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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES  
REGION VIII

BUREAU OF MINES

MAY 22 1952

Mount Hope, W. Va.

FINAL REPORT ON MAJOR INRUSH-OF-WATER DISASTER  
HOLMES SLOPE MINE  
CANO AND MARTIN, INCORPORATED  
FORRESTVILLE, SCHUYLKILL COUNTY, PENNSYLVANIA  
(POST OFFICE - MINERSVILLE, SCHUYLKILL COUNTY, PENNSYLVANIA)

March 27, 1952

By

E. H. McCleary  
Chief, Wilkes-Barre Branch  
Accident Prevention and Health Division

Joseph V. Mather  
Mining Engineer  
Geo. W. Culverhouse  
James R. Laird  
Coal-Mine Inspectors

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Introduction

A sudden inrush of water occurred in the Holmes Slope mine, Cano and Martin, Incorporated, Forrestville, (Post Office - Minersville) Schuylkill County, Pennsylvania, about 8:35 p.m., Thursday, March 27, 1952, causing the death of five workmen. Two other men who were near the slope bottom when the inrush of water occurred were able to escape. Only seven men were employed underground on the second shift. The accident occurred when a round of blast holes in No. 6 breast off the west Holmes gangway broke into old workings of an abandoned "bootleg" hole. The area involved is shown on appendixes B and C. The names of the deceased, their ages, marital status, number of dependents, mining experience, and social security numbers are listed in appendix A.

General Information

The Holmes Slope mine of Cano and Martin, Incorporated, is about a half mile west of Forrestville, Schuylkill County, Pennsylvania. Production from the mine was hauled about 2-1/2 miles in autotrucks to the Floss breaker of the Floss Coal Company for preparation. The breaker is served by the Pennsylvania railroad.

The mine was originally opened in June or July 1949, by John Macario and operated by him alone until August 1950, when he acquired a copartner, Frank Siemanis. The partners operated the mine

at intermittent periods until September 1951, when they sold their holdings to the present operators. At that time Cano and Martin, Incorporated, obtained a verbal lease from the Indian Head Coal Company and immediately started to recondition the surface equipment. Work to recondition and extend the slope was also started and a small amount of coal was produced at that time. Full production was obtained about January 12, 1952.

The office address of Cano and Martin, Incorporated, is Minersville, Pennsylvania. Aurelio Cano, whose home address is 112 Westwood Street, Minersville, Pennsylvania, is the president, and Charles Martin of 118 North Front Street, Minersville, Pennsylvania, is the secretary and treasurer.

A total of 17 persons was employed, 8 of whom worked underground and 1 on the surface on the first shift, and 7 underground and 1 on the surface on the second shift. The mine was operated 5 days a week and the average daily production was 50 tons of anthracite. Access to the underground workings was by a hoisting slope and by an airway, both of which were driven on the pitch of the vein. The hoisting slope was 404 feet in length; the lower 30 feet being used as a sump.

Mining was being done in the Holmes vein, also known as the No. 10 vein, which ranged in thickness from 4 to 6 feet, except in a faulted area where the coal "pinched." The inclination of the vein was about 45°. The immediate roof was conglomerate or sandstone and the floor was sandstone.

The area in which the Holmes Slope mine is located is known locally as the York tunnel section. In years past numerous "bootleg" holes or mines were operated in this area, but records or maps of these operations were not made. In later years the area was strip mined and the openings of these "bootleg" holes or mines were destroyed or covered; therefore, they were not shown on current mining maps.

#### Mining Methods, Conditions, and Equipment

The open breast-and-pillar method of mining was used, but current production was obtained from two breasts and development of the gangway. Coal produced from the breasts was loaded by gravity onto a chain conveyor and that from the face of the gangway was hand-loaded onto the same conveyor, which transported it to a "buggy" near the bottom of the slope. The west Holmes gangway was turned at a point approximately 40 feet above the bottom of the slope and was driven on the strike of the vein for a distance of 340 feet. "Monkey" headings driven between chutes were utilized as an airway. The gangway was about 10 feet in



width and the airway averaged about 6 feet in width. Chutes, 8 to 10 feet in width, were driven from the gangway to the "monkey" heading, at which point breasts of approximately 20 feet in width were driven up the pitch. The No. 1 chute had been connected to the airway, but the No. 1 breast had not been advanced. Breasts Nos. 2 and 3 had been driven their distance and stopped. The Nos. 4 and 5 breasts were not driven because of faulty condition of the coal vein. The Nos. 6 and 7 breasts and the gangway were being advanced. An east gangway had been turned off the slope and driven approximately 50 feet and stopped, see appendix C.

The timbering system consisted chiefly of props hitched in the mine floor and stood on about 6-foot centers; however, timber sets were used at some places along the slope and at other places where required.

The coal was blasted off the solid, and blasting was done on shift with permissible explosives for coal and 60-percent dynamite for rock. Instantaneous and Nos. 1- to 5-delay electric detonators fired with a 10- or 50-shot blasting unit were used to detonate the charges. The blast holes were drilled about 7 feet in depth with compressed-air-driven jackhammers, and from 9 to 13 holes were drilled in the face of each breast for blasting. From four to six cartridges of explosives were used in each blast hole. Firing lines consisted of No. 20 annunciator wires attached to props, and one firing station near No. 5 chute was used for blasting in Nos. 6 and 7 breasts and the gangway. Blasting supplies were kept underground in shipping containers. It was stated that tests for methane were made at the faces before and after blasting.

