

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
March 17, 2015

Ulrich Gravel Inc.
Ulrich Pit
Ord, Valley County, Nebraska
Mine ID No. 25-00888

Investigators

Michael L. Treloar
Mine Safety and Health Inspector

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Mechanical Engineer

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TABLE OF CONTENTS

OVERVIEW	2
GENERAL INFORMATION	3
DESCRIPTION OF ACCIDENT	3
INVESTIGATION OF ACCIDENT	4
DISCUSSION	5
Location of the Accident	5
Workplace Examinations	5
Weather	5
Equipment Involved	5
TRAINING AND EXPERIENCE	7
ROOT CAUSE ANALYSIS	7
CONCLUSION	8
ENFORCEMENT ACTIONS	9
APPENDIX A	11
APPENDIX B	12
APPENDIX C	13



OVERVIEW

On March 17, 2015, Michael Jay Nickels, Haul Truck Driver, age 44, was injured operating an articulated haul truck. Nickels was operating on an elevated haul road that was on the embankment adjacent to the mine's dredge pond when he drove off into the pond. The rescue team extricated Nickels from the truck and administered CPR. Nickels succumbed to his injuries and died on March 19, 2015.

The accident occurred because mine management failed to install a berm along the elevated roadway where a drop-off hazard existed and failed to conduct workplace examinations to identify and correct hazardous conditions. Mine management also failed to ensure that the victim maintained control of the truck he was operating at all times and failed to ensure that the victim was wearing a seat belt.

GENERAL INFORMATION

Ulrich Pit is a dredge sand and gravel mine, owned and operated by Ulrich Gravel Inc., and is located in Ord, Valley County, Nebraska. The principal operating officials are Wes Ulrich, Co-Owner/Co-President/Operator and Scott Ulrich, Co-Owner/Co-President. The pit operates one 9-hour shift per day, five days per week. At the time of the accident the mine had nine (9) employees.

The pit operates two dredge barges with screens within the single pit's pond. A front-end loader loads the material into haul trucks to the customer. The final product is sold for use in construction.

The Mine Safety and Health Administration (MSHA) completed its last regular inspection of the mine on July 8, 2014.

DESCRIPTION OF ACCIDENT

On the day of the accident, Michael Jay Nickels (victim) arrived at the mine at approximately 8:00 a.m. Nickels began the shift by conducting routine maintenance on the articulated haul truck that he was assigned to operate. At 8:30 a.m., Nickels met with Galen Manchester, Excavator Operator, and together they completed the preoperational inspection on the articulated haul truck. Manchester was to load the haul truck with the pit's excavator and Nickels was to haul the material to a stockpile about 900 feet across the dredge's embankment haul road.

At 8:55 a.m., Manchester and Nickels began loading and hauling material. Manchester and Nickels took a lunch break at 12:00 p.m. Sometime during the late morning or early afternoon, Wes Ulrich instructed Nickels not to dump material too high on the stockpile.

At 3:45 p.m., Wes Ulrich was in a front-end loader working material at the east dredge tipple when he noticed a series of waves on the pond that were unusual. Wes Ulrich then noticed that the haul truck had overturned in the pond adjacent to the pond's embankment. Wes Ulrich immediately called Manchester and RD McKay, Barge Operator. Wes Ulrich then contacted 911 emergency response teams (Valley County Ambulance, Valley County Sheriff Department, and Fire Department). Martin Butts, Barge Operator, was traveling by the entrance of the pit and saw the activity. Butts went to his pond boat and proceeded to the accident scene.

At 3:52 p.m., Emergency Medical Services were dispatched.

McKay and Butts approached the accident scene from the pond while Manchester approached the accident scene with his excavator from the embankment. Manchester used the bucket and hydraulic boom to hook the cab

and turn it up-right out of the water. Wes Ulrich had the cab of the haul truck secured to the excavator.

At 4:05 p.m., Ken White, Deputy Sheriff, Gerome Dolan, EMT Technician for the Fire Department, and Tyler Herrold, Deputy Sheriff, joined McKay and Butts in the pond boats and stabilized the truck with the boats to retrieve Nickels. Nickels was found upside down in the cab of the haul truck. Dolan extricated Nickels by breaking the left door window and retrieving him through the window. Dolan proceeded to administer CPR to Nickels. Nickels was transferred to the ambulance crew where additional medical attention was administered.

