

REPORT OF GAS IGNITION

* * *

BURNING SPRINGS COLLIERIES COMPANY

NO. 1 MINE

KERMIT, MINGO COUNTY, WEST VIRGINIA

* * *

January 18, 1951

REPORT.

THE GAS IGNITION IN THE NO. 1 MINE, BURNING SPRINGS COLLIERIES COMPANY, KERMIT, MINGO COUNTY, WEST VIRGINIA, ON THURSDAY, JANUARY 18, 1951, AT 11:51 A. M., KILLING ELEVEN MEN AND INJURING TWO MEN.

The No. 1 mine of the Burning Springs Collieries Company is located near Kermit, Mingo County, on the Norfolk and Western Railroad, and is owned and operated by the Burning Springs Collieries Company, a corporation, of which Mr. Frank Weisenfelder, First National Bank Building, Cincinnati, Ohio, is President.

This mine employs around eighty men and has a daily production of about 750 tons.

The mine is a drift mine, in about 10,000 feet, with a slight dip to the northwest. The coal seam operated is locally known as the Warfield seam, but is geologically correlated as the No. 2 Gas seam. The seam will average about 40" in thickness, with a hard sandstone roof and a fire clay bottom. The coal itself is of a high volatile analysis.

The general plan of mining is that of the room and pillar system, and the coal is loaded mechanically by loading machines. There is both partial and full recovery of pillars in this mine.

Permissible type explosives are used underground.

The mine is ventilated by a 42" exhausting Axial Flow fan and, at the last ventilation reading by this department, the fan was making 38,690 cubic feet per minute of air. The mine is ventilated by a continuous air current.

The general condition of the mine is wet to dry and, from all appearances, the mine is well rock dusted.

Haulage is by main line, secondary gathering, conveyors and shuttle cars.

The mine is electrified, 250 Volt, DC., equipped with trolley and feeder lines, which seemed to be in good condition.

Employees use permissibly type portable electric lights, and smoking is prohibited by law.

The mine is classified as gassy by the West Virginia Department of Mines.

A fire occurred in this mine in February, 1946, when a trolley wheel on a haulage locomotive ignited dry brattice cloth flap on the top of a trap door frame. There were no injuries or fatalities.

On the morning of the disaster, the mine was fire bossed; the fire boss going into the mine at 4:00 A. M., and, with the exception of two local spots in which the fire boss reported drummy roof, the fire boss reported the mine safe and ready for work. The fire boss making this run was Robert Hodge, Certificate #16754-49. This fire boss report was duly countersigned by John Chaffin, deceased, section foreman on the affected section, Certificate #16784-49, and was countersigned by W. L. Walker, another section foreman, Certificate #14899-48. The mine foreman, T. W. Lambert, Certificate #14435-47, had not countersigned the fire boss report this particular morning. (See original fire boss report attached)

The workmen entered the mine at 7:00 A. M., the customary time, in the mantrip and proceeded to their respective sections.

The section affected by the ignition consisted of three

entries driven from Seven Mains to a fault, and butted off at a distance of approximately six hundred and fifty feet (650'). Three working rooms had been turned off No. 3 Entry, to the right, No. 1, No. 2 and No. 3. No. 1 was advanced sixty feet (60'); No. 2 was advanced forty feet (40'); and No. 3 was advanced thirty feet (30').

From information received, the loading machine started to work that morning in No. 1 Room, and advanced to No. 2 Room. Then, into No. 3 Room and returned to No. 1 Room, which was the deepest of the three rooms and which room had cut through into an abandoned section of the mine and the cut shot down. The place cut through from the live workings to the old works was about ten feet (10') wide. (Old works having been completed about December 15, 1950)

After the loading machine had cleaned up the loose coal in No. 1 Room, it moved into No. 2 Room and cleaned the loose coal up in that place. It then moved and was in No. 3 Room at the time of the ignition.

From observation, the loading machine was the only piece of equipment on that section which was operating at the time of the ignition. However, the cutting machine was located in No. 2 Room, the machine man and helper eating their lunch and not near the machine at the time. It is believed that the power was on the cutting machine at this time.

There is attached to this report a blueprint of the affected section, showing the location of all the bodies on the section after the ignition and the location of the equipment at the time of the ignition.

On January 8, 1951, Coal Mine Inspector Lynch, of the United States Bureau of Mines, inspected this mine and found no major violations of the Code.

