

FINAL REPORT, EXPLOSION, SONMAN "E" MINE,
SONMAN SHAFT COAL COMPANY, SONMAN,
CAMBRIA COUNTY, PENNSYLVANIA,
JULY 15, 1940

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BUREAU OF MINES

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INTRODUCTION

An explosion occurred in the Sonman "E" mine of the Sonman Shaft Coal Company, Sonman, Cambria County, Pennsylvania, at about 10:40 a.m., July 15, 1940. Sixty-three men were killed as a result of this explosion, of which number about 55 were killed by afterdamp and 8 were killed by burns and afterdamp. Few if any of the men were killed outright by burns and violence and it is probable that the eventual cause of death in all cases was due to afterdamp. Eighteen men escaped without assistance from the immediate explosion area and 12 others working on the same split of air escaped unaided. About 350 men were in the mine at the time of the explosion.

Thirty-four bodies were found behind a barricade (at about 700 feet inby No. 3 haulage on 16 right) which had been ineffectively erected and located. Seven others were also found back of this barricade some distance inby from the group of 34 at and near the face of room No. 3, 16 right. Evidence in the form of a note found on one of the victims indicated that at least some of them were still alive at 6:00 p.m.

The explosion was not general throughout the mine, but traversed a relatively small area in Nos. 16, 17, and 18 right entries off the north dip, and the flame of the explosion did not reach the entrance to these entries on the north dip or the faces of the entries.

No water was used in this mine for allaying the coal dust and the mine was not rock-dusted except that some rock dust had been sparsely applied at some locations on haulage entries only.

The Safety Division of the Bureau of Mines at Pittsburgh, Pa., was informed by telephone at about 12:45 p.m. that an explosion had occurred, by District Mine Inspector W. H. Filer when Filer arrived at the mine. He was unable to give any details but requested assistance and stated that he and Inspector Michael Thomas were entering the mine to obtain additional information. A group of Bureau of Mines employees, consisting of J. J. Forbes, G. W. Grove, M. J. Ankeny, and E. J. Ristedt in a Bureau automobile and H. R. Burdelsky and J. W. Pero in a Bureau truck loaded with oxygen breathing apparatus, gas masks, and accessories, left the Bureau of Mines station at 1:10 p.m. They arrived at the mine at about 4:00 p.m. and, after conferring with company officials, Messrs. Forbes, Grove, Ankeny, Ristedt, and Pero entered the mine at 4:45 p.m. Upon reaching the affected area about 45 minutes later, they found that the ventilation had been restored up 17 right to about No. 20 room. From this point employees of the Bureau of Mines participated in the recovery work until its completion at 8:30 a.m. when the last body was recovered and left the mine about 11:00 a.m., July 16.

GENERAL INFORMATION

Location and Operating Officials

The Sonman "E" mine is located on the Sonman branch of the Pennsylvania Railroad at Sonman, Portage Township, Cambria County, Pennsylvania, and is owned by the Sonman Shaft Coal Company. The mine is operated by the Koppers Coal Company under an operating agreement dated December 24, 1935, and expiring December 31, 1940.

The officials of the Sonman Shaft Coal Company are as follows:

President	Thomas E. Baird, Jr.	1434 Commercial Trust Bldg., Philadelphia, Pa.
Vice President	P. C. Thomas	Koppers Bldg., Pittsburgh, Pa.
Chief Engineer	M. A. Evans	Ebensburg, Pa.
Resident Engineer	J. M. Baker	South Fork, Pa.
General Inspector	John Lindley	Montgomery, W. Va.
Division Inspector	O. V. Simpson	Morgantown, W. Va.
Mine Superintendent	Victor Duras	Sonman, Pa.
Mine Foreman	L. L. Steele	Sonman, Pa.
Safety Inspector	W. E. Ray	Portage, Pa.

Employees and Production

The mine operates two 7-hour shifts a day, the day shift from 7:00 a.m. to 2:30 p.m. and the night shift from 7:00 p.m. to 2:30 a.m., with 1/2 hour off at mid-shift for lunch. A total of about 720 men are employed at the mine, of which number 680 are employed underground on the two shifts. The average daily production is about 2,700 tons.

Openings

The mine is opened by three slopes. The main slope, located at the surface plant at Sonman, is in rock 800 feet long on a grade of 25 percent. This slope is used for hoisting coal and rock, as a means of ingress and egress of men, and as a main intake airway. Another slope, known as the Shoemaker manway, is located about 2,000 feet northeast of the main slope; this is 3,000 feet long, driven in the coal on an 8 percent grade. It is also used as a main air intake. The return airway slope, known as the Portage manway, is located in 4 left off the south dip about 1,900 feet from the mouth of 4 left. This is a rock slope 420 feet long on a grade of 87 percent and is connected to the ventilating fan which operates exhausting.

Nature of the Coal Bed

The Sonman "E" mine is operating in the Upper Freeport coal bed known locally as the "E" bed. The coal at this location dips at an average rate of 8 percent in the direction of north 70° west. The coal bed averages about 54 inches in thickness and is immediately overlain by a layer of black shale 5 to 10 inches in thickness. One representative borehole section shows

that above the black shale in succession are a dark shale, 14 feet; light sandy shale, 10 feet; gray sandstone, 6 feet 10 inches; gray shale, 32 feet; pebbly sandstone, 20 feet; white burly sandstone, 19 feet; gray sandy shale, 19 feet; and from thence to the surface, various layers of dark and gray shale, sandstones, limestones, fireclay, coal, and bony coal. The minimum cover over the coal bed near the working sections of the mine is about 500 feet. The floor is a hard dark fireclay about 1-1/2 feet in thickness. The natural conditions of the roof in the Sonman "E" mine are good and little timbering is required in entries.

Three face samples of coal were collected during the investigation, the analyses of which are shown in table 1.

These analyses of the Upper Freeport coal at the Sonman "E" mine on an "as received" basis show that the volatile matter ranges from 15.8 to 18.5 percent with an average of 17.6 percent, and the fixed carbon ranges from 71.8 to 73.6 percent with an average of 73 percent. The ratio of volatile matter to total combustible matter of this coal, which is an index of the explosibility of the coal dust, is shown by the formula:

$$\text{Volatile ratio} = \frac{\text{Volatile matter}}{\text{Volatile matter} + \text{fixed carbon}} = \frac{17.6}{90.6} = 0.19$$

Experiments by the Bureau of Mines have shown that coal dust having a volatile to total combustible ratio in excess of 0.12 is explosive. The explosibility of coal dust increases as the volatile to total combustible ratio increases. It is therefore obvious that the coal dust in the Sonman "E" mine is explosive.

Based on a volatile ratio of 0.19 percent, at least 64 percent incombustible matter is required to prevent the propagation of an explosion, according to tests of the Bureau of Mines.

UNDERGROUND MINING METHODS, CONDITIONS, AND EQUIPMENT

Method of Mining

The mine is opened by two main dip systems of entries leading from the main slope, as shown on the map of the mine contained in the appendix to this report. These main dip entries, known as the north dip and the south dip, are approximately parallel to each other and were driven, roughly, 6,000 feet apart. These main dip entries were originally driven in triplicate, but during the later life of the mine sets of five entries were projected and driven on the main dips. Room entries are turned off the main dip entries to the right and left at about 500-foot intervals, approximately on the strike of the bed. These entries are generally driven in pairs from which the rooms, about 30 feet wide, are driven to the rise parallel to the main slopes on about 60-foot centers. In the more recently developed portions of the mine, the rooms are driven through from one pair of entries to the air course of the adjacent entries. While pillars have previously been extracted, the present system of mining, which is a modification of a mining method known as the Gary system, was laid out with a view to obtaining the greatest possible recovery of coal without extracting the pillars.

Table 1. - Analysis of coal, Sonman "E" mine,
Sonman Shaft Coal Co., Sonman, Pa.,
July 23, 25, 26, 1940

Labor- atory No.	Location in mine	Coal as received						Coal—moisture- and ash-free			
		Percent						Percent			B.t.u.
		Mois- ture	Vol. matter	Fixed carbon	Ash	Sul- phur	B.t.u.	Vol. matter	Fixed carbon	Sul- phur	
B-54946	16 right air course off north dip, 155 ft. inby No. 5 haulage air course	3.5	18.5	71.8	6.2	1.4	14,210	20.5	79.5	1.6	15,740
B-54947	18 right off north dip, face No. 2 entry	2.7	18.5	73.6	5.2	1.0	14,470	20.1	79.9	1.1	15,720
B-54948	15 left main heading, off south dip, 75 ft. inby room 27	3.4	15.8	73.6	7.2	2.2	14,010	17.7	82.3	2.5	15,680

Section of bed

B-54946			B-54947			B-54948		
Material	Ft.	In.	Material	Ft.	In.	Material	Ft.	In.
*Bone and coal		5	Coal	2	3	*Bony coal		6
Coal	1	10	*Bony coal		5-1/2	*Slate		1
*Bony coal		6-1/2	*Dark shale		1-1/4	Coal	2	3-1/2
*Slate		1-1/2	Coal	1	1	*Bony coal		7
Coal		11	*Dark shale		2	*Slate		1-1/2
*Dark shale		2-1/2	*Fireclay			Coal	1	3
						*Slate		2
						*Bony		2-1/2

*Sections not included in sample.

Instead of the total extraction of pillars whereby the roof is caused to break and cave, rooms and entries are driven with cut-throughs at legal intervals (not less than 16 yards nor more than 35 yards apart). After rooms have been driven to their limits, additional crosscuts are driven through the room pillars, leaving stumps for the support of the roof. Also, whenever entries are no longer used or needed for haulage purposes, the chain pillars are partially extracted by driving openings through them.

Complete pillar mining was abandoned in order to avoid fracturing the roof, which in the past created a very serious and costly drainage problem. The present system is projected for an 80 percent recovery of coal, but it is reported that only about 72 percent recovery is actually attained.

In order to obtain a more complete control of the drainage problem in this mine, the present operating company left a 400-foot barrier of solid coal between the old workings of the mine and the new development. This barrier extends entirely across the property between 14 and 15 right and 14 and 15 left off the north dip, and between 12 and 13 right and 12 and 13 left off the south dip.

The system of mining is a modification of the standard room-and-pillar system. It differs from the room-and-pillar system in that rooms are driven through to the air courses of adjacent entries; rooms are driven through in pairs at intervals of about 800 feet to adjacent entries, such rooms being used as haulageways. Solid blocks of coal about 175 to 200 feet thick are left adjacent to these haulage rooms until the rooms are no longer used for haulage purposes, after which the blocks are developed and partially mined out.

The coal is undercut with permissible Goodman standard shortwall mining machines and permissible Sullivan C.E.7 shortwall mining machines. Coal is drilled with breast augers. Fireclay bottom is taken up in haulage entries. Holes are drilled in the fireclay by means of jackhammers powered by permissible and nonpermissible portable compressor units. At the present time coal is loaded by hand in all places in the north dip section, but two permissible-type shaker conveyor units are in operation in the south dip section.

The natural roof conditions in this mine are good and not a great deal of timbering is required in entries. A definite system of posting has been adopted for use in rooms and developing entries and this timbering plan is enforced. In entries one line of posts is set parallel to the track with 2 feet 3 inches clearance on 4-foot centers. Another line of posts, parallel to the first line of posts, 4 feet toward the gob side, is set at 5-foot centers. A safety post is maintained in line with the center of the track at the face. The timbering system in rooms is similar to that in entries except that an additional line of posts is set on the rib side, close to the rib, with 3 feet 9 inches clearance from the track, on 4-foot centers.

Ventilation and Gases

The mine is ventilated by means of an 8- by 4-2/3-foot double-inlet Jeffrey Retrovane centrifugal fan driven by a 150-horsepower Westinghouse motor connected to the fan by means of a multiple belt drive. The fan is

offset from the opening about 15 feet, but explosion doors have not been provided. It is operating exhausting and when the air was measured after the explosion it was circulating about 100,000 cubic feet of air per minute at a water gage of about 4.2 inches. The fan is not reversible. No separate source of power is available for driving the fan in the event of failure of the regular power circuit and no auxiliary fan or auxiliary drive has been provided. A warning device has been installed on the fan whereby any stoppage or slowing down of the fan would give both a visual and audible warning at a nearby dwelling house, residence of the mine electrician. Arrangements have been made to have some member of the family always present and in the event of the warning being sounded the cause of the interruption is investigated and the mine is notified by telephone.

A much more reliable method would be to arrange to cut all power from the mine by means of an electric relay switch system activated by the vane in the fan duct, in the event of failure of the fan. At the same time a visual and audible warning device should be installed at the mine surface plant or superintendent's office which would give warning in the event of failure of the fan.

The map of the mine and the detail map of the explosion area, included in the appendix of this report, show by arrows the coursing of air through the mine prior to the explosion. The intake air enters the mine through the main (Sonman) slope and through a slope located on an adjoining property known as the Shoemaker manway after having passed by the unsealed entrances to abandoned and worked-out areas of the abandoned Wilmore No. 1 mine of the Shoemaker Coal Mining Company. The main air current is split, one portion of it going into the north dip and the other portion into the south dip. The total air in the south dip split is conducted to the lower end of the south dip entries where it is again split two ways. One of these secondary splits ventilates the workings on the right side of the south dip and is designated as split No. 3; the other ventilates the workings on the left side of the south dip and is designated as split No. 4. Split No. 3 circulates continuously through 19, 18, 17, 16, and 15 right entries and the workings thereof and travels to the main return through the old abandoned workings of 13 and 14 right. Split No. 4 circulates continuously through 18, 17, 16, 15, and 14 left and the workings off these entries. The returns from these splits are conducted to the return slope through parallel return airways on the left and right sides of the south dip. The air going into the north dip is split at 14 right. One split, designated as split No. 1, is conducted up 14 right heading and is then directed into the workings of 12 right, 13, right, and 14 right and is returned through 14 right air course to the main return through an overcast at 14 right. The other split (the one in which the explosion occurred), designated as split No. 2, enters 17 right with a small portion entering 16 right through a regulator door. The air entering 17 right is directed through the rooms to 16 right heading and air course. After traveling up 16 right heading and through the rooms of 16 right inby No. 3 haulage road, the air currents are concentrated on the 16 right heading. The air circulates through the 16 right heading to the face, then down the 16 right air course, through No. 3 haulage air course, up 17 right heading, down 17 right air course, across No. 5 haulage heading and air course, up 17 butt heading, down 17 butt

air course, through No. 4 haulage entries, up No. 4 face entry, 18 right, around the faces of No. 5 haulage entries, down Nos. 1 and 2 face entries, 18 right, to the air lock on 18 right, where the air is concentrated in No. 1 face entry, 18 right. The air then circulates through the faces of the north dip entries, continuously through 18, 17, 16, and 15 left, and then into the main return. Some of the return air from the north dip section finds its way through old abandoned workings intervening between the north and south dip entries, and all return air from the north side of the mine is concentrated at 4 right off the south dip where it crosses the overcasts into the main return.

According to the official mine foreman's record book, air measurements were recorded by the mine foreman on July 12 as follows:

Split No.	Location	Quantity cu. ft. per minute
1	12 right, north	7,800
1	13 right, north	7,500
1	14 right, north	9,900
2	16 right, north	16,250
2	17 right, north	14,950
2	18 right, north	13,650
3	15 right, south	12,000
3	16 right, south	12,000
3	17 right, south	10,000
3	18 right, south	8,000
3	19 right, south	7,000
4	16 left, south	6,300
4	15 left, south	5,460
4	14 left, south	9,600

Ventilation is controlled by a system of doors which are provided with latches so that the doors can be latched open. In some locations doors are installed in pairs forming an air lock between them so that when one door is open the other, having the same effect upon the ventilating current, can remain closed, thus enabling trips to pass through doors without interrupting the ventilating current. Such air locks were provided at 18 right, on No. 2 haulage of 18 left, and at 17 left off the north dip. Other installations of doors, notably those on No. 2 and No. 3 haulage roads between 18 right and 17 right north dip, were erected in pairs but failed to form air locks because the stoppings necessary to complete the air locks were not erected. The opening of any one of the doors produced short circuits in the ventilating current in one portion of the section or another, depending upon which door was open.

While testimony was brought out at the inquest that doors were never found left latched open by the haulage crews, the door located in No. 3 haulage near 17 right was found latched open by the recovery crews following the explosion, and there is a strong suspicion that the other door on No. 3 haulage between 2 and 3 face entries on 18 right was also left latched open, although this door was blown out by the explosion. The installation of latches on

ventilating doors is almost an invitation when trips of cars pass through them to create short circuits in the ventilation. This is particularly true when air locks are not provided. Whenever any doors except check doors are erected in the mine for the purpose of controlling ventilation, they should always be erected in pairs and the necessary stoppings should be constructed so that the doors will form a complete air lock. The doors should be so constructed and installed that they will be self-closing, and it is suggested that bumper bars be provided on the doors so that they can be opened by the locomotive and held open by the cars as they are passing through, after which they will close automatically when the trip has passed.

Stoppings in main entries are constructed of brick set in mortar, and stoppings in room entries are "dry wall" brick stoppings faced with mortar. Some dry pack wall stoppings are also used in room entries.

The present system of mining was obviously laid out with a view to obtaining a maximum recovery of coal without making pillar falls and apparently little consideration was given to proper and adequate ventilation. Rooms are driven through to the air courses of adjacent entries on the advance as the entries are developing and the intake air must drift through these rooms before reaching the active working places of either rooms or advancing entries. Air from abandoned workings and active rooms and entries is conducted through airways in which trolley lines have been installed and trolley locomotives operate. A much higher degree of safety would be attained if each set of room entries were placed on a separate split of air with an overcast for each set. A barrier pillar should be left between the rooms of one entry and the air course of the adjacent entry and occasional bleeder openings should be driven through this barrier pillar to the air course of the adjacent entry and regulators should be maintained on these bleeder openings so as to provide complete control of the air. The air should be conducted into each set of room entries through the entry from which rooms are turned and a portion of the air should be allowed to ventilate the worked-out areas and return through the air course of adjacent entries. The system of mining should be so designed that bleeder entries will be left adjacent to the property boundary lines so that old abandoned areas which are unsealed can be properly ventilated.

Nonpermissible electrical equipment, including trolley wires, trailing cable connections other than through permissible junction boxes, and power lines (except armored rubber-covered cables which meet the specifications of the National Electrical Code), should not be installed or operated in air which has passed through or by any active workings, or air which has passed through any abandoned workings whether or not pillars have been drawn, or air which has passed by the unsealed entrances to abandoned territory. A system of mining and ventilation should be adopted and proper equipment should be provided so that this mine and all coal mines can be operated in accordance with this principle if electricity is permitted to be used in mines.

The mine is classed as gassy by the Pennsylvania Department of Mines and fire bosses are employed to examine the mine before the shift enters and while the men are at work.

A sample of air was collected by the company safety inspector from split No. 2 (the split in which the explosion occurred) about 10 minutes before the explosion. This sample was analyzed at the Bureau of Mines gas laboratory at Pittsburgh and was found to contain the following: CO₂, 0.11; O₂, 20.36; CH₄, 0.18; and N₂, 79.35 percent. The quantity of air measured was 13,600 cubic feet per minute.

Samples of air are collected in the split returns by the company safety inspector semi-monthly and analyzed at a company laboratory. Following is a tabulation of the results of some recent analyses.

Date sampled	Split No.	Location	Percent		Quantity of air, cu. ft. per min.
			CO ₂	CH ₄	
6/25/40	1	14th right overcast	0.15	0.03	17,600
6/25/40	2	15th left regulator	.15	.17	13,600
7/3/40	3	12th right air course	.10	.00	16,600
7/3/40	4	12th left air course	.10	.00	17,100
7/6/40	1	14th right overcast	.05	.00	15,800
7/6/40	2	15th left regulator	.05	.00	13,300

Air samples were collected by the Bureau of Mines during the investigation, analyses of which are shown in table 2. It is believed that the results of analyses of samples taken in split returns are fairly representative of the average daily conditions, except that the methane content may be somewhat lower than under actual operating conditions, due to the fact that the mine had been idle for a period of about 10 days when the samples were collected. It will be observed that samples collected at the faces of 16 right air course and 17 right heading a few days after the explosion showed 0.79 and 0.38 percent methane, respectively, and a sample collected near a clay vein at the face of 24 room off 16 right contained 1.08 percent methane. A sample collected in No. 23-1/2 room off 16 right in a slightly moving air current contained 0.26 percent methane. A sample collected at the "lip" of the fall in 16 right air course at No. 28 room on July 19 contained 21.9 percent methane. A sample collected in 18 right off the north dip just outby the 3rd crosscut from the face contained 0.43 percent methane in 13,500 cubic feet of air. This represents the full return from the explosion area just outby the last open crosscut and indicates that methane is being liberated in the section at the rate of 83,592 cubic feet per 24 hours. Another sample collected 5 feet outby the first slant in 15 left, representing the entire return from No. 2 split, contained 0.34 percent methane in 18,590 cubic feet of air, or 91,017 cubic feet of methane per 24 hours. Accordingly No. 1 split with 0.19 percent methane produces 39,946 cubic feet of methane per 24 hours; No. 3 split, 0.17 percent methane or 34,333 cubic feet per 24 hours; and No. 4 split, 0.09 percent methane or 36,936 cubic feet per 24 hours.

Duplicate samples of the total main return collected in the fan duct leading from the Portage slope to the fan contained 0.13 and 0.14 percent methane, respectively, in 110,330 cubic feet of air. At this rate the entire mine was producing from 206,538 to 222,425 cubic feet of methane per 24-hour period.

Table 2. - Air analysis, Sonman "E" mine,
Sonman Shaft Coal Company,
July 1940.

Labor- atory No.	Location in mine	Date of samp- ling	Percent				Quantity of air, cu. ft. per min.	Methane lib- erated in 24 hours, cu. ft.
			Carbon dioxide, CO ₂	Oxygen, O ₂	Methane, CH ₄	Nitro- gen N ₂		
65923	Room 23-1/2 off 16 right	7/19	0.26	20.43	0.26	79.05		
65922	16 right air course at 28 room at edge of fall	7/19	0.3	15.5	21.9	62.3	No vel.	
65921	Face 16 right air course	7/19	0.25	20.09	0.79	78.87	No vel.	
65924	Face of room 24 off 16 right (clay vein)	7/19	0.33	19.74	1.08	78.85	No vel.	
65937	Face of 17 right off north dip	7/24	0.27	20.20	0.38	79.15		
65914	15 left regulator from No. 2 split (rubber bag)	7/15 10:30 a.m.	0.11	20.36	0.18	79.35	13,600	35,251
65939	18 right off north dip, outby 3rd crosscut from face 1 entry	7/25	0.25	20.23	0.43	79.09	13,500	83,592
65936	17 butt off 17 right off north dip, outby from next to last crosscut	7/24	0.21	20.29	0.38	79.12	7,700	42,134
65934	North dip 5 face, 25 ft. north of 14 right haulage	7/25	0.20	20.53	0.19	79.08	14,600	39,946
65935	15 left haulage, 5 ft. outby 1st slant	7/25	0.24	20.25	0.34	79.17	18,590	91,017
65938	South dip 5 face, 50 ft. inby 12 right air course	7/26	0.21	20.24	0.17	79.38	14,025	34,333
65931	12 left air course off south dip, 50 ft. inby 1 face	7/26	0.17	20.50	0.09	79.24	28,500	36,936
65932	Main return inby fan at Portage slope, Orchard St., Portage	7/26	0.34	20.21	0.14	79.31	110,330	222,425
65933	do	7/26	0.34	20.17	0.13	79.36	110,330	206,538

From the analysis of these samples it is apparent that a considerable amount of explosive gas is being liberated in the mine and that a dangerous condition could result should the ventilating current be short-circuited or otherwise disrupted for any length of time.

Attention is also called to the fact that the methane content in split returns as shown by Bureau of Mines analysis is considerably higher than is indicated in previous samples collected by the company safety inspector. It is suggested that the laboratory method employed by the company may not be as accurate as it should be or that the sampling technique is at fault. It is recommended that glass or copper tubes in conjunction with the water-displacement method be substituted for the rubber bags which are in use at the present time for collecting air samples.

Haulage

All main haulage in the mine is by electric locomotives and rope haulage. The coal is hauled from the north dip section by means of a 150-horsepower electric relay hoist located between 10 and 11 right and from that point to the main north by means of a 400-horsepower electric hoist located near the junction of main north with the north dip entries. From this point the coal is hauled to the main slope through the main north heading by an electric locomotive and is hauled to the surface through the main slope by means of a steam hoist located on the surface. The haulage arrangement on the south dip is essentially the same except that the main hoist is located on the surface with the rope installed in a borehole and the relay hoist is located at 15 left off the south dip. An electric locomotive is used to haul the coal from the south dip to the main slope through the main south heading. All main haulage systems, including electric hoists, signal lines, and the electric locomotives operating on the main north and main south headings, are operated on intake air; however, a portion of this main intake air travels through or by the unsealed entrances to abandoned and worked-out areas of the Wilmore No. 1 mine of the Shoemaker Coal Mining Company before it reaches the haulage roads of the Sonman "E" mine.

Secondary haulage or haulage from the side tracks near the working places to the main side tracks on the rope haulage system is by means of electric trolley locomotives. Some gathering is also done by trolley locomotives on the entries and, in general, these trolley locomotives operate on return air from abandoned mined-out areas and from active workings. Gathering of loads and placing of empty cars is to a large extent done by the use of animals.

The track gage is 42 inches, with 60- and 30-pound rails used on main haulage and 30-pound rails used in rooms. Endgate-type wooden cars of 2- and 3-1/2-ton capacity are used and these cars are of fairly tight construction. Shelter holes are provided along haulage entries at intervals of about 50 feet, and 30 inches of clearance is maintained consistently along haulage roads between the side of the cars and the rib. There is considerable spillage of coal along haulage roads, particularly along the rope haulages, resulting in much dust along these roads. Trolley wires are substantially guarded at intersections, man-trip loading zones, and other points where

workmen are required to pass under them. Drivers are permitted to ride on front and rear bumpers of cars, but it is reported that the coupling of cars while moving and flying switches are prohibited. On the rope haulage the rope rider rides on the bumper of the second car from the rope on loaded trips and in the rope car on empty trips.

Lighting

Fixed incandescent lights mounted in weatherproof sockets are installed at track switches, derail switches, doors, side tracks, and permanent electrical installations underground, such as pumps, hoists, and switchboards. These fixed incandescent lights are not guarded. Permissible Wolf and Koehler flame safety lamps are carried by the mine foreman, safety inspector, assistant mine foreman, and fire bosses for use in testing for gas and, as far as could be determined, the fire bosses use no other light than the flame safety lamp in making their examinations of the mine. Permissible flame safety lamps are also carried by the operators of all cutting machines, who are supposed to test for gas at the face before taking the machine beyond the last open crosscut, and frequently while the machine is in operation at the face. Edison portable electric cap lamps are used by minors and all other employees for illumination. The use of open lights in the mine, as well as smoking, is prohibited.

Machinery Underground

Permissible Goodman and Sullivan shortwall mining machines are used for cutting coal and two truck-mounted portable air compressors are used for operating the jackhammers in drilling the bottom fireclay in entries. The portable air compressor in the north dip section is of the permissible type and the portable compressor in the south dip is of the nonpermissible type. All main and gathering pumps are nonpermissible.

Mining machines, electric trolley locomotives, compressors, and all gathering pumps (except one) are operated on the regular trolley circuit of 250 volts direct current. Feeder lines for the trolley circuits are brought into the mine through boreholes at convenient locations from the power converter station on the surface. Three main pumps which discharge water to the surface through boreholes and one main gathering pump are operated on 2,200 volts alternating current. These high-voltage circuits are carried into the mine through boreholes. The mine circuits are equipped with automatic reclosing circuit breakers located in the substation on the surface and the transmission lines are controlled at a switch station underground. The trolley wire into each section is sectionalized by cut-out switches. Four-inch rubber mats are installed at 2,200-volt switch panels underground and insulated stools are provided at switching points for the 250-volt direct-current circuits. An official of the company asserted that all permissible equipment was inspected by a competent repairman at least several times each week, but no records are kept of such inspections. All permissible equipment examined underground during the investigation appeared to be in good condition. It is common practice to splice cables underground.

There were three permissible mining machines in the section in which the explosion occurred. These machines were located at the heading stumps between 18 and 19 rooms on 16 right, in the face of 16 right entry, and in No. 3 face, 18 right.

All of these machines, with the possible exception of the one in the 16 right heading stumps which had just completed a cut, were in operation when the explosion occurred. These machines were all examined carefully during the investigation and were found to be in good condition. While the machines themselves are permissible, they obtain their power for tramping by "nipping" along the trolley wire and they obtain their power for cutting by means of a ground hook on the rail and a fused nip on the trolley wire. While these machines were in the section in which the explosion occurred, none of them was in the actual explosion area at the time of the explosion and no evidence was found to indicate that any one of these machines may have caused the ignition.

Explosives

Blasting is done at any time during the working shift and all shots are charged, stemmed, and fired by the miners. No shot firers are employed. The coal is undercut to a depth of about 6 feet and the boreholes are placed by the loaders at a depth of about 5-1/2 feet. Three and four holes are placed for each cut, depending upon its width, and each hole is charged with two to three cartridges of explosive and stemmed with clay. The holes are usually drilled and charged at essentially the same time but they are fired singly in sequence.

Permissible explosives, du Pont Lumpcoal CC in 1-1/2- by 6-inch cartridges, are used for blasting coal and du Pont Gelobel for blasting fire-clay and rock. All shots are fired electrically with a small nonpermissible dry-cell battery.

Explosives are taken underground by the miners in small wooden boxes or rubberized canvas bags of about 10 or 12 sticks capacity, and the detonators are carried in separate boxes made of wood. Explosives and detonators are carried on man-trips. Explosives boxes and bags and detonator boxes are stored in the working places at least 75 feet from the faces and out of line of fire. The canvas bags containing explosives are sometimes hung from timber cap pieces. Cubby holes for the storage of explosives have not been provided because the coal is said to fall away from the ribs, making it almost impossible to maintain such storage places.

The faces of all working places in the immediate explosion area were carefully examined during the investigation and no evidence was found that any shots were fired at the time the gas ignition occurred. All working places were either blasted some time before the explosion and had loaded out some coal or were in the course of preparation for blasting.

Drainage

While the mine is moderately dry, a serious and costly drainage problem exists. According to company officials, this mine is producing an average

of 4,300 gallons of water per minute. Of this amount 1,200 gallons per minute is pumped to the surface through a borehole at one location and 800 gallons per minute at another location in the south dip; 900 gallons per minute is pumped to the surface from one location on the north dip and 1,400 gallons per minute is discharged through a borehole to the shaft mine operating in the underlying coal bed. The foregoing figures represent an average discharge of water over a 24-hour period. Pillars were extracted and "falls" were made in this mine previous to 1935. It is claimed that the present system of mining was substituted for the regular room-and-pillar method to avoid fracturing the roof as in pillar work, because a preponderance of the water came from the broken roof. In addition, a barrier of solid coal 400 feet in thickness was left across the entire mine between the old workings and the new development in order to obtain more complete control of the water and drainage problem. While large quantities of water are drained into the mine, the mine surfaces, ribs, roadways, and roof are generally dry, although at this season of the year considerable moisture is deposited on the mine surfaces by the ventilating current. The presence of water in drainage ditches and sumps in no way minimizes the coal-dust explosion hazard. It is pointed out, however, that an ample supply of water could be made available for use at the working faces to allay the dust while cutting, loading, and blasting.

Coal Dust

Considerable fine coal dust is produced during the operation of cutting, blasting, and loading; moreover, spillage of coal from cars while in transit to the outside has resulted in deposition of much fine dust on the roof, ribs, and floor along the haulage roads. No water is used for allaying the dust. Analysis of the coal shows that at least 64 percent of inert material must be present in the coal dust to prevent the propagation of an explosion by means of the dust when no methane is present in the atmosphere. In only one sample collected in the part of the mine affected by the explosion was this amount of incombustible present.

To lessen the coal-dust explosion hazard and decrease the amount of rock dust needed to afford full protection against the propagation of a dust explosion, machine coal cuttings should be wetted as the cutting is being done; the face regions should be wetted before and after blasting; the coal face and the working place approximately 40 feet therefrom should be kept free of coal dust by the use of water; the coal should be so loaded that it will not be shaken off the cars while in transit and the empty cars and loads should be so sprayed as to prevent dust being distributed along the haulageways.

The foregoing recommended practices are aimed at wetting, as much as possible, the dust at the point of its formation in working places and elsewhere and thus preventing it from rising into the air and being carried and spread widely by the air current. The use of water at the working face can best be effected by the installation of water lines extended to each face and watering by hose, each face region being kept supplied with suitable hose. The installation of sprinklers along haulage roads will prevent the blowing of dust from the tops of trips, which is greatly responsible for the wide distribution of coal dust.

Aside from decreasing the danger of dust explosions, reducing the amount of coal dust in the air is beneficial to the health of the workmen and increases their comfort and efficiency. When the air is clear of dust, visibility is increased, thus adding to the safety with which the work may be conducted.

Rock Dust

According to information received from company officials, rock dust has been applied by means of a high-pressure rock-dusting machine in the following haulage entries during the past year: In 17 right from room 10 to about room 28, 16 right from room 21 to 28 and in 13 right and 14 right, all off the north dip; also the north dip haulage entry from 11 right to 18 right. Some rock dust was applied around the north and south "bottoms" and 15 right off the south dip. There was no visible evidence during the recovery work of any rock-dusting having been done in 16, 17, or 18 right entries off the north dip, and results of the analysis of samples collected by the Bureau of Mines during the investigation, as shown in table 3, indicate that such dusting as has been done is insufficient to render the coal dust incombustible; moreover, no rock dust has been applied in trackless entries, air courses, and rooms, and rock-dust barriers are not used.

Table 3 is a tabulation of the analytical reports of samples collected by the Bureau of Mines during the investigation and analyzed by the Bureau of Mines coal laboratory at Pittsburgh, Pa. It will be observed that the rib and roof samples from the three affected headings averaged 15.6 percent incombustible content and would require the addition of at least 48.4 percent of inert matter to render the coal dust nonexplosive. The floor dust in the same area averaged 17.8 percent incombustible and would require the addition of 46.2 percent of inert material. Table 4 summarizes the analytical data of the dust samples collected during the investigation. It will be observed that the highest incombustible content found in rock-dusted locations was 70 percent in a rib and roof sample and 35.2 percent in a floor sample, while the lowest incombustible content at rock-dusted locations was 15.1 percent in a rib and roof sample and 13.5 percent in a floor sample. The highest incombustible content in a non-rock-dusted area was 46.5 percent in a floor sample and 19.2 percent in a rib and roof sample, while the lowest incombustible content was 10.2 in a rib and roof sample and 6.9 percent in a floor sample.

Dust which passes through a 20-mesh to the linear inch screen may enter into an explosion and the explosibility of the dust increases as the size decreases. Screen tests of the dust samples showed that in 21 roof and rib samples an average of 71.8 percent passed through a 20-mesh screen and in 7 roof and rib samples 25.4 percent passed through a 200-mesh screen. In 24 floor samples an average of 52.0 percent passed through a 20-mesh screen and in 19 floor samples 16.9 percent passed through a 200-mesh screen.

The data contained in these analytical reports indicate that rock-dusting practices at this mine fall far short of what is necessary to prevent the ignition of coal dust and propagation of coal-dust explosions.

collected in Sonman "E" mine, Sonman Shaft Coal Company, July 25-26, 1940

Incombustible		Percent incombustible			Percent	Cumulative			Amount of coke present	Remarks
Sample No.	Total combustible	Moisture	Ash	Total incombustible	Through 20-mesh	100% through 20-mesh				
						Percent through				
						48-mesh	100-mesh	200-mesh		
1.5	81.9	2.1	16.0	18.1	60.3	37.0	13.2	6.4	Small	In explosion area
2.1	53.5	1.3	45.2	46.5	69.0	39.9	11.3	5.6	Very small.	do.
3.2	82.8	2.2	15.0	17.2	90.7	-	-	-	Large	do.
4.3	82.3	1.6	16.1	17.7	60.1	58.8	33.3	20.8	do.	do.
5.8	86.2	2.0	11.8	13.8	90.0	48.3	23.2	13.1	do.	do.
6.3	87.6	1.7	10.7	12.4	46.3	39.6	17.4	9.3	None	Inby explosion area
7.5	91.3	1.5	7.2	8.7	54.1	51.2	23.9	12.0	do.	do.
8.8	85.8	1.9	12.3	14.2	68.1	66.2	44.6	34.3	Small	Outby explosion area
9.2	77.8	2.0	20.2	22.2	62.0	50.3	21.1	10.3	Very small.	do.
10.6	88.6	2.4	9.0	11.4	92.3	-	-	-	Large	do.
11.0	87.3	2.3	10.4	12.7	54.6	44.3	23.3	14.8	Medium	do.
12.9	78.4	2.3	19.3	21.6	87.7	-	-	-	do.	In explosion area; rock dust present.
13.7	84.7	2.6	12.7	15.3	60.3	64.6	40.3	26.0	do.	do.
14.5	84.9	2.7	12.4	15.1	86.2	-	-	-	Large	do.

- Analysis of dust samples collected in Sonman "E" mine, Sonman Shaft Coal Company, July 25-26, 1940 (Cont'd.)

Line	Kind of sample	Percent combustible			Percent incombustible			Percent Through 20-mesh	Cumulative			Amount of coke present	Remarks
		Volatile matter	Fixed carbon	Total combustible	Moisture	Ash	Total incombustible		100% through 20-mesh				
									Percent through				
									48-mesh	100-mesh	200-mesh		
ght off int oppo-	Roof & Rib.	19.3	65.4	84.7	2.5	12.8	15.3	69.6	-	-	-	None	Inby explosion area.
right off slant.	Floor	19.1	74.0	93.1	1.7	5.2	6.9	34.5	-	-	-	do.	do.
	Roof & Rib.	17.5	63.3	80.8	4.7	14.5	19.2	52.5	55.5	31.9	21.8	Small	Outby explosion area.
	Floor	15.2	58.5	73.7	3.5	22.8	26.3	53.0	43.4	16.4	8.7	do.	do.
ght off t oppo-	Rib & Posts.	19.1	68.8	87.9	2.0	10.1	12.1	79.9	66.8	35.1	17.5	Medium	do.
50 ft.	Floor	17.4	71.6	89.0	4.5	16.5	11.0	38.5	34.6	12.6	4.9	None	do.
	Roof & Rib.	-	-	58.0	3.8	38.2	41.0	54.6	65.4	45.6	33.5	do.	Unaffected portion; rock dust present
	Floor	19.8	63.8	83.6	2.4	14.0	16.4	52.1	58.0	29.9	16.2	Trace	do.
t 11 right	Roof & Rib.	-	-	69.5	3.0	27.5	30.5	61.9	71.9	51.0	36.2	None	do.
t 12 left	Floor	20.0	66.5	86.5	3.1	10.4	13.5	62.8	58.1	30.2	15.2	Trace	do.
	Roof & Rib.	19.0	69.2	88.2	2.7	9.1	11.8	75.1	-	-	-	Very small.	Unaffected portion;
	Floor	17.6	69.3	86.9	1.8	11.3	13.1	40.0	-	-	-	None	do.
dip, eft.	Floor	18.1	70.2	88.3	2.8	8.9	11.7	14.8	-	-	-	do.	do.
50 ft.	Roof & Rib.	-	-	30.0	1.1	68.9	70.0	78.9	-	-	-	do.	Unaffected portion; fresh rock dust.
	Floor	-	-	40.2	1.0	58.8	59.8	46.4	-	-	-	do.	do.
	Roof & Rib.	-	-	73.9	2.4	23.7	26.1	64.3	-	-	-	do.	Unaffected portion; wet rock dust.
dip, t.	Floor	-	-	64.8	1.7	33.5	35.2	16.1	-	-	-	do.	do.

lected in Sonman "E" mine, Sonman Shaft Coal Company, July 25-26, 1940 (Cont'd.)

0181

do.	B-54966
15 ft. Inby 16 left	B-54970
2 face entry, south	B-54971
do.	B-54972
Inby 16 left	B-54974
South dip haulage	B-54973
120 ft. outby 12	B-54974
2 face entry, south	B-54973
do.	B-54974
South dip haulage	B-54974
do.	B-54975
North dip haulage	B-54975
do.	B-54976
outby 15 right	B-54976
North dip haulage	B-54963
do.	B-54963
site No. 1 haulage	B-54964
north dip, at point	B-54964
1 face entry, 18 ft	B-54964
do.	B-54964
north dip, at 1st	B-54964
2 face heading, 18	B-54962
do.	B-54975
site No. 4 haulage	B-54975
north dip, at a po	B-54975
1 face entry, 18 ft	B-54976
Location in m	No.
Labor-	atory

Incombustible	Total com-bus-tible	Percent incombustible			Percent Through 20-mesh	Cumulative			Amount of coke present	Remarks
		Mois-ture	Ash	Total incom-bus-tible		100% through 20-mesh				
						Percent through				
						48-mesh	100-mesh	200-mesh		
1	85.0	3.6	11.4	15.0	60.6	54.8	34.2	21.5	Medium	In explosion area; rock dust present.
2	87.0	1.6	11.4	13.0	72.5	-	-	-	Small	Inby explosion area
3	88.0	2.2	9.8	12.0	55.0	47.7	22.9	13.5	None	do.
4	85.5	1.6	12.9	14.5	33.9	-	-	-	Small	do.
5	89.7	1.3	9.0	10.3	59.4	46.0	21.2	10.3	None	do.
6	75.9	2.3	21.8	24.1	65.8	-	-	-	Trace	Outby explosion area;
7	70.8	3.5	25.7	29.2	69.5	55.0	21.8	11.5	do.	do.
8	84.4	2.5	13.1	15.6	100.0	-	-	-	Very small.	do.
9	78.6	2.5	18.9	21.4	57.9	85.8	76.7	72.4	None	do.
10	86.1	1.6	12.3	13.9	48.3	63.4	41.4	27.8	Large	In explosion area.
11	81.2	2.9	15.9	18.8	55.1	61.6	33.0	17.0	do.	do.
12	89.8	2.2	8.0	10.2	95.0	-	-	-	do.	do.
13	88.1	4.1	7.8	11.9	57.2	56.6	30.2	18.5	do.	do.
14	83.6	2.1	14.3	16.4	70.7	-	-	-	Trace	Inby explosion area.
15	78.3	1.5	20.2	21.7	67.5	50.7	20.8	11.7	do.	do.

Table 4. - Summary of dust samples collected in Sonman "E" mine,
Sonman Shaft Coal Company; incombustible content
as received at the laboratory.

Locations	Kind of samples	Total number of samples	Average % incomb. Moisture plus ash	Lowest percentage	Highest percentage	Samples with coke particles	
						Greater amount	Lesser amount
Non-rock-dusted locations	(Roof and rib	14	14.5	10.2	19.2		
	(Floor	17	16.8	6.9	46.5		
Rock-dusted locations	(Roof and rib	7	32.8	15.1	70.0		
	(Floor	7	26.3	13.5	35.2		
Locations in explosion area	(Roof and rib	6	16.0	10.2	21.6	5	1
	(Floor	6	20.9	11.9	46.5	5	1
Locations inby explosion area	(Roof and rib	4	14.8	13.0	16.4	None	3
	(Floor	6	12.0	6.9	21.7	None	1
Locations outby explosion area	(Roof and rib	6	16.1	11.4	19.2	2	4
	(Floor	6	20.5	11.0	29.2	1	3

Results of sizing tests on samples from entire mine

21 roof and rib samples averaged 71.8 percent through a 20-mesh screen
 7 " " " " " 25.4 " " " 200-mesh "
 24 floor " " 52.0 " " " 20-mesh "
 19 " " " 16.9 " " " 200-mesh "

The producing sections should, in general, be the first to receive treatment with rock dust. Coal dust and loose and gobbled material should first be removed from the haulageways, return entries, and crosscuts. A quantity of rock dust sufficient to give the required incombustible content should then be applied from the face to the entrance. Advancing workings should be kept rock-dusted to within about 40 feet of the face, or to the last crosscut.

Main headings, haulageways, and air courses should receive similar treatment.

All abandoned rooms, entries, and pillar workings where coal dust has accumulated, or is likely to accumulate, should be cleaned of such dust to the greatest possible extent and should then be treated with a thick coating of rock dust unless such places are effectively sealed.

Where rock-dusting cannot be done with the high-pressure dusting machine, with or without extension tubing, it should be done thoroughly by hand methods, or by dusting machines designed for use in places where there is no track.

Dust samples should be collected and analyzed monthly so that redusting may be done when sufficient coal dust has been deposited to bring the mixture to a point near the explosive limit.

Ten out of 12 samples collected in the explosion area contained large amounts of coked particles, showing that coal dust entered at least to some extent in the propagation of the explosion. While there were few visible evidences of coking, a sample of plastic coke collected from the post of the door on No. 3 haulage between Nos. 2 and 3 face entries, 18 right, was examined under the microscope by G. C. Sprunk, coal constitution laboratory in Pittsburgh, who reported as follows:

"This sample, under the microscope, appears like coal dust which has been heated to temperatures high enough to have caused considerable coking. Many of the particles have melted and adhere together in loosely consolidated lumps or aggregates. Some particles have a cellular structure and others have formed hollow spheres. Spheres of this type are commonly found in low-temperature coke."

GENERAL SAFETY CONDITIONS

First Aid and Mine Rescue

The company does not maintain a mine-rescue station and there is no equipment such as self-contained oxygen breathing apparatus, all-service gas masks, or carbon monoxide detectors available at the plant and no employees are trained in the use of this equipment. There are several mines in the vicinity that have mine-rescue equipment and trained teams who rendered valuable service at the Sonman disaster.

About 52 of the employees have Bureau of Mines first-aid training certificates. The plant is equipped with a surface first-aid dispensary.

Underground first-aid stations are located at 11 right, 17 left, and 14 right, on the north dip haulage; 16 right on the south dip haulage; and the south bottom. These stations are equipped with first-aid canisters containing stretchers, blankets, and first-aid material and are inspected monthly.

Any mine having a large number of men employed should have a fully equipped mine-rescue station consisting of oxygen breathing apparatus, gas masks, gas-detecting devices and supplies, and accessories for such equipment and devices. A number of selected men, sufficient to provide at least six teams of five or six men each, should be thoroughly trained in the use and care of oxygen breathing apparatus. These men should also be given instructions in rescue and recovery operations, including training in the use of gas-detecting devices, sampling and analysis of mine gases, methods of protection against mine gases, such as oxygen breathing apparatus, gas masks, self-rescuers, and erection of barricades, and in organization and procedure to be followed after mine fires and explosions. Retraining, preferably once a month, with oxygen breathing apparatus and in rescue and recovery operations should be conducted. All of the men employed in the mine should be given a course in first-aid training and this training should be repeated annually.

Safety Organization

A safety inspector is employed at the mine to examine the mine at regular intervals, report to the management any unsafe practices and conditions, and to make recommendations for the safer operation of the mine. The safety inspector also collects air samples from the split returns semi-monthly. A division safety inspector employed by the managing company also inspects the mine and reports on unsafe conditions and practices observed.

A safety committee, composed of the mine superintendent, the mine foreman, the safety inspector, two miners, two day men, and one outside man, has been organized at the mine. The employee members of this committee are appointed by the management, each member attending three meetings, after which he is replaced by a newly appointed member. The appointment of committee members is staggered so that each committee meeting has some new members and some old members. This committee holds its regular meetings monthly and is presided over by the mine superintendent. The duty of the committee is to investigate all serious and fatal accidents and to make recommendations for the prevention of similar accidents. It reports on all unsafe conditions observed in the mine and surface plant and recommends methods for the elimination of hazards. It also considers whatever action has been taken on past recommendations. A local chapter of the Holmes Safety Association was organized at this mine some years ago, but this chapter has been inactive for several years. General safety meetings of employees are not held. Both the employees and the management apparently have a favorable attitude toward safety.

