

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

METAL AND NONMETAL MINE SAFETY AND HEALTH
REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Sand & Gravel)

Fatal Machinery Accident
February 25, 2008

Illinois Mining Corporation
Contractor I.D. SRE
at
Wash Plant
Park View Sand & Gravel, LLC
Rochester, Racine County, Wisconsin
Mine I.D. 47-03001

Investigators

George F. Schorr
Supervisory Special Investigator

Carol L. Tasillo
Civil Engineer, P.E.

Originating Office
Mine Safety and Health Administration
North Central District
515 West First Street, Room 333
Duluth, MN 55802-1302
Steven M. Richetta, District Manager

OVERVIEW

Charles S. Nemetz, general superintendent, age 62, was fatally injured on February 25, 2008, when the track-mounted excavator he was operating broke through ice covering a water-filled ditch. Nemetz was using the excavator to free a dragline frozen to the ice-covered pit floor.

The accident occurred because management policies and procedures failed to address the hazard created by an ice-covered, water-filled ditch. All hazards associated with the task were not identified and appropriate controls were not in place to ensure that persons could safely perform the task. Barricades or warning signs, visible from all approaches, were not erected to warn persons of a hazard that was not immediately obvious.



Photo of Accident Scene

(Used with permission of Racine County, WI Sheriff's Department)

GENERAL INFORMATION

Wash Plant, a surface sand and gravel operation, owned and operated by Park View Sand & Gravel, LLC, (PVSG) was located near Rochester, Racine County, Wisconsin. The principal operating official was Paul Loppnow, foreman. The mine had recently reopened from the winter shutdown. Total employment was 6 persons.

Material was mined from a single bench by front-end loader and transported by a truck to the wash plant. The material was washed, sized, and sold for use in the construction industry.

Illinois Mining Corporation (IMC), located in Lake in the Hills, Illinois, provided contract concrete recycling and administrative services to PVSG and periodically provided operational consultation services. The principal operating official was William M. Pavin, president and director of operations. Several shareholders of IMC were also shareholders of PVSG.

Charles S. Nemetz, general superintendent (victim), had been employed as a member of IMC's management team for approximately two years and functioned primarily as the manager of concrete recycling operations. During the first two months of his employment, he had assisted PVSG in reconfiguring its wash plant. He periodically visited the wash plant thereafter to provide operational advice.

Gerald A. Ignatowski, mechanic/operator, and Larry L. Epright, crusher operator, were employees of PVSG.

The last regular inspection of PVSG was completed on November 1, 2007.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Nemetz arrived at the mine before 5:45 a.m. He was joined in the shop at that time by Ignatowski, with whom Nemetz discussed the day's work activities. At 6:30 a.m., Epright arrived at the shop and met with Ignatowski and Nemetz. Nemetz told Ignatowski and Epright that he was at the mine to supervise moving a dragline from the pit to the settling pond area adjacent to the wash plant.

At approximately 7:00 a.m., Nemetz, Ignatowski, and Epright drove to the pit in separate vehicles. When they arrived, Ignatowski asked Nemetz to move the pickup truck he was driving. Ignatowski was concerned that the truck might be parked on or near an ice-covered, water-filled ditch. The water in the ditch was deep and Ignatowski suggested the truck be repositioned to a location where it was known that deep water was not beneath the ice. The location of the ditch could not be discerned exactly because the pit floor near the dragline had

previously flooded due to unseasonably high temperatures and rain. As temperatures dropped to normal, the water covering the pit floor froze. Approximately 4 inches of ice covered the pit floor and had frozen the dragline's bucket and tracks to the ground. Nemetz moved and parked his truck in a different location.

Because the dragline bucket was frozen to the ground, Nemetz, Ignatowski, and Epright were unable to align the dragline's boom in a position which would allow them to set the gears and engage the dragline's tracks. They decided to extract the bucket and the tracks from the ice. Nemetz instructed Ignatowski to tram the excavator to the area to help free the dragline.