At 4:17 p.m., Nickels was transported by ambulance to Valley County Health System in Ord, Nebraska, arriving at 4:26 p.m. At 7:07 p.m., Nickels was transferred via life flight to Good Samaritan Hospital in Kearney, Nebraska. On March 18, 2015, Nickels was transferred via life flight to Nebraska Medical Center in Omaha, Nebraska.

Nickels died on March 19, 2015 at 10:52 p.m. The cause of death was attributed to drowning.

INVESTIGATION OF ACCIDENT

Lynn Bundy, Office Administrator, notified MSHA of the accident at 4:03 p.m. on March 17, 2015, by telephone call, to the Department of Labor's National Contact Center (DOLNCC). The DOLNCC notified Shannon Burns, District Secretary, who notified Pete Del Duca, Staff Assistant, and an investigation started that same day.

An order was issued under the provisions of Section 103(j) of the Mine Act to ensure the safety of the miners. This order was later modified to an order under Section 103(k) of the Mine Act when the first Authorized Representative arrived at the mine.

MSHA's accident investigation team traveled to the mine site, made a physical inspection of the accident scene, interviewed miners and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and miners.

DISCUSSION

Location of the Accident

The accident took place on the east side of the Ulrich Pit's dredge pond in the Wetland Project Area. The haul road had been recently established along the elevated embankment. The elevated haul road was approximately 19.5 feet wide and 850 feet long from the load-out to the stockpile. The haul road was located 270 yards across the dredge pond from the tipple.

The elevated haul road consisted of packed dirt and ran adjacent to a pond. At the location of the accident, the pond had a 6 foot depth but the depth increased to approximately 45 feet near the center of the pond. Berms were not provided for a distance of approximately 384 feet along the elevated haul road.

Workplace Examinations

Workplace examination records were reviewed for the operation. The last workplace examination record provided by the operator was dated March 9, 2015. No workplace examinations were performed for the Wetland Project Area.

Weather

The weather conditions on the day of the accident were partly cloudy with a high of 54° F. Weather was not considered to be a factor in the accident.

Equipment Involved

1. **General Information:** The truck involved in the accident is a 2010 Caterpillar Model 730 Articulated Truck consisting of a tractor unit and a trailer unit. The truck is approximately 32 ½' feet long, 9 ½' feet wide, and 12 ½' feet high and is powered by a 6-cylinder turbocharged diesel engine. The transmission had six forward speeds and one reverse speed. The operator selected the gear using a shift lever in the operator's compartment. The transmission had an integral hydraulic retarder activated by a lever on the right side of the steering column. The truck had six-wheel drive, with one axle on the tractor unit and two axles on the trailer unit. The truck's rated load capacity was 31 tons and its approximate gross vehicle weight was 56 tons. The truck was being leased to the mine operator by NMC, Inc.
2. **Truck Conditions Found:** The truck sustained relatively minor physical damage due to the accident. The front windshield was broken and pushed from its seal and the left side cab window was pushed from its seal. The right side fender area sustained damage from an excavator bucket during the rescue of the driver and the right side trailer service brake lines sustained damage during recovery of the truck from the water.

The transmission gear shift lever was reported to be in the D position (i.e., "drive" position) after the machine was recovered from the water.

The current hours on the truck could not be determined since no battery power had been put to the machine during the field investigation. The machine was equipped with 23.5R25 radial tires. The tires were in good to fair condition. The rolling radius of the tires, with the truck unloaded, was approximately 30 inches and the tread width was approximately 22 inches.

3. **Pre-operational Inspections and Maintenance:** NMC, Inc. provided maintenance records for the subject truck but this only included documents showing a machine inspection on, or about, February 20, 2015; a machine inspection and general service between March 9 and March 12, 2015, and a repair to a broken light and associated bracket between March 9 and March 12, 2015. It was reported that NMC, Inc., had recently acquired the truck for its' rental fleet; therefore NMC, Inc. had limited maintenance records for the truck.

Information handwritten on fluid filter bodies within the engine compartment indicated that the filters were replaced during the month of March 2015.

No pre-operational inspection records indicated any problems with the truck.

4. **Braking Systems Design and Testing:** The truck was equipped with a dual circuit, hydraulic pressure-applied service brake system and a spring-applied, hydraulic pressure-released parking brake. The service brake system activated a dry caliper disc brake at each of the six wheel ends. The parking brake system activated a dry caliper disc brake attached to the drive line for the center axle. The parking brake acts on both of the trailer axles.