This mine was inspected on Monday, January 15, 1951, by Inspectors White and Perry, of the West Virginia Department of Mines, and no major violations were reported.

Both of these inspections showed sufficient ventilation and no detection of gas with a flame safety lamp.

The mine has been classified gassy by the West Virginia Department of Mines, due to finding of gas in advanced boreholes with a methane detector.

Attached will be found a copy of the testimony of the witnesses at the hearing held in Williamson, Friday, January 19, 1951, and a subsequent hearing at the mine on Wednesday, January 24, 1951.

The witnesses examined testified in large that there had been no disturbance, or very little disturbance, in the mine atmosphere at the time of the ignition in other sections of the mine.

As quickly as word could be gotten to the mine foreman, T. W. Lambert, who was in the mine at the time of the ignition, the mine foreman and the superintendent, T. L. Lambert, accompanied by Balboa Bowling, Haulage Motorman, came to the affected section to find out what was wrong, which was soon apparent to them. They immediately, with the help of other men in the mine, started to reestablish ventilation and to check and see the extent of injury and loss of life.

They found the motorman, Joe Hinkle, on the section in a dazed condition and sent him to the outside. Mr. Hinkle's testimony is attached.

They found the boom man, Bill Bowen, who was in by the mouth

of the entry about one hundred feet (100'), at the loading boom. He was alive, but seriously injured. They immediately sent Mr. Bowen to the outside and to the hospital.

The party proceeded up the entry, finding the remainder of the workmen dead.

Work of recovery of the bodies went forward as quickly as ventilation could be reestablished.

A call was sent to the United States Bureau of Mines and the West Virginia Department of Mines, notifying them of the ignition. Representatives of both of these organizations appeared on the scene as soon as possible.

A mine rescue team of the West Virginia Department of Mines, from Chattaroy, was called to the scene but was not sent inside immediately, as it was deemed unnecessary. Full exploration of the affected section had been made and ventilation had been temporarily reestablished.

The recovery of the bodies was started and was made as rapidly as possible. There had been a great deal of heat from the ignition and it was necessary that the area cool down before full recovery of all the bodies could be made.

Recovery of eight bodies had been made, under the direction of the mine foreman, T. W. Lambert, and the superintendent, T. L. Lambert.

At this point, Charles Perry and Hurstle White, Inspectors of the West Virginia Department of Mines, and J. C. Muir, Coal Mine Inspector of the United States Bureau of Mines, had gotten to and entered the mine to further assist with the recovery.

At 6:00 P. M., John Hansford, Administrative Assistant in

Charge of Mine Rescue and Safety, and Young Lawson, Inspector-at-Large of the Logan Division, West Virginia Department of Mines, entered the mine to further assist in the recovery work.

The remaining three bodies were recovered and all the bodies brought outside, wrapped in brattice cloth. A jury was impaneled and an inquest held by Coroner Tabor Ball, of Mingo County, a copy of which is herewith attached. The bodies were sent to funeral homes, as directed by the families of the deceased.

At 8:00 P. M., an investigating party, consisting of J. W. Westfield, Jr., E. E. Quenon, O. W. Harris, Hobert Lynch, all of the United States Bureau of Mines, Arch J. Alexander, Chief, West Virginia Department of Mines, T. W. Lambert, Mine Foreman, Joe Newman, Night Foreman, and Marian Marcum, Member of the Mine Safety Committee, proceeded into the mine to begin a formal investigation of the ignition.

The investigating party explored the area to determine the direction of the forces of the ignition. It was very evident that the forces radiated from the face area of the No. 3 Room, off of No. 3 Entry, in every direction. The forces were indicated by dislodged posts in the outward direction, the way they were lined up along entries and also by other indications. The forces of the ignition traveled at a high velocity for about six hundred feet (600'), to a point where there was more area to expend and allowed these forces to completely die out.

Due to the mine having been heavily rock dusted, coal dust in the affected area did not ignite.

A close and diligent search was made for anything and everything to which, in the opinion of the investigators, the cause of

this ignition could be attributed.

The equipment in the face regions was thoroughly examined for defects. It was found that the loading machine, which was back from the face of No. 3 Room about fifteen feet (15'), and practically in the entry, was in operating condition. The controller was open and the machine in reverse, showing that the machine had been in operation at the time of the ignition. The other equipment on the section was idle at the time of the ignition, the operators of the idle equipment being in the act of eating their lunch, or otherwise occupied.

