

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 Machinery Accident
April 17, 2014

Hafenstine Plant #1
Hafenstine Construction Company
Alma, Wabaunsee County, Kansas
ID No. 14-01708

Investigators

Lee A. Hughes
Mine Safety and Health Inspector

F. Terry Marshall
Mechanical Engineer

Thomas Turner
Mine Safety and Health Specialist (Training)

Originating Office
Mine Safety and Health Administration
Rocky Mountain District
P.O. Box 25367, DFC
Denver, Colorado 80225
Richard Laufenberg, District Manager

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OVERVIEW

Harold Steege, Truck Driver, age 58, was killed at this operation on April 17, 2014. Steege was standing outside the cab of a dump truck that he had just parked at the pit. He was waiting for an excavator to load the truck with material. Steege was struck by the excavator bucket and crushed between the excavator bucket and the truck.

The accident occurred due to management's failure to establish safe work procedures for truck drivers waiting to be loaded in the pit. Steege left the protection of his truck's cab and was crushed when the loading process began.

GENERAL INFORMATION

Hafenstine Plant #1, a sand and gravel operation owned and operated by Hafenstine Construction Company, is located in Alma, Wabaunsee County, Kansas. The principal official is Donald P. Hafenstine, Owner/Operator. The mine usually operates one 8 hour shift a day, 5 days a week. Total employment is 6 persons.

Material is mined from multiple areas along Mill Creek. The material is excavated from the bottom of the creek bed using an excavator. The excavator loads the material into dump trucks which transport the material to the plant located approximately 3 miles away from the pit. The material is then screened, processed, and sold for construction aggregate.

The Mine Safety and Health Administration (MSHA) completed the last regular inspection at this operation on February 28, 2014.

DESCRIPTION OF ACCIDENT

On the day of the accident, Harold Steege (victim) arrived at the mine about 8:00 a.m. Steege and Tyler Wegele, Equipment Operator, were assigned to the screening plant to screen creek gravel.

At approximately 11:00 a.m., Brian Hafenstine, Supervisor, reassigned Steege and Wegele to the south branch of Mill Creek. Steege was to haul material from the creek to the plant and Wegele was to load trucks with the excavator.

At approximately 3:30 p.m., Steege arrived in his truck for a load of material and positioned the truck to be loaded. Wegele trammed the excavator behind Steege's truck. Wegele saw Steege exit the truck while he moved the excavator into position to load it. Wegele positioned the excavator at the back of the truck and started to load it. However, he inadvertently swung the excavator bucket to the right, pinning Steege between the excavator bucket and the truck bed. Wegele immediately swung the bucket to the left and exited the cab to assist Steege. Wegele called 911 for assistance and the Alma Emergency Medical Service, Fire, and Sheriff Departments were dispatched to the accident at 3:35 p.m.

Steege was pronounced dead at 4:45 p.m., by Dr. Diana K. Katt, M.D., Wabaunsee County Coroner. The cause of death was attributed to blunt force trauma.

INVESTIGATION OF ACCIDENT

Janet Hafenstine, wife of the owner, called Sidney Garay, Field Office Supervisor, Topeka, Kansas, at 4:02 p.m., on April 17, 2014, to notify MSHA of the accident. Garay advised her to call MSHA's National Call Center. Garay then notified Richard Laufenberg, District Manager, and Dustan Crelly, Assistant District Manager, and an investigation started the 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 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, conducted a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of the mine management, employees, and local law enforcement.

DISCUSSION

Location of the Accident

The accident took place at the south branch location of Mill Creek. The load out area was relatively flat and dry. The plant is located approximately 3 miles from this area.

Weather Conditions

The weather conditions on the day of the accident were clear skies with a slight breeze and a temperature of 51 degrees Fahrenheit.

Physical Factors

1) MACHINE INFORMATION: The track-mounted excavator involved in the accident was a 1994 Caterpillar Model 320L with an 18 foot, 7 inch R type boom, a 9 foot, 7 inch R2.9B type stick, and a 1.25 cubic yard trenching bucket. Product information indicated it was equipped with a Caterpillar 3066 diesel engine with a rated output of 128 HP at 1,800 RPM. The machine had a two speed hydrostatic drive for ground travel with each track driven by an independent hydraulic motor. The excavator had a ground level reach of approximately 34 feet, 11 inches and an operating weight of approximately 45,000 pounds.