Commendable Safety Practices and Safety Record

The Sonman Shaft Coal Company is to be commended on the use of permissible mining machines, conveyors, air compressors, electric cap lamps, flame safety lamps, and explosives, and for the use of protective caps and protective shoes by the employees.

The present operating company is also to be commended on the progress that has been made, particularly in the Slope mine, since assuming its management about 4 years ago, for its efforts in improving the ventilation, which resulted in establishing the main haulage system on intake air rather than on return air as formerly, improvement in travelways, clearance along haulage roads, handling of water, and the general system of conducting safety activities.

That considerable attention has been given to the promotion of safety is reflected in the improved accident record of the Sonman Shaft and Slope mines during the past 4 years, as indicated in the following table:

Accident experience of Sonman mines,
1936 to July 1, 1940

Year	Number of fatalities	Number of accidents	Tons per accident	Frequency rate
1936.....	1	104	5,633	70.3
1937.....	1	78	9,770	50.8
1938.....	2	73	10,300	52.9
1939.....	1	45	19,800	25.6
1940 (6 mos.)	1	22	22,000	22.6

It will be noted that since 1936 the accident record has shown a steady decline. The accident frequency rate has been reduced from 70.3 to 22.6 from 1936 to July 1, 1940, a reduction of 67.8 percent; and the number of tons per accident has increased from 5,633 to 22,000 during this period, nearly 300 percent. During 1939 the Sonman Slope mine won first place and the Sonman Shaft mine won second place in the Tenth Bituminous Holmes Council safety competition, the Slope mine having produced 33,381 tons per accident and the Shaft mine 12,808 tons per accident during the year. By the winning of first and second place by these mines it is shown that they had a better record than 13 other mines which participated in the competition conducted by the Tenth Bituminous Holmes Council.

Supervision and Discipline

In addition to the mine foreman, eight assistant mine foremen, six full-time fire bosses, and two part-time fire bosses who make the first run only are employed at the mine. It was the stated intent of the management that each working place would receive at least three official visits per shift—one preshift examination by the fire boss, one fire-boss examination while the men are at their working places, and at least one visit of the section foreman during the shift—with additional visits of the section foreman to working places where unusual or dangerous conditions exist. A total of 680 underground employees, to be supervised by 8 assistant mine foremen, would require each foreman to supervise an average of 85 men, but the men are not evenly distributed; therefore, some foremen would have considerably more than 85 men to visit. On the day of the explosion there were 81 men on the section involved, all of these men being subject to the supervision of one section foreman. Moreover, it is reported that 12 additional men who ordinarily worked on the section were sent to the left side of the north dip on the morning of the explosion before the explosion occurred.

Testimony at the coroner's inquest by some of the men who escaped from the faces of 18 right and the heading stumps in 16 right indicated that the section foremen did not visit their working places daily and that sometimes as much as a week would elapse between visits. If this is true, the working places received only one regular daily inspection while the men were at work, consisting of the inspection of the fire boss on his second run. This is a definite violation of the Pennsylvania mining law which requires that a section foreman visit each working place at least once per shift.

It is evident that the supervision at the mine is not sufficiently adequate to insure at least two and preferably more official visits of the section foremen to each working place, which is considered the minimum standard of good supervision.

Safety rules have been adopted and published by the management and a penalty system has been provided for the enforcement of the rules. The penalty system provides that for the first violation of a rule the offender is given a warning; for the second, one day suspension; for the third, three days suspension; for the fourth, discharge.

Fire Fighting

No fire-fighting organization is maintained either for fighting fires at the surface plant or underground. Fire hydrants have been located at convenient points on the surface and a hose cart has been provided. Some of the fire plugs are equipped with folded hose attached to the plugs for immediate use. One-quart carbon tetrachloride extinguishers have been installed at underground electric hoists and pumps. A box of rock dust is kept on each side of all wooden doors on the haulage roads to be used for fire-fighting purposes. Portable electrical machines, such as locomotives, cutting machines, and compressors, are not equipped with fire extinguishers.

MINE CONDITIONS IMMEDIATELY PRIOR TO EXPLOSION

The mine was operating normally after a suspension of two days, Saturday, July 13, and Sunday, July 14, and no unusual conditions had been observed during the day of the explosion. The weather was fair and warm. Barometer readings taken at the power plant at Windber, Pennsylvania, about 17 miles distant, were as follows:

July 14	12:00 midnight	28.28
July 15	1:00 a.m.	28.27
	Each hour 2:00	
	a.m. to 10:00	
	a.m. inclusive	28.26
	11:00 a.m.	28.24
	12:00 noon	28.24
	1:00 p.m.	28.22
	2:00 p.m.	28.02
	3:00 p.m.	28.18

Only a slight drop of 0.02 inch of mercury occurred between midnight, July 14, and the time the explosion occurred; therefore, it is concluded that atmospheric pressure had no effect on the liberation of methane at the time of the explosion.

According to the fire-boss record book, gas was found in No. 9 room, 14 right heading, and the place was posted with a danger sign on the preshift fire-boss examination on the morning of the explosion. This location was not in the explosion area and has no bearing on the explosion. The last time gas was reported in the section involved in this explosion, previous to the explosion, was on July 11, when gas was reported at the face of the 18 right motor road (3 face entry), also at the face of No. 35 room, 16 right, and no gas was reported before that in the section at any time during the month of July.

A sample of air was collected by the plant safety inspector in the return from the split involved in the explosion at 15 left regulator about 10 minutes before the explosion. This sample was analyzed at the Bureau of mines gas laboratory at Pittsburgh on July 19, 1940, with the following results:

	Percent
Carbon dioxide.....	0.11
Oxygen.....	20.36
Carbon monoxide.....	0.00
Methane.....	0.18

Quantity of air in No. 2 split as measured at 15 left regulator, 13,600 cubic feet per minute.

$13,600 \times 0.0018 \times 60 = 1,468.8$ cubic feet of methane per hour given off by the area ventilated by this split.

PREVIOUS EXPLOSIONS IN THIS OR NEARBY MINES

No previous explosion has occurred in the Sonman "E" mine, but it is reported that an ignition of gas occurred in the Portage slope (the return air slope) in 1920 when the slope was being driven to the surface from the underground workings. Several men were burned but no deaths are reported to have resulted from this ignition.

A coal-dust explosion occurred in a neighboring mine, the No. 3 mine of the Pennsylvania Coal and Coke Corporation, located at Ehrenfeld, Pa., about 6 miles from Sonman, on March 30, 1927, in which four men were killed. This mine was operating in the Lower Kittanning (Miller or "B") coal bed.

PROPERTY DAMAGE

The property damage resulting from this explosion was comparatively slight. The extent of damage consisted of the loss of 12 haulage animals (ponies and mules); the destruction of several wooden ventilation doors; the destruction of several dry-wall plastered brick stoppings; and the breaking of the trolley wire at three places. The cost of recovery operations was also slight in comparison with similar disasters because of the speed with which the area was explored and the bodies removed (11:40 a.m., July 15, to 8:30 a.m., July 16, about 21 hours). The explosion caused the suspension of operations of the entire mine for about 10 days and at the time of this report the affected portion had not been placed in operation.

STORY OF THE EXPLOSION AND RECOVERY OPERATIONS

The first indication of any trouble inside the mine was in the form of a telephone communication received by the mine superintendent on the surface. Some unidentified person underground, possibly one of the hoisting engineers, notified the superintendent that the air had reversed. The superintendent immediately sent someone to check on the fan at the Portage slope and another person to check on the air movement in the Shoemaker manway, which was a main intake. He then got in touch with the mine foreman, who had just arrived at the bottom of the main slope from the south dip, and directed him to proceed to the north dip to investigate the trouble. Subsequently the superintendent notified the district mine inspector that some trouble had occurred at the mine. The mine foreman proceeded immediately down the north dip to 14 right where he met the fire bosses who were just coming off shift, the safety inspector, four loaders, and a machine helper who had escaped from the explosion area in 16 right, and 12 men who had come out of 16 left after the explosion. After checking the men who had escaped, the mine foreman, accompanied by the safety inspector and fire bosses, proceeded down the north dip, checking all stoppings between the intake and return airways as they progressed toward 17 left. At 17 left they found the air-lock doors on 17 left blown inby, causing a direct short circuit of the air from the right side of the north dip. They then removed a door which was not in use from 17 right and installed it at the location of the first air-lock door in 17 left. They then proceeded to 18 left and found the door partially damaged and noted that the forces were inby. They repaired the door temporarily and entered 18 right and found the manway door blown inby. They repaired this door and traveled in 18 right to the first door of the air lock located about 400 feet inby from the entrance to 18 right. This door was in place but had the top board blown off. After repairing this door they tried to get up to the second door of the air lock, about 200 feet inby from the first door, but were unable to reach the second door because of smoke and dust. The party then returned to 17 right, which was the main air intake for the section, and traveled about 300 feet into 17 right when someone reported that two men had come out of 18 right and that nine (actually eleven) more were on their way out. The party then returned to the air-lock door in 18 right with the intention of short-circuiting the air into 18 right when they were advised that the 18 right men had reached the north dip safely through the No. 1 face entry of 18 right at about 2:00 p.m. The mine foreman and others then returned to 17 right and found that the air was short-circuiting into the 17 right air course through the crosscuts. They were discussing this short circuit when Inspectors W. H. Filer and M. W. Thomas of the Pennsylvania Department of Mines arrived. From this point air was conducted up 17 right entry by closing off all openings to the left with canvas stoppings. Arrangements were made to obtain additional air by cutting it off from the south dip sections of the mine. After proceeding up 17 right for some distance, the party was joined by two additional State mine inspectors, R. D. Joseph and D. J. Keenan. The first working place in 17 right, No. 15 room, was explored by apparatus crews where three bodies were recovered and a fourth located. A smoldering fire consisting of an article of clothing belonging to one of the miners was later discovered and extinguished in No. 15 room about 1:30 a.m., when the fourth body which had previously been located was removed. An advance was made toward No. 2 haulage road where it was found that a door had been blown out and the air was short-circuiting. While

erecting canvas stoppings in the No. 2 haulage, the party was joined by J. J. Forbes, G. W. Grove, M. J. Ankeny, E. J. Ristedt, and J. W. Pero of the Bureau of Mines, at about 5:30 p.m.

The closing off of No. 2 haulage enabled the further exploration of 17 right entry. The first work performed after the Bureau men reached the point where work was being advanced was the recovery of two bodies in 28 room. A recent fall had occurred in the room and the roof was still "working" and falling as the bodies were being recovered. The party then proceeded up 17 right to the junction of No. 3 haulage, which extends from 18 right to 16 right. In the immediate vicinity of this point six additional bodies were found. After closing a door on No. 3 haulage road and replacing four stoppings which had been blown out at the junction of the haulage road and 17 right, the recovery crews advanced inby on the No. 3 haulage road by temporarily replacing the stoppings with brattice cloth to the junction of 16 right air course and the No. 3 haulage road. At this point footprints were observed in the dust which had obviously been made after the dust from the explosion had settled. Shortly thereafter, the bodies of two men comprising a motor crew were found on the "tight" side alongside the first and second cars of a nine-car trip of coal attached to an electric locomotive.

The exploration work was then continued and on reaching the 16 right haulage road, other footprints were observed, and upon tracing these footprints up the entry during an exploration by Messrs. Forbes, Grove, and Pero, wearing gas masks, numerous additional footprints were observed, leading to the belief that men were probably barricaded at some inby point. As the ventilation had not been fully restored and there was still considerable carbon monoxide in the air, it was decided that a crew wearing oxygen breathing apparatus should make an exploration, if possible to the face of 16 right. This crew, after exploring a short distance in 16 right, returned and advised that they had located a canvas stopping across the 16 right entry at about room 26. Messrs. Forbes, Grove, Pero, State Mine Inspector R. D. Joseph, and a few others then advanced to this canvas stopping and, after several calls which were unanswered, a decision was made to remove the stopping. After removing this stopping a second canvas stopping, partially erected, was found 52 feet inby the first one. Two bodies were found lying outby the second brattice and 32 bodies were found inby strewn along the 16 right entry throughout a distance of about 170 feet from the second brattice to where the last body was lying.

While these bodies were being removed, explorations were made to the faces of 16 right heading and air course, but no additional bodies were found. Another barricade, erected by some or possibly all of the men found in 16 right, was found at the entrance to No. 5 haulage road off 16 right. This barricade was well erected, but the enclosed area was limited in capacity (a space 48 feet long, 17 feet wide, and 4 feet 3 inches high). While the evidence indicates that at least some of the men spent several hours in this barricade, it had been abandoned before the men met their death and no bodies were found in it.

At about this time, the advance crews were joined by four additional State mine inspectors, G. J. Steinheiser, R. E. George, P. H. O'Neill, and W. G. Knapper, who relieved the four State mine inspectors who had been on

duty up to this point. Following the removal of the bodies from 16 right entry, additional explorations were made in rooms leading off 16 right and seven additional bodies were found near the face in No. 30 room. The locating of these bodies and the exploration of the remaining rooms completed the recovery work on 16 right.

The crews then returned to the junction of 17 right and the No. 3 haulage road and continued the exploration work by conducting the ventilation into 17 right in by the No. 3 haulage road. After progressing a short distance in this entry, four additional bodies were found opposite the first crosscut in No. 31 room off 17 right. After exploring the faces of 17 right and 17 right air course and 17 butt heading and air course, two additional bodies were found in 17 butt air course opposite the next to the last open crosscut. This completed the exploration work on 17 right and 17 butt and the crews again returned to the junction of 17 right and the No. 3 haulage road. At this point the party was joined by H. B. Lindeman and E. L. Christensen of the Bureau of Mines.

The recovery crews then proceeded down No. 3 haulage road to 18 right. It was known that at least one body was lying on 18 right haulage road (No. 3 face entry), as it had been seen by some of the men who escaped from this entry. After erecting a few canvas stoppings to advance the air, it was finally decided to send an oxygen breathing apparatus crew down 18 right to recover the body that was known to be there and locate the body of the last missing man. On recovering these two bodies, the last of which was reached about 8:30 a.m., by the apparatus crews, all of the missing men having been located, further work was suspended and the recovery crews returned to the surface on orders of the State Department of Mines.

During the coroner's inquest the questions were raised as to why the recovery work was not conducted through 16 right, why if air had been put into 16 right it would not have reached the barricaded men, and why the barricaded men were not reached sooner. The reasons why these things were not or could not be accomplished are as follows:

1. It was not feasible to conduct recovery operations by way of 16 right because the roof in the lower portion of this entry was known to be bad and danger boards had been placed to prohibit anyone from using the entry as a travelway. As a result of the unsafe roof conditions and previous falls, it was considered that travel on this entry was extremely difficult and dangerous. This was strengthened by the reports of the men who escaped from the 16 right entry. Therefore, if it had been decided to enter the affected area by way of 16 right, it would doubtless have required considerable work to make conditions safe, which would have resulted in serious delay. In addition to this, if an effort had been made to conduct the ventilation up 16 right, it would have been necessary to construct numerous stoppings to prevent the air from entering the rooms between 16 and 17 right and the rooms driven off 16 right toward the barrier. This would have required a tremendous amount of labor and material and much more time than taking the air up 17 right as was done during the recovery work.

2. Air could not have reached the barricaded men by putting it into 16 right regardless of the amount of air available or the amount used because it would have returned through openings leading from 16 right toward 17 and 18 right long before reaching the barricaded men.

3. It is believed that everything humanly possible was done, under prevailing conditions, to reach the barricaded men at the earliest possible moment. It must be realized that, after the explosion occurred, the obtaining of men and materials and getting them into the mine, a distance of 2 miles or more, was a task of considerable magnitude. Moreover, after the material was delivered to the bottom of the north dips it was necessary to carry it by hand, as recovery work advanced, from the north dip at 17 right, up 17 right to No. 3 haulageway, and from there to the junction of No. 3 haulageway and 16 right, a distance of about 1/2 mile. This in low coal required time and arduous labor.

It is admitted that there were delays occasioned by lack of necessary material, such as boards, brattice cloth, tools, etc., required to replace stoppings which had been blown out by the explosion, but this is something that generally is found after any disaster. The writers of this report definitely know that after their arrival underground every possible effort was made to carry on the recovery work vigorously. As a matter of fact, after reaching the junction of the No. 3 haulage and 16 right and the finding of footprints made in the dust which settled after the explosion, the work was carried on at considerable risk on the part of the advance workers. It was known that the air contained considerable carbon monoxide and that definite hazards existed but, in view of the fact that there were strong indications that men might be barricaded, risks were taken which otherwise would not have been undertaken. All of the men in the advance party of the recovery crew, by the time they reached the barricade on 16 right, were affected by carbon monoxide to the extent of suffering severe headaches and nausea, which was a clear indication that they had about reached the limit of human endurance. It is therefore believed that everything possible was done to reach the affected area where the men were barricaded in the quickest possible time.

Several oxygen breathing apparatus crews made explorations ahead of fresh air and located and removed some of the bodies. One crew also made a trip into the return air from the section while the reventilation of the area was in progress, to make some changes in the ventilation, when rising water in the return airways threatened to block up the return air.

The following oxygen breathing apparatus teams reported for duty and were used underground:

Industrial Collieries Corp.	Johnstown, Pa.	2 teams
Barnes and Tucker Coal Co.	Barnesboro, Pa.	2 teams
Monroe Coal Mining Co.	Revloc, Pa.	2 teams
Koppers Coal Co.	Grant Town, W.Va.	1 team
Pennsylvania Electric Co.	Seward, Pa.	1 team

The following teams reported to the mine for duty but were not employed underground:

Rochester & Pittsburgh Coal Co.	Helvetia, Pa.	1 team
Rochester & Pittsburgh Coal Co.	Ernest, Pa.	1 team
Ebensburg Coal Co.	Colver, Pa.	1 team
Koppers Coal Co.	Grant Town, W. Va.	1 team
Berwind-White Coal Mining Co.	Windber, Pa.	1 team

The following self-contained oxygen breathing apparatus was available for use at the explosion:

United States Department of the Interior,	
Bureau of Mines	10 Gibbs
Industrial Collieries Corp.	10 Gibbs
Barnes and Tucker Coal Co.	5 Gibbs
Monroe Coal Mining Co.	5 Gibbs
Pennsylvania Electric Co.	5 McCaa
Koppers Coal Co.	5 McCaa
Rochester & Pittsburgh Coal Co.	5 McCaa

Five men escaped from the immediate explosion area in 16 right and 13 others who were working in 18 right and No. 5 haulage off 18 right, also in the explosion area, made their way through afterdamp from the explosion to the north dip entries and safety.

The 5 men who escaped from 16 right, and one other whose body was later found among the 34 behind the barricade in 16 right, were in the vicinity of the pillar split between No. 17 and 18 room off 16 right when the explosion occurred. This pillar split was driven in about 14 feet from the entry. The mining machine had just finished cutting across the place and the machine runner and helper were in the act of loading the machine on the trucks. Two miners were on the entry near the pillar split and two others were in the No. 17 room neck. The miners were conversing with each other while waiting for the machine to get out of the working place. According to evidence found after the explosion, a locomotive was working about 500 feet up 16 right entry from the pillar split, at the junction of No. 3 haulage road. The locomotive had placed 12 empty cars in 16 right heading just below the No. 3 haulage switch; it had gathered 9 loaded cars from the working places inby on 16 right and was in the act of placing these loaded cars in the chute between 16 right heading and air course on the No. 3 haulage road when the explosion occurred.

According to statements made by the five survivors from the 16 right entry when questioned by the Pennsylvania commission of inspectors investigating this explosion, and at the coroner's inquest, one of the miners on the entry near the pillar split saw a flash of flame about 250 feet up the entry toward No. 3 haulage. He said, "It looks like the motor is on fire." Another miner saw the flame also and said, "Explo - - !" At this instant the men were knocked down by the force of the blast. The machineman and helper who were in the pillar split also felt the force of the explosion. The cutter said, "Pull the breaker," and he started up the entry toward No. 3 haulage.

Presumably he intended to open the trolley section insulator switch located near the No. 3 haulage. The others called to each other and, after collecting in a group, attempted to escape by traveling down the rooms that were driven through from 17 right to the 16 right air course. After traveling some distance down these rooms, they found that the air was unbearably hot and was filled with dust and afterdamp. They then returned to 16 right entry and made an effort to locate the cutter by going a short distance up 16 right entry toward No. 3 haulage road. Again finding the air too hot and filled with dust and afterdamp, the group started out 16 right toward the north dip. At this time the air in 16 right entry was so filled with dust and smoke that they could see only about 1 foot ahead. The trip down 16 right entry was extremely difficult due to the smoke, dust, and falls along the entry. The group finally reached fresh air at the junction of 16 right and the north dip haulage road. Two men of this group found that their ears were slightly burned. The body of the cutter was later found in the group of 34 men behind the barricade in 16 right. He had traveled directly through the explosion area to reach this group.

The 13 men who escaped from 18 right consisted of 10 men who were working in the 18 right entries and the No. 5 haulage entries which were being driven toward 17 right, a cutting machine operator and helper who were working in No. 3 face entry, 18 right, and the driver for this section.

When the explosion occurred, all (or most) of these men were thrown to their knees by the force of the blast and experienced considerable pressure on their eardrums. Within a few seconds brown smoke and dust was drifting into the working places. The men ran from their working places and collected in a group on the haulage entry (2 face). They then attempted to travel down the haulage (2 face) toward the north dip but, upon reaching the intersection of No. 3 haulage, they encountered heavy black smoke. One of the party, Wesley Diehl, crawled on his hands and knees about 20 feet out by No. 3 haulage, where he encountered the door which had been blown from the No. 3 haulage between 2 and 3 face, 18 right. Finding the smoke too thick to attempt to travel through it, the group then returned to the top end of No. 2 face entry, 18 right. They then traveled down 3 face entry in an effort to reach 17 right through No. 4 haulage but were unable to get into the haulage road because of smoke. They again retreated to the top of No. 2 face entry and thereafter traveled down No. 1 face entry for a considerable distance when they reached a point approximately opposite No. 3 haulage. At this point they found a pocket of air that was fairly good, although there was considerable smoke back of them toward the face and in front of them toward the north dip. Wesley Diehl then left the party and retraced his steps back to the face of No. 2 face entry and started to erect a barricade. He was joined shortly thereafter by Howard Inman, the driver. After a time these two decided to rejoin the party they had left on No. 1 face entry. Upon returning they were advised that one man had gone through a crosscut into No. 2 face (the haulage road) and had found the body of one of the wiremen. After some discussion it was decided to take the cutter's flame safety lamp and attempt to reach the north dip through No. 1 face entry (the return air course). Wesley Diehl, Howard Inman, and Joe Sarie took the lamp and started down the air course. They made their way down to the side track and concluded that it would be possible to reach the north dip safely. It was decided that Sarie

would go back and bring the others and that Diehl and Inman would continue on their way out. Diehl stated that they instructed Sarie that if they found them (Diehl and Inman) overcome by gas on their way out, the entire group was to retreat to 18 right faces and complete the barricade which Diehl had started. Diehl and Inman continued out toward the north dip and reached it safely by way of the haulage side track. Subsequently the others were led by Sarie down the air course (No. 1 face) and reached fresh air and safety through the north dip manway door at about 2:00 p.m.

THE EFFORT TO BARRICADE

Of the 63 men who lost their lives in this explosion, a group of 34 and possibly 7 others made an unsuccessful attempt to protect themselves from the afterdamp following the explosion by means of two sets of barricades.

The first set of barricades as discovered by the recovery crews is shown in the map in appendix B titled "Detail of Evidence" and in appendix C. The recovery crews first encountered a canvas stopping across 16 right heading, 35 feet inby No. 26 room, at about 10:30 p.m. on July 15. When found, this stopping was bowed outward, indicating that the air current had circumvented the barricade through the adjacent rooms on 26 right and their crosscuts and had probably carried considerable afterdamp into the barricaded area. The first barricade was removed and a second partially erected canvas barricade was found 52 feet inby the first one. Just outby this stopping were the bodies of two men who were evidently trying to complete the stopping when they were overcome. At a point between these two barriers opposite a crosscut leading to the No. 4 haulage air course was a sign written with chalk on a brick, "Seven men in here," and an arrow on another brick pointing toward No. 4 haulage. No one was found, however, in the openings leading to the No. 4 haulage entries or in the 16 right air course.

Inby the second barrier along the entry for a distance of 170 feet were the bodies of 32 men. These men were in sitting and lying postures and death had evidently come to them very slowly. The bodies of 7 additional men were found near the face of No. 30 room, a distance of about 200 feet from the entry. This was the first room inby the last body found on the entry. Upon further exploration, a second barricade was found in No. 5 haulage entry just inby 16 right air course. Just outby the canvas door in the haulage chute leading to this place were found two cap pieces. On one cap piece was written in chalk, "Men in trap door." On the other cap piece was an arrow pointing toward the door. The entrance to No. 5 haulage at this point was closed off with a brick stopping in which there was a 2- by 2-foot trap door. This stopping served as one end of the barricaded area. Forty-eight feet inby this stopping on No. 5 haulage entry was a barrier constructed of shale and fine particles of shale and coal. This barrier (see appendix D) was 4 feet 3 inches high, 17 feet wide, and 3 feet thick. It consisted of two pack walls with the fine material in between the two walls. A tight seal was made at the top by caulking with clothing. Seven miners' jackets were found caulked into the top of this barrier. When this barricaded area was explored by the recovery crews, it had been vacated and its occupants were among the bodies previously found along 16 right entry or in No. 30 room.

Several notes and wills were found on the bodies in 16 right. These notes indicate that at least 31 men were in the No. 5 haulage barricade at one time. They also indicate that at 3:00 p.m. at least the writer of a note and possibly others abandoned this barricade and went to the barriers which are being erected on 16 right heading. It is suggested in a note that at 4:30 p.m. the air noticeably started to get extremely bad. The last notation among notes found during the recovery work was made at 4:35 p.m., about 6 hours after the explosion occurred. Subsequently another note, written in Italian, was found in the clothing of one of the miners during a search of clothing that had been removed from the bodies, after they had been brought out of the mine. This note, translated during the coroner's inquest, indicated that the writer was alive and conscious at 6:00 p.m., about 7 hours after the explosion.

Exactly what transpired during this extended period of time or why the men did not retreat into 16 right heading and air course and erect barricades in a proper location cannot be determined. If properly constructed barricades had been erected across 16 right heading and air course about 500 feet inby where they were erected (just inby the last room on 16 right) and a stopping placed across No. 5 haulage air course at the juncture of 16 right air course, a perfect barricaded zone would have been effected which would have contained an ample volume of air to sustain life for a considerable length of time; moreover, several other possibilities of effecting a completely barricaded zone existed in 16 right and the No. 5 haulage heading and air course. The location of the barricades in 16 right at the point where they were located did not provide a sealed enclosure, but left a way open for the afterdamp to drift through the rooms on the right and come out upon the men from the rear.

It is apparent that there was ample time and that sufficient quantities of material such as brattice cloth, timber, and brick were available to erect substantial barricades at accessible and effective locations. If the proper procedure had been followed, undoubtedly 41 lives would have been saved. Another possible means of escape for the men trapped on 16 right by this explosion would have been the use of miners' self-rescuers. It is confidently believed that had these men been equipped with self-rescuers they could have escaped to the north dip entries through 16 or 17 right; in addition, it is felt that at least 14 others in other portions of the mine might have escaped with the aid of self-rescuers.

INVESTIGATION OF CAUSE OF EXPLOSION

An investigation to determine the cause of the explosion was conducted jointly by the Pennsylvania Department of Mines, the Koppers Coal Company, the United Mine Workers of America, and the Federal Bureau of Mines, but separate reports are formulated by each of these agencies. The State's commission consisted of R. E. George, chairman, R. D. Joseph, George Steinheiser, and M. W. Thomas. The State's investigation was in charge of Richard Maize, acting deputy secretary of mines. The company was represented by L. C. Campbell, John Lindley, M. A. Evans, O. V. Simpson, Victor Duras, and J. M. Baker. The United Mine Workers of America was represented by James Hess, Joseph Yurich, and Harvey Younkers. The Bureau of Mines was represented by J. J. Forbes, G. W. Grove, M. J. Ankeny, and H. B. Lindeman.

The underground inspection and investigation of the explosion area was conducted on July 18, 19, 23, and 25 and hearings of witnesses were conducted by the Pennsylvania Department of Mines July 20, 24, and 26.

STATE INSPECTORS' FINDINGS AND CONCLUSIONS

1. That ninety-three (93) men were employed in the number two (No. 2) air split, one continuous circuit of air, and that the employment of more than seventy (70) men, legally allowed on this air split, did not contribute as to either cause or propagate the explosion.
2. That the control of the air current in the number two (No. 2) air split by single doors did not provide a constant supply of fresh air as required by law.
3. That the air door situated at the junction of seventeen (17) right and the number three (No. 3) haulage road, which was found open and so secured following the explosion, did interrupt the air flow in the sixteen (16) right, and that this interruption did not contribute to either cause or propagate the explosion.
4. That coal dust, present in variable quantities along the roadways, travelingways, and airways, was thrown in suspension, carried by the explosion and subsequently deposited, did not contribute as to initiate the explosion and played little part, if any, in its propagation.
5. That the fresh intake air used to ventilate the number two (No. 2) air split, and which traversed the roadway in which trolley wire was suspended from the roof and from which an open type electric trolley locomotive was operating, was first passed through an area in which pillars were mined to such an extent as to permit abandonment, and mined to such an extent as to cause caving.
6. That caving occurred in the number twenty-eight (No. 28) room off seventeen (17) right and that such caving was induced by the partial extraction of the coal seam, and was superinduced at this place by the presence of clay veins and a barrier pillar.
7. That the caving in the number twenty-eight (No. 28) room off seventeen (17) right occurred just prior to the explosion and continued for some time afterward.
8. That explosive gas was suddenly liberated in considerable volume from the fall which occurred in the number twenty-eight (No. 28) room and was carried in the air current.
9. That a trolley locomotive operating in the sixteen (16) right heading was in the path of explosive gas contaminating the mine atmosphere.

Conclusion

That the explosion which occurred was initiated by the ignition of explosive gas in the mine atmosphere, by an arc or spark from a trolley locomotive operating at or near the junction of the number three (No. 3) haulage road and the sixteen (16) right heading, and was propagated by gas in the mine atmosphere. We further conclude that the ignition was indirectly brought about by the failure of the system of mining, which failure might have been anticipated, yet was not expected.

CORONER'S INQUEST

A coroner's inquest was conducted by Patrick McDermott, coroner of Cambria County, which included the testimony of witnesses before a coroner's jury of five men at Portage, Pa., on August 13, 14, and 15. After hearing the testimony of mine officials, inspectors, survivors, and others, the jury rendered the following verdict:

Freeman George and sixty-two others came accidentally to their death by asphyxiation and first and second degree burns in slope of Sonman Shaft Coal Company at Sonman by gas explosion on July 15, 1940, gas being ignited by a trolley locomotive. The ignition was superinduced by the failure of system of mining and negligence of officials directly in charge of mine management at time of explosion, Victor Duras, Superintendent; Leslie Steele, Mine Foreman; Guy Wahl, Assistant Mine Foreman.

(Signed) John M. Sloan, Foreman

John P. Castel

John Franey

Frank Grecek

Arthur Barrs

We Recommend the adoption and furtherance of recommendations submitted by the inspectors.

FORCES

The point of origin, extent of flame, extent of violence, and direction of forces are indicated on the maps contained in the appendix to this report. While the explosion was decidedly not violent in character, sufficient evidence of forces existed to substantiate the conclusions as to the point of origin. In general, the forces radiate from the point where No. 28 room off 17 right intersects with the 16 right air course. The forces in 16 right and 16 right air course are outby from this point. They are also inby from this point in these headings. In the rooms off 16 right the forces are generally toward 15 right. In 17 right the forces are definitely outby in 28 room toward 17 right. The forces are also strongly outby (that is, from 17 right toward 18 right) in No. 3 haulage road, but they were inby in No. 2 haulage road and air course. The forces were strongly outby on 2, 3, and 4 face entries, 18 right, especially at the junctions of No. 2 and No. 3 haulage roads with 18 right.

EVIDENCE OF HEAT OR FLAME

The area of heat and flame resulting from this explosion, as indicated by burns on the bodies of workmen, burned clothing, bits of charred paper, deposition of coked particles, and charred wood, is shown in the map of detail of evidence in the appendix to this report. It is evident that the flame did not cover an extensive area in the mine and reached very few working places. Burns on the bodies of some of the victims indicate that flame or intense heat reached No. 15 room and 28 room, 17 right; the junction of 17 right and No. 3 haulage road and a short distance in 17 right; the junction of 16 right and No. 3 haulage road; and the haulage road on 18 right between No. 2 and No. 3 haulage entries. Two of the survivors who were at about No. 18 room on 16 right actually saw the flame of the explosion about 200 feet in by and their ears were slightly burned according to their testimony at the coroner's inquest; however, the burns are believed to be the result of heated gases rather than flame.

It is difficult to state the extent to which coal dust entered into this explosion. The presence of coked particles in dust samples collected in the explosion area indicates that coal dust did contribute to some extent to the heat and flame of the explosion and the generation of afterdamp; however, coal dust is believed not to have propagated the explosion to any considerable extent.

Despite the lack of precautionary measures such as watering methods and rock-dusting, coal dust did not enter into the explosion to any great extent for several reasons. There were numerous openings communicating to the immediate area where the explosion originated, giving ample opportunity for immediate expansion and therefore preventing the explosion from reaching high-pressure velocities necessary to get a sufficient cloud of coal dust into suspension. The lack of extreme violence also leads to the belief that the gas may have been at or near the lower explosive limit when ignited. The coal was low in volatile content and contained considerable moisture. Low-volatile dusts, to ignite, require a higher temperature than do higher-volatile dusts. The presence of moisture in the dust makes it more difficult to raise into the atmosphere than dry dust. It is pointed out, however, that low-volatile coal dusts even when in a damp condition will propagate an explosion with extreme violence when other conditions are favorable.

It is believed that the initial gas explosion did not develop sufficient pressure and velocity to raise the moist low-volatile coal dust into a cloud of sufficient density to contribute materially to the propagation of the explosion.

SUMMARY OF EVIDENCE AS TO CAUSE, ORIGIN, AND PROPAGATION

Source of Explosive Gas

This mine may be considered to be a moderately gassy mine. Methane is liberated freely at the working faces but not often in sufficient quantities to cause accumulations. When accumulations of gas are detected, the working

places are fenced off until the affected places are properly ventilated. Methane is also known to exist in strata of shales overlying the coal bed. In pillar workings considerable gas was encountered in this mine, especially after the occurrence of caves when pillars were extracted. The layer of hard black shale immediately above the coal bed is to a considerable extent impervious to gas and therefore would hold gas under pressure until such time as it may have become broken.

The source of explosive gas in this case centers on No. 28 room off 17 right. This place was visited and examined by the fire boss about 30 minutes before the explosion, according to his statement. No unusual conditions of the roof were noted during this examination and no gas was detected. The room had been driven through to 16 right air course and the miners were working in a pillar split on the right side of the working place about 130 feet inby the room neck. When this room was reached by the rescue party about 6:00 p.m. on the day of the explosion, the roof had caved from some point inby to within 100 feet of the room neck and the roof was still "working". The bodies of the two miners were found about 50 feet inby the room neck. A car which was about two-thirds loaded was found on the No. 28 room switch curve. The brake of the car was strongly set and all four wheels of the car were off the track. A shirt belonging to one of the miners was in the car on top of the coal. The bumper on the inby end of the car was heaped with dirt and coal dust and scorched bits of paper were lodged on the inby end of the car, indicating that the forces accompanied by the flame of the explosion were strongly outby in this room. The evidence indicates that sometime within the 30-minute interval between the time the fire boss examined the place and the time of the explosion, the roof suddenly started to "work". The miners hastily left their working place, taking the partially loaded car with them. It is not likely that the car got out of control in the 3.3 percent average grade of the room. Probably the car was taken to the switch curve under control by the miners, who then started back toward the face to investigate the "working" of the roof and possibly to recover their tools. The car may have been blown off the switch curve by the force of the explosion.

At about 1:00 p.m., Wednesday, July 17, the point where No. 28 room intersects with the 16 right air course was visited and it was found that the fall extended entirely across the 16 right air course, with some slight air movement across the top of the fall. An explosive mixture of gas was found at the "lip" of the fall with an M.S.A. methane detector. On Thursday, July 18, when this point was visited by the investigating party, an explosive mixture of gas at the "lip" of the fall was again indicated, and a sample of air collected at this point on Friday, July 19, analyzed at the Bureau of Mines gas laboratory at Pittsburgh, Pa., showed 21.9 percent methane. The roof in 28 room was still "working" on Thursday and by Friday the fall had extended through a crosscut between 16 right heading and 16 right air course opposite No. 28 room and also extended across 16 right heading. By this time the fall extended to the room neck in 28 room and would have extended across 17 right heading except for the setting of timbers on 17 right at the room neck.

A systematic search for explosive gas was made by the investigators using an M.S.A. methane detector and by the sampling and analysis of air in the old workings and rooms off 16 right and 17 right and in all solid working places throughout the affected area, and no unusual quantity of methane was discovered that would cast any suspicion upon any place other than 28 room off 17 right.

The foregoing circumstances lead the investigators to believe that a body of methane of considerable magnitude was suddenly liberated into the air current from the overlying rock strata by the fall in No. 28 room. This conclusion is strengthened by the fact that the men who were working on the stumps on 16 right and who escaped after the explosion all testified to hearing an unusual rumbling noise high up in the roof about 20 minutes prior to the explosion. This rumbling noise was probably caused by the breaking of the strata which in turn caused the fall and the liberation of gas in No. 28 room.

Source of Ignition

While permissible mining machines are employed at the working faces, permissible explosives are used for blasting and permissible electric cap lamps are used for illumination in this mine, apparently no consideration has been given to the haulage operation as a possible source of gas ignitions. Open-type trolley locomotives operate not only on partial return air circuits from old, abandoned, partially pillared areas and from active workings, but they also operate on full split returns, the only restriction being that trolley wire must not be extended in any place beyond the last open crosscut.

Shortly before the explosion occurred, according to the evidence, a trolley locomotive brought a trip of 12 empty cars from the side track in 18 right, up through No. 3 haulage road, and placed them in 16 right heading below the No. 3 haulage switch. The locomotive then proceeded up 26 right entry and gathered one loaded car from each of the following places as identified by the check numbers on the cars: Rooms 25, 26, 27, 29, 30, 32, and 35, and two cars which were unidentified. The locomotive then returned with its trip, the cars preceding the locomotive to the chute between 16 right air course and 16 right heading on No. 3 haulage. When the locomotive reached the intersection of No. 3 haulage the explosion occurred.

There were nine loaded cars attached to the locomotive. The brake of the first car from the locomotive was off, the second car on, third on, fourth on, fifth on, sixth off, seventh on, eighth off, ninth on. The controller of the locomotive was in the "off" position and the reverse lever was set for the outby movement of the locomotive. The brake was set strongly and the right or clearance-side trolley pole was "hooked" down. The left or wire-side trolley wheel rested on the trolley wire about 7-1/2 feet outby the trolley frog. An electric light had been installed about 10 feet outby the point of switch and was located about 4 feet inby the place where the locomotive had come to a stop. The weatherproof socket was still in place, but the light had evidently been broken by flying debris of the explosion. No particles of glass were found in the vicinity. Footprints of one or both of the haulage crew were observed by the rescue party and these footprints led to the discovery of their bodies which were found on the "tight" side of the track opposite the last two cars from the locomotive. This evidence indicates that these men, or at least one of them, moved from the locomotive the full length of the trip, around the end of the last car to the point where his body was found after the dust from the explosion had settled. Obviously, the locomotive was working at this point, 250 feet inby from the intersection of 28 room and 16 right air course, at the time of the explosion. Moreover, the locomotive was on the return side of the air circuit from this point. Any gas liberated from a fall in No. 28 room would naturally be carried in the air current toward the locomotive. While no actual eye witnesses to the ignition are still alive, attention is called to the fact

that two of the miners who escaped were 500 feet down 16 right entry when the explosion occurred. They saw the flash of flame up 16 right entry and one of them surmised that the locomotive was afire. After seeing the flash one had time to say, "It looks like the motor is on fire," before the explosion pressure wave reached the point where he was standing and knocked him down. From this testimony, the surrounding circumstances, and the evidence found after the explosion, it is believed that a spark or arc from the trolley wheel of the locomotive ignited an explosive mixture of gas at the extreme edge of the mixture being carried by the air current. It is also believed that the mixture at the point where it was ignited was near the lowest explosive point and that the flame propagated through the mixture toward the source of the gas with increasing violence as the mixture approached the upper explosive limit.

Ventilation As It Is Related to the Cause of the Explosion

When the recovery crews on the night of July 15 reached the intersection of No. 3 haulage entry with No. 17 right, they found that some of the air was short-circuiting into No. 3 haulage entry. Further investigation disclosed that the ventilation door in No. 3 haulage road near 17 right air course had been latched open, presumably by the haulage crew. (See maps in appendix.) Investigation later revealed that the door in the chute between No. 2 and No. 3 face, 18 right entries, leading to No. 3 haulage was blown out by the explosion. It was impossible to determine definitely whether this door also had been latched open. There is, however, a strong suspicion that it may have been, particularly in view of the fact that it was found almost intact about 75 feet outby from the door frame. It is believed that had the door been closed it would have been badly broken up when blown through the frame. Moreover, evidence of char on the door latch indicated that the latch was in such a position as would hold the door open when the flame of the explosion reached it. With both doors latched open, the major portion of the air would have short-circuited directly to the 18 right return, with a slight amount of air traveling in its usual course through 16 and 17 right entries. With the door at 18 right closed and the door near 17 right open, about 6,000 cubic feet of air per minute or about one-half the total volume for the split would have short-circuited to 18 right and the remaining quantity would have traveled in its usual course, through 16 and 17 right. This was determined by tests conducted by the investigating party after the explosion. The investigation also revealed that these two doors did not constitute a complete air lock, as at first supposed. It was found that with the door near 17 right open and the door near 18 right closed, part of the air would short-circuit from 16 and 17 right, but the 18 right faces would get their full quantity. With the 17 right door closed and the door near 18 right open, the air would be partially short-circuited from the faces of 18 right entries and the No. 5 haulage entries. The erection of two stoppings in Nos. 3 and 4 face entries off 18 right just inby from No. 3 haulage entry and three stoppings in the crosscuts in No. 3 haulage entries would have completed the air lock so that with any one door open and the other closed no disruption in ventilation would have occurred. While this partial air lock is considered poor ventilation practice, it is doubtful that at least one of the doors being latched open had any effect on the cause of this

The writers are of the opinion that had the mine been laid out and developed in such a way as to permit the installation of trolley wires and the operation of trolley locomotives on "pure intake air" exclusively, the ignition of gas would not have occurred.

(c) Air which is free from poisonous gas and by analysis contains not less than 20 percent oxygen (dry basis) and not over 0.05 percent of inflammable gas.

(b) Air which has not passed through or by any inactive workings unless these are effectively sealed, and

(a) Air which has not passed through or by any active workings, and (or)

2. When health and safety are concerned, the term "pure intake air" shall mean--

In Decision No. 8 the Bureau defines "pure intake air" as follows:

3. Electric power shall be cut off whenever the air in the workings is in a dangerous condition due to inflammable gas.

2. Nonpermissible electrical equipment shall be used only in pure intake air.

1. Electrical equipment shall be permissible.

The Bureau of Mines in its Mine Safety Board Decision No. 11 recommends that in coal mines haulage be kept in intake air as far as possible. In Decision No. 13 the Bureau of Mines recommends that when electricity is used in coal mines rated as gassy, or whenever in any mine the atmosphere may become gassy:

The main air intake to the section is through No. 17 right entry with a small quantity entering the section through 16 right. This air is conducted up 16 and 17 right, past the entrances to rooms in which the pillars have been partially extracted, through such rooms, and past active working places which liberate methane. The air is then directed onto haulage roads, notably 16 right, 17 right, No. 3 haulage, No. 2 haulage, and 18 right, on which trolley wires have been installed and open-type trolley locomotives operate. Accordingly trolley locomotives, and particularly the trolley locomotive which undoubtedly caused this ignition, were operating on return air from worked-out areas and from active workings.

It is probable that if either one or both of the doors had been latched open at the time of the explosion, or if they had both been closed, the body of explosive gas would have extended from No. 28 room to the point where it was ignited, in any event.

PROBABLE CAUSE OF THE EXPLOSION

After carefully considering observations made during recovery operations, evidence and information obtained throughout the investigation, the results of analyses of dust and air samples collected in the mine, and the careful weighing of testimony presented during the hearing conducted by the coroner of Cambria County, the Bureau investigators are of the opinion that this explosion originated at the junction of No. 3 haulageway and 16 right; that the explosion was caused by the ignition of gas by an arc or spark from an electric trolley locomotive; and that the gas was liberated suddenly by a fall of roof in 28 room off 17 right and carried from there by the air current to the point of ignition.

LEGAL ASPECTS

The Pennsylvania bituminous mining law provides in Article XI, Section 6, that "It shall be unlawful in any gaseous portion of a mine *** to run or operate a locomotive fed directly or indirectly from a trolley wire by the open entrances to worked out places wherein the pillars have been drawn, or places in which the pillars have not been drawn, but in which places the roof has collapsed, unless such places are constantly and thoroughly ventilated and examined as frequently for explosive gas as active working places are examined."

A gaseous portion of a mine is defined in Article XI, Section 6, as follows: "All the workings and roadways traversed by the locomotive and ventilated by the same continuous air current and in which portion explosive gas has been generated in sufficient quantity to be detected by an approved safety lamp within a period of two years."

Explosive gas was discovered in No. 35 room, 16 right, by the fire boss on July 11, 1940, in the same continuous air current in which the locomotive was operating (moreover, explosive gas was discovered and reported in the sections at numerous other times previously); therefore the trolley locomotive was operating in a "gaseous portion of a mine". This in itself is not illegal, but this locomotive was being run by the open entrances to worked-out places wherein the pillars have not been drawn as stated in the law, but partially drawn. Moreover, while such places were constantly and thoroughly ventilated, they were not examined as frequently for explosive gas as active working places were examined. It appears that the only possible violation of the law in this connection was the operation or running of the locomotive by entrances to abandoned places which were not regularly examined. The examination of these abandoned places as is somewhat dubiously required by law would not have prevented this explosion. Article XI, Section 6, of the Pennsylvania bituminous mining law permits the operation of trolley locomotives in gaseous portions of a mine regardless of whether it is operating in intake or return air when the portion in which the locomotive operates is free of accumulated explosive gas, and the highest methane content of the air current in which the locomotive operates is not in excess of 0.5 percent, if the air current is so guided and directed that the opening and closing of a door will not interrupt or seriously diminish the air flow passing into and through the portion of the mine in which the locomotive operates. The mining code in Article IX, Section 4, provides that when requested by the inspector, the mine foreman or the superintendent shall once each week direct and see that the methane content of the

ventilating current or currents is determined by analysis or by an instrument capable of accuracy to 0.05 percent. The samples or the determinations shall be taken on the return end of the air circuit or circuits just beyond the last working place unless otherwise directed by the inspector, and a correct report of these determinations shall be promptly furnished to the inspector.

Air samples were collected in this mine every two weeks at the points where the split returns join the main returns and not "on the return end of the air circuit or circuits just beyond the last working place" as required by law. The practice of taking samples at points where the split returns join the main returns is not indicative of the concentrations of methane which may be present on the haulage roads because of the dilution which takes place due to leakage of fresh air from the intake to the return.

In any event, the practice of taking air samples in split returns once each week as required by law for a criterion as to whether or not it is safe to operate trolley locomotives in "gaseous portions of mines" is an outright fallacy, as was forcefully demonstrated by the circumstances surrounding this explosion. The fact that the methane content in an air split was less than 0.5 percent when the sample was collected is no guarantee that the methane content would not suddenly become higher and even reach the explosive point, as it did in this case in a very short time.

Full compliance with the law in every respect, including examination of abandoned areas and the sampling and analysis of air, would not have prevented the locomotive from operating where the gas was ignited on July 15 and would not have removed the trolley wires from where they were installed in the return airways of the affected section; therefore, the law was totally inadequate to have prevented this explosion.