Careful search was made for smoking articles. An unopened package of cigarettes, ownership unknown, was found in No. 1 Room, in the top of a lunch kit which was pushed well back underneath the kerf, believed to have been shoved there by the force of the ignition. No further smoking articles were found at this time.

The investigating party returned to the outside, arriving outside about 12:30 A. M.

The investigation of this ignition was continued by both the United States Bureau of Mines and the West Virginia Department of Mines for some six days following the ignition. During this six-day period, additional information and testimony was brought forth, which was quite enlightening. (See affidavits of persons engaged in recovery of the bodies, attached herewith)

A serious disaster of this nature warrants a very close investigation, for two reasons; (1) To try to determine the cause of this gas ignition in this coal mine, and (2) to see what lessons might be learned from such an investigation of the disaster, so that these lessons might be passed on to the mining industry.

It is the opinion of the West Virginia Department of Mines, from the investigation, testimony and evidence presented, that the

following facts are true:

- (1) That the forces of the ignition were from and outby No. 3 Room.
- (2) The gas, in sufficient quantity for an explosive mixture, was present in No. 1 Entry, the butt-off connecting No. 1 and No. 2 Entries, No. 2 Entry, the butt-off between No. 2 and No. 3 Entries and in No. 3 Entry down as far as No. 1 Room. It is our concerted opinion that this gas originated and came into these live workings from the old works, which had been cut into previously that morning in No. 1 Room. Air samples were later taken in and about this abandoned area and found to have contained gas in dangerous quantities. The results of the analyses of these samples are attached herewith.
- (3) It is also the concerted opinion of the West Virginia Department of Mines that this gas was ignited from one of three sources:
 1. From the loading machine which was working, and on which there was power.
 2. From the cables attached to the loading machine. These cables had several splices outby the loading machine, which were electrically satisfactory.
 3. Smoking by the individuals who were on the section at the time of the ignition.

In an effort to arrive at the most logical of the three possible sources of the ignition, the following observations must be considered.

Mr. E. J. Gleim and Mr. H. B. Brunot, Permissibility Experts from the United States Bureau of Mines Laboratory, at Pittsburgh, who inspected the machine for permissibility on January 19, 1951, and January 25, 1951, assume in their report, a copy of which is attached, that there was no evidence that the gas was ignited by an internal electric spark and no evidence of an opening large enough to permit propagation of the internal explosion to the surrounding atmosphere was found.

Therefore, we can safely assume that the machine was in a safe operating condition.

The cable supplying power to the loading machine was found

to have been spliced several times but, upon close inspection of these splices, they were found to be electrically satisfactory from the standpoint of arcing as there was no indication of burning or shooting through.

Evidence of smoking is corroborated by the attached affidavit of Willard Evans, Oscar Young, Damon Fugate, Oscar Moore, Freddie Howe and Wilburn Porter, employees of the Burning Springs Collieries Company, who assisted in the recovery of the bodies and removed smoker's articles from the clothing of the deceased. The affidavit was sworn and subscribed by C. H. Shewey, Notary Public in the County of Mingo. According to this affidavit, smoker's articles were taken from the bodies of the deceased and either hidden in the gob in the mine or taken to the outside. By the evidence given in this affidavit, it is an established fact that smoking was a common practice in this mine. However, in spite of this evidence, on January 8, 1951, the fire boss and mine committeemen, in the presence of Mr. Lynch, Coal Mine Inspector of the United States Bureau of Mines, searched the employees of this mine, according to law, as they entered the mine that morning. This indicates that search according to law had been made previously.

Further sustaining the fact that smoking was a common practice in this mine, upon investigation by the inspectors of the West Virginia Department of Mines and the United States Bureau of Mines, cigarette butts and a burned match were found on an adjacent section. Furthermore, cigarettes and matches, which had been taken from the bodies of the deceased and hidden in the gob, were later uncovered by some of the individuals making this affidavit, in the presence of the inspectors of the United States Bureau of Mines

and the West Virginia Department of Mines, and turned over to these inspectors as evidence.

CONCLUSIONS.

After careful consideration of observations underground and the testimony given by the witnesses, the West Virginia Department of Mines must necessarily conclude that the gas ignition in the Burning Springs mine, on January 18, 1951, resulted when gas accumulated in old works, moved into the live workings of the affected area as the result of the moving of the coal between No. 1 Room and the old works, and most probably ignited by the smoking of cigarettes by the individuals on the affected section.

