

**REPORT OF INVESTIGATION  
(UNDERGROUND COAL MINE)**

**MULTIPLE FATAL ROOF FALL ACCIDENT**

**Beatrice Mine (I.D. No. 44-00238)  
Beatrice Pocahontas Company  
Keen Mountain, Buchanan County, Virginia**

**April 13, 1978**

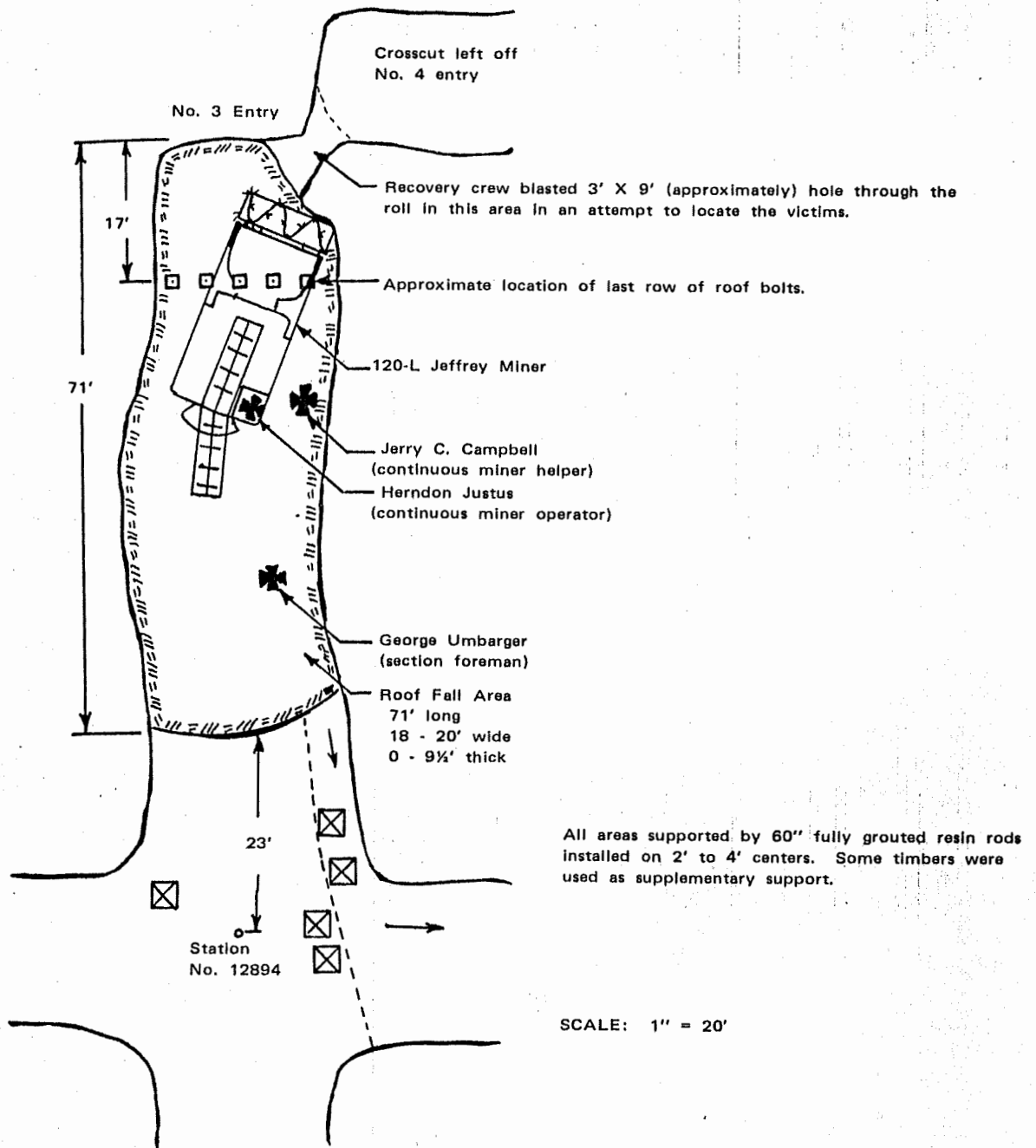
# SKETCH OF MULTIPLE FATAL ROOF FALL ACCIDENT