Ventilation was induced by a 3-foot fan installed in a sheet-metal enclosure on the surface at the top of the airway. The fan was operated blowing, continuously, and 10,560 cubic feet of air a minute was returning through the main slope at the time of the investigation. A continuous air current was used to ventilate the mine; however, none of the workings was more than 1,000 feet from the surface. The mine is classed gassy by the Pennsylvania Department of Mines. It has never been examined by a Federal mine inspector. It was stated during the investigation that preshift, on-shift, and weekly examinations for methane and other hazards were made; however, these examinations were not made by State-certified officials, nor was a State-certified official employed to supervise the operation of the mine. The ventilating fan was operated continuously during recovery operations, and the mine air was of good quality.

The mine was naturally wet, and the coal at the faces was damp.



Vein material was transported by a chain conveyor to the slope bottom and then by a "buggy" to a coal pocket on the surface. An autotruck was used to drive the single-drum hoist, and trucks transported the coal to a breaker at Primrose, Pennsylvania, for preparation.

Electric power as 22,000 volts alternating current was purchased from a utility company, and properly installed transformers on the surface reduced it to 440 and 220 volts alternating current for use on the surface and in the mine. Electric power was transmitted underground by insulated cables installed along the slope. The only electric equipment used in the mine was two electrically driven pumps and a conveyor unit, all of which were of the open type. Overload protection and cut-out switches were provided. Permissible electric cap lamps were used for portable illumination underground, and the miners used permissible-type flame safety lamps for gas-testing purposes. Smoking was not permitted underground.

Although the employees were not trained in mine rescue work, the assistance of mine rescue crews from nearby companies was available.

#### Previous Water Disasters at This or Nearby Mines

This is the first inrush-of-water accident at this mine, but 10 men were drowned by water from old workings in the nearby Lytle mine on April 20, 1892.

#### Mine Conditions Immediately Prior to Disaster

Reportedly, the weather was clear and cool and no heavy rainfall had been recorded in the area for several days prior to the accident. Moreover, no standing body of water was observed at any time in the abandoned stripping pit above the active workings. The mine was in normal operation; no unusual condition, as far as could be ascertained, had been reported prior to the time of the accident.

#### Activities of Bureau of Mines Personnel

Mr. E. H. McCleary, Chief, Wilkes-Barre Branch, Bureau of Mines, first learned of the disaster at 7:30 a.m., March 28, 1952, when he noted it in the Wilkes-Barre Record of that date. Upon his arrival at the office Inspectors Geo. W. Culverhouse and James R. Laird were immediately sent to the scene of the disaster. Mr. McCleary then notified James Westfield, Chief, Accident Prevention and Health Division, Bureau of Mines, Region VIII, Pittsburgh, Pennsylvania, and W. J. Fene, Assistant Chief, Health and Safety Division, Bureau of Mines, Washington, D. C., by telephone.



Inspectors Culverhouse and Laird arrived at the scene of the disaster at 11:10 a.m. After ascertaining the cause of the disaster they telephoned Mr. McCleary. After receiving detailed information Mr. McCleary again telephoned Messrs. Westfield and Fene and gave them the additional information received from the inspectors.

Mr. McCleary and Joseph V. Mather arrived at the mine about 7 p.m., March 28. At that time Mr. McCleary took charge of the activities of the Bureau of Mines representatives and arranged to have a Federal inspector on each shift. Mr. Westfield, Chief, Accident Prevention and Health Division, Bureau of Mines, Region VIII, Pittsburgh, Pennsylvania, and H. R. Burdelsky, coal-mine inspector of the Pittsburgh, Pa., Branch, arrived at the scene of the disaster March 29 and remained at the scene until the last body was recovered early Monday morning, March 31. On March 30, Federal Inspectors R. C. Todd and Gerald W. Croyle were sent to the scene of the disaster to expedite recovery operations.

#### Story of Inrush of Water and Recovery Operations

The second shift workmen arrived in the mine shortly before their regular starting time at 2 p.m., on March 27. The lineman or conveyor operator, Charles Micklo, was instructed to grease the conveyor motor and "buggy" and to clean up the coal spillage under the conveyor head. Workmen Joseph Siditus and Francis Lipinsky were instructed to work in the No. 6 breast. Martin Brazenec and Dennis Onushco, who were buddies and generally worked in No. 7 breast, were instructed to work in the gangway. Chester Lipinsky was instructed to do general work.

