

UNITED STATES
DEPARTMENT OF THE INTERIOR
MINING ENFORCEMENT AND SAFETY ADMINISTRATION

A

DISTRICT 4

REPORT OF MULTIPLE FATAL HOISTING OF MATERIALS TYPE ACCIDENT

MAPLE MEADOW MINE (SLOPE) (ID NO. 46-03374)
MAPLE MEADOW MINING COMPANY

MONTY BROTHERS CONSTRUCTION COMPANY (ID NO. A97-410(A))
FAIRDALE, RALEIGH COUNTY, WEST VIRGINIA

October 2, 1974

By

Fred E. Ferguson
Coal Mine Inspection Supervisor

Originating Office - Mining Enforcement and Safety Administration
Mount Hope, West Virginia 25880
J. M. Krese, District Manager
Coal Mine Health and Safety District 4

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INTRODUCTION

This report is based on an investigation made pursuant to the provisions of the Federal Coal Mine Health and Safety Act of 1969 (83 Stat. 742).

A hoisting of materials type accident which occurred about 11:15 a.m., Wednesday, October 2, 1974, at the slope of the Maple Meadow mine, resulted in the death of three employees. The three fatally injured employees were: James Spence, utility man, Social Security No. [REDACTED]; Thomas Stewart, raw-coal operator, Social Security No. [REDACTED]; and James Mullens, raw-coal operator, Social Security No. [REDACTED]. Spence, age 34, had 17 years mining experience, including 3 months with the coal company, and he is survived by his widow and 3 dependent children. Stewart, age 25, had 4 years experience, including 3-1/2 months with the coal company, and he is survived by his widow and 1 dependent child. Mullens, age 30, had 2 years experience, including 2 months with the coal company, and he is survived by his widow and 1 dependent child.

The Mount Hope office of the Mining Enforcement and Safety Administration was notified of the accident immediately, and an investigation was started shortly thereafter.

The information for this report was obtained from statements of officials of the mining and construction companies, from employees and from an investigation of the accident scene and the involved equipment.

GENERAL INFORMATION

(Construction Company Operations)

The Maple Meadow slope construction site is located near Fairdale, West Virginia. The construction project in progress at the time of the accident consisted of the installation of a 6-inch metal, water

pipeline in the slope which is 2,880 feet in length. The slope contained a belt conveyor and a track-haulage system. Seven men were employed at the construction site on the day of the accident.

The equipment involved in the accident consisted of a walkway platform installed along the 42-inch belt conveyor; a 75 ton, Model 545, Lorain mobile crane; a 25 horsepower Bayard winch installed as a stationary hoist; and the related wire ropes and sheaves used with the hoisting equipment. The substandard conditions and practices revealed during the investigation are outlined in the Description of the Accident and in the Findings of Fact sections of the report, and in the Notices and Orders issued during the investigation.

The investigation was conducted by Mining Enforcement and Safety Administration personnel, and those persons present during the investigation were:

Monty Brothers Construction Company Officials

John Monty	President and Owner
Selby Cook	Crew Leader

Maple Meadow Mining Company Officials

Paul Morton	President
C. H. Williams	General Superintendent
Richard Mitchell	Mine Foreman
Richard L. Hickman	Safety Director
D. N. Perry	Section Foreman
W. W. Carman	Chief Engineer

United Mine Workers of America
(Iron Workers)

Nat Pishner	Crane Operator
Roger Mullens	Welder
James Stewart	Iron Worker
Douglas Shields	Iron Worker
Joseph Cozart	Iron Worker

United Mine Workers of America
(Coal Mine)

John G. Sulka	UMWA International Washington Office
Everette Acord	Safety Inspector, District 29
Bernard B. Shrewsberry	Safety Coordinator, District 29
Jonathan Williams	Inspector, International Safety Coordinator, District 29
Paul Ratliff	President, Local Union 1961
Raymond C. Dorton, Jr.	Chairman, Mine Health and Safety Committee
Ballard Lester	Member, Mine Health and Safety Committee
Eddie Henderson	Miner Operator (Eyewitness at Bottom of Slope)

West Virginia Department of Mines

John Ashcraft	Director
Paul C. Riley	Deputy Director
J. A. Philpott	Inspector-at-Large
J. W. Hatfield	Assistant Inspector-at-Large
Charles H. Browning	District Inspector
Steve C. Colosi	Electrical Inspector

Mining Enforcement and Safety Administration

John E. Weekly	Subdistrict Manager
Fred E. Ferguson	Coal Mine Inspection Supervisor
Edward M. Kawenski	Chief, Industrial Safety Group, MESA, Pittsburgh, Pennsylvania
Birkie Allen	Federal Coal Mine Inspector
John R. McGann	Federal Coal Mine Inspector
James M. Jenkins	Federal Coal Mine Inspector

The management structure for the contracting firm consists of a president, a vice president and working crew leaders. John Monty, President, is the official in charge of health and safety for the contracting company. Accident rates were not compiled by the company for this operation.

Selby Cook, the working crew leader and direct supervisor of the construction crew had received training in methane and oxygen deficiency detection and in first aid. He (Cook) had 18 years construction experience, including 8 years as crew leader and 6-1/2 years with Monty Brothers Construction Company.