Beatrice Mine (I.D. No. 44-00238)

Beatrice Pocahontas Company

Keen Mountain, Buchanan County, Virginia

April 13, 1978



## Abstract of Investigation

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

### SECTION A—IDENTIFICATION DATA

1. Title of investigation: Multiple Fatal Fall of Roof Accident
2. Date MSHA investigation started: April 17, 1978
3. Report release date: 10/23/78
4. Mine: Beatrice Mine
5. Mine ID number: 44-00238
6. Company: Beatrice Pocahontas Company
7. Town, County, State: Keen Mountain, Buchanan County, Va.
8. Author(s): Carl E. Boone, II

### SECTION D—ORIGINATING OFFICE

18. Mining Enforcement and Safety Administration  
Coal Mine Health and Safety District No.: 5  
Address: 646 Alexandria Ave., Norton, Va. 24273

### SECTION B—MINE INFORMATION

9. Daily production: 3,300 tons
10. Surface employment: 52
11. Underground employment: 458
12. Name of coalbed: Pocahontas No. 3
13. Thickness of coalbed: 48 - 60 inches

### SECTION C—LAST QUARTER INJURY FREQUENCY RATE (HSAC) FOR:

14. Industry: 37.75
15. This operation: 16.36
16. Training program approved: Yes
17. Mine Profile Rating: 766 or 77%

### SECTION E—ABSTRACT

On Thursday, April 13, 1978, at about 11:10 a.m., a roof fall accident occurred in the No. 3 entry working place, No. 7 unit (2 east of 6 north) of Beatrice Mine, Beatrice Pocahontas Company. The accident resulted in the deaths of George E. Umbarger, section foreman; Herndon Justus, continuous miner operator; and Jerry C. Campbell, continuous miner operator's helper. Umbarger had 26 years mining experience, of which 8 years and 5 months were as a section foreman. Justus and Campbell had 27 and 13½ years mining experience, respectively. The three victims were crushed to death by a large fall of roof that apparently fell suddenly and without warning. The fall was approximately 71 feet long, 20 feet wide, and 9½ feet thick. The accident occurred because both management and employees failed to make an accurate evaluation of the roof conditions. Management's failure to fully anticipate and adequately compensate for the hazards associated with mining in fault areas, particularly in the fringes of the fault, contributed materially to the cause of the accident. Advancing the face of the No. 3 entry 17 feet in by the last row of roof bolts may have contributed to the cause of the accident.

### SECTION F—MINE ORGANIZATION

- | Company officials:          | Name                                  | Address                                       |
|-----------------------------|---------------------------------------|---|
| 19. President:              | <u>John Turyn</u>                     | <u>Keen Mountain, Virginia 24624</u>          |
| 20. Superintendent:         | <u>Allen Williamson</u>               | <u>Keen Mountain, Virginia 24624</u>          |
| 21. Safety Director:        | <u>Harold Stanley</u>                 | <u>Keen Mountain, Virginia 24624</u>          |
| 22. Principle officer—H&S:  | <u>Allen Williamson</u>               | <u>Keen Mountain, Virginia 24624</u>          |
| 23. Labor Organization:     | <u>United Mine Workers of America</u> |   |
| 24. Chairman—H&S Committee: | <u>Walter Browning</u>                | <u>Box 531, Keen Mountain, Virginia 24624</u> |

## **TABLE OF CONTENTS**

<b>Part</b>	<b>Commentary.....</b>	<b>1</b>
<b>Part II</b>	<b>Discussion and Evaluation.....</b>	<b>3</b>
<b>Part III</b>	<b>Findings of Fact.....</b>	<b>5</b>
<b>Part IV</b>	<b>Conclusion.....</b>	<b>5</b>