At the start of the shift a cut of coal was blasted off the solid face in the west Holmes gangway and this coal was loaded out about 5 p.m. While the workmen were drilling for another cut of coal in the gangway, the shift leader, Walter Yarosh, entered No. 7 breast. Arriving at the face of the breast he saw that a round of blast holes fired by the day shift had not completely removed the cut and that there was another hole to be fired. Mr. Yarosh charged this blast hole and after warning the other workmen of his intentions, he fired it. While this work was being done, the No. 6 breast workmen stood several props and drilled and charged an undetermined number (believed to be 10 to 13) of blast holes. When all was in readiness for blasting in No. 6 breast, these workmen retreated to the gangway and informed the men working therein that they were ready to blast. By this time the gangway workmen had loaded about half the coal from their second cut. The gangway and No. 6 breast workmen, together with Mr. Yarosh and Chester Lipinsky, retreated along the gangway to a point between Nos. 4 and 5 chutes. Mr. Siditus stopped at the blasting station at No. 5 chute. Yarosh asked the time and was informed that it was almost quitting time. Yarosh realized that it was necessary to operate the pumps before leaving the mine and hurried out of the gangway. He was about 5 feet from the head of the conveyor near the foot of the slope when he heard a blast, followed immediately by a second blast and a loud rumbling noise and a



terrific gust of wind. Observing the conveyor operator, Micklo, near the east gangway entrance and believing that an explosion had occurred, Yarosh called to him to get up the slope. As the two men hurried up the slope Yarosh warned Micklo to watch for the "buggy" as he knew it should be coming down the slope. When the "buggy" passed them Micklo signaled the hoisting engineer to stop and then to hoist the "buggy." Micklo boarded the "buggy" at that point and when it reached Yarosh he also got on. Arriving on the surface Yarosh instructed James Slane, the hoisting engineer, to go to Minersville for help as he believed an explosion had occurred. Shortly after the hoisting engineer went for help, Yarosh and Micklo heard the signal bell ring and they believed someone inside the mine was calling for help. Yarosh immediately manned the hoist and the "buggy" was lowered into the mine. When it was returned to the surface it was wet. It was then decided that Micklo would operate the hoist and Yarosh, the shift foreman, would follow the "buggy" as it was again lowered in the slope. Yarosh walked about 25 feet back of the "buggy" as it was being lowered. When the "buggy" was about halfway down he heard it splash in water and then he realized that it had not been an explosion but an inrush of water. He then started to return to the surface and had reached a point about 30 feet from the slope portal when he became exhausted and had to be helped from the mine.

When the hoisting engineer arrived in Minersville he immediately contacted Edward Mullock and informed him that it was believed that an explosion had occurred at the mine. Shortly thereafter, Mullock, Charles Martin, copartner of Cano and Martin, Incorporated, LeVan Atkinson, mining engineer, and Walter Davis, superintendent, both of Indian Head Coal Company, and others arrived at the mine. Harvey Hilbert, State mine inspector, was notified of the disaster at 9:10 p.m., March 27, by LeVan Atkinson. Mr. Hilbert immediately contacted William J. Clements, Deputy Secretary of Mines, and soon thereafter Mr. Clements, Mr. Hilbert, and State Inspectors T. A. Ryan and Gordon Smith arrived at the mine.

After determining the approximate amount of water in the mine, it was decided to obtain three electrically driven pumps from Pittston, Pennsylvania. The three pumps, each of 220-foot head, 250 gallons-a-minute capacity, arrived at the mine about 6 a.m., March 28. Work was immediately started to install one of the pumps and it was in operation at 12:45 p.m., March 28. However, this pump was not operating efficiently, therefore, a second pump was substituted at 4:30 p.m. the same day. A larger pump was also installed at 6:30 p.m. The smaller of the two pumps was later replaced by another large pump which was put into operation at 5:07 p.m., March 29. These two larger pumps operated continuously, except when it was necessary to move them closer to the water as it receded, until the water was below the level of the west Holmes airway, and then the operation of one pump was discontinued. The total amount of water pumped from the mine during unwatering operations was estimated to be 1,200,000 gallons.



As the water receded, investigators and workmen were able to enter the west Holmes airway, and the first body was observed in the gangway through No. 3 chute at 2:15 p.m., March 30. This body was brought to the surface at 4:30 p.m.

After further exploration, the bodies of three other victims were found near the face of the west Holmes gangway at 5:50 p.m. Owing to the large amount of debris and loose material hanging in No. 6 breast, it was necessary to stand numerous props and install lagging in No. 6 chute before these bodies could be recovered; therefore, the last of the three was not removed from the mine until 12:30 a.m., March 31. A stream of water was still running from No. 6 chute at the time. The body of the fifth victim was found at 1 a.m., March 31, near the face of No. 7 breast where it was lashed to a prop by a belt. This body was brought to the surface at 2:03 a.m.

#### Investigation of Cause of Disaster

Testimony of workmen and officials began at 8 a.m., April 2, and the official investigation of the accident began the morning of April 3. However, additional testimony and further investigation continued through April 9. The Pennsylvania Department of Mines was represented by Inspectors Gordon Smith, Harvey Hilbert, and H. E. Shomper. Bureau of Mines representatives were Joseph V. Mather, mining engineer, Geo. W. Culverhouse and James R. Laird, coal-mine inspectors. E. H. McCleary, Chief, Wilkes-Barre Branch, was present during the testimony given April 2. On the morning of April 3, the State and Bureau investigators, in company with Mr. Cano, one of the operators, began their underground examination to determine the cause of the disaster.

Flooding of the mine caused property damage to two small pump motors and a conveyor motor; however, considerable debris covered the pans of the conveyor line in the west Holmes gangway. The entire mine was abandoned and all of the equipment, except part of the conveyor line and one of the pumps, was removed before the investigation was completed.

