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DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DISTRICT B

BUREAU OF MINES

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Mount Hope, W. Va.

REPORT OF COAL-MINE INUNDATION

SAXSEWELL NO. 8 MINE
GAULEY COAL AND COKE COMPANY
SAXSEWELL DIVISION
LEIVASY, NICHOLAS COUNTY, WEST VIRGINIA

May 6, 1968

By

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CONTENTS

	PAGE
Introduction.	1
General Information	1
Mining Methods, Conditions, and Equipment	2
Mining Methods.	2
Transportation.	3
Electricity	3
Illumination.	3
Mine Rescue	3
Story of Inundation and Recovery Operations	4
Participating Organizations	4
Activities of Bureau of Mines Personnel	4
Mining Conditions Immediately Prior to Inundation	5
Evidence of Activities and Story of Inundation.	5
Recovery Operations	8
Investigation of Cause of Inundation.	13
Investigation Committee	13
Mine Maps As A Factor in the Inundation	14
Summary of Evidence	16
Cause of Inundation	17
Recommendations	18
Acknowledgment.	19
Appendixes	
A - Victims of Inundation	
B - Saxsewell No. 8 mine and adjacent mines following inundation of May 6, 1968	
C - 2 right entries off south mains, Saxsewell No. 8 mine and adjacent mines	
D - Room development off 2 right entries after inundation	
E - Profile of water level after inundation	

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INTRODUCTION

This report is based on an investigation made in accordance with provisions of the Federal Coal Mine Safety Act (66 Stat. 692; 30 U.S.C. Secs. 451-483) as amended.

An inundation (water) of part of the active workings of the Saxsewell No. 8 mine occurred at 9:40 a.m., Monday, May 6, 1968. There were 26 men in the mine at the time of the occurrence. One man escaped from the mine unassisted, but the others were entrapped in the mine by the intrushing water. Fifteen men were rescued 5 days later and six others were rescued 10 days after the inundation occurred. Four men were fatally injured or were drowned by the intrush of water. The victims were brought to the surface on the morning of May 16, 1968.

The inundation occurred when a continuous miner (Jeffrey 100-L) holed through into the workings of an abandoned mine while cutting the face of No. 3 room left off 2 right off south main entries.

The intrush of water and the flooding of the active workings caused considerable property damage.

Pertinent information concerning the entrapped men and the victims is listed in Appendix A.

GENERAL INFORMATION

The Saxsewell No. 8 mine of the Gauley Coal and Coke Company, Saxsewell Division, is located on Hominy Creek, approximately 5 miles south of Leivasy, West Virginia, off highway route No. 20, and is served by autotrucks and the Baltimore and Ohio Railroad.

The Sewell coalbed on this property was leased by the Gauley Coal and Coke Company from Eugene and Thomas McKenzie of East Rainelle, West Virginia, April 24, 1962. The McKenzies had operated the No. 4 mine, Sugar Grove Coal Company prior to their leasing the tract of coal, and they retained part of the property for 5 years to continue operating the No. 4 mine. The McKenzies operated the No. 4 mine until 1963, and several different contractors mined coal on the reserved boundary until March 1966, when the No. 4 mine was permanently abandoned. After acquiring the property, the Gauley Coal and Coke Company leased tracts of coal to small mine operators in addition to operating the Saxsewell No. 8 mine.

The names and addresses of the officials of the Maust Coal and Coke Corporation and their wholly owned operating company, Gauley Coal and Coke Company, Saxsewell Division are:

Maust Coal and Coke Corporation

C. E. Richardson	President	Bayard, West Virginia
T. A. Salvati	General Manager, Southern Mines	Richwood, West Virginia
Floyd Barnette, Jr.	Chief Engineer, Southern Mines	Richwood, West Virginia

Gauley Coal and Coke Company

Franklin O. Davis	Superintendent and Mine Foreman	Richwood, West Virginia
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The mine was being developed through drifts into the medium-volatile Sewell coalbed, which averaged 32 inches in thickness locally. A total of 68 men, 66 underground and 2 on the surface, was employed on 1 maintenance and 2 coal-producing shifts a day, 5 days a week. The daily production averaged 1,200 tons of coal, all loaded mechanically.

The immediate roof is reasonably firm shale, ranging from 2 to 6 feet in thickness and contains occasional rolls, tension cracks, and slips. The main roof is firm shale overlain with sandstone, which contacts the coalbed at irregular intervals.

MINING METHODS, CONDITIONS, AND EQUIPMENT

Mining Methods: The mine was developed by a multiple-entry system, using Jeffrey 100-L continuous miners. Main, cross, and room entries were driven on 40-foot centers and 28 feet wide. Rooms, on 75-foot centers, were driven 30 feet wide on the advance and 30 feet

was mined from the room pillars on the retreat; no effort was made to recover the remaining part of the room pillars. Crosscuts were about 75 feet apart. The Jeffrey 100-L miners average about 60 feet of advance a shift.

Transportation: The coal is transported from the faces to the surface by a series of bridge, chain, and 30-inch belt conveyor lines. Men and supplies are transported underground in rubber-tired mine cars hauled by battery-powered tractors.

Electricity: Electric power at 13,200 volts alternating current, purchased from the Monongahela Power Company, was conducted underground by special power cables that are suitably installed and protected from falls of roof. Disconnecting switches and lightning arresters were provided in the circuits near the main portal where the circuits entered the mine. Transformers at strategic locations underground reduced the high-voltage power to 480 volts alternating current. The electric face equipment was of the permissible type. Suitable overload protection was provided for the electric circuits of the equipment, and the frames of the equipment were grounded effectively. All trailing cables were of the flame-resistant type and were provided with suitable short-circuit protection.

It is the opinion of the writers that when the water entered the mine and grounded the electrical circuits, the electronic circuit breaker located on the surface did not open and the circuits were not de-energized until the fuses in the disconnect station opened when water roofed in the station.

Underground communication was by a Femco loudspeaking telephone system.

Illumination: Permissible electric cap lamps were used for portable illumination underground. Additional illumination was provided by means of electric lights installed at strategic locations underground.

Mine Rescue: A mine rescue team was not maintained at the mine. Two fully equipped State mine rescue teams stationed at the Sewell No. 4 mine, Sewell Coal Company, and the Quinwood No. 2 mine, Imperial Smokeless Coal Company, were available, but their services were not utilized. Normally, the established escapeways from the working sections were well maintained, but these avenues of escape were blocked by the inrush of water. A check-in and check-out system was in force. The numbers on the permissible electric cap lamps were used as a means of personal identification, but several of the employees carried their lamps in open wire holsters. These lamps were not securely fastened to the mine belts, and two of the victims, when found, were without their cap lamps.