## **APPENDIX**

- A**     **Persons Participating in the Investigation**
- B**     **Data Sheets**
- C**     **Sketch of Accident Scene**

## PART I

### COMMENTARY

On Thursday, April 13, 1978, the No. 7 unit crew, under the supervision of George E. Umbarger, entered the mine at 7:30 a.m. and arrived on the section at 8:00 a.m. Darrell Cantrell, industrial engineer, accompanied the crew into the mine. The crew was not a fully complemented crew and consisted of only Herndon Justus, continuous mining machine operator; Jerry C. Campbell, continuous mining machine operator's helper; Frank James, shuttle car operator; David Reedy, beltman; and George E. Umbarger, section foreman. This "short crew" assignment was due to the fact that the section had encountered a fault area ("want") and a considerable portion of the crew's time was spent drilling, blasting and loading rock. The No. 3 entry had been in the fault area for approximately 200 feet and the coal in the place had ranged from 0 to 34 inches.

Upon arrival on the section, Umbarger conducted a simulated emergency fire drill and instructed the crew in the procedures to follow in the event a conveyor belt fire occurred. Upon completion of the fire drill, Umbarger examined the face areas for hazardous conditions and then assigned duties to the crew members. Reedy assumed his regular duties as a beltman and the remainder of the crew, along with Darrell Cantrell, went to the No. 3 entry where the continuous mining machine was located. Upon arrival in the No. 3 entry, the miner crew began installing new cutter bits on the ripperhead of the continuous mining machine. While this work was in progress, Umbarger measured the distance to the face of No. 3 entry and commented to both Cantrell and James that it lacked from 11 to 12 feet cutting into the left crosscut off No. 4 entry. After the work of installing the cutter bits in the ripperhead of the continuous mining machine was completed, Justus and Campbell scaled some loose pieces of roof down and then trammed the miner to the face of the No. 3 entry to begin the loading operation. The initial phase of the loading operation consisted of loading about three shuttle cars of rock which had been blasted and left in the place by the previous shift. At sometime near 11:00 a.m., after loading about 13 shuttle cars of coal and rock from the place, Umbarger walked back to the reel compartment of the shuttle car that Frank James was operating and told him that the place was cleaned up. Umbarger then directed James to call the beltman and dispatcher and to tell them that all the material had been loaded. He also instructed James to clean-up around the belt tailpiece while he and the miner crew installed 3 or 4 safety posts in the face area of the No. 3 entry and informed him that the crew would eat lunch after this work was done. James started toward the belt tailpiece and had traveled between 150 and 200 feet when he heard something

rattle. He did not think anything about it and proceeded on to the belt tailpiece. After discharging the load from the shuttle car onto the belt, he began cleaning up around the tailpiece as instructed.

At approximately 11:20 a.m., David Reedy arrived at the belt tailpiece with a jackhammer he had been instructed to deliver to the section. He talked to James about where the jackhammer was to be left and James told him to take it to the face of No. 3 entry and to check on the other men as they should have already been out of the place. Reedy proceeded toward the face of the No. 3 entry and could see a fall in the place even before he got to the last open crosscut. He continued on up to the edge of the fall and looked at it but did not realize that Justus, Campbell, and Umbarger were in the place. He then went back to the belt tailpiece and told James about the fall. After realizing what had happened, Reedy and James ran back to the place. Darrell Cantrell, who was in the No. 2 entry almost opposite the tailpiece, heard Reedy and James talking about the fall and also went to the scene. The three men attempted to contact the trapped men by voice and by pounding on the ribs but could not do so. After notifying officials on the surface about the accident, Reedy, James, and Cantrell began installing cribs immediately outby the fall and putting a line curtain in the place as far as they could safely do so. While this was in progress Bill Folino, safety engineer, arrived on the scene. After being informed of what had happened, he went to the telephone to ascertain if help was on the way.