DESCRIPTION OF ACCIDENT
(Construction Company Operations)

The crew under the direction of crew leader Selby Cook, began work at 8 a.m., Wednesday, October 2, 1974. The segment of the operation in progress on this day consisted of welding sections of 6-inch pipe. The pipe was then hoisted by a mobile crane and positioned on angle iron, which was utilized as a guide into the 17 degree slope. The entire installation paralleled the walkway and the slope belt. The 6-inch pipe, which had been welded in lengths of approximately 60-feet, were in turn welded to the end of the pipe being lowered into the slope. Selby Cook, the crew leader, assigned Nat Pishner to operate the mobile crane and Roger Mullens to weld the sections of pipe together in approximately 60-foot lengths. The welding operation was performed on the ground before they were placed on the working platform alongside the slope belt. (See Sketch No. 2) James Stewart's job assignment was to assist other crew members in alignment of the pipe after it was positioned on the working platform by the mobile crane. After a section of pipe had been welded onto the pipe entering the slope, the entire length of pipe was then tied off with a 1/4-inch

wire rope, hand operated come-a-long device. Thereafter, the pipe was secured with a U-type clamp to the belt structure. After the pipe was secured, Stewart would weld a 3/8-inch by approximately 4-inch by 4-inch steel lug onto the pipe. After installing the lug, he (Stewart) would wrap a 5/8-inch wire rope choker sling around the pipe twice below the lug and connect the end of the choker sling to the stationary hoist rope with a shackle.

Doug Shields was assigned to weld the sections of pipe together and assist Larry Elkins. Elkins was assigned to help clamp off the pipe with the hand-operated come-a-long and the U-clamp. He was also assigned to rig the pull-line from the mobile crane which was used to pull the pipe into the slope if the pipe failed to move freely. Joe Cozart, iron worker, was assigned to go into the slope at about 10 a.m. He was to watch the inby end of the pipe to see that it did not catch on the I-beams that were installed in the slope. Selby Cook, the working crew leader, operated the stationary hoist which was used to lower the pipe into the slope.

About 11 a.m., James Spence, utility man, and Eddie Henderson, miner operator, were assigned to install an air-operated dewatering pump in a sump near the slope bottom. Thomas Stewart and James Mullens, raw-coal operators (who regularly performed duties in the slope) were also located in the slope sump area along with Spence and Henderson. These four persons were employees of the Maple Meadow Mining Company.

About 11:15 a.m., the time of the accident, a combined length of pipe was being lowered to a position in the slope to facilitate the connection of another section of pipe. Stewart stated that the pipe moved about 10 to 12 feet when the 5/8-inch wire rope choker sling broke. Approximately 700 feet of the 6-inch pipe, which weighed about 13,000 pounds, began to slide down the slope on the steel I-beams that were installed in the slope to support the belt structure. The pipe gained momentum as it slid down the 2,880-foot slope. Marks on the sandstone roof revealed that the pipe struck the roof at a distance of about 2,650 feet into the slope. The impacts with stationary objects near the bottom of the slope broke the 700-foot length of pipe into 6 separate sections. Some of the pipe sections crossed over and under the conveyor belt. Most of the pipe sections (after the initial impact near the 2,650-foot point in the slope) traveled to the left side of the slope and/or near the center of the slope. (See Sketch No. 3)

Eddie Henderson, the only survivor of the four persons located near the bottom of the slope, stated that he heard a rumbling noise coming down the slope. According to Henderson, the noise sounded like a run-a-way mine car. He stated that he looked up and saw what appeared to be a streak of fire coming down the slope. At that time, he turned and climbed the right wall of the slope, using the 4- by 4-inch wire mesh which had been used to support the gunite installed on the slope walls and ceiling. Henderson explained that it was only a matter of a very few seconds after he climbed the wall until the pipe struck the sump area at the bottom of the slope. According to Henderson, after

the noise was over, the dust which was created by the pipe was so thick that he had to wait a short period of time before visibility was good enough for him to descend from the wall of the slope. After he reached the slope floor, he stated that he observed Spence, Stewart and Mullens who were apparently killed by the impact of the pipe. Thereafter, he came out of the sump area and met the section crew who were on their way into the slope. Rescue operations were started a short time later.

GENERAL INFORMATION
(Coal Company Operations)

The Maple Meadow mine is located near Fairdale, Raleigh County, West Virginia, and the mine is entered through 1 slope and 1 shaft into the Beckley coalbed, which averages 84 inches in thickness locally. There are 85 men, 25 underground and 60 on the surface, employed on 3 production shifts a day, 5 days a week. The daily production averages 400 tons of coal, all loaded mechanically. The Maple Meadow mine is still in the construction stage. The mining operations in progress were for the purpose of connecting a dual compartment shaft, 730 feet in depth, to the 2,880-foot, 17-degree angle slope (the slope involved in the accident). A belt conveyor had been installed in the upper 7-foot section of the slope with a track haulage system installed on the slope floor. A man-trip elevator was being installed in the shaft. Also, the shaft was utilized for return ventilation purposes.

The management structure for the mine consisted of a president, a general superintendent, a mine foreman, a chief electrician, a section foreman for each section, a surface superintendent and a general preparation-plant foreman. Richard Mitchell is the designated official in charge of health and safety for the mine. The company is a member of the National Safety Council, and weekly safety meetings are conducted with the employees. The company has established an approved employee training program.

James Spence (victim) had 17 years mining experience, including 3 months with this company. David Perry, Spence's immediate supervisor, is a certified foreman by the State of West Virginia and has 8 years of mining experience, which includes 7 months with this company.