About 10:15 a.m., Ignatowski used the excavator bucket in an attempt to remove ice from around the dragline bucket. Shortly thereafter, Nemetz directed Ignatowski to exit the cab so he could operate the excavator.

Ignatowski and Epright walked to the counterweight end of the dragline to retrieve equipment. They came around the end of the dragline and saw Nemetz tramping the excavator toward the ice-covered, water-filled ditch. Ignatowski and Epright tried to warn Nemetz but were unable to get his attention.

The excavator fell through the ice and tipped on its side, submerging the cab and a major portion of the excavator (Appendix C). Epright used his cell phone to call for emergency assistance. Ignatowski and Epright then attempted to rescue Nemetz from the water but were unsuccessful. The Racine County Sheriff's Department arrived at 10:24 a.m. and located Nemetz at approximately 4 p.m. Nemetz was transported to a local hospital where he was pronounced dead by the Racine County medical examiner. The cause of death was attributed to drowning.

INVESTIGATION OF THE ACCIDENT

The Mine Safety and Health Administration (MSHA) was notified of the accident on February 25, 2008, at 10:50 a.m. by a telephone call from Sue M. Gualano, corporate secretary, Illinois Mining Corporation, to David A. Thome, mine safety and health inspector. An investigation began 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, conducted a physical inspection of the accident site, interviewed employees, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management and employees.

DISCUSSION

Location

The accident occurred in the pit north of the existing wash plant. The excavator was positioned on ice covering the pit floor near a drainage ditch.

The drainage ditch was located along the west side of the north pit, oriented generally in the north-south direction (Appendix B). Mine personnel reported that the ditch was dug in the spring of 2007 to alleviate wet conditions caused by excessive precipitation and an elevated ground water level in the pit. The drainage ditch was approximately 10 feet wide at the top, 3 feet wide at the bottom, and about 10 feet deep, with two exceptions created by the dragline. A pump had been installed at the south end of the ditch but was removed in September 2007. The pump typically maintained the water level about 2 to 3 feet below the top of the ditch. When the pump was removed, the water level in the pit rose above the ditch banks and spilled water approximately 4 inches deep across the surrounding pit floor. During the winter the water froze in the pit. The uniform layer of ice covering the area prevented persons from distinguishing the exact location of the ditch. No berms, barricades, or warning signs were posted to identify the location of the ditch.

Investigators determined that the water level in the drainage ditch was related to the surrounding groundwater table and did not change significantly or suddenly. Water remained in the ditch and pit because it was not being pumped out. The water level in the ditch was found to be in contact with the ice that covered the ditch, and no air voids were noted under the ice.

The dragline was located approximately 25 feet from the east side of the drainage ditch (Appendix B). The dragline was assembled and test operated at this location in the summer of 2007. Two areas were excavated, a small area north of the machine and a larger area to its west. The larger area was the location where the excavator tipped over. This excavated area was estimated to be approximately 15 feet wide, 25 feet long, and 12 feet deep.

Excavator

The hydraulic excavator was a Caterpillar model 245. It was equipped with a 14½-foot long arm attached to the boom; a 36-inch wide double-grouser track; and a 36 inch wide, 2 cubic yard capacity bucket. The excavator's operating weight was approximately 141,663 pounds.

Pickup Truck

The victim used a pickup truck to travel to and about the pit. The truck was identified as a 2005 Dodge Ram 2500 SLT truck equipped with a quad cab, long bed, 4-wheel drive and diesel engine. The truck's curb weight (with standard equipment and no cargo) was approximately 6,243 pounds and the gross vehicle weight (full cargo and optional equipment) was 8,800 pounds.

Dragline

The dragline was manufactured by Pawling & Harnischfeger in the 1950s. Quarry personnel reported that the dragline was purchased about 1½ years prior to the accident and was reassembled in the north pit during the summer of 2007.