The Pennsylvania mining law is also inadequate in that it does not give an inspector authority to enforce recognized safety precautions unless life is immediately in danger. In this particular case, as brought out in testimony during the coroner's inquest, it was understood by the State mine inspector and mine management that certain improvements were to be made in the ventilation in the portion of the mine affected by the explosion. However, in view of the fact that it would have been extremely difficult to prove that life was immediately in danger, the inspector did not have the required authority to remove the men or to bring about the necessary changes in a reasonable period of time.

Article IX, Section 2, provides that "not more than seventy persons shall be permitted to work in the same continuous air current, unless in the judgment of the inspector of the district it is impractical to comply with this requirement, in which case a larger number, not exceeding ninety persons, may be permitted to work therein." On the day of the explosion there were 93 men working on the split in which the explosion occurred. This excessive number of men working on the same split of air had no bearing on the cause of the explosion. It is pointed out, however, that had the number of men working on the split been limited to the legal number of 70 it is quite probable that a fewer number would have been exposed and consequently fewer would have been killed.

The last examination of the mine by the district mine inspector of the Pennsylvania Department of Mines was on March 13, 14, 15, 18, 25, and 26, 1940. Following is the complete inspection report made upon the completion of the inspection of the mine.

I inspected the Sonman E. (Slope) mine, Cambria County, and found the total quantity of air at the ventilator was 101,000 cubic feet per minute. The air was also measured in each split near the working faces as follows:

R.P.M. of the fan, 330

Water Gage, 4 inches

Split No.	Cu. ft. per min.	Number of persons
1	11,250	40
2	15,000	69
3	11,600	50
4	12,600	58

Number of employees inside as given by the mine foreman on date of inspection: 610.

Note: Have results of CH_4 tests on immediate return of air from last place on each split sent in weekly to inspector.

Condition of mine:

Manways wet and muddy, not completed down to workings. Men have to travel dilly road to reach manway.

Possibly due to doors being open was unable to get readings at either 16 or 17 rights on north side. Working places on 13 right generating methane.

Coal dust on 14 right caused by mule haulage not sufficiently rock-dusted.

Barrel of lubricating oil kept on top of south dip along haulage.

Dip haulages badly in need of cleaning up on clearance side.

Danger signs instead of warning or no admittance signs at all pump and hoist rooms.

Recommended and required:

That the manways be arranged so men and animals will not have to travel on dilly roads and that they be properly drained. That clearance on dip rope haulages be made to comply with the mining law. These two recommendations seem to be perpetual.

That the fine coal dust be loaded up and taken out of the mine and rock dust used. This refers particularly to the 14 right section.

That the ventilation be so arranged that the opening of doors will not interrupt the flow of air 16 and 17 rights north dip.

That the practice of keeping barrel of oil in any place but a legal oil room be discontinued at once. That legal clearance be maintained along conveyors. That the use of legal danger signs on engine and pump rooms be discontinued.

(Signed) W. H. Filer
Inspector
10th Bituminous District

LESSONS TO BE LEARNED FROM THE CONDITIONS AS THEY RELATE TO THIS EXPLOSION

In the opinion of the writers, there are six outstanding lessons to be learned from this explosion, as follows:

1. Sudden and unusual liberations of gas in large quantities can occur in nongassy and moderately gassy mines; therefore, all coal mines should be so developed and operated that if and when such liberations of gas do occur, no ignition sources will be present.

2. Pure intake air should be conducted directly to the active mine workings through intake airways which are not connected to old abandoned workings unless the old workings are effectively sealed, and after ventilating the active workings the air should be conducted directly to the main return airways. All entries, rooms, panels, or sections that cannot be kept well ventilated throughout or cannot be inspected regularly and thoroughly, or that are not being used for coursing the air, travel, haulage, or the extraction of coal, should be sealed by strong fireproof stoppings.

3. The operation of trolley locomotives, or other nonpermissible electrical equipment, in air that has passed through any active workings, or air that has passed through any old abandoned workings or over "pillared" areas, or air that has passed by any unsealed entrances to abandoned workings or "pillared" areas is decidedly unsafe. When haulage operations are necessary in places operating in return air from such places, animals or permissible electric storage-battery locomotives should be used.

4. A method of mining which seeks to obtain a large percentage of recovery of coal without the complete extraction of pillars involving the driving of working places at extreme widths, the partial extraction of room pillars by driving splits at frequent intervals, the driving of rooms through the barrier pillars of adjacent entries, and the partial extraction of entry pillars is not good mining practice and is likely to result in "creeps" or "squeezes", breakage of the immediate roof, and release of gas when gas is present in the overlying strata.

5. When live men are trapped in a mine by an explosion they are generally confronted with a decision as to whether to make an effort to travel through the area affected by the explosion to a place of safety, or to barricade. The lessons to be drawn from the experience of the trapped men in this instance are:

First, if a decision is made to barricade, a place should be selected which would enclose a sufficient volume of space so that there would be an ample quantity of air to last for a considerable time, dependent of course upon the number of men present. The barricades should be built effectively and located properly and care should be exercised to see that all openings communicating with the affected area are closed. In this case ample materials were at hand, there was sufficient time, and an ideal condition for barricading existed in the 16 right heading and air course inby No. 5 haulage. The barricading effort failed because the men did not observe these precautions.

Second, it is barely possible that had these men attempted to reach fresh air by traveling out 16 right through the explosion area they might have been able to reach the north dip safely as indicated by the fact that the machine operator traveled from the pillar split between No. 17 and No. 18 rooms through the explosion area and reached the men who were inby. If the 41 men who were trapped in 16 right had been equipped with miners' self-rescuers, they probably would have made an effort to come out through the explosion area. It is firmly believed that had such an effort been made with aid of self-rescuers, all of those men would probably have been saved. Moreover, most of the men who were killed in other portions of the mine were killed by afterdamp and not by burns and violence, and it is believed that they, too, would have had a very good chance of escaping if they had been equipped with self-rescuers.

6. This explosion, like practically all others, demonstrates the lack of an efficient organization to promptly carry on recovery work in the early stages, previous to the arrival of outside help, following a mine disaster, and that mine management generally fails to anticipate the possibility of a disaster occurring in their mines. Much could be done towards providing and making available the necessary equipment and emergency material and by proper training of personnel, which would assist materially in efficiently carrying on rescue and recovery operations following a disaster.

RECOMMENDATIONS

The following recommendations are made with the belief that their adoption will materially lessen the chances of an explosion occurring in this mine in the future.

Ventilation

1. A system of mining and ventilation should be adopted whereby pure intake air would be conducted directly to the active mine workings through intake airways which are not connected to abandoned workings unless the old workings are sealed effectively.

2. Air that has passed through active workings, abandoned workings, and "pillared" areas should be conducted directly to the main return airways and should not be coursed through any entries where trolley wires or feeder circuits are installed.

3. The ventilating circuit should be split so that not more than one set of room or developing entries will be on one split of air.

4. The use of doors for controlling ventilation should be eliminated as far as possible by the use of overcasts, but where it is necessary to use doors, they should be installed in pairs and the necessary stoppings should be built so as to form a complete air lock.

5. Latches should not be installed on doors to hold them open, and doors should be hung in such a manner as to insure positive self-closing.

6. The capacity and installation of the fan should be such that the entire mine workings are adequately ventilated at all times. The fan housing should be provided with ample pressure-relief doors or other devices easily opened by the force of the explosion. The installation should permit prompt reversal of air flow and at least two independent sources of power for operating the fan should be immediately applicable.

Electricity

1. Trolley wires and bare feeder lines should not be installed in the mine in other than pure intake air: (a) Air which has not passed through or by any active workings, and (or) (b) Air which has not passed through or by any inactive workings, unless these are sealed effectively, and (c) Air which is free from poisonous gas and by analysis contains not less than 20 percent oxygen (dry basis) and not over 0.05 percent of inflammable gas; nor should they be installed past open rooms whether working or abandoned.

2. All electrical equipment used at or near the face of workings, such as mining machines, conveyors, drills, and air compressors, should be of the permissible type, and this equipment should be maintained in a permissible condition. Such equipment should be connected to its source of power by means of permissible junction boxes. When trailing cables fail they should be replaced by standby cables and the defective cables should be taken to the surface to be repaired.

3. Electric pumps should be installed on pure intake air wherever possible. When it is necessary to install pumps on return air they should be of the permissible type and should not be started or stopped until an examination of the surrounding air indicates that an explosive mixture of methane and air is not present.

4. All permissible electrical equipment should be inspected daily by a competent person and a written report made on the condition of such equipment. It should be the duty of the person making the inspection to see (1) that such equipment is maintained in a permissible condition and (2) that it is not used in a nonpermissible manner. All major repairs to the electrical parts should be made in the shop. All permanent cable splices should be vulcanized and this work should also be done in the shop.

Dust

1. Provision should be made for applying water on the cutter bars of all mining machines, and the machine coal cuttings should be wetted as the cutting is being done.

2. All working places should be thoroughly wetted with water in the face regions before and after blasting.

3. The tops of loaded cars should be thoroughly wetted in the working places to avoid the distribution of coal dust along haulage roads.

4. The coal face and the working place 40 feet therefrom should be kept free of coal dust by the use of water.

5. To prevent the coal from shaking off the cars along the haulage road and being ground to dust, the coal cars should not be overloaded.

6. Haulage entries should be kept free from spillage of coal and deposition of float dust. At places where haulage entries are excessively dusty, provision should be made to sprinkle or wet the floor.

7. "Rock dust should be applied to every mine surface, including haulage entries, trackless entries, return airways, rooms, and pillar workings to within 40 feet of the working faces if water is used. If water is not used in working places, rock dust should be maintained to within one cut of the face."

8. The rock dust should be applied to the roof, ribs, floors, timbers, and other mine surfaces in such quantities that the incombustible content will be not less than 65 percent at all times.

9. Dust samples should be collected at frequent intervals at designated points in the mine to maintain a check on the condition of the dust as to explosibility. Entries and airways should be redusted before the incombustible content falls below a safe limit, as stated in the preceding recommendation.

10. Return airways, trackless entries, and rooms that have not previously been rock-dusted should be cleaned of fine coal dust before rock dust is applied.

11. Provision should be made in stoppings between the intake and return airways to convey rock dust into the returns by means of the hose of a high-pressure rock-dusting machine. Airtight trap doors or capped pipes in the stoppings are suggested.

Explosives and Blasting

1. A sufficient number of competent shot firers should be employed to charge, tamp, and fire holes. These shot firers should be required to examine all places for explosive gas and other dangers before and after firing each shot and no shot should be fired in any place if gas is present in sufficient quantities to be detected with a flame safety lamp.

2. Rigid boxes made of wood or some other rigid dielectric material should be used for carrying explosives to the working places.

3. Explosives containers should be kept in a niche cut in the rib at least 100 feet from the working faces and out of line of fire.

4. Detonators should be carried into the mine by the shot firers in rigid wooden containers or containers constructed of some other rigid dielectric material.

5. No detonators should be stored in the mine at any time, but they should be kept continuously in the possession of the shot firer.

6. The shot firer should be required to keep a record of all shots fired, all misfires, all blown-out shots, and all places which he refused to fire, and he should make a complete report on these items at the close of the shift. Every detonator taken into the mine should be accounted for in the shot firer's report.

7. All shots should be fired by means of a permissible electrical blasting unit which the shot firer should keep in his possession at all times.

General

1. A sufficient number of section foremen should be employed and the work should be so distributed that each working place will receive an official visit and inspection at least every 2 hours.

2. Self-rescuers should be made available for use at all times by all persons underground.

3. Employees should be instructed in the use and care of the self-rescuers and each self-rescuer should be tested once a month according to recommendations of the manufacturer.

4. A mine-rescue station containing at least 10 sets of oxygen breathing apparatus, gas masks, and gas-detecting devices, supplies, and accessories should be provided at the mine or be readily available for emergency use.

5. A number of selected employees should be given a course of instructions in the use and care of oxygen breathing apparatus and in rescue and recovery operations. Employees trained in this work should be given additional training monthly, and all employees should be given a course in first-aid training.

6. All mine employees, but especially mine officials, should be given complete instructions on the subject of barricading.

7. A positive check-in-and-out system should be employed in which each employee carries an identification check on his person at all times while underground. A record should be kept in a safe and quickly accessible place on the surface which will show the time when each person goes into and when he comes out of the mine, and which shall also show, insofar as practicable, where he may be found while in the mine.

ACKNOWLEDGMENT

The writers wish to acknowledge the courtesies extended and the help given by the officials of the Sonman Shaft Coal Company and the Koppers Coal Company, particularly P. C. Thomas, vice president; L. C. Campbell, assistant

to the vice president; Victor Duras, superintendent; L. L. Steele, mine foreman; M. A. Evans, chief engineer; and J. M. Baker, resident engineer. All information requested from these company officials in connection with this investigation was given without reservation. The cooperation of the Pennsylvania Department of Mines, particularly Richard Maize, deputy secretary of mines; members of the investigating commission; Inspectors R. E. George, R. D. Joseph, M. W. Thomas, and George Steinheiser; and Inspectors W. H. Filer and D. J. Keenan, is also hereby gratefully acknowledged.

Complete cooperation existed between the operating company, the Pennsylvania Department of Mines, the United Mine Workers of America, and the Department of the Interior, Bureau of Mines, throughout the investigation of this disaster.

Respectfully submitted

J. J. FORBES
Supervising Engineer
Safety Division

J. G. M. GROVE
Senior Mining Engineer

W. J. ANKENY
Mining Engineer

H. B. LINDEMAN
Associate Mining Engineer

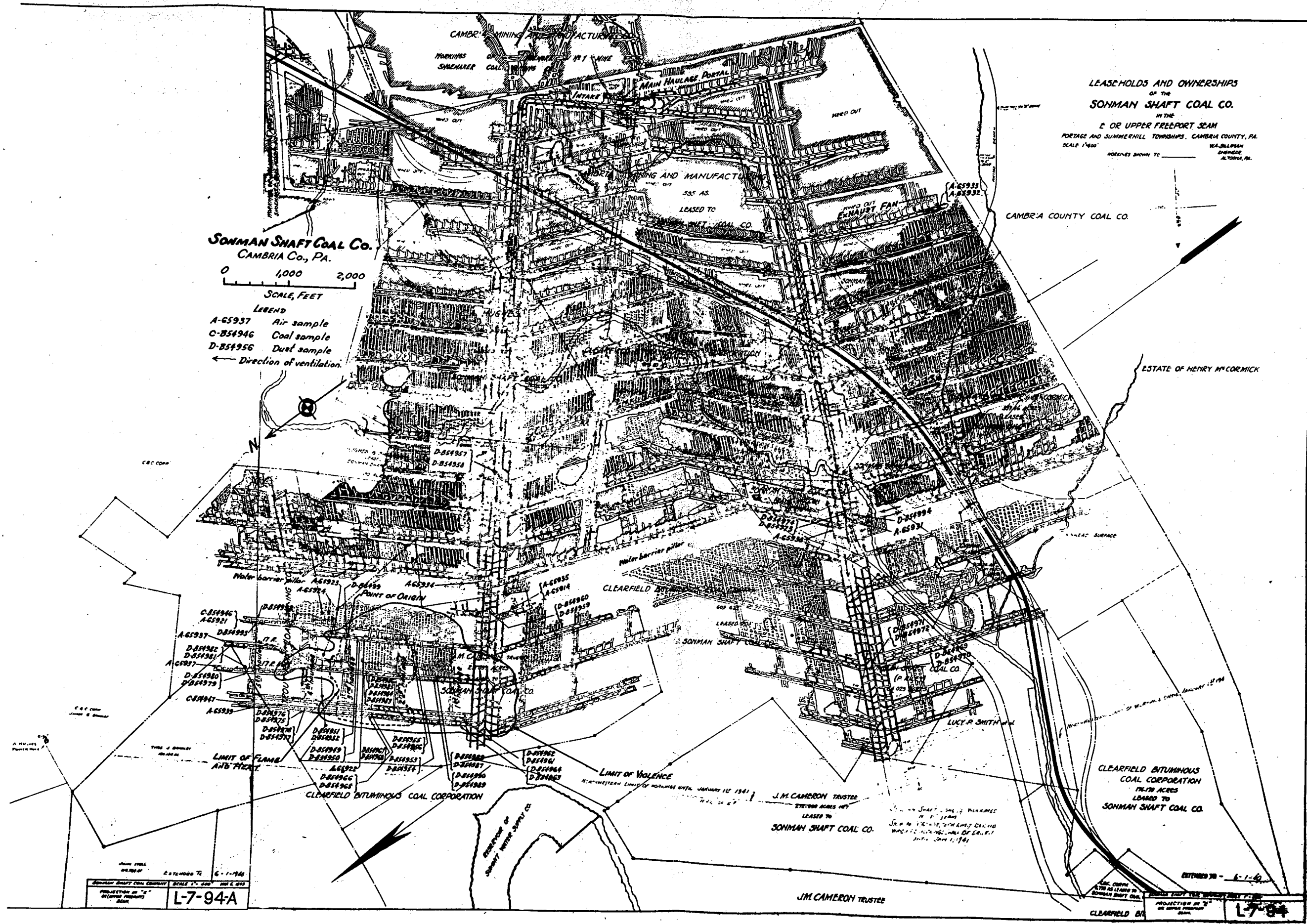
Approved except that I do not approve the statements and recommendations about the "self-rescuer".

D. HARRINGTON
Chief, Health and Safety Branch

A P P E N D I X A

LEASEHOLDS AND OWNERSHIPS
OF THE
SONMAN SHAFT COAL CO.
IN THE
E OR UPPER FREEPORT SEAM
PORTAGE AND SUMMERHILL TOWNSHIPS, CAMBRIA COUNTY, PA.
SCALE 1"=400'
WORKING SHOWN TO

SONMAN SHAFT COAL CO.
CAMBRIA Co., PA.
0 1,000 2,000
SCALE, FEET
LEGEND
A-65937 Air sample
C-854946 Coal sample
D-854956 Dust sample
← Direction of ventilation.



SONMAN SHAFT COAL COMPANY
SCALE 1"=400'
PROJECTION IN "E"
OF UPPER FREEPORT SEAM
L-7-94-A

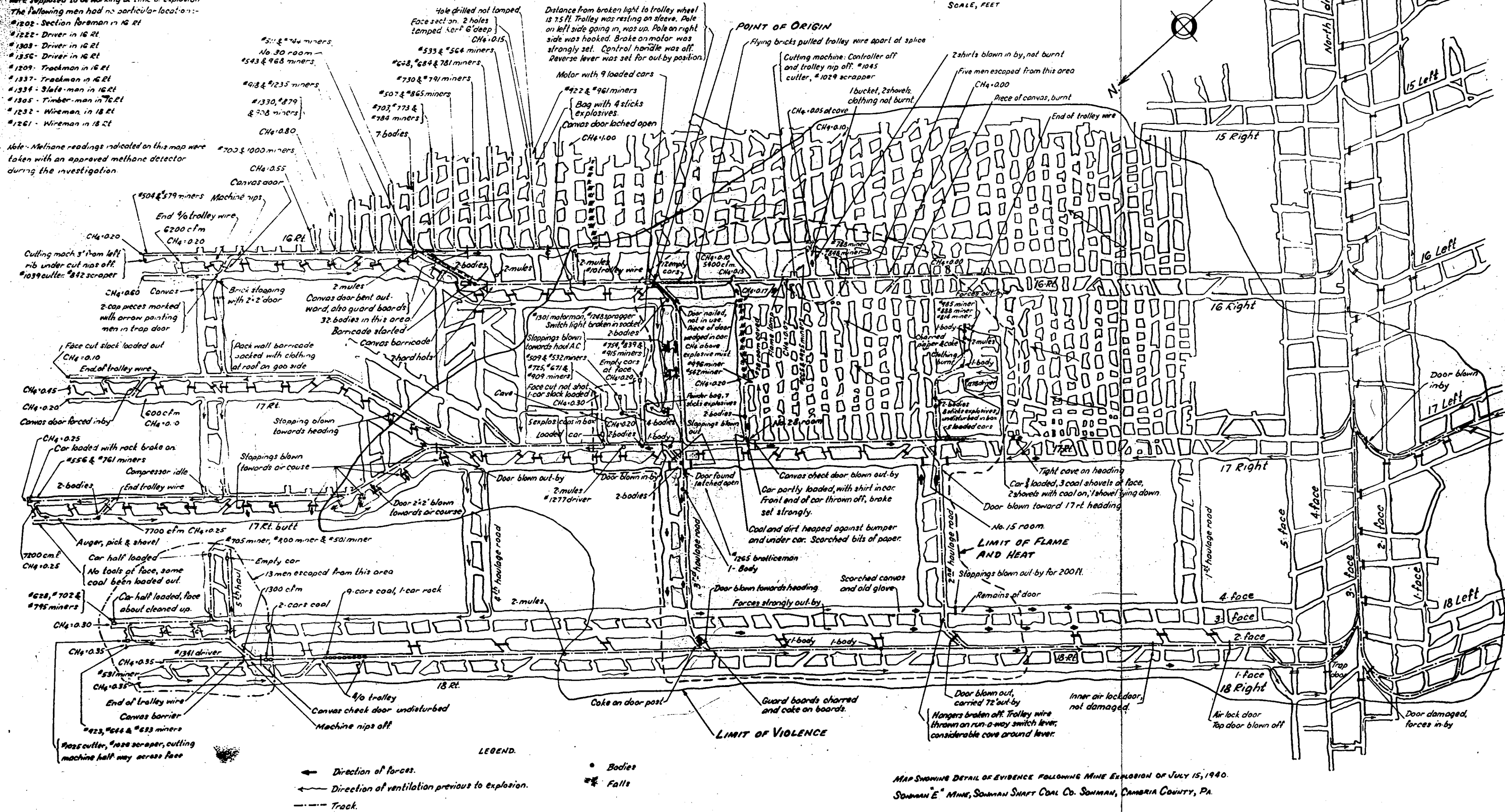
PROJECTION IN "E"
OF UPPER FREEPORT SEAM
L-7-94

A P P E N D I X B

Check numbers (#743 etc) indicate where men were supposed to be working at time of explosion. The following men had no particular location:-

- * 1202 - Section Foreman in 16 Rt
- * 1222 - Driver in 16 Rt
- * 1303 - Driver in 16 Rt
- * 1356 - Driver in 16 Rt
- * 1209 - Trackman in 16 Rt
- * 1337 - Trackman in 16 Rt
- * 1334 - Gate-man in 16 Rt
- * 1305 - Timber-man in 16 Rt
- * 1232 - Wireman in 18 Rt
- * 1261 - Wireman in 18 Rt

Note: Methane readings indicated on this map were taken with an approved methane detector during the investigation.

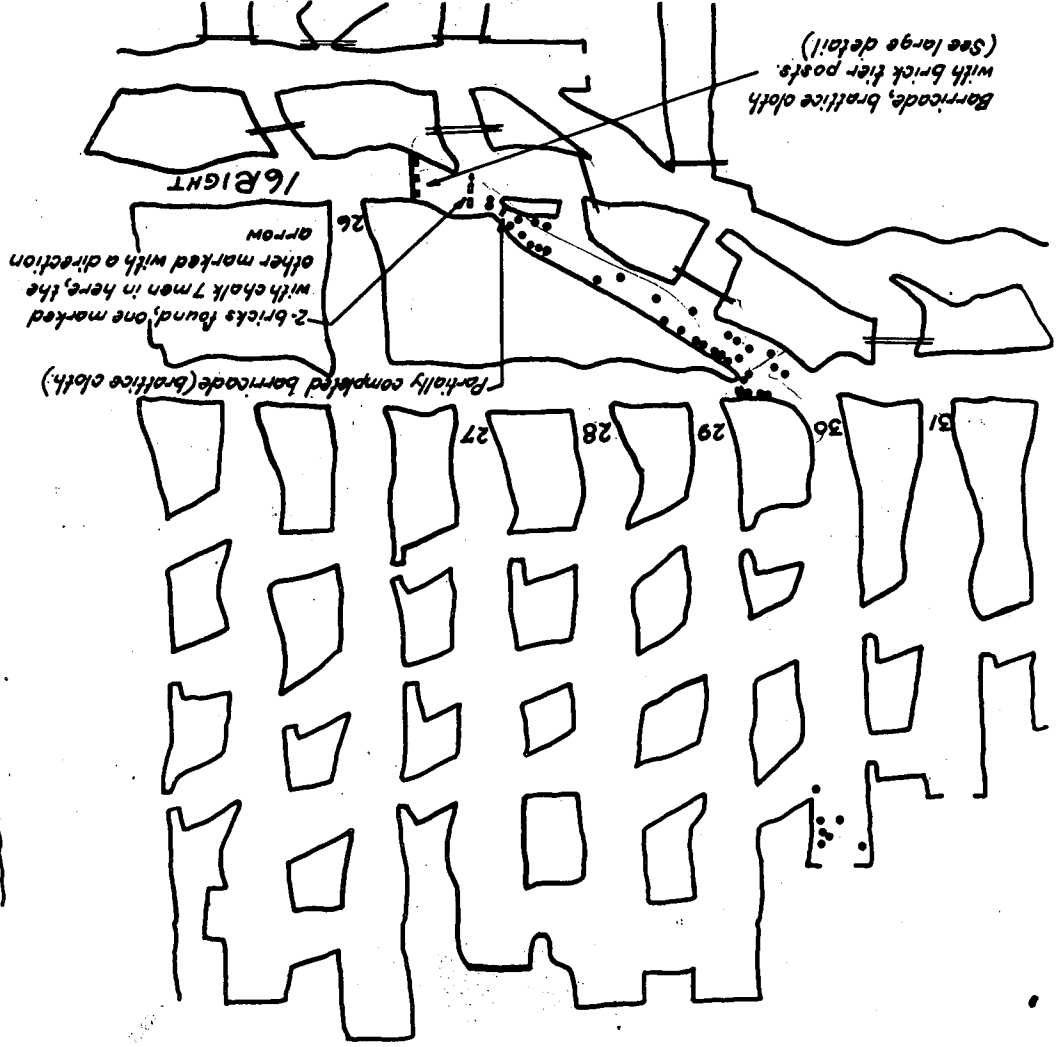
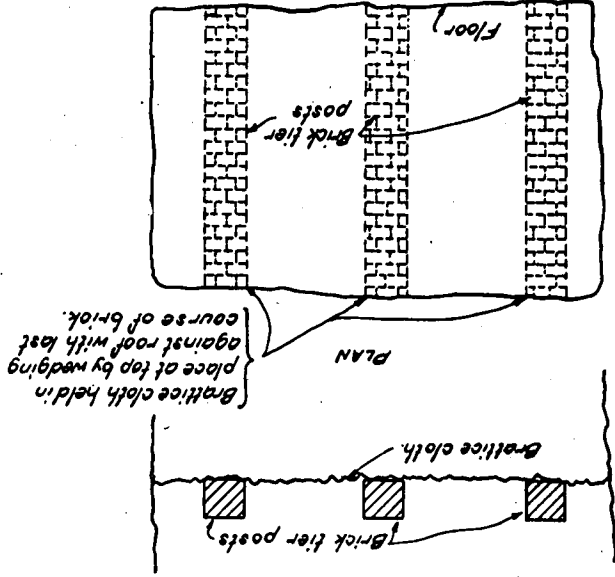


MAP SHOWING DETAIL OF EVIDENCE FOLLOWING MINE EXPLOSION OF JULY 15, 1940.
SONNMAN "E" MINE, SONNMAN SHAFT COAL CO. SONNMAN, CAMBRIA COUNTY, PA.

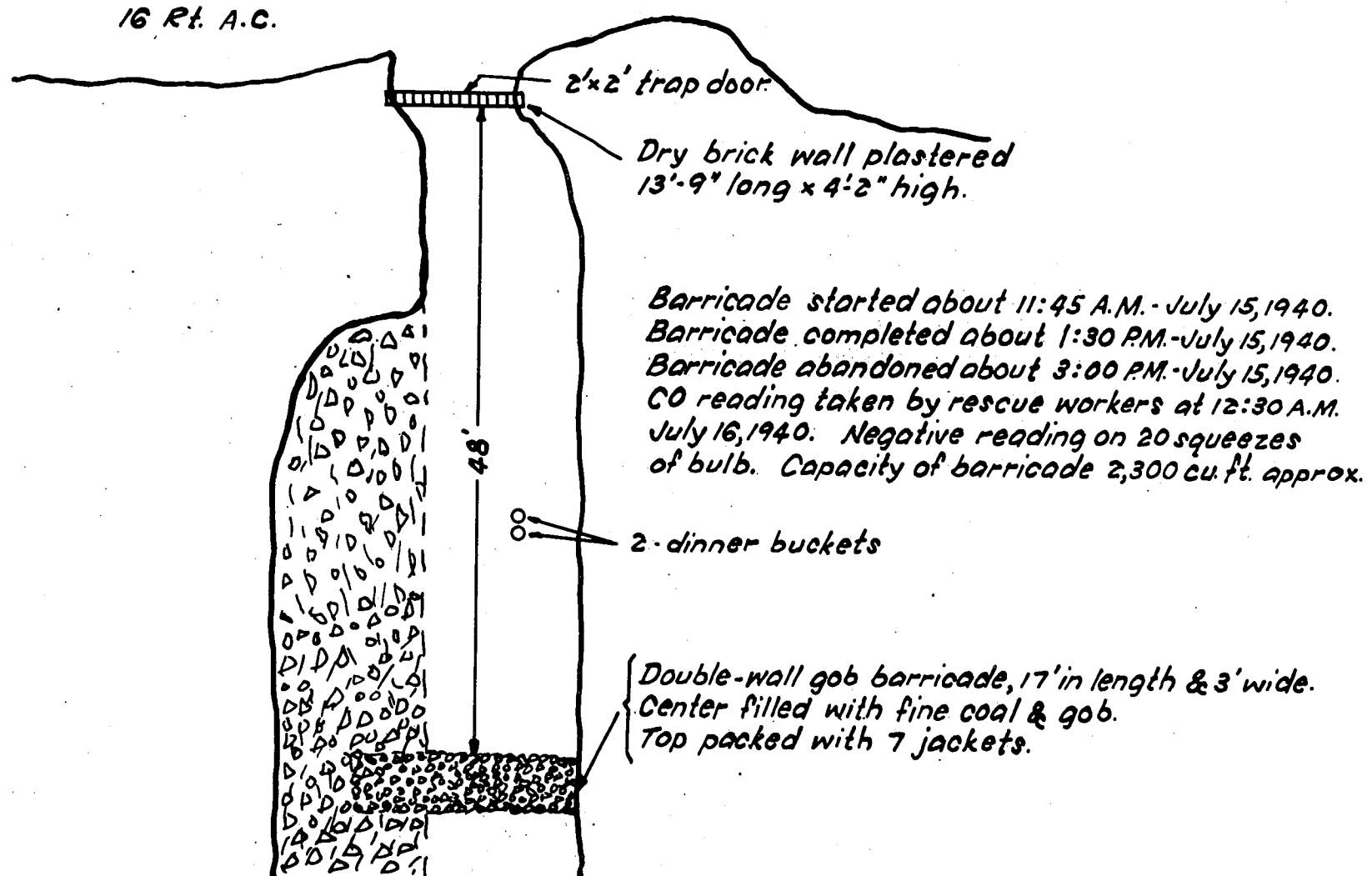
APPENDIX C

SKETCH SHOWING BARRICADES AND LOCATION
OF BODIES TO RIGHT OF NORTH DIRT
EXPLOSION OF JULY 15, 1940.
SOLMAN E. MINE - SOLMAN SHAFT COAL CO.
CAMBRIA CO., PA.

ELEVATION.
DETAIL OF BARRICADE WITH BRICK TIER POSTS.



A P P E N D I X D



SKETCH SHOWING BARRICADE BUILT BY MINERS IN NO. 5 HAULWAY-17 RT. HEADING-N. DIP.
EXPLOSION OF JULY 15, 1940. SONMAN "E" MINE - SONMAN SHAFT COAL CO, CAMBRIA CO., PA.

APPENDIX E

REPORT OF EXPLOSION
SONMAN "E" MINE, SONMAN SHAFT COAL COMPANY
SONMAN, PORTAGE TOWNSHIP, CAMBRIA COUNTY, PENNSYLVANIA
JULY 15, 1940

This is a report compiled by the commission who investigated the explosion which occurred in the Sonman "E" Slope Mine, of the Sonman Shaft Coal Company, at about 10:40 a.m., July 15, 1940, in which a total of sixty-three (63) men lost their lives. The lives lost can be imputed as follows: fifty (50) to the afterdamp or poisonous gas, ten (10) to burns and the afterdamp, and three (3) directly to the forces of the explosion.

Ninety-three (93) men were employed in the area affected; of the ninety-three (93) men, eighty-one (81) men were employed in the area immediately affected by the flame of the explosion and poisonous gases. Eighteen (18) of the eighty-one (81) men escaped miraculously from the zone to fresh air by abandoning or passing through the zone of mine atmosphere which was contaminated to some extent by poisonous gases.

Upon ascertainment that an explosion had happened and with no knowledge as to the extent, the mine superintendent directed that the District Inspector and Inspectors from adjoining districts be notified. At approximately 12:30 p.m., three (3) Inspectors of the Department of Mines were at the scene of the accident and assumed charge of the recovery work. Under their direction the recovery work was continued, supplementing that which had been started immediately following the explosion.

Subsequent emergency calls to the Department of Mines and the United States Bureau of Mines brought additional State Mine Inspectors and other experienced mine recovery men, who continued with the recovery, both on the surface and underground, until completed. The recovery work was made possible and expedited by mine rescue apparatus crews, supplied by neighboring companies, volunteer labor and supervisory help from the Sonman Shaft Coal Company's mines and from mines located in the several adjoining inspection districts.

Scope of the Investigation

The investigation consisted of a study of the mine records, maps and legal record books; a complete examination of the section involved, including explosive gas determinations with a methane gas detector; and a study of all evidence found relating to the explosion. Further study was made of data compiled by the United States Bureau of Mines, such data being the result of analyses of coal, mine dust, deposits made by the explosion and mine atmosphere samples.

The investigation was directed only in that portion of the mine in which the explosion occurred, and recommendations are made to correct conditions found therein.

The commission making the investigation was accompanied by observers: those who represented the United States Bureau of Mines; mine officials, who represented the interest of the employees and the company; a member of the

local Union, and a representative of District No. 2 of the United Mine Workers of America represented the miners. The coroner of Cambria County, who represented the public and all concerned, was invited and did attend sessions at which witnesses were interrogated.

During the interrogation of witnesses observers were excluded, excepting the coroner and those representing the group from which the witness was selected.

Employment and Production

The Sonman "E" Slope Mine, operated by the Sonman Shaft Coal Company, works two (2) seven (7) hour shifts in a twenty-four (24) hour period, beginning at 7:00 a.m. and 7:00 p.m., employing six hundred and seventeen (617) men underground and fifty-two (52) men on the surface. The mine produces an average of 2,700 tons of coal daily.

The mine is divided into two divisions, known as the North and South Slopes, with an approximate equal number of men employed in each division.

The mine officials directly in charge of the operation of this mine are Victor Duras, Superintendent, and Leslie L. Steele, Mine Foreman.

Coal Bed and Openings

The mine operates in the Upper Freeport coal bed which ranges in thickness from forty-eight (48) to fifty-eight (58) inches, including a bone coal at the top of the seam of an average thickness of five (5) inches.

The coal bed lies on the eastern slope of the Wilmore syncline and has an average dip of seven (7) percent.

The bed is reached through two slopes and one drift and is penetrated in this area by two shafts. The main hoisting slope has a pitch of twenty-five percent (25%) and intersects the coal bed approximately five hundred (500) feet inbye the portal. This slope with a drift forms the intake airways; the other slope being used as the main return to the fan. One shaft, which penetrates the coal bed and serves as a hoisting shaft for another mine, is segregated from this mine by stoppings, providing an escapeway for men employed in the Sonman "E" Slope Mine. The other shaft is completely segregated from this mine by clay-packed brick stoppings.

The workings in this bed are also connected with the workings in the Lower Kittanning coal bed by means of slopes which pass through an intermediate seam, such connected workings are separated by means of fireproof doors erected in the lower slope.

The cover over the coal bed ranges in thickness from one hundred (100) to seven hundred and fifty (750) feet. The cover over the area in which the explosion occurred has an average thickness of six hundred (600) feet.

The immediate roof consists of black slate and shale which has an average thickness of twenty-five (25) feet, fairly consistent, though somewhat interspersed with clay veins and roof rolls.

Mining Methods

The development of the main division is provided for by driving five (5) main entries, as slopes, on the pitch of the seam, from which the bounding territory is developed and mined, also, by driving right and left room headings above the strike of the seam, to provide drainage and grades in favor of the loaded cars. Rooms are then turned on sixty (60) foot centers to the rise of the seam. These rooms and the separating pillars are extracted as the room headings advance.

In the area in which the explosion occurred and the area opposite on the North Main Division, the system had been changed, whereby an area of coal was being developed by two (2) room headings of two (2) faces each, and one main heading consisting of four (4) faces. Haulage roads were directed from the main entry, intersecting the room headings forming panels of various lengths. In these panels the room and pillar system of mining is used, with the rooms driven and the pillars partially extracted as the entries advance. The coal recovered approximates seventy-three percent (73%). The remaining coal is left as a support for the roof, intending to exclude general caving and reduce the possible emission of roof gases and water.

Both room and entry faces are driven on an average of twenty-four (24) feet wide. The coal is extracted by undermining, drilled by hand augers and blasted by the individual miners.

Ventilation and Gases

The mine is ventilated with a Jeffrey 8' x 4'8", double-inlet, centrifugal fan, operating on the exhaust system, not provided with explosion doors. The fan is driven by a 150 horsepower, 2,200 volt, three-phase synchronous motor at a speed of 332 R.P.M., creating a water gauge of approximately 4.1 inches, which is recorded by the use of a Bristol pressure recording gauge. The fan produces approximately 90,000 cubic feet of air per minute, which is divided into four splits.

The split ventilating the area affected by the explosion is known as air split No. 2. The intake air enters this No. 2 split by way of the sixteen (16) and seventeen (17) right headings, travels through the stumped area and working places, and collects at the intersection of the sixteen (16) right and the No. 3 haulage road. It then ventilates the faces of all working places in the sixteen (16) right, seventeen (17) right, seventeen (17) butt and eighteen (18) right headings, passing to the faces in the sixteen (16) left heading and into the main return.

The deflection of the air current to the faces is made by means of line brattices and canvas doors. Double air-locking doors make positive the air circulation into the sixteen (16) right and the seventeen (17) right headings to the intersection of the No. 2 haulage road. All inbye circulation through the various room headings is controlled by single doors.

Air measurements taken and recorded for the week ending July 12, 1940 in the No. 2 split are as follows:

	<u>Area</u>	<u>Velocity</u>	<u>Quantity</u>
16 right heading - north dip	65	250	16,250
17 right heading - north dip	65	230	14,950
18 right heading - north dip	65	210	13,650

The number of men employed on one shift in the split, as recorded, indicated thirty (30) men in sixteen (16) right, eighteen (18) men in seventeen (17) right, and thirteen (13) men in eighteen (18) right, making a total of sixty-one (61) men. No accounting is made of the men employed on the opposite shift.

The mine is considered gaseous by the Pennsylvania Department of Mines and is operated as such by the operating company. The percentage of methane in the full return from each split was determined periodically by analyses of mine atmosphere and by the use of a methane detector.

Prior to the installation of the present ventilating equipment, the Slope "E" Mine and Shaft "B" Mine were being ventilated by one and the same fan, which was operating on the force system, with the return air passing through the main haulage entries. This system of ventilation had been used for a period of approximately twenty-eight (28) years. The present ventilating equipment being used to ventilate the Slope "E" Mine, which operates on the exhaust system, was installed and put into operation during January of 1938. Since this date, the ventilation on all air splits has been reversed, except air split No. 2.

Haulage

Coal and waste material are transported from the working faces to the room headings by means of conveyor or car with animal haulage. From the room headings the loaded cars are hauled to the north and south dips by trolley locomotives, then taken to the main hoisting slope by both rope and locomotive, and from thence to the surface by means of rope haulage. The system prevails throughout the mine, with the exception that the conveyors are used in the south division.

Six (6) trolley locomotives; four hundred and seventy-five (475), 4400-lb. capacity, mine cars; eighty (80) horses or mules; four (4) permanently located main line electric hoists and one steam hoist are used in the transportation system.

Lighting

Permissible Edison electric cap lamps are being used for general illuminating purposes; magnetically locked Wolf flame safety lamps are used by mine officials, machinemen and pumpers. Incandescent lamps are used at practically all heading junctions.

Underground Machinery

Seventeen (17) electric-driven, centrifugal and reciprocating pumps are used in this mine; fourteen (14) are used as collecting pumps and three

(3) delivering water to the surface. One pump on the north dip division was not on the intake airway at the time of the explosion. Six (6) electric trolley locomotives are used in the transportation of coal and waste material. Twelve (12) mining machines of permissible or approved type are used to undercut the coal. Portable electric-driven air compressors are being used to provide air for drilling purposes.

Explosives

Permissible explosives are used for blasting all coal and rock, all blasting being done by the use of permissible shot-firing units.

Coal Dust

The coal seam is not excessively friable, however, in the process of mining and transportation some dust is produced and deposited along roadways and adjacent openings. Dust, prevalent on the top, sides and floor in the affected area, is in a damp condition and contains sufficient moisture to deter it from being readily thrown into suspension. Roadways outbye the explosion zone are reasonably free of accumulations of dry coal dust.

Analysis and Explosibility of the Coal Seam

The average analysis of the Upper Freeport coal seam in the vicinity of the explosion is as follows:

	Percent
Moisture	3.1
Volatile Matter	18.5
Fixed Carbon	72.7
Ash	5.7
Total	100.0

B. T. U. 14,660

The ratio of the volatile matter to the total combustible shows that coal dust from this coal seam is explosive. This ratio is .203. The ratio of the volatile matter to the total combustible is derived as follows:

$$\frac{\text{Volatile}}{\text{Volatile} + \text{fixed carbon}} = \frac{18.5}{18.5 + 72.7} = .203$$

According to the United States Bureau of Mines, it is definitely known that coal having a ratio of volatile matter to total combustible above .12 will explode violently if ignited.

Rock Dusting

The mine was partially rock dusted. The extent of rock dusting in the north dip division extended from the bottom of the Main Slope to the entrance of the eighteen (18) right heading. Seventeen (17) right heading had been rock dusted from the north dip entry to twenty-five (No. 25) room. All other headings on air split No. 2 had never been rock dusted.

Supervision

The supervisory personnel of the mine consists of one (1) superintendent, one (1) mine foreman, eight (8) assistant mine foremen, eight (8) fire bosses and one (1) safety inspector.

The Superintendent directs the operation of this and another mine. The mine foreman, subject to the control of the superintendent or operator, has charge of the mine and the persons employed therein. Four (4) assistant mine foremen and four (4) fire bosses are employed on each shift, supervising and fire bossing the four (4) sections. The section lines of the assistant foremen and fire bosses are similar. The safety inspector has charge of the general safety in this mine and devotes a portion of his time to this work. Officials employed are certificated by the Pennsylvania Department of Mines for the position in which they are employed.

The official record books required by law are kept in the mine office on the surface. The inside fire bosses' record books are kept in fireproof vaults, installed in permanent fire boss stations. The north dip station is located on the intake airway at eleven (11) right heading.

Explosion

Preceding and on the day of the explosion, the section involved, as well as all other sections of the mine, were examined by fire bosses and reported safe. The fire boss of the No. 2 air split had completed his second examination and subsequently reported that he had found it safe. He, the fire boss, was en route to the surface when the forces built up by the explosion were felt. At the same time the D. C. electric current, which was being supplied through an automatic circuit breaker, was interrupted.

The safety inspector, who was traveling on foot along the north dip slope, between fourteen (14) and fifteen (15) lefts, was thrown by the forces to the floor.

The air traveling inbye along the north dip appeared to have stopped, started in a counter direction, then resumed its course.

The men in the face workings of the eighteen (18) right entry, who later escaped, were thrown to the floor by the tremors of the explosion and were distressed by the tremendous pressure developed. The men working in the sixteen (16) right stumps, who also escaped, were thrown to the floor, witnessed flame and one was burned slightly.

The destruction in the path of the explosion and the accompanying destruction, brought about by the concussive forces developed, was such as to disestablish the ventilation in the zone of the explosion and outbye to fourteen (14) left. This destruction was of such nature as to render it impossible to re-establish the ventilation in a short period of time, making it necessary to progressively establish the air current as a part of the recovery work.

Likewise, this destruction formed a zone or pocket of irrespirable air which entombed those persons who were not killed by the explosion. For those entombed to reach fresh air, or for those at fresh air to reach the entombed, involved twenty-five hundred (2500) feet of travel through an atmosphere contaminated with variable amounts of poisonous or noxious gases.

The Escape

An escape from the area directly affected by the explosion was made by eighteen (18) men. Five (5) men, working in the stump section of sixteen (16) right, made their escape by traveling out the abandoned section of sixteen (16) right to the north dip, a distance of approximately fifteen hundred (1500) feet. The thirteen (13) men working at the face of eighteen (18) right, after considerable discussion and meditation as to their avenue of escape, tried several means of egress and finally made their way out of No. 1 face, eighteen (18) right, to the north dip, a distance of approximately three thousand, six hundred (3,600) feet. The area, through which the men from sixteen (16) right and eighteen (18) right made their escape, was obstructed at points with local roof falls and accumulations of water. The atmosphere in this area was contaminated with variable concentrations of smoke and afterdamp.

The miraculous escape made by these men required outstanding courage, leadership and endurance on their part.

In addition to the eighteen (18) men who escaped from the area directly affected by the explosion, twelve (12) men also escaped from the sixteen (16) left and points on the north dip headings which were ventilated by the same split of air.

Recovery

Recovery work began immediately following the explosion by those who were near the explosion zone. This was conducted under the direction of the mine foreman. These men re-established the ventilation along the north dip by erecting temporary stoppings to replace doors which had been blown out at the fourteen (14) right, seventeen (17) and eighteen (18) lefts, and then closing the lock doors in the eighteen (18) right.

Upon completion of this step, State Mine Inspectors assumed charge of the work and proceeded to explore the seventeen (17) right to the junction of the No. 3 haulage road. Recovery was then directed up the No. 3 haulage road to sixteen (16) right, thence to the face of sixteen (16) right.

The recovery crews were then returned to the junction of seventeen (17) right and the No. 3 haulage road, from which central point the seventeen (17) right, seventeen (17) butt, the No. 3 haulage road below seventeen (17) right and a portion of the eighteen (18) right haulage road were explored and recovered.

In the recovery work off the main haulage road, it was necessary to re-establish temporarily the ventilation through the seventeen (17) right, up the No. 3 haulage road to sixteen (16) right, up the seventeen (17) right

inbye the No. 3 haulage road and in the seventeen (17) butt. Such work required the construction of canvas and board stoppings.

The recovery of the mine and those entombed was not particularly retarded due to the amount of construction work necessary. Some little delay was due to the time taken up in getting material to the fresh air base. However, the movement of the crews was controlled largely by the airflow in the section. The air, while plentiful in volume, was not present in sufficient velocity to move the poisonous and noxious gases and provide for a more rapid recovery. The volume of air, due to the system of mining, was spread over such a large area, making it impractical to attempt to centralize the airflow.

As the recovery work proceeded apparatus crews, wearing self-contained breathing apparatus, were used to explore in advance of the fresh air base for fires, gases and possible barricades. As the apparatus crews advanced beyond the fresh air base a reserve crew, under oxygen, was kept at the base for emergency purposes. Ventilation crews erected the necessary stoppings, supply crews carried in the material from the north dip, and stretcher bearers carried the bodies to the main haulage road.

Recovery work began at approximately 11:30 a.m., July 15, and was carried on without stoppage until the last body was recovered at about 8:30 a.m., July 16. The time worked was twenty-one (21) hours.