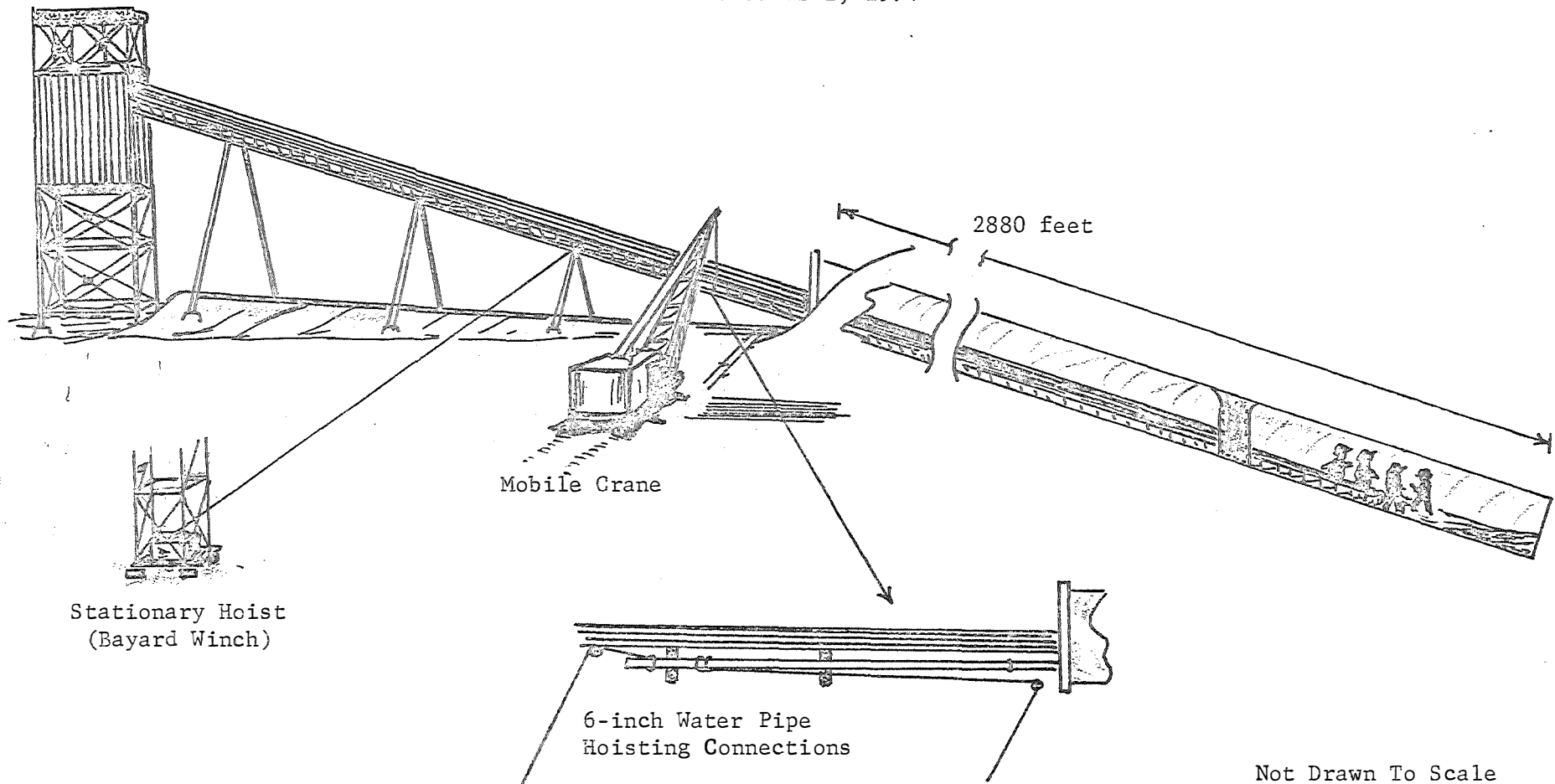
James Mullens (victim), had 2 years experience, including 2 months with this company. Thomas Stewart (victim) had 4 years experience, including 3-1/2 months with this company. Buel Harold, immediate supervisor of both Stewart and Mullens, was not certified as an underground or a surface foreman. Harold is classified as the preparation plant foreman and he has 6 years experience, including 3-1/2 months with the company.

The mine has established a procedure of reporting and recording all accidents that result in injuries, and the mine had an injury frequency rate of 66.43 and a severity rate of 132.80 per million man hours of exposure.

MULTIPLE FATAL HOISTING OF MATERIALS TYPE ACCIDENT

MAPLE MEADOW MINE (SLOPE)
MAPLE MEADOW MINING COMPANY

MONTY BROTHERS CONSTRUCTION COMPANY
FAIRDALE, RALEIGH COUNTY, WEST VIRGINIA
October 2, 1974



Not Drawn To Scale
Sketch No. 1

DESCRIPTION OF ACCIDENT
(Coal Company Operations)

The coal company construction crew, under the supervision of David Perry, entered the mine at 8 a.m., Wednesday, October 2, 1974. After arriving on the section, they began routine production operations. Shortly thereafter, the crew experienced mechanical problems with the continuous mining machine. Therefore, Perry assigned his crew to various duties on the section. At approximately 10:15 a.m., Richard Mitchell, mine foreman, instructed David Perry to have two men to get an air-operated water pump from the section, to take the pump to the slope sump and to install it. Perry instructed Henderson and Stewart in accordance with Mitchell's instructions. Henderson and Stewart had worked in the sump area before and when they arrived at the sump area, they found Mullens and Spence removing a defective air-operated pump from the sump area.

