

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Preparation Plant

Fatal Machinery Accident
December 28, 2004

at

Supreme Energy Prep Plant
ICG Knott County, LLC
Kite, Knott County, Kentucky
ID No. 15-16567

Accident Investigators

Arthur V. Smith
Mine Safety and Health Inspector (Surface)

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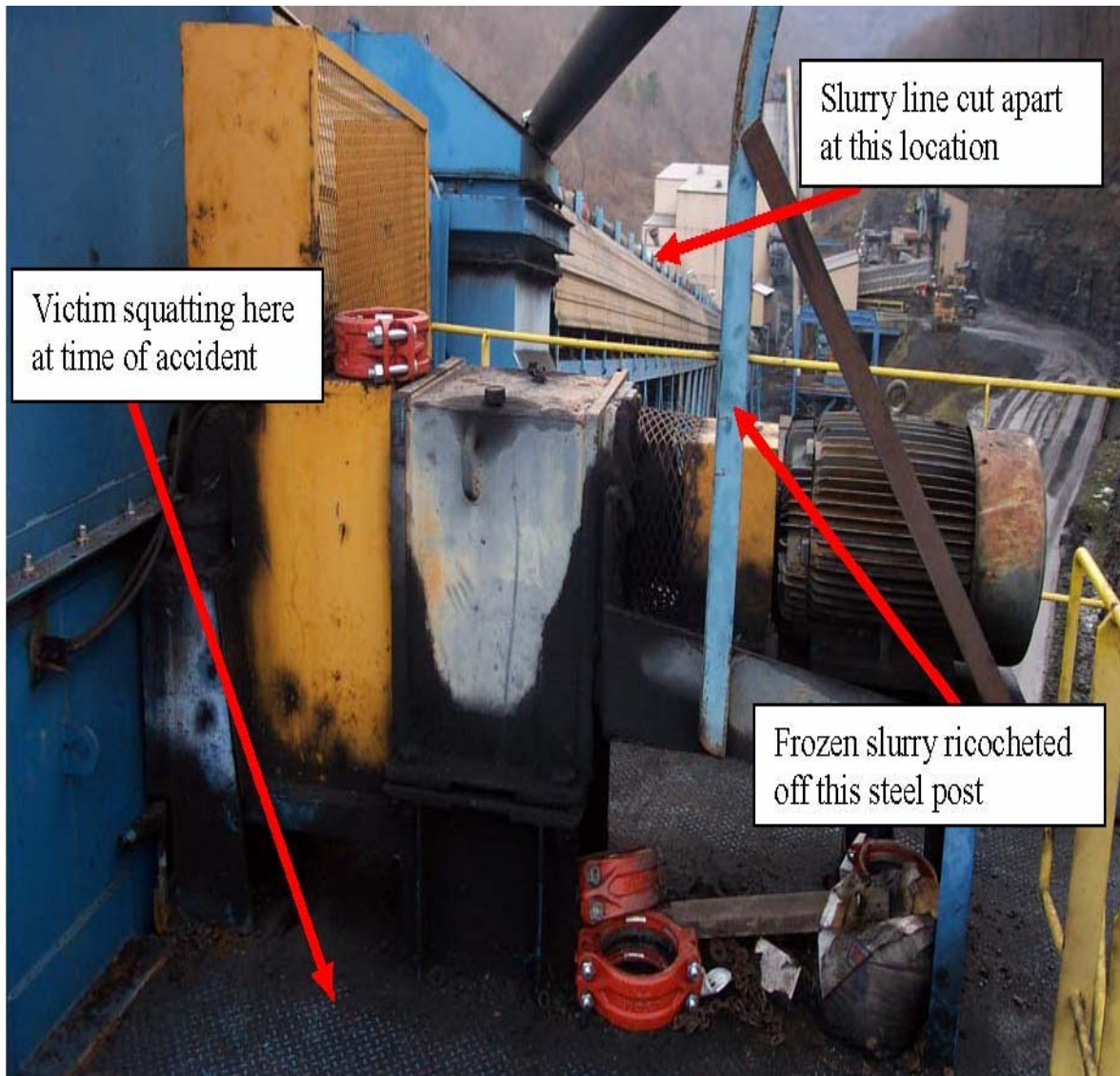
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ACCIDENT SITE

View of No.102 belt drive unit looking toward direction of blowout.



OVERVIEW

At 3:30 p.m. on Tuesday, December 28, 2004, a 64-year old heavy equipment operator with 30 years of mining experience, was fatally injured at the ICG Knott County, LLC., Supreme Energy preparation plant. The accident occurred while Earnie Williams and other miners were trying to dislodge frozen slurry from a slurry pipeline. The miners cut the line several times and energized the slurry pumps each time trying to force the frozen slurry out of the pipe. On the final attempt, the frozen slurry discharged violently out of the line and traveled approximately 85 feet hitting and ricocheting off a metal line support, striking Williams in the head.