RECOMMENDATIONS.

1. That boreholes should be kept at least twelve feet (12') ahead when driving toward known faults and old works, and the last cut in such a place should not be shot down until it is definitely determined that there are no dangerous quantities of gas and water in the abandoned areas.
2. Cutting machines shall be equipped with flame safety lamps and the operators of such machines should test frequently before cutting, and while cutting, for dangerous gases.
3. Closer inspection and observation of the section and men should be made by the section foreman in charge.

4. Section foremen should make frequent examinations for gas before men and equipment are moved from place to place, and should also observe and enforce the mining laws and the safety rules of the Department of Mines.

5. No smoker's articles or smoking should be permitted in any mine rated as gassy by the West Virginia Department of Mines.

6. The mine foreman should read and countersign the fire boss book according to law.

Signed

Young Lawson, Inspector-at-Large
Logan Division

Signed

Charley Perry, District Inspector
District 31

Approved:

Arch J. Alexander, Chief
West Virginia Department of Mines

Approved:

John H. Hansford, Director
Mine Rescue and Safety

Attached herewith are the following:

1. Copy of page of Fire Boss Book, containing record of the fire boss run made on the day of the ignition.
2. Certified copy of the map of the affected section.
3. Copy of testimony given at hearing in Williamson, Friday, January 19, 1951.
4. Testimony given in hearing January 24, 1951.
5. Affidavit of employees of the Burning Springs Collieries Company.
6. Report of gas tests and rock dust tests of the Bureau of Mines
7. Copy of report of Permissibility Experts, United States Bureau of Mines.

COPY

1/24/51

Statement of Joe Hinkle - Swing Motorman.

I went to #9 Haulway (about third trip this morning; with empties) and stayed coupled to the empties while 12 of them were loaded. I left the loading point and took the loads to the empty hole which is 500 or 600 feet below the boom. Balboa Bowling, the main line motorman was waiting for me. While we were switching around I asked him what time it was and he said 11:30. I cannot remember anything else until I realized I was in the hospital.

Signed:

Joe Hinkle

Statement taken by J. H. Hansford, 1/24/51 - Re - Ignition at Burning Springs Coll. Co., January 18, 1951, at approximately 11:51 A. M.

COPY

1/24/51

Statement of - Robert D. Hodge, 16754-49, Fire Boss, Re. to his activities on January 18, 1951, at the mine of the Burning Springs Collieries Company.

Thursday is my regular day to make the fire boss run. I am the night section boss on the Mains section. My shift of men goes off duty at 12 midnight. That night (1/17/51), Joe Newman, Night Boss, asked me to go down on #9 Haulway and bring the machine men out at 1:00 A. M. (They were working overtime).

I went up on the section to the last place against the fault and they had just finished cutting it and were ready to load the machine. I sat down in the butt off between #2 and #3 Hds to wait until they loaded the machine on the truck. While I was there I heard some kind of a ripping noise near me but did not know just where. I thought it was the top and sounded it and also asked the machine man if it had been working. They said that the top there had not been working and I could not find any loose top either. When the machine was loaded I brought the machine men to the outside. It was then around 1:15 A. M. or 1:20 A. M. I then went over to the office and ate the rest of my lunch, fixed fires, etc. outside until about 3:30 A. M., when I went back inside to start my fire boss run. I made the Mains first, all working and idle places and went on the return from the Mains and to a fall near the top end of old #9 Haulway. This air current is part of the ventilating current for new #9 Haulway and joins with the remainder of the air used to

COPY

ventilate new #9 Haulway at its mouth. I did not find any gas. I then went around to the falls at the top end of old #9 Haulway which was on the same air that had come from the Mains and before it had joined with the fresh air at the mouth of new #9 Haulway. I did not find any gas. I then went on the new #9 Haulway and examined all the places and along the fault to the top end of No. 1 Heading. I did not find any gas. I then came out of #9 Haulway section and down to the empty hole below #9 Haulway section and went into the return from #9 Haulway section and tested for gas. I did not find any gas. I then came outside and OK'd the mine.

Signed:

Robert D. Hodge

Q. How long have you been fire bossing here?

A. Approximately a year.

Q. Ever find any gas?

A. No sir, I have not.

Q. Was No. 1 Room #9 Haulway cut through when you were up there?

A. No sir, it was not.

Q. Is it customary for you bosses to make the fire boss runs on alternate days?

A. Yes sir, it is except on Fridays, Mondays and after idle days.

Then Joe Newman makes them (Newman is employed as the regular general night foreman).