As heretofore mentioned, at approximately 11:15 a.m., the wire rope choker sling broke, releasing the 6-inch pipeline into the slope. According to Mitchell, mine foreman, and the other men working in the mine, they heard someone shouting over the mine telephone paging system that something was coming down the slope; therefore, Mitchell and the crew rushed toward the slope bottom. According to Mitchell and the crew, before they reached the slope bottom, they heard a noise that sounded like a run-a-way mine car. They stated that not long thereafter, the pipe struck the slope bottom area. When they (Mitchell and the crew) arrived at the turnout at the bottom level of the slope, he (Mitchell) stated that he went into the sump area with part of the crew. There he observed the three victims in the water. After looking closely, he thought that one of them might be alive. He then instructed the crew members to get him out first. Mitchell stated that it was apparent by the extent of the physical injuries to the other two victims that they were dead. According to Mitchell, he then went to the turnout and telephoned for more first-aid equipment and for an ambulance.

By this time, the crew had brought one man to the slope car. Thereafter, the one victim and part of the crew were transported to the surface, at which time the victim was placed in an ambulance. According to Mitchell, the other two victims were loaded on the slope car, transported to the surface at 11:45 a.m., and placed in an ambulance. They were then taken to the Raleigh General Hospital, Beckley, West Virginia, where they (Spence, Stewart and Mullens) were pronounced dead upon arrival.

The investigation of the accident revealed the following:

1. The construction company had installed, without incident, the belt structure in the slope similar to the manner in which the pipe was being installed.

2. The 6-inch pipe was being lowered by the use of a 25 horsepower Bayard winch installed as a stationary hoist using a 3/4-inch wire rope. The hoist rope was connected to the pipe by a 5/8-inch wire rope choker sling which was wrapped twice around the pipe and then threaded through the eye on one end of the choker sling. (See Sketch No. 2) The other eye of the choker sling was then connected to the hoise rope by the use of a clevis. Also, a 1/2-inch wire rope, which was connected to the mobile crane, was threaded through a sheave and connected to the pipe by a hook and a 1/2-inch wire rope choker sling. The crane rigging was used only to pull the pipe into the slope in the event it would not move freely by gravity.

3. John Monty and Selby Cook, construction company officials, stated that the installation of the pipe and the methods in which it was being installed in the slope was formulated at the job site. No blueprints or other written design specifications were provided outlining proper procedures for the installation of the pipe in the slope.

4. On the day of the accident, at 11:15 a.m., Wednesday, October 2, 1974, a section of pipe had been welded onto the pipe in the slope and the entire length of pipe was being lowered into the slope when the wire rope choker sling broke.

5. Roger Mullens stated that he ran to the telephone to call and warn the men in the slope when the pipe broke loose. Mullens stated that he knew that two men were working in the slope. According to Mullens, he had seen them in the slope on the previous day, and further, he had seen them enter the slope in the morning prior to the accident.

6. Larry Elkins stated that he knew that there were men in the slope while the pipe was being lowered into the slope. He also stated that men had been working in the slope the previous day when he and Mullens were assigned to work in the slope. He further stated that he saw the two men enter the slope the morning of the accident. According to Elkins, on the day before the accident, the pipe was being lowered into the slope while he and Mullens were welding in the hopper discharge chute located at the slope bottom.

7. Doug Shields stated that he also saw men enter the slope on the morning of the accident. He also knew that men were working in the slope the day before while pipe was being lowered into the slope.

8. Joe Cozart stated that he was aware men were working in the slope on the day of the accident.

9. John Monty, president of Monty Brothers Construction Company, stated that it was his company's policy that no one was to work under or in front of a load of material or supplies being hoisted. Also, he stated that he was not aware of anyone working in the slope on the day of the accident.

10. Selby Cook, working crew leader, stated that he was not aware of anyone working in the slope on the day of the accident. He also stated that he had been told by management not to work anyone in the slope when material or supplies were being lowered. Cook explained that he knew the hazards of working inby where materials and supplies were being lowered, and on the day of the accident he did not check the slope area for persons working inby when the pipe was being lowered into the slope.

11. James Stewart stated that the 5/8-inch wire rope choker sling which was used around the pipe and connected to the stationary hoist, showed signs of being frayed.

12. C. H. Williams, Jr., general superintendent of Maple Meadow Mining Company, stated that he knew that pipe was to be installed in the slope, and generally the method in which it was to be installed, but was not aware that the pipe was being lowered into the slope the day of the accident.

13. Richard Mitchell, mine foreman, stated that he was not aware the pipe was being installed in the slope on the day of the accident.

14. David Perry, section foreman and direct supervisor of one of the victims, stated that he was not aware that the pipe was being lowered into the slope.

15. Buel Harold, preparation plant foreman and direct supervisor of two of the victims, stated that he was aware of the pipe being installed in the slope. He also stated that he had received no instructions from other management personnel pertaining to persons working in the slope when supplies or materials were being lowered.

16. The investigation revealed that employees of both the contractor and the mining company were required to perform underground duties. Further, these employees were not certified miners nor were they directly supervised.

17. Also, the investigation revealed that signal devices were not installed at the slope bottom or along the slope to indicate that material (supplies or mantrip car) was being lowered or hoisted.

18. It is relevant to note that an accident similar to this pipe fall accident had occurred at this site a few weeks prior. During switching operations, a supply car had been uncoupled by coal company employees at the top of the slope and the car was permitted to enter the slope uncontrolled. No injuries resulted from the accident.