GENERAL INFORMATION

The Supreme Energy Preparation Plant is a heavy media cyclone coal processing plant located at Kite in Knott County, Kentucky. The plant is owned and operated by ICG Knott County, LLC which is a subsidiary of International Coal Group, Inc. International Coal Group, Inc. purchased the plant from Addington Enterprises, Inc., on October 1, 2004. Coal is transported to the plant by truck, crushed, screened, sized, analyzed, and washed, and the finished product is transported by rail to the customer. The coal waste slurry is piped to the King Branch slurry impoundment and the coarse refuse is hauled by truck to the Bates Branch refuse pile.

Employment is provided for 14 hourly and 3 salaried persons on two production shifts and one maintenance shift. The average daily (24 hour) production is 5,000 tons of clean coal.

The principal officers for the mine at the time of the accident were:

Verlin RobinsonPresident / General Manager

Prior to the accident, the Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection on 09/30/2004. The Non-Fatal Days Lost (NFDL) injury incidence rate for the mine in 2003 was 0.00 compared to a National NFDL rate of 6.04.

DESCRIPTION OF ACCIDENT

On Tuesday, December 28, 2004, at 6:30 a.m., Earnie Williams, victim, a heavy equipment operator on the utility crew, met with maintenance supervisor Gary Ousley and fellow crew members at the support shop at Puncheon branch and discussed work plans for the day. Williams and equipment operator Charles Hall used a low boy rig and delivered a section of conveyor belt to Clean Energy Mine approximately twelve miles away.

When Williams and Hall arrived back to the support shop, Ousley instructed them to go to the preparation plant and help unclog a frozen slurry pipeline. This pipeline was the only slurry line at the preparation plant. The line was installed on top of the No. 102 clean coal belt structure and ran the length of the belt. The line then traveled its own structure to the hill side where it entered the ground and ran underground until it reached the impoundment 7,750 feet from the plant. The line had frozen while the plant was shut down for the Christmas vacation. The plant workers had been trying to unclog it since Monday, December 27, 2004, by running the pumps and by heating the thick plastic line with fires fueled by diesel fuel in buckets that were suspended under the line.

Williams rode with Ousley to the No. 102 belt where Ousley spoke with Robinson. They decided a front end loader may be needed. Williams and Ousley traveled back to the support shop to tell Hall and another miner to bring a loader to the pipeline. Ousley and Williams arrived back at the slurry pipeline around 12:30 p.m. They climbed several stairs to the top platform of the No. 102 belt structure where Robinson and other miners were beating the slurry line with sledge hammers in an attempt to loosen the frozen slurry.

Work continued until Bob Hollis, Director of Processing, arrived around 1:30 p.m. The miners took the pipeline apart at a coupling where the line enters the ground at the hill side, but no ice was found. The miners then used a portable drill and drilled ¼" holes along the pipeline to determine where the line was clogged. Once finding the clogged area they used a chain saw to cut and separate the line past the clogged area of pipe near the No. 102 belt drive unit. Robinson and Hollis instructed the miners about hazards associated with clogged slurry lines, telling them to stay away from the end of the pipe and always secure the pipe so it would not move. They then energized the slurry pumps several times to force the frozen slurry out of the pipe, but they were unsuccessful. They then de-energized the pumps and drained the pressure from the line with a valve near the preparation plant.

They moved 108 feet closer to the plant and cut the line a second time, and energized the pumps. This forced ice and water out of the pipeline. They drained the pressure and coupled the pipe together at the second cut and made two more attempts to blow the pipe out at the location of the first cut, but the 108 foot section of pipe between the two cuts remained clogged. The miners then moved to an area between the first and second cuts and made a third cut in the pipeline. They secured the pipe with a chain at the third cut, and Robinson warned the miners twice to move to a safe location. Hollis and others signaled that all miners were in the clear. Williams was crouched behind the large metal