COPY

1/24/51

Statements of Walter Walker - Re. his fire bossing at Burning Springs mine.

I have read the statement of Robert Hodge, Fire Boss, and testify that when I make a fire boss run on my turn I make it essentially in the same manner as Hodge has described his run on Jan. 17, 1951.

Signed:

Walter L. Walker

Q. How long have you fire bossed here?

A. About three years.

Q. Ever find any gas?

A. Never have found any.

Jan 24, 1951

This is the answers to the questions asked the different men on recovery work of the explosive victims.

State of West Virginia
County of Mingo.

by Mr. Lambert if any Cigarettes or Matches
the bodies Mr. Evans stated that he taken
Cigarettes and matches off four or five of the men that he searched.

The foregoing statement of Willard Evans, Oscar Young and Damon
Fugate Oscar Moore Freddie Howell and Wilburn Porter and also
the statements made by Willard Evans, Oscar Young and Damon Fugate
are true and correct to the best of knowledge and belief
Sworn and Subscribed before me this 24 Day of Jan. 1951

Mr. Lynch asked if Mr. Evans would turn them over to be filed
and he turned them over.

Mr. Lawson asked if Mr. Evans had seen Willard Evans
and Mr. Evans answered no Sir, I did not see him then.

Mr. Lawson asked Mr. Evans if he had seen any of the men on his
shift working and the answer was Oscar Young

Mr. Lynch asked Mr. Evans if he had seen any witnesses of anything
other than taking the Cigarettes and matches off the victims and
Mr. Evans answer was no. Damon Fugate

Mr. Lambert asked if the above statement was about the same as he
had seen and Mr. Young answer was Yes Sir.

Mr. Lawson asked Mr. Young if he had seen any of the bodies
and Mr. Young answered yes Oscar Moore

Mr. Lawson asked Mr. Young what Freddie Howell
got off of the men and Mr. Young said I put some down in the bag
just to keep Mr. Lambert from seeing them.

Mr. Lawson asked Mr. Young if he had seen Wilburn Porter
Mr. Young answer was I did not see him then.

My Commission Expires July 8 1956

Mr. Lawson asked Mr. Fugate if he had helped search any of the
men and Mr. Fugate answer was yes I helped search two.

Mr. Lawson asked if he had found any cigarettes and matches and
Mr. Fugate answer was yes. C. F. Shewey, Notary Public

Mr. Harris asked Mr. Fugate if he had seen any of the men make a
practice of smoking in front of the foreman and Mr. Fugate
answer was no.

Jan 24, 1951

This is the answers to the questions asked the different men on recovery work of the explosive victims.

The question was asked by Mr. Lambert if any Cigarettes or Matches were taken off of the bodies Mr. Evans stated that he taken Cigarettes and matches off four or five of the men that he searched.

Mr. Lambert asked the question if he had any of the Cigarettes or matches that came off of the bodies Mr. Evans answered yes Sir:

Mr. Lambert asked if any of the Cigarettes packages were open Mr. Evans answer was Yes Sir:

Mr. Lynch asked if Mr. Evans would turn them over to be filed and he turned them over.

Mr. Lawson asked if Mr. Evans has seen any of the men smokeing and Mr. Evans answered no Sir, I did not work with them.

Mr. Lawson asked Mr. Evans if he had seen any of the men on his shift smokeing and the answer was no.

Mr. Lynch asked Mr. Evans if he had seen any evidence of smokeing other than taking the Cigarettes and matches off the victims and Mr. Evans answer was no.

Mr. Lambert asked if the above statement was about the same as he had seen and Mr. Young answer was Yes Sir:

Mr. Lawson asked Mr. Young if he had searched any of the bodies and Mr. Young answered yes

Mr. Lawson asked Mr. Young what he did with the Cigarettes that he got off of the men and Mr. Young said I put them down in the bug dust to keep Mr. Lambert from seeing them.

Mr. Lawson asked Mr. Young if he helped search the Joy Operator Mr. Young answer was I did not mess with him.

Mr. Lawson asked Mr. Fugate if he had helped search any of the men and Mr. Fugate answer was yes I helped search two.