Charlie R. Jessee, general superintendent; Allen Williamson, superintendent; and Earl Shortridge, acting mine foreman; who had been informed of the accident, went to the section to ascertain the predicament of the missing men and to start recovery work. S. E. Gaspersich, coal mine safety specialist; C. E. McGraw, coal mine inspection supervisor; and Carl E. Duty, coal mine inspector; were in the mine to investigate a coal mine bump which had occurred in the 1 south section. They were accompanied by F. P. Vandyke, assistant mine foreman. After being notified of the accident, they proceeded to the scene and enroute were joined by John Turyn, president, and Harold Stanley, safety director.

In the early phases of the recovery operations, it was decided to start cleaning up a passageway along the right rib of the No. 3 entry and to attempt to contact the missing men by drilling a hole into the place from the left crosscut off No. 4 entry. Two holes about 6 and 10 feet deep were drilled into the place and several futile attempts were made to establish voice contact through hoses inserted in the holes. It was then decided to drill additional holes in the place and blast through into the accident scene but this approach had to be stopped when it was discovered that methane was building up in the No. 3 entry. Cribs and timbers were installed on top of the fall to near the face of

the place and a line brattice was installed. This cleared the methane out of the place and permitted a hole to be blasted through from the left crosscut off No. 4 entry. The initial penetration into the face of the No. 3 entry was made about 10:00 p.m. Recovery workers could see the ripper-head of the continuous mining machine but could neither see nor contact any of the missing men.

The major thrust of the recovery work was made up the right rib in the No. 3 entry and involved moving rock by hand and installing posts and cribs as they advanced. The body of George E. Umbarger was recovered about 4:10 a.m., April 14, 1978, from about 20 feet inby the outer edge of the fall. Jerry C. Campbell's body was recovered from alongside the continuous mining machine at about 4:40 p.m., April 14, 1978. Herndon Justus' body was freed from the control deck of the continuous mining machine at about 11:50 p.m., April 14, 1978. All three men were apparently killed instantly.

Numerous mine workmen and officials from the company, United Mine Workers of America, Virginia Division of Mines and Quarries and the Mine Safety and Health Administration participated in the recovery effort at various times.

## PART II

### DISCUSSION AND EVALUATION

The investigation revealed the following factor relevant to the occurrence of the accident:

1. The roof that fell was a slickensided horseback-shaped mass, 71 feet long, 18 to 20 feet wide and up to 9½ feet thick. The edges of the horseback, while within the confines of the entry, very closely followed the rib lines. The rock had characteristics of both sandy shale and sandstone with the predominate characteristics being sandstone. It apparently fell suddenly and without warning which can be attributed to its shape, location and slickensided characteristics.
2. According to Darrell Cantrell, industrial engineer, who was on the section observing mining operations and working conditions at the time of the accident, the roof that fell was supported with 60-inch fully grouted resin rods installed 5 in a row crosswise and on not more than 4-foot centers, lengthwise. He stated that most of the rods were installed on 2-to 4-foot centers and that there were some timbers installed with the line curtain on the right side of the entry. Five cribs had been installed in the intersection. Cantrell further stated that Umbarger had informed him at the beginning of the shift that the No. 3 entry face was located 77 feet inby Survey Station No. 12894.
3. Frank James, shuttle car operator, and Darrell Cantrell stated that they had been in and out of the face areas of the No. 3 entry all during that shift and

did not observe any roof movements or hear the roof "working". They further stated that they did not observe any abnormal roof conditions and were of the opinion that the roof was adequately supported prior to the accident.

4. The face of No. 3 entry had been advanced only 27 to 32 feet since resumption of mining after the work stoppage (110 days). An estimated two-thirds of the roof that fell had been supported prior to the work stoppage.

5. A M.S.H.A. roof control representative had inspected the section as part of a routine review of the mine roof control plan on April 6, 1978, and did not observe any conditions to warrant a change in the roof control plan.

6. A safety and health inspection on the section had been completed on April 5, 1978, and no violations of the mandatory provisions were cited.