19. Construction company officials indicated that the wire rope choker sling (the rope involved in the accident) had not been gauged or tested to determine if it was suitable for use in the pipe installation. Also, a rope test and examination program had not been established for

the project and the only rope examinations that had been performed at the site were visual examinations.

20. The 5/8-inch wire rope choker sling used around the pipe was permitted to rub the welded lug on the pipe. In addition, the choker sling had been permitted to rub the angle iron of the working platform as the pipe descended into the slope.

21. The Bayard winch was equipped with a hand-operated mechanical brake; however, the brake was not maintained in proper mechanical condition. The electrical brakes on the winch were designed to be normally on and were released by the electrical power, which made speed control through the electrical brake almost impossible.

The Mining Enforcement and Safety Administration of Mount Hope, West Virginia, requested the services of the Technical Support Centers located in Pittsburgh, Pennsylvania, and in Denver, Colorado for testing the wire ropes involved in the accident and for assistance in conducting a comprehensive investigation of the accident. Their findings are outlined below and complete reports with regard to the accident compiled by the Centers are on file at the District 4 headquarters, Mount Hope, West Virginia.

1. Wire ropes are not designed to be subjected to any type of shock loading. Excessive bending of wire ropes results in loss of strength and induces fatigue effects. For example, the minimum sheave diameter recommended for a 6 x 19 by 5/8-inch wire rope is 25 inches, whereas, the wire rope choker sling was looped around the 6-inch pipe twice and bearing against the restraining plate. Considering this arrangement, it must be assumed that the rope bend approached 90 degrees with severe shearing stresses imposed by the plate. Wire rope experts have stated without reservation that the break had occurred on the bend. In accordance with this analysis, the break would have occurred about the midpoint of the wire rope choker sling. Actual measurements indicate the break did occur in this immediate area.

2. The Wire Rope Engineering Handbook gives a breaking strength of 33,400 pounds for a 5/8-inch improved plow steel 6 x 19 standard hoisting rope with a fiber core. The rated breaking strength of this rope is reduced 10% to 30,060 pounds when used as a wire rope choker sling. At the time of the accident, the contractor was operating at about 78% of rated rope capacity for static loading.

3. Calculations indicate that the vectorial load on the wire rope choker sling (paralleling the slope) was about 3,877 pounds. Friction between the pipe and beam supports is neglected in the calculations because of small contacting surfaces. The kinetic energy possessed by the pipe after sliding a distance of 10 feet causes tensile stresses on the wire rope. These stresses are proportional to the internal strain absorbed by the wires in the rope. When tensile stresses are applied and exceed the elastic limits or internal strain energy of the wire rope, the rope fails. The intent here is to show that

wire rope elongation (stretch) under static breaking strength loading would be exceeded several times when subjected to shock loads. Information presented by witnesses at the hearings is rather sketchy and certain assumptions must be made. However, the assumptions made are most conservative for the conditions presented. Quite obviously, if the pipe had slid a distance greater than 10 feet or the crane operator had induced an initial velocity on the pipe, shock loads would have been much greater. Further, from the configuration of the crane wire rope choker sling, it is evident that this rope could not restrain movement of the pipe. It is assumed with logic, that the 1/2-inch 6 x 19 crane choker sling failed when the slack had been extended to its limits causing both the snatch block and wire rope to snap.

4. Calculations indicate that shock loads would have resulted in an elongation or stretch in the wire rope over 3 times greater than the maximum elongation possible at static breaking strength loads. It can be shown that the wire rope choker sling may have failed if the piping had moved only 1-foot before hoist brakes were applied.

5. It is ascertained that the contractor intended to utilize the same wire rope arrangement to complete the 2,880-foot water line; however, construction company officials stated that the diameter of the choker sling would be increased as the load grew larger. The rated capacity of the 5/8-inch wire rope choker sling would have been exceeded when 900 feet or an additional 200 feet of pipe had been installed in the slope. When considering the critical effects of shock loading on wire rope, the contractor was operating under an extremely narrow margin of safety.

6. From the analysis of the 5/8-inch wire rope choker sling, the following was determined:

- a. The wires in the broken ends showed an evident tension break throughout the wire rope sling.
- b. The fiber core was found to be dry and completely deteriorated at different sections of the sling.
- c. The core had started to appear at the rope exterior near the ferrule connection.
- d. Broken crown wires were found in some sections.
- e. Signs of kinking, twisting, and crushing were evident.
- f. The sling eye size was measured and found to be 2-inch width by 12-inch length compared with 5-inch by 10-inch when new. The sling eyes were permanently deformed, demonstrating that the sling had been pulled beyond the elastic limit of the steel wires.

g. The diameter of the rope at the loop of the eye was measured and found to have an average dimension of 0.5370-inches or 82 percent of the original diameter.

7. The analysis of the 1/2-inch wire rope choker sling indicated:

- a. A similar pattern as the 5/8-inch choker sling with the exception that broken wires were found near the pressed-on ferrule connection and that the sling eye size was 2-inch by 11-inch compared to 4-inch by 8-inch when new.
- b. The diameter of the rope at the eye loop was found to have an average dimension of 0.3383 inches or 64 percent of the original diameter.
- c. A bird cage was formed on the 1/2-inch sling eye.
- d. The snatch block had the middle pulley stuck. This may have occurred when the 5/8-inch choker sling was broken and the weight of pipe jerked the snatch block striking the outside of the belt conveyor structure.