Mr. Lawson asked if he had found any Cigarettes and matches and Mr. Fugate answer was yes.

Mr. Harris asked Mr. Fugate if he had seen any of the men make a practice of smokeing in front of the foreman and Mr. Fugate answer was no.

INQUEST HELD FOLLOWING THE EXPLOSION, CAUSE OF DEATH OF ELEVEN MEN AT THE BURNING SPRINGS COLLIERIES COMPANY MINE, KERMIT, WEST VIRGINIA, ON JANUARY 12, 1951

Dave Johnson, Deputy Sheriff of Mingo County, selected the following men to serve as jurors to listen to the evidence:

Willie Dillon, Foreman, Kermit, W. Va.
S. O. Osborne, Kermit, W. Va.
Ray Donahoe
B. L. Spaulding
Clifford Webb
John B. Vinson

The jury being duly sworn, the inquest took place in the offices of the Burning Springs Collieries Company at 7:20 P.M. following removal of the last body from the mine.

It was impossible to get an eye witness account of what happened as the only two survivors, Bill Rowan and Joe Hinkle, were both receiving treatment at the Williamson Memorial Hospital. Because of the excitement and the crowd of people it was impossible to procure proper statements. Responsible mine officials were mostly occupied with mine operations and were inside.

Mr. Orville Copley, Superintendent of Wince Block of Naugatuck, W. Va., had been placed in charge of the premises by Mr. T. W. Lambert, Superintendent of the Company. Mr. Lambert at the time of the inquest was in bed suffering from physical shock brought on by the explosion and was unable to offer testimony. However, he had given Mr. Copley what few details he knew.

No definite time of the explosion could be established but from talk around the mine we tentatively placed the time as being between 12:30 and 1:00. The testimony as given him by Mr. Lambert.

"Tom Lambert told me that he supposed the men had drilled, into or the coal cutter, had cut into a fault. This can happen in any mine and would not of a necessity be had planning on the part of mine officials. Other than this Mr. Lambert could not explain the cause of the explosion or the work the men had been doing."

STATEMENT OF GARLAND BREMER:

"I was not working at the time of the explosion but someone told me and I immediately went to the mine to offer my services. I went in to help with the rescue work. I did not know what time the explosion took place but imagine that it was about 12:30. What circumstances led up to the explosion I do not know but I imagine that the men either drilled into a gas pocket or the machine men unintentionally drilled into a pocket. I do know that the mines have been working near a fault for some time but

STATEMENT OF GARLAND BREWER (Cont'd.)

precautions had been taken in so far as possible for the safety of the men."

Deputy Sheriff of Kings County, selected the following

The above testimony is all that we took because of the conditions surrounding the mines. There were so many conflicting versions that we were unable to sort them out. We feel that we must take Mr. Copley's statement from Mr. Lambert as the basis for our verdict.

VERDICT: We the jury do find and agree that this explosion was accidental and was not the fault of carelessness of either mine officials or the men working.

The jury being duly sworn, the following were the officials of the Burning Springs California Co. who were present at the time of the explosion and the recovery of the last body from the mine.

- Willie Dillon, Foreman
- S. C. Osborne
- Ray Donahoe
- B. L. Spaulding
- Clifford Webb
- John B. Vinson

It was impossible to get an account of what happened as the only two survivors, Bill [Name] and [Name], were both receiving treatment at the Williamson Hospital. Because of the excitement and the crowd of people it was impossible to procure proper statements. Responsible mine officials were mostly occupied with mine operations and were inside.

Mr. Orville Copley, Superintendent of Mines Block of Kingstuck, N. Va., had been placed in charge of the premises by M. T. BALL, GOVERNOR of the Company. Mr. Lambert at the time of the explosion was in bed suffering from physical shock brought on by the explosion and was unable to offer testimony. However, he had given Mr. Copley what few details he knew.

No definite time of the explosion could be established but from talk around the mine we tentatively placed the time as being between 12:30 and 1:00. The testimony as given him by Mr. Lambert.

"Mr. Lambert told us that he supposed the men had drilled, into or the coal either, had cut into a fault. This can happen in any mine and would not of a necessity be had planning on the part of mine officials. Other than this Mr. Lambert could not explain the cause of the explosion or the work the men had been doing."