7. According to Claude Hamm, section foreman on the afternoon shift for the No. 7 unit, he and Umbarger, as a precautionary measure, instituted the practice of installing a mechanical type,  $\frac{3}{4}$ -inch roof bolt, 6-foot in length, in addition to the 5 resin rods installed in each row. He further stated that these bolts had been installed in the place for the last 40 feet and that the torque on them was checked each shift. Hamm also stated that these checks had not revealed any excessive torque reading and that in his opinion, the roof in the place was supported adequately.

8. Ernest Rife, repairman and mine safety committeeman, stated that he had worked on the No. 7 unit on the 12 midnight to 8:00 a.m. shift (shift prior to accident) and had spent most of the shift working on the continuous miner which was in the No. 3 entry. He did not detect any unusual roof conditions or movement of the roof.

9. According to company officials and employees on the No. 7 unit, it had been the practice to advance the entry faces in the fault area about 4 to 7 feet each mining cycle.

10. The accident area was examined on May 24, 1978, after the roof fall had been cleaned up and the roof supported. The face of No. 3 entry was 94 feet inby survey station No. 12894. Testimony indicated that the face was 77 feet inby this station at the beginning of the shift; therefore, the face of No. 3 entry had been advanced 17 feet inby the last row of roof bolts. Also, 34 inches of coal was present on the left side of the place and only 1 inch of coal was present on the right side.



11. According to Claude Hamm, evening shift section foreman on No. 7 unit, at least 3 test holes, 8-foot deep, had been drilled in by the last open crosscut in the No. 3 entry. Hamm also stated that he had checked these holes and did not detect any cracks. He further stated that the roof bolting crew did not detect any cracks while drilling these test holes.

12. It is relevant to note that a large roof fall had occurred in the No. 3 entry about 125 feet outby the accident area and at the beginning of the fault (See Appendix C).

13. According to statements of Claude Hamm, evening shift section foreman on No. 7 unit, and Darrell Cantrell, industrial engineer, the roof in the accident area was supported with 5-foot, fully-grouted resin rods, installed 5 in a row crosswise, on 2- to 4-foot centers, and on 4-foot centers lengthwise. These resin rods were supplemented by a 6-foot, 3/4-inch mechanical type bolt in each row. Also, according to Cantrell, there were a few timbers installed on the right side of the place. The supports installed in the place exceeded the minimum requirements of the approved roof control plan.

### PART III

#### FINDINGS OF FACT

The Mine Safety and Health Administration's investigation did not reveal any violations of Title 30, Code of Federal Regulations, that caused or contributed to the cause of the accident.

### PART IV

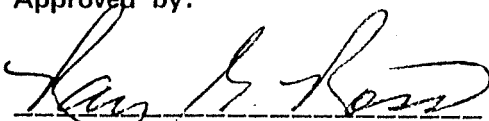
#### CONCLUSION

The accident occurred because both management and employees failed to make an accurate evaluation of the roof conditions. This failure can be attributed to the fact that the physical indications normally associated with adverse roof conditions had not manifested themselves. The thickness and the slicksided characteristics of the horseback-shaped mass, with the edges within the confines of the entry, precluded these indications from manifesting themselves until immediately before the roof fell. Managements' failure to fully anticipate and adequately compensate for the hazards associated with mining in fault areas, particularly in the fringes of the fault, contributed materially to the cause of the accident. Advancing the face of the No. 3 entry 17 feet in by the last row of roof bolts in a fault area may have contributed to the cause of the accident.