Weather

The weather at the time of the accident was overcast with an air temperature of approximately 34 degrees Fahrenheit. The previous day the daytime temperature was slightly above freezing at 34 degrees Fahrenheit. The overnight air temperature was at or above freezing for 10 hours preceding the accident. Wind was 3 mph out of the southwest with gusts up to 6 mph. Though rising air temperatures may have weakened the ice, it was not considered the primary cause of the accident. No precipitation had fallen for seven days prior to the accident.

Ice Thickness

The thickness of the ice at the accident scene varied from approximately 9 inches to 12 inches. The ice consisted of layers of clear and white ice, with the clear ice beneath the white ice. Clear ice at the drainage ditch varied from approximately 4 inches to 6½ inches thick. The white ice was the result of an accumulation of melted snow and rain that froze on top of the clear ice and varied from approximately 4½ inches to 5½ inches thick. Ice strength guidelines (Ice Engineering Information Bulletin No. 13, "Safe Loads on Ice Sheets", U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Hanover, NH, Jan. 1996) estimate that white ice exhibits half of the strength of clear ice, therefore only one-half of white ice thickness could be considered as contributing to ice strength. Consequently, for strength estimation, ice thickness at the accident scene was considered to vary from 6½ inches to 9¼ inches, with an average thickness of about 8 inches.

Required Ice Thickness

Based on empirical observations of safe transportation on ice (Ice Engineering Information Bulletin No. 13, "Safe Loads on Ice Sheets", U. S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Hanover, NH,

Jan. 1996; "Engineering and Design – Ice Engineering," U.S. Army Corps of Engineers, EM1110-2-1612, October 2002; and "Use of Ice Covers for Transportation," 23rd Canadian Geotechnical Conference, Banff Alberta, Canada, L.W. Gould, Nov. 19-20, 1970), it is estimated that an ice thickness of 8½ inches to 10 inches was necessary to support the victim's pickup truck given the estimated vehicle weight and temperature conditions leading up to the accident. Using these same methods, the ice thickness required to support the approximately 71-ton CAT 245 excavator was estimated to be between 32 inches and 44 inches. These calculations show that the estimated actual equivalent ice thickness of 8 inches was significantly inadequate to support the excavator.

Training and Experience

Charles S. Nemetz had 12 years of mining experience and had previously received training in accordance with 30 CFR, Part 46. On the day of the accident he was working with experienced miners.

Larry L. Epright had 6 years of mining experience and had received training in accordance with 30 CFR, Part 46. Epright had experience with hazards associated with traveling on ice.

Gerald A. Ignatowski had 23 year of mining experience and had received training in accordance with 30 CFR, Part 46. Ignatowski had experience with hazards associated with traveling on ice.

ROOT CAUSE ANALYSIS

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

Causal Factor: Management policies, procedures, and controls were inadequate and failed to ensure that persons could safely perform tasks when working in ice conditions on the pit floor.

Corrective Action: Management should establish policies, procedures, and controls to ensure that persons can safely perform their tasks when working on ice on the pit floor. Ice conditions should be evaluated for safety and barricaded or posted with warning signs visible from all approaches if unsafe on which to work or travel.

CONCLUSION

The accident occurred because management policies and procedures failed to address the hazard created by an ice-covered, water-filled ditch. All hazards associated with the task were not identified and appropriate controls were not in place to ensure that persons could safely perform the task. Barricades or

warning signs, visible from all approaches, were not erected to warn persons of a hazard that was not immediately obvious.

ENFORCEMENT ACTIONS

Issued to Park View Sand & Gravel, LLC

Order No. 6185509 was issued on February 25, 2008, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on February 25, 2008, when three miners were attempting to dig out a dragline that had been frozen in the ice. This order is issued to assure the safety of all persons at this operation. It prohibits all activity at the North Pit 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 for all actions to recover and/or restore operations to the affected area.

This order was terminated on March 18, 2008. Conditions that contributed to the accident no longer exist.