8. The 5/8-inch wire rope choker sling was in poor condition. The sling eye was permanently deformed which showed that the sling had been pulled beyond the elastic limit of the steel wire. The broken wire ends showed unmistakable characteristics of a tensile break. Lack of lubrication was evident in the core. The 1/2-inch choker sling showed similar patterns. Broken wires were found near the pressed-on ferrule connection with a bird cage deformation formed on the sling eye.

9. Due to the shock load, the elongation was calculated to be 3.26 inches compared to the static elongation during normal operation which should be about 0.1512 inch.

10. The sling was overloaded by about 71 percent.

The investigation also revealed the following hoisting apparatus discrepancies that, although not directly related to the accident, indicated a failure by the contracting firm to provide a safe operation:

1. The Bayard winch wire rope was required to maintain a small amount of slack for the mobile crane to start the pipe down the slope and this created shock loading. Wire ropes are not designed to be subjected to any kind of shock loading.

2. The recommended diameter ratio of the load (water pipe) to the diameter of wire rope choker is 20 to 1. A ratio of 9.5 to 1 was in effect at the time of the accident.

3. The 5/8-inch wire rope choker sling was permitted to scrub under load over a steel support bracket that could have caused premature failure.

4. The 3/4-inch winch rope was used with a 7/8-inch tread diameter sheave.
5. The 1/2-inch wire rope, used as extensions of the mobile crane, was used with a snatch block equipped with a 3/4-inch tread diameter.
6. The eyes of the wire rope choker sling were not equipped with thimbles and these eyes were attached to the hoisting ropes with clevises containing various diameters.

CAUSE OF ACCIDENT

The accident, which resulted in multiple fatalities, occurred when a wire rope used as a choker sling failed.

Contributing factors to the failure of the wire rope were:

1. The procedure of lowering the water pipe into the slope was performed without the necessary engineering to insure that the materials, equipment and methods utilized would provide a suitable margin of safety against a rope failure.
2. The procedure of lowering the pipe permitted the wire rope choker sling to be rubbed over a metal bracket and a metal stop block on a continual basis, which caused excessive damage to the rope.
3. At the time of the accident, the manner in which the 5/8-inch wire rope choker sling was supporting an approximate 13,000 pound load of pipe, along with the procedures for lowering the pipe over the I-beams, resulted in noncompliance with acceptable standards for the selection and use of wire ropes as outlined in the American National Standard, USAS M11.1-1960, "Specifications for and Use of Wire Ropes for Mines".

Contributing factors to the seriousness (3 fatalities) of the accident were:

1. The management of the Monty Brothers Construction Company permitted the lowering of the 6-inch pipe into the slope without insuring that men were not exposed to the hazards presented by a rope failure.
2. The management of the Maple Meadow mine permitted employees to work in the slope bottom without insuring that they would not be exposed to the hazards presented by a rope failure.

FINDINGS OF FACT

Monty Brothers Construction Company

1. The 5/8-inch wire rope choker sling used for material hoisting was not suitable in that the following conditions were found, violations of Section 77.210(a):

- a. The fiber core was found to be completely dry of lubrication and deteriorated at different sections of the sling.
- b. The core had started to appear at the rope exterior near the ferrule.
- c. Broken crown wires were found in some sections.
- d. Signs of kinking, twisting and crushing were evident.
- e. The sling eye size was measured and found to be 2 inch width by 12 inch length compared with 5 by 10 inches when new. The sling eyes were permanently deformed demonstrating that the sling had been pulled beyond the elastic limits of the steel wires.
- f. The diameter of the rope at the loop of the eye was found to have an average dimension of 0.5370 inches or 82 percent of the original diameter.
- g. The sling was overloaded by about 71 percent due to shock loads.
- h. The wires in the broken ends showed an evident tension break throughout the wire rope sling.
- i. The sling was allowed to scrub under load over a steel support bracket that would cause premature failure.

2. Management permitted the lowering of a load of about 6-1/2 tons (6-inch pipe) into the mine slope and men were exposed beneath such loads, a violation of Section 77.210(b).

3. The mechanical brake for the Bayard winch was not maintained in an operating condition, a violation of Section 77.404(a).

4. Suitable daily examinations for hazardous conditions were not made or records kept of any examinations, a violation of Section 77.1713.

5. Safety regulations were not posted or distributed to the employees, a violation of Section 77.1708.

Maple Meadow Mining Company

1. Management permitted the lowering of a load of about 6-1/2 tons (6-inch pipe) into the mine slope and men were exposed beneath such loads, a violation of Section 77.210(b).

REQUIREMENTS

Monty Brothers Construction Company

1. Management shall insure that men are not exposed to hazards of loads being hoisted.
2. Management shall conduct the necessary engineering studies to insure that each project undertaken is performed in a safe manner and is in compliance with the required and/or recommended standards for hoisting and the use of wire ropes.
3. Management shall provide slings and hoisting procedures suitable for handling the type and loads of materials being hoisted.
4. Management shall examine, and test all hoisting apparatus to insure that such apparatus is maintained in a safe state of repair.
5. Management shall establish and maintain a program of instruction of safety regulations for all employees.

Maple Meadow Mining Company

1. Management shall insure that men are not exposed to hazards of loads being hoisted.
2. Management shall conduct the necessary studies in regard to contract-type work performed on mine property to insure that such projects will not pose hazards to the miners.

NOTICES AND ORDERS

Monty Brothers Construction Company

Investigation of Accident - Section 103(f)

A miscellaneous hoisting-of-materials type accident has occurred resulting in multiple fatalities (3). A hoisting failure occurred while water pipe was being installed in the mine slope of the Maple Meadow mine, Maple Meadow Mining Company.