Carl E. Boone, II

Approved by:



Ray G. Ross, District Manager

## APPENDIX

## **APPENDIX A**

The investigation was conducted by the Mine Safety and Health Administration personnel and those persons present during the investigation were:

### **Island Creek Coal Company**

John Turyn, Jr.	Division President
E. E. McBurney	Corporate Safety Coordinator
Harold Stanley	Safety Director
C. R. Jessee	Manager of Mines
MacDonald Hagy	Safety Inspector
Steve Hamro	Division Mine Engineer
Glen R. Thompson	Mine Engineer
Darrell Cantrell	Industrial Engineer

### **Beatrice Pocahontas Company Officials**

Allen Williamson	Superintendent
Carnie Browning	Safety Inspector
Hearl Shortridge	Acting Mine Foreman
F. P. Vandyke	Assistant Mine Foreman
Claude Hamm	Section Foreman

### **Beatrice Pocahontas Company Employees**

Frank James	Shuttle Car Operator
David Reedy	Beltman

### **Representatives of Miners**

E. W. Gilbert	Safety Director
Danny Davidson	International Safety Inspector
F. T. Mullins	District 28 Safety Coordinator
Alonzo Mullins	District 28 Safety Coordinator
E. M. Long, Jr.	Safety Department
Carless Clark	President, Local 1374
Walter Browning	Chairman, Safety Committee
Ernest Rife	Safety Committee

**DuPont Company - FASLOC Sales**

W. B. Beerbower	Product Specialist
J. E. Richardson	Marketing Specialist

**Virginia Division of Mines and Quarries**

Frank Linkous	Chief Mine Inspector
Lewis F. Wheatley	Technical Assistant
H. D. White	District Mine Inspector (Roof Control)
Phillip Willis	District Mine Inspector

**Mine Safety and Health Administration**

Ray G. Ross	District Manager
Jack F. McManus	Subdistrict Manager
S. E. Gaspersich	Coal Mine Safety Specialist
Elmer Simmons	Supervisory Mining Engineer
Merian O'Bryan	Supervisory Coal Mine Technical Specialist (Accident Prevention and Investigation)
James E. Belcher	Safety and Health Specialist
W. Terry Hoch	Mining Engineer
William Debevec	Safety Specialist
Carl E. Boone, II	Coal Mine Inspector (Roof Control)

## APPENDIX B

Form No. 2000-58  
June 1977

## Data Sheet

**SECTION A—VICTIM DATA**

1. Name: George E. Umbarger 2. Sex M ☒ F ☐ 3. SSN: [REDACTED]

4. Age: 53 5. Job classification: Section Foreman

6. Experience at this classification: 8 years 5 months 7. Total mining experience: 26 years

8. What activity was being performed at time of accident? Supervising continuous miner crew.

9. Victim's experience at this activity: 8 years 5 months

10. Was victim trained in this task? Yes

11. Health and Safety courses/Training received (related to accident) \_\_\_\_\_ Date received \_\_\_\_\_

<u>Instructors Training for Roof &amp; Rib Control</u>	<u>11-15-74</u>
<u>First Aid</u>	<u>11-27-74</u>
<u>Retraining for Certified Instructors</u>	<u>3-20-78</u>

**SECTION B—SUPERVISOR DATA (supervisor of victim)**

12. Name: Harl Shortridge 13. Certified: Yes ☒ No ☐

14. Experience as supervisor: 6 years 15. Total mining experience: 25 years

16. Health and Safety courses/Training received (related to accident) \_\_\_\_\_ Date received \_\_\_\_\_

<u>Retraining for Certified Instructors including Roof Control</u>	<u>12-9-77</u>
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17. When was the supervisor last present at accident scene prior to the accident? April 7, 1978

18. What did he do when he was there? Made faces and section

19. When was he last in contact with the victim? Before going inside mine

20. Did he issue instructions relative to the accident? No

21. Was he aware of or did he express an awareness of any unsafe practice or condition? No

## APPENDIX B

Form No. 2000-58  
June 1977

## Data Sheet

**SECTION A—VICTIM DATA**

1. Name: Herndon Justus 2. Sex ☒ M ☐ F 3. SSN: [REDACTED]

4. Age: 44 5. Job classification: Continuous Miner Operator

6. Experience at this classification: 2 years 4 months 7. Total mining experience: 27 years

8. What activity was being performed at time of accident? Operating Continuous Miner

9. Victim's experience at this activity: 2 years 4 months

10. Was victim trained in this task? Yes

11. Health and Safety courses/Training received (related to accident) First Aid, Accident Prevention, Roof & Rib Control Date received 2-14-77