Issued to Illinois Mining Corporation

Citation No. 6135299 was issued on April 25, 2008, under the provisions of Section 104(a) of the Mine Act for a violation of 56.20011:

A fatal accident occurred at this operation on February 25, 2008, when a track-mounted excavator broke through an ice-covered, water-filled ditch. An equipment operator was using the excavator to break up ice to free a dragline when it traveled over the ditch that was approximately 25 feet wide and 12 feet deep. There were no visible warning signs or barricades to warn persons of the hazards.

This citation was terminated on May 2, 2008. Safety policies and procedures were established addressing the use of barricades and/or warning signs visible from all approaches when hazards exist that are not immediately obvious. The procedures were discussed with all persons required to perform work at mines.

Approved by:

Date:

Steven M. Richetta
District Manager
North Central District

APPENDICES

APPENDIX A	Persons Participating in the Investigation
APPENDIX B	Diagram of Accident Scene
APPENDIX C	View of Accident Scene
APPENDIX D	Accident Investigation Data-Victim Information Form

APPENDIX A

Persons Participating in the Investigation

Park View Sand & Gravel, LLC

Paul A. Lopnow operations manager

Racine County Sheriff's Department Dive Team

Bob Zortman lieutenant

Mine Safety and Health Administration

George F. Schorr supervisory special investigator
Carol L. Tasillo civil engineer, P.E.

APPENDIX B

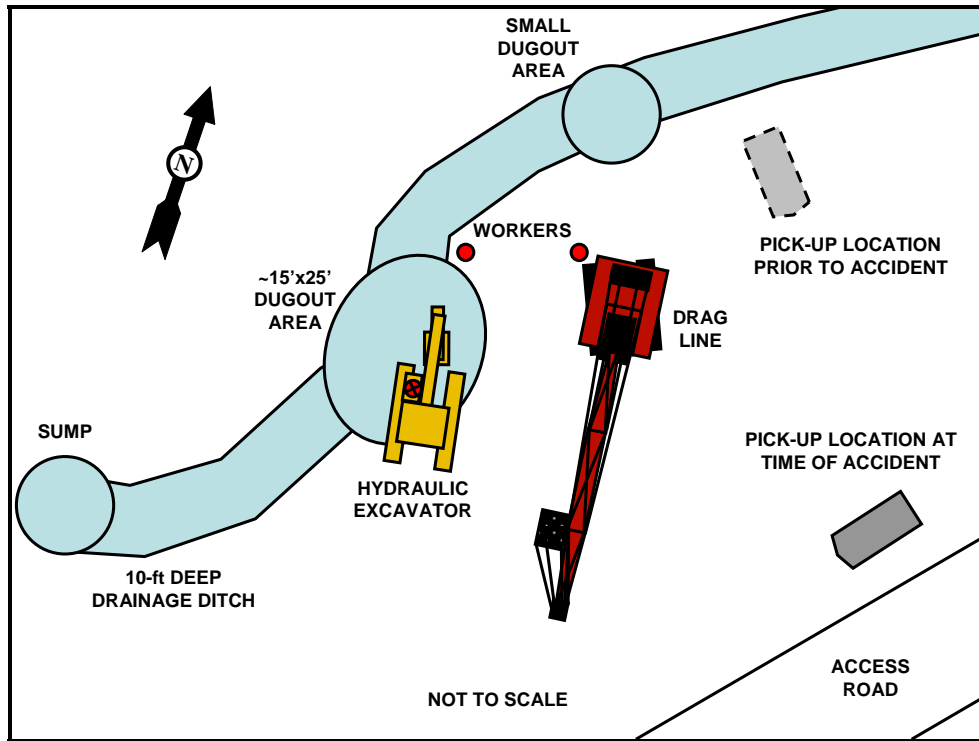
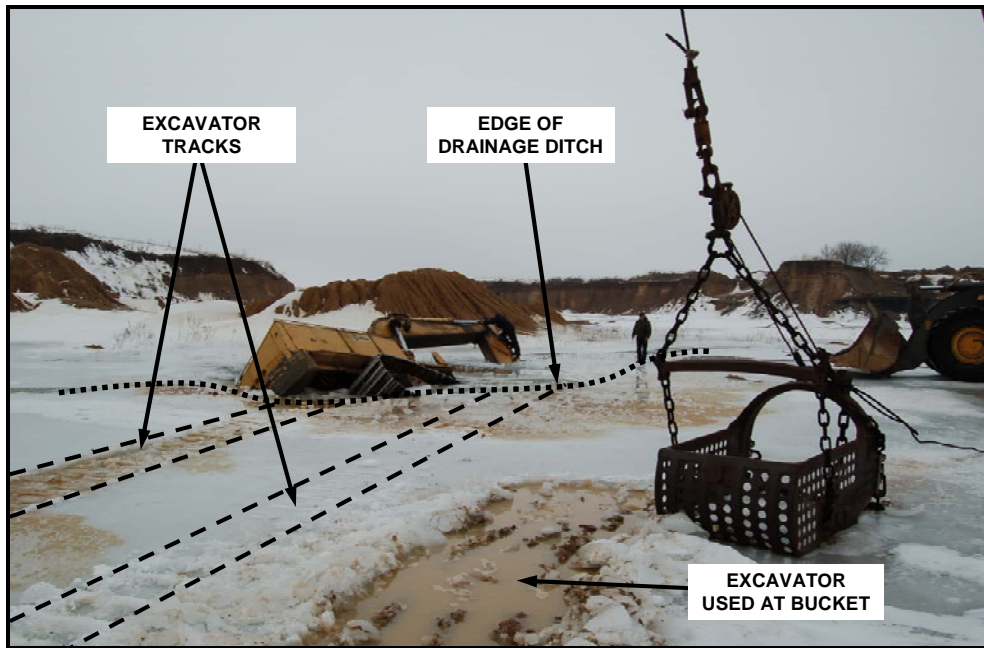