During the process of the recovery work two barricades were found in sixteen (16) right. The first one was located on sixteen (16) right haulage road between twenty-six (26) and twenty-seven (27) rooms. It was constructed of two brattices of single ply brattice cloth erected fifty-two (52) feet apart. It was so located as to be in the direct course of the air travel that it afforded little, if any, protection to the men. Two (2) bodies were found in the enclosure and thirty-two (32) bodies were found between the innermost brattice and the number thirty (No. 30) room on the sixteen (16) right. The area, in which the larger number of bodies was found, was not isolated from the mine workings which were affected by the explosion.

The second barricade was found in the number five (No. 5) motor road, near the intersection of the sixteen (16) right air course. The barricaded area was formed by two (2) stoppings. The first one was constructed of brick laid in cement, built around a two-foot square wooden door set in the stopping. This stopping was previously used to deflect the air current and was erected six (6) feet from the junction of the sixteen (16) right air course and the number five (No. 5) motor road. The second stopping, erected by those entombed, was forty-eight (48) feet inbye the brick stopping. This stopping was built of mine waste material and filled with fine refuse. The men who constructed the stopping used their shirts and jackets as packing near the roof to prevent an inward leakage of poisonous gas and smoke. The total area enclosed in the barricade was twenty-three hundred (2300) cubic feet, and there were no bodies found in the area.

The men who had escaped from the eighteen (18) right, before escaping, had erected a single brattice cloth closing off the number two (No. 2) face and a crosscut. The barricading of the area in eighteen (18) right was apparently not completed and the area was not occupied.

Property Damage and Course of Explosion

Property damage in the explosion area is limited to the destruction of doors and stoppings, the demolishing of line brattices and the scattering of mine debris along road and travelingways. Doors destroyed were constructed of wood. Stoppings forced down were constructed of brick, built in dry wall, cement-faced; those constructed of mine refuse, built in dry pack wall, were also forced down.

Stoppings and wing walls of doors, which were constructed of brick laid in cement, were not destroyed; mine timber was not displaced; and there was no caving brought about by the explosion.

The paths in which the explosion traveled are definitely indicated by the direction in which the damaged material and debris were blown. These paths lead in all directions from the junction of the sixteen (16) right and the number three (No. 3) haulage road. The main course seems to have been directed from that point outbye through the sixteen (16) right air course to number twenty-eight (No. 28) room, off the seventeen (17) right, traveled down this room, then inbye on seventeen (17) right. It joined these forces on the number three (No. 3) haulage road, and traveled down the number three (No. 3) haulage road to the eighteen (18) right, then outbye on this entry to the number two (No. 2) haulage road through which it traveled to the seventeen (17) right heading, where it stopped. Forces directed from this main path apparently diminished rapidly, particularly those expended in the direction of the working faces.

Findings and Conclusions

The following findings and conclusions are based upon facts disclosed or substantiated in the report, the appendix of the report, and in the attached testimony or in supporting records:

1. That ninety-three (93) men were employed in the number two (No. 2) air split, one continuous circuit of air, and that the employment of more than seventy (70) men, legally allowed on this air split, did not contribute as to either cause or propagate the explosion.
2. That the control of the air current in the number two (No. 2) air split by single doors did not provide a constant supply of fresh air as required by law.
3. That the air door situated at the junction of seventeen (17) right and the number three (No. 3) haulage road, which was found open and so secured following the explosion, did interrupt the air flow in the sixteen (16) right, and that this interruption did not contribute to either cause or propagate the explosion.
4. That coal dust, present in variable quantities along the roadways, travelingways, and airways, was thrown in suspension, carried by the explosion and subsequently deposited, did not contribute as to initiate the explosion and played little part, if any, in its propagation.

5. That the fresh intake air used to ventilate the number two (No. 2) air split, and which traversed the roadway in which trolley wire was suspended from the roof and from which an open type electric trolley locomotive was operating, was first passed through an area in which pillars were mined to such an extent as to permit abandonment, and mined to such an extent as to cause caving.

6. That caving occurred in the number twenty-eight (No. 28) room off seventeen (17) right and that such caving was induced by the partial extraction of the coal seam, and was superinduced at this place by the presence of clay veins and a barrier pillar.

7. That the caving in the number twenty-eight (No. 28) room off seventeen (17) right occurred just prior to the explosion and continued for some time afterward.

8. That explosive gas was suddenly liberated in considerable volume from the fall which occurred in the number twenty-eight (No. 28) room and was carried in the air current.

9. That a trolley locomotive operating in the sixteen (16) right heading was in the path of explosive gas contaminating the mine atmosphere.

Conclusion

That the explosion which occurred was initiated by the ignition of explosive gas in the mine atmosphere, by an arc or spark from a trolley locomotive operating at or near the junction of the number three (No. 3) haulage road and the sixteen (16) right heading, and was propagated by gas in the mine atmosphere. We further conclude that the ignition was indirectly brought about by the failure of the system of mining, which failure might have been anticipated, yet was not expected.

Recommendations

1. That the ventilating air current in the number two (No. 2) split be so conducted as not to pass through any abandoned areas, abandoned by reason of total or partial coal extraction; nor should the air current pass by the open roads to such areas.

2. That the air current used to ventilate areas abandoned by reason of total or partial extraction be so conducted as not to pass over any open type electrical equipment.

3. That no live trolley wire or open type electrical equipment be permitted to remain or be installed in places ventilated by the air current inbye the first active pillar or entry stump being partially extracted.

4. That legally qualified shot-firers be employed to charge, tamp, and fire all holes properly placed by the miner.

5. That the definition of pillared areas or pillaring be established by law to convey the meaning that all areas in mines in which room and entry pillars are mined, or are being mined to any extent beyond the legally required cut-throughs or cross-cuts, or in areas in which mining is so conducted as to be conducive to caving, or in areas in which any system of mining is used which results in the extraction of coal to the point of abandonment, be considered as pillared areas or pillaring.

6. That Rule 77, Article XI, of the Bituminous Mining Law, be so amended or changed to define a gaseous portion of a mine as "all workings and roadways being traversed by the same continuous air current, in which portions explosive gas has been generated in sufficient quantity to be detected by an approved safety lamp, within a period of two (2) years", and to limit the use of electric equipment, operated from a trolley, to entries in which air currents are established. And to further limit the use of open type electric equipment by the open entrances to places in which pillars have been drawn, and in atmosphere which has ventilated or passed through such places.

7. That an effort be made by State Agencies, through the operating company, to disseminate among persons employed in bituminous mines, information and educational material concerning the necessity, construction and location of barricades following mine explosions and mine fires.

Acknowledgment

This Commission wishes to acknowledge the cooperation and assistance given by members of the safety division of the United States Bureau of Mines in the rescue and recovery operations, and in supplying data acquired through the facilities of the Pittsburgh Experimental Station. The Commission wishes also to acknowledge the ready cooperation of the management, officials, and employees of the Sorman Shaft Coal Company, and all other persons who assisted in the recovery and investigation.

Respectfully submitted,

(Sgd.) M. W. Thomas
M. W. Thomas, Inspector
24th Bituminous District

(Sgd.) R. E. George, Chairman
R. E. George, Inspector
18th Bituminous District

(Sgd.) R. D. Joseph
R. D. Joseph, Inspector
6th Bituminous District

(Sgd.) Geo. J. Steinheiser
Geo. J. Steinheiser, Inspector
25th Bituminous District

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PROCEEDINGS BEFORE CAMBRIA COUNTY CORONER PATRICK F.
McDERMOTT, INQUIRING INTO THE CUASE OF DEATH
OF FREEMAN GEORGE AND 62 OTHERS ON JULY
15, 1940 AT THE SONMAN "E" SLOPE MINE

MOOSE HALL, PORTAGE, PA.,
AUGUST 13, 1940
9:30 A.M.

BEFORE: CORONER PATRICK F. McDERMOTT.

APPEARANCES OF COUNSEL, OFFICIALS AND OTHERS:

HOWARD W. STULL, ESQ., Special Deputy Attorney General, for the State
Department of Mines.

Philip N. Shettig, ESQ, for Sonman Shaft Coal Company.

JOHN M. BENNETT., ESQ., Assistant District Attorney, for the District
Attorney.

RICHARD MAIZE, Deputy Secretary of Mines.

R.D.Joseph, Geo. J. Steinheiser, M.W.Thomas and R.E.George, State Mine
Inspectors, Members of the Mines Board of Inquiry.

J.J. FORBES, Chief of Pittsburgh Office of the Federal Bureau of Mines.

JAMES HESS, President of Local Union 1318, U.M.W. of A.

HARVEY YOUNKER, District Organizer of District 2, U.M.W. of A.

CORONER'S JURY

Arthur Barrs, Portage, Pa.
John Sloan, Summerhill, Pa.
John Franey, Cassandra, Pa.
Frank Grecik, Jamestown, Portage Twp., Pa.
John Castel, Portage Township, Pa.

BY THE CORONER: Are there any objections by any party in interest to any
of these gentlemen serving on the Jury,

(No objections interposed)

THE JURY IS SWORN AT 9:40,A.M.

VICTOR DURAS, Called, Sworn.

BY THE CORONER: If by making any statement to this jury in connection with this inquest, if anybody feels that they may place themselves in jeopardy or subject themselves to a criminal prosecution, then they are at liberty to refuse to testify.

They are represented by counsel and counsel said they want their people to testify.

EXAMINATION BY MR. GEORGE:

Q. Your name, Please? A. Victor Duras.

Q. What is your official capacity at the Sonman "E" Slope Mine?
A. Mine Superintendent.

Q. Who is the operating Company of Sonman "E" Slope Mine? A. Sonman Shaft Coal Company.

Q. Mr. Duras, we would like to have you tell us in your own words what occurred on the morning of July 15, 1940 from seven o'clock until twelve? A. The mine started to work July 15 at 7:00 o'clock. The man trips had left at 6:20. Outside of my regular procedure nothing else happened. Then about eleven o'clock, or thereabout, I happened to be on the telephone calling the bottom of the slope, - by the bottom of the slope I mean the foot of the slope, about eight hundred feet from the outside. Some one else answered the telephone from the bottom. As near as I can find out it was from the lower dip. He told me that for some reason the air was reversing in the mine. I at once went to the slope drift mouth and sent the outside foreman to the Shoemaker Drift Mouth and the chief electrician, I sent him to the fan. After I got to the drift mouth the air was entering the mine in a normal way. The outside foreman came back from Shoemaker Drift and he told me the air was entering the mine in a normal way. By that time I got on the telephone and I think the next fellow I could get on the telephone was Safety Inspector Bill Ray, and he told me he didn't know what happened, whatever happened happened below 14 Right north. I told him to send all the men out. I got hold of the Fire Boss from the south and the Mine Foreman and sent them down to the north, and notified the Mine Inspector, Mr. Filer, called up Dick Grouse of the Monroe Coal Company, to send me his rescue team. Then I got the clerk to call the rest of the Mine Inspectors. By that time it was noon.

Q. What did you do immediately after the inspector arrived, what took place after that time in your day's work? A. Well, the mine rescue team arrived, Mr. Joseph and Mr. Hess, and Mr. Filer and Mr. Hess at once started in, Roy Joseph was five minutes later going in. The rescue team checked up on their apparatus and went in, they checked the necessary materials, such as lumber, canvas, tools, etc. and went in the mine.

Q. What was the number of the air split in the area affected by the explosion? A. No. 2 split.

Q. How many men were working in No. 2 air split? A. According to the reports 93.

Q. How many men lost their lives in the explosion? A. 63.

Q. How many men made an escape from the explosion area? A. 18.

Q. Were the working places examined once each working shift in the affected area by the assistant mine foreman? A. To the best of my knowledge, yes.

Q. You have countersigned your weekly official reports? A. I did.

Q. How many men are permitted legally to operate in any single split of air? A. 70.

Q. Had you ever been given permission to operate, or to work or employ more than 70 men on this split of air? A. No.

Q. Had you ever discussed the employment of more than 70 men in this split of air, with the Mine Inspector of the district? A. No.

Q. Were there any other men escaped from the No. 2 split besides the 18 who escaped from the immediately affected area? A. Yes.

Q. How many men? A. They were on the other side, eleven or thirteen.

Q. Where were those men working? A. 16 Left.

Q. 16 Left was also part of the No. 2 Air split? A. That's right.

Q. Had the Mine Inspector of the District made any requests of you as Superintendent to reverse the air current in air split No. 2 prior to the time of the explosion? A. No.

Q. How long had the present ventilation system of the Sonman "E" Slope Mine been in operation? A. November 11, 1939.

Q. Had the Mine Inspector ever requested you or your company, to your knowledge, to install the present ventilating equipment? A. He did.

Q. When did he make this request? A. Six or seven years ago.

Q. At the time of his making the request was the mine operated on the force or exhaust system of ventilation? A. On the force system.

Q. Was the force system of ventilation being used directly to ventilate the Sonman "E" Slope Mine? A. Yes.

Q. Were there any other mines ventilated by that single fan? A. Yes.

Q. What other mine was that? A. Sonman Shaft.

Q. When the present ventilating system was installed and put into operation, was it not also understood that the ventilation throughout the mine would be reversed to comply with the exhaust system of ventilation? A. Yes.

Q. Who made that request, A. The Mine Inspector.

Q. To your knowledge had the Mine Inspector made a recommendation for the establishing of airlocks on the air split No. 2 to provide a continuous and constant flow of air around the working places prior to the time of the explosion? A. I think his recommendation said, or his request was that the arranging of the doors, -- no, that the doors be so arranged that the opening and closing of the doors will not interfere with the flow of the air.

Q. What did you understand by that recommendation? A. Well, I understood by that recommendation he wanted the air locked.

Q. Had you complied with that recommendation from the time the report was presented to you to the time of the explosion? A. Partly.

Q. What part did you comply with? A. To the bratticing of the main dip where the air crossed from the right side to the left.

Q. Was the air locked as requested by the Mine Inspector in his last inspection prior to the time of the explosion? A. Partly.

Q. What portions of the mine, or section of the mine affected was not properly air locked? A. I just can't answer you that question.

Q. Had you as the Superintendent of the mine made any personal investigation to determine whether or not the Mine Inspector's recommendation pertaining to airlocking had been complied with? A. I have not.

Q. Had you consulted with the Mine Foreman, or visited the mine to determine whether or not these recommendations had been complied with? A. I talked to the Mine Foreman.

Q. When was the Inspector's report requiring the air to be locked on air split No. 2 presented to you? A. Sometime in April.

Q. And the date of the explosion was what? A. July 15.

Q. Had you as the Superintendent directed your Mine Foreman to see that the Mine Inspector's report had been complied with? A. Yes, sir.

Q. Had you made any personal examination of the mine to determine whether or not he had complied with your orders? A. No.

Q. Had you visited the section known as air split No. 2 from the time of the Inspector's last report until the date of the explosion? A. I did.

Q. When did you make this examination? A. About ten days before the explosion occurred.

Q. What portion of the section did you examine? A. The faces of all headings, 16 Right, 17 Right, 17 Butt and 18 Right.

Q. Did you make a check of the ventilation on your inspection trip? A. I did.

Q. Did you read the air, take or check the air with an anemometer? A. No.

Q. What method of checking the air did you use? A. The velocity in the last cross-cut.

Q. You estimated it rather than by reading it? A. That's right.

Q. Do you have any definite way of determining the volume of air passing a given point in a mine by determining, or guessing the velocity of the Air? A. Yes, to such an extent.

Q. You may be out several thousand cubic feet of air in an estimated reading? A. Several thousand?

Q. Yes? A. I might be one or two thousand out.

Q. Who was required by you to make the air measurements? A. The Mine Foreman.

Q. Did the Mine Foreman make these air measurements as required? A. To the best of my knowledge.

Q. Did you countersign weekly the report book? A. I did.

Q. Did you check the number of men as recorded in the report book by the Mine Foreman? A. No.

Q. You didn't know then whether the men working in the air split No. 2 was actually being reported correctly? A. No.

Q. Had you ever authorized your mine foreman to employ more than 70 men on any one split of air? A. No.

Q. Yet you knew that more than 70 men were employed in the air split No. 2? A. I did not.

Q. Had you made any plans to reverse the flow of air in No. 2 air split, if it was made prior to the time of the explosion? A. Yes.

Q. Why did you not complete your plans for reversing the air on No. 2 split? A. I didn't have time.

Q. How much work was required, or would have been required to have completed the work necessary to reverse the air flow? A. Four overcasts.

Q. How long would it have taken you to have completed your work in reversing your air flow in Split No. 2? A. That entirely depends on how many men you have and what equipment we have.

Q. How much work was involved in the changing of your ventilation in the entire mine after your new fan had been installed, and how long had you been working toward that end? A. About two and one-half years.

Q. Had all other requirements been complied with except the reversing of your air in split No. 2? A. I think so.

Q. Did you direct your Mine Foreman not to employ more than 70 men at any one air split? A. No, I didn't. You mean did I tell him?

Q. Whether you told him not to employ more than 70 men? A. No.

Q. Had any immediate danger ever been reported to you by your mine officials that would convince you that an immediate change of your ventilation in split No. 2 was necessary, A. No.

Q. Did the Mine Foreman ever bring to your attention that more than 70 men were employed in air split No. 2? A. No.

Q. Did you ever make an official report on the progress you were making to comply with the Mine Inspector's recommendation to properly, or sufficiently lock your ventilation in air split No. 2? A. Repeat that.

Q. Did you ever make any report to the Mine Inspector, or any other person, stating how much work was necessary to complete the requirements as recommended by the Mine Inspector in regard to the locking of your air,? A. No.

BY THE CORONER: Does anybody else have any questions to ask?

BY MR. HESS:

Q. I would like to have Mr. Duras answer the question, what part of the mine was not locked at the time of the explosion? A. I don't know.

BY THE CORONER:

Q. I think I understood you to say you didn't know there was over 70 men on that split? A. That's right.

BY MR. STULL:

Q. Who did know? Who is the highest official who knew the number of men in that split? A. The Mine Foreman.

Q. Who is the Mine Foreman? A. Mr. Steele.

Q. His first name? A. L.L. Steele.

Q. He was on duty at that time? A. Yes, sir.

BY THE CORONER:

Q. You knew, of course, 70 men was all that was allowed in that split, Mr. Duras,? A. Yes.

Q. And you are satisfied that your foreman knew that? A. Yes.

Q. Then if he was allowing more than seventy men on that split he was doing it without your knowledge and in violation of the law? A. Yes, sir.

BY MR. GEORGE:

Q. Mr. Duras, did you make any transfers from one section to the other yourself? A. No.

Q.. Who was responsible for the placing of your men in the various sections of the mine? A. The Mine Foreman and Assistant Mine Foreman.

Q. You had no knowledge as to how they were placed, or the number of them that were placed in each section? A. That's right.

Q. Who placed the men in 16 Left on air split No. 2 on the morning of the explosion? A. The Mine Foreman.

Q. Who authorized the Mine Foreman to place the men in 16 Left that morning? A. I did.

BY MR. STULL:

Q. Mr. Duras, when you received the report of the Mine Inspector covering the period of March 13,14,15,18,25,and 26, 1940, recommending certain changes in the operation. . . (interrupted) ? A. That's right.

Q. What did you do after receiving that report to remedy those conditions? A. Most of them were remedied.

Q. What remained to be remedied just immediately prior to the explosion. A. Finish locking the air in 18 Right.

Q. What direction if any did you give to have this work done? A. I told the Mine Foreman to fix the ventilation to comply with the law.

Q. The Mine Foreman was Mr. Steele? A. Yes.

Q. Did you make any check on the work to find out if Mr. Steele had performed his duty in that respect? A. No.

Q. Just when did you give him those instructions, about what time? A. Right after I got the Mine Inspector's report.

Q. That is countersigned by you on the 27th of March, 1940? Is that correct? A. I would say yes.

Q. When was it you gave the instructions, the same day or the next day? A. The same day.

Q. Did you receive any report of any character from Mr. Steele with respect to your instructions? A. No. In an off-handed way he told me he put that brattice in there.

Q. There was some recommendation about the coal dust being loaded up and taken out, did he make any report on that? A. You mean the Mine Foreman?

Q. Did he make any report to you about that? A. No.

Q. There was also a recommendation that the ventilation be so arranged that the opening of doors would not interrupt the flow of air in 17 and 16 Right north dip; did he make any report on correcting that? A. That is the one we are talking about.

Q. That is where the brattice is placed? A. That's right.

Q. Do we understand you to say, Mr. Duras, you made no personal inspection to ascertain if Mr. Steele had made the corrections? A. That's right.

Q. You are positive that is correct, you didn't make any personal inspection? A. I just looked around in the section.

Q. Do you recall having testified before the Commission in this same matter? A. Yes.

Q. Do you recall that in answer to a similar question I have just put to you that you said at that time you went into the mine and made a personal inspection and found the conditions corrected? A. That is the one, the condition as far as the air flow is concerned.

Q. That statement is only confined to the correction of the air flow? A. Yes, that's right.

Q. But the other corrections you hadn't inspected to find out if they were complied with? A. No.

BY THE CORONER:

Q. There was something said about putting ten additional men in 16 Left, is that right? A. That's right.

Q. Where were those men brought from to be placed in 16 Left? A. From the same split, 16,17,17 Butt and 18 Right.

Q. Was there any particular reason why those men should be removed from 16 Right? A. 16,17 and 18 Right.

Q. Was there any particular reason why they should be moved? A. Yes.

Q. Why? A. The heading got lower of coal, the coal seam so low, and the men didn't want to work in there.

BY MR. HESS:

Q. I would like to ask Mr. Duras how often he tried to measure the air current without the use of an anemometer,?

BY THE CORONER:

Q. Let's put the question this way: Was that your particular method of trying to determine the amount of air, by estimation, without using any instrument? A. Yes.

Q. That was your usual method? A. Correct.

BY MR. HESS: That indicates, by the answer given, he never used an anemometer.

BY THE CORONER:

Q. Did you use an anemometer? A. You mean in my life?

Q. I mean recently in that particular mine? A. Oh, yes.

Q. Prior to the explosion? A. Yes.

BY MR. MAIZE:

Q. Mr. Duras, didn't you know that particular morning when you told him to change the men from heading 16, 17 and 18 Right to the left that there were more than 70 men on that split? A. No.

Q. Well, in the report of the men working in that mine couldn't you tell one of the splits was overloaded, one of the airsplits was overloaded,? A. All the report I have if there is, is the mine report, the report the Mine Foreman put in his daily book.

Q. He never reported there were more than 70 men in this No. 2 split? A. No, he didn't.

BY MR. GEORGE:

Q. Mr. Duras, when you checked your Mine Foreman's report book and noted the number of men employed, or shown employed in your individual splits, did you know that that was, or that the number of men represented your miners and excluded your company men? A. No, I didn't.

Q. Had you ever given any instructions to your Mine Foreman to show the number of miners in the report book and not show the company men on that split? A. No, I didn't.

LESLIE L. STEELE, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Your name, please? A. Leslie Steele.

Q. What is your official title in connection with the Sonman "E" Slope Mine? A. Mine Foreman.

Q. Were you employed by the Sonman Shaft Coal Company as Mine Foreman of the Sonman "E" Slope Mine on the morning of July 15, 1940? A. Yes, sir.

Q. Have you a first grade mine foreman's certificate? A. Yes, sir.

Q. Who had charge of placing the men in the mine, in the various splits, directing them to their places? A. Well, generally that would come under me, but particularly, I just assisted to move what men he felt like moving, If there was any particular men. I seldom placed a man particularly, once in a great while.

Q. Had the superintendent of the mine placed any men in any part of the mine without your knowledge? A. No, sir.

Q. Did you know that the number of men in air split No. 2 was in excess of 70 men? A. Yes, sir.

Q. Had you ever discussed the question of employing more than 70 men in any split of air with your superintendent? A. Yes, sir.

Q. What was his answer to your questioning at that time? A. Not to use more than 70 miners on the split.

Q. Did he definitely instruct you to use miners only on that split? A. To count the miners that were working in the split, as the company men were moved around considerably and didn't work in one place very much of the time, and we were counting just the miners.

Q. Will you tell us, Mr. Steele, in your own words, what knowledge you have of what took place at Sonman "E" Slope Mine about 10:30 on the morning of July 15, 1940, and carry that through to the point where you wish to conclude it? A. Do you wish me to start with my day's work? So far as recalling time, I don't recall.

Q. Begin with your day's work? A. I went in the mine shortly after six o'clock, and this being the 15th, it was necessary to put all the time in in the morning. I got through with that about nine o'clock, I suppose, somewhere around there, and from there I went down to the south dip, to just about the end of 14 Right, where we were building a hoist room. I had bratticemen working in there and wanted to see how much of this brick work they had completed. I then caught a trip and came up to the bottom of the main slope. I went there and caught a trip on the north bottom going back to the dip of north slope. When I came to the hoist on the dip of north slope the engineer flagged the trip down and said something happened in the north dip, that the air had reversed and rushed up the heading and immediately reversed again and started flowing in a normal direction. He said Mr. Duras had asked for me to go down right away and see what happened. The hoist runner started to drop the line down and I ordered it stopped. I got down in a very few minutes to 11 Right, and of course as I went down and saw the various employes they told me the same thing, and the further I got down the worse I found it, until I got to 14 Right, where I found Safety Inspector William Ray and Fire Boss William Seese, and Jimmy Hess. That's about the three I can remember distinctly. At that time the men were out of 16 Right and 16 Left. I took the Safety Inspector and the Fire Boss with me, and in the meantime asked Mr. Hess to check any men that came out of there, stay there and check them. I don't know if he did or not, but we started down the dip, and when we got to 17 Left we found the doors blown in towards the face of 17 Left. These doors were demolished. We found that there was a door on 17 Right which wasn't being used, which we took off and put in the frame of 17 Left. This caused the air to flow to 18 Right. When we got there we found 18 Left door blown from the frame, but not in so bad shape we couldn't push it back and use it, which we did. That caused the air to flow in 18 Right to the manway, which was about four face, the manway on the right side of the haulway. One of these was blown off and it was necessary to canvas it with canvas, which we did. We proceeded to 18 Right, to the lockdoors and found the first one blown open but not harmed to any considerable extent. The top bar across the top of the door had been blown off but the door was all right. We couldn't get to the second lock door, but we found that the smoke, dust was too thick up there. We finally concluded it was shut and didn't go up. Immediately then we spread out; William Seese was in the lead, I believe. We concluded the second door was shut and came back to fix the

first one, and this caused the air to go in the intake at 16 and 17 Right. We came back and walked up the dip, and I started in 17 Right and was in on the sidetrack when some one called to me and said two men came out of 18 Right and nine more were coming. I knew we just restored the air in this direction and I rushed to 18 to open the lockdoors, but by the time I got there these men came out. I didn't see the men that came out, except Howard Inman, that came out No. 1 face. We proceeded back to 17 followed the intake in to the inbye point of the barrier pillar, where we found the air shorted down through the first shoofly into 17 back heading. We were then in the act of gathering up boards and canvas to build canvas and board stoppings across this aircourse and haulway so as to take the air up to the haulway, which came up to 15 room from 17 Right, when Mr. Thomas and Mr. Filer, the State Inspectors, came in and took charge of the work.

Q. Does the law make any distinction between miners and company men in designating 70 men as the limit on one split of air? A. The law says persons.

Q. Did you inform the superintendent that exceeding 70 men was a violation of the law? A. Well, I don't know as I particularly called it a violation of the law, but I told him I didn't think we should have more than 70 persons on a split.

Q. What was his reply? A. Use 70 miners.

Q. Mr. Steele, how long have you been employed as Mine Foreman in Sonman "E" Slope Mine? A. I was employed eleven months and fifteen days to the time of the explosion.

Q. Will you tell what improvements you made in regard to ventilation in Sonman "E" Slope Mine since you took charge as Mine Foreman in there? A. In the south dip the air split at about 16 or 17 Right, I'm not sure of that at this time, and it drove all to the left side of the south and one-third of the right side of the south on one split there at the time I took charge. While the section was locked somewhat, it wasn't very well locked. We had completed splitting the air in conducting the air to the face of the dip, and splitting it on both sides and having the sections in my opinion well locked, both sections of the south. In fact in some of the headings there were three doors off the dip. In the north dip at the time I took charge I found they were making an inspection with Mr. Filer. We traveled one day in 12 and 14 and found that the air wasn't being conducted very well to the face, and he asked to have a number of rooms bratticed off. That had been done. In the north dip I had built a brattice at the bottom of this slope. What had happened there was, there was a door down there and the dispatcher down there had smashed this door several times, and I went into build a stopping and put a good block in to keep the cars from running into this door. I started to build locks along the left side of the north dip at 14 Left and had it practically completed, and had told my bratticemen to keep the air well up to the face by keeping brattices constructed well up to the face.

Q. Do you consider drivers, machine runners, motormen and other day men as miners? A. No, sir.

Q. Mr. Steele, will you please establish the ventilation in the air split No. 2, show its circulation and point out the work necessary to complete the locks? You may use the large map? A. The ventilation in No. 2 split came down both the haulway.(interrupted).

Q. First, for the record, will you state what this map is and the scale of it? A. This is a map of the north dip, section No. 2 split, showing the area of the explosion, and those things, and is on a scale of fifty feet to the inch. It shows the area where the explosion occurred. The color in red is the flame area and the color in green is the affected area, where it showed signs of disturbance due to forces. The air in this No. 2 split came down, as I said, the main dip which we call three face and the manway which we call four face, down to 16 Right, where there was a bleeder regulator in it with a two by two door, which was opened about six inches; that left a small quantity of air came in there.

Q. Into where? A. Into 16 Right. The air came on down to 17 where the full intake went in.

Q. 17 Right? A. 17 Right, where the full intake went in. It went up to this point, where it was. . (interrupted).

Q. Identify these points. A. It went up to No. 2 haulway on 17, where it was prevented from going back to 18 by a door. From there, in 17, it went from 15 room past 28, where it was deflected by a door in this No. 2 haulway from 18 and a door on 17 entry up this No. 3 haulway to 16, and from there it picked up a small quantity of air from 16, and from there was taken to the face of 16 Right. From the face of 16 right it was deflected back down through this here by the use of stoppings.

Q. To where? A. Through the aircourse of No. 3 haulway from 16 and 17 where it was taken over to ventilate Nos. 30 and 31 rooms; and from there it was taken to 17 Right, back and down to 17 Butt, back and down No. 4 haulway and the aircourse of No. 3 haulway, and then up to the face of 18, and from the face of 18 back down to the dip, where the air was locked by doors.

Q. Where? A. On 18 Right. The air was there taken around through the cross-cuts on the face into 18 Left, taken to face of 18, back to No. 2 haulway, up to 17, to the face of 17.

Q. 17 Left? A. 17 Left. Back to this No. 3 haulway in 17, taken to the face there and circulated around there, and back here to No. 2 haulway in 17 Right, and taken to 16 and circulated back. . (interrupted).

Q. 16 Left, A. 16 Left; and taken back past these rooms into the rooms through here and here. . . .(interrupted).

Q. What are those places? A. The rooms off 16 Left and the face between 15 and 16 heading.

Q. Where did it go from there, after it got to 15 Left? A. After it gets to 15 Left it goes both up this face above 14 and out 14 Left to what we call the new dip, the part goes up the new dip and part goes up the face to the left of the main dip hauling.

Q. Into the main return from there? A Yes, sir.

Q. Mr. Steele, will you please point out the etries in which the air was returning from your 18 face section to the right? A. In here.

Q. Which? A. The two bottom ones.

Q. Known as what faces? A. 1 and 2.

Q. Was there any trolley wires across these two entries? A. The trolley wire was hanging on No. 2.

Q. Throughout its full length? A. Yes, sir.

Q. Was the No. 2 entry used as your main haulage from that section?
A. Yes, sir.

Q. What work was done to comply with the inspector's recommendation as noted in his last report as far as locking of the air was concerned?
A. Well, particularly the thing that caused the trouble that day was that the dispatcher had smashed this door below 18 Right. I investigated that and built a stopping there and further down and put what I would call practically a positive block to keep the cars from coming back down into it again, and of course, while that didn't help there, I had locked this one.

Q. Which one? A. The No. 2 haulway in 18 Left, and was building a lock behind this door in 14 Left. In fact the bratticemen were supposed to go there before the explosion.

Q. What entries on the left side of your north dip were locked at the time of the explosion? A. 17 Left here, just off the dip, and No. 1 haulway for the 18 Left.

Q. Were there any locks in 16 Left? A. No, sir.

Q. Were there any other airlocks on the right side of your north dip? A. There was just a lock at this point.

Q. Identify that? A. Just the locks on 18, which is off the dip inbye the sidetrack. These haulway doors did act as locks for 18, except two of them were open, but didn't act as locks for 17, 16 and 17 Butt.

Q. What effect would the locks establish at the sidetrack on 18 Right, 16 and 17 right have on the ventilation of the entire section? A. Well, that would be just another point where the air, -- where one door wouldn't affect the ventilation; the locks here on 18, of course, caused practically positive air to flow to this point.

Q. To what point? A. To the point, where No. 2 haulway off 18 intersects 17; and these doors would serve, the doors on No. 2 haulway off 18, and 3 off 18, would serve as locks to lock the air in the face of 18 Right.

Q. Would the air be effectively locked in your opinion from the No. 2 haulway on 17 Right to the face of 16 Right, 17 Left and 17 Right entries? A. No, sir, it wouldn't have been effectively locked until we built stoppings between 2 and 3 haulways in 18 and their aircourse.

Q. Then the air flowing from the intersection of No. 2 haulway with 17 Right, from there to the face on 16, 17 Right, and 17 Butt, was not air locked? A. No, sir.

Q. Will you please point out the work which was necessary to provide the locks for those entries? A. There was a door on 14 Left which we were sealing, there was a door on 15 Left, there was one here on 18 Left, there was stoppings here that was locked; it would have been necessary to build stoppings in here, here, here, here and here, five stoppings between 18 Haulage and 17 on No. 1 haulway, and five stoppings between 18 Haulage and 17 on No. 3 Haulway, lock doors on 17 Heading inbye No. 3 Haulway, and lock doors on 17 Butt inbye 17 Right.

Q. When you referred to the No. 1 Haulway in the last explanation, did you not mean the No. 2 Haulway? A. Here is where the stoppings would have been built in No. 2 Haulway. No. 1 was blocked off with stoppings at this point and at this point.

Q. Have you ever been requested to delay your work for any reason that would have established the airlocking in that particular section, by any of your superiors? A. No, sir.

Q. What was the reason for the delay? A. Well, I was getting all done I could with the men I had employed.

Q. It was a question of manpower? A. Yes, sir.

Q. Can you give us an estimate of how many days' work it would take to complete that job? A. About forty five days, I imagine, possibly fifty.

Q. With how many men? A. Two

Q. Two men? A. Yes, sir.

Q. Why did you not put on the manpower to complete the work? A. Well, in my opinion we were certainly making a lot of progress. There wasn't any question about that in my mind. I think I made a lot of progress in taking care of the ventilation of this mine. I didn't particularly ask for any more help.

Q. Did the Mine Inspector ever request that the air be reversed on air split No. 2? A. I wouldn't say that he had requested it exactly, but he certainly had the impression from me that it would be, because that was intended, that was the aim; the aim was to do that but it hadn't gotten done.

Q. The full intent of everybody concerned was the air current in air split No. 2 would be completely reversed? A. Yes, sir.

Q. Mr. Steele, will you kindly outline and establish the haulage in the section known as air split No. 2, involving 16 Right, 17 Right, 17 Butt, and 18 Right entries? A. All of the haulage from the section was hauled from 18, from 18 to No. 1 haulway; the haulage from 15 to 28 rooms in 17 Right was hauled on 17 down both 2 and 3 Haulways off of 18; the haulage from 16 Right was done down No. 3 Haulway off of 18 and 17; the haulage from 17 and 17 Butt was hauled down No. 3 Haulway off 18, and from that point down 18 to the dip, and the 18 Right was hauled from the face down to the dip.

Q. Will you kindly complete the establishing, or outlining of the haulage on the left side, and by what it was taken from that point to the surface? A. The Haulage on 18 was, - on 18 Left was from the face to the dip and this

haulage was hauled through 18 Left to the dip. We were in process of coupling that up but no coal from anywhere else had been hauled to 18 Left. The haulage from 17 Left was hauled down 17. That had been discontinued and 17 wasn't working. There was a switch thrown in here onto this haulway which was coupled up, and 16 coal, 16 Left coal was all hauled to the No. 2 haulway off 17, brought down that haulway and out 17 Left at this point. Of course the face haulage in the rooms in the entire place was done with mules. Entry haulage was practically all done with electric locomotives to this point and this point, where it was picked up by a relay hoist rope, outbye 11 Left.

Q. Will you indicate those two points where you said the electric locomotive hauled to? A. The electric locomotives hauled to 17 Left and 18 at the present time, where it was picked up by a hoist rope, the hoist being located outbye 11 Left, where they had a sidetrack. They placed their loads in 11 Left. The coal from 11 Left was picked up by the main north hoist, which sat on the north bottom, and this hoist hauled the coal up to the north bottom, where the coal was picked up by another locomotive and hauled into the bottom at the bottom of the main slope, where it was again picked up by hoist and hauled out to the tipple.

Q. Will you kindly point out what effect on the ventilation the normal course of your haulage would have with the opening of the door located on No. 3 Haulway at the intersection of 17 Right and 16 Right? A. If this door was opened, practically all the air would short down here, down No. 3 Haulway off 18 and go directly to the face of 18.

Q. What entries then would the air be shorted from? A. 16 Right, 17 Right and 17 Butt

Q. Will you kindly point out on that map, and establish the installation of your trolley wire as applied to all entries involved on that right side? A. The trolley wire was taken up No. 2 face on 18 to the face. It was taken up No. 2 Haulway off 18 up onto 17, and extended back to this point, to a point outbye No. 2 Haulway in 17 about five hundred feet, and extended up inbye on 17, and coupled onto the trolley wire at No. 3 Haulway. The trolley wire was taken off 18 by No. 3 Haulway to 17, across 17 and through No. 3 Haulway from 17 to 16, and taken back into the stump several hundred feet.

Q. In what entry? A. 16. Taken out by the stump several hundred feet on 16, and taken to the face of 16. At the point where 17 intersected No. 3 Haulway off 18, the trolley wire was taken into 17, taken into the point where 17 and 17 Butt split off, and the trolley wire was taken into both 17 Right and 17 Butt.

Q. Will you kindly outline the work necessary to carry loads from and place empties into 16 Right entry? A. In the stump area the motor brought his cars up in No. 3 haulway to a point, to clear the track in 16, proceeded down into the stumps and got the loads and brought them up to the Haulway and pulled the loads up onto 16, pushed them down into the stumps of 16, placed his loads on No. 3 haulway across, and then, -- no, he then pushed his loads down there and took his loads and went, and the driver took the empties back into the stumps. For the outbye of 16 he brought his empties up to 16 and pushed them down into the stumps. He then proceeded up to point at 30 room on 16 where he got his loads, brought the loads back on 16 to where No. 3 haulway intersects it, placed the loads down in the stump side of 16, took his empties and brought them back out 16 to 30 room, and pushed the empties down in toward 29, 28 and 27 rooms, where there was a spur track.

Q. Did he push or pull the loads from 16 Right up onto the 18 Right side-track? A. He usually pushed them.

Q. Where was the motor and motor trip located following the explosion? A. The motor, - the cars were located just at a point practically to clear 16 Right down in this No. 3 Haulway toward 17.

Q. Will you kindly locate the places that were working in 16 Right, 17 Right and 17 Butt, and 18 Right entries on the right side, and in 16 Left on the left side? A. I'm not positive of that, as far as places that were working.

Q. Will you kindly point out in a general way where they were supposed to be? A. In a general way they were working in 16 stumps at 19 and about 20 room, heading stumps, and in 16 Right. They were working, in a general way from 27 to 31 room in 16 Right and the heading and aircourse. In 17 Right they were working in this blocking place in 15 room, off 17 and in 28 room off 17, and in from 35 to 37 off 17, and I don't believe there was any one in 17 Right or back heading. In 17 Butt there were two men working on the heading or aircourse. In the 18 Right, of 4 face, some were working, I believe.

Q. Mr. Steele, what type of work was being done in No. 28 room on 17 Right? A. Blocking or pillaring, - in other words we were working on an eighty per cent recovery plan, where we don't pull all the pillars, and we did what we call blocking or chest pillaring to recover eighty percent of the coal. They were somewhere about this point blocking at the time the explosion happened. Just where I don't know.

Q. What portion of 16 and 17 Rights had the track been removed on? A. The outbye portions on 17 and 14 room to the dip and on 16 from about 18 room, or somewhere in that general vicinity, out to the dip.

Q. In the system of mining which is called stumping or blocking, did you consider the area that had already been stumped or blocked from which track had been removed as pillared or abandoned areas? A. Yes, very much so; in fact they were dangered off.

Q. It wasn't your purpose, then, to recover any additional coal in the areas from which track had been removed? A. No, sir.

Q. Can you give us any opinion as to why this system of mining was adopted? A. Nothing except that it does help to throw a considerable tonnage in a very short length of time, concentrates the area and causes us not to have so much track, equipment and things of that sort.

Q. Why the idea of recovering eighty per cent of your coal, leaving the balance of twenty per cent stumpage; what was the purpose of that? A. I have been told that this was done due to the fact this water barrier, which hasn't been cut except where dips come down, and outbye where they get pillar falls and get high breaks they get an excessive quantity of water, and it was felt if they did get that much more water in these areas it would be necessary to abandon the mine.

Q. In other words, it was established for the purpose of trying to prevent general caving in that area? A. Yes, sir.

Q. Was the system of stumping adopted solely for the purpose of eliminating roof water to your knowledge? A. Yes, sir.

Q. Was there any possible idea that it might also prevent the emission of roof gas? A. No, sir.

BY A JUROR:

Q. Mr. Steel mentioned the door being broken or torn out at the main dip in 18 Left; what effect would that have on the air in the explosion area? A. This would short the entire quantity.

Q. Would short it? Yes.

BY THE CORONER:

Q. Was that door broken the particular day of the explosion? A. To the best of my knowledge, Mr. McDermott, yes, sir.

Q. At the time? A. Not prior, to the best of my knowledge it wasn't.

BY A JUROR:

Q. What type of brattice work do you use? A. We use the special block brick, which is about four by five by seven. I don't know the dimensions exactly.

Q. All your brattice work is completed with that type of brick to the face of these working places? A. Yes, sir. All brattice work on main roads are built in cement, and in the temporary areas brick plastered with cement.

Q. Did you have any caving in 16 and 17 Right? A. There is local falls in several places.

Q. Do you know if they are high? A. Not, not excessively high, in fact you can't tell very many of them, but I would say not more than ten feet.

Q. There is no overcast on either side? A. There is no overcast on either side until you get to 14 Left. There is one at 14 Right, and then there are no overcasts across the dip until you get to 4, where they are across the dip and manway.

Q. Then your velocity intake at 16 and 17 would be rather strong, A. Yes sir, there was a very good quantity of air there.

Q. What per cent would you have on your intake and return near the same point there, - that is, an idea of the loss; suppose you check on your intake in 16, do you have much loss on your bridge in the lower end of 16 as the top? A. So far as the brattice work is concerned, the loss was practically nil, but there were several doors that there was some loss, but it wasn't excessive.

Q. Had the haulway and airway been abandoned on the 16 Right Heading when the stumps have been withdrawn? A. Does what?

Q. You mentioned the coal was taken out in approximately 18 room? A. Yes,

that had been abandoned; track was taken out.

Q. Part of the air supply went up in that abandoned area. A. Yes.

BY MR. HESS:

Q. Mr. Steele, you made the statement the air was not properly locked in the explosion area of 16 and 17 Right intake at the time of the explosion, is that right? A. Yes, sir.

Q. And for them, that is, the bratticemen, to properly lock the air, could they complete it in forty five days, with two men? A. Yes, sir.

Q. What was the reason that the bratticeman that was taking care of the ventilation in this particular section was taken from this brattice work and put on loading coal two weeks prior to the explosion, leaving no one to take care of the ventilation? A. That was due to the South Side breaking down.

Q. Due to the south side breaking down? A. And the north side produced such a small quantity of coal that the budget would not stand them being on that work.

Q. Then there was nobody taking care of that work at the time this man was loading coal? Is that right? A. No, sir.

BY MR. YOUNKER:

Q. Mr. Steele, what was the quantity of air on No. 2 air split at the time of the explosion? A. I measured the air in 15 Left around about the last week in June and I think it was the 28th, although I don't remember, and found 16,000 cubic feet at the return.

BY MR. GEORGE:

Q. Mr. Steele, how much time elapsed between the time the Inspector made his recommendations to establish airlocking in air split No. 2 and the explosion? A. About three months.

Q. Had a special effort been made during this three month period to comply with his recommendations on your part? A. Only so far as eliminating the immediate cause of the shortage of the air, - that was in the dip below 18 Left where the door had been smashed, and of course I had started at 14 Left to brattice those entries off.

Q. Who took the air measurements as required by law in the various sections of the mine? A. The Assistant Mine Foreman.

Q. When did you take your last reading, air measurement in air split No. 2? A. The latter part of June, at the return is all I took.

Q. Do you recall what volume of air was passing the working places, the faces of your right hand entries off your north dip as recorded by the Assistant in your last week's report? A. No, sir.

Q. To the best of your knowledge he reported a sufficient volume of air passing the last working places to comply with the requirements of the law?
A. Yes, sir.

Q. Mr. Steele, you referred to a budget; will you kindly tell us what effect the budget had on you not complying with your official duties as mine foreman in regards to completing the recommendations as set forth by the District Inspector? A. I would say not any, except for the period Mr. Hess brought out. There were several company men taken off during the two weeks that the south side was down. I had two bratticemen down in these two sections, with thirteen or fourteen bratticemen spending, - oh, some little time down in the No. 2 split instead of No. 1. I wouldn't be able to say the amount, but he spent quite a bit there in the last couple months.

Q. Then as I understand it, you were budgeted to the extent that you were required to produce your coal at a given cost? A. That was the end.

Q. Of course you were required by your superiors to stay within your budget? A. To the best of my ability, yes.

Q. Did you ever have reported to you by your mine officials or any workman in your mine of a dangerous condition in any section of your mine that might have been due to the lack of airlocks or absence of airlocks? A. No, sir.

Q. Where does the law require air to be measured by the Mine Foreman or his assistant? A. In the last room and entry beyond the last room.

Q. Are you required by law to personally make a record of these measurements for a record book? A. Well, my interpretation of that was I have the right to employ sufficient number of assistants to assist me in all my duties, and as he measured the air I had the assistant put it in the book.

Q. You did check the assistant's air measurements as reported and countersigned them? A. Yes, sir.

Q. Do you know whether there was an air reading ordered in the Mine Foreman's records book to show the volume of air passing the face of all active entries on air split No. 2? A. I know that there was, yes, sir.

Q. There was air measurements recorded? A. On the right side, yes, and on the left.

Q. Will you produce your mine foreman record book to verify that statement? A. I am not able to do it now, unless it is here.

Q. Mr. Steele do you know whether or not the working places in air split No. 2 were all examined as required by law once in each shift by your assistant mine foreman? A. To the best of my knowledge they were, and the assistant mine foreman was also given instructions if at any time he couldn't personally make an examination of a working place they were to deputize some one to do so.

Q. Did any person ever make a report to you that the assistant foreman was not making a daily visit to each working place where men were at work? A. No, sir, not previous to the explosion.

BY THE CORONER:

Q. Let's get this straight, this reversing of the air; was this recommendation by the Mine Inspector of the district to reverse the air? A. Well, I don't know, but to the best of my knowledge, like I said before, I think Mr. Filer had reasons to expect that it would be. There wasn't any specified time, but I certainly had hopes that we would get it reversed shortly.

Q. Had you discussed reversing the air with the Superintendent and Mine Inspector previous to the explosion for sometime? A. Yes, sir.

Q. Had you all agreed that this air should be reversed? A. Yes, sir.

Q. Was there some apparent danger, or expected danger from the air traveling as it was at the time that necessitated the changing of the air? A. No particular, - no apparent danger. There was no particular danger, just that the air should be, should have been split to comply with good mining practice.