The service and parking brake systems were supplied with hydraulic pressure from an engine driven variable displacement piston pump. Hydraulic pressure is applied to the service brakes when the operator activates a foot pedal in the operator's compartment. Hydraulic pressure releases the parking brake when a control button in the operator's compartment is depressed. The parking brake is applied by pulling the button out.

Other than the previously noted damage to the right side trailer service brake lines sustained during recovery, all braking system components were visually intact with no visual fluid leaks.

No functional tests were conducted on either the service or parking brake systems. It is noted that when the machine was dragged away from the pond, the four trailer tires skidded on the dirt ground surface due to the parking brake being applied. This was an expected condition due to the design of the machine and did not represent an automatic application of the parking brake during the accident.

5. **Steering System Design and Testing:** Articulated-machine frame steering was provided by double-acting hydraulic steering cylinders that provided 45° left and right steering. Caterpillar specifies an SAE turning radius of 23'10". Under normal operation, the steering system provided hydraulic pressure by a variable displacement piston pump connected to the engine. In the case of loss of primary steering pressure, automatic electronically controlled secondary steering was provided by a battery driven hydraulic pump arrangement. A secondary steering test switch was located on the instrument panel in the operator's compartment.

No damage to the steering wheel was observed. The right side articulation cylinder sustained some contact damage to one of the hose port areas from the right side fender brace, causing a fitting to loosen and allowing some slight fluid leakage in this area. All other steering system components were visually intact with no visible fluid leaks.

No functional tests were performed on either the primary or secondary steering systems.

6. **Seat Belt:** The operator's seat belt assembly used a retractable lap type belt. It functioned when tested.

TRAINING AND EXPERIENCE

Michael Jay Nickels had four (4) days of mining experience. A representative of MSHA's Educational Field and Small Mine Services conducted an in-depth review of the mine operator's training records. The records were found to be up to date and in compliance with MSHA requirements.

ROOT CAUSE ANALYSIS

The investigators conducted a root cause analysis of this accident and the following root causes were identified and the corresponding corrective actions implemented to prevent a recurrence of the accident:

Root Cause: Management failed to install a berm along an elevated roadway where a drop-off hazard existed for heavy mobile equipment travel.

Corrective Action: Management constructed adequate berms where the roadway hazardous drop-off existed.

Root Cause: Management failed to complete a workplace exam to identify and correct hazardous conditions in the working area.

Corrective Action: Management will develop a thorough training procedure on complete workplace examinations under variable workplace conditions.

Root Cause: Management failed to ensure that the equipment operator maintained control of the haul truck at all times.

Corrective Action: Management shall develop a task training process that will monitor newly trained equipment operators when new to the operation.

Root Cause: Management failed to ensure that the equipment operator wore his seat belt when operating the haul truck.

Corrective Action: Management retrained employees on the requirement of wearing seat belts while operating equipment. Management will monitor truck drivers to ensure seat belts are worn.

CONCLUSION

The accident occurred when mine management failed to construct adequate berms along the elevated roadway when a drop-off hazard exists. Mine management also failed to complete a workplace exam to recognize safety hazards in the working area. In addition, mine management failed to ensure that the equipment operator maintained control at all times and that the equipment operator wore his seat belt.

ENFORCEMENT ACTIONS

Order No. 8828399- Issued March 18, 2015, under the provisions of Section 103(j) of the Mine Act. An Authorized Representative modified this order to section 103(k) of the Min Act upon arrival at the mine site:

The initial order, verbally issued at 16:38 on 03/17/2015, is modified to reflect that MSHA is now proceeding under the authority of Section 103 (k). The order is intended to protect the safety of all persons on-site, including those involved in rescue and recovery operations or investigation of the accident. The mine operator shall obtain prior approval from an Authorized Representative of the Secretary for all actions to recover and/or restore operations in the affected area. Additionally, the mine operator is reminded of its existing obligations to prevent the destruction of evidence that would aid in investigating the cause or causes of the accident. Section II, Item 12 is modified to 103(k).

Citation No. 8931602 – Issued under provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.9300(a).