STORY OF INUNDATION AND RECOVERY OPERATIONS

Participating Organizations: Officials and workmen of the Gauley Coal and Coke Company; numerous large and small coal companies and contracting firms; Volunteer Fire Departments from East Rainelle, Quinwood, and Summersville, West Virginia; and a number of interested persons installed pumps at the various affected openings as soon as the pumps were available. Also, men from these organizations aided materially with the drilling of nine boreholes from the surface to the coalbed and the installing of five deep-well pumps.

Communication and power facilities were provided by the Chesapeake and Potomac Telephone Company, National Mine Service, and the Monongahela Power Company.

Representatives of the West Virginia Department of Mines, United Mine Workers of America, and the United States Bureau of Mines participated in the recovery operations and underground investigation.

Activities of Bureau of Mines Personnel: Clyde Perry, Federal coal-mine inspector, learned of the occurrence upon arrival at the Saxsewell No. 8 mine at 11:20 a.m. to continue a regular mine inspection, and he promptly notified W. R. Park, district manager, at the Mount Hope office. Immediately thereafter, Park directed several Federal inspectors to proceed to the scene of the occurrence and assist in every way possible. Park arrived at the mine about 4:30 p.m. and was informed that 26 men were in the mine at the time of the inundation and that only one of the men had escaped by way of the belt conveyor. Frank C. Memmott, Associate Director--Health and Safety, arrived at the scene about 10 p.m., May 6, 1968, and Earl T. Hayes, Acting Director, arrived at the mine at 9:15 a.m., May 8, 1968. Federal Inspectors Herschel H. Potter, Fred Casteel, Wade Ross, John Poole, Russell Butcher, Clyde Perry, Gerald Croyle, James Blankenship, Jr., John Crawford, William M. Cordray, Mike Delridge, and James Micheal assisted in the 24-hour-a-day recovery operations.

The officials of the adjacent No. 2 mine, S. and C. Coal Company, and No. 3 mine, Lee Coal Company, cooperated fully when they were notified on May 6, 1968, of the seriousness of the situation and were requested to refrain from mining until such time as the extent of the inundation and possible dangers to their mines could be determined.

A Closure Order, inundation danger, was issued May 6, 1968, under Section 203(a)(1) of the Federal Coal Mine Safety Act, requiring all persons except those persons referred to in Section 203(a)(2) of the Act to be debarred from entering the mine.

Mining Conditions Immediately Prior to Inundation: Charles Beam, third-shift foreman and fire boss, examined the Nos. 1, 2, and 3 rooms left off 2 right entries about 4 a.m., May 6, 1968. Beam stated that the condition of the three rooms was normal. He observed that the floor in all three rooms was wet, but this was not unusual, especially after the places had been idle for a weekend. John Moore, Jr., day-shift foreman, examined Nos. 1, 2, and 3 rooms at the beginning of the shift shortly after 7:30 a.m., approximately 2 hours prior to the flood. He observed that there was a small stream of water flowing out of the No. 3 room and that the rooms were damp. However, he did not consider that this was an unusual condition as the mine floor generally showed evidence of moisture.

Several of the face employees stated that water had seeped through the coal near the face of No. 1 room on the last work day, Friday, May 3, prior to the inundation and that some water had accumulated near this face; however, none of the employees or officials was particularly concerned about the water seeping from the coal as they were of the opinion that they were in solid coal.

Evidence of Activities and Story of Inundation: The day-shift crew entered the mine at 7 a.m., May 6, 1968, and they were transported in rubber-tired mine cars hauled by battery-powered mine tractors to their respective sections without incident.

The two continuous miner crews working in the main entries performed their normal mining operations without incident until about 11:25 a.m., when they were notified of the inrush of water by telephone. These men were instructed to travel to the battery-charging station near south mains belt head and wait at this location for further instructions. The names and occupations of these men are listed in Appendix A.

The two continuous miner crews in 2 right off south mains, including John Moore, Jr., foreman, arrived on the section about 7:30 a.m. Moore stated that he examined the three working places (Nos. 1, 2, and 3 rooms) at the beginning of the shift and thereafter remained in the No. 3 room while the crew performed work preparatory to loading. When they began mining coal in No. 3 room, Moore traveled to No. 1 room where the "paddle chain" was being repaired on No. 5 miner.

The miner in No. 2 room was not being operated at the time of the inrush of water, and no one was working in the place at the time.

Gene Martin, supplyman, was the only survivor of the five men working in No. 3 room at the time the miner holed through. Martin

stated that the miner was making the third run across the face, cutting from left to right, and had mined about 12 feet in depth when the inrush of water occurred. He was on the right side of No. 3 room near the tail of the bridge conveyor when he heard William Burdette, timberman who was working on the right side of the miner, yell. Martin turned toward the face to look for Burdette and the water struck him (Martin), carrying him out of the place and then toward the mouth of No. 2 room. Martin observed water coming through the lead auger at the roof but has no other recollection of the events until the men from No. 1 room helped him out of the water and into No. 2 room.

The other four members of the No. 3 room crew were carried out of No. 3 room by the water. Three of the victims were later found alongside the belt conveyor in No. 2 entry and one was recovered near the mouth of No. 17 room right (see Appendix C).

The force of the inrushing water moved the continuous miner about 17 feet outby the face and washed the pans and chain for the chain-conveyor line out of the room and piled them up in No. 1 entry.

John Moore, Jr., foreman, Jennings Lilly, miner operator, Richard Scarbro, miner helper, Larry Lynch, beltman, and Joe Fitzwater, electrician, were working on No. 5 miner in No. 1 room when they heard the inrush of water and the shouts of No. 3 miner crew. They immediately went to the mouth of No. 2 room, where they met the water and assisted Gene Martin from the water. Moore stated that the water was coming out of No. 3 room at a terrific force and of sufficient volume to fill the entire room. After this crew attempted to get through the water and failed, they collected three dinner buckets, three jackets, and brattice cloth, and thereafter retreated into No. 2 room.

