. Time: 6:00</i>					
8. Regular Job Title: <i>149 Mine Superintendent</i>				9. Work Activity when Injured: <i>055 Truck Driver</i>				10. Was this work activity part of regular job? <i>Yes</i> <input checked="" type="checkbox"/> <i>No</i> <input type="checkbox"/>			
11. Experience: Years Weeks Days <i>a. This</i>			b. Regular			c. This			d. Total		
<i>Work Activity: 16 0 0</i>			<i>Job Title: 25 0 0</i>			<i>Mine: 27 49 0</i>			<i>Mining: 27 49 0</i>		
12. What Directly Inflicted Injury or Illness: <i>126 Overtumed truck in water.</i>						13. Nature of Injury or Illness: <i>390 Drowning</i>					
14. Training Deficiencies: Hazard: <input type="checkbox"/> <input type="checkbox"/> New/Newly-Employed Experienced Miner: <input type="checkbox"/> <input type="checkbox"/> Annual: <input type="checkbox"/> <input type="checkbox"/> Task: <input type="checkbox"/>											
15. Company of Employment: (If different from production operator) <i>Operator</i>						Independent Contractor ID: (if applicable)					
16. On-site Emergency Medical Treatment: <i>Not Applicable:</i> <input type="checkbox"/> <input type="checkbox"/> First-Aid: <input type="checkbox"/> <input type="checkbox"/> CPR: <input type="checkbox"/> <input type="checkbox"/> BMT: <input type="checkbox"/> <input type="checkbox"/> Medical Professional: <input type="checkbox"/> <input type="checkbox"/> None: <input type="checkbox"/>											
17. Part 50 Document Control Number: (form 7000-1)						18. Union Affiliation of Victim: <i>9999 None (No Union Affiliation)</i>					

Victim Information:											
1. Name of Injured/All Employee:			2. Sex	3. Victim's Age		4. Last Four Digits of SSN:			5. Degree of Injury:		
6. Date (MM/DD/YY) and Time (24 Hr.) Of Death:						7. Date and Time Started:					
8. Regular Job Title:				9. Work Activity when Injured:				10. Was this work activity part of regular job? <i>Yes</i> <input type="checkbox"/> <i>No</i> <input type="checkbox"/>			
11. Experience: Years Weeks Days <i>a. This</i>			b. Regular			c. This			d. Total		
<i>Work Activity:</i>			<i>Job Title:</i>			<i>Mine:</i>			<i>Mining:</i>		
12. What Directly Inflicted Injury or Illness?						13. Nature of Injury or Illness:					
14. Training Deficiencies: Hazard: <input type="checkbox"/> <input type="checkbox"/> New/Newly-Employed Experienced Miner: <input type="checkbox"/> <input type="checkbox"/> Annual: <input type="checkbox"/> <input type="checkbox"/> Task: <input type="checkbox"/>											
15. Company of Employment: (If different from production operator)						Independent Contractor ID: (if applicable)					
16. On-site Emergency Medical Treatment: <i>Not Applicable:</i> <input type="checkbox"/> <input type="checkbox"/> First-Aid: <input type="checkbox"/> <input type="checkbox"/> CPR: <input type="checkbox"/> <input type="checkbox"/> BMT: <input type="checkbox"/> <input type="checkbox"/> Medical Professional: <input type="checkbox"/> <input type="checkbox"/> None: <input type="checkbox"/>											
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Victim Information:											
1. Name of Injured/All Employee:			2. Sex	3. Victim's Age		4. Last Four Digits of SSN:			5. Degree of Injury:		
6. Date (MM/DD/YY) and Time (24 Hr.) Of Death:						7. Date and Time Started:					
8. Regular Job Title:				9. Work Activity when Injured:				10. Was this work activity part of regular job? <i>Yes</i> <input type="checkbox"/> <i>No</i> <input type="checkbox"/>			
11. Experience: Years Weeks Days <i>a. This</i>			b. Regular			c. This			d. Total		
<i>Work Activity:</i>			<i>Job Title:</i>			<i>Mine:</i>			<i>Mining:</i>		
12. What Directly Inflicted Injury or Illness						13. Nature of Injury or Illness:					
14. Training Deficiencies: Hazard: <input type="checkbox"/> <input type="checkbox"/> New/Newly-Employed Experienced Miner: <input type="checkbox"/> <input type="checkbox"/> Annual: <input type="checkbox"/> <input type="checkbox"/> Task: <input type="checkbox"/>											
15. Company of Employment: (If different from production operator)						Independent Contractor ID: (if applicable)					
16. On-site Emergency Medical Treatment: <i>Not Applicable:</i> <input type="checkbox"/> <input type="checkbox"/> First-Aid: <input type="checkbox"/> <input type="checkbox"/> CPR: <input type="checkbox"/> <input type="checkbox"/> EMT: <input type="checkbox"/> <input type="checkbox"/> Medical Professional: <input type="checkbox"/> <input type="checkbox"/> None: <input type="checkbox"/>											
17. Part 50 Document Control Number: (form 7000-1)						18. Union Affiliation of Victim:					