Q. Under the system of mining prevailing in that particular section? A. Well, in my opinion under any conditions of mining that air should be split.

Q. Let's put it this way: Was the fact that the intake of air traveled over an abandoned section, section of workings, - was it not considered dangerous? A. Well, I couldn't see any apparent danger myself, although, as I say, there is always the hazard of conducting intake air through this kind of workings.

Q. For that reason it was decided to change, or reverse the air? A. Yes, sir.

BY A JUROR:

Q. Do you have cutting machines? A. Yes, sir.

Q. Were they the Goodman type? A. Goodman and Sullivan, an approved type.

Q. Did you inspect it where this air had to travel across the roof, was there any hazard in there at the time, gas or anything while the air was passing through? A. Just immediately adjacent to the working places was what was inspected.

Q. There was never any analysis taken of your air coming down from the north side to the main dip, you never had any analyses taken? A. Yes, sir, every two weeks there was an analysis taken of the return of that split.

Q. Were the analyses in favor of no hazard? A. That's right.

BY THE CORONER:

Q. Have you formed a conclusion in your own mind as to what caused this explosion? A. Yes, sir.

Q. In that case, assuming that the air had been reversed, then would this explosion have happened? A. It is very possible for it to have happened either way. The air could have gone up to 16 stumps and it could have gone down into 17 from 28 outbye toward 14. I believe the explosion was caused by a fall in 28 room, liberating a large quantity of gas in a very short time. It would have been very easy for it to have gotten down on the trolley wire between 28 and 15 rooms on 17, as the return would have been closed down that way.

Q. Even if the air had been reversed? A. Yes.

BY MR. STULL:

Q. You mean if there had been a sufficient quantity of air current to the number of men employed? A. Well, that would be very much of an estimation. I have no way of knowing the quantity of gas or the period of time of its emission.

Q. Can you form any estimate or conclusion as to the largest or smallest quantity of gas from the effect of the explosion? A. No, sir.

Q. I mean to the extent of the explosion, would that indicate a large quantity or small quantity? A. I don't feel I am able to make a statement as to the quantity, due to the area affected.

Q. You had 93 persons working in this affected area? A. Yes, sir.

Q. And under the mining law you are only permitted 70? That is except by special permission? A. Yes, sir.

Q. You are familiar with that provision of the law, you might have up to 90? A. Yes, sir.

Q. By securing written permission from the Inspector? A. Yes, sir.

Q. Did you or did you not discuss that matter with the Superintendent as to having an excessive number in there by permission, - in other words, did you ever discuss with him the advisability of getting permission to have that number? A. No, sir.

Q. For how long a time had this excessive number been employed? A. Since before my time.

Q. When did you say you made the last measurement at the outlet? A. The latter part of June.

Q. You say you got 16,000 cubic feet? A. At the return, yes, sir.

Q. That is why there were 93 men working in this area? A. I don't know. Of course, I believe it is always generally known that there are a considerable number of men considered general men in and around on the split, - in other words, I had two track bosses, line trackman, my boss driver, a patcher at the bottom of the dip, two wiremen, a bratticeman.

Q. Are those men employed generally throughout all of the workings? A. They are employed more or less generally, yes, sir.

Q. And they are only in this particular area at particular times? A. That's right.

Q. Short times? A. Yes, sir.

BY THE CORONER:

Q. And your drivers ? A. They are always in there.

Q. The Machine runners? A. Yes, sir, but the machine runners are supposed to go in at ten o'clock and start to work at eleven. Of course they were given permission to go in at times when they had the places cleaned out; they were staggered.

Q. The wiremen? A. Yes.

Q. Timbermen? A. There was one of those particularly that worked daylight, he was a general man.

BY MR. STULL:

Q. The provisions of the law with respect to the maximum number of men working in one air split is 70, except by special permission, - 70 persons?
A. Yes, sir.

Q. That doesn't distinguish as to whether they are in there a short time or long time? A. Well, I still contend it has been considered good practice in all coal mines that I have ever seen, that the general men, working generally, weren't counted, when there was a sufficient quantity of intake at least coming into the mine.

Q. You say that is the general opinion among mining men? A. I certainly think so.

BY THE CORONER:

Q. That is, good practice or allowable practice? A. Yes, it is good practice

Q. To have more than the law requires? A. Not for any extended length of time.

BY MR. STULL:

Q. After all, while you were down inspecting you would be an additional person in that area? A. Yes, sir.

Q. And would come under the plain provisions of the law? A. Yes, sir, and I might not be back for any length of time.

Q. So that, if there were 70 persons working regularly and you went in to inspect, you would make an excessive number of persons? A. Yes, sir.

Q. You found 16,000 cubic feet of air at the outlet; would that be about the quantity in other parts of the mine at the same time? A. It could diminish somewhat due to doors and leakage from there to the face of 16.

Q. Did you say there would be less at the face than at the outlet? A. At the return, yes, sir.

Q. The legal quantity would be 18,200 for the number of men you had, - 18,600 cubic feet; would you say 16,000 feet was a dangerous insufficiency of air? A. No, sir.

Q. Did you make an inspection for methane content? A. The safety inspector takes those every two weeks.

Q. What was the last reading, do you know? A. The last one I saw was nothing.

Q. Zero? A. Yes, sir.

Q. What was the highest reading? A. .27.

Q. What is the allowable content? A. 5 tenths of one per cent, on trolley line.

Q. So that, you are less than half the allowable in methene content? A. yes.

Q. What has been your experience in mining, what length of time? A. Since about 1919.

Q. How long have you been Mine Foreman? A. 1932.

Q. In your experience in mining have you ever seen the effects of other explosions in mines? A. Only a small explosion at Tunnel Smokeless in Johnstown, about 1927.

Q. You say you have formed a definite opinion in your own mind as to the cause of this explosion? A. Yes, sir.

Q. Mr. Steele, would you say that a greater quantity of air or a reversal of current of air as proposed by the Inspector, would have prevented this explosion? A. As I said, there would still have been two possibilities of lighting that gas in my opinion.

Q. Then the volume of air or manner of conducting it through the workings had nothing to do with the fact of the explosion? A. No, sir, not in my opinion.

Q. In other words, your opinion is such a volume of gas liberated that no amount of fresh air would have dissipated it in time to prevent the explosion? A. I don't feel that I have experience enough to answer that, only I think in my opinion it would have taken the whole intake of the mine.

BY A JUROR:

Q. Do you employ fire bosses there? A. Yes.

Q. From time to time have there been regular reports, - or, any time you have had a fire boss make his report, did he report finding any traces of explosive gas in one of these areas? A. Yes, there has been.

Q. You had your cutting machines equipped with an approved safety lamp? A. Yes.

BY MR. STULL:

Q. How soon before the explosion did the Fire Boss make his inspection in these workings? A. Well, I don't know personally when, except from what he told me in his report. He visited the place within an hour of the time of the explosion from his report.

Q. That is room 28? A. Yes, sir.

Q. Did he report any gas at that time? A. No, sir, he reported everything in normal condition at the time of his inspection.

BY A JUROR:

Q. Was it always the policy of yourself, of your organization with respect to the Fire Bosses, if they found or detected gas to have it inserted in the book according to law? A. Yes.

Q. That was regularly done? A. Yes.

Q. There was never any intimidation done with the Fire Boss, telling him not to make a record of any findings he found in his particular section? A. No, sir.

BY MR STULL:

Q. Mr. Steele, when, if at any time, was gas reported in this 28 room, 17 Right? A. I don't know. It was when the room was driven up that gas was reported in this room, in fact in 26, 27 and 28.

Q. How much? A. Oh, as I remember, - I was down there this particular morning, and it was unusual, the fact it was there in the quantity it was; I would say about four per cent.

Q. You say four per cent? A. Yes, sir. I was there personally and kept the men out, cut the power off the trolley wire. This was caused by some one employed in that section going through there on Friday or Saturday morning at the end of the last shift and leaving the door open, and no one traveled this particular place until between three and six o'clock Monday morning. I immediately then gave instructions to the assistants that they should leave a man there until they felt sure all the men were out of there and that door was shut. I felt that was no place to leave the door open.

Q. Where was that door? A. Between 27 and 28 room.

BY A JUROR:

Q. Don't they close themselves? A. They are just check doors, some didn't.

BY MR. STULL:

Q. Was that corrected before the explosion, or when? A. It was in my mind three weeks before.

Q. Then it had entirely cleared up? A. Absolutely.

BY A JUROR:

Q. What would prevent these doors closing? A. So far as I am concerned, I'm not able to state. It may have been latched open. I believe the Fire Boss can answer that, but I'm not able to now. Some of these check doors won't close themselves.

BY A JUROR:

Q. If the air was reversed, would that affect the number of casualties in any way in your opinion? A. No, I don't believe that it would have; in other words, the gas explosion did blow out numerous stoppings and doors and did short the air in such a manner that, — well, in fact in my opinion if the air had been reversed the men in 16 stumps would have also been killed by the explosion.

Q. Would it have increased the toll? A. Very probably, from what I can see from traveling over and viewing the scene of the disaster.

BY MR. STULL:

Q. Would the doors you had proposed to put up but had not yet erected likely have been blown out by this explosion? Would they have been in the area? A. Yes, sir.

BY MR. GEORGE:

Q. Mr. Steele, you said you had taken an air reading the last week in June; when did you make your last general inspection of this section? A. I don't recall so far as a complete inspection; it has been some considerable time before, a couple months.

Q. Had you made a partial inspection of that part of it prior, or between the time of your general inspection and the time of the explosion? A. Yes, sir.

Q. What portion of the mine did you cover? A. I visited one of those rooms, stumps in 16, where there was some small controversy between the assistant and one of the men; and from there I went directly out 16, out to the old haulway.

Q. What was the condition of the old haulway at that time, what obstructions, roof falls and the like? A. There was one small fall, as I recall it, and generally, it is heaved until it is about half its normal height.

Q. Would you consider the mine as exceptionally gassy or moderately gassy? A. Oh, very moderately gassy, in my opinion.

RECESS UNTIL 1:30, P.M.

AFTERNOON SESSION
1:30 P.M.

LESLIE L. STEELE, Recalled

BY MR. GEORGE:

Q. Mr. Steele, you identify that signature as being yours, countersigning the Fire Boss' Record Book? A. Yes, sir.

Q. Do you identify that signature as being yours, countersigning the Assistant Mine Foreman's Record Book? A. Yes, sir.

Q. The date of the signature there,— this isn't the last book. A. No, sir, that is the old book.

Q. The date signed there is 7/18; the last one, however, the date of countersigning, 7/15/40, that was the day of the explosion, was it not? A. Yes, sir.

Q. You recognize that to be your signature to the report, weekly report for air measurements for the last week of June? A. Yes.

Q. 17,550 cubic feet of air as being the total number of cubic feet of air measured at what point, return or intake? A. Return.

Q. At what point? A. I don't know exactly.

Q. Who took this record? A. According to what I can see there it is Monteith's writing.

Q. Do you identify that as being a correct air reading for the No. 2 split during the week of July 12, 1940? A. The assistant would have to verify that reading.

Q. What assistant entered that record? A. I don't know. It would compare favorably with this one, and that there is Guy Wahl's writing here.

Q. You can't identify definitely the report as being made by either one or the other of the assistants? A. No, sir.

VICTOR DURAS, Recalled.

BY MR. GEORGE:

Q. Mr. Duras, do you recognize that signature as the Superintendent of this mine as being yours? A. Yes, sir

Q. Do you have any way of identifying who entered this report? A. No, I have not.

LESLIE L. STEELE, Recalled.

BY MR. GEORGE:

Q. The report book was checked by you before you countersigned it? A. That report wasn't in the book when I countersigned.

Q. This report wasn't in the book when you signed it? A. No, sir.

Q. When was it put in? A. I don't know.

Q. You identify this record book as the official record book being used by the Mine Foreman and Superintendent of the Sonman "E" Slope Mine and as the one in use at the time of the explosion? A. Yes, sir.

BY MR. STULL:

Q. Showing what? A. Showing the condition of the mine, showing my observations and the observations of the Assistant Foreman and Fire Boss and

others, and air measurements for the week.

Q. What is that book? A. Mine Foreman's Daily Report Book.

BY MR. GEORGE:

Q. Mr. Steele, you identified this book as what official record? A. Mine Foreman's Daily Report.

Q. For what mine? A. Sonman Slope.

Q. You identify this record as what official report? A. Fire Boss' Daily Report of Sonman Slope, inside book.

Q. You identify this record book as what legal book being used in connection with the mine? A. Fire Boss' Daily Book, outside, Mine Foreman's office.

Q. Mr. Steele, how many assistant mine foremen are employed in the Sonman "E" Slope Mine? A. Eight.

Q. How many fire bosses are employed in the same mine? A. Eight.

Q. How many assistant foremen and fire bosses are employed on each shift? A. Four.

BY MR. STULL:

Q. Mr. Steele, on the left hand page of this record under date of July 12, 1940, the Mine Foreman's Daily Record, which you identified, that entry was made and signed by you? A. Yes, sir.

Q. So, too, the item of July 13, stating that the mine was idle on that date, that also was signed by you? A. Yes, sir.

Q. Were the items on the opposite page showing the air content as for No. 3 Split, South Side, No. 4, and No. 1, were they in the book when you countersigned it? A. Yes, sir.

Q. Then we understand you to say that all the items that represent volume of air for No. 2 split, North Dip, under the date of 7/12/40 were entered after you had countersigned it under date of July 13? A. To the best of my knowledge they were.

Q. You put this date in, July 13? A. Yes, sir.

Q. After you signed it? A. Yes, sir.

Q. You are positive these three items, being 16 Right, area 65, velocity 250, quantity 16,250 cubic feet for the first entry, 17 Right, area 65, velocity 230, quantity 14,950, and 18 Right, area 65, velocity 210, quantity 13,650 cubic feet, were entered subsequent to your signing? A. To the best of my knowledge.

Q. Are you able to say who wrote those in? A. No, sir.

Q. Would you say the item regarding No. 3 Split at the head of the page is in the same handwriting as No. 2 Split? A. No.

Q. It isn't the same writing? A. Doesn't look the same to me.

Q. Does No. 4 split and No. 3 Split appear in the same handwriting? A. It is possible they are.

Q. But you can't identify from what writing? A. No, sir.

Q. Can you identify the writing of the third entry there? A. Split No. 1?

Q. Yes? A. That should be McDermott's.

Q. Who is McDermott? A. John McDermott, assistant, 13 and 14 Right.

Q. Assistant Foreman? A. Yes, sir.

Q. What other assistant foremen would make those entries? A. Assistant Foreman Smalley; Assistant Foreman McFeely.

Q. Just three Assistant Foreman? A. There are four on the day shift, Assistant Foreman Bolton, Assistant Foreman Fahey, Assistant Foreman Cronauer and Assistant Foreman Wahl.

Q. Which shift is represented by these entries? A. That is represented by, - the shift there that is represented is Smalley, McFeely, McDermott and Monteith.

Q. In the order you named them? A. No, the order would be McDermott, 1, Monteith, No. 2, Smalley, No. 3, and McFeely, No. 4.

Q. You don't identify any of these records with any of these names? A. No, sir.

Q. But it is customary for the assistant who makes the air reading to make the entry? A. That's right.

Q. Would that cover a twenty four hour, either day or night, area? A. that covered a weekly reading.

Q. It may have been at night or day? A. It was supposed to be measured at night, so that the anemometer would be available for various ones of us on day shift.

Q. That is customary? A. Yes, sir.

BY MR. GEORGE:

Q. Mr. Steele, and Mr. Duras, Mr. Joseph is reading the names of the victims. Pay particular attention so that we might be able to get on the record the names of the men who were victims, and who lost their lives either directly or indirectly a result of this explosion.

BY MR. JOSEPH:

J.R. Monteith
 John Mascoviak
 John Inman
 Chester Bradley
 John Panyak
 Horace Chappell

John Thomas
Clayton Brunnet
John Smindak
Frank Chilesky
Alex Uveges
F.E. George
Ted Pittman
Thomas Shaw
Philip Hufford
William Wisneski
August Snyder
Thomas Leap
Homer Leap
Andrew Bobrowicz
Steve Doman
Harry McVicker
Leo Etienne, Jr.
George Zimmerman
John Pristas
Joseph Holiday
Laird Zimmerman
William Flynn
Thomas Hough
Walter Sibis
John Hebda
John Trunak
John Kuczynsky (Changed to John Kent by Court Order)
Louis Mantel
Joseph Gavlak
George Lutz
Angelo Concitino
Melvin Owens
Charles Klatt
Edward Mantel
Sernicki Mike Sernicki
George Stauski
John Czima
Walter Szura
John Dubulis
Joseph Smith
John Rudash
Emmett Moyer
Andrew Rudash, Jr.
Flori Pasi
Sheldon McDonald
John Kuzin
Stanley Kaleski
Arthur McDonald
August Bem
John Meterko
Frank Szura
Mike Simo
Steve Sarwash
John Simo
John Lester
John Nowobelski
Melvin Leap

BY MR. GEORGE:

Q. Do you gentlemen identify the names of the men just read as being the victims who either lost their lives directly or indirectly as a result of the explosion which occurred in Sonman "E" Slope Mine on the morning of July 15, 1940?

BY MR. DURAS: Yes.

BY MR. STEELE: To the best of my knowledge I do.

LESLIE L. STEELE, Continued on Stand.

BY A JUROR:

Q. Approximately how many horses or mules were in this air split No. 2 at the time of the explosion? A. Twelve. I might say possibly fourteen; there were two on the left side.

Q. Is there any allowance made for air for the animals? A. No, sir.

BY THE CORONER:

Q. Mr. Steele, is there a certain requirement or any amount of air required by law for animals, that is mules or horses in the mine. A. To the best of my knowledge there is not and has not been since 1937, - I'm not sure about before that. I know it isn't in there at this time. That I am positive of. I know it was at one time, just when it was taken out I don't know.

BY A JUROR:

Q. Was 93 the exact number of men working on that No. 2 split that day? A. Yes, sir.

Q. No more and no less, just 93? A. That's right.

Q. Just one question, the law specified 70; there were 63 dead and 18 escaped, where were the other 12?

BY THE CORONER: The fellows we considered escaped were from 16 Right and 18 Right. The others were from the left side.

BY MR. HESS:

Q. Mr. Steele, how did these air readings get on the book after your signature, which is on the book, or, are you in the habit of signing spaces without any readings? A. No, I'm not in the habit of signing spaces, although there is a line in that book for me to sign and there is a space left there, so far as that is concerned.

Q. Don't you sign after the readings are admitted in the book? A. I sign them each week end.

BY THE CORONER:

Q. It is customary, Mr. Steele, for you to sign the book knowing that there

are other records to go in, and should go in above your signature? A. Well, quite often yes; the assistants quite often don't put in their readings until a couple days after they measure their air.

Q. You just signed it, then, prior to their entering their readings? A. Yes, sir, I did.

BY MR. YOUNKER:

Q. Mr. Steele, while you say you sometimes signed that book at the week and without their air readings being on, are they made, do you know whether they are made or not? Do they make them after you sign the book? A. If they do they violate my instructions because they are ordered to measure that air during the week that they are on night shift. That is the standard instruction, fully understood by every assistant mine foreman under me, that they make that report and measure the air during the week on night shift.

WILLIAM E. RAY, Called, Sworn.

BY MR. GEORGE:

Q. Your name is? A. W.E.Ray.

Q. What is your official title? A. Safety Inspector.

Q. How long have you acted as Safety Inspector? A. Since February 1, 1939

Q. What part of your time do you spend in Sonman "E" Slope Mine? A. Approximately half.

Q. What are your general duties as Safety Inspector? A. Make inspections of haulage roads and sections, take care of air sampling and rock dust sampling.

Q. Who are your superiors? A. The Superintendent, Mr. Duras.

Q. Do you report direct to Mr. Duras? A. Yes, sir.

Q. Does your position as Safety Inspector require any legal qualifications? A. No, sir.

Q. Then you aren't required under any circumstances to make or to sign or turn in any legal reports? A. No, sir.

Q. How often do you take air samples? A. In the "E" seam, we are speaking of the "E" seam, once a week.

Q. Where do you take those samples? A. At the direct return of each split, on the main return of each split.

Q. What has your highest methane reading been found to be in the "E" seam mine? A. Eight one-hundredths of one per cent.

Q. Where did you make that test? A. 15 Regulator for split No. 2.

Q. Was that test made by analysis? A. The test I had reference to was made by methane detector.

Q. The test you referred to was made by a methane detector? A. Yes, sir.

Q. Did you ever take a methane sample of air either by analysis or sampling bottom or top with a methane detector at the face of any one of the entries on the right side of the split? A. No, sir.

BY THE CORONER: For the benefit of the jury will somebody explain what methane is?

BY MR. JOSEPH: Methane is an explosive gas, composed, chemically, of CH₄, one part carbon, evidently, with four parts hydrocarbons, and under certain mixtures with air becomes explosive gas.

BY MR. GEORGE:

Q. When did you take the last sample in the return from split No. 2? A. As near as I remember it was ten minutes before the explosion.

Q. Have you had a report as to the analysis of that sample? A. No, sir.

Q. You don't know what the sample shows? A. I don't know what it shows.

Q. Do you recall how long prior to the taking of that sample the last preceding sample had been taken? A. It might have been in the middle of June, I just can't recall the exact date, but it should have been made in there.

Q. In the middle of June, 1940? A. Yes, sir.

Q. Where was that sample taken? A. By the same place.

Q. Do you recall what the percentage of methane in that sample was? A. It was two-one-hundredths, I think. That is just recalling, I'm not sure about that.

Q. Over the past sixty days have you noticed any appreciable increase in the amount of methane given off in that area? A. No, sir.

Q. Have you ever had any occasion to take a methane sample or reading on the top of any roof fall in this area? A. No, sir.

Q. Did you ever detect explosive gas on a fall, on the top of any roof fall prior to this? A. No, sir.

Q. How often do you take dust samples in the affected area, air split No. 2? A. I have been taking them about once every two or three months, not knowing exactly when I did take them.

Q. Where did you take your last dust sample? A. In that area?

Q. Yes? A. 17 Right, in the main entry.

Q. Do you recall what the analysis of that sample was? A. No, I don't. I never seen the analysis of it.

Q. After you have taken your samples do you not check the analysis to

determine what the content was of any of the samples? A. No.

Q. Was there any information given to you by Mr. Duras, your superior as to the results of these samples? A. Not in that particular place, no sir.

Q. Under the circumstances, then, you have never had Mr. Duras refer to you that there might have been any dangerous accumulations, or dangerous percentages of explosive gas being carried in the atmosphere? A. No, sir.

Q. Do you make regular periodical inspections of the working places of the Sonman "E" Slope? A. Yes, sir.

Q. How often do you make regular inspections? A. I would say every thirty days, each section.

Q. Visiting all working places? A. That's right.

Q. At the time of your regular inspection of this mine was it your duty to take air measurements in the various, - in the faces of the various entries? A. No, sir.

Q. Did you ever check any one of the faces, either 16 right, 17 right, 17 Butt or 18 Right for air readings? A. No, sir.

Q. Was the air, in your opinion, of sufficient volume to take care of the legal requirements for the split? A. Not knowing what the volume was I couldn't say.

Q. In other words, measurement of the air was left up to the Mine Foreman and the Assistant Mine Foreman? A. That's right.

Q. Do you carry a flame safety lamp with you while making inspections? A. Yes, sir.

Q. Together with a cap lamp? A. Yes, sir.

Q. Have you ever been able to detect explosive gas on any of the working faces while making these inspections? A. I did about a year ago, and it was reported and dangered off by the Fire Boss.

Q. It was taken care of? A. Yes.

Q. You never walked into any since that? A. No.

Q. While you were making your inspection of the section of the mine, or the mine as a whole, did you ever encounter a condition that in your opinion would become a hazard to the life and safety of the men employed in that section of the men? A. While accompanied by the General Inspector we did one time, yes, sir.

Q. Would you mind stating what that hazard was? A. The General Inspector and I were making an inspection in March of this particular section you are speaking of, the Assistant General Inspector for the company.

BY THE CORONER:

Q. For the entire workings of the company? A. Yes.

BY MR. GEORGE:

Q. Who was he? A. O.V.Simpson.

Q. Proceed. A. We thought the ventilation was a little wrong in the 16 Right and took it up with the Superintendent, Fancourt, and he said we were behind the times, that was already in the making, that plans were changed.

BY THE CORONER:

Q. You were calling attention to something they had already in mind changing themselves? A. Yes, sir.

Q. In other words, too late in making any recommendation? A. Yes.

BY MR. GEORGE:

Q. Were you with the recovery crews at any time during the recovery work after the explosion? A. Yes, sir.

Q. What part of the mine was traversed, or recovered while you were with them? A. 17 Right up to 28 room.

Q. Do you recall having encountered a cave in 28 room on 17 Right during recovery operations? A. It was falling when we went to recover a body out of 28, I think.

Q. There was some fall, some roof, you recall at that time? A. Yes, sir.

Q. Do you recall of any additional caving from the time of the recovery of the men from that room until the investigation began by this commission? A. The fall kept on coming out of the room and attempted to cross 17 Right entry. It was taken care of by timbering. And it also crossed 16 Right above this room that was on 17.

Q. In other words, the caving that began there prior to, or at the time of the explosion, continued? A. Continued on while the investigation was on.

Q. During the period of the investigation? A. That's right.

Q. Do you know whether or not any caving had taken place in No. 28 room prior to the time of the explosion? A. No, I don't.

BY A JUROR:

Q. What time was you up in 17 Right heading recovering those bodies when this roof was working? A. Well, the time was something we wasn't thinking of,

Q. Approximately? A. Between four and six o'clock.

Q. It was working? A. We couldn't say whether it was working or how far it had fallen.

BY THE CORONER:

Q. How far down the room was it caved at the time you were in there? A.

Between 100 and 150 feet.

Q. From what? A. The entry into the room.

Q. 100 to 150 feet? A. Yes, sir.

Q. And the entire length of the room was what, from 17 to the back heading of 16 Left? A. Between 350 and 400 feet.

BY A JUROR:

Q. The recommendation you made to the superintendent, was that made pertaining to the reversal of the air in split No. 2? A. No, it didn't pertain to anything about the air; just a recommendation they do something about it.

Q. In this particular area? A. Yes.

Q. Where were you at the time of the explosion? A. Somewhere between 14 and 15 Left, on the main dip.

Q. You made pretty good time in ten minutes, when you made that test?
A. I just came out from there making the test.

Q. The ventilation, then, apparently was faulty in split No. 2 which required those recommendations? A. In course, but not volume.

BY MR. BENNETT:

Q. When was the time the report to Mr. Fancourt was made? A. Sometime in March, I can't tell you the exact date.

BY A JUROR:

Q. What percentage of methane do you consider dangerous? A. from one per cent up.

Q. You had as high as : two per cent. A. No, two one hundredths of one per cent.

Q. One per cent up you consider dangerous? A. I would.

BY MR. GEORGE:

Q. Did you see the men who escaped from 16 and 18 Right after the explosion?
A. Yes, sir, all of them.

Q. How many men do you know that escaped from 16 Right? A. Five, I think, came out of there.

Q. How long after the explosion, do you recall how long it was from the time the explosion had taken place until these five men landed in the north dip haulage? A. I don't think it took more than fifteen or twenty minutes.

Q. Fifteen minutes? A. I would say that, taking the distance for me to walk, where I met them and got out of there.

Q. Do you remember when the 18 men came out? A. Yes, sir.

Q. Do you recall about what time they landed in the north slope? A. I don't recall that.

Q. Could you give us an estimate of the time? A. Probably an hour and a half afterwards, somewhere around there.

BY A JUROR:

Q. Will you show the jury where you took that sample of air on that map? A. Yes, sir.

Q. Will you do that for the satisfaction of the jury? A. Yes, sir. Right here.

Q. Where were you when the explosion happened?

BY MR. GEORGE:

Q. Identify that. A. 15 Left regulator. I was approximately here, I judge that is 100 feet inbye 14 Left.

BY Mr. HESS:

Q. Mr. Ray, what is the general idea of taking samples of the dust in the haulage-ways? A. To determine the inert contents of the dust.

Q. How can it be determined if the samples of the analysis aren't returned to you? A. It is returned to the local management.

Q. You didn't see any of the analyses? A. That is true.

Q. When did you take the last dust sample in the afflicted area, north side on the right, 16,17,and 18? A. I just can't say the exact date, but the last sample was taken on 17 Right either a month or two before that.

Q. Would you say that the haulage from 18 Right up to 16 Right is a dusty condition or not? A. No.

Q. It isn't? A. No.

BY MR. SHETTIG:

Q. Mr. Ray, will you kindly explain what is meant by the inert contents of the dust? A. The inert contents of the dust is what the mixture of the rock dust would be above the percentage of the explosive limit of the dust.

Q. You have said part of your duties consist of looking after the sampling of rock dust? A. That is true.

Q. Is that particular section of the mine one that is rock dusted regularly? A. Well, I suppose it would be regularly dusted when the management deemed necessary.

Q. You found rock dusting when you went through there on your tours of duty? A. Yes, sir.

BY THE CORONER:

Q. That is, you found rock dust in 18? A. I found rock dust in 17, 16 and also the motor roads, on the right side of the north.

BY MR. HESS:

Q. Do you know when it was rock dusted last, Bill? A. No, I don't recall.

BY MR. GEORGE:

Q. A portion of 16 Right was rock dusted? A. My best memory was it was rock dusted between 17 room up to 21 room, or 27 room, I just can't recall in mind.

Q. What type records do you keep of your rock dusting? A. Of course rock dust is kept on the map of the mine by the Engineer.

Q. Progress map? A. Progress map.

Q. What section, if any, of 18 Right was ever rock dusted? A. I don't recall of any of 18 right entry.

BY A JUROR:

Q. Was rock dusting done at regular intervals, or periodically? A. Periodically.

BY MR. STULL:

Q. Mr. Ray, what distance was it from the point of explosion to the place you were standing when you learned of the explosion? A. When I learned of it?

Q. When you felt it and knew it had happened? A. About 1500 feet; I judge about 1500 to 2000 feet.

Q. Around a quarter of a mile? A. Yes, sir.

Q. Had you gone directly there or stopped on the way? A. No, there was some men above me. One of them had fallen down. I called; there is a telephone above and I walked up to the telephone not far above me, not over 125 feet, and instructed the men to get inside the fresh air.

Q. That is after the explosion? A. After.

Q. I am speaking of your journey from the place where you took the reading to where you were when the explosion occurred? A. That was about 1500 feet, - no, not from the place I took the reading, no, it wouldn't be over three or four hundred feet.

Q. From the place where you took the reading, which you say was ten minutes before the explosion? A. Yes.

Q. You traveled, then, what distance? A. About five or six hundred feet, when the explosion occurred.

Q. You estimate that by the ten minute interval? A. Yes.

Q. Who, if any one, was with you when you took the air sample? A. I was alone.

Q. No one with you? A. No.

Q. You returned that sample to headquarters and don't know what the result of it was? A. No.

Q. You used an anemometer? A. An anemometer.

Q. Did you measure the air at that time? A. Not that time, no, sir.

Q. You say you consider one per cent methane dangerous? A. Anywhere from one up, I would consider dangerous.

Q. What does the law consider dangerous, and permissible? A. One half of one per cent, to my knowledge.

Q. You think you can still go another half per cent without any danger? A. That is my opinion.

Q. Then if it is in excess of one half of one per cent there has to be some corrective measures? A. Yes, sir.

Q. The discussion you had with respect to the conditions in the mine had to do with that condition? A. The course of the air more than anything.

Q. You have seen this mine since the explosion? A. Yes, sir.

Q. Have you formed any opinion in your own mind as to the cause of this explosion? A. My own opinion is . . . (interrupted).

Q. Have you formed any opinion? A. I will say no.

Q. You don't have any at this time? A. No.

Q. How long have you been in the mining business? A. About twenty one years.

Q. Did you inspect room 28 in 17 Right since the explosion? A. The last inspection in that room would be June 11.

Q. Since the explosion? A. No, we couldn't get in.

Q. I will ask you how you could give us a true sample of methane in the air if you didn't take an air measurement at the same time? A. The air measurement at the same time? Did I say I didn't take an air measurement?

Q. Yes? A. I am sorry. You sure do when you take a sample. It was 13,600 feet if I remember right.

Q. 13,600 at the face of No. 28? A. No, 15 Left regulator.

Q. Is that what you call the outlet? A. Yes.

Q. From your experience as a mining man, Mr. Ray, will you say that a change, or reversing the air current here would have prevented this explosion? A. I don't think so.

BY THE CORONER:

Q. You say you haven't formed any conclusions as to the cause of it?
A. I haven't formed any, but there is hearsay.

Q. That is from what you heard? A. That's right.

Q. From what you heard as being the natural cause, then of course you say the change would not have prevented it? A. That's right.

BY MR. GEORGE:

Q. What was the condition of your samples, the dust samples when you took them with relation to the amount of moisture? Were they apparently dry or damp? A. The deeper into the entry I would go it was impossible to take a sample for moisture, and I would step back and probably take a rib or bottom. Very seldom could you get a roof sample on account of the moisture on the roof.

Q. You did encounter considerable moisture at the time of your sample?
A. I did.

BY THE CORONER:

Q. Mr. Ray, do you consider that you are an authority on this matter of safety inspection? A. That's right.

Q. Is that confined to making recommendations to your superior? A. To my superior.

Q. But no authority to enforce? A. No authority to enforce anything.

BY MR. GEORGE:

Q. Mr. Ray, what certificate of qualification is issued by the Department of Mines to you? A. First grade Assistant Mine Foreman, and First Grade Mine Foreman.

BY A JUROR:

Q. In your own opinion do you have any opinion formed as to where the source of this gas may be that caused the explosion? A. No.

WILLIAM SEESE, Called, Sworn.

DIRECT EXAMINATION BY MR. GEORGE:

Q. Your name, please? A. William Seese.

Q. You were employed at the Sonman Shaft "E" Seam mine on the morning of July 15, 1940? A. Yes, sir.

Q. What is your official title? A. Fire Boss.

Q. Are you a certified Fire Boss, certified by the Department of Mines of Pennsylvania? A. Yes, sir.

Q. What section do you fire boss? A. Section 4, main north dip, heading 16,17 and 18 Right.

Q. Your fire bossing was confined exclusively to the right side of air split No. 2? A. That 's right.

Q. How long had you been fire bossing in this section? A. Since September 20, 1939.

Q. Had you completed your first run on the morning of July 15, 1940 involving all working places and abandoned area of the 16 Right? A. Yes, sir.

Q. What time did you complete that inspection to the best of your knowledge? A. About five minutes of six.

Q. Did you detect explosive gas on your first examination of that section? A. No, sir.

Q. You found no other unusual conditions that might indicate danger? A. No, sir.

Q. Did you make a second run in this section during the morning of July 15? A. Yes, sir.

Q. Did you make a complete examination in this section? A. Of all working places, yes, sir.

Q. Did you detect explosive gas at any point on your second run? A. No, sir.

Q. What were the last places examined by you on the morning of the 15th, at the time of your second run? A. No. 15 room off 17 Right.

Q. How long prior to that had you examined No. 28 room on 17 Right? A. Less than ten minutes.

Q. Mr. Seese, do you identify this as being your report and signature of July 15, 1940, the day of the explosion? A. Yes, sir.

Q. You identify this book as being the Fire Boss Record? A. Yes, sir.

Q. Do you identify this as the Fire Boss Record Book in which you made your report of first examination the early morning run of July 15, 1940? A. Yes, sir.

Q. Mr. Seese, you stated that you had examined room No. 28 on 17 Right about ten minutes before you completed your second run, is that correct? A. Yes.

Q. Do you remember the time that you completed, or that you made the run of 28 room on 17 Right? A. I couldn't remember the exact time I was in there, but I visited one place after that, which was 15 room, and went from there to 18 Right sidetrack, and was on the sidetrack at 10:30.

Q. Then you can give us a pretty definite time as to when you made that examination of Room 28? A. Yes, sir, it was between 10 and 10:30.

Q. Did you find explosive gas in 28 room when you made your final run? A. No, sir.

Q. Where were the men working at the time you made your examination?
A. Working at the cross-cut which was turned to the right about two-thirds of the way in the room.

Q. Do you recall whether or not that cross-cut had cut through the pillar?
A. Yes, sir.

Q. It had cut through? A. It was cut through.

Q. About how many cars of coal had they to complete the cleaning up of that cut when you left, do you recall? A. One car of coal would have cleaned the cut.

Q. How far up, or in by, that cross-cut did you examine 28 room? A. About fifty or seventy five feet.

Q. You traversed that by foot? A. Yes, sir.

Q. And made an examination of roof conditions as well as presence of explosive gas? A. Yes, sir.

Q. Did you find any unusual condition? A. No, sir.

Q. Was there any apparent weight coming on in that room at the time of your examination? A. Not any more than there had been coming on for several days.

Q. It had been working slightly prior to that time? A. Not working; these rooms, the bottom was heaving, showing up in the other rooms as we advanced past them. That is, there was no sign of top cracking or working; it was bottom working.

Q. Was there any part of that room caved, to your knowledge, when you went in there? A. No, sir.

Q. Were there any unusual conditions in connection with the driving up of that room, from the standpoint of clay veins, roof spars or rolls? A. No, sir.

Q. There were no spars? A. There was clay veins in there but no dangerous condition to any extent.

Q. But they did encounter clay veins in that room? A. That's right.

Q. Do you recall how many they encountered while driving that room up?
A. About four.

Q. That is from the 17 Right to the intersection of 16 Right aircourse?
A. Yes.

Q. Was there any tendency of any of these clay veins to parallel the ribs of that place? A. No.

Q. But did they cut the place at an angle, right angle, approximately?
A. That's right.

Q. Did you ever encounter on any of your fire boss runs in this room, or notice that there was an unusual volume of gas given off at these clay veins, of volumes sufficient to be detected by you as Fire Boss? A. Yes, sir.

Q. Do you recall when that was? A. I couldn't give you the exact date. It is in the book, the runs I made.

Q. But there was sufficient gas there for you to detect? A. Yes, sir.

Q. What did you do with the working places? A. Dangered it off.

Q. Were there any other working places involved in that same procedure? A. Yes, sir.

Q. What number of rooms were involved? A. 26, 27, and 28.

Q. Those three rooms, in consecutive order, in the same entry? A. That's right.

Q. What did you do to remove the gas, or, was it endangered off? A. It was endangered off and the men held out until I established a door between 27 and 28 room.

Q. Had the door you say you established been destroyed by virtue of breaking down, tearing down or being torn out? A. No, sir, at that time the door hadn't been erected yet.

Q. That was the point and time when the check door was erected? A. That's right.

Q. You say the bottom was heaving in this room; what do you account for the bottom heaving, or, what do you attribute the heaving to? A. The abstraction of the pillars in this block system of mining.

Q. Where do you believe this weight was coming from, overhead or underneath, - in other words, were there any bottom breaks in the bottom, was the bottom broken? A. Not in that room that you would notice, but we had noticed it in the other rooms. That room was just too new, like.

Q. But you had noticed similar bottom breaks in other rooms where you had roof trouble? A. That's right.

Q. What do you really figure caused the heaving of the bottom? A. I haven't had as many years' experience as a lot of these men, but when you abstract coal and don't abstract completely clean, and there are a certain number of stumps left, they carry weight and it has to go someplace, pressure from the top.

Q. At the time of your examination of No. 28 room on July 15th had you any conversation with the men working in that room? A. yes, sir.

Q. What was that conversation? A. They first asked me if Monteith, - or Jimmy, as they called him, - was going to come around soon. I said he won't be here soon because he has a lot of work this morning, it being July 15th and all time had to be turned in at once and a complete list of the men made out that morning; I didn't know but what he might have done that before he

started from the office. They asked me "Where are we going to go when we finish this place?" I said "There's nothing else to do but drop down between the next two cross-cuts and start a new one," and they asked me if I would go down and mark it off, which I done. That was about the exact words of the conversation, I think.

Q. Do you know whether or not the working places in air split No. 2 had been examined once each shift by the assistant mine foreman of that section? A. I understand so, yes.

Q. Did you see the assistant foreman traveling the working places while you were on your second run? A. Not that day I didn't, no.

Q. Had you encountered him on previous days? A. Yes, sir.

Q. Had any of the miners in that section intimated to you that the assistant mine foreman wasn't making his runs? A. No, sir.

Q. It was your opinion the runs were being made? A. To my knowledge, it is my opinion, yes.

Q. Did you ever find it necessary to direct other workmen in different parts of your section, as to what they might do in such case as just shown in No. 28 room? A. Yes, sir.

Q. Were you asked to do that by the assistant mine foreman or mine foreman? A. We were given orders by Mr. Steel to have the authority, or to help the assistants to the fullest extent.

Q. In other words, to cooperate with him wherever possible? A. That's right.

Q. How frequently did you find it necessary to give such instructions? A. My instructions mostly was with the bratticemen, occasionally a trackman involved in cleaning of the switch or something of that nature, or timbermen; those three sets of men was the only ones in the way of company men I gave any instructions to.

Q. Had you given your bratticemen any instructions on the morning of July 15, 1940? A. Yes, sir.

Q. What were those instructions? A. The instructions was to go over to the face of 16 Right heading and put a canvas heading up.

Q. Where were you going to put the canvas? A. Over the last break through toward the face.

Q. On 16 Right heading? A. Yes, sir.

Q. Do you know whether that job had been completed? A. I have seen since it was completed.

Q. About how long do you estimate it would take your bratticeman to complete that job? A. It could have been,-- he could have been able to complete that job in an hour after I left him.

Q. What time did you leave him? A. Shortly after seven o'clock. I recall looking at my watch once when I was talking to him and I recall it was ten after seven.

Q. Did you have any other work planned for the bratticeman after he finished the job of bratticing there? A. Yes. He asked me if there was anything else. I asked him what other instructions he may have had and he said he had none right then. I said "While you are up here canvas off a couple of these new break throughs cut through in these rooms between 24 and 25, room, 16, Right, and 31 and 32 also in 16 Right, as I had doors placed at those points. He said he would do it.

Q. You don't have any knowledge of any special work he expected to do on the No. 3 haulroad between 18 and 16 Rights? A. No, sir.

Q. You say that he was instructed to line canvas on 16 Right heading. What was the reason for stringing line canvas? A. Heading shooting, heavy bottom in there; naturally there is considerable smoke and the men were complaining about the smoke on the previous night, Friday night, and I promised them I would have canvas up the first thing Monday morning.

Q. The line canvas was strung specifically to take care of smoke conditions and not the generation of explosive gas? A. That's right.

Q. Do you remember what the condition of the air door located on the third haulroad close to the intersection of 17 air course was in when you saw it last? A. The door was in good shape whenever I saw it, at least I went through it and saw nothing wrong with it.

Q. It was closed at the time; you opened it to go through? A. Yes, sir.

Q. Do you recall what time that was? A. That was just shortly before ten o'clock.

Q. When ^{you} were on your way up to 17 to complete your run? A. That's right.

Q. You also paid particular attention to the condition of the door on the lower end of the No. 3 haulway between 2 and 3 face on 18 Right? A. Yes, sir, I went through both of them.

Q. They were both in good condition? A. Yes, sir.

Q. And both closed when you came through. A. Yes, sir.

Q. You closed them behind you? A. Yes, sir.

BY THE CORONER:

Q. Mr. Seese, you said in reply to a question that you visited all working places in that particular section of your run? A. Yes, sir.

Q. Does that mean, then, you didn't visit or take tests for gas in so-called abandoned places, or at the air coming through the abandoned places? A. on my first run I would take care of all that where my air comes into the section.

Q. That is, say for instance, 18 and 17 rooms off 16 Right? A. Yes, sir.

Q. I was wondering why you limited your answer to the working places. Do you recollect of answering that question that way? A. Yes, sir.

Q. I was wondering why you limited your answer to the working places when you actually had visited the abandoned area, that is, the outcropping at least? A. It is our legal duty to visit each and every place and adjacent places and all falls in the first run, and as we sign for the first run we must sign that way. We sign for the second run as visiting each and every working place.

BY MR. GEORGE:

Q. Have you at any time prior to the explosion found any air doors open near points where trolley locomotives were operating? A. Yes, sir.

Q. Where did you encounter such condition? A. The door between 27 and 28 room off 17 Right.

Q. Between 27 and 28 room off 17 Right? A. That's right

Q. Was that a main door or check door? A. That was a check door.

Q. An air check on the entry to deflect the ventilation toward this room? A. Yes.

Q. What instructions did you give at that time to the men who were responsible for leaving the door open? A. It was a hard thing to find out who was responsible.

Q. Did you ever find out who left the door open? A. No, sir. The only thing, I asked Monteith if we couldn't instruct someone to be the last man through there, and that is the orders he had given. The man he had appointed was one of his trackmen who made it his business to be the last through there, to see the doors were checked after I found it open that one particular time.

Q. Did you make an examination at the face of 27 and 28 room after finding that door open? A. Yes, sir.

Q. Did you find explosive gas accumulated at that face as a result of that door being open? A. Yes, sir.

Q. How much gas did you find? A. I wasn't able to get to the face.

Q. How far back from the face did you detect gas? A. About fifty feet. That place wasn't driven through. I think it was about fifty feet back from the face at that time.

Q. What date, do you recall was it when you found this door open and found the accumulation of gas? A. The date is in that book.

Q. You don't have an approximate idea? A. It must have been about a month before. I think that is pretty close. It was on a Monday Morning.

Q. Will you please reveal the circumstances under which you found the door open, by telling us whether it was during the working period of a shift, or was it on your early run, or when did you find it open? A. I found it on my first run. It had been left open, apparently, by some one leaving the section on Friday night of the previous week.

Q. It had been open all night Friday Night? A. Apparently, as near as we

could recall. That's the way we figured it. We didn't know of any one else going through there. We assumed it had been open from the previous night.

Q. There hadn't been a fire boss run made in there on Saturday or Sunday on the idle days? A. No.

Q. Had there been any other officials of the mine in there during those two days? A. Yes, there was a Sunday fire run made and Saturday is taken care of by the Mine Foreman.

Q. How do you suppose the Sunday fire run didn't reveal that door being open? Do you believe had he made a complete run on Sunday he would not have found this door, open, as you did on Monday morning? A. Well, our Sunday runs, I guess are more or less confined to main regulating doors, main doors, and this wasn't considered a main door, and probably knowing it wasn't hadn't reached that point, is all I could say.

Q. Was there any special effort on the part of the Mine Foreman or Assistant Mine Foreman to correct the situation that developed when this door was open? A. Yes, sir, that is, by instructing the man to be the last one down through that section, to see it was closed.

Q. Who was picked out to be the last man out of that section? A. I think it was one of our trackmen, Frank Schlesky.

Q. He was a trackman working on your shift? A. Yes. I understand Monteith told me he was the man he told to stay in. I have heard, and I recall him mentioning he was the man he wanted to stay in and see those doors were shut after this last trouble.

Q. It is evident, then, that the face of 26, 27 and 28 rooms on 18 Right was generating explosive gas to the point which required a continual flow of air around those faces to keep that generation below the point of detection on the flame of your safety lamp? A. That's right. That is on 17 Right

Q. Have you ever been questioned as to whether to report or not when you reported gas? A. No, sir.

Q. Have you ever been requested to refrain from entering any gas finding in your fire boss record? A. No, sir.

Q. Have you ever been encouraged by your mine officials to make such entries when you found gas? A. Yes, sir.

BY A JUROR ;

Q. Was there a check on that door when you discovered it open, standing without the check on it,--what I mean is, was it latched back or was it standing without it? A. That particular time I couldn't say, because I noticed that door at one time going through while the men worked had stood open without the latch. The reason for that is, just the same as the bottom heaving in the rest of the rooms; when that door was constructed it closed properly, but as the rooms was worked out naturally the bottom would have a tendency to heave, which would throw that door out of plumb, which is the reason I found the door open one time without the latch.

BY THE CORONER:

Q. Would it drag on the rail or something of that kind? A. That throws the

door off center, and it didn't need to.