The water entered the mine immediately after blasts were fired in the face of No. 6 breast. The length of the breast and other data relative to mining and where the workmen were found are shown in appendix C, and profiles of the slope and breasts are shown in appendixes D, E, and F.

Testimony indicated that at the time of the disaster the workmen were preparing to end their shift. Two employees were near



the foot of the slope, and the remaining five were believed to be near the blasting station at No. 5 breast; however, the bodies of four victims were found in by No. 6 chute.

Legible water marks on the roof, floor, and sides of No. 7 breast indicated that the water had only risen to within 25 feet of the face of this breast. Although the water rose to a higher elevation in the slope, it is believed that the compression of air in No. 7 breast prevented the water from rising to a higher elevation therein. The No. 6 breast could not be explored owing to large rocks and washed material having closed the breast and chute; however, a stream of water continued to flow from this breast. Analysis of a sample of the water collected during the unwatering of the mine is shown in appendix G.

#### SUMMARY OF EVIDENCE

The water that flooded the mine and caused the death of five workmen entered from abandoned "bootleg" workings immediately after blasts were fired at the face of No. 6 breast. Testimony of former operators revealed that the York tunnel area, in which the Holmes Slope mine was located, had been extensively mined in former years by "bootleg" operations that were not recorded nor mapped.

Information relative to a possible dangerous body of impounded water in the area was given to one of the operators of Cano and Martin, Incorporated, by a former "bootleg" miner, however, this information apparently was not checked thoroughly to determine its accuracy. It was further learned during the investigation that six "bootleg" holes had been formerly operated in the same vein and in the immediate area as the Holmes Slope mine.

Testimony given during the investigation indicated that stop distances had been determined by the official in charge of underground operations for Cano and Martin, Incorporated, for breasts driven off the west Holmes gangway. This official stated that these stop distances would leave a 100-foot barrier between old workings and the faces of the advancing breasts. Apparently the determination of stop distances was based on the belief that none of the abandoned workings was more than 180 feet in depth. However, from information available, the No. 6 breast had been advanced beyond a point that would have left a 100-foot barrier.

Although the operator was cognizant of the fact that abandoned "bootleg" workings existed in the area, test holes were not drilled in the faces or in the ribs of advancing breasts.



A State-certified mine foreman was not employed to supervise the operation of this mine. These duties were performed by one of the operators who was a certified miner; two other certified miners acted as his assistants.

#### CONDITIONS CONSIDERED RESPONSIBLE FOR THE DISASTER

1. The operators failed to take advantage of the information available to them concerning extensiveness of "bootleg" workings in the immediate area.

2. A map of the area showing former "bootleg" workings was not available at the mine.

3. Tests holes were not drilled in advance of faces or in ribs of places driven in an uncharted questionable area.

4. A State-certified official was not in charge of mining operations.

#### Recommendations

The following recommendations relate to conditions that are believed to have been directly or indirectly responsible for this disaster and are intended to prevent a recurrence:

1. The mine owner or operators should determine the extensiveness of any adjacent abandoned workings and this information should be placed on the map of the active mine.

2. The width of barrier pillars to be left between abandoned and active workings should be determined by a mining engineer with the approval of the State mine inspector of the district. (This information should be available to Federal coal-mine inspectors.)

3. If the mine map reveals, or conditions indicate, or it is suspected that a place has been driven within 200 feet of worked-out or abandoned areas that cannot be inspected or that may contain a large body of water or gas, boreholes should be kept at least 20 feet in advance of the face; similarly, 45° angle holes at least 25 feet in depth and not more than 8 feet apart should be drilled in the ribs. Furthermore, in any mine operated in an area where former mining has been done and accurate maps showing the extent of such mining can not be made, similar test holes in advance of the face and flank holes in the ribs should be drilled in each working place.

4. Only State-certified foremen and assistants should be employed to supervise underground operations.

#### Acknowledgment and Commendations

The writers acknowledge the courtesies extended and the help given by the officials of Cano and Martin, Incorporated, the Indian Head Coal Company, and representatives of the Pennsylvania Department of Mines, who gave, without reservation, all information requested in connection with this investigation.

The Bureau of Mines commends the efficient, courageous, and humanitarian services rendered by the employees of the company and by the volunteer rescue workers. The Bureau of Mines also acknowledges the excellent services rendered by the Pennsylvania State Police, the Salvation Army, and the Red Cross.

Respectfully submitted,

*E. H. McCleary*

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Wilkes-Barre Branch, Region VIII