A fatal accident developed at this operation from a March 17, 2015 incident when an equipment operator operating a loaded articulated haul truck went off a drop-off and overturned into the pit's pond causing extensive injuries. The victim died on March 19, 2015. The accident occurred because the mine operator failed to provide berms along the banks of the elevated haul road. The mine had been using the haul road for at least two days. Management engaged in aggravated conduct constituting more than ordinary negligence by failing to provide berms on the banks of the elevated haul road; therefore, this violation is an unwarrantable failure to comply with a mandatory standard.

Order No. 8931603 – Issued under provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.18002(a).

A fatal accident developed at this operation from a March 17, 2015 incident when an equipment operator operating a loaded articulated haul truck went off a drop-off and overturned into the pit's pond causing extensive injuries. The victim died on March 19, 2015. No workplace examination of the elevated haul road that the victim was traveling on was performed during the shift that the accident occurred. The mine had been using the haul road for at least two days, and conditions present at the time of the accident had existed for at least two days. Management engaged in aggravated conduct constituting more than ordinary negligence by failing to ensure persons were properly conducting workplace examinations; therefore, this violation is an unwarrantable failure to comply with a mandatory standard.

Citation No. 8931604– Issued under provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.9101.

A fatal accident developed at this operation from a March 17, 2015, incident when an equipment operator operating a loaded articulated haul truck went off a drop-off and overturned into the pit's pond causing extensive injuries. The victim died on March 19, 2015. The equipment operator did not maintain control of the haul truck. There were no signs of evasive or corrective actions taken by the haul truck operator to maintain control of the haul truck to prevent the truck from driving into the pit's pond.

Citation No. 8931605– Issued under provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.14131(a).

A fatal accident developed at this operation from a March 17, 2015 incident when an equipment operator operating a loaded articulated haul truck went off a drop-off and overturned into the pit's pond causing extensive injuries. The victim died on March 19, 2015. The equipment operator was not wearing a seat belt at the time of the accident.

Approved By: Richard R. Laufenberg Date: 12/07/2015

Richard Laufenberg,
District Manager

APPENDIX A

Persons Participating in the Investigation

Ulrich Gravel Inc.

Wes Ulrich	President
Galen Manchester	Equipment Operator
Joshua Schultz	Legal Representation

NMC, Inc.

Michael Walters	Sales and Service Manager
Timothy McGargill	Shop Coordinator
John Pavelka	Technical Representative
Thomas Locher	Legal Representation

Caterpillar, Inc.

Ronald Reinholdt	Technical Representative
Jason Madden	Legal Representation

Mine Safety and Health Administration

Michael L. Treloar	Mine Safety and Health Inspector
Leon F. Mueller	Mine Safety and Health Inspector
F. Terry Marshall	Mechanical Engineer
Walter S. Pitney	Mine Safety and Health Specialist (Training)

APPENDIX B

Victim Data Information

Accident Investigation Data - Victim Information

Event Number: 6694920

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



Victim Information: 1																							
1. Name of Injured/Ill Employee: <i>Michael J. Nickels</i>				2. Sex: <i>M</i>		3. Victim's Age: <i>44</i>		4. Degree of Injury: <i>01 Fatal</i>															
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 03/19/2015 b. Time: 22:01</i>								6. Date and Time Started: <i>a. Date: 03/17/2015 b. Time: 15:48</i>															
7. Regular Job Title: <i>176 Haul Truck Driver</i>						8. Work Activity when Injured: <i>055 Operating Haul Truck</i>				9. Was this work activity part of regular job? <div style="text-align: right;">Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></div>													
10. Experience		Years	Weeks	Days	b. Regular		Years	Weeks	Days	c. This		Years	Weeks	Days	d. Total		Years	Weeks	Days				
a. This					Job Title:					Mine:					Mining:								
Work Activity:		<i>0</i>	<i>0</i>	<i>4</i>			<i>0</i>	<i>0</i>	<i>4</i>			<i>0</i>	<i>0</i>	<i>4</i>			<i>0</i>	<i>0</i>	<i>4</i>				
11. What Directly Inflicted Injury or Illness? <i>014 Dredge pond.</i>										12. Nature of Injury or Illness: <i>390 Drowning</i>													
13. Training Deficiencies:																							
Hazard:				New/Newly-Employed Experienced Miner:				Annual:				Task:											
14. Company of Employment: (If different from production operator) <i>Operator</i>										Independent Contractor ID: (if applicable)													
15. On-site Emergency Medical Treatment:																							
Not Applicable:				First-Aid:				CPR: <input checked="" type="checkbox"/>				EMT: <input checked="" type="checkbox"/>				Medical Professional:				None:			
16. Part 50 Document Control Number: (form 7000-1)										17. Union Affiliation of Victim:													