BY A JUROR:

Q. Was this room 28 on the advance or retreat? A. What particular time.

Q. Of the explosion? A. On the retreat.

Q. Does the coal have to be shot? A. It had to be shot.

Q. Was there precautionary measures taken for the blasting of the coal?
A. nothing outside of our disciplining routine.

Q. Was there any examination made prior by the shot firer? A. There was no shot firer.

Q. Everybody did his own shooting? A. Yes, sir.

Q. What type of battery did he use? A. Permissible.

BY MR. GEORGE:

Q. What kind of tamping did they use to sump or hold with? A. Clay.

BY THE CORONER:

Referring back to the question asked by Mr. George with reference to whether or not the company encouraged or discouraged the fire boss in reporting or not reporting gas as found on his particular run, he said that he was not discouraged by the company officials. He said he was encouraged to do so. That is to clear up a misunderstanding.

BY A JUROR:

Q. One point, on the morning of the explosion, when you made your run, you just made it to the working places where they were on the retreat, you didn't make it on up? A. Yes, behind it.

Q. Past the roadway that went into the pillar? A. Yes, sir.

BY THE CORONER:

Q. Was this the second run? A. Both runs.

Q. Mr. Seese, to follow that up, you say your first run you were required to examine the abandoned places, at least the air coming from the abandoned places? A. Yes.

Q. The second run on this morning in this particular place you got up seventy five feet to an abandoned section to examine; why, did you figure it was dangerous at that particular place? A. No, Just to see how clean the other cross-cuts have been taken out.

Q. Owing to the fact that you had discovered gas there before? A. Yes.

Q. And you had a check or something, recommended a check be placed to shove

the air up in there, and then this particular morning the explosion occurred you went up that cross-cut seventy five feet. Now, therewas seventeen working in 17 Right, or in 27 Room? A. No, sir.

Q. Were any of these working back beyond that 28 room where the cave occurred? A. Yes, sir, 15.

Q. Is it being drawn back, retreat work? A. Yes, sir.

Q. Did you go up beyond the place working in 15? A. yes, sir.

Q. That was where you discovered gas once before? A. Not in 15.

Q. But in 17 and 18? A. 26, 27 and 28.

BY MR. GEORGE:

Q. Mr. Seese, in order to probably clear up this question, when you made your last examination in No. 28 room off 17 Right, did you notice any air current traveling through that room? A. No, you couldn't notice any air current traveling.

Q. In other words, the area was expanded, by virtue of your method of mining, to the point that your volume may have been sufficient and yet your velocity had been reduced, by virtue of your expanded area, to the point where you wouldn't readily notice new air traveling? A. That's right. The only indication we had we know we have air moving in there, aside from the place being clear, is, we can clear the smoke off readily,

Q. The smoke clears out well? A. Yes, sir.

Q. Which direction was your smoke moving, or air traveling in 28 room, toward 16 aircourse? A. At that time it would have been traveling toward 16 aircourse.

Q. Do you know whether there was air traveling at the time you made your last inspection? A. Yes, sir. You can always tell by the canvas doors.

Q. It shows by the air pressure being exerted? A. Yes.

BY A JUROR:

Q. From the point of your last examination to the 16 Right aircourse would be what distance in 28 room? A. Seventy five to one hundred feet, I imagine, four hundred foot room.

Q. It wasn't half way back? A. No.

BY MR. STULL:

Q. Mr. Seese, will you take your record book there and open it to the entry of May 23rd? Do you find any entry there with respect to finding gas? A. 26, 27, and 28 rooms off 17 Right.

Q. State whether or not that is the time you referred to when you found gas at the face of the workings? A. Yes, sir.

Q. Is that the date on which you found it? A. Yes, sir.

Q. That is 1940? A. Yes, sir.

Q. Is that the same day on which you found these doors open? A. Yes, sir.

Q. Where were these doors that were open? A. Door.

Q. Just one door? A. Yes.

Q. Where was it? A. Between 27 and 28 room.

Q. You attribute the presence of gas to the opening of that door? A. That's right.

Q. What did you do to correct it? A. Had the section shut off and by canvas work and holding the men out we removed the gas until it was safe.

Q. That was entirely completed, that correction? A. Yes, sir.

Q. Will you turn to the entry of July 15, 1940? A. Inside or outside book?

Q. Is there a difference between the two books? A. There is two entries in one and one and one in the other.

Q. Which one did you make first? A. This one, inside.

Mr. Coroner, I would suggest, since considerable reference has been made to this inspection, that the entry itself be read into the record by the witness, both inside and outside record, the day of the explosion, July 15.

BY THE CORONER:

Q. Read the entry. Read what the column shows and what your entry is. You are reading from the Fire Boss Record of the Sonman Shaft E. Slope, where this explosion occurred? A. Yes, sir.

Q. All right. A. The date is "7/15/40;" Under the column marked "Explosive Gas," marked "None." Under the column marked, "Dangers from falls of slate, roof and sides," marked "none." Under the column marked "Is the mine in safe condition for men to enter?" Marked "Yes." Under the column, "Time of beginning and ending of examination," marked "From 3 to 6 a.m." Under the column "State nature and location of any other danger found in any other place in the mine, General Remarks," marked "Examined all places in Section 4D according to law and found same in safe and healthy condition." Signed "William Seese."

BY MR. STULL:

Q. That is your signature? A. Yes, sir.

Q. You made the entry? A. Yes, sir.

Q. Take the book, the outside book, and refer to the same date, the corresponding date, July 15, 1940; how many entries do you find on that

date? A. Two entries.

Q. Does that represent the first and second tour? A. That's right.

Q. Read each of them? A. The date is "7/15" under 1940. Under the column "Explosive gas," "none." Under the column "Dangers from falls of slate, roof and sides," "none." Under the column, "Is mine in safe condition for the men to enter," "Yes." "Time of beginning and ending of examination," "3 to 6 a.m." Under the column "State the nature and location of any other dangers found in any other place in the mine, General Remarks," I have "Examined all places in Section 4D according to law and found the same in safe and healthy condition." Signed "William Seese," countersigned "L. Steele."

Q. He is the Mine Foreman? A. Yes.

Q. That is the complete report of the first? A. Yes. The second is 7/15/40" Under the first column, "Explosive gas," marked "None." Second column "Dangers from falls of slate, roof and sides," marked "None." "Is the mine in safe condition for men to enter," marked "Yes." "Time of beginning and ending of examination," "7 to 10:30 A.M." Column, "State nature and location of any other dangers found in any other place in the mine," "General Remarks" marked "Visited places working in 4D and left same in a safe condition." Signed "William Seese," countersigned "L. Steele."

Q. You made those entries personally? A. Yes, sir.

Q. At what time, with respect to the examination, did you make the entry, how long after? A. Well, this was really entered on the date of the 16th.

Q. That was after the explosion? A. Yes. I never got near the book before.

Q. When was the entry made in the inside book? A. It was entered just before that explosion, - no, wait a minute; yes, I had my first run completed and had signed the book.

Q. Where is that inside book? A. That inside book is kept at the shanty at 11 Right, north dip.

Q. How close is that to the point of explosion? Was it within the explosion area? A. No, sir, at least a mile and a half away.

Q. You are confident that was made before the explosion occurred? A. Yes, sir.

Q. Was the inside report signed by the Mine Foreman at the same time? A. Oh, I couldn't say.

Q. Is the inside report countersigned? A. I said it was, didn't I?

Q. I don't recall. A. No, sir, it isn't countersigned, not the inside.

Q. But it is signed by you? A. Yes, sir.

Q. Which indicates you signed it at the time you entered it. A. Yes, sir.

Q. Mr. Seese, did any of the men complain at any time about the condition

of the air, the gas, ventilation in the mine, or anything about the safety of the mine? A. No, sir.

Q. Never made any complaints at all at any time? A. No. The only complaint, as I remarked awhile ago, was when these two men in 16 Right heading, face of the heading, complained about the smoke.

Q. Never about gas? A. No, sir.

Q. Can you recall about when that complaint was made about the smoke? A. Oh, it would have been about, -- I suppose somewhere between nine and ten o'clock of July, -- Friday night preceding that.

BY MR. YOUNKER:

Q. Mr. Seese, were you with the recovery crew after the explosion? A. Yes, sir.

Q. Did you go with them to No. 3 haulway in 17? A. Yes, sir.

Q. Were you with them in No. 3 Haulway and 17? A. As far as the door, yes, sir, at the top of the haulway, intersecting No. 3 haulway and 17 Right.

Q. Was there a door there? A. Yes, sir.

Q. What was the condition of the door? A. The door was in good condition.

Q. Mr. Seese, when we recessed a couple minutes ago I wanted to ask you if in No. 3 haulway, close to the junction of 17, there was a door in there; was there? A. Yes, sir.

Q. You said it was in what condition? A. It was in a fair condition.

Q. In what position was it? A. Open

Q. Open? A. Yes, sir.

Q. Just naturally, or locked open? A. It was locked open.

Q. Have you any idea how long it was that way? I will rephrase that question: Is that the way it should have been under ordinary circumstances? A. No, sir.

Q. I will follow it with the other question; in your opinion do you think it was open? A. I am afraid I couldn't tell you.

Q. Did you make the run through there the first thing in the morning on your first run? A. Yes, sir.

Q. Was it open then? A. No, sir. It wasn't open on the second run either.

Q. It wasn't. A. No, sir.

Q. What time did you go through there on your second run? A. Before ten o'clock; between 9:30 and 10:00.

Q. Where were you when the explosion occurred? A. Inbye 11 Left entry on the north dip.

Q. Then the door, so far as it was concerned, was in good condition but open? A. Yes, sir.

Q. During recovery work, when they were in there to recover? A. Yes, sir.

BY MR. HESS:

Q. Mr. Seese, as the Fire Boss for the Sonman Shaft Coal Company, did you ever find gas in any of the working places and not submit same to your book? A. No, sir.

BY MR. STULL:

Q. Mr. Seese, I think there was some disagreement about some item of your testimony; you testified, I believe, to finding a door open on a Friday or on a Monday? A. Yes, sir.

Q. It had been open since Friday? A. Yes, sir.

Q. Where was that? A. That was the door, check door between 27 and 28 room off 17 Right.

Q. Was it a result of the opening of that door that gas accumulated? A. Yes, sir.

Q. When did you find that out, on a Monday? The report shows the 23rd of May; the 23rd of May happens to be Thursday. That is where the confusion is; we understood you to testify as to a Monday. A. Then there is another date someplace. What date is the 17th of June?

Q. It is on Monday. A. That's the date.

Q. That has no relation to the rooms 26, 27 and 28, does it? A. Yes, sir.

Q. Is that another occasion besides the one in May? A. Yes, sir. Now, that we have got the date straightened out, as I told you before it was on this date I had the door installed.

Q. On the 23rd? A. Yes. That is the day I told you I had the door installed.

Q. You had discovered gas at that time in these three places? A. Yes, sir.

Q. On the 17th of June you discovered it again? A. This was the day the door was opened, the door I had installed on the 23rd of May.

GUY WAHL, Called, Sworn.

BY MR. GEORGE:

Q. Mr. Wahl, what was the date of the last shift you worked preceding the explosion? A. July 12.

Q. Will you kindly identify your report in the Assistant Mine Foreman's Daily Report Book for Sonman "E" Slope Mine, covering your official entry of your examination for that date? A. Right here. No that is the 11th. Did I skip that day? This is my signature to the 11th here. I don't see it for the 12th.

Q. Then you cannot identify any of these reports as being your report? A. No, sir.

Q. Covering your examination of that section for the 12th of July, 1940? A. No, sir.

Q. How often do you miss reporting your examinations? A. Very seldom. This is the first time I know of.

Q. But this one you will admit you have omitted? A. Yes, I admit that one.

Q. When do you usually enter your report in the report book of your examinations? A. At the end of the shift.

Q. Was this shift worked on the day shift or night shift? A. Day shift.

Q. It was the day shift? A. Yes, sir.

Q. What was the condition of your section on the last day you worked? A. Good condition.

Q. Prior to the explosion? A. Good condition.

Q. Did you examine every working place in your section? A. Yes, sir, I did.

Q. Did you make a habit of examining all working places in your section? A. Yes, sir.

Q. Were there any exceptions to that particular rule? A. Yes, once in a while I missed, if I am held up. I didn't make a practice of doing that.

Q. What did you do to comply legally with that condition when you encountered it? A. I always made sure the Fire Boss had examined those places.

Q. What is the number of your section? A. Section 3.

Q. That is also ventilated by what we know as air split No. 2? A. Yes, sir.

Q. What entries does your section involve? A. 16 Right, 17 Right, and 18 Right, and 17 Butt.

Q. Did you encounter any unusual condition from the standpoint of roof, or any hazardous condition on your last examination? A. No, sir.

Q. In order that we might clear up a previous misunderstanding, will you kindly check your record book again to see whether or not you might have two entries made for the 11th of July, 1940? A. I see I have. I was the first one that signed the record book and I guess I looked above and carried it through. I think this is for the 12th. I am sure it was.

Q. Did you sign two? A. Yes, here's one for the 11th and here's another for the 11th.

Q. It is apparent that you put down the 11th instead of the 12th for your report? A. Yes sir.

Q. Will you kindly read your entry into the Assistant Mine Foreman's Daily Report of Sonman "E" Slope for your examination of July 12, 1940? A. "Examined all places in Section 3, North Dip, and found the same in safe and healthy condition. A. G. Wahl."

Q. Mr. Wahl, do you take air readings in your section as required by law? A. Yes, sir.

Q. Will you identify the last air reading recorded in the Mine Foreman's Daily Report Book for the section which you measured it in? A. This is my air reading right here.

Q. You identify that as your reading for July 12, 1940? A. Yes, sir.

Q. Was that taken on the day shift or night shift? A. I was on night shift,--or, on day shift, but I didn't measure it. It is Mr. Duras' request I put the air reading in for July 12.

Q. What other explanation, if any? Did you actually take the reading as recorded? A. No, sir.

Q. How did you arrive at the volume indicated in the report? A. I copied from the week before in this particular reading. The rest of the readings I had taken myself.

Q. What date was the report entered in the book? A. It was Tuesday Morning, I think, after the explosion.

Q. Do you identify this reading as the reading taken on the previous week by you, taken and entered as of July 5, 1940? A. Yes, sir.

Q. If that were copied from the previous week's reading, why do the readings not compare? A. I didn't copy them the same. I took it from memory.

Q. Then you were estimating that reading all the way through as recorded in the report for July 12, 1940? A. I estimated that one reading, yes, sir.

Q. Did you not have the opinion that the changing of the quantity as recorded in the record book would show that you had taken the reading? A. I wasn't trying to cover up, because I didn't take the reading.

Q. Did you have any particular motive then for changing your reading? A. No, sir.

Q. How many men were employed in the air split No. 2 on July 12, 1940? A. On my shift?

Q. Yes, A. I had 61 loaders, but there wasn't usually that many in because there was usually five or six off for dirty coal. 61 employed in the section.

Q. How many additional men aside from loaders did you have? A. 13 company men.

Q. That, of course, involved only 16 Right, 17 Right, 17 Butt and 18 Right headings? A. Yes, sir.

Q. Were there any other men employed on the left of this split, in 16 Left, at that time, to your knowledge? A. No, sir.

Q. When did the men begin to work in 16 Left? A. I don't know.

Q. There wasn't any in there to your knowledge prior to July 15, 1940? A. No, sir.

Q. Where did you take your air measurements as recorded for the book? A. At the last break through they had a brick stopping in on the return side; that was usually about one cross-cut in back. Sometimes there was a cross-cut back through to the face.

Q. What was being used in the cross-cuts between the last brick stopping in the face? A. Canvas.

Q. Did you always find a sufficient volume of air in circulation at the various points of reading to legally comply with the law, requirements of the law? A. Not always.

Q. What volumes did you find, or measure when they failed to comply with the requirements of the law? A. Sometimes that wasn't enough for 200 cubic feet to a man.

Q. You are referring directly to the total number of men on the split? A. Yes, sir.

Q. Passing the last open break through on the split in that particular heading? A. Yes, sir.

Q. Did you find any generation of explosive gas in any working place at any time during your last shift prior to the explosion? A. No, sir.

Q. How long had it been before the explosion you found your last explosive gas? A. I couldn't say. There was no explosive gas found in the section for several weeks that I know of, - that I can remember of, better put it that way.

Q. Do you know when you entered your air reading under date of July 12, 1940, which was requested by Mr. Duras, whether or not the Mine Foreman's signature was on the book at that time? A. I couldn't say.

Q. You don't know, then, whether the record book was signed by the Foreman before you made your entry? A. I couldn't say. I didn't notice that.

Q. Did you look for it, to examine it? A. No, sir, I didn't.

Q. At the time of your last trip through the doors on No. 3 haulway between 18 Right and 17 Right, what was the condition of those doors? A. They were in good condition.

Q. Were they both closed when you came to them? A. Yes, sir.

Q. You closed them behind you? A. Yes, sir, the doors was always kept shut.

Q. Do you know of any particular condition when the trolley locomotive was operating on any of the entries mentioned heretofore, whether or not the doors were kept closed. A. They were kept closed in order to let the trip pass through.

Q. Who usually opened the doors to leave the trip pass through? A. The brakeman, and he closed it as soon as the trip passed through. He came ahead of the trip, opened the door, and closed it and got on the back of the trip.

Q. To your knowledge the doors were kept closed only at such times they were opened to leave the trip pass through? A. That's all.

Q. Did you ever encounter any air checks being left open? Did you ever encounter any air checks being left open, such as referred to by Mr. Seese? A. He told me one night there was an air check left open and I put a man on it to check after that to see it was closed at the end of the shift.

Q. The same procedure was followed out he explained, by designating a single man to see these doors were closed at the end of each shift? A. Yes, sir.

Q. Who was the man directed by you to see that these doors were kept closed? A. Rudy Erzoe; he worked at the top of the heading and he usually was the last man out, and I asked him to see the door was closed.

Q. Was he a miner? A. No.

Q. Did you definitely request he be the last man through? A. I just asked him to see the door was shut every night yes.

Q. You knew there had been a recommendation made for the establishment of permanent airlocks to control the flow of air around 16 and 17 Rights, 17 Butt and 18 Right entries, did you not? A. Yes, sir.

Q. What instructions had the mine foreman given to you to see that this work had been complied with and completed? A. He said we would/it as quick as we could get to it.

Q. Had there been any work done to complete this recommendation? A. There was. In the main north, there was stoppings built on 14 Left and 15 Left entries that weren't working. The doors in there, we were building stoppings to replace the doors.

Q. Was this work being held up because of a shortage of manpower. A. We only had two men to do it and could only do it as we could get these men to do it.

Q. To the best of your knowledge have you or any other persons found gas

on the local falls, such as you have in some of the places in 16 and 17 Rights? A. None until after this explosion.

Q. Prior to that time you hadn't detected explosive gas on any falls? A. No. The falls aren't high enough.

Q. Had you ever made any suggestions to the Mine Foreman or Superintendent as to the need for rushing of your airlocks, to complete the airlocking system? A. Me and the Mine Foreman talked it over.

Q. What was the nature of your conversation at that time? A. He said we would do it as fast as we could get men to do it.

Q. Did you ever stress the importance of doing it as soon as possible? A. Yes, sir, he knew that.

Q. You hadn't been in the section involved in the explosion then from the 12th of July until after the explosion. A. No, sir.

Q. What condition did you find No. 28 room in in 17 right at the time of your last examination? A. The room was open to the face to where it was cut through.

Q. Did you travel clear through that room? A. Yes, sir, the last trip I did. There was a few falls on the left side of the room but that was natural for that kind of work. There was no unusual condition there.

Q. You didn't notice any roof breaks? A. No, sir, I didn't.

Q. Do you recall how many clay veins was encountered in the driving of that room? A. There was one clay vein ran along the left rib, and I think we encountered about two that crossed the place.

Q. Did you ever detect any generation of explosive gas at any point along these clay veins? A. Not any more than any place else.

Q. Do you know whether or not the air was traveling through 28 room on your last examination of 28? A. There wasn't enough air you could detect the volume of it. There was air traveling through. The door was between 27 and 28 and it had to go through 28. You couldn't detect it, however.

Q. Was No. 27 room working at the time? A. No, sir.

Q. Was there any fall in 27 room at all to your knowledge? A. No, sir, it was open.

BY MR. CORONER:

Q. You say the figures were suggested to you by Mr. Duras; did he suggest the figures you wrote in there? A. No, sir.

Q. But he suggested you make the record complete? A. Yes, sir.

Q. Why was that done? A. I don't know. I shouldn't have done it. I didn't think so much of it. I was tired and weary working the shift the night before and did it unthinkingly. I shouldn't have made the entry when I didn't measure the air.

Q. Naturally you shouldn't use figures. What was the date you took the last reading? A. During the week of July 5.

Q. During the week of July 5? A. Week end of July 5.

BY MR. GEORGE:

Q. Did you tell Mr. Duras, when he requested you to make the entry in the book of the air measurement, that you hadn't measured the air for that week. A. I told him I hadn't yes, sir.

Q. What was his reply? A. He said I could put it in anyhow.

BY THE CORONER:

Q. You willingly put in those figures? A. Yes, sir, unthinkingly.

Q. Would that also be true of some of your other duties in connection with the operation of this mine? A. No, sir it isn't.

BY MR. HESS:

Q. Mr. Wahl, due to the fact the bratticeman was laid off prior to the explosion to balance the budget, was he loading coal under you? A. No, sir, he wasn't.

BY THE CORONER:

Q. Was that the reason he was laid off, so you could come within the budget? Q. Yes, I think so. One side of the mine wasn't working.

BY MR. HESS:

Q. While he was laid off who was doing that work? A. There was no one to my knowledge.

Q. Although there was a lot of work that should have been done in connection with airlocking in this section of the explosion? A. There was work to be done, yes, sir.

BY MR. YOUNKER:

Q. Mr. Wahl, had you, when they laid the man off, requested he be kept on for this work? A. That wasn't under my control. He was laid off on the opposite shift. The bratticemen always worked day shift.

Q. But you knew this work was necessary to make the necessary changes, didn't you? A. Yes, sir, I did.

Q. Mr. Wahl, how many bratticemen were there working in that section? A. One always, and sometimes two. When there was no work in 13 and 14 Right we had two.

Q. Were there bratticemen in both shifts? A. Just one.

Q. And he was laid off? A. Yes, sir.

Q. Do you know how long he was laid off? A. No, I couldn't say.

Q. Mr. Wahl, isn't it a fact you were on day shift after he was laid off?
A. I think one day. I was on day shift after he was laid off one day.

Q. One day? A. One day of the week he worked. I think he loaded coal for one day.

Q. You say you made an entry here at the suggestion of Mr. Duras, even though you weren't sure of the reading; that is the air entry? A. Yes, sir.

Q. You made an entry concerning the air reading and you weren't sure what it was? A. I did that.

Q. What was the date? A. July 12.

BY MR. HESS:

Q. Mr. Wahl, concerning this man that was loading the coal, you said you think he worked one day loading coal; are you sure of that fact? A. Yes, I think just one day.

Q. Are you sure of it, or you don't think? A. I couldn't be positive of it, but I think he only worked one day because he went back on brattice work again. It was at the end of the month and he started at the beginning of the month.

Q. You couldn't answer whether it was one, two or three days. A. No, I couldn't.

Q. Did you keep a book? A. Yes, sir.

Q. Could you refer to your book and let us know how many days he loaded coal? A. No, I don't think I have a record of him in the book.

BY MR. GEORGE:

Q. Mr. Wahl, in your opinion did the failure to have the airlocking completed in that split have any direct bearing on the cause of the explosion? A. I think the explosion would have occurred whether the air was locked or not, if it was what I think it was, - a sudden rush of gas coming from the room.

Q. Will you please go to the map and outline the course of the airflow in case the haulage door, the door across No. 3 haulway, was open? A. yes, sir. That air would have come up 17 Right to No. 3 haulway, went down No. 3 haulway to 3 and 4 face to 18 Right, and returned on 1 and 2 face on 18 Right.

Q. What portion of your volume of air, with that door being open, would be circulated toward 16 Right? A. Very little.

Q. Did you have airlocks or checkdoors established on your 15 Haulway, or your 17 Haulway between 3 and 2? A. No, sir, no airlocks.

Q. Airchecks? A. There was doors there.

Q. Check Doors? A. Yes, wood doors.

Q. How many were there? A. One at the top and one at the bottom of the entry.

Q. I mean on the section of your 17 haulway from 28 back to 15? A. Four doors.

Q. What was the purpose of those airchecks? A. They were carrying air current up to 16 and 17 Right.

Q. Which direction would that travel? A. It would go up to 29 room and from 29 room up through these rooms in 16 Right to the face of 16 Right, back to the aircourse, 16 Right.

Q. Just a minute; will you please consider the purpose of the erection of those airchecks between 28 room and 15 room on 17 Right, why were they installed? A. If there would have been an aircheck there the air would have come down the haulway up three and four face.

Q. I'm not speaking of the door across the No. 2 haulway. A. Which one do you mean? There was an aircheck between 27 and 28 room there.

Q. There was one there? A. Yes, sir.

Q. Was there any other aircheck between there and 15? A. There was one at 21, between 21 and 22 room.

Q. Was there a partial cave on 17 Right heading between 14 and 15 rooms? A. No, sir. There was a little rock down, maybe a quarter of a ton of rock down, that's all that was down.

Q. Would you call that a partial cave? A. You could hardly call it a cave, I would say.

Q. There was enough down to make it necessary to prevent you from traveling 17 Right haulage? A. Yes, sir. We didn't want the men traveling up there any more.

Q. With the airchecks established on 17 Right it would have a tendency then of deflecting the ventilation from 17 Right through that pillared area and from the No. 1 haulway on 17 Right to the No. 3 haulway on 17 Right, wouldn't it? A. No, the cave was down below No. haulway, - or No. 2 haulway rather.

Q. There was an aircheck established between 27 and 28, wasn't there? A. Yes, sir.

Q. There was an aircheck established around 20 and 21? A. That was open.

Q. There was a partial cave between 14 and 15, making it necessary for you to travel, when you came to that point, around through that aircourse. A. Yes, sir.

Q. Was it not the purpose when these checks were established to deflect the ventilation through the pillared area from No. 1 haulway toward 16? A. Yes, sir.

Q. Isn't that what made a definite circulation of air past your stump section, in 16? A. Yes, and then this was bratticed off so that the air couldn't go farther than 29 room. We put a lock in there.

Q. Your leakage was collected at 23 haulway and conducted through there to 16? A. Yes.

Q. With these locks in position, closed, and this door open, would there not be a sufficient volume of air coming across this caged area to 16 Right to create a leakage down to 28 room toward 17 Right? A. It would have taken the path of least resistance, would have come down 29 room instead of 28.

Q. What would you consider the path of least resistance? A. The one which was open.

Q. Was 28 open? A. There was gob on top of 28, it was partially open.

Q. Were these stumps open between 27 and 28? A. Yes, sir.

Q. Wasn't the line, perhaps of least resistance in consideration of this door being open, - didn't it contribute just as much chance for air to leak down through 28 into 17 Right as it would to come down 3 haulway? A. There was no stoppings in 28 room, and the air from the first cross-cut back would be the path of least resistance.

Q. And short through your 28 room to 17? A. Yes, sir.

BY A JUROR:

Q. You say you found gas after the explosion? A. Yes, sir on top of the fall in 28 room.

Q. You didn't find it before this? A. No, sir, there was no gas before that.

Q. You made the statement awhile ago that you were going to make the necessary improvements on that when you got to it? A. When we could get the work done.

Q. What hinderance was there to stop the work? A. We didn't have the manpower to do it.

BY THE CORONER:

Q. Of course you had no authority, you were assistant foreman? A. That's right.

Q. You had no authority to hiremen? A. No, sir.

Q. That, of course, would come under the jurisdiction of the Foreman or Superintendent? A. The brattice work comes under the Foreman, under his jurisdiction.

BY A JUROR:

Q. Did I understand you to tell the District Representative these figures were entered on the 12th? Previous to that you said they were entered on the 16th? A. No, I said sometime after the 12th. They weren't entered on the 12th. I don't just know the date. It was this day after the explosion, whenever that fell on.

Q. Then that was the 16th? A. They are dated the 12th.

BY MR. STULL:

Q. Do I understand you to say you were above 28 room after the explosion?
A. Yes, sir.

Q. And you found gas there? A. A small quantity.

Q. Upon your examination of the workings there did you form any opinion of what caused the explosion, where the explosion came from? A. There must have been a sudden outburst of gas.

Q. From where? A. From the cave in 28 room.

Q. Then the fall of roof in 28 created that gas? A. It must have. That's the only thing I know of.

Q. How long have you had experience in mines? A. Since 1917.

Q. Have you had any experience in explosions before? A. No, sir.

Q. In your experience as a miner would you say the quantity, volume of air or direction of its flow through these workings had anything to do to contribute to this accident or explosion? In other words, would another course or volume of air have prevented this explosion? A. I believe not.

Q. If there had been a reversal of the air through this area as had been proposed by the authorities would that have made any difference? A. I don't think it would have made any changes.

Q. Would it have reduced the number of fatalities in your opinion? Would there have been as many men killed from this same explosion if there had been a reversal of air current? A. I couldn't say on that.

Q. You have no opinion on that? A. No sir.

BY A JUROR:

Q. That gas came in an outburst, you say; was there a motor or anything in there? A. There was a motor on the cars at 16 Right.

Q. How far away from 28 room is that? A. About 200 feet.

BY MR. YOUNKER:

Q. I asked a question here and thought I had gotten a definite answer; I asked you the question when you had entered this reading, or these readings in the book at the request of Mr. Duras, I understood you to say July 12? A. No, sir, it was after the 12th.

Q. Was it after the explosion? A. Yes, sir.

BY THE CORONER:

Q. How long after the explosion? A. It was on Tuesday Morning.

Q. On the 16th? A. Yes.

BY MR. HESS:

Q. When you put those false figures in that book did you know you were violating the State Mining Law? A. Yes, but I didn't think about it at the time.

BY A JUROR:

Q. Would it be possible from the falls that occurred, and by the air currents flowing from this section, to bring it into this section to cause the gas? A. This is the first time. We usually find some small local falls, but it doesn't fall more than three or four feet high.

Q. Would you have any knowledge of the falls in the abandoned section, where these air currents travel? A. Some local falls but no gas in them.

BY MR. STULL:

Q. Did you state whether or not in other parts of the mine where the pillars had been drawn and roof broken, whether there had been any gas generated? A. I never done any work when we drew pillars on the north side, but on the south side I found gas in the extracted areas.

Q. Is that in this split? A. No, sir, on the opposite side of the mine.

Q. Off the same heading? A. No, on the opposite side. We were on the opposite side of the mine entirely, two thousand feet.

Q. Is that the same system? A. No, sir, that was the room and pillar system.

Q. What is the system here? A. The Garry system.

Q. What is the difference? A. In the room and pillar system you take all the coal you can get; on the Garry system you take only eighty per cent.

Q. Do you do that in original mining, or come back and take it? A. When we drive sixty foot centers we do it in original mining.

Q. What per cent do you get? A. Eighty per cent.

Q. You referred to the motor; did you have any personal knowledge of the presence of that motor at the time of the explosion? A. It was at 16 Right curve.

Q. You didn't learn that until after the explosion, did you? A. No, sir.

Q. The morning of the explosion you didn't know where it was? A. No, sir I wasn't working that day.

Q. How far from this fall in 28 on 17 Right was the motor located? A. About 200 feet.

Q. Was there anything about that motor that would ignite gas? A. It could do it.

Q. From the brushes on the commentator? A. Yes, sir.

BY THE CORONER:

Q. And sparks from the trolley wire? A. Yes.

Q. And sand on the rail, would that cause sparks? A. That would throw sparks, yes, sir.

BY MR. YOUNKER:

Q. Did you know that there were more than seventy men on this air split? A. Yes, sir. As a rule I didn't have more than seventy in my section on my shift. I don't know about the other shifts.

Q. Did you at one time have a conveyor located in 16 Right? A. Yes, but I got more men after I sent the conveyors out.

Q. Why did they discontinue conveyor loading up there? A. Too many clay veins.

Q. Wasn't it on account of the dust? A. No, sir, on account of so many clay veins.

BY MR. STULL:

Q. Mr. Wahl, was it illegal or unlawful to have this motor at the place it was found to be? A. I think not.

Q. A regular haulage motor was it? A. Yes, sir.

Q. That was the proper place for it? A. Yes, sir.

Q. In the condition the mine was in, the condition of ventilation and everything, it was the place for it to be? A. Yes, sir. It wasn't out of place.

BY MR. YOUNKER:

Q. Hadn't the men in 16 and 17 complained to you about dust? A. Never to me.

Q. Do you know if they had any complaints to anybody else? A. I do not. We loaded our dust out, kept the dust loaded out of the hallways. Every day we loaded several cars of road cleanings.

BY MR. STULL:

Q. Mr. Wahl, did you examine the deposits of dust in this mine in the area affected by the explosion when you made your inspection on the 12th? A. There wasn't any unusual amount of dust.

Q. What do you call an unusual amount? A. It wasn't over the rails; the motor wasn't driving it down.

Q. How much of a deposit of dust do you estimate to be safe before it ought to be removed or treated? A. We clean our dust out usually daily. We load some dust daily in the section.

Q. As long as it doesn't come on the rail, where the motors do disturb it, or as long as the motor doesn't drive it? A. It doesn't.

Q. In other words, the condition of the moisture has something to do with it? A. Yes, sir.

Q. How was that dust? A. It isn't wet or dry.

Q. Was it damp enough to prevent it being dusted up? A. Yes.

Q. You know that is a fact? A. 16 Right would have been the most dust for that was the most dry.

Q. Do you recall specifically about the condition of the dust? A. I don't think it was a dust explosion.

Q. In the light of the fact you made some entries in this book from recollection, I want to know what amount of recollection you are using now. Do you recall specifically of noticing the condition of the dust on this inspection? A. We just had the dust loaded out on 16 Right heading.

Q. I didn't ask you that; I asked you if you noticed, or paid any particular attention to the dust this morning of the 12th? Is that part of the investigation you made that morning? Did you look at the dust to see what condition it was in? A. Yes, I look at it every day.

Q. You did on that morning, the 12th? A. Yes, sir.

Q. And found the dust that morning not dangerous? A. It wasn't dangerous.

Q. Was any part of it sanded in that area? A. You mean. . . (interrupted).

Q. Rock dusted, I mean? A. Yes, the lower part; It wasn't dusted to the face.

Q. To the face of 28? A. To the face of 16 Right.

Q. From that standpoint, you think it was perfectly safe from your inspection? A. I think so.

HEARING ADJOURNS UNTIL 9:00 A. M.

WEDNESDAY, AUGUST 14, 1940

Wednesday, August 14, 1940
9:00 o'clock, a.m.

MORNING SESSION

JOHN GAVLAK, Called, Sworn.

BY MR. GEORGE:

Q. Mr. Gavlak, you were employed by the Sonman Shaft Coal Company on July 15, 1940? A. Yes, sir.

Q. What is your official job? A. Fire Boss.

Q. Are you a certified Fire Boss? A. Yes, sir.

Q. How long have you been Fire Boss in the afflicted section? A. It will be a year in September.

Q. What part of Mine were you Fire Bossing in, name the entries? A. 16 Right, 17 Right, 17 Butt and 18 Right.

Q. When did you make your last fire boss run? A. Second run, Friday, July 12.

Q. Will you please identify your last report in this record book and identify the record book as you go? A. This is the inside book, and that is mine, - that is for the 11th, though. The 12th is right here.

Q. Will you kindly identify the book and read your report? A. This is the inside fire boss report book, Sonman Slope Mine, and the date is 7/12/40. I found no explosive gas but had fenced off 16 Right heading at 19 room. There was bad slate there, some fell down and I had that fenced off. "Is the mine in safe condition to enter?" "Yes." "Time of beginning and ending of examination," was from 3 to 6 a.m. "State nature and location of any other danger found in any other place in the mine, and general remarks," "Examined main haulage and all places in Section 3 and found same in safe and healthy condition." Signature of Fire Boss, and of Mine Foreman. My signature is John Gavlak.

Q. Did the Mine Foreman have that inspection countersigned? A. The Mine Foreman doesn't have that countersigned.

Q. Check the other page to make sure? A. It is countersigned.

Q. What inspection of the mine does this represent? A. This is the first run.

Q. Kindly identify your other records in the outside book. A. I had been in the mine on Sunday prior to the explosion and made a Sunday fire run. I was in through that section and found all doors closed and had date on the door with my initials.

Q. On the doors? A. Yes, sir. Of course that isn't Friday; that is Sunday. This is the outside report book.

Q. Do you have a record of your Sunday examination in your report book? A. Yes, right here.

Q. Read the last one you made. A. Date of Sunday run, 7/14/40. We weren't required to run any places. I found no fire. "State nature and location of any other danger found in any place in the mine, and general remarks," "Examined slope mine for fire and falls. Visited all vacant rooms, hoist rooms and motor haulage and found same in safe condition. Found air traveling in its proper course and all doors closed and in good condition. Found mine in safe and healthy condition." Signed, signature of Fire Boss, John Gavlak, and it is countersigned by Leslie Steele.

Q. Read your last report of examination, your last complete examination of all working places. A. On 7/12/40, "Explosive gas found in entries," "None." "Danger from falls of slate, roof and sides," "16 Right heading

at 19 room, bad slate, fenced off." "Is the mine in safe condition for the men to enter?" "Yes." "Time of beginning and ending of examination," "3 to 6 a.m." "State nature and location of any other danger found in any place in the mine, and general remarks," "Examined Section 3 and found all places free of gas and danger," except as read. "Also found north main haulage safe." Signature of Fire Boss and of Mine Foreman, John Gavlak, countersigned by L.L.Steele. Second run, the date is 7/12/40, "Explosive gas found in entries," "None." "Danger from falls of slate, roof and sides," "Above danger taken care of." That is the danger found in the first run. "Is the mine in safe condition for the men to enter?" I have omitted that.

Q. That is your second run? A. Yes. "Time of beginning and ending of examination," I omitted that too.

Q. What time was that? A. From eleven to,--I mean from seven to eleven, a.m. "State nature and location of any other danger found in any place in the mine, and general remarks," "Visited Section 3 north and found same free from danger and in a healthy condition." Signature of Fire Boss and Mine Foreman, John Gavlak, countersigned by L.Steele.

Q. Before we proceed, will you please go to the map and locate the point on the map where this fall occurred in order that the jury might get that clear? A. The fall occurred right between 19 room and this small room.

Q. On the haulage entry? A. On the haulage entry, 16 Right haulage.

Q. Did you refer to a fall in 28 room? A. No, sir.

Q. Point out 28 room on 17 Right while you are there. A. 28 room, 17 Right is at this point, and it followed the entire distance until it cut through on the 16 Right aircourse.

Q. Show the point the men were working in the last time you visited the places? A. The last time I visited the places they were down about this place down here (pointing on map).

Q. What stump was that from 16, the first or second from the barrier. A. That was the second split.

Q. Will you kindly state the condition of 28 room at the time of your last examination? A. 28 room hadn't fallen in, but while I was in there the bottom gave a loud thump, while I was in there on the second run. But I heard no signs of props breaking or roof working.

Q. The noise appeared to be coming from the bottom? A. Yes, sir.

Q. Did you travel through 28 room at that time? A. Yes, sir, first run.

Q. You entered at the room neck on 17? A. Yes, sir.

Q. And traveled through 28 room its entire length to 16 Right aircourse? A. Yes, sir. I cut through the bug hole and went out at 27 room in order to go down into the pillars at 16 Right. I had men working in the aircourse at that time.

Q. You are positive there was no fall or caving in 16 Right at the time? A. There was no fall.

Q. What was the condition of the coal in that room from the standpoint of clay veins or spars to your knowledge? A. There was a clay vein followed the place on the left side most of the way up, and there was kind of a spar, - it wasn't a bad clay vein. In some rooms you could hardly notice it. It was within about fifty feet of where it cut through. I believe there was one down above the first cross-cut. We haven't worked that room, so I wouldn't be so sure. We didn't work that room until it was half way up.

BY THE CORONER:

Q. In reply to a question whether or not you traveled the entire length of 28 room from the parting up to 16 Right, you said you did? A. Yes, sir.

Q. But yet in making an explanation you say you cut through the bug hole to 27 room; what bug hole? A. That was the last cross-cut in the place.

Q. The last cross-cut? A. Yes.

Q. Then there would be part of 28 room you wouldn't go through is that right? A. I went through; I was at the face of 28 room and back-tracked. I couldn't very well go through 28 room because there was a gob; 16 right aircourse was bogged high and I didn't want to crawl over that.

BY MR. GEORGE:

Q. The room had been cut through to the aircourse and gobbled up? A. Yes.

Q. Did you at any time ever find any explosive gas being generated in 28 room off spars or clay veins? A. No, sir.

Q. Did you have knowledge of any additional roof movements in that area just prior to the explosion, a few days or week before? A. There was roof movement in 16 Right heading. One time there we had roof movement in 28 room, the props were pretty well bent and it was retimbered along the roadway.

Q. The timbering had been taken care of and the roof finally settled down, is that correct? A. Yes, sir.

Q. How long prior to the time of the explosion was this that you noticed the roof movement, do you recall? A. Around the same section, 16?

Q. Yes? A. About a week.

Q. Prior to the time of the explosion? A. Yes.

Q. At the time of your last run did you find your doors all in good shape? A. Yes, sir.

Q. There was no door broken or standing partly open? A. No, sir.

Q. Did you ever encounter any doors open on your first run? A. No, sir.

Q. Do you consider the section through which you are traveling sufficient, or too large to give you a definite or proper time to make a thorough examination of your section? A. Yes, sir.

Q. You consider it too large; do you consider the section too large to make a legal run in your section, or is it not too large? A. I believe I answered that question to the investigation committee. At that time I said it wasn't.

Q. Have you any reason to change your opinion? A. Well, according to mining law and the route I would have to take, it would take me longer.

Q. Do you feel you had made a complete examination of your section as a Fire Boss? A. Yes, sir.

Q. And you had sufficient time to make what you considered a complete examination? A. Sometimes I would get it done before the time and sometimes I wouldn't. It just depends on the nature of the places.

Q. If you failed to get it done before the time did you neglect to examine those places? A. No, sir.

Q. You completed your examination anyway? A. Yes, sir.

Q. And reported just a little bit later, is that correct? A. Yes, sir.

Q. Did you have any particular knowledge that the airlocks weren't properly established in 17,16 and 17 Butt? A. Well, I knew if one of the doors was open it would short circuit the air.

Q. Do you know whether there was any special effort being made to correct that situation? A. Yes.

Q. There was? A. Yes.

Q. What had been done? A. Brattices built along the main dip, started on the main dip, and the last brattice I knew that was put in there was in 16 Right entry between 3 and 4, or between 4 and 5 face.

Q. Who is the Assistant Foreman on the shift with you? A. The assistant was Mr. Wahl.

Q. Do you know whether or not Mr. Wahl has been able to make his daily examination of the working places according to law? A. Do I know what?

Q. Whether or not he has been able to do that? Has he been examining the working places regularly, to your knowledge? A. To my knowledge, yes.

Q. Did you have any reports of his failure to do that? A. No, sir.

Q. From the men or anybody else? A. No, sir.

Q. Have you ever found gas in any of the local falls in this section? A. No, sir.

Q. Mr. Gavlak, you said that you knew that the air in 16,17 and 17 Butt was operated by single doors? A. Yes, sir.

Q. Did you ever find any gas or smoke in any working places in either of these entries as a result of doors being left open? A. I found no doors open in that particular section.

Q. At no time? A. Just trip smoke there.

Q. Did you outside of the natural course of opening and closing due to the transportation? A. No.

Q. Did you find they always closed their doors immediately after passing through? A. Yes, sir.

BY THE CORONER:

Q. I think you stated, in reply to one question by Mr. George, that you said at the investigation which was conducted by the Board of Examiners, Mine Inspectors, that you said you had ample time to complete your run; is that right? A. Yes, sir.

Q. Now, you say in order to comply with the mining laws you feel you don't have sufficient time; was that your reply? A. Yes, sir.

Q. Has something happened since the investigation,-- in other words, did you know the requirement of the mining laws at the time of the investigation? A. Yes, sir.

Q. But outside of something unusual happening, then you feel you have ample time to complete your investigation according to the mining laws? A. Yes, sir.

BY MR. STULL:

Q. Mr. Gavlak, did you at any time ever have a request from Mr. Steele to give him a report on your run as a substitute for the run he couldn't make? A. What?

Q. Did Mr. Steele ever request you to make a run for him that he couldn't make? A. No, sir.

Q. Did you ever, -- or did he ever at any time tell you he hadn't time to make a run and asked you to give him the information from your run so that he could make a report on it? A. No, sir.

Q. He never did that? A. No, sir.

EDWARD BEM, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Mr. Bem, where were you working at the time of the explosion? A. 16 Right stumps.

Q. What stumps? A. Between 17 and 18, or 18 and 19.

Q. What was your occupation? A. Machine helper.

Q. Do you have a miner's certificate? A. I passed the test but didn't get the certificate yet,--oh, yes, I have a miner's certificate.

Q. Mr. Bem, when Mr. Gavlak pointed out to the Jury the location of the fall on 16 about 19 room, that is the location within 50 or 60 feet of

where you were working, is it not? A. I believe so.

Q. You say you do have a miner's certificate? A. Yes.

Q. Do you have a machine runner's certificate? A. No, I passed the test but didn't get the certificate yet.

Q. Did your machine runner have a certificate, to your knowledge? A. Yes, he did.

Q. Had you cut No. 28 room on the morning of the explosion prior to the time of the explosion? A. Yes, I did.

Q. Did the pillar cut through at that time? A. That's right, it did.

Q. About how wide did you make that cut? A. About twelve feet wide, I would say.

Q. Was the place examined for explosive gas by the machine runner prior to the time of his taking the machine into the place? A. That's right.

Q. Did he find explosive gas? A. No, sir, he didn't find any.

Q. Did he make the examination or did you? A. He made the examination.

Q. The place was free of explosive gas before you took the machine in? A. Yes.

Q. How long were you working in that place? A. In 28 about half an hour, maybe.

Q. Do you recall what time it was you cut that place? A. Between maybe eight-thirty, between nine and nine-thirty.

Q. Of the morning of July 15, 1940? A. Yes.

Q. Was the roadway caved in any way in No. 28 room off 17 Right at the time of your cutting it? A. Off 17 Right up to the place where we were cutting?

Q. Yes? A. No.

Q. Was there any caving from that point to 16 you could detect? A. I don't know.

Q. To your knowledge was there any caving there? A. Not that I know of.

Q. Were there any other places cut by you from the time you cut 28 room, pillar in 28 room until you went over to 16 right stumps? A. No. That was our next move to go to, 16, after we cut 28.

Q. That was the first place? A. It was.

Q. 16 stumps was the first after you had cut 28? A. Yes.

Q. What line of travel did you follow to take your machine from the point in 28 room to 16 right stumps? A. We went up what we call No. 3 haulway, the same haulway.

Q. Start at the point where you loaded the machine up? A. At 28 room?

Q. From the point where you loaded the machine up in 28 room? A. After we came out of 28 room we came out onto 17 right heading, came up toward No. 3 haulway. It is only a distance of 120 feet. From there we have to wait to get an open road to go up into 16. After the motor comes down we take the machine and go up 16 and go out in 16 heading down toward the stumps.

Q. Was your machine equipped with trolley pole? A. No.

Q. What manner of power did your buddy use, or the cutter use in transporting his machine from that point to the stumps? A. He has a trolley bar with a wire on it and he holds it with his hands.

Q. Holds it on the wire? A. Yes.

Q. Is there very much arc usually created by the contact of the nips with that wire? A. The only time it would arc was when you hit a cross-arm hanger, and as long as it was held smoothly on the wire there wasn't much.

Q. However, there would be almost a continuous arc until you hit the trolley wire and as long as you didn't hold it smoothly? A. Yes, you could see it.

Q. As long as you could hold it smoothly on the wire, what? A. There wasn't much.

Q. Would you say the arc created by your machine pole on the trolley wire would be similar to the arc created by a trolley locomotive in passing over that same trolley wire? A. Almost the same.