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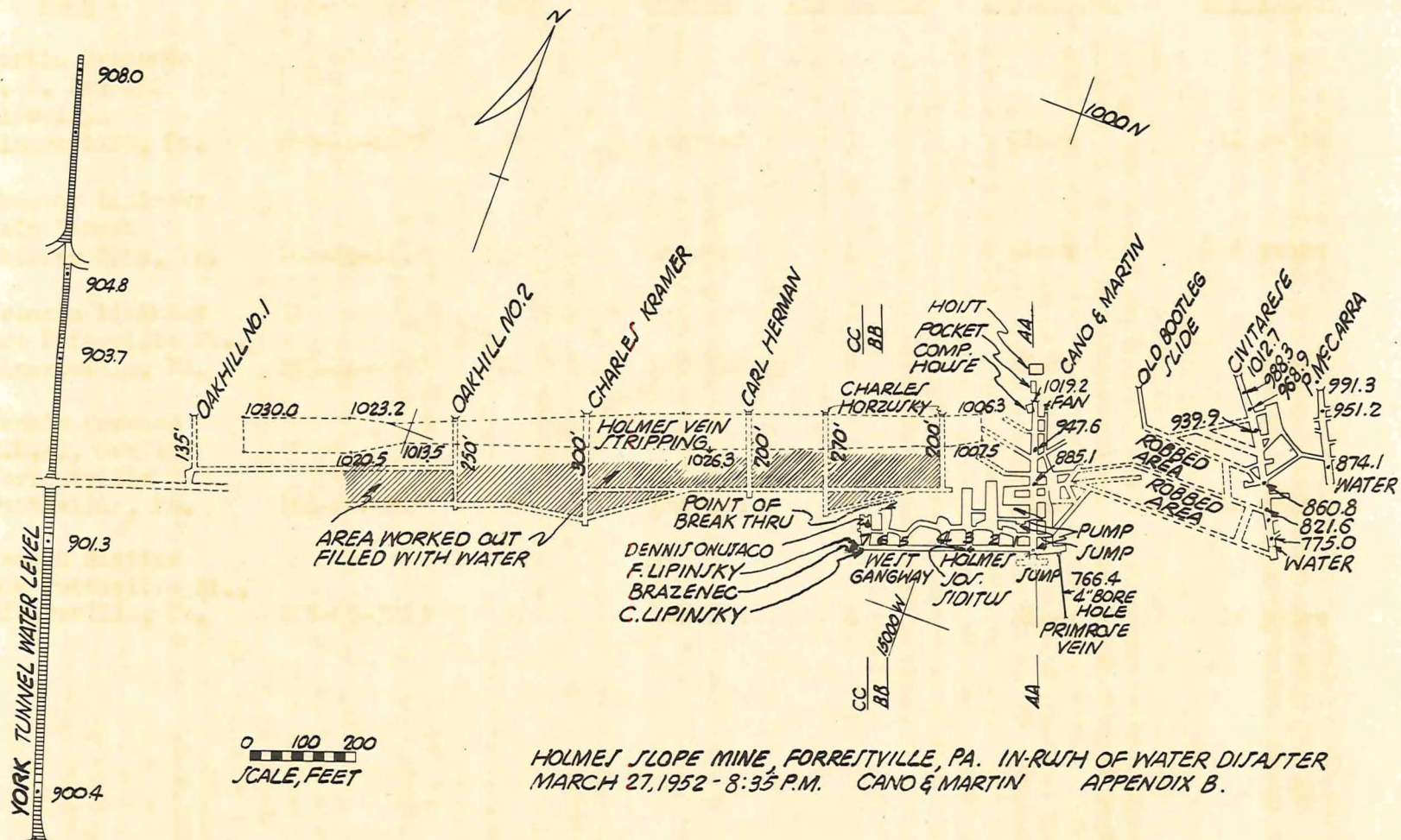
Approved by:

*James Westfield*  
James Westfield, Chief  
Accident Prevention and  
Health Division, Region VIII