**SECTION B—SUPERVISOR DATA (supervisor of victim)**

12. Name: George E. Umbarger 13. Certified: Yes ☒ No ☐

14. Experience as supervisor: 8 years 5 months 15. Total mining experience: 26 years

16. Health and Safety courses/Training received (related to accident) Retraining for Certified Instructors including Roof Control Date received 12-9-77

17. When was the supervisor last present at accident scene prior to the accident? Present at occurrence

18. What did he do when he was there? Supervising continuous miner operations

19. When was he last in contact with the victim? At time of accident.

20. Did he issue instructions relative to the accident? Unknown

21. Was he aware of or did he express an awareness of any unsafe practice, or condition? Unknown



## Data Sheet

**SECTION A—VICTIM DATA**

1. Name: Jerry C. Campbell 2. Sex ☒ M ☐ F 3. SSN [REDACTED]

4. Age: 30 5. Job classification: Miner Helper

6. Experience at this classification: 8½ months 7. Total mining experience: 13½ years

8. What activity was being performed at time of accident? Assisting Miner Operator

9. Victim's experience at this activity: 8½ months

10. Was victim trained in this task? Yes

11. Health and Safety courses/Training received (related to accident) First Aid; Accident Prevention; Roof & Rib Control Date received 2-28-77

**SECTION B—SUPERVISOR DATA (supervisor of victim)**

12. Name: George E. Umbarger 13. Certified: Yes ☒ No ☐

14. Experience as supervisor: 8 years 5 months 15. Total mining experience: 26 years

16. Health and Safety courses/Training received (related to accident) Retraining for Certified Instructors including Roof Control Date received 12-9-77

17. When was the supervisor last present at accident scene prior to the accident? Present at occurrence.

18. What did he do when he was there? Supervised continuous miner operations.

19. When was he last in contact with the victim? At time of accident.

20. Did he issue instructions relative to the accident? Unknown

21. Was he aware of or did he express an awareness of any unsafe practice or condition? Unknown

Form No. 2000-59  
June 1977



1. Voltage of circuit involved: \_\_\_\_\_
2. Voltage to which victim was exposed: \_\_\_\_\_
3. Type of supply circuitry (trolley wire, portable rectifier, wye connected secondary, delta connected secondary) \_\_\_\_\_
4. Type, size, and insulation rating of conductor involved: \_\_\_\_\_
5. Electrical protection for circuit: \_\_\_\_\_
6. Ground fault trip value (3 phase only): \_\_\_\_\_
7. Wiring diagram of circuit involved (attach separate drawing): \_\_\_\_\_
8. Condition of mine floor: \_\_\_\_\_
9. Was victim wearing rubber boots? Yes ☐ No ☐ Condition of boots: \_\_\_\_\_
10. Was victim wearing gloves? Yes ☐ No ☐ Type: \_\_\_\_\_ Condition: \_\_\_\_\_
11. Type of frame grounding for equipment: \_\_\_\_\_