cover of the No. 102 belt head approximately 85 feet from the open end of the pipe, and out of the direct line of the open pipe. Hall was on the same platform nearby. Robinson and other miners were along the catwalk beside the slurry line just behind the open end of the pipe. Robinson radioed the plant operator to turn on the pumps. During the second attempt to clear the line, the frozen slurry blew out of the pipeline violently and with a loud noise. A chunk of the frozen slurry traveled 85 feet and ricocheted off a metal line support, striking Williams in the head. Hall, also on the platform with Williams, seeing the slurry blow out, turned his back and crouched, and was struck by slurry, but received no injuries. Hollis, standing on the walkway which leads to the hillside, observed the accident and ran immediately to Williams. Hall was close behind. Williams was unconscious and lying on his right side on the platform floor. Hollis yelled to Robinson to call for an ambulance. Robinson radioed to the control room for someone to call an ambulance and he and the remaining miners ran to Williams. Control room operator David Brown called 911 and the Kentucky State Police received the call at 3:33 p.m. Robinson, an E.M.T., checked William's vital signs and pupils and found them to be normal. Williams quickly regained consciousness, recognized the miners, sat up, and then stood. He wanted to walk down the stairs, but the miners persuaded him to lie on a stretcher. Teams carried him down to the roadside and awaited the arrival of the ambulance.

The Transtar Ambulance Service arrived at 3:56 p.m. and left with Williams at 4:02 p.m., arriving at the McDowell Appalachian Regional Hospital in McDowell, Kentucky at 4:40 p.m. Williams was evaluated to determine the extent of his injuries and subsequently transported by air to University of Kentucky Medical Center at Lexington, Kentucky. He died at 4:55 p.m. on December 30, 2004.

INVESTIGATION OF THE ACCIDENT

Donald G. Baker, Supervisory Coal Mine Safety and Health Inspector, was notified at 6:00 p.m. on the day of the accident by a telephone call from Stewart Bailey, Safety Director. An order was issued pursuant to section 103(k) of the Mine Act to ensure the safety of miners and to preserve the accident scene. The investigation was started the same day.

MSHA's accident investigation team traveled to the preparation plant; conducted a physical examination of the accident scene and equipment involved, interviewed five persons, and reviewed conditions and procedures relative to the accident. The investigation was conducted jointly with the assistance of mine management and miners.

DISCUSSION

EVENTS LEADING TO THE DAY OF THE ACCIDENT: The preparation plant had closed for a week to observe the holiday season. The valve in the slurry line, located just outside the preparation plant, was opened before the shutdown to drain the line in an attempt to keep it from freezing. The plant returned to operation on December 27, 2004. Maintenance was performed before the coal cleaning process began. When the plant was started in the afternoon, it was determined that the slurry pumping system was not operating properly. Reportedly, the plant crew initially thought the slurry pumps had lost their prime. The pumps were primed and an attempt was made to pump slurry through the pipeline, but the system still did not operate properly.

With the pumps turned on, the output end of the slurry line was observed. A water flow stream approximately ½ inch in diameter was observed at the output end of the slurry pipeline. This reduced amount of flow indicated the slurry line was blocked with ice. The temperature was well below freezing, and the pumps were kept on to prevent further freezing while the slurry line was heated and beat with hammers in an attempt to loosen the ice. By 11:30 pm, the flow observed at the end of the slurry line had stopped. At that point, the pumps were turned off and only started occasionally as the pipeline was heated and beat with hammers.

SLURRY PIPELINE: The pipeline carried the slurry to the refuse impoundment that was approximately 180 feet in elevation above the preparation plant. The pipeline was approximately 7,750 feet long. Several types of pipe were used in the slurry pipeline. As the distance from the slurry pumps increases, the pressure in the slurry pipeline decreases, allowing the pressure rating of the pipe to be decreased accordingly. The section of pipeline being cleared at the time of the accident was a section of 8 inch SDR6 polyethylene pipe approximately 860 feet long. The pipe in this 860-foot section was thermally welded to make a continuous smooth pipe section.

This section of pipe started at a drain valve that was approximately 4 feet from where the slurry pipeline exited the preparation plant and traveled horizontally for approximately 100 feet. When looking up at the bottom of the conveyor, one can see the walkway on the conveyor's right side. The slurry pipeline traveled an additional distance of approximately 660 feet before it traveled away from the conveyor belt again, to the left. This point is approximately 30 feet from the belt drive, which was mounted on a catwalk platform, at the upper end of the conveyor. This portion of the slurry pipeline was attached to a support mounted on the edge of the catwalk platform. After leaving the support on the edge of the walkway, the pipeline continued to travel to the left across the catwalk platform and alongside a walkway above an access road. The pipeline sagged approximately one foot in vertical distance at a location between the catwalk and the catwalk platform. The low point of this sag was approximately 2 feet from the conveyor side, across the access road. This low point was approximately 785 feet from the preparation plant. After crossing the access road, the pipe descended to the hillside above the access road. The point where the slurry pipe contacted the hillside was the end of the

approximately 860 feet of 8-inch pipe. A coupling at the end of the 8-inch pipe connected the 8-inch pipe to a 6-inch SDR7.5 polyethylene pipe. This next section of slurry pipe could not freeze because it was buried.