APPENDIX C

Accident Scene Schematic and Photos

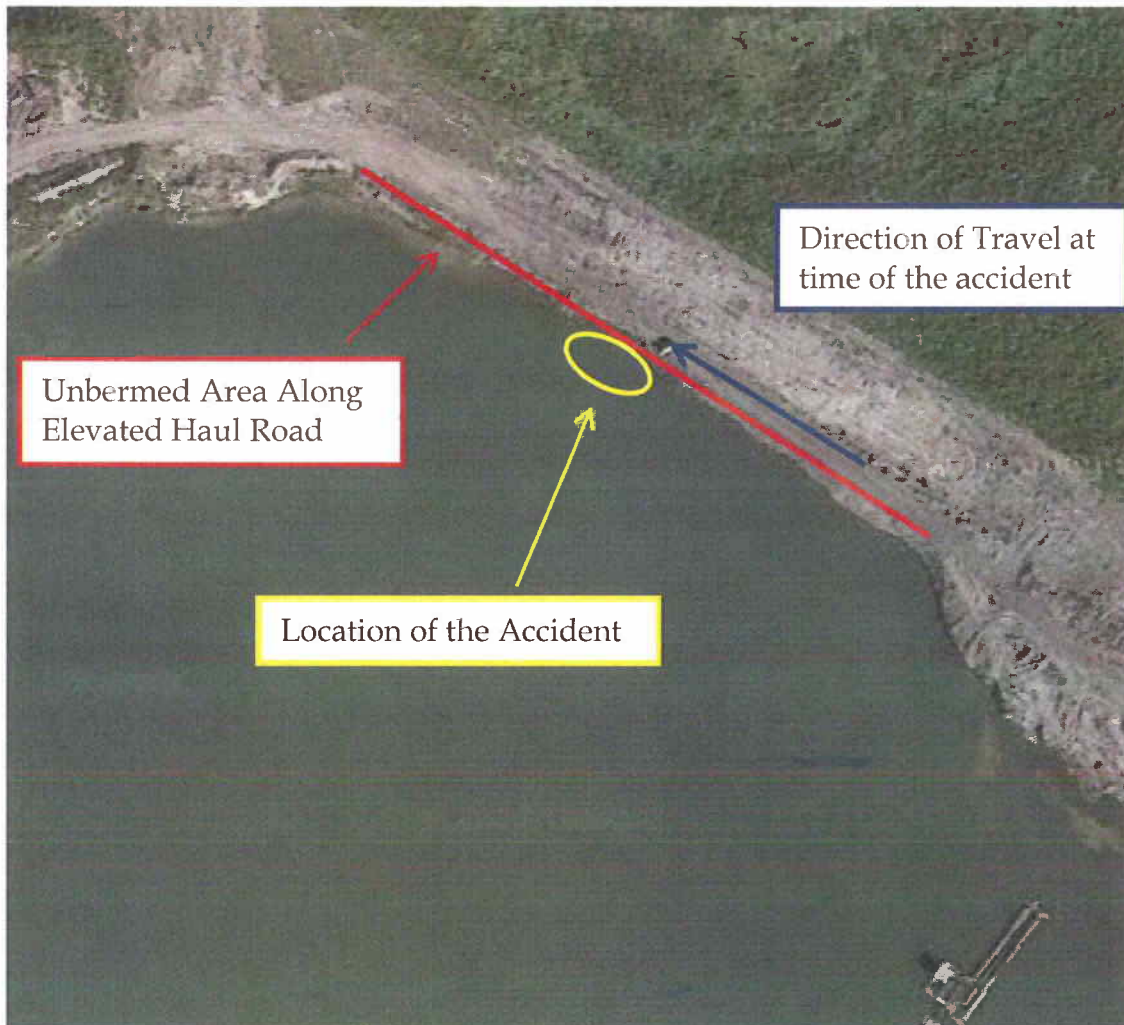


FIGURE 1 - Schematic of the Accident Location



FIGURE 2 - Looking East toward Accident Scene



FIGURE 3 - Looking South from Accident Scene Toward Tipple