Q. Would you say that there was a possibility of it being similar? A. I imagine it would be almost the same.

Q. Will you tell us whether or not you heard any rumbling overhead from roof noise while you were cutting, or after you had completed cutting of your heading stump at 16? A. Well, I heard it right before we started cutting. As soon as we unloaded the machine we heard a rumbling well up in the roof.

Q. Before you unloaded the machine? A. Just as we were lining the machine along the face.

Q. You just heard one rumbling? A. Yes, and it seemed to fall away. We didn't know exactly what direction it was.

Q. How long had you worked in 16 Right stumps before the explosion occurred? A. Maybe for about two or three weeks; it wasn't very long.

Q. I mean from the time you took your machine into the stumps and unloaded to cut until the explosion occurred? A. Well, we got up into 16 about ten o'clock and the explosion occurred at around ten-thirty.

Q. Do you know about what time you completed your cutting in No. 28 room? A. Well, I would say it must have been around nine or a little after nine. I don't know exactly what time it was because we left the machine sit for half an hour.

Q. Where did the machine sit? A. On the side of the switch on 17 off 3 haulway.

Q. Was the mining machine in operation at the time of the explosion?
A. No, sir.

Q. Will you tell, now, in your own words, just what took place while you were there at the time of the explosion, what you were doing and the rest of the men at that particular time? Talk loud and slowly; don't be in so much of a hurry. A. After we completed the place, cutting, the machine was stopped. When he stopped the machine I felt a strong concussion coming and right after that there was a lot of air and dust; it only lasted maybe fifteen or twenty seconds. So after it settled down, where we were at we couldn't tell exactly on account of the dust. My buddy went up the heading toward 16 somewhere.

Q. Who is your buddy? A. William Wisnewski. So, the last I heard him say was "pull the breaker." He went on out. Then there was four other fellows with me, five with myself. So, we all seemed to get together and try to find out where we were at and where to go. We crawled over to the back heading; it was pretty hot and we crawled back out the heading and we decided to go after my buddy. We started and couldn't make it up that way.

Q. Which way was your buddy trying to go? A. Up toward the face of 16. So, after that we decided we would go out the dilly road.

Q. What is the dilly road? A. The dilly is the main haulage, rope, out toward where the main rope haulage is. So, we started, From there we crawled over the top of a cave, and I believe crawled over the top of a trolley wire one place. That is how we knew what direction to go. We followed the wire as far as we could and followed the rails as far as we could until they were taken out. From there we couldn't see much of anything, so we stopped in places to get some air, where there was cool air. We got better air in places until we got out to 16 sidetrack. There you could notice the smoke was all lying up against the roof and it was pretty clear. There was about two feet from the roof down. We came to a brattice I have heard here, a two by two door. The door was open six inches and we pushed it open and crawled through it. After we all crawled through we got out on the rope haulage. The first two there was the fellows who take care of the rollers. Then we walked up between 14 and 16 and I met Mr. Ray. From there we rode out No. 14 until we got a ride up to No. 11.

Q. Will you kindly name the men with you on this trip? A. There was Stanley Cyrwus, Ed Bobrowicz, Raymond McIntosh and Clarence Hufford and myself.

Q. There were four other men besides yourself? A. Yes, four others besides myself.

Q. What time did you arrive at the dilly road? A. It must have been, I would say, between eleven and quarter after eleven, around that time. I figure from the time of the explosion for us to get out to the dilly road it must have at least taken us, the way we were crawling, at least half an hour, maybe. I wouldn't know exact, but I think that is how long it seemed to me.

Q. It couldn't have been more than half an hour? A. Until we got to 14 was more than half an hour, maybe forty five minutes or longer.

Q. Did you see any flame at the time of the explosion? A. No, sir, I never seen no flame .

Q. Were you burned? A. No, I wasn't burned. The fellows with me were, one of them.

Q. You said your buddy went up to pull the breaker; what do you mean by the breaker? A. The only thing I figure he meant was the breaker on the trolley line.

Q. You mean cut out the switch? A. Yes.

Q. Do you know where the cut-out switch was located? A. Yes.

Q. Where? A. Right about No. 3 haulway at 16 Right, that's a distance of about two or three hundred feet from where we were going.

Q. Was that above the frog, where the wire connected from No. 3 to 16? A. The cut-out switches?

Q. Yes? A. It is right around,- it latches on the switch at 16.

Q. Was that between the point where the wire connected with your 16 wire, or between that point and the end of your stumps? A. It was between that point and the end of the stumps.

Q. What was the condition of the trolley wire prior to the time of the explosion? A. The condition was all right Friday the week before that, for we worked down in the lower end. We could get down with our machine and all. We used to travel down for them to cut the chain pillars in the back heading. The wire was all up.

Q. Did you come to the end of the wire at that time on Friday? A. No, the wire was on down below. The switches was right there, we never bothered going down farther to see how far down it was.

Q. You said it was necessary to pass over trolley wire on your road to the dilly road when you made your escape? A. Yes.

Q. It is your opinion the wire was torn down, blown down by the explosion, by the force of the explosion? A. It must have been for it was lying there, for we wouldn't have no power.

Q. What was the condition of your mining machine? A. It was in good condition.

Q. The cable was in good condition? A. Yes.

Q. No defects you folks knew of? A. No, sir.

BY THE CORONER:

Q. Edward, have you formed any conclusions, any opinion as to what caused this explosion? A. Well, I wouldn't know exactly what caused it, but if they got orders to build overcasts why didn't they do it, why didn't they live up to the law?

Q. What I want to know is if you have any idea just what caused the explosion, then we will have you explain it? A. I couldn't exactly say what caused it. It was the first explosion I was ever in. I don't know what causes

explosions. Of course if there was an arc off the trolley wires, or motors, or wires being knocked down, I imagine it would cause explosions. That's about the only thing I could tell you.

Q. How long have you worked there, did you say? A. At Sonman mines?

Q. Yes? A. I worked there two years October 15.

Q. In this particular section? A. In this particular section, I worked in 16 only about three weeks, or two weeks, I wouldn't know for sure. It wasn't a very long time.

Q. There has been some questions asked along the line of the foremen visiting the place and carrying out their duties; would you say there was any lax examination on behalf of the officials in charge of that section? A. I wouldn't know for sure, because we always seen the foreman. Of course on 15th we never seen the foreman. He was up at 16. The fellows who worked in the place could tell you more than I could.

BY MR. GEORGE:

Q. Edward, do you know whether or not your buddy made an examination of the 19th room on 16 Right before you took the machine into that place? A. My buddy did.

Q. Do you know what his findings were? A. He must not have found gas; he started cutting and he is in charge of the machine.

Q. As far as you were able to determine was the air condition in 28 room, 17 Right okay at the time of your cutting? A. It was okay, in fact seemed to. It seemed to be all right in 28 according to my opinion.

Q. The air was all right in 28? A. Yes.

Q. What was the condition of the air on 16 Right where you were cutting your 19 heading stump? A. 16 heading, it all seemed the same; it wasn't too strong.

Q. You noticed air moving in 16? A. Yes, I noticed it.

Q. But while cutting these places on your machine run, did you notice whether there was very much dust in suspension in the air at the time of your cutting? Was it dry or was it damp, or, just what was the condition so far as your opinion was concerned? A. The condition in the right side always was dusty, because we cut on the right side and left. It appeared to me the right side was more dusty while cutting than the left side. I would say the right side cutting was a lot dustier than the left.

Q. When you say it was dustier, can you give us an idea just what in your opinion this dust condition really was, whether there was very much dust in the air, whether it held in suspension or settled quickly, or just what took place while you were cutting? A. Well, I know you got a lot of dust from that chain; is that what you mean?

Q. That's right. A. Yes, after you are there cutting, it don't take long until it settles down.

Q. It didn't stay in suspension very long, but settled quickly? A. Not all at once it didn't.

Q. How long would you say it took to settle down after it was thrown in the air by your machine? A. Well, as long as it takes me to rid up the track, five to seven minutes, and before we leave the place you sometimes still see dust. I don't know what it is like after, because I don't stay in the place that long.

Q. Did you find any places that were especially drier than others, or were they all about the same? A. No, they weren't about the same. In the block between 3 and 2 haulway in 17 is pretty dusty. We had three rooms above No. 3 haulway.

Q. Where were those rooms located? A. No. 30, 30 crooked and 31. They weren't so dusty. The 16 stumps, I guess, were pretty dusty.

Q. In the room you considered not dusty and damp, did you notice any dust being suspended in the air in this place while your machine was operating and chain whirling it around? A. You got some dust but not as much as you did in the other place.

BY MR. HESS:

Q. When you were escaping, you say you traveled over this wire; what point was the wire found, if you know? A. I couldn't exactly tell you on account of we couldn't tell the direction on account of the dust.

Q. Was the wire close to the bottom or on its natural hangers? A. If it had been on the natural hangers we couldn't be crawling over them.

Q. It was on the bottom? A. It appeared to me it was that way.

Q. Do you know if or not the wire had power in it? A. We didn't touch it. We decided not to touch it. I don't think there was any power.

Q. About how much coal was in the cut you cut in 28 room about nine-thirty? A. Oh, I wouldn't know how much coal was right there.

Q. About how much coal was in the cut, how wide was the cut? A. About twelve feet wide.

Q. Just approximately? A. If they got all big cars there would be only about three.

Q. You say you cut that place about nine-thirty that morning? A. No, between nine fifteen and nine thirty.

Q. At what point in 16 Right did you fellows begin to find fresh air on the way out? A. It must have been, - where we hit the real good fresh air it must have been No. 1 room right off the sidetrack. Of course we hit it in spots. I wouldn't know exactly what point it was. It was half way between where we were going and the main road. I don't know.

Q. Approximately half way you began to find fresh pockets of air? A. Yes.

BY THE CORONER:

Q. When you speak of the sidetrack, that is the sidetrack that used to be on 16 Right heading? A. That's right.

BY MR. GEORGE:

Q. Did you or your buddy to your knowledge ever find explosive gas in sufficient quantity to be detected on the flame of your approved safety lamp at any time you were cutting, or before or after? A. We never found no gas. The only time was just when the Fire Boss had it dangered off. That is the only time I remember finding gas.

BY MR. HESS:

Q. Do you remember when you left the machine if the nips were on the wire or not? A. I don't know whether they were on or not.

BY MR. YOUNKER:

Q. While you were in that section as scraper, had any place been dangered off for you in the morning after the fire boss run? A. Yes.

Q. How many times? A. One particular time there, it was during the time the south side was broke down,- I don't know what month that would be. The whole side was dangered off. Another time we came in at 26, 27 and 28; it was dangered off, three or four places dangered off.

Q. That is in 16 and 17 Right section? A. That was in 17 Right, 26 Room, 27 room and 28 room. That other time the south was broke. I imagine nobody was allowed to go to work.

Q. How long was that dangered off? A. I know we didn't go in to work until about ten o'clock.

BY THE CORONER:

Q. What time are you talking about when you say you didn't go there until ten or ten-thirty? A. This was the time the south side was broke down. The reason I know that, one of the brattice fellows was loading coal at that time.

BY MR. GEORGE:

Q. You referred to the whole side being shut down; tell us definitely what side of the mine was closed down and dangered off? A. Right.

Q. The north side? A. Yes, 16 Right, 17 and 17 Butt. Maybe we sit there an hour, or half an hour, and got up to No. 2 haulway and we sat there awhile.

Q. Do you know why it was dangered off? A. I don't know. It was supposed to be for gas, I don't know. They always called it too hot. I don't know what they meant by that.

Q. How long prior to the time of the explosion was this? A. Well, the best way to find that out is find out when the south side hoist was broken down. I don't know.

Q. We want that from your own recollection? A. I don't know, maybe a month. I don't know how long.

BY MR. YOUNKER:

Q. Had this happened more than once? A. I remember it since I have been working there; that would be the second time.

BY MR. GEORGE:

Q. Do you recall how long prior to the explosion the second occurrence was? A. The second occurrence must have been when that door was placed there, that is the door between 27 room and 28 room.

Q. In 17? A. Yes.

Q. You are referring to the gas, the places that were dangered off, 26, 27, and 28? A. That's right.

Q. Prior to the door being built? A. The door was built the same day it was dangered off.

Q. Do you know who the Fire Boss was that made that run on the morning you were kept out of that section? A. You mean the morning every one was kept out?

Q. Yes? A. Mr. Seese was the one who was there.

Q. How far in did you go? A. He left us off the mantrip at 17 right sidetrack. That is all the further we got.

Q. What time did you land at the sidetrack? What I want to know is, what shift were you working on at the time? A. I think the day shift. What day I wouldn't know.

Q. Did you see the Fire Boss, Seese, on the morning you were held out? A. Yes, I seen him.

Q. Where did you see him at? A. After they took us up to No. 2 haulway, coming up from 18 to 17, he was right there.

Q. You say you saw him when you were going up to 2 haulway? A. Of course I saw him the first thing in the morning.

Q. How did you get up to No. 2 haulway if you were kept out in the main dip at 17? A. That's right, we were kept out, and they sent word down for us to come up farther.

Q. You were held out temporarily and later on left in? A. That's right.

Q. Do you remember how long you were held out? A. Oh, at least,-- that is, away from work?

Q. Yes, how long were you kept at 17 sidetrack before you were permitted to proceed to your working places? A. Well, maybe a half hour or forty five minutes. That is at the sidetrack. Understand, we had no work at the time, but the fellow who were working the place, they went in at different times. Whenever their places were cleared out, they put two men in, and just kept going until they had the whole section cleared out.

Q. Which way did the men enter their working places, through 17 or 18 at that time? A. At that they traveled through 17.

Q. Did all men travel that way? A. I believe 16 and 17 heading traveled that way. 18 heading either went down the main road or manway and got into 18.

Q. Did you ever hear or see or know of any one smoking in the mine or carrying smoking articles in the mine? A. No, I didn't.

BY MR. YOUNKER:

Q. Did they ever search you at the mantrip or inside for smoking materials? A. Well, they searched us for something. They used to search the mantrip every morning, not take the pockets out, just feel over the pockets.

Q. How long was it before the explosion you were last searched? A. Oh, I wouldn't know, maybe a month or two weeks, but he kept searching; one boss took half the trip and the other took the other half.

BY MR. STULL:

Q. I believe you said, Mr. Bem, that at no time did your cutting machine man find any gas or make any comment about gas while you were working with him? A. That's right.

Q. You spoke of the dust condition that you observed in these different working places; some places were worse than others, you say? A. Yes, sir.

Q. Do you consider the condition of dust you found there a dangerous condition? A. Sure it would be dangerous.

Q. Do you recognize it as a dangerous condition when you see it? A. They say all dust is dangerous in the mine.

Q. Some is more dangerous than others, depending on how much there is? A. Yes.

Q. Was the accumulation of dust here of such quantity and amount you considered it dangerous? A. You mean in any particular place?

Q. In any place you saw it? A. I imagine if anything happened chances are it would have caused an explosion. I don't know how much dust it takes to cause an explosion, but there was a good bit of dust in places. Maybe it would cause an explosion and maybe it wouldn't.

Q. You didn't feel alarmed over the amount of dust you saw there? If you thought it would make an explosion you would probably have said something about it? A. If I thought of it I would.

Q. You recognize as a miner it is the duty of a miner, if he finds anything dangerous in the mine, to report it to his superiors? A. That is true.

Q. Then you didn't find any condition here that caused you to report anything, or any condition to your superior? A. Well, there was other cutters there and they was there longer than I was.

Q. I am speaking about what you do. A. The only thing I would do was

keep on working, that's all.

Q. You could have reported a bad condition if you seen one? A. For dust?

Q. Any kind of bad condition? You spoke about dust being worse on the right than left? A. Yes, at the time of cutting, while the machine was in motion.

Q. There was no accumulation of dust in either place you considered dangerous? A. What I meant, while we were cutting on the left side you could see pretty good, while cutting the place there wasn't very much dust there; but on the right side it is pretty hard to recognize each other sometimes.

Q. That is only when you are cutting? A. Yes.

Q. It was more so than other places? A. Yes.

BY A JUROR:

Q. When you were cutting these places that had this dust, these places you say there was serious dust condition, were there any precautionary measures taken more so in that place than any other? We have had reports where from time to time periodically it was rock dusted; was there at any time in these particular places you specify as being exceptionally dusty to what the others were, was there any additional care or attention given those places to keep that dust down in any way? A. No. I never seen it. They had the place rock dusted in there. From there on I never seen any rock dust at all.

Q. At the 28 room you would make it known, you had a danger board, fenced off; also that they had a door broken and constructed again, reconstructed, in order to clarify the place to make it fit for the men to work in? A. The door wasn't broken, they just built the door.

Q. What provision did you make up in 28 and 27 and those rooms, how many cross-cuts was open between those rooms? A. At that time I would say there was only about two or three cross-cuts.

Q. After the door was constructed, then were there any provisions made for the closing of any or all cross-cuts with the exception of the top? A. That's right. They had fellows there sticking canvas up, sticking canvas up to the face, I imagine about fifty feet away from the face.

BY MR. GEORGE:

Q. On the morning you were held out from your working places at 17 right sidetrack, do you remember whether all the men that worked inbye No. 3 haulway, that is, toward the face on 16 Right, 17 Right and 17 Butt, and 18 Right, were held out of their working places that morning? A. I do know this, all of the places beyond that were held out the same way, but I don't know whether 18 was or not.

Q. You don't know whether they were held out or not? A. No.

Q. You do know all the men that traveled in 16 Right and 17 Right and 17 Butt were held out? A. Yes.

BY A JUROR:

Q. You mentioned about crawling over the debris along the way; what part in 16 heading was this debris, in the abandoned area or where? A. This was toward the abandoned area, going toward the abandoned area.

Q. Was it still in the haulageway, still being used for a haulageway? A. Not exactly.

Q. Abandoned haulageway? A. We dropped empties down and the motor was to go down and hook on.

Q. From that point on toward the abandoned area is where the debris was? A. Yes.

BY MR. GEORGE:

Q. On the 16 right that you used as a travelway to make your escape, was it dangered off any particular point from the end of your stumps to the dilly road? A. It was not. The board was blowed away; we never seen it.

Q. Did you use 16 Right from the end of the stumps to the dilly road as a regular travelway? A. No, that is the first time I was through there.

Q. Will you please tell the jury what way you traveled to and from your working place as your regular route of travel? A. Well, first you could travel from 17, 17 right heading, until it seemed to get bad and they dangered it off, and we traveled from 18 Right down to the rope haul; we there crossed at 17 sidetrack, or went down the manway. We got onto 18 Right then. From 18 heading most of them,-- there was two haulways that connects 18 and 17, and some of the fellows went straight on out and got on No. 3 haulway, and they just walked straight up into 16.

BY THE CORONER:

Q. You mentioned going down 16 heading down to the dilly road; you say that the wire extended down the abandoned workings? A. Yes, it was.

Q. Was the rails also extended to that particular point as far as the wire went down? A. I don't know how far the wire was, or the rails were, but the wire, when we worked down there the Friday before the explosion, we just went down to the switch that turned off to go into the chain pillar.

Q. And beyond that? A. Beyond that point the only time I was ever there was the time of the explosion. I couldn't see very much. I know the wire and rails was still there as we traveled.

BY A JUROR:

Q. Did they have any men loading dust cars to take out of the mine? A. Well, in 17, between 3 and 2 haulway, that is where our section was. I think they loaded at least twice the time I was there. They cleaned it up clean. It was pretty clean. That was done on Monteith's shift. I don't know whether they done it on any other shift. I know they done it on our shift. That was done on Jim's shift. About two times they loaded it up.

Q. How long have you been there? A. I would say close to three months.

Q. They only loaded two times in three months? A. That's all I know of. Drivers used to complain about too much coal on the road to push the coal up.

Q. You say the drivers complained about that? A. Yes. The drivers complained, so they got them to clean it out.

BY MR. HESS:

Q. Going back to the 28 room, where you cut it, when you sumped into the face do you know whether the cutter bar cut through or not? A. No, not when we sumped; until we cut over about half the place then it cut through.

BY MR. GEORGE:

Q. You spoke of your cleaning up the points where the dust had created trouble; was that coal loaded up as real fine dust or was it mixed with larger pieces and lumps? A. It was mixed.

BY THE CORONER:

Q. Would that be a general condition or be at the particular place where there may be a rough piece of road or coupling up of the track? A. Most of the coal was where they drop the cars at the face around the switch and it would slide down.

BY A JUROR:

Q. In these dusty places, after you cut them was the dust, or was the coal shot down? A. They shot everything down and loaded it up, and loaded the dust too.

BY MR. YOUNKER:

Q. Do you know whether in 28 room, - you said you cut it that morning, - do you know whether there was any shooting down by the men while you were there or in that vicinity or after you left? A. I couldn't tell you. I wouldn't know; we were too far away.

Q. You didn't hear anything? A. No.

WILLIAM SEESE, Recalled.

BY MR. GEORGE:

Q. Mr. Seese, you heard the testimony just given relating to a condition where the men were held out at 16 sidetrack, or 17 sidetrack on the north dip; do you remember the morning that occurred? A. That was the time, that must have been the date of the 17th of June, which was spoken of here yesterday.

Q. Was that, to the best of your knowledge, the date the explosive gas was found in 26, 27 and 28 rooms on 17 Right? A. Yes.

Q. And was fenced off by you in the morning? A. Yes, sir.

Q. Will you please check your records here and read your report of the morning that occurred, whatever date it was? A. The date was 6/17/40, explosive gas was found in 17 Right, and dangered off. "Danger from falls of slate, roof and sides," "none." "Was the mine in safe condition for the men to enter." "Yes." "Time of beginning and ending of examination," "3 to 6 a.m." "State nature and location of any other dangers found in any place in the mine, general remarks," "Examined all places in Section 4D according to law and found the same in safe condition except as noted." Signed by William Seese.

Q. And countersigned by? A. Not countersigned.

Q. That is the inside book? A. Yes.

Q. Do you recall holding the men out on that particular morning? A. Yes.

Q. Were all the men in that particular air split held out inbye the point of generation? A. Yes, sir.

Q. What was the purpose in holding them out? A. For the purpose of removing the gas before the men was allowed to enter.

Q. Was the gas completely removed from the affected area before the men were permitted to enter? A. Yes, sir.

Q. Did that include the men in 18 as well as 16, 17 and 17 Butt? A. Yes, sir.

Q. Is that a requirement of law? A. Yes, sir.

Q. It was, in your opinion, in safe condition when you left the men enter? A. Yes, sir.

Q. Mr. Seese, do you know, after you made your examination of 28 room immediately preceding the explosion, whether or not there had been any shots fired by the miners. A. I know of no shots fired.

Q. There would be no shots fired after you left? A. No, sir.

Q. That is, immediately preceding the explosion. A. No, sir.

Q. The place was nearly cleaned up, as you say? A. Yes, sir.

BY MR. HESS:

Q. Mr. Seese, in yesterday's testimony you said in 28 room the place was nearly cleaned up when you visited it between the hours of ten and ten thirty? A. Yes, sir.

Q. It seems from testimony from the machine runner's helper the place was cut at approximately nine-thirty. Do you think it is logical to clean a cut of coal up in that length of time? A. The condition you find in there was a cross-cut. I understood him to say he cut out a twelve foot place. You find in there when you go in and examine these places, these miners, whenever they leave a cross-cut what they consider as cleaned up, they work the top of that coal off. It is cut through into the gob on the other side and there is so much gob piled up if they try to take all that coal out completely clean they have dirty coal. So they took the coal along the top, and these men asked me for a new place to start, as I told you yesterday.

Q. You considered it cleaned up also? A. I considered it cleaned up.

Q. But there was still one more car of coal to load, as you said. A. Yes, sir.

Q. Mr. Seese, what time did you leave outside on the first fire run? A. I left the Foreman's office at three o'clock.

Q. Approximately how long does it take you to get to your first place of examination that you are to examine? A. About one hour.

Q. Approximately how long does it take you to make a complete examination of your entire run? A. Three hours.

Q. It takes you one hour to walk from the outside, that is four hours? A. No, sir.

Q. You leave the outside at three o'clock and it takes you four hours to cover that routine until you examine the last place; that is four hours? A. I didn't say that.

Q. You say it takes three hours to make the first examination until the last? A. Mr. Hess, my examination starts from the outside.

Q. It takes you three hours to complete your examination? A. Three hours yes, sir.

Q. Do you think that is sufficient time to make that examination according to law? A. The law states you aren't allowed to make an examination more than three hours prior to the men entering the mine.

Q. I asked you if you think that is sufficient time for you to properly examine these places, each and every place on your run? A. No, sir.

Q. You don't think it is enough time? A. No, sir.

Q. Then not being enough time do you skip some places? A. No, sir, not working places.

Q. I don't see how you can properly examine these places if you don't have proper time to do it in? A. Mr. Hess, to properly examine the complete mine, according to law, each and every place must be traveled from the switch to the face, all haulageroads, adjacent places, visit all caves and any fenced areas.

Q. Then you said that you didn't have enough time to examine those places according to law? A. I said working places. I examine all working places.

BY THE CORONER:

Q. In visiting all the working places were you complying with the mining laws? A. Yes, sir.

Q. How about the abandoned places? A. I visited the abandoned places and the adjacent places, adjacent places to each live working place.

BY MR. YOUNKER:

Q. Mr. Seese, then it is a common practice that instead of going in and out of the rooms and to the switch you cut through cross-cuts? A. Where possible; most of the times you have to travel back very nearly to the switch.

Q. You heard the testimony of Mr. Bem concerning twice they were held out because of gas or some other condition which was dangerous; do you remember the other date and under what circumstances that was? A. I think so.

Q. Where was it? A. I think the date was read yesterday as the 23rd of May.

Q. Did you hold the entire section out? A. Yes.

Q. For how long? A. We were only held up that morning,-- I don't think they were held up more than an hour that morning.

Q. And you considered it safe for them to proceed to their working places and go to work? A. Yes, sir.

Q. Did you do that yourself or under the direction of the Assistant Foreman? A. It was my authority to do so.

Q. I didn't ask you that question; I asked you whether the two of you worked together or whether you did that yourself? A. At the time I dangered it off, I did it myself.

BY MR. GEORGE:

Q. Mr. Seese, in order to probably clear up this particular question of travel, is it possible for you to make one trip over the roadway in each working place and cut across through a cross-cut to the face of the other places and out the other room without having to travel the same roadway twice? That is going up one room and crossing through and down the other? A. Do you mean is it possible in the time I have?

Q. Is it possible in the time you have? A. Oh, I would say not.

Q. Then there were times when you short-circuited your trip in order to save time by crossing from one room to the other through a cross-cut? A. That's right.

Q. And there were particular places in which you didn't travel your roadways? A. That's right.

BY A JUROR:

Q. The reports of June 17, 1940, would you mind reading that over again? A. Date, 6/17/40, "Explosive gas," "Second panel 17 Right, gas dangered off." "Dangers from falls of slate, roof and sides," "none." "Is the mine in safe condition for the men to enter." Under column, "Time of beginning and ending of examination," "3 to 6 a.m." "State nature and location of any other danger found in any place in the mine, general remarks," "Examined all places in Section 4 D according to law and found same in safe and healthy condition except as noted."

Q. Under the column, "Was it safe for the men to enter or not," was that yes or no? A. Yes.

Q. Then you held the men out on the sidetrack? A. They were held off the section but not out of the mine.

Q. That pertains to the whole mine, or just your section, that report there? A. Just the section.

Q. The point I want clarified is, if it was safe for you to enter and still held them at the sidetrack, it wasn't safe? A. You see, as far as the mine was concerned, it was except that particular section. The gas involved only a few rooms.

Q. I mean this particular section you inspected here, that is the only thing that report pertains to, the particular section you examined? A. No, sir, that examination also includes the haulageroad.

Q. The main haulageroad? A. Yes.

Q. By that report there you mean it was safe for the men to enter on the haulage road only? A. Yes.

Q. On the morning you had this condition there you didn't let them all go in together? A. What do you mean?

Q. On your air set up, your body of gas would be in one path; naturally you took precautionary measures to see that there was no element of any type there in these working places below? A. That's right.

Q. Then, according to that, you had the seat of your trouble, and they would go to work as you could visit one and visit the other places, and as far as the men knew the place was clarified? A. Yes.

BY MR. GEORGE:

Q. Mr. Seese, there were other sections in this mine working beside the section you examined? A. Yes, sir, on that side.

Q. From that particular point of view the other men proceeded to their section from the surface? A. Yes, sir.

Q. And as far as the legality of bringing, or permitting you men to enter the mine and going to the point on the north dip at 17, there was no particular part of that area through which they traveled being ventilated by the return from the split that you had dangered off? A. No, sir.

Q. In other words they were absolutely in fresh air? A. Yes, sir.

BY MR. STULL:

Q. Mr. Seese, in your report for the 17th of June, where you have noted the dangerous places there, you fenced it off and under the heading "Is the mine in safe condition for men to enter," you have noted "Yes." Then in your remarks you say it is safe "except as noted?" A. That's right.

Q. Does "except as noted" clarify your "yes" in any respect? A. Yes, certainly.

Q. That is to say, the "yes" you have noted here meant the mine was safe except as to the points you have noted in your report? A. Exactly.

Q. That pertains to all the section under your charge? A. That's right.

Q. How long was this section shut down until it was clarified and the men allowed to go in? A. I would say it was about an hour anyhow; I don't just remember the time.

BY MR. GEORGE:

Q. Mr. George, when you located explosive gas accumulations in 26, 27 and 28 rooms off 17 Right, what did you do to eliminate the power hazard? A. Had the power cut off by the sidetrack.

Q. What sidetrack? A. 18 Right.

Q. You had the entire source of power into that particular section cut off? A. Yes, sir.

BY A JUROR:

Q. Do you think the "yes" under that column was the proper thing, or that "no" would have been proper? A. I say "yes" would have been proper because I have it covered by the wording "except as noted."

Q. Then it wasn't safe for the men to enter? A. That section of the mine.

WESLEY DIEHL, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Wesley, where were you working at the time of the explosion? A. 4 face in 18 right.

Q. As a miner? A. Yes, sir.

Q. Do you have a miner's certificate? A. Yes, sir.

Q. Will you tell in your own words just what took place at the time of the explosion and how you arrived at your conclusions that an explosion had occurred? A. At the time of the explosion we were working at the face. There was so much of a jar it affected your ears so badly that when my buddy said something to me it sounded as though he was talking from a long distance away, and it was only a few seconds until our place was practically filled with smoke; the smoke came rolling in there.

Q. Just go ahead, tell in your own words what happened and what your reaction was from the time it happened until you made your escape? Before you do that will you give a more definite location as to your working place for the benefit of the jury? A. We were at 4 face on 18 Right heading. Right after the explosion we all came out to the main haulage, that is the main haulage for that heading. There we met the rest of the men, and naturally our first impulse was to try to get out. So, we went straight down the heading to the first motorroad, and the smoke was so thick there we couldn't see the bottom. Well, when we got to the motorroad I crawled over the door which was blown off.

Q. Which assistant ran the 17 and 18 Left Section? A. Mr. Monteith.

Q. What was the other assistant's name? A. Fahey.

Q. He had complete charge of the right section? A. Did he? I don't think he had 18 Right. I know he had 16 and 17 Right.

BY MR. YOUNKER:

Q. Mr. Sanders, you say you worked in the mine, two years in this mine:
A. In Sonman.

Q. Have you ever been searched for smoking material? A. They searched me on the mantrip, I imagine it was for smoking material, carrying explosives and caps on your clothes; I imagine it was the same thing.

Q. Did your boss ever tell you no smoking was allowed? A. Yes, I have been told. Of course we should know that.

Q. You never heard of any smoking? A. No, sir.

Q. Never saw any? A. No, sir.

BY MR. GEORGE:

Q. Did you report to the Mine Foreman or Superintendent that daily inspections of your working places had not been made by the assistant?
A. No, sir. They should know that themselves.

BY A JUROR:

Q. Mr. Sanders, what did you mean about time? A. We were working,-- you mean when I said I hadn't saw Mr. Monteith for a certain time?

Q. Yes? A. What I meant by that, we were working pulling these pillars back and shoveling back gob and different things like that which would take two or three hours to shovel one out, and after you finished the place and dropped down another place, that's what I meant by that.

Q. Do you mean you got paid for it or didn't get paid for it? A. I did get paid for it in the end, but I say I didn't see him for a certain length of time, and the reason I knew for a fact was from that time.

BY THE CORONER:

Q. Do you have any information you want to volunteer in connection with this accident? A. That's all.

EDWIN DELOZIER, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Mr. Delozier, where were you working at the time of the explosion?
A. Motor-road, back heading, 18 Right.

Q. How long have you worked there? A. I would say one week,-- no I

would say three weeks.

Q. Do you have a miner's certificate? A. Yes, sir.

Q. Would you consider your working place as dry and dusty? A. Well, it is uphill. It isn't exactly dusty, but it is dusty. It isn't exceptionally dusty.

Q. It isn't exceptionally dusty, but there is some dust there? A. Yes, sir.

Q. Did you escape with the men from 18 Right? A. Yes.

Q. After the explosion? A. Yes, sir.

Q. Is there any particular thing that you might want to say at this time that would, or that hasn't already been said by the other men about your escape or conditions? A. Before I went down to 18 I worked in 17 and 25 room. Up there it was, - it is dirty going up, and when you got near the top there was gas found in places up there. Sometimes there was gas found in one place, and probably a day or so later found in the next place, and then in the next place. I remember three places, 24, 25 and 26 it had been found in. Of course we weren't allowed to go in there until it was taken out or blown out by the air. Going through these holes they cut through, they sometimes loaded a car of bug dust, others none; you could barely see a car. After you were loading regular coal it was all right, you could see very well.

Q. Did you ordinarily load your bug dust up before you shot your coal? A. We had up until we started getting dirty coal.

Q. Prior to that time you loaded the coal dust before you shot the coal? A. Yes, because the driver was always in a hurry for the car.

Q. Did you see the Fire Boss mark in your working place, indicating he had made his early run before you entered the mine each day? A. Yes, sir, every day.

Q. Did he make his second inspection of your working place while you were in? A. Yes, sir.

Q. You have never known him to miss? A. No, sir, he was always in our place. One boss or the other was always in our place every day.

Q. Was the Fire Boss always in your place every day while you were at work? A. If he would miss a day Jim was there, - that is, Mr. Monteith.

Q. How often did the Fire Boss miss? A. Very seldom the Fire Boss missed; very seldom.

Q. Did Mr. Monteith examine the working places daily? A. Not every day, no.

Q. How often were his visits made? A. It was rather irregular. Sometimes for three or four days at a time, and sometimes maybe we wouldn't see him a week or two, but he was in there the day before the explosion.

Q. What do you refer to as the day before the explosion? A. Well, that would have been Friday.

Q. Was that on the day shift or night shift? A. Friday night shift. It was nearly quitting time when he came in.

Q. Was it generally known by you that smoking articles and matches were to be kept out of the mine? A. Yes, sir.

Q. Did you ever know of anybody carrying them in? A. Never.

Q. Do you recall definitely what mine officials, any of the mine officials examining you to determine whether you had them on your person? A. I was never examined, but I have seen it done on the mantrip at the dip.

Q. You never knew of anybody to smoke or carry smoking articles in the mine? A. No, sir.

Q. You say the Fire Boss ordinarily made his examinations each day? Can you cite one particular day when the Fire Boss failed to make his examination? A. He made his examination every day on the first run, but there was a certain time,-- or, I will say it was very seldom he ever missed the second run.

Q. Do you know at times when he missed the second run whether there was some unusual occurrence took place that would prevent him from making it? A. Well, they had a lot of traveling. The right roadway they could have made much more time, but they didn't have the right roadway.

Q. What do you mean? A. When you go down through 18 and up and back up again, you have a lot of condition, when you can't get through these places.

Q. They weren't connected? A. Possibly they could have gotten through.

Q. You can't recall any particular day that he failed to make his examination? A. No, it has been a long time since the Fire Boss wasn't in on the Second run.

Q. How long do you imagine it was? A. It wasn't while I was working on the right side.

Q. How long have you worked on the right side? A. Since they took the conveyors on the south side.

Q. How long has that been? A. Three or four months.

Q. The Fire Boss, to your knowledge, hasn't missed a second run in your working place in the last three or four months? A. That's right.

BY MR. HESS:

Q. How long have you worked for this company? A. Well, I worked when they first started up. I started to work there and I got my arm broken and was laid off and couldn't get my job back. Of course, I wasn't hurt

in the mines. Then I started back when they put this other shift on.

Q. Approximately two years? A. Well, on the whole, more.

Q. You say you were never searched for any smoking material? A. No, sir,

Q. Did you see anybody else searched? A. Yes, sir.

Q. How were they searched, were their pockets turned inside out? A. Sometimes they were told to turn them inside out, yes, and sometimes they were felt.

Q. How does it come you weren't searched? A. Because I wasn't in the immediate vicinity.

Q. They didn't search very good? A. They started on one end of a trip,-- well, no they didn't search every one.

BY MR. GEORGE:

Q. Did you ever report to the Mine Foreman or Superintendent that the assistant foreman had failed to visit your working places regularly. A. No, sir.

BY MR. STULL:

Q. You understand the law requires some one to search the miners for smoking materials? A. Yes, sir, in a gaseous mine.

Q. They must search them to find out if they have any materials? A. I don't know exactly about the law, but it is understood.

Q. But the law doesn't impose any duty on the officials to search the men? A. Well, I don't know anything about that.

BY THE CORONER:

Q. Is there anything else you would like to say to this jury in connection with this portion of this mine, or anything in connection with this explosion? A. My only idea is that there would have been a lot more careful work done if the men were paid for it.

Q. You may explain just what you mean? A. Well, there was some places where they had clay veins and a lot of rock that had to come down. The less rock they could take down to make it reasonably safe, that is what they took down; but, if the men were getting paid for it they would have taken it down and made it real safe. There was lots of work in there you weren't paid for.

Q. In your opinion would that particular neglect have any bearing on this explosion that occurred? A. Well, as far as I am concerned, no, because what I am referring to was the work being down on the other side in 18 Left.

Q. The other side of the mine? A. Yes.

Q. Practically out of the path of the explosion? A. Yes, sir.

Q. Of course, this question of lack of pay and so on is between the men and the company themselves, or their organization, unless it may enter into the explosion itself. Is there anything else you want to volunteer?
A. Well, I would say this explosion happened in 28 room. I would say it wasn't the fault of the person working there, because I worked with that boy since the time this mine started up until the time I was transferred up into 16.

Q. I don't think there has been any testimony so far inferring that the boys in 28 room or any other of the rooms in there had anything to do with causing this explosion. A. That's all, then.

BY MR. GEORGE:

Q. Do you consider it the legal duty of a miner to safely secure his working place and keep it in safe condition? A. Yes, sir.

BY MR. STULL: It has been suggested that the Rule of Law be read into the record which covers the duty in regard to smoking, which is Rule 32, to qualify the matter. Rule 32, as amended and approved July 12, 1935, P.L.656, further amended by Act No. 464, July 1, 1937. "No person shall carry any matches, pipes, or other smokers' articles into a gaseous mine, or portion of a gaseous mine, worked exclusively with approved safety lamps, or approved electric lamps, or both, nor shall any person have any of said articles in his possession while in such a mine: Provided, however, that it shall not be assumed or be inferred that a coal mine is gaseous because of the partial or exclusive use of electric cap lamps."

Therefore, there is no duty on a person to make searches.

BY THE CORONER:

Any other questions?

(No reply)
HEARING RECESSES UNTIL
1:30 P.M.

HEARING RECESSES UNTIL 1:30 P.M.

AFTERNOON SESSION

STANLEY CYRWUS, Called, Sworn

EXAMINATION BY MR. GEORGE:

Q. Stanley, were you employed at the Sonman Slope Mine on the morning of July 15, 1940? A. Yes.

Q. Where were you working? A. I was working at stumps in about, between 17 and 18 room, I think.

Q. On what heading? A. In 16 right.

Q. Where did you see the flame? A. Well, to my judgment I think I seen it,- it was up ahead toward the face of the heading, I judge about 22 room on 16 Right.

Q. 22 Room on 16 Right? A. Yes.

Q. You say you were working between 17 and 18? A. Yes.

Q. That would be approximately four rooms toward the face from where you were working? A. Yes.

Q. Or a distance of approximately 240 to 250 feet, is that right?
A. About that.

Q. What did this flame appear to be like when you first saw it? A. Well, it sort of looked like a fire cracker at night, real bright, just bursting in, in the whole heading; it just came out and was filled up, like.

Q. Just illuminated very suddenly? A. Yes, all together, just by looking up there. I was looking up that way and noticed the flame was red, then I hollered and jumped aside.

Q. What did you holler? A. I hollered "explosion."

Q. You hollered "explosion?" A. Yes.

Q. Was there any flame came back as far as where you were located?
A. Well, of course I didn't see it, but my buddy had his hair singed..

Q. Who was your buddy? A. Edward Bobrowicz.

Q. Did your buddy say anything at the time? A. What do you mean?

Q. When you hollered "explosion" and the flame came back and burned his ears? A. He was quiet after that, or his voice was covered by that noise and the force started throwing stuff around.

Q. Were you thrown to the floor? A. No.

Q. You were standing up? A. I was in a crouched position, you couldn't stand in the place.

Q. Were you in a stooped position standing with you back as high as you could get it? A. I was in a stooped position.

Q. But not on your knees? A. No.

Q. Do you know what position your buddy was in? A. No, I don't

Q. You weren't burned in any way at all, were you. A. No, I wasn't burned.

Q. And your hair wasn't singed? A. No.

Q. The flame didn't burn, or didn't reach you, then? A. No, it didn't.

Q. Do you know whether the machine runner examined your working place with an approved safety lamp for the detection of gas before he took in the machine? A. At the time they were in we were at the buckets; I couldn't tell you.

BY MR. GEORGE:

Q. When you heard the working of the roof up high, did the men present say anything about the unusual thump or sound? A. I can't recall what we were saying, but everybody had a word to say. I can't recall that.

Q. Could you give us an idea what that sound sounded like to you. A. Well, I just say like a railroad car or something roaring, if you know what I mean,- the wheels.

Q. Sounded like something rolling or rumbling overhead? A. Like rollers of any kind.

Q. When you heard your buddy holler, or, when you hollered "explosion", did you hear your buddy say anything about the motor being on fire? A. No, I don't think I heard that.

Q. You didn't hear anybody making that statement? A. Not that I know of.

BY MR. STULL:

Q. Mr. Cyrwus, what space of time elapsed between the time you saw the flame and the time that you felt the force of the explosion? A. You mean the time between that?

Q. I mean between those two occurrences, when you saw the flame and felt the force of the explosion? A. It was so sudden I just couldn't tell you what time.

Q. Would it be almost simultaneous, practically the same time, the flash immediately followed by the force? A. That's what I believe. As soon as I seen it I ducked.

Q. There was no appreciable space of time in between those two things that you experienced? A. No.

BY THE CORONER:

Q. That is, you didn't have time to tell anybody else there was an explosion up there, the motor was on fire or anything of that kind? A. No.

BY MR. HESS:

Q. About how long did it take you, Stanley, to reach a current of fresh air from the time the explosion occurred? A. I just can't exactly tell you the minutes, how many minutes it took us, because it was very hard.

Q. Do you know what time the explosion happened? A. No, I don't know.

BY THE CORONER:

Q. Stanley, among yourselves prior to the explosion was there any general discussion regarding the condition of the mine as regards safety? A. What do you mean, at the time?

Q. Well, not at the time; lots of times fellows get together at the bug hole or cross-cut when eating on the heading, and say, "well, this mine don't seem safe to me," or something of that kind. Now, was there any dis-

cussion along that line among the men? A. A couple months ago I know I talked a lot about that.

Q. What reasons were there for you to make a statement along that line?
A. Well, it was so dusty down 17 Right stumps.

Q. Of course that was in regard to the dust condition in 17 Right stumps?
A. Yes, it was very hot down there. It would get so hot my nose would bleed three or four times a day, maybe more. That's what I blamed that on, heat.

Q. Any discussion relative to the amount of air that was being supplied, velocity of the air? A. Yes, we complained to the boss about that and he said he would do something about it. He did and helped us a little bit, not much.

Q. You didn't feel you were being supplied with a sufficient amount of air to work in those places you were working in? A. In the stumps. The air,- it was real hot in that place. I figured there was no air in it, that's what I thought, that's my opinion.

Q. Was there any discussion relative to gas conditions? A. Not that I recall.

BY MR. GEORGE:

Q. Stanley, where did you say you were working when this heat condition existed in your working place? A. That was in 17 Right heading stump.

Q. 17 Right heading stumps? A. Yes.

Q. At what number? A. I believe about six or eight around between 6 and 10, I would say.

Q. Between six and ten? A. Yes.

Q. How long prior to the time of the explosion? A. That was in about,- I believe we worked down there in the month of March.

Q. March of this year? A. Yes.

Q. How long did you work there in the stumps at that time? A. A few months.

Q. When you were working in the stumps, the rooms had been driven up and down, some back, before you started your stumps, had they not? A. Yes.

Q. There was never any more work done in these rooms after you worked in the stumps? A. Not in the rooms.

Q. How far at any time in those heading stumps were you working off of the 17 Right heading? A. I didn't get that.

Q. About what distance did you work, the maximum distance you worked from 17 Right heading until the stump work there, or until the heading stump was completed? A. I still don't get it.

Q. How many cuts would it take, the stump you started, from the heading?
A. I can't recall, about four I think.

Q. About four cuts? A. That's what I think.

Q. What length cutter bar were they using, do you know, approximately?
A. I believe six.

Q. In your own opinion, you would cut through the stump in about twenty four or twenty five feet from the heading? A. Yes.

Q. Would you cut through into gob? A. Yes, we cut through to the gob.

Q. Was there any cave around those stumps, or was it open behind and around?

BY THE CORONER:

Q. After cutting through the stumps was it caved, or could you see back? A. Oh, some places the draw slate would dome down, that's about all.

BY MR. GEORGE:

Q. There was no general caving outside of that they were open? A. Not that I recall.

Q. Do you remember in making your escape whether you saw a danger board across 16 Right heading between the stumps where you were working and the dilly road? A. I didn't see any at the time. You couldn't see.

Q. How was the visibility from that point to the dilly road when making your escape? Did you have any real difficulty in seeing? A. I did. It began affecting my eyes. It was just like peeling an onion and water was dropping over my eyes. I had a hard time seeing.

Q. Did there appear to be much dust and smoke in the atmosphere? A. Yes, there seemed to be a lot of smoke.

Q. Do you know whether the 16 Right heading from the stumps to the dilly road was dangered off or boarded up before the explosion occurred? A. Yes, I know.

Q. You knew what? A. I knew it was dangered off.

Q. Dangered off below you prior to the explosion? A. Yes.

BY MR. HESS :

Q. Stanley, in making your escape from the stumps and your working place at 16, do you recall seeing an electric wire or trolley wire in other words? A. I seen it, -- you mean down?

Q. Did you see it? A. Yes, I seen trolley wire.

Q. In what position was it? A. Well, the wire I can remember where we went in toward,-- we were trying to get into 15 room, 17 Right; right at that shoo-fly there was a board down. I don't think the wire was completely down there, but down below it was down to the ground.

Q. Lying on the bottom? A. On the bottom.

Q. Did you hear, with the other men, the loud rumbling noise above you? A. I did.

Q. What did that appear to sound like to you? A. Sounded like cars running, but I don't know.

Q. Where did the sound seem to come from? A. From all above us.

Q. Directly over you? A. Yes.

Q. Will you tell us as near as you can what you saw and what happened at the time of the explosion? A. Well, I saw a flame before the explosion.

Q. You saw the flame before the explosion? A. Yes.

Q. Where did the flame seem to come from? A. Up around the motor road.

Q. How far was the motor road from where you were located? A. I don't know how far it is.

Q. Could you give us an idea? A. No, I couldn't. Close to three hundred feet.

Q. What did it look like when you saw the flame? A. Like the motor was burning.

Q. You definitely knew the motor was up there? A. No, I didn't know if it was up there or not.

Q. But it looked to you as if there was an electrical piece of equipment on fire? A. Yes.

Q. Will you tell, now, just what happened from that time on as near as you can? A. I was standing up and it knocked me over, that's all I know.