2) GENERAL CONDITION OF THE EXCAVATOR: The excavator did not incur any damage during the accident. The machine was in operational condition to conduct functional tests during the field investigation.

3) IMPLEMENT AND SWING SYSTEM DESIGN: The implement and swing systems used two pilot-operated joystick hand levers oriented in a standard backhoe loader pattern to control the boom, stick, bucket and upper structure swing features (see Photo No. 1, Photo No. 2 and Figure No. 1). Oblique movement of either joystick hand lever correspondingly operated two functions simultaneously.

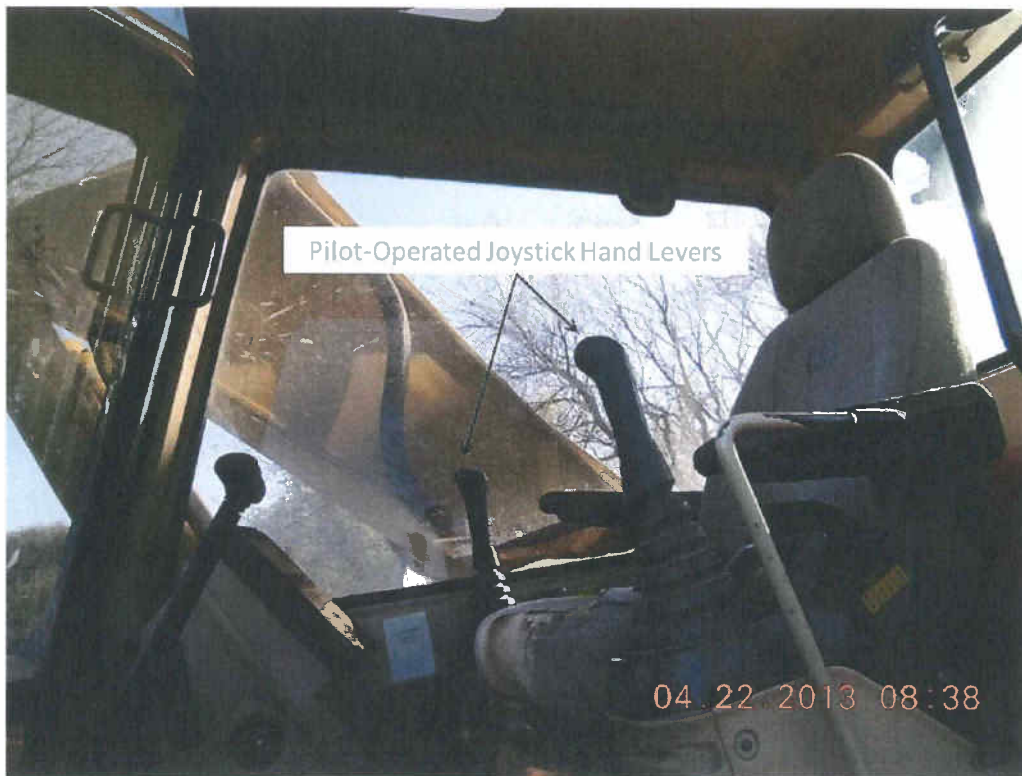


Photo No. 1: Oblique View of Operator's Cab Showing Layout of Implement and Swing Hand Controls

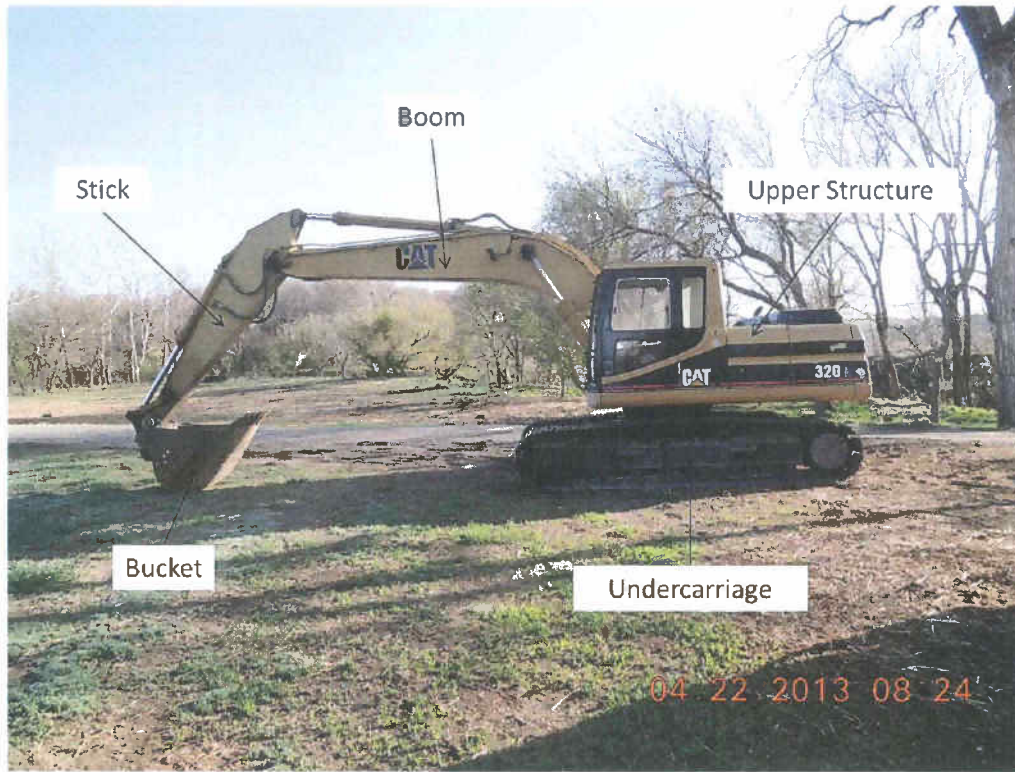


Photo No. 2: Identification of General Excavator Components

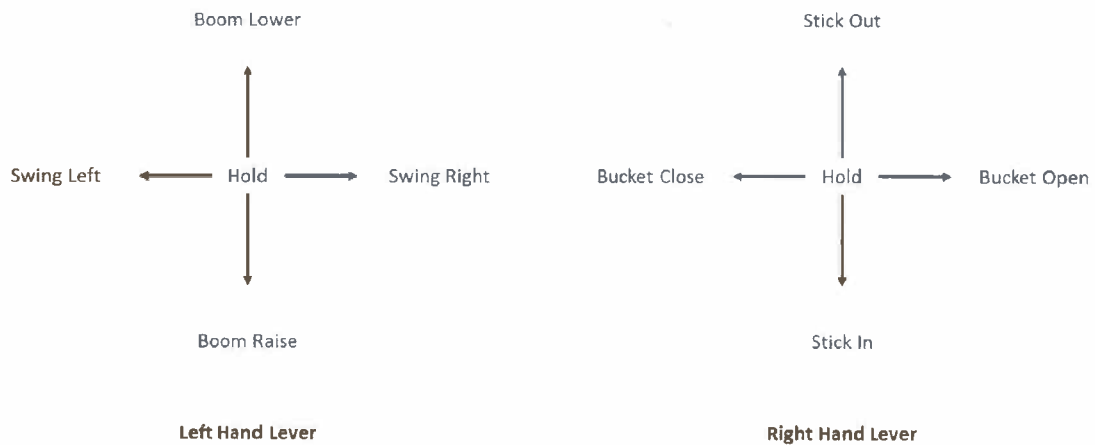


Figure No. 1: Patterns of Implement and Swing Hand Control Levers (Standard Backhoe Loader System Patterns)

The pilot-operated hand levers delivered hydraulic signal pressures to the main hydraulic valve system to provide actuation of each of the implement and swing systems (i.e., they were hydraulic over hydraulic systems). The boom, stick and bucket systems used two-way hydraulic cylinders for actuation while the upper