STATEMENT OF GARLAND BREWER

"I was not working at the time of the explosion but someone told me and I immediately went to the mine to offer my services. I went in to help with the rescue work. I did not know what time the explosion took place but imagine that it was about 12:30. What circumstances led up to the explosion I do not know but I imagine that the men either drilled into a gas pocket or the machine was unintentionally drilled into a pocket. I do know that the mines have been working near a fault for some time but

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Inspection of Joy Manufacturing Company
Type 14BU-7BE Loading Machine at the
Kermit Mine of the Burning Springs
Collieries Co., by E. J. Gleim on Jan 19 and
H. B. Brunot and Frank R. Lee on Jan. 24, 1951

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The Joy 14BU-7BE loading machine was examined first in the place it was at the time of the explosion. The following discrepancies in its condition were found:

1. No seal was in place on the screw cover of the master switch.
2. No seals were present on the screw handhole covers of the right-hand traction and right-hand head motor. Also, several of the set screws which are used to lock these covers were missing.
3. No seals or set screws were in place on left-hand head motor handhole covers. Set screws were in place on the left-hand traction motor but no seals were present. The set screws were in place on the pump motor but no seals were present.
4. The cover of the conduit box on the left-hand head motor had been damaged by a severe blow of some kind but seemed to be securely in place but had no openings in it.
5. The lower copper tube that holds the hose conduit at the left-hand head motor was smashed flat but the hose conduit was still in place.

6. The control compartments appeared to be in good condition.

7. After the examination in the working place, another cable was attached and the machine was moved down into the entry and the loading head was raised so that the cover of the resistance compartment could be seen. Examination of this cover showed one bolt missing. A .004 inch feeler gage could be inserted under this cover at one place.

8. A grounding conductor was not connected to the frame of the machine.

9. Three poorly made splices were found in the trailing cable at 11, 28, and 34 feet, respectively, from the machine. These were removed from the cable for closer examination outside the mine. These splices are shown in figures 1, 2, and 3, figure 1 showing the splice nearest the machine. In figure 1, the taped portion at the right-hand end partially covered a gash lengthwise through the outer jacket into a power conductor, some of the strands of which are not covered by tape. This figure also shows the grounding conductor cut off and the copper strand ends exposed. Figure 2 also shows exposed ends of the strands of the grounding conductor and a bare splicing ring on one power conductor. In figure 3, the grounding conductor strand ends are exposed. Laboratory test of the splice in figure 1 showed the grounding conductor and a power conductor to be electrically connected through internal damage, thus making it possible for the exposed ends of the grounding conductor and the power conductor to be alive when the machine cable was connected to the power source.

The trailing cable arrangement has been changed from that specified for the machine design approved by the Bureau. Two Miller Type single-pole plugs are used near the stuffing box and the length of protective hose conduit over the cable which should extend several feet from the machine is absent. A steel clamp with a piece of rubber to protect the cable has been added to hold the cable out by the Miller plugs. This clamp is attached to the machine by a short length of chain.

In connection with the foregoing statements, it must be borne in mind that under the conditions of the examination, it was impossible to see or inspect much of the conduit and the under sides and hidden parts of the explosion - proof enclosures.

Discussion:

The machine was not in permissible condition for the following reasons:

1. Absence of set screws and seal wires on several compartments.
2. Absence of frame ground.
3. Absence of bolt for resistance cover.
4. Absence of protective hose conduit at trailing cable entrance.
5. Unauthorized use of disconnect plugs in cable.
6. Poorly made splices with exposed conductors.

There is a possibility that the exposed conductors could have made momentary contact with the machine frame and produced sparks

capable of igniting gas. Examination of the exposed strands was made with a high power microscope (magnification 18 diameters) and although some ends were bright the evidence was not positive that this was the result of electrical burning rather than scouring from dragging on the mine floor. Laboratory experiments indicate that igniting sparks can occur at the ends of copper strands without leaving positive evidence such as beading or burning.

The use of separable plugs, as in this instance, to permit disconnecting the trailing cable is a dangerous practice in that the plugs can be connected and disconnected while the cable is energized. Thus, it is possible to make electric sparks, arcs, or flashes with these plugs should they be accidentally or intentionally separated under load and ignite gas.

Conclusion:

Assuming that an explosive mixture did enter any enclosure and was ignited by an internal electric spark, no evidence of an opening large enough to permit propagation of the internal explosion to the surrounding atmosphere was found.

In order to make a satisfactory and complete examination of this machine, it would be necessary to take it outside to the shop where all of the electrical equipment could be examined and tested.

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