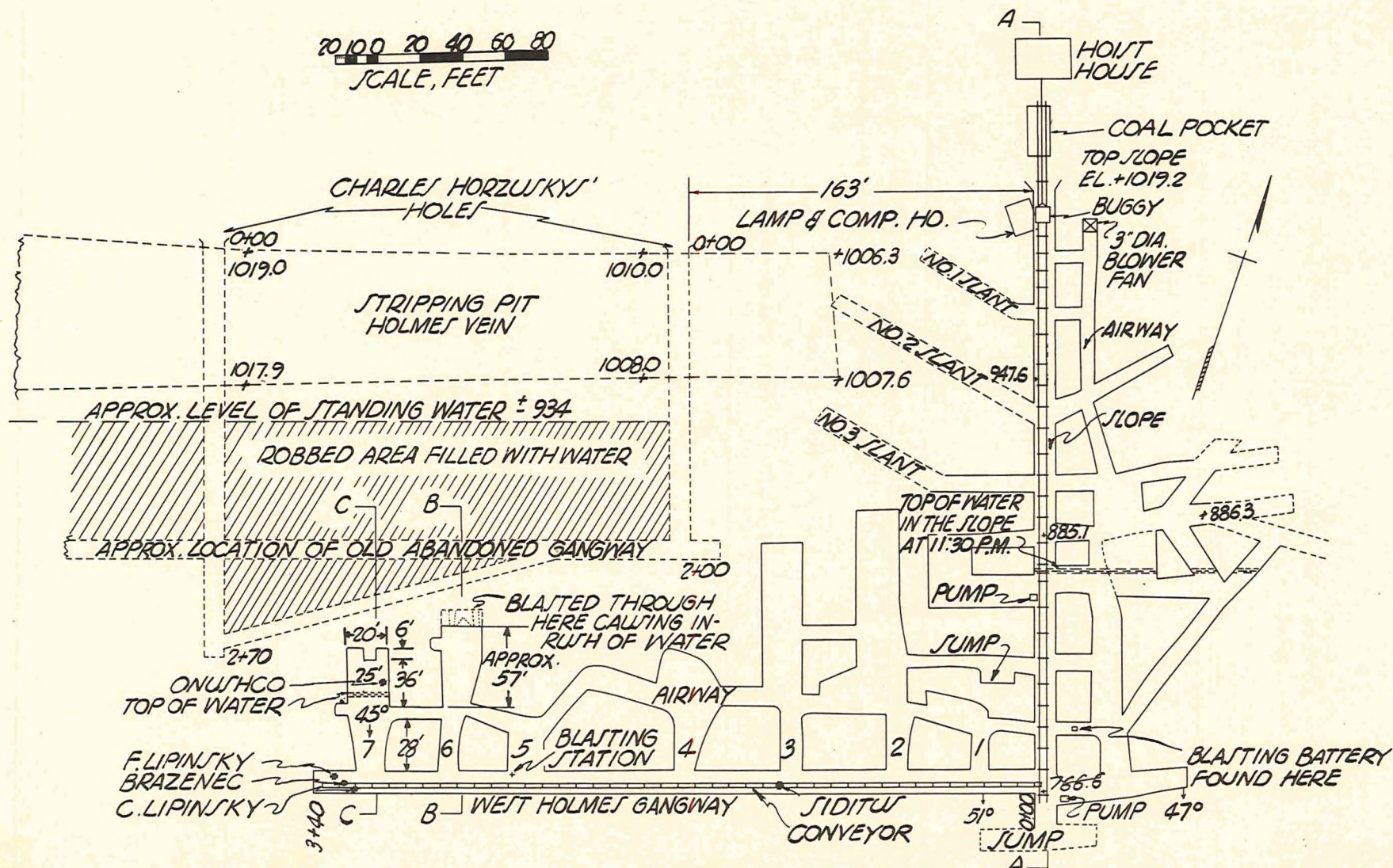
<u>Name</u>	<u>S.S.Number</u>	<u>Age</u>	<u>Marital Status</u>	<u>Dependents</u>	<u>Occupation</u>	<u>Total Experience</u>
Martin Brazenec P. O. Box 452 Llewellyn Minersville, Pa.	168-14-4827	35	Married	3	Miner	12 years
Chester Lipinsky Main Street Seltzer City, Pa.	162-24-1419	29	Married	1	Miner	8 years
Francis Lipinsky 521 Pottsville St., Minersville, Pa.	168-24-9930	21	Married	2	Miner	1 year
Dennis Onushco R.D.#1, Box 132 Forrestville Pottsville, Pa.	164-26-3929	35	Married	5	Miner	14 years
Joseph Siditus 508 Pottsville St., Minersville, Pa.	205-05-3223	39	Married	4	Miner	18 years