12. Name of manufacturer of machine involved: Jeffrey Mining Machinery Division  
Dresser Industries, Incorporated

13. Model, approval number, and type of machine: 120L Helimer

14. Machine voltage: 440 Volt AC

15. Did design of machine contribute to accident? Yes ☐ No ☒

16. Did maintenance deficiencies contribute to accident? Yes ☐ No ☒

17. Name of official responsible for maintenance of equipment: Roger Smith

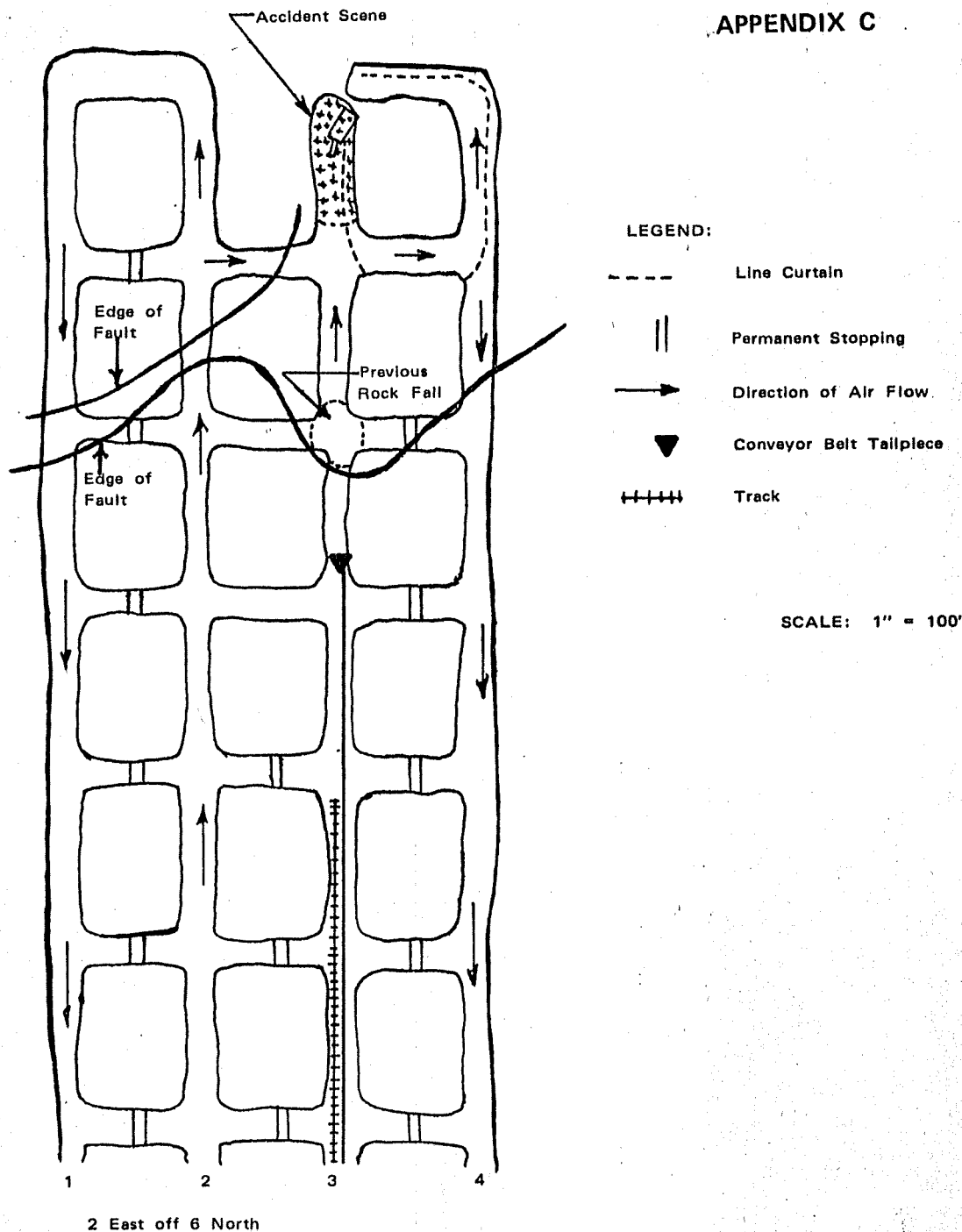
18. Experience of operator: 2 years 4 months

19. Was machine being operated within safe limits of its capability? Yes ☒ No ☐

### SECTION C-REMARKS



# APPENDIX C



## SKETCH OF MULTIPLE FATAL ROOF FALL ACCIDENT

Beatrice Mine (I.D. No. 44-00238)

Beatrice Pocahontas Company

Keen Mountain, Buchanan County, Virginia

April 13, 1978