Q. What did you do after it knocked you over? A. Covered my face.

Q. Were you burned? A. My ear.

Q. Your ear was burned? A. Yes.

Q. Were you standing up when the flame came back? A. I was standing up.

Q. You were standing up as near the roof line as you could? A. Yes.

Q. Your head was practically at the roof line? A. Yes.

Q. Did you notice when you were standing up in a rather stooped position, looking down, whether any flame extended around your feet? A. No, I didn't see anything.

Q. You made your escape from 16 Right heading stumps immediately after the explosion with the other four men? A. Yes.

Q. Do you recall what time you landed on the dilly road? A. I don't know what time it was.

Q. About how long do you think it took you to go from the working place to the dilly road? A. I don't know.

Q. Do you have anything else to offer that might throw any light as to the cause of this explosion? A. No, I don't.

BY MR. HESS:

Q. Do you state you saw flame before the explosion? How long before the explosion did you see this flame? A. It wasn't very long whenever it happened.

Q. About how long, Ed? A. Oh, a couple seconds.

Q. Before you felt the impact of the explosion? A. Yes.

BY THE CORONER:

Q. A couple seconds before you felt the impact yourself, do you mean?
A. The air coming down.

Q. Jimmy asked you if you saw a flame before the explosion? A. I seen a flame.

Q. Would that be an arc from an electric wire or be the explosion itself?
A. Oh, I don't know what it was.

BY MR. HESS:

Q. You made the statement you saw the flame before the explosion and I don't know how long before the explosion you saw this flame; it could be some other electric equipment on fire. A. It was a second or so before the explosion, because I stood there and I told them it looked like the motor was on fire. Then, no sooner did I say that when it hit us.

BY MR. YOUNKER:

Q. How big did this flame seem to be, just a small flame? A. No, it seemed to be a pretty big flame.

Q. Did it seem to fill the entry, the heading? A. It seemed, it filled the whole thing. It just seemed the whole thing was on fire.

Q. A couple seconds later you felt the impact? A. Yes.

BY MR. GEORGE:

Q. Edward, when you saw the flame, what you thought was the motor on fire, what color was that flame? A. Just like a fire.

Q. Was it bright red or orange color, or half bluish, or what. A. Oh, just a flame, I don't know what kind it was.

Q. You have often seen an electric arc in a mine? A. Yes.

Q. Did it resemble the color of an arc? A. No.

Q. What color did it resemble? If you were able to distinguish between the color of an arc and some other color, what was it? A. Sort of bright red.

Q. Did I understand you to say from the time you saw the flame it was a second or two before you noticed the concussion and vibration of the air? A. Yes.

Q. Will you tell us what you mean by a second, just about how long do you mean by a second or two? A. Well, I was standing there and all of a sudden it knocked me over like wind or something.

Q. The seeing of the flame was followed almost instantaneously by you being thrown about by the force of the explosion. A. Yes.

Q. Did you notice whether the flame traveled toward you from that point? A. No, it didn't travel toward me.

Q. How did it come down to the point where it burned your ears? A. Oh, I don't know.

Q. It was so quick you didn't see it coming? A. Yes.

Q. Are you sure it didn't come from behind you? A. No, no, it didn't come from behind me.

Q. Or from the side? A. No.

BY MR. STULL:

Q. You are familiar with this fact, Mr. Bobrowicz: You have seen steam coming from the whistle of a locomotive much sooner than you heard the sound of the locomotive whistle? A. Yes.

Q. Having that in mind, in comparing it with the time between the seeing of the flash and hearing an explosion, or the force of it, would you say it was somewhat similar to that in nature. A. Oh, I don't know.

Q. That is to say, would you think the flash and the explosion occurred at the same time, or you saw it first and heard it later? A. I didn't hear anything.

Q. You didn't hear anything? A. No.

Q. But you felt it? A. Yes.

Q. That was after you saw the flash? A. Yes.

Q. It wasn't so long but what it might have been the same force? A. Yes.

Q. In other words, you couldn't feel it until you had previously seen it? A. Yes.

BY MR. HESS:

Q. Ed, you are confident, then, in your expression that you thought it might have been the explosion, the flame from the explosion, is what you saw? A. Oh, I don't know.

Q. You don't know? A. No.

BY MR. GEORGE:

Q. Was it your buddy who called out "explosion?" A. Yes, it was him.

Q. You heard him call out "explosion?" A. Yes, No sooner did he holler when it came down there.

BY MR. HESS:

Q. When you made the statement before that, whether this motor was on fire, had you felt the impact of the explosion until that time? A. No.

BY THE CORONER:

Q. You say you hadn't felt the explosion, the force of it; were your ears burned at that time, when you told your buddy the motor was on fire? A. No, I didn't feel anything at the time.

Q. You were burned at the time? A. No.

BY MR. HESS:

Q. About how long do you think it would take you to tell your buddy that? A. Oh, it didn't take me very long.

Q. What we are after, is, we are trying to determine how much time elapsed between the time you saw this flame until you felt the impact of the explosion, or concussion of the air?

BY THE CORONER:

Q. In other words, Ed, what we are trying to get at is this, whether or not they were operating defective machinery that is liable to cause an explosion? A. I don't know.

Q. Did you ever know of that machine motor, or, did you ever know of that motor being defective or in bad repair that may throw off sparks, unnecessary sparks? A. Oh, I didn't see no sparks; once in a while I seen sparks under the wheels, that's all I know.

Q. What Jim is asking you, of course, is if you saw this motor on fire, as you say you thought it was the motor on fire. How long before the explosion was that, that you saw it, if you had time to tell your buddy? If you had time to tell your buddy the motor was on fire then it couldn't have been the same light you saw, I wouldn't think. What do you say about that? A. Well, it wasn't so long. I was standing there and seen the flame and told him right away.

BY MR. GEORGE:

Q. Was there a danger board to your knowledge on 16 Right between where you worked and the dilly road right prior to the explosion? A. I wasn't down that far.

Q. You didn't use that as a regular means of travel? A. No.

BY THE CORONER:

Q. But you were down that particular morning when you were escaping? You escaped that way? A. Well, we went down that way.

BY A JUROR:

Q. Ed, when did you discover your ears burning? A. As soon as I got out on the dilly road, in the fresh air.

BY MR. HESS:

Q. You don't know how far down 16 Right you went before you became accustomed there was fresh air there? A. We went down to where the sidetrack was.

Q. You went on the sidetrack before you got fresh air? A. Yes.

HOWARD INMAN, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Howard, you were working in 18 Right at the time of the explosion? A. That's right.

Q. What were you doing in 18 Right? A. Driver.

Q. How long have you been driving in 18 Right? A. I would say fourteen months.

Q. Where were you located at the time of the explosion? A. About 500 feet from the face of the heading.

Q. Could you give us a definite location by naming the haulroad? A. Yes, it is the last motor road that turned off; it isn't cut through yet.

Q. Turned off 18 Right? A. Turned off 18 Right and toward 17. I was standing about ten feet below the switch, between the switch and door. I was ready to shut the door.

Q. You were driving ponies or mules? A. Ponies.

Q. The ponies were with you? A. Yes.

Q. Do you have a miner's certificate? A. Yes.

Q. Howard, will you tell us in your own words what you saw and experienced at the time of the explosion and how you made your escape to the dilly road? Talk loud and slow and clearly. A. Well, I was at 4 place turned off that motor road. Of the one switch there was four places. There was only three working that day. Two men were off. I just placed an empty in all them places and ran their loads down. I had, I think, nine or eleven loads, I'm not sure which, right below there after I dropped the three down. I dropped them down right, I would say 300 feet below where the switch was, that is where the motor came in with the loads. I walked back up and was up there and was going to shut the door, and I don't know, it started out in

a whistle, like, something like a siren and a roar, and it upset me and I don't know if I saw a flame or not. I was facing down the heading at the time. I couldn't swear if I saw a flame or not. I did see something that might have been shoved around. I walked up the heading to where the ponies were and at that time the rest of the men were gathering out of their places. We all had to come out of the same switch, and we met there and they all wanted to know what was the matter. I didn't know myself right away, and I couldn't tell them. Then the smoke came, well, I would say not over a half minute after the roar, and it filled up with smoke; you couldn't see your hand in front of you. We tried to go down the heading. We said it was too bad, we better turn back. We went back up and we went in the shoo-fly that turns off to 3 and 4 face, turned off the heading into 3 and 4 face by the motor road. We thought there was a chance going up that way through 17. There is a motor road below that. It isn't the one they are hauling on; it isn't hooked up. We went down there and lifted a canvas off to cross 3 face and couldn't see anything there. We went back up the heading again. I think we sat up there ten or fifteen minutes and we went back down again. The next time we got down as far as the motor road, that the motor was using at the time, - that is the one with the door on.

Q. No. 3? A. No. 3 motor road, second haulage road. We seen a door out across the heading. We knowed where the explosion occurred above us. We couldn't get farther than that and we went back up the heading again, and I would say 300 feet above that motor road, somewhere around there, we went back in the back heading and it was clear in there, and we sat there and Wesley Diehl and Howard Sanders said they were going up to build a Barricade up there, and they were up there quite a while and I decided to walk up myself and see what they were doing. I met Sanders coming down and he told me to go with Diehl. I went up with Diehl and we put a canvas across the heading and the heading and back heading for 400 feet was clear, as clear as it was in here. There was no smoke or anything in there, but on down below it was real thick. So, we went down with the rest of the men after we put that canvas up, and we sat around in there for maybe half an hour, and I says I was going to take a walk and see how far I could get down myself. I got down that time to the 3rd motor road. I was going down the back heading. The 3rd motor road goes up into 17, and I got about 100 feet below that, maybe 200 feet, by myself, and I came back up and Wesley Diehl and I don't know which Saire, I think Joe, - Wesley and Joe and myself, I asked them to go along with me, and they both said they would go. See, the three of us left this time and we got down to where there is a runaround down there, maybe half way down the heading, where they switched the empties with the motor. The three of us got to the runaround and we sent Joe Saire back and told him to go back for the rest of the men, and Wes Diehl and I were going to go on and they were to follow and if they seen us lying anywhere they were to beat it back up the heading and do the best they could. We walked down slow, the two of us. There are two airlocks coming off the sidetrack, about half way between that airlock and motor road, second motor road and first haulage, half way between that motor road. We went out through the heading, down through them doors. The doors were both shut and both on at the time we went through, and in between them doors it was thick with smoke, you couldn't see anything in there. We got out onto the main dilly. I believe we met, - there was quite a few bosses there, Mr. Steele, I recall, and Bill Ray were both there. We were talking to both of them and the other men followed us, but they didn't come out on the heading. They followed the back heading on the return clear around to the dip, clear up to that brattice that has a little door in it. They came through that door, the rest of the men.

Q. When the three of you left the rest of the men from 18, who went back to tell them it was all right? A. Joe Saire.

Q. Do you remember what time it was when you landed on the dilly road? A. No, I couldn't tell you exactly. I can't tell you exactly. When we left the men it was one-thirty.

Q. How long do you imagine it took you from the time you left the men until you landed at the dilly road? A. At least half an hour.

Q. Then you would fix that at approximately two o'clock? A. Yes, somewhere around two o'clock.

Q. Did you go to the surface immediately from there? A. No, I stayed inside until eight o'clock that night. They wanted to take me out and I wouldn't go out. I was with Mr. Hess for awhile, Jimmy Hess.

Q. Do you recall immediately after the explosion occurred how much dust and smoke was present in the air at the point on 18 Right and No. 5 Motor road, where you were standing? A. Below 5 motor road you couldn't see.

Q. How was it where you were standing? A. Where I was standing first you couldn't see. I was below, between it and the canvas door, but above the motor road on the heading it was clear.

Q. It was clear above the No. 5 haulage road on 18? A. Yes.

Q. It was clear from there to the face? A. That's right.

Q. Did you see anybody working below you when you came out, on the motor road? A. Yes, sir, I seen a light below me. Just where he was walking, it was quite a distance from me.

Q. That was at the time of the explosion? A. I would say it might have been five minutes before, when I dropped the four loads down that is when I seen the light.

Q. When you first came out on the road? A. Yes, I came out and dropped the loads and coupled them and came up and seen it.

Q. You didn't see that light after the explosion? A. No, I mentioned to the men there was a man working down the heading, I wondered what became of him.

Q. How often did you see the mine foreman, assistant mine foreman in your section? A. I would say once a week.

Q. How often did you see the mine foreman in your section, section in which you hauled? A. I couldn't tell you. I would say about once a month. That would be my idea.

Q. Do you think the mine foreman or assistant mine foreman could come in your section without you seeing them? A. No, he couldn't come up, but the fire boss, we seen the fire boss every day, I'll say that.

BY MR. HESS:

Q. Mr. Inman, what was the dust condition on the haulage roads where you drove prior to the explosion? A. Well, in some places the motor dragged,

I will say that. The bottom of the motor dragged on the dust.

Q. Was the dust dry dust? A. Yes, in the upper part I would say it was dry. Down farther it was damp.

BY MR. GEORGE:

Q. What do you mean by the upper part? A. That is from that No. 3 motor road on up. They quit shooting bottom there. Right above 3 haulage-road where they left the bottom, on up, it was dusty; below that it was damp.

Q. From there out to the main side track, where the dilly road is? A. yes.

BY MR. HESS:

Q. Would you say in places where the dry dust was it was a dangerous condition? A. Yes, as far as dust is concerned, yes.

BY MR. YOUNKER:

Q. Howard, had you ever heard the men among themselves saying that they thought the mine was in a dangerous condition because of dust? A. Well, I never heard them saying it was dangerous. I never heard them mention that, but I did hear them say it was awful dusty.

Q. About the air, did they feel the air was bad, not enough air? A. Not in 18 Right, the air was good.

Q. That was your section? A. Yes.

BY MR. HESS:

Q. Do you remember whether or not this part of the section where you claimed it was dusty was ever rock dusted? A. Never rock dusted, no.

BY MR. GEORGE:

Q. Howard, do you know whether there was any disturbance or anything blown about from No. 3 haulageroad to the face of 18 Right? A. Well, there was nothing but debris and stuff.

Q. No heavy material? A. No.

Q. Except that light stuff that might be picked up in the concussion of the air? A. Yes.

Q. You didn't notice any direct force? A. Yes, there was a force.

Q. What I mean is, anything flying through the entries or rooms? A. No.

Q. Large enough to do any damage, strike a man and do damage? A. No.

BY MR. STULL:

Q. Mr. Inman, where was this door located you mentioned you opened and closed? A. Right below No. 5 motor road; I would say 15 feet below the switch.

Q. You mean in on 18 Right? A. Yes.

Q. Did you go through that door with your team, ponies?

A. No, I didn't take the ponies through the door. After I placed the three empties I turned the ponies up the road.

Q. The door was closed when you came through and you opened it and put empties in? A. Yes, and I closed the door and dropped the loads down.

Q. How long had you had the door open? A. Oh, I would say not more than five minutes at a time.

Q. After you closed it the last time, how soon after the closing of the door did the explosion happen? A. The door was open when the explosion occurred. I was going through the door, dropped the loads down and was coming through the door and was ready to close it, just ready to throw the latch and let the door close, when it happened.

Q. Just ready to close it when it happened? A. That's right.

BY MR. GEORGE:

Q. Howard, do you know why the door you are referring to was installed, what its purpose was? A. Yes, sir.

Q. Will you please explain that? A. Well, 18 Right is a four way entry, 1, 2, 3, and 4 face. The air, the way they regulate it in the upper part, goes up 4 face and crosses that shoo-fly between 4 face and 3 face. They have canvas strung to throw the air clear to 4 face to the top and down to 3 face, and down 3 face and down that same shoo-fly to the 2 face. That would be the route. Down below that shoo-fly they have a door and they turn the air up the heading through a hole in the back heading and it is in the return.

Q. Do you know whether that door had anything to do with the driving of the ventilation in 16 and 17 right? A. No, that door didn't have nothing to do with that.

Q. Do you know whether or not it was a local door established for the purpose of ventilating the No. 5 haulageway and No. 1, 2, 3 and 4 faces? A. The old motor road or back heading; all that door does is take care of the heading and back heading.

Q. If that door were open what effect would it have on 1, and 2 face? A. If that door was open there would be no air.

Q. It would short the air? A. Yes.

Q. Therefore, it was a door established for the purpose of conducting ventilation around the faces of No. 5 haulageway, No. 1, 2, 3 and 4 faces. A. Yes.

BY A JUROR:

Q. Which one of these entries is 1, 2, and 3 and 4 face? If I understand it, the air is traveling the other direction? A. That's right, we were instructed it was coming the other way. The 1 face is the last one down this way toward the bottom.

Q. The air comes up the 1, then 2, 3 and 4 face? A. No, to 4 face first,

then 3, 2 and 1, back down one.

Q. Where is the door located? A. Well, you see the last haulageroad doesn't cut through into 17,15 feet on the right hand side of that looking at it from here.

JOSEPH SARIE, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Joe, you were employed in 18 Right on the morning of July 15, 1940?
A. That's right.

Q. What were you doing? A. Loading coal.

Q. Do you have a miner's certificate, Joe? A. Yes.

Q. Where were you working at the time of the explosion? A. 18 Right, in 4 face.

Q. What were you doing at the time of the explosion? A. We were loading a car.

Q. Will you tell, in your own words, Joe, what took place at the time of the explosion, what you did and what reaction it had on you? A. There. was three of us working in 4 face, and we happened to be loading a car; we had it about half loaded, or a little more, one of them big cars, and the first reaction I knew about it, my ears seemed to be kind of deaf on me. I put both hands on my ears, dropped my shovel and held my ears, and it seemed there was great pressure coming on, almost busting my eardrums. At the same time it put me down on my knees, and the only thing I heard was a hissing sound, and I could more or less feel the blood rushing to the face and head. I noticed these fellows was looking at me and they done the same thing, they put their hands to their ears. I happened to be working on the rib side, right side, and it had me affected first. I noticed they were doing the same thing. I figured if it would last more than a second, I thought it would bust my eardrums. While it was catching me I imagined there was something wrong with me, and I noticed the other fellows were doing the same thing, and I figured there was something wrong with all of us, and as soon as that let up on us Wesley Diehl was the third man in the inbye working there and he hollered "explosion," so we dropped everything and of course we had to drop it at that particular time. We ran out of our place and didn't get very far until the fellows working on motor road back heading were coming up, and we all met at that particular place, and there is a cross-cut there. There was six of us, three of us in the back heading and us three. We went down through the cross-cut into 3 face and there was three more men down there, and the cutter and scraper. So that made eleven of us there. We all ran out to 3 face, on down toward, you might say shoo-fly motor road out to the heading there and we met the driver and another fellow, a fellow working in the heading. That made thirteen of us all together there. While we were ruhning up there, there was quite a bit of smoke in our place there, and we ran out the heading there and we made a break on down the heading. We wanted to go down by the sidetrack. We got down quite a piece but didn't get to the motor road and ran into pretty heavy stuff. It choked us and made a fellow feel bad, feel sick. We tried to go in there a hundred feet or so and found out we couldn't stand it, and

went back out of there. We turned back up and when we did go back up there we left everything, buckets and coats, and I noticed it was clear in our place. Me and Wesley Diehl went up to our place and got our coats and buckets and took our buddy's, bucket, he was down ahead. In the meantime we were going to make, or we were figuring on going up to 17, maybe the explosion was over in the left, in 17 left or 16 left; they started that particular day. We tried to go down; we did get down the road, down the heading again, motor road, feeling our way along the road. It was heavy; you couldn't see. We kept on the road very well; we were kind of feeling our way there and we came on up. There was a blown off door there. We seen there was no use of us going in there, it was heavy, and we turned back up. We were talking about going up into 4 face, and there was another motor road there, more or less a heading which they aren't using that one there. We figured we would go down that way, but we couldn't do it. We stood around fifteen minutes or so and felt the best place to go was the back heading. We did go down the back heading and it was pretty clear there. We stayed in the back heading. Every once in awhile we tried to go down the back heading and we ran into that heavy stuff too. We turned back and stayed where the air was clear. Every now and then a few of us would go out the heading and see how the thing was coming along. Well, it seemed to be staying in the same place; it wasn't coming up on us too much, but it was heavy and we turned back in there. There was one time I noticed it kind of dropped down twenty or thirty feet, that stuff in the heading. The next time we went back it was back up again. Then a few fellows would go out there and take a piece of board and hit on the motor wire signaling for some one to rescue us in case someone would hear that signal. We hit the motor wire. Then we would always turn back in there. We were sitting in the back heading. It was clear; air wasn't circulating at that time, I suppose. The clear spot we had was still there. The next time a few fellows went back the back heading way and went up in the heading, I believe the back motor road, and they came back and told us there was a fellow burned, they can't recognize him. We tried to figure who it would be. I believe they said he had something in his hand, pliers, that he was more or less a wireman. We tried to figure out who it was. We thought it was Stumpy George, they called him, but I didn't see him. We went as far as the motor road then. We were sitting around there, and of course there was a few fellows went up to build a brattice, build canvas up. We even tried to put that door on that blowed off and some fellow said there was no use doing that, it will make it that much worse. We were in the back heading a good while, we even took time out to eat a little bit and drink water, a certain few of us there, and I believe a couple fellows went down a piece in the back heading and it seemed to be cooling off slightly, but we stayed there, I don't know how long. Three of us decided to go on down ahead. I noticed the safety lamp the cutter used. I noticed he had more or less a small light in it and that thing was going up, seemed to be getting kind of red. I don't know much about this condition, but we started up. It seemed to be filling in on us; it wasn't too heavy, but was coming in on us, and we decided to go on ahead and explore and see if it didn't drop down and get cool. We went on down there, the three of us together, me, and this fellow who was here before me and Wesley Diehl. One of them carried a safety lamp and went on down there past that run-around there. Of course we were pretty close to the bottom, hugging the bottom as near as we could. That is where you could see the most. It wasn't quite as bad near the bottom. We went down until we passed the run-around, and went down a couple hundred feet until we decided it was about the same thing, but if we went that far we might as well go back and get the rest of them. We all had our dinner buckets along, the three of us. I said, or, we decided I was going to go back after the ten fellows. There was ten fellows above us. These two fellows said they were

Q. Joe, did the assistant foreman in that section where you worked visit the working places each day? A. You mean Monteith?

Q. Your assistant foreman? A. No, he wasn't around each day.

Q. How often did he come around? A. The last time I remember was about a week ago.

Q. Did the fire boss make his second run? A. Yes, fire boss was in there every day.

BY THE CORONER:

Q. How about the foreman? A. Who do you mean?

Q. Mr. Steele, did he make his regular visits, or any visits? A. Not very often.

Q. How often did you see him in there? A. Oh, I don't really know. It was quite a good while since I saw him in there, especially in our place.

THOMAS SARIE, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Tom, were you working in 18 Right on the morning of July 15, 1940?
A. I was.

Q. Where were you working? A. At motor road back heading, in 18 Right.

Q. Do you have a miner's certificate? A. Yes, I do.

Q. Tom, do you have anything to say that might throw light as to the cause of this explosion? A. Really I couldn't. I couldn't say any more than what the fellows who have testified here before did; in fact I probably haven't gone through all they did because I was up among the ten men that waited up there.

Q. You haven't anything to say? Do you have any contradictions to offer to any testimony presented? A. No, I couldn't

Q. Tom, did the assistant mine foreman in the section make regular visits in your working place. A. About the last time I saw him was about a week ago.

Q. That is a week before the explosion? A. That's right.

Q. How long prior to that did you see him? A. Oh, I would say he made a visit about weekly. It wasn't any sooner than that,- about weekly.

Q. Did the fire boss make his regular visits while you were in the mine?
A. Yes, every day he was in there.

Q. You always located his mark when you entered? A. That's right.

BY MR. HESS:

Q. Concerning the dust, Tom, in the haulageroad, was it dusty condition, dry dust? A. It was dusty where we were working, down at the motor road is where it was damp.

Q. Did you consider this dust dangerous? A. Well, from the understanding I have, I would say it was, yes.

Q. Do you have any recollection of when the place was rock dusted last, or if it was ever rock dusted? A. It wasn't rock dusted any time I was there, I'm sure.

Q. How long have you worked there? A. I would say about six months anyhow, Jimmy.

BY MR. YOUNKER:

Q. Had the men in your presence ever discussed the safety of the mine, whether it was safe or unsafe? A. No, I never heard them say that.

Q. Never heard of any one smoking in the mine? A. No, no, I haven't heard that either.

Q. And never saw any one? A. No.

JOHN SARIE, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. John, were you working in 18 Right the morning of July 15, 1940?
A. That's right.

Q. Where were you working? A. 18 Right, 4 face.

Q. How long have you worked in 18 Right, John? A. Oh, I can't recollect; about six months now.

Q. Do you have a miner's certificate? A. That's right, I do.

Q. How often did the assistant mine foreman of the section visit your working place? A. Well, the last time I saw him was about a week ago.

Q. About a week before the explosion? A. That's right.

Q. Had his visits been any less frequent prior to that time or about the same? A. About the same.

Q. About once a week? A. Yes.

Q. The fire boss made his visits daily? A. Daily.

Q. You always noticed his mark on the place indicating he had made his early run? A. That's right.

Q. Do you have anything to say, John, that might throw any light on the cause of this explosion? A. No, I could hardly say anything. I couldn't contradict anything.

Q. Anything you can throw any light on would be appreciated? A. I don't know of anything that could have caused it.

Q. John, do you recall what time you landed on the surface? A. On the outside?

Q. On the outside? A. When I was going home it blowed two-thirty.

Q. Was that about the time you left the mine? A. No. Well, I figure we left where we were staying to make the break, we left, I figure, about one-thirty. That isn't exact time or anything.

Q. The question I asked is what time you arrived at the surface outside. Where were you when the whistle was blown. A. I was on my way home. I figure we got out about twenty five after two on the surface.

Q. Do you know about what time you landed on the dilly road? A. I couldn't figure. This isn't accurate but I figure about two o'clock.

FRANCIS TERLOSKY, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Francis, were you working in 18 Right on the morning of July 15, 1940? A. I was.

Q. What were your regular duties? A. Scraper on the machine.

Q. Where was the machine located at the time of the explosion? A. 3 face, sumped in, about half way through the place.

Q. Who made the examination for gas at the face before you took the machine in? A. I did.

Q. You made the test for explosive gas? A. I did.

Q. Do you have a machine runner's certificate? A. I do.

Q. Did you ever detect explosive gas in any working place in 18 Right? A. I did not.

Q. Do you know of explosive gas being detected in any working place in 18 right by your buddy when he made the examination? A. I do not.

Q. Who was your buddy? A. Joe Kuzick.

Q. Francis, do you have anything to say that might throw any light on the cause of this explosion that hasn't already been said, or any statement you care to contradict? A. The only thing I can say is I don't know how it happened, but how we got out.

Q. Do you have anything you care to say that hasn't already been said?

A. Nothing I know of. All I heard is what I heard here. I know about the same thing.

Q. Has there been anything omitted that you might add to? A. Not that I know of.

BY A JUROR:

Q. How long did you operate on that cutting machine? A. Two years and a half.

Q. Was that cutting machine always in good working order, good cable and resistance and everything, that wouldn't cause a flame by an arc? A. It was always all right as far as I know.

Q. All right and in safe working condition? A. Yes.

JOSEPH TREXLER, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Joe, were you working in 18 Right on the morning of July 15, 1940?
A. Yes, sir.

Q. Where were you working? A. On the face of the heading.

Q. What were you doing? A. Digging up bottom.

Q. As a miner? A. Yes.

Q. Do you have a miner's certificate? A. I do.

Q. Joe, did the section foreman make regular visits daily of your working place? A. I started about a week before the explosion happened, and I seen him the first time the night I started, that is the last I seen of him.

Q. How long have you worked in this section? A. How long is it since the explosion?

Q. Was that your first week, the week preceding the explosion? A. The week before.

Q. You hadn't worked in that mine prior to that time, not that section of the mine? A. No.

Q. Did you see the fire boss daily while you were working there. A. I seen the fire boss every day.

Q. Joe, do you have anything else to say that hasn't already been said that might throw any light on the cause of the explosion. A. No.

Q. Or any criticism or contradictory statements to make? A. No. You heard about the rock dusting, didn't you?

BY THE CORONER:

Q. There has been some testimony in regard to rock dusting. A. That's all I know.

Q. Do you have anything to say in regard to the condition of the air?
A. It was good air in my place. I don't know how it was in the other places.

Q. Have you anything further to offer? A. No.

CONRAD BRUNETT, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Conrad, were you working in 18 Right on the morning of July 15, 1940? A. Yes.

Q. Where were you working? A. 3 face.

Q. As a miner? A. Yes.

Q. Do you have a miner's certificate? A. Yes.

Q. How long have you been working in 18 Right? A. About a year and a half.

Q. How often did the assistant mine foreman visit your working place during that period of time, frequent or infrequent, or were they daily?
A. No, it wasn't daily. He was in there about a week before the explosion.

Q. About a week before the explosion? A. Yes.

Q. Do you recall when his last visit preceding that was? A. Before that?

Q. Yes? A. Oh, around two weeks.

Q. Did the fire boss make regular daily visits while you were at work?
A. Yes.

Q. You always noticed his sign? A. Yes, his sign was always there.

Q. For the daily, early run? A. Yes.

Q. Do you have anything to offer that hasn't already been said in regard to the cause of this explosion, or any contradictory statements you care to make? A. No.

Q. How was the ventilation in your place on the morning prior to the explosion? A. It was pretty fair.

Q. Did you have any trouble having your smoke clear up after shooting?
A. We didn't shoot that morning.

Q. Did you on the day before? A. No.

Q. Did the smoke usually clear out pretty well? A. Yes, it cleared out pretty good.

BY THE CORONER:

Q. Mr. Brunett, practically every witness that comes up here and testifies says that the assistant mine foreman wasn't visiting the places regularly in accordance with the mining laws; now, do you know of any way that the company officials, Superintendent or Mine Foreman, should know of that condition? Do you know whether or not they did know that their assistant mine foreman wasn't visiting their places regularly? A. I don't know if they knowed it or not.

Q. You don't know. A. No.

Q. Was there any discussion among the men? A. About what?

Q. About the assistant mine foreman not visiting the places in accordance with the mining laws? A. Yes, I heard some of them saying that they only saw him once a week or so.

Q. Was there any suggestion made in regard to notifying the Superintendent or the Mine Foreman that he was derelict in his duties? A. No they didn't go that far.

Q. Do you think these rumors among the men, - sometimes they spread and sometimes they carry to the Superintendent or carry to the Mine Foreman; do you think there would be any leaks that way? A. I don't know.

Q. Did any one ever call the attention of the Mine Foreman or Superintendent to the fact that you know of, that they weren't carrying out their visits as they should have? A. The fire boss was in there regularly. He was in there twice a day, in the morning, and he came back again before he went out.

Q. Do you know whether or not the fire boss knew that the assistant was not visiting the places? A. No, I don't know. Sometimes the other boss was in and sometimes he was not. We couldn't tell whether he was or not. We would tell the truth.

Q. What do you mean by telling the truth? A. I said we would tell the fire boss if he was or not.

BY MR. GEORGE:

Q. Would the assistant foreman have a chance to make his examination of your working places after the fire boss left after his day's work? A. Yes.

BY MR. HESS:

Q. Mr. Brunett, did you work at the Sonman Mine, north side, at the time they had two assistant foreman in this section? A. I don't recall that.

Q. How long have you worked in that air split No. 2? A. About a year and a half.

Q. Do you remember when 17 and 18 Left was working? A. 17 and 18 Left?

Q. Yes? A. Yes.

Q. Who was your assistant foreman at that time? A. Jim Monteith was assistant foreman.

Q. Who was assistant foreman on the right side, 16 and 17? A. I wasn't working the right side.

Q. Was Fahey an assistant? A. No. He was before, when Jim Monteith was on the conveyors at that time.

Q. You don't recall, then, that at the time the two assistant foremen were on whether or not your place was visited each day by an assistant? A. Pretty regularly, yes.

Q. What, to your estimation, would be the reason the assistant foreman at that time, prior to the explosion, couldn't visit the places daily? A. I don't know, unless he had too much work to do.

Q. You never heard him make that statement, did you? A. No.

BY THE CORONER:

Q. Do you have anything else you want to say to the Jury in connection with this accident? A. No.

JOSEPH KUZICK, called, Sworn

EXAMINATION BY MR. GEORGE:

Q. Joe, were you working in 18 Right on the morning of July 15, 1940? A. Yes.

Q. Joe, what is your regular occupation? A. Cutter.

Q. Do you have a cutter's certificate, machine runner's certificate? A. Yes.

Q. Where were you working at the time of the explosion? A. In 3 face.

Q. Who examined the face of the working place where you were cutting for explosive gas before cutting in the last open break through? A. My buddy done that.

Q. How frequently did you leave your buddy make the examination for gas? A. He did this time.

Q. How frequently did you let your buddy do this work, did you take turn about? A. Take turn about.

?Q. You ran one place and he ran the other. A. Yes.

Q. You were always satisfied when he reported no gas? A. Of course we look when we cut through the place.

Q. Did you ever detect explosive gas at the face of any working place in 18 Right? A. No.

Q. Where did you cut before you cut in 18 Right? A. 17 Right.

Q. How long before did you cut in 17 Right? A. In the morning we cut that place and got out.

Q. You were working 17 Right and 18 Right also? A. Yes.

Q. 17 Right was part of your run? A. Yes. We just cut that early in the morning and we came down to 18.

Q. Did you ever detect explosive gas at any working place in 17 Right? A. No, there wasn't.

Q. Was your machine in good condition? A. In good condition, yes, sir.

Q. As far as you knew? A. Yes.

Q. Have you noticed any sparking or arcing about the machine? A. No. We would report if there was anything wrong.

Q. Who would you report to? A. To the electrician.

Q. Who was the electrician? A. Jerry Shull.

Q. Joe, do you have anything to say that hasn't already been said that might throw any light on the cause of this explosion? A. No.

Q. How did you find the air in 18 and 17 Right entries while you were working in either one of them? A. It was not too bad before the explosion.

Q. Before the explosion the air was circulating around your working places? A. Yes. Of course we are in solid place, of course.

Q. You cut in 17 Right entry as well as 18 Right, as I understand? A. Yes.

Q. Was there any difference in the dust condition in 17 and 18 Right while your machine was in operation? Did you notice whether there was any more dust in 17 Right than there was in your 18 Right? A. I don't think I can tell you that.

Q. About how much dust was thrown into suspension, into the air, while you were cutting? A. It depends on the power you have; if you have stronger power either place, you have dust. It circulate faster.

Q. The faster the machine cuts the more dust circulates? A. Yes.

Q. How long would dust remain in the air before it cleared up after you cut? A. Oh, I don't know. Once we get that cut out we don't waste time.

Q. About how much; was there dust enough created while the machine was in operation to make itself hard to see? A. Oh, no.

Q. You didn't have any trouble seeing while the machine was inoperation? A. No.

Q. In 17 or 18 Right? A. No.

Q. In neither place? A. Neither place.

Q. Did you notice whether there was indication of moisture or water dampness on the roof, sides and bottom in 17 and 18 Right? A. Yes, because the solid places is all the time damp.

Q. Solid places all the time were more or less damp? A. Yes. That's all we cut, heading.

Q. You weren't referring to any room? A. No, just solid entries.

Q. Do you mean to say your headings in 17 and 18 Right were being driven in solid coal, were always in a damp condition? A. Yes, it was always in damp condition, all the time.

Q. Did you know of any dust accumulations piled up along the haulage-roads in either 18 or 17 Right? A. There was a couple places there.

Q. How fine would that dust be? A. It wasn't very fine, because it fall off the cars.

Q. Spillage off the cars? A. Yes, off the cars.

Q. Was it permitted to pile up to the extent that it would be ground up by the wheels of the cars or locomotives? A. Some place.

Q. What particular place do you have in mind where that condition might have developed? A. It was in 18.

Q. Where at? A. Well, I tell you. I just can't figure how far it was from motor road; I would say about 150 feet, well, I'll say 1000 feet from the face.

Q. Was that on this side of No. 3 haulageroad? Was it between the haulageroad and the face. A. Yes, between haulageroad and face.

Q. That is between the gathering sidetrack that the driver used to the No. 3 haulway? A. Yes, sir.

Q. Is there a low spot in the roof there that might knock coal off the top of the cars? A. Yes, a few places it was low.

Q. Where this coal was piled up along your roadway, was that left go for any period of time before it was cleaned up, or, how often did they clean those bad spots? A. Well, I can't tell you; in a week's time or so.

Q. In a week or so? A. Yes.

Q. Every week or so they cleaned those spots up? A. Yes.

Q. Do you have anything else to say, Joe? A. No.

BY THE CORONER:

Q. Joe, in your mind, did you ever have any fear of an explosion occurring due to an accumulation of gas or lack of air traveling through that particular

area in the section in which you worked? A. No.

Q. You never had any fear of that? A. No. How do you mean?

Q. I mean did it ever enter your mind you were afraid to work in that particular section for fear there might be an explosion? A. If I was afraid I no work that place.

BY MR. HESS:

Q. Do you remember of any of the places which you cut in 17 or 18 Right being dangered off for gas by the fire boss? A. There was dangered off for bad roof but not gas.

Q. Is the cable on your cutting machine long enough that when you put the nips on to the trolley wire you can continue up to the face and cut it? A. Yes, 500 feet I have of cable now.

BY THE CORONER:

Q. You have now? A. Yes.

Q. How long have you had that? A. About six months.

BY MR. HESS:

Q. How long was your cable before that? A. Well, about 450.

Q. Was it long enough to reach each and every place at one time? A. Yes. If we can't reach we put the cables up.

Q. What type of cable did you use when you had to use a jumpover? A. Same cable as the machine.

Q. When you were through with it you unloosened the snip and left it lay on the gob? A. Yes.

BY MR. GEORGE:

Q. Joe, where was the end of the cable located when you connected your nips on the end of the cable? A. I just nailed it to the side.

Q. Was it located on the heading where you carried your trolley wire, or where was it located? A. How do you mean? I can't understand you.

Q. Where was the end fastened in the room, on the heading or where? A. In the room, about ten or fifteen feet.

Q. In the room neck, about ten or fifteen feet? A. Yes.

Q. In 17 and 18 Right? A. No, just 18; 17 we could reach that.

Q. Did you have any rooms working off 18 Right? A. No.

Q. I understood you to say you didn't have any rooms in 18 right? A. No.

Q. Where was the cable anchored in your room? A. We reach now with this

Q. No fuse trouble at all? A. No, sir.

Q. Do you think that dust condition that existed in that particular part you mentioned is dangerous? A. Well, to a certain extent it is.

BY MR. GEORGE:

Q. Walter, could these headings have been rock dusted without your knowledge? A. Why, yes they could have been.

Q. Will you tell us how high the coal cars were usually lumped in your section? A. Well, they never hardly lumped any cars.

Q. Were they just thrown up on the cars? A. Just thrown up on the cars. Where they could put the sideboards up they put the sideboards up.

Q. There wasn't any excessive piling up of coal above the sideboards? A. No, sir.

Q. Were they usually loaded about level? A. About level.

Q. Was there very much chance for coal to spill from the rear end of the car? A. No, not a whole lot.

Q. Was there any difference in the height of the car on the ends than on the sides? A. Yes, sir.

Q. How much difference? A. Eight to twelve inches.

Q. With the sideboards up. A. Yes, sir.

Q. How much difference would there be with the sideboards down? A. It is about even.

Q. About level? A. Yes, sir.

Q. Do you know whether or not there is much spillage, falling off of coal along the curves on your haulway? A. No, sir, there isn't.

Q. Not any excessive spillage to your knowledge? A. No, sir, there isn't.

Q. Did you ever notice any definite dust being suspended in the air while you were riding on your loaded trips or empty trips? A. No, sir.

BY MR. HESS:

Q. Walter, you said you thought this section could be rock dusted without you knowing it. Do you have any idea how long a trace of the rock dust stays after the place has been rock dusted? A. Well, it is there quite awhile, Jimmy, sure. Maybe I got your question wrong there. I thought you meant they could rock dust without me telling them.

Q. Mr. George asked you that question, if they could rock dust without you knowing it? A. No, they couldn't because the rock dust would lay and I could see it.

BY THE CORONER:

Q. You want to correct that reply to Mr. George to read "it couldn't?"
A. Yes.

BY MR. GEORGE:

Q. Walter, have you been employed continuously and regularly as a spragger in that section? A. Yes, sir.

Q. How long have you been a spragger? A. About a year in the north side, or better.

Q. What entries do you haul from on the north side? A. Well, I hauled rope on 18, 17 and 16.

Q. 16 Right? A. Yes.

Q. 17 Right? A. Yes.

Q. 17 Butt? A. Yes.

Q. And 18 Right? A. Yes.

Q. That constituted your haulage? A. Yes, sir.

Q. Where was the face of 16 Right heading located when you started to work as a spragger, do you recall? A. No, I don't recall.

Q. The number of the room? A. No, sir, I don't. They had what they called the conveyor placed up there and it was driven while we were hauling from the lower end.

Q. Which cross-haul were they using when you first started? A. Second motor road.

Q. Do you recall how long it has been since the third motor road was put in as a haulage? A. I would say five or six months anyhow.

BY MR. STULL:

Q. Mr. McVicker, do you know where the motor was found after the explosion? A. Yes, sir.

Q. Were you familiar with the condition of the dust in the neighborhood of that motor? A. Yes, sir.

Q. What would you say was the condition of the dust in the vicinity of the motor? A. Right where the motor was sitting whenever I saw it, there wasn't a whole lot of dust.

Q. Would you consider the amount of dust there was in a dangerous quantity? A. No, not by the place where the motor was.

Q. You said it was more or less dangerous at 16 stumps? A. Yes, sir.

Q. How far was that area removed from the place where the motor was found? A. I would say a thousand feet, anyhow.

Q. What area on the motor road in either direction in the drift was the dust not dangerous? A. The dust was away; 16 stumps was away from it.

Q. I understand that, but my question is, how far from the motor up and down the heading, each way, was the dust condition not dangerous? A. Better than a thousand feet at the top end, there wouldn't be no danger.

Q. On the other end? A. About a thousand.

Q. About a thousand feet on either side the dust condition wasn't dangerous? A. No, sir.

BY MR. GEORGE:

Q. What road are you referring to? A. 16 Right.

BY MR. STULL:

Q. That condition, you say, prevailed the night before the explosion? A. Friday I was on day shift.

Q. And the explosion was on Monday following? A. Yes, sir.

RAYMOND McINTOSH, Called, Sworn.

BY THE CORONER:

Q. Were you asked to be here today or yesterday? A. No, I wasn't.

Q. You weren't told by any one to be here yesterday or today? A. I wasn't told to be here until I got word in the mine today.

Q. Then your not being here this morning was not due to pressure on behalf of any one on you? No one did it deliberately to keep you away this morning? A. No. When I went to work was the first I knew about it.

BY MR. GEORGE:

Q. Raymond, where were you working on the morning of July 15, 1940? A. I was working in 16 heading.

Q. What were you doing in 16 heading at the time of the explosion? A. I was watching the cutter cut the place.

Q. What room were you working in as a miner, or what heading stump? A. I was splitting a stump between 17 and 18 room.

Q. Do you have a miner's certificate? A. Yes, sir.

Q. Who was your buddy on the day of the explosion? A. Clarence Hufford.

Q. Raymond, did you hear any roof working immediately prior to the time of the explosion? A. No, I didn't. About a half hour before that we heard the roof working.

Q. What kind of a roof movement did this appear to be? A. Well, the roof just seemed to be working, but it seemed high.

Q. Very high? A. Yes, seemed very high when it was working.

Q. What did the noise appear to sound like? A. Well, I don't really know. I never heard a noise in the mine like that before, but it was a loud noise, just like the roof was working, real high.

Q. How long had you worked in 16 Right? A. About three or four weeks.

Q. How long had you been in the heading stumps? A. I have been in there since I worked 16.

Q. Three or four weeks? A. I would say.

Q. Had you worked in that mine prior to that time? A. Yes.

Q. Where? A. I worked in 17 Right.

Q. In this same section? A. Yes, Sir.

Q. Did you see any indication of flame at the time of the explosion? A. Yes, I seen the flame before the explosion.

Q. Where did you see the flame at? A. Up the heading from us, about the switch off there that comes down to 17. I saw the flame up the heading about where the switch comes down to 17.

Q. Did the flame reach back to where you were? A. Yes.

Q. Were you burned? A. Yes, I was burned in my neck and ears, and had my hair burned off as far as my cap.

Q. What position were you in when you were burned? A. I was lying in the middle of the track on my face.

Q. You were lying in the middle of the track on your face? A. Yes.

Q. Do you recall where the other man who had his ears burned, Bobrowicz,-- do you recall how far you were from him when you were burned? A. No. We weren't so far apart. I don't know where we were at.

Q. Did you know where he was at prior to the time you saw the flame? A. Yes, he was sitting right alongside of me by the switch.

Q. Were you burned before you were blown about or afterward? A. No, I was blown and then I was burned.

Q. How long did it appear to you to be from the time you first saw the flame until you were blown and burned? A. It wasn't more than a couple seconds until the wind hit us.

Q. When the wind hit you the flame hit you? A. Right after the wind came along the flame came along.

Q. Was there any particular debris in the air, such as chunks of coal or bricks or any other objects flying around? A. Yes, there was plenty of rock flying around.

Q. Was there any of you five men struck by flying debris? A. Yes, my buddy was struck on the shoulder.

Q. Who was your buddy? A. Clarence Hufford.

Q. Did he complain of his injury? A. Yes.

Q. Did you escape from the point where you were working in the stumps to the dilly road with the other four men? A. Yes.

Q. Do you know whether or not there was a motor in operation on 16 Right near the intersection of the No. 3 haulway? A. No, I didn't see any motor there.

Q. Did you hear a motor there? A. No, I didn't hear any.

Q. Do you suppose you might have been able to hear the motor if the machine wasn't running? A. If the machine wasn't running I think we could have heard it.

Q. The fact the machine was running prevented you, perhaps, from hearing the sound of the motor? A. Yes.

Q. Did you hear any one of the other four men crying "explosion?" A. Yes.

Q. Do you remember what the cutter said when he left you men? A. No.

Q. Did you hear him say anything? A. I heard him holler once but I don't know what he said.

Q. Did he start toward the cut-out switch after you were burned, or had he started before you were burned? A. No, after I was burned he went the other way.

Q. How long after, do you recall? A. Well, not very long, just about as soon as he could get up and go.

Q. Were any of your lamps destroyed from the standpoint of burning? A. No.

Q. Did they all continue to burn? A. Yes.

Q. Did you see the fire boss on the morning of the explosion in your place? A. Yes, I seen him.

Q. His mark was there indicating he had made his first run? A. Yes.

Q. Did you see the assistant mine foreman on that morning there?
A. No, sir.

Q. Did you see the mine foreman at any other point of the mine that morning preceding the explosion,-- the assistant, rather? A. Only when we went down the mantrip.

Q. You saw him going in on the mantrip? A. Yes, sir.

Q. Did you hear any roof movements or high rumbling noises on any date prior to the day of the explosion? A. Yes, that roof has been working down there in them old rooms.

Q. In what rooms are you referring to? A. In them rooms between them stumps down there.

Q. That is the rooms on 16 heading? A. Yes.

Q. Was the noise you heard a similar noise to what you heard on the morning of the explosion? A. No.

Q. It was a different noise? A. Yes, it is.

Q. Did it seem to be high up? A. No, these noises I have been hearing, they didn't seem to be high.

Q. Seemed to be more of a local condition and closer to your coal?
A. Yes.

BY MR. STULL:

Q. What rooms on 16 did you hear that noise in? A. Before the explosion?

Q. Yes? A. It seemed to be working right over us from where we were there.

Q. What rooms would that be in? A. Around about 18 room.

Q. On 16 right? A. Yes.

Q. In the stumps? A. Yes.

Q. Did it extend any further up the rooms toward 18? A. Yes. It seemed to