LOCATION OF ORIGINAL BLOCKAGE: The slurry pipeline was drained at the valve located just outside of the preparation plant before the plant was shut down for the holidays. This valve was incorporated in the pipeline for the purpose of draining the entire pipeline from the preparation plant to the end of the catwalk which crossed the access road. Because of the low point in the pipeline (located between the catwalk platform and the catwalk crossing the access road), a trap was created in the line that prevented drainage of the slurry from the location of the low point to the discharge point. This resulted in the freezing of the slurry at the low point in the line. The draining of the lower portion of the line (from the preparation plant to the low point in the line) eliminated the probability of the original blockage being in the section of the slurry pipeline that traveled along top the conveyor up to the low point in the line. On December 27, 2004, the crew left the pumps on from the afternoon until late night with very little observed flow at the discharge point. The section of slurry pipeline along the top of the conveyor probably became frozen during this time frame because the slurry flow rate was severely reduced due to blockage in the low point of the line, and the temperature of the air around the pipeline was extremely cold. After the ice was cleared to a point just beyond the low point in the slurry line, the slurry pipeline was completely cleared. Based on the findings, the ice blockage probably occurred initially in the low point of the pipeline while the system was shut down for the holidays. The lower section of the pipeline then froze due to the low flow rate and extreme temperatures while the crew was attempting to clear the line.

COMPRESSED AIR: The drain valve located just outside of the preparation plant was opened by the crew to bleed the pressure from the line before each cut in the slurry pipe was made. The bleeding of the pressure from the line also allowed the slurry to drain from the line. When the pumps were restarted, air was trapped and compressed in the slurry pipeline between the pump and the ice blockage. With the pumps rated at 550 gallons per minute and 320 p.s.i., the trapped compressed air provided the force that violently discharged the ice that struck the victim.

ROOT CAUSE ANALYSIS

An analysis was conducted to identify the most basic causes of the accident that were correctable through reasonable management controls. During the analysis, a causal factor was identified that, if eliminated, would have either prevented the accident or mitigated its consequences.

Listed below are the causal factor identified during the analysis and the corresponding corrective action implemented to prevent a recurrence of the accident.

Causal Factor: There was no written procedure for the safe unclogging of slurry pipelines.

Corrective Action: In accordance with 30 C.F.R. §77.1708, mine management established, implemented, and will enforce a detailed written procedure for unclogging slurry pipelines which requires all miners to be behind the open end of the pipe in the opposite direction of the discharged material, in a protected location, before attempting to blow ice and other blockages from the pipe. These procedures shall be incorporated into annual refresher and newly employed miner training.

CONCLUSION

The accident occurred while miners were trying to dislodge frozen slurry from a pipeline. The miners cut the line several times and energized the slurry pumps each time trying to force the frozen slurry out of the pipe. On the final attempt the frozen slurry discharged violently from the pipe. Discharged material traveled approximately 85 feet through the air before ricocheting off a metal support and striking the victim in the head. The accident resulted from a failure to establish and follow safe work procedures for clearing a frozen slurry pipeline.

Approved By:

Norman Page
Acting District Manager

Date

ENFORCEMENT ACTIONS

Order No. 7547301 was issued on December 28, 2004, under the provisions of section 103(k) of the Mine Act.

The preparation plant has experienced a non-fatal injury accident which has the potential to result in death. The accident and injury occurred in the area of the No. 102 belt head chute, which was located on the top floor of the sampling tower. This order is issued to ensure the safety of any person at the plant until an examination or investigation is made to determine that the top floor of the sampling tower is safe. Only those persons selected from company officials, the miners' representatives and other persons who are deemed by MSHA to have information relevant to the investigation may enter or remain in the affected area.

A 104(a) Citation, S&S, Moderate negligence, No. 7544618 for a violation of 30CFR 77.1708, was issued to ICG Knott County, LLC.

The operator has failed to establish an adequate program of instruction, publish and distribute the program to employees and post the program in conspicuous places throughout the mine with regard to safe practices and procedures to be followed when unclogging blocked (frozen) slurry pipelines. This condition was observed during an investigation of an accident which occurred on December 28, 2004, which subsequently resulted in the death of the victim on December 30, 2004. The accident occurred while miners were trying to dislodge frozen slurry from a pipeline.

Appendix A

Persons Participating in the Investigation

Mine Safety and Health Administration

<u>Name</u>	<u>Title</u>
Arthur V. Smith	Mine Safety and Health Inspector (Surface)
Eugene D. Hennen	Mechanical Engineer
Roy Parker	Mine Safety and Health Inspector
Lester Cox	Mine Safety and Health Inspector Supervisor