Action taken

Order No. 1 FEF, Form 103(f), was issued October 2, 1974, prohibiting all construction-type operations at the mine site until the completion of an investigation.

Imminent Danger - Section 104(a)

Pursuant to Section 77.210(b)---About 6-1/2 ton (about 700 feet of 6-inch pipe) was being hoisted on the surface at the slope entrance while four (4) men were working at the slope bottom under the load. This Withdrawal Order was issued October 18, 1974, and this practice was found to be established during an investigation of a hoisting accident resulting in a triple (3) fatality. The Order was modified to include violations of Section 77.404(a) and 77.210(a).

Action taken

Order No. 1 BA, Form 104(a), was issued October 18, 1974, requiring that all persons, except persons referred to in Section 104(d) of the Act, be withdrawn from and prohibited from all construction activities and hoisting on the surface and underground.

Notice No. 4 BA - Violation of Section 77.1713

A 104(b) Notice of Violation, No. 4 BA, was issued on Form 1 requiring that this violation be abated by 12:35 p.m., October 18, 1974. This condition was found during a triple (3) fatality investigation.

Notice No. 1 BA - Violation of Section 77.1708

A 104(b) Notice of Violation, No. 1 BA, was issued on Form 1 requiring that this violation be abated by 12:20 p.m., October 18, 1974. This condition was found during a triple fatality investigation.

Other Notices issued for violations not directly connected to or contributing to the cause of the accident have been included in a spot inspection report dated October 2 and 18, 1974.

NOTICES AND ORDERS

Maple Meadow Mining Company

Investigation of Accident - Section 103(f)

A miscellaneous hoisting-of-materials type accident had occurred in the main slope of the mine resulting in multiple fatalities (3). A contracting firm (Monty Brothers Construction Company) was in the process of installing a water pipe system in the slope when a hoisting failure occurred.

Action taken

Order No. 1 FEF, Form 103(f), was issued October 2, 1974, causing all normal mining operations to cease until the completion of an investigation.

Imminent Danger - Section 104(a)

Pursuant to Section 77.210(b)---Underground workmen at the slope bottom were allowed to work under a load (about 700 feet of 6-inch pipe - 6-1/2 tons) being hoisted at the slope entrance on the surface. These conditions were observed during a fatal hoisting accident investigation in the slope.

Action taken

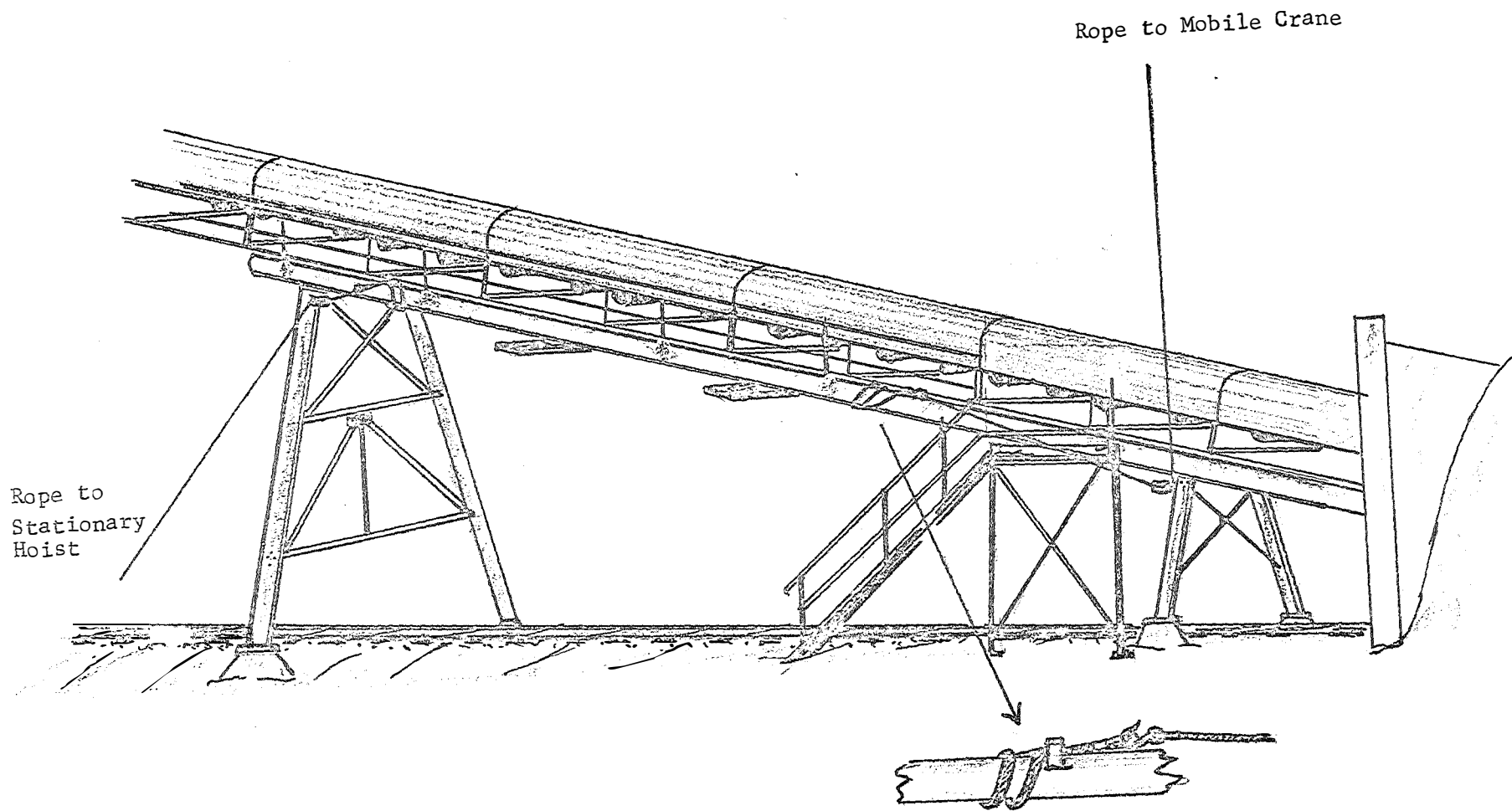
Order No. 1 BA, Form 104(a), was issued October 2, 1974, requiring that all persons, except persons referred to in Section 104(d) of the Act, be withdrawn from and prohibited from all hoisting in the slope.