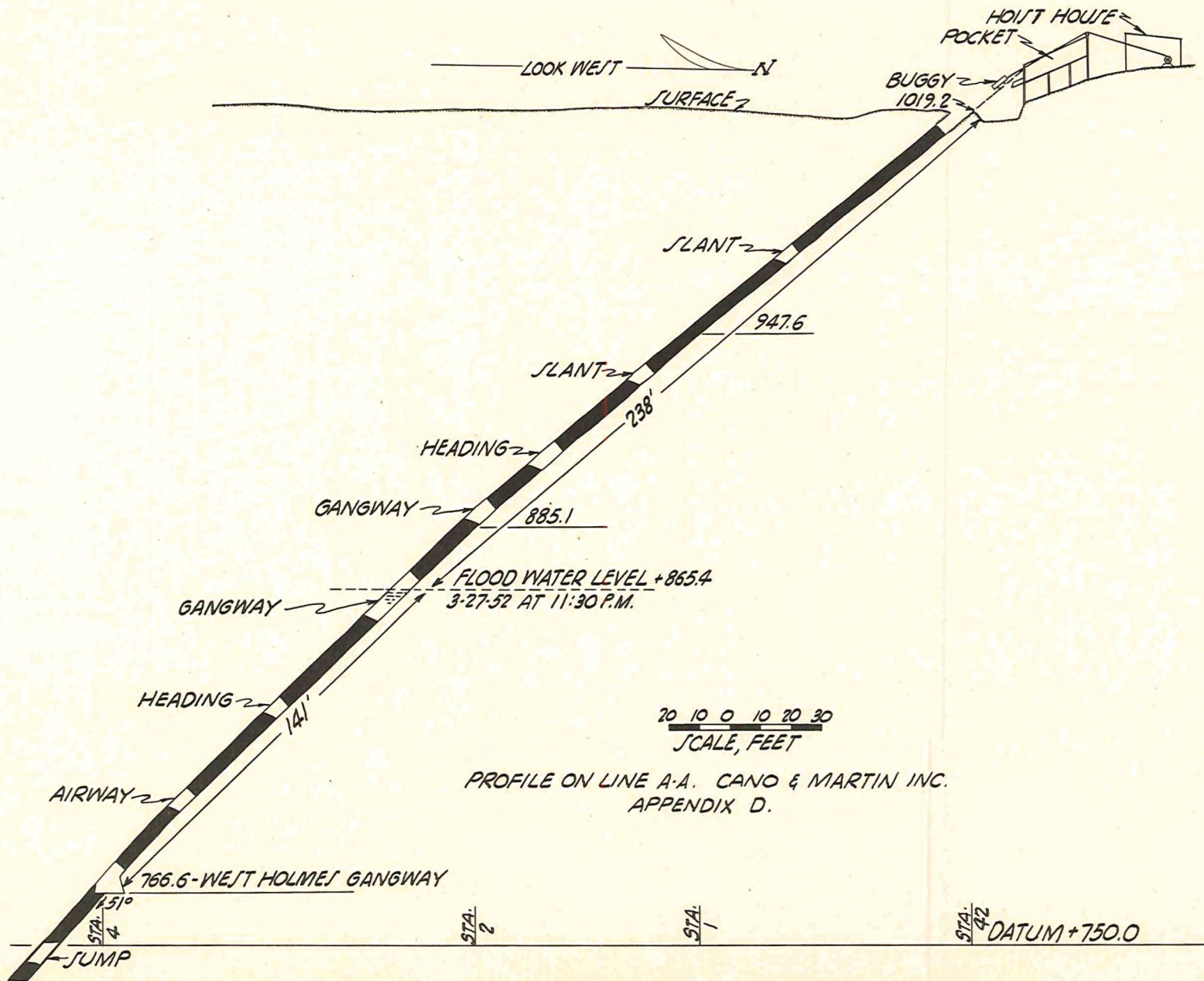


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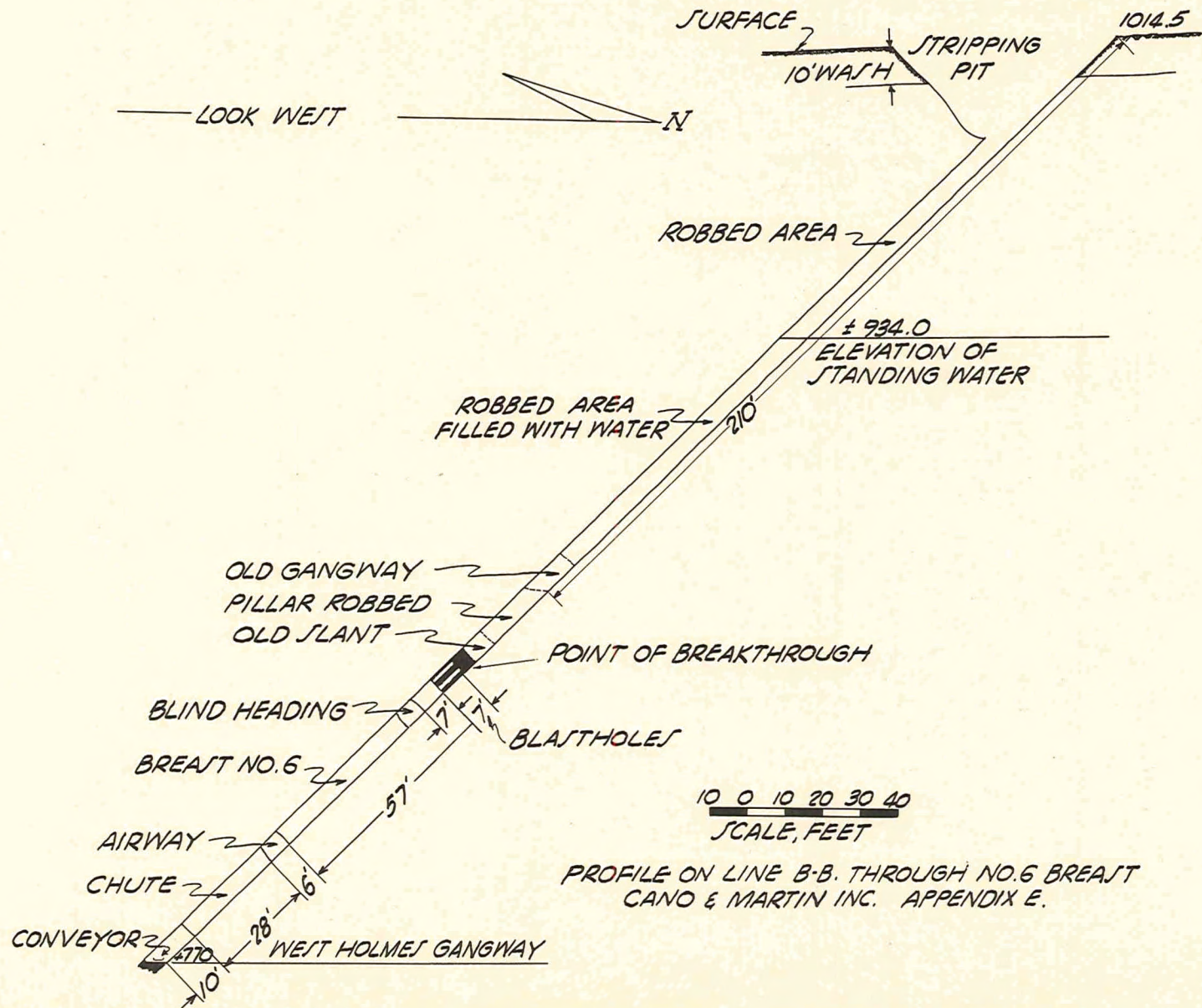


HOLMES SLOPE MINE, FORRESTVILLE, PA. IN-RUSH OF WATER DISASTER ON MARCH 27, 1952 - 8:35 P.M.  
CANO & MARTIN INC. APPENDIX C.