The No. 1 room crew hung brattice-cloth curtains across Nos. 1 and 2 rooms at the locations where the water had backed up into the rooms, about 165 feet and 90 feet outby the faces of Nos. 1 and 2 rooms, respectively. The men constructed a shelter 5 feet wide and 8 feet long of three layers of brattice cloth near the face of No. 2 room (see Appendix D). The six men remained in the shelter for the greater part of the time they were entrapped, leaving only to obtain drinking water and to check on the water level. Moore stated that on Monday morning, May 13, they thought they might be able to travel to the surface and they traveled outby in No. 1 entry for a distance of about 400 feet, at which location they found the water roofed across the entry. They then returned to the shelter in No. 2 room and remained until rescued. The entrapped men's food supply was exhausted Thursday, May 9, and they drank mine water thereafter. The

men stated that they had no difficulty in breathing and that the air always seemed to be of good quality. They mentioned further that their greatest discomfort was coldness, resulting from the mine temperature, dampness, and inactivity.

Franklin Davis, superintendent and mine foreman, did not ride the man trip on the morning of May 6, and he was on the surface when Andy Walton and Ernest Fitzwater, supplymen and operators of the battery-powered mine tractors, returned to the surface at 8:30 a.m. Davis directed Fitzwater to load his supplies and to transport Clyde Perry, Federal coal-mine inspector, underground when he (Perry) arrived at the mine. Davis thereafter rode the supply trip with Walton to the main entries section, where he examined the working places.

About 10:30 a.m., the main belt conveyor stopped and about 10:50 a.m., Davis telephoned the surface to learn why the belt had stopped and was informed that a timber was fouled in the hopper. After the belt conveyor started to run, Davis stated that he re-examined the working places in the main entries and then returned to the tailpiece of the main belt about 11:25 a.m. He mentioned that he noticed that the main belt was wet and assumed that the wet belt resulted from raining on the surface. Continued observation of the wet belt caused Davis to decide he should check further and he started traveling toward south main entries.

Ernest Fitzwater entered the mine with a trip of supplies about 11 a.m., and when he had traveled about 1,050 feet in by the portal, he observed an unusual amount of water apparently flowing out by in the belt entry; after a fast glance at the water, he left the tractor, jumped onto the belt conveyor and rode to the surface. On the surface, Fitzwater immediately began telephoning for Superintendent Davis. As Davis approached the south mains belt head, he heard himself "paged" and observed water flowing out of south main entries. Davis answered the telephone and directed Fitzwater to call T. A. Salvati, general manager, and inform him of the water and the need for pumps. Davis then called the beltman in the main entries and told him to bring the two crews to the battery-charging station as soon as possible.

Lonnie Bennett, electrician, was at the main entry belt conveyor tailpiece when Davis called, and he immediately traveled to the battery charging station. Davis directed Bennett to remain at the station until the remainder of the men from the main entries arrived. He further directed Bennett that all were to remain at the station until he (Davis) returned. Davis then instructed Edward Rudd, beltman working in the area, to travel with him into south mains to try to determine the source of the water. When they arrived at 2 right belt

head, Davis telephoned the surface and T. G. Spurlock, District State mine inspector, answered. Spurlock had been at a nearby mine when he heard of the occurrence, and immediately traveled to Saxsewell No. 8 mine.

Davis informed Spurlock that the water was coming from 2 right entries and that he and Rudd were going to travel into 2 right via No. 1 entry as far as possible. Traveling in No. 1 entry, Davis and Rudd found that the water was roofed in No. 1 entry about 500 feet inby the mouth of the entry; whereupon, they returned to 2 right belt head and telephoned the battery-charging station. Davis learned that the men from the mains section had arrived and that the water was within 12 inches of being roofed near the mouth of south mains. He was advised further that they would have to hurry to get through to the main entries. However, Davis and Rudd failed to reach the battery-charging station because of the depth of the water at the ventilation doors and the presence of fumes over the top of the water from transformer oil. The two men then returned to the higher elevation at 2 right belt head, where they arrived about 12:05 p.m.

The main entry crews were unable to travel to the surface because of the water at the south mains belt head. However, they were able to communicate with surface employees by telephone and they remained near the charging station inby the water until they were instructed on the morning of May 8 to travel to No. 5 room left off 2 right mains where a borehole (No. 2) was being drilled from the surface. The group of 13 men, as well as Davis and Rudd at 2 right belt head, were able to maintain telephone communications with the surface at all times until their rescue.

Recovery Operations: Supervisors from other mines of the Maust Coal and Coke Corporation in the immediate area were directed to report to the Saxsewell No. 8 mine. Within 4 hours of the inundation, three 6-inch and four 2-inch pumps had been moved into the mine. The 2-inch pumps, owned by Volunteer Fire Departments in nearby towns, were placed in operation in the No. 3 entry and were later replaced with 3-inch pumps. These pumps were advanced as the water receded; however, rising water in Nos. 1 and 2 entries necessitated that the first pumps installed in these entries be retreated until they were installed on the surface at the portals. About midnight on May 6, the water ran out of the No. 1 portal entry, and the run-off continued for several hours. The high water level in No. 2 entry was 412 feet inby the portal, and the 6-inch pumps were placed in operation at this location.

On May 7, sections of 4-inch plastic pipe were filled with food, drinking water, and blankets, sealed with plastic, securely fastened to the main belt conveyor, and sent back to the 13 entrapped men in the main

entries. This procedure was followed in supplying these men until a 5-5/8-inch borehole was drilled into No. 5 room left 2 right off the main entries at 2:15 a.m., May 8, and such materials were thereafter lowered through the borehole.

About 3:15 p.m., May 7, 1968, a 3-inch borehole reached the coalbed near Davis and Rudd. An air compressor was put into operation discharging air through this borehole for the purpose of ventilation, and the compressor was operated 20 minutes out of each 30 minutes. About 5 a.m., May 8, a 5-5/8-inch borehole reached the coal near the 2 right south mains belt drive, and the two men were supplied through this borehole until they left the area and joined the men in the main entries.

In March 1967, No. 11 room right in the No. 6 mine, Straley Coal Company, an abandoned adjacent mine, accidentally holed through into the abandoned No. 4 mine, Sugar Grove Coal Company. An effort to reach the 2 right section in the Saxsewell No. 8 mine through this opening by State and Federal inspectors was attempted but failed because water was roofed in the No. 4 mine.

The main entries of the active adjacent No. 2 mine, S. and C. Coal Company were stopped several months prior to this incident because water was observed seeping out of the face of the coal. In an attempt to help dewater the Saxsewell No. 8 mine, a crew equipped with a hand-held hydraulic drill and 1-1/2-inch augers, was instructed to drill boreholes in advance of the face in No. 2 main entry. Five holes were drilled to depths of 23 to 36 feet when they reached the adjacent abandoned workings and water. The holes were promptly plugged and two 3-inch pumps were installed about 470 feet in by the portal. The plugs were thereafter removed and water was permitted to flow into the mine. The pumps in the No. 2 mine were operated continuously until May 12, when the holes ran dry (see Appendix B).

The main entries of the active No. 1 mine, C. and D. Coal Company, were within 600 feet of 1 left 3 right off the main entries of the Saxsewell No. 8 mine. Officials of the Imperial Smokeless Coal Company offered to install a belt conveyor in the No. 1 mine and drive a single entry to rescue the 13 men who were entrapped in the main entries. Work was begun on the evening of May 6 and continued until the men were rescued May 11 through the Saxsewell No. 8 portal (see Appendix B).

Two attempts were made on May 7 to reach the 2 right section through the abandoned No. 4 mine, Sugar Grove Coal Company, by State and Federal inspectors. These efforts were unsuccessful because of water being roofed across all entries. On the same day, a ventilating fan and a 6-inch pump were installed in this mine so as to lower the water level in No. 4 mine and perhaps assist in lowering the water levels in the Saxsewell No. 8 mine.

Continuous pumping in the main entries of Saxsewell No. 8 mine lowered the water sufficiently in the south main entries to permit Davis and Rudd on May 10 to join the 13 men in the main entries. On May 11, the water in the main entries had receded sufficiently to permit a recovery team from the surface to wade through the water in the No. 4 entry by traveling close to the right rib. This water was about 18 inches in depth and extended for several hundred feet in length. The recovery team reached the 15 men in the main entries about 3:30 a.m., May 11, and the rescued men arrived on the surface about 5:20 a.m. by way of the No. 4 entry. At this time, the Nos. 1, 2, and 3 main entries remained blocked with water.

As soon as the water was pumped off the roadway in the swag on the main entries inby 1 left on May 12, a 6-inch pump was moved to and installed in 2 right entries. Later two additional pumps were installed in these entries.

About 6:30 p.m., May 15, pumping had lowered the water from the mine roof in 2 right south mains and air began moving over the water. To prevent moving contaminated air from the abandoned adjacent mines into the Saxsewell No. 8 mine, the main fan for the Saxsewell No. 8 mine was stopped, and the fan at the No. 2 mine, S. and C. Coal Company, was changed to operate exhausting. The fan changes were completed about 7:30 p.m., and 7,000 cubic feet of air a minute was moving over the water towards the abandoned mines shortly thereafter.

About 1 a.m., May 16, a rescue team waded through the remaining water in No. 1 entry of 2 right and discovered fresh footprints inby the water. This group of men explored about 650 feet inby the water and returned to the rescue base. After discussion, another team waded the water and found six men alive in No. 2 room left off 2 right entries about 2 a.m., May 16. The six men were in reasonably good condition and they and the rescue team crawled about 1,000 feet outby to a location where they boarded a man trip. The man trip arrived on the surface about 4:30 a.m. and waiting ambulances transported the rescued men to the Sacred Heart Hospital at Richwood, West Virginia. The bodies of the four remaining men entrapped by the inrush of water were located and identified, and they were brought to the surface about 8:30 a.m.

Pumping operations were continued to dewater the rooms right off No. 3 entry of 2 right, and this work was completed May 27, 1968.

Five deep-well pumps were installed following the inundation, one in 1 left off the main entries and the remaining four in 2 right off south mains; these pumps ranged in capacity from 600 to 3,200 g.p.m. The first of the deep-well pumps started operating about 9 p.m., May 10; the last one at 4 a.m., May 14 (see Appendix B). In general, the affected area was dewatered from a high water elevation

of 2380.39 feet reached at 12 midnight on May 6 to the lowest elevation of 2338.9 feet reached about 2 a.m. on May 11 in the main entries and from a high water elevation of 2431.3 feet to the lowest elevation of 2408.3 feet reached at 12:45 a.m. on May 16 in the 2 right off south main entries.

As previously mentioned, water stopped running from the drill holes in the No. 2 mine, S. and C. Coal Company, on May 12. Thereafter, it was decided to shoot the coal from the solid so as to make an opening at the drill hole location into the abandoned No. 4 mine, Sugar Grove Coal Company (see Appendix B). This work was completed May 13 and when the opening was made, a large body of black damp was released. The ventilating fan for the No. 2 mine was reversed to blowing and an additional fan was installed in the No. 4 mine, Sugar Grove Coal Company. Both of the fans at the No. 4 mine were operated exhausting. On May 13 and 14, two exploratory trips were made from the No. 2 mine, S. and C. Coal Company, and an exploratory trip was made into the No. 4 mine, Sugar Grove Coal Company, by teams of company supervisors and State and Federal inspectors in attempts to reach the 2 right section of the Saxsewell No. 8 mine. All approaches were blocked by falls of roof.

The 21 entrapped men survived because of the differences in elevations at the locations where they were working at the time of the inrush of water and the areas of the mine that were flooded. The six survivors, who were trapped in Nos. 1 and 2 rooms left off 2 right entries, were from 0.40 to 2.7 feet higher in elevation than the mouth of the No. 3 entry of 2 right and 53.61 feet higher than the No. 2 portal entry. The elevations in No. 3 room off 2 right entries, in No. 3 entry at the mouth of 2 right, and the No. 2 portal entry were 2430.0, 2431.7, and 2380.39, respectively (see Appendix B).

The company began rehabilitating the mine on May 18, 1968, by erecting a seal, provided with a water trap, between the Saxsewell No. 8 mine and the No. 4 mine, Sugar Grove Coal Company. After a special inspection of the mine was completed by Bureau of Mines personnel, the Closure Order issued May 6 was revised by the Director of the Bureau of Mines to permit resumption of loading operations in the main entries section.

The Director annulled the Closure Order of May 6 to permit resumption of loading operations in the remainder of the mine, 2 right south mains section, June 12, 1968.

The investigation revealed that the No. 3 room left off 2 right entries inadvertently holed through into an entry of the abandoned

No. 4 mine of the Sugar Grove Coal Company while a continuous miner was being operated from left to right in the No. 3 room. The lead auger on the miner was about 11 feet from the right rib of the room at the time the active room and abandoned entry were connected.

Examination of the faces of the four entries in the No. 4 mine indicated that the entries likely had been stopped and abandoned because of the physical characteristics of the coalbed at this location. The faces apparently were stopped in an area where relatively clean coal measured only 18 inches and the remaining 22 inches of the coalbed consisted of shale and other impurities. The coal in the last cut made in the No. 3 entry of the No. 4 mine had been loaded out before the place was stopped; however, the bottom shale of the cut had been left in place. Immediately prior to the breakthrough, only 27 inches of coal separated the advancing face of the No. 3 room and the impounded water in the abandoned mine. In the breakthrough area, the bottom shale left in the abandoned mine was washed out making an opening 80 inches wide and 44 inches high between the No. 3 room and the abandoned entry. All evidence indicated that the impounded water rushed into the No. 3 room with terrific pressure and force.

The 21 men entombed in the Saxsewell No. 8 mine following the inundation displayed remarkable self-control, good discipline, and remained well organized during the entire time they were entrapped. Each man is commended for his courage and self-control. Especially commendable was the courage and self-control of the 6 men during their 237-1/2 hour ordeal. Fifteen of the 21 men were rescued on May 11 and each of these men were examined by medical doctors when they arrived on the surface. Several of the men were permitted thereafter to proceed to their homes while the others were sent to a hospital for observation and checking. All were released from the hospital several hours after they were admitted. The six men rescued on May 16 appeared to be in remarkably good condition when they arrived on the surface, but each was transported by ambulance to a hospital for observation and checking. Four of the six men were released within 24 hours after their admittance, and the last of the men was released from the hospital on Sunday, May 19.

Rescue of the entrapped men resulted from the combined efforts of many organizations and individual persons, and it is impossible to give suitable recognition to the efforts of all such organizations or individuals. The continuing efforts of officials and employees of the Gauley Coal and Coke Company were especially commendable and the company's engineering force was particularly effective in running lines and cutting roads for the boreholes drilled from the surface to the coalbed. Hundreds of experienced miners worked diligently for long periods of time without rest moving pumps used in

dewatering the mine by manual effort under strenuous conditions. Representatives of the West Virginia Department of Mines, the Bureau of Mines, and United Mine Workers of America lent invaluable assistance throughout the ordeal, and numerous coal companies and supply organizations provided men, equipment, and supplies in almost unlimited quantities. While the entrapment of the 21 men must have appeared lengthy to them, certainly, the combined efforts of all mentioned heretofore shortened considerably the time they spent underground.

INVESTIGATION OF CAUSE OF INUNDATION

Investigation Committee: The official underground investigation of the inundation was made May 17, 1968. Persons taking part in the investigation were:

Maust Coal and Coke Corporation
And
Gauley Coal and Coke Company

T. A. Salvati	General Manager, Southern Mines
Floyd Barnette, Jr.	Chief Engineer, Southern Mines
Robert Dunlap	Chief Engineer, Gauley Eagle Division
Franklin O. Davis	Superintendent and Mine Foreman

United Mine Workers of America

Donald Poland	Field Representative, District 31
Lee McClure	President, Local Union No. 1254
Eldon Collins	Member, Mine Safety Committee

West Virginia Department of Mines

J. A. Philpott	Inspector-at-Large
J. W. Hatfield	Assistant Inspector-at-Large
Milton Hitechew	District Mine Inspector
T. G. Spurlock	District Mine Inspector

United States Bureau of Mines

Frank C. Memmott	Associate Director--Health and Safety
W. R. Park	District Manager
James C. Blankenship, Jr.	Technical Assistant
John W. Crawford	Mining Engineer
Herschel H. Potter	Federal Coal-Mine Inspector

Hearings were conducted by the West Virginia Department of Mines on May 23, 1968, in the Capitol Building at Charleston, West Virginia; and on July 11, 1968, in the Nicholas County Courthouse at Summersville, West Virginia; the hearings were conducted by Elmer C. Workman, Director. Mr. Workman invited representatives of the United Mine Workers of America, The Maust Coal and Coke Corporation, The Gauley Coal and Coke Company, and the Bureau of Mines to participate in the interrogation of officials and workmen of the Gauley Coal and Coke Company.

Mine Maps As A Factor in the Inundation: The map of the Saxsewell No. 8 mine, posted in the mine foreman's office on the day of the inundation, had not been brought up-to-date after March 30, 1968. This map did not show or indicate abandoned and active mines in close proximity to the 2 right entries, except that several rooms from an active adjacent mine were shown by red pencil several hundred feet immediately inby the 2 right entries. Also, a property line and a stop line for rooms being turned left off 2 right entries were on the map. This stop line averaged about 320 feet from the centerline of No. 2 entry of 2 right and permitted the advancement of full length rooms.

Franklin Davis, superintendent and mine foreman, stated that he was unaware that workings of adjacent mines were in close proximity to the 2 right entries. Davis stated further that he had no reason to be concerned about workings in the 2 right section, as stop lines in other areas of the mine had provided the necessary precautionary safeguards; therefore, exploratory test holes were not drilled.

The 2 right entries were turned off south mains at 248 degrees 30 minutes and had been driven 1,741 feet in depth, although they were projected to be driven 1,850 feet. When the spads were "pushed up" at engineer's station spad No. 4+40 (440 feet inby mouth of 2 right), a minus 4 degrees 32 minutes ($-4^{\circ}32'$) error was made and resulted in the faces of the 2 right entries being located about 95 feet closer to the stop line and to the No. 4 mine, Sugar Grove Coal Company than expected. This error was discovered during a check survey following the inundation (see Appendix C).

Although the 2 right entries had been projected to be driven 1,850 feet, the superintendent decided to stop the faces at 1,741 feet and turn rooms left off No. 1 entry. This was done without consulting higher officials or the engineering department.

The No. 3 room (accident area) was turned 210 feet outby the face of No. 1 entry and at this location, the 2 right entries were about 81 feet closer to the stop line than expected.

The map in the engineer's office on the day of the inundation showed that the distance from the centerline of No. 1 entry of 2 right entries to the workings of the No. 4 mine ranged from 360 feet at engineer's station spad No. 6+39 to 350 feet at the mouth of No. 3 room. The investigation revealed that three of the four entries in the No. 4 mine, one of which No. 3 room holed into, had been driven 25, 49, and 21 feet farther in by engineer's station spad Nos. 216, 215, and 214 in Nos. 2, 3, and 4 entries, respectively, than shown on the map (see Appendix B).

A tract of coal containing 1,487 acres east of No. 4 mine, Sugar Grove Coal Company, was leased to small coal companies by the Imperial Smokeless Coal Company, an adjoining property owner. This coal was mined by Nos. 7 and 8 mines, George Coal Company; No. 1 mine, Shortridge Coal Company; No. 2 mine, Walkup Coal Company; No. 2 mine, Comer Coal Company; and No. 2 mine, H. H. Miller Coal Company. All these mines were interconnected underground, and at least some of these mines had excessive water accumulations.

The height of the coalbed in the area ranged from 36 to 54 inches in thickness. The dip of the coalbed is northwest or toward the Saxsewell No. 8 mine to the north and the No. 4 mine, Sugar Grove Coal Company, to the west (see Appendix B).

The No. 4 mine, Sugar Grove Coal Company, was leased to James Boone and H. H. Miller in August 1963 and was operated as the No. 3 mine, Lee Coal Company. In October 1964, the mine was operated as the No. 1 mine, Big Creek Coal Company, and this company abandoned the mine in March 1966. Reportedly, during pillar extraction in the No. 4 mine, Sugar Grove Coal Company, large amounts of water from the No. 2 mine of the H. H. Miller Coal Company flowed over the roof falls and into the No. 4 mine. Following the inundation, it was estimated that about 35 million gallons of water, not including the run-off, was present in the Saxsewell No. 8 mine when pumping operations were initiated.

Usually, the engineering staff of the Saxsewell No. 8 mine extended the map posted in the mine office upon completion of their weekly surveys. During the investigation, Franklin Davis, superintendent, stated that the posted mine map was usually 3 to 4 days behind, but at the time of the inundation, the engineers had not visited the Saxsewell No. 8 mine for about 10 days. Foremen did not carry a map of the mine or section of the mine under their supervision, and none of the foremen extended their mine development daily or at any other time on the map posted in the mine office.

Maps of the Saxsewell No. 8 mine and the No. 4 mine of the Sugar Grove Coal Company in use prior to the inundation were in error as mentioned

previously, and the block of coal left between the two mines was considerably smaller than anticipated by all concerned; however, at least one additional engineering or map error had to have occurred to permit the No. 3 room off 2 right entries, Saxsewell No. 8 mine, to "hole through" into the abandoned entries of the No. 4 mine, Sugar Grove Coal Company. Entries blocked by extensive roof falls and water in the No. 4 mine prevented surveying the No. 4 mine and/or tying the surveys of the two mines together.

Summary of Evidence: Evidence used in this report was acquired from underground examinations of the Saxsewell No. 8 and the No. 4 mines and from statements of company officials and workmen. The evidence is summarized as follows:

1. Detectable or apparent evidence of a breakthrough into abandoned workings was not visible to the miner crew members and foremen or to the preshift examiner in either Nos. 1, 2, or 3 rooms left off 2 right entries prior to the breakthrough.
2. The workings of the abandoned No. 4 mine, Sugar Grove Coal Company, and the workings of the active No. 3 mine, Lee Coal Company, were not shown on the work map posted in the mine office, although these workings were in close proximity to the 2 right entries of Saxsewell No. 8 mine.
3. The map of the No. 4 mine, Sugar Grove Coal Company, had not been brought up-to-date when the mine was abandoned, as the No. 3 entry (entry mined into) was advanced 49 feet further than shown on the mine map.
4. A minus 4 degree 32 minute ($-4^{\circ}32'$) error occurred when the spads were "pushed up" at engineer's station spad No. 4+40 in 2 right entries off south mains in Saxsewell No. 8 mine. This error resulted in the 2 right entries being about 95 feet closer than assumed to the No. 4 mine, Sugar Grove Coal Company, at the location where No. 1 room left was turned off No. 1 entry of 2 right entries (see Appendix C).
5. The "cutting through" of No. 3 room off 2 right entries into the abandoned No. 4 mine could not have occurred at the accident location, if an additional undetected engineering error had not been made.
6. A closed survey was not made of the 2 right entries off south mains as the entries were advanced. Furthermore, as shown on the map in the engineer's office, the location of the 2 right entries in relation to the active and abandoned mines in the area had not been determined accurately prior to the inundation.

7. The 2 right entries were projected to be driven 1,850 feet; however, the superintendent stopped the entries at a depth of 1,741 feet and turned rooms left off No. 1 entry without consulting higher officials or the engineering department.

8. Although a "stop line" for rooms turned left off 2 right entries was shown on the map in the mine office, local mine officials were not informed of the reasons for the "stop line."

9. Mine officials either did not observe the "stop line" on their work map or were not concerned sufficiently about the "stop line" so as to inquire as to the reasons for ceasing operations in an apparently solid block of coal..

10. The extensions of the mine map in the foreman's office were made by the engineering department, and these extensions were made after the weekly surveys. The last visit of the engineers to the Saxsewell No. 8 mine was about 10 days prior to the inundation.

11. Foremen did not carry a map of the mine or their sections while underground.

12. Established elevations were shown at only two locations on the maps of the Saxsewell No. 8 mine at the time of the inundation; one at the portal and the second at a location about 1,100 feet in by the main portals.

13. The check survey made following the inundation revealed that the elevations in Nos. 1 and 2 rooms left off 2 right entries were slightly higher than elevations at any other location traversed by the intruding water in its travel to the main portals.

14. Exploratory boreholes were not drilled in advance of the faces of the three rooms being advanced off 2 right towards an adjacent abandoned mine.

15. The check-in and check-out system in effect at the mine was dependent upon the numbers on the permissible electric cap lamps as a means of positive identification. Two of the bodies of the victims, when found, were without their cap lamps.

Cause of Inundation: This inundation was caused by an intrush of impounded water following the unintentional "holing through" of a room into inaccessible workings of an abandoned mine. Surveying and map errors at the two mines and inadequate communications between the engineering department and local mine officials contributed to the occurrence.

RECOMMENDATIONS

The following recommendations are made to help prevent a similar occurrence:

1. An accurate map of the mine should be posted in a place accessible to the employees. Such map should be extended daily by local mine management and brought up-to-date every 6 months. The map should contain the following:

- a. Property lines and the outcrop of the coal seam of the tract of land on which the mine is located as may be within 1,000 feet of any part of the workings. Also, adjacent mine workings, active or abandoned, that are within 1,000 feet of the mine.

- b. Elevations of all main and cross entries and contour elevations.

- c. The dip of the coalbed.

- d. Directions of air currents clearly indicated by darts or arrows.

2. Where development work is being done in areas known to contain active and abandoned mines, a closed survey should be made as the working places are advanced and as the spads are extended, so that the active workings of the mine can be definitely located. Also, in such areas, elevations should be established.

3. When working places approach within 200 feet of an abandoned mine or mine workings that can not be inspected, boreholes shall be kept at least 20 feet in advance of the face and 45 degree angle rib holes shall be drilled at least 20 feet deep and not more than 8 feet apart.

4. Management should consider adopting a company policy requiring that projected lines of development within a mine can not be changed or revised without discussion with and authorization from top management officials and representatives of the engineering department.

5. The mine foreman and each assistant foreman should carry on his person while underground a map of the mine or the portion thereof that is under his supervision.

6. Before a mine is abandoned, the operator should have the mine map extended and the map should show clearly all workings within the mine. Property and boundary lines should be indicated. Copies of such map should be furnished to the West Virginia Department of Mines and the United States Bureau of Mines.

7. Better communications should be established between engineering departments and local mine management. All unusual conditions or problems, such as abandoned or active mines and "stop lines," should be discussed thoroughly.

8. Local mine officials should inquire as to the reason for any information furnished on the mine maps that is not clearly indicated, such as "stop lines" and out-of-the-ordinary projections.

9. Extreme caution should be exercised by mine management when areas of a mine are approaching abandoned workings suspected of containing impounded water or contaminated air.

10. A check-in and check-out system that will provide positive identification upon the person of every individual underground should be put in force. An accurate record of the men in the mine, which should consist of a written record, a check board, or a time-clock record, should be kept on the surface in a place that will not be affected in the event of an emergency. Such record should bear a number or name identical to an identification check carried by or fastened to the belt of each person going underground.

ACKNOWLEDGMENT

The courtesies, cooperation, and assistance extended by officials and employees of the operating company and other companies in the area, officials and members of the United Mine Workers of America, and representatives of the West Virginia Department of Mines are gratefully acknowledged.

The Red Cross, Salvation Army, and the National Guard prepared and made available to all on the scene food on a 24-hour basis from the day of the inundation until the victims were recovered. These services were utilized and enjoyed by all, and the men and women who provided the services on a regular shift basis are highly commended.

Respectfully submitted,

/s/ James C. Blankenship, Jr.
James C. Blankenship, Jr.
James C. Blankenship, Jr.
Technical Assistant

/s/ Herschel H. Potter
Herschel H. Potter
Herschel H. Potter
Federal Coal-Mine Inspector

Approved by:

/s/ W. R. Park
W. R. Park
W. R. Park
District Manager
Health and Safety District B

APPENDIX A

VICTIMS OF INUNDATION SAXSEWELL NO. 8 MINE GAULEY COAL AND COKE COMPANY

May 6, 1968

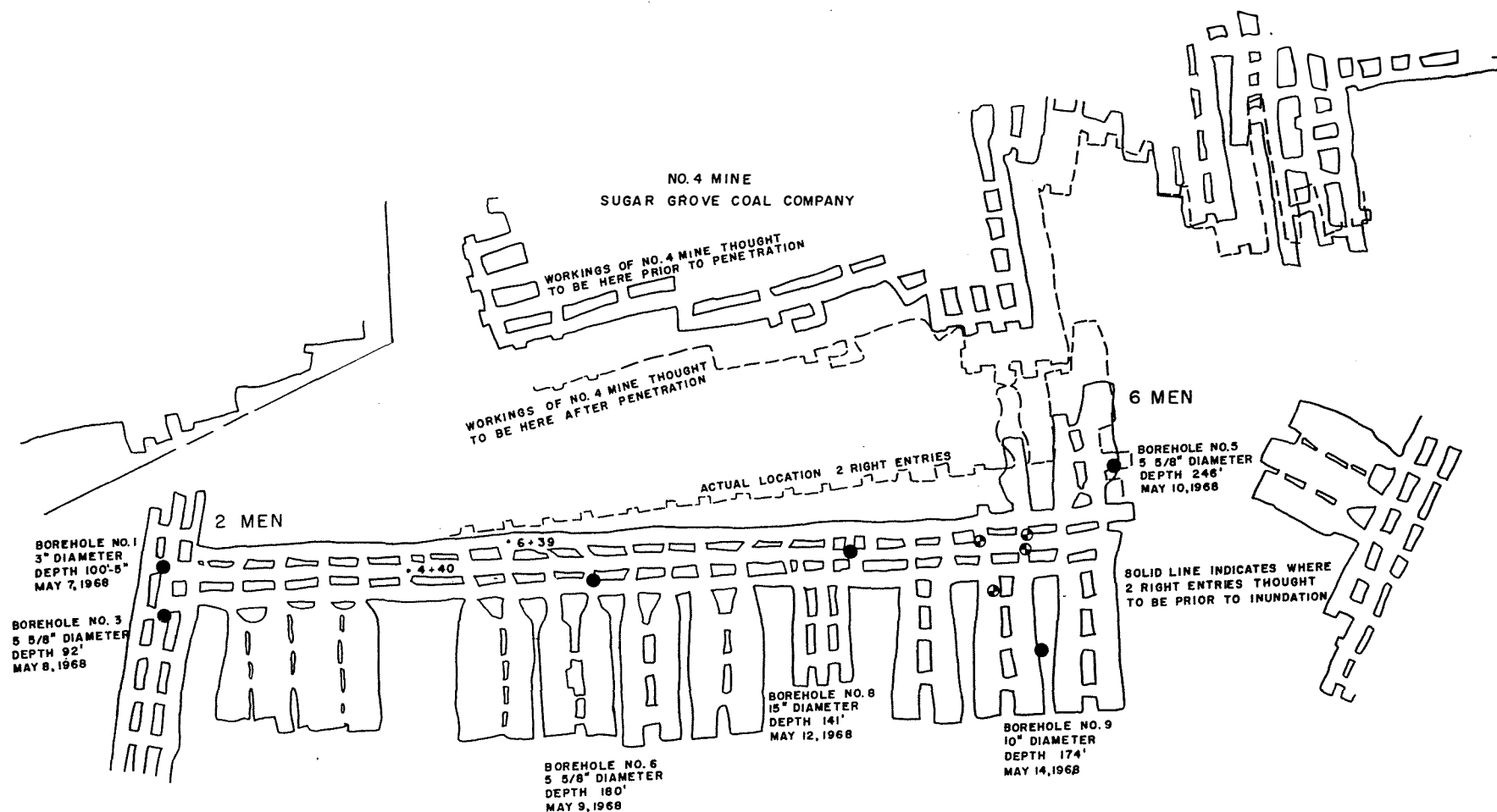
<u>Name</u>	<u>Age</u>	<u>Number of Dependents</u>	<u>Occupation</u>	<u>Years Experience This Occupation</u>	<u>Years Experience In Mines</u>
William F. Burdette	43	3	Timberman	3/4	14
Claude Roy Dodd	42	3	Miner Helper	1-1/2	24
Renick F. McClung	46	6	Timberman	1-1/2	27
Eli Edward Walkup	37	3	Miner Operator	1-1/2	12-1/2