Diagram of Accident Scene (not to scale)

APPENDIX C



View of Accident Scene

Photo courtesy of Racine County, WI Sheriff's Department
(Used by permission)

Markings superimposed by MSHA accident investigation team

APPENDIX D

Accident Investigation Data - Victim Information

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



Event Number: 1 0 0 1 0 5 4

Victim Information: 1

1. Name of Injured/Ill Employee: <i>Charles S. Nemetz</i>				2. Sex: <i>M</i>		3. Victim's Age: <i>62</i>		4. Degree of Injury: <i>01 Fatal</i>									
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 02/25/2008 b. Time: 16:00</i>						6. Date and Time Started: <i>a. Date: 02/25/2008 b. Time: 6:00</i>											
7. Regular Job Title: <i>199 Superintendent</i>						8. Work Activity when Injured: <i>041 Moving Excavator</i>						9. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input type="checkbox"/> X					
10. Experience a. This				b. Regular				c. This				d. Total					
Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days			
Work Activity:	<i>0</i>	<i>0</i>	<i>1</i>	Job Title:	<i>2</i>	<i>40</i>	<i>5</i>	Mine:	<i>0</i>	<i>0</i>	<i>5</i>	Mining:	<i>11</i>	<i>19</i>	<i>2</i>		
11. What Directly Inflicted Injury or Illness? <i>126 Water</i>						12. Nature of Injury or Illness: <i>110 Drowning</i>											
13. Training Deficiencies:												Annual: <input type="checkbox"/>			Task: <input type="checkbox"/>		
14. Company of Employment: (If different from production operator) <i>Illinois Mining Corporation</i>												Independent Contractor ID: (if applicable) <i>SRE</i>					
15. On-site Emergency Medical Treatment: Not Applicable: <input type="checkbox"/> First-Aid: <input type="checkbox"/> CPR: <input type="checkbox"/> EMT: <input checked="" type="checkbox"/> Medical Professional: <input type="checkbox"/> None: <input type="checkbox"/>																	
16. Part 50 Document Control Number: (form 7000-1)						17. Union Affiliation of Victim: <i>2647 AFL-CIO</i>											

Victim Information:

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

Victim Information:

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