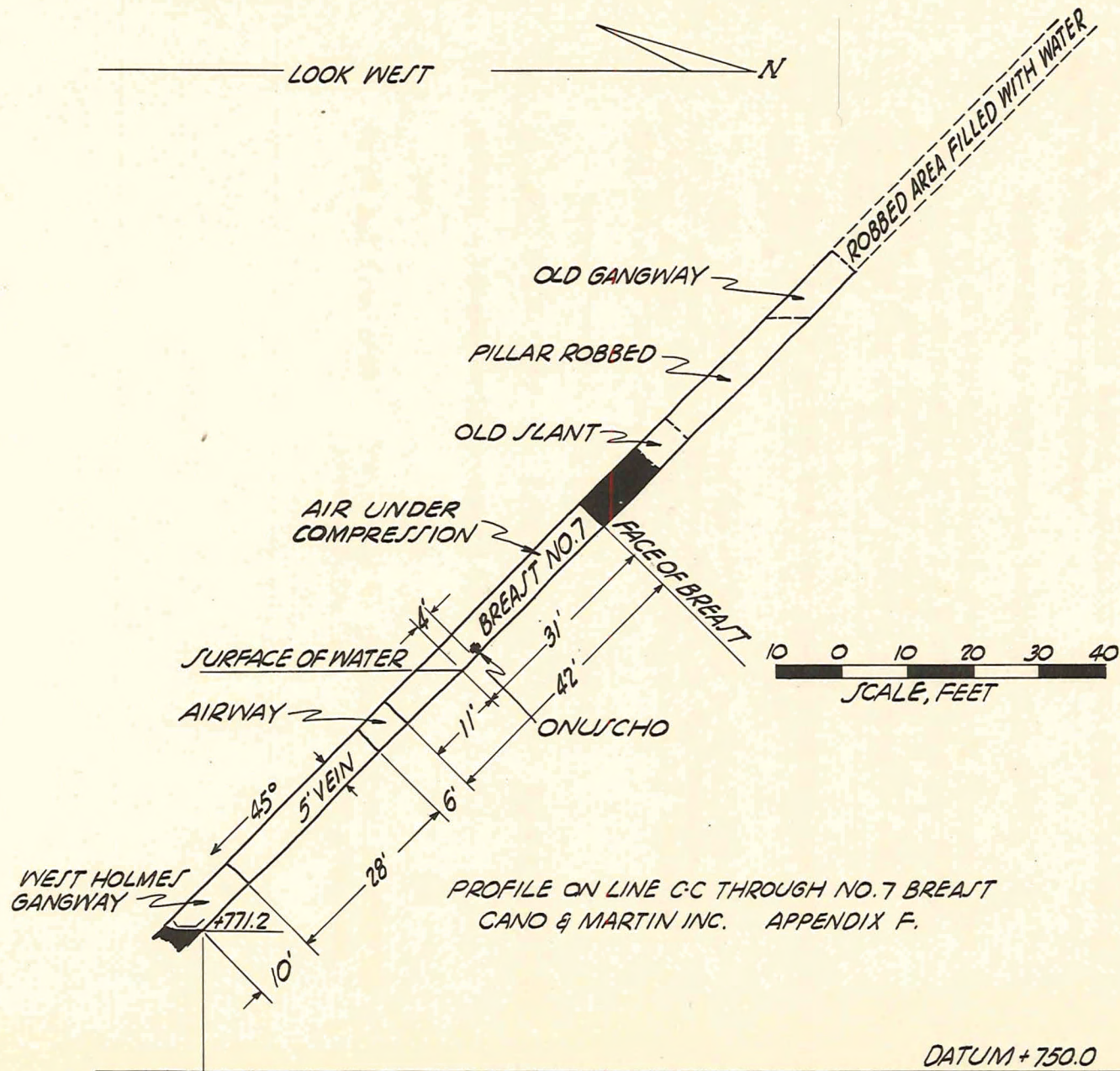






PROFILE ON LINE B-B. THROUGH NO. 6 BREAST  
CANO & MARTIN INC. APPENDIX E.







## WATER SAMPLE

A water sample was collected at 1 p.m., March 29, 1952, at the discharge water line during unwatering operations of the Holmes Slope mine, Cano and Martin, Incorporated. The water was analyzed by the U. S. Geological Survey, Schuylkill Haven, Pennsylvania, on April 1, 1952, and is as follows:

Conductance is high corresponding to mine water.

The pH is very acid indicating mine water. However, the total acidity is relatively low for this conductance and pH, therefore, we may conclude the water has not been in contact with the air long - the water probably was from old mine workings.

When in contact with air - the pyrites oxidize forming more acid.

Acid mine drainage waters which have been collected from surface streams of conductance 1400 and pH 3.20 usually give a total acidity of approximately between 400 - 500 (Example Mill Creek at Mill Creek, Pa.)

Sample from Cano and Martin Mine Pumpage:

pH 3.20	R-KCl	357	R-sample	253	Conductance 1410
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Acidity - titrate using standard NaOH

168	264	308
to pH 4.5 free acid	free acid to phenolphthalein pH 7.0	total acidity to phenolphthalein pH 7.0

## Appendix G

Int. - Bu. of Mines, Pgh., Pa.