THE 15 MEN RESCUED MAY 11, 1968 WERE:

Franklin Davis	Superintendent and Mine Foreman
Edward Rudd	Beltman
Hershel Seabolt	Miner Operator
Oscar Dillon	Miner Operator
Roy McClure	Miner Helper
Addison Copen	Miner Helper
Issac Casto	Timberman
Harry Bess	Timberman
Osmond Dillon	Timberman
Ottie Walton	Beltman
Elwood O'Dell	Timberman
Eldon Collins	Bridge Conveyor Operator
Glen Amick	Timberman
Lonnie Bennett	Electrician
Andy Walton	Supplyman

THE 6 MEN RESCUED MAY 16, 1968 WERE:

John Moore, Jr.	Assistant Foreman
Joe Fitzwater	Electrician
Jennings Lilly	Miner Operator
Edward Scarbro	Miner Helper
Gene Martin	Timberman
Larry Lynch	Beltman



2 RIGHT ENTRIES OFF SOUTH MAINS
SAXSEWELL NO. 8 MINE
GAULEY COAL AND COKE COMPANY
SAXSEWELL DIVISION
AND ADJACENT MINES
MAY 6, 1968

LEGEND

- BOREHOLE
- ⊙ BODY



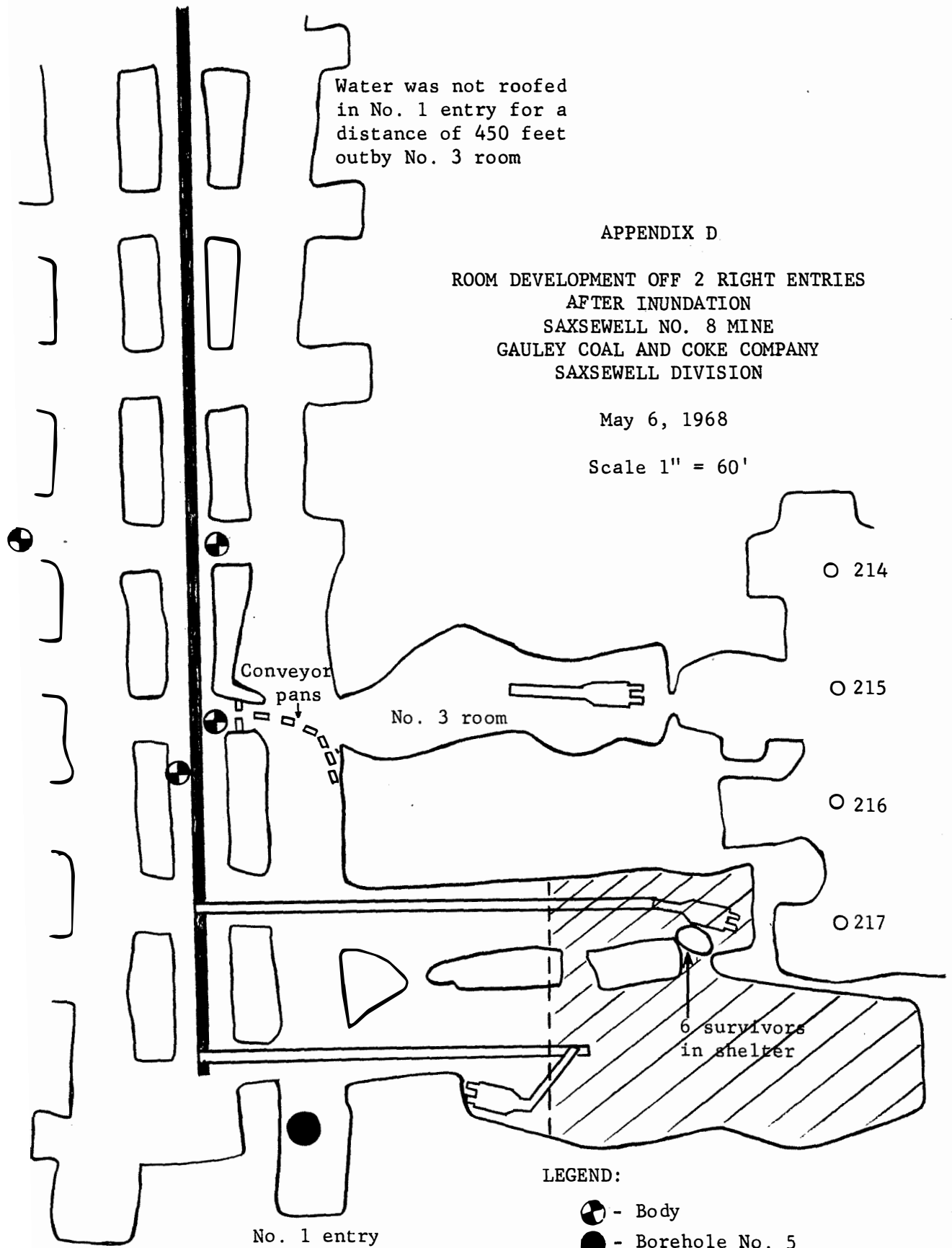
Water was not roofed
in No. 1 entry for a
distance of 450 feet
outby No. 3 room

APPENDIX D

ROOM DEVELOPMENT OFF 2 RIGHT ENTRIES AFTER INUNDATION SAXSEWELL NO. 8 MINE GAULEY COAL AND COKE COMPANY SAXSEWELL DIVISION

May 6, 1968

Scale 1" = 60'



LEGEND:

- - Body
- - Borehole No. 5
- - Belt conveyor
- - Chain conveyor
- ▨ - Unflooded area