Other Notices issued for violations not directly connected to or contributing to the cause of the accident have been included in a spot inspection report dated October 2-4, 7-8, 14 and 16, 1974.

Respectfully submitted,

/s/ Fred E. Ferguson

Fred E. Ferguson
Coal Mine Inspection Supervisor

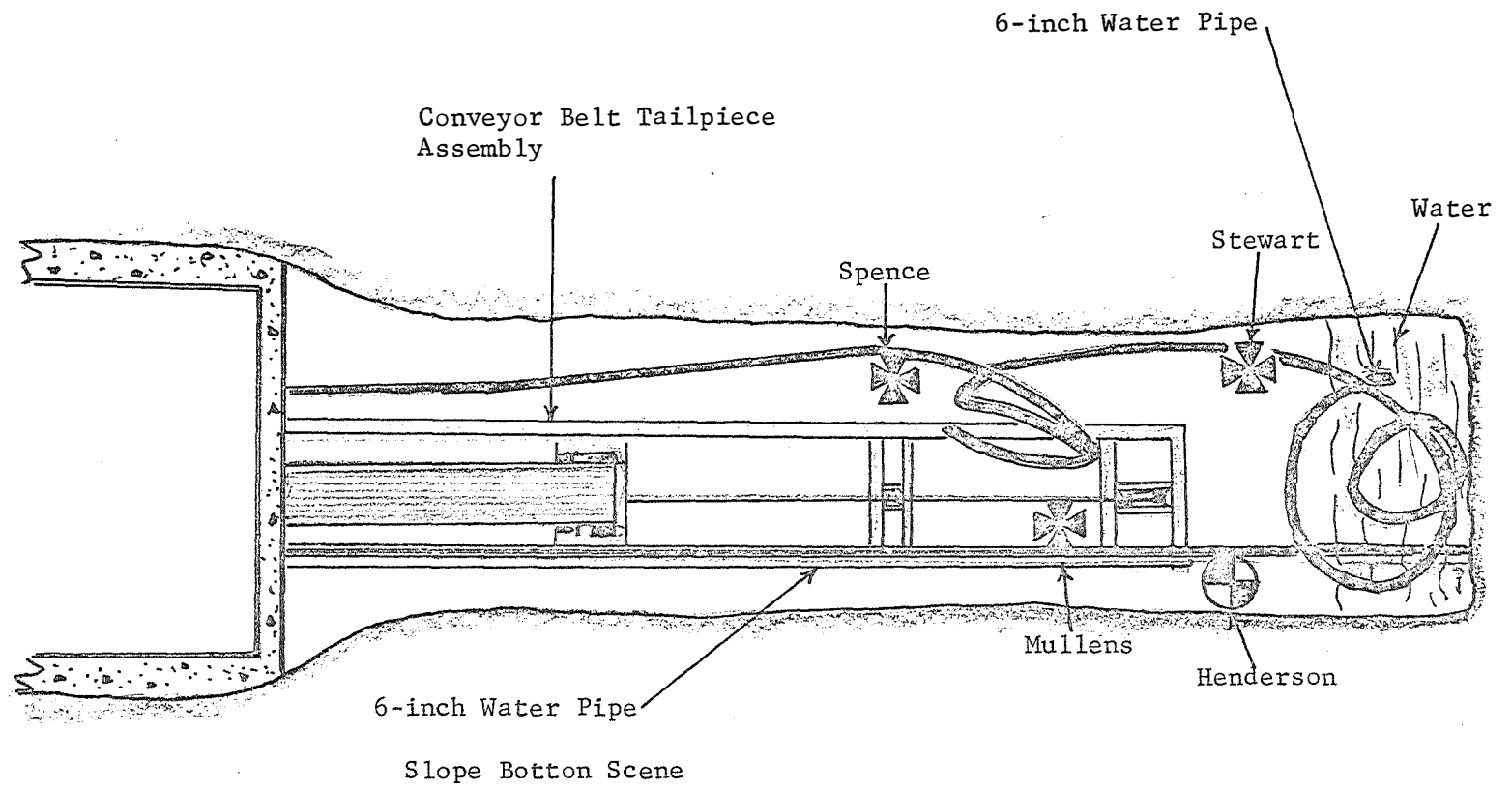


Rope to Mobile Crane

Rope to
Stationary
Hoist

Choker Rope Arrangement

Not Drawn to Scale
Sketch No. 2



Not Drawn To Scale
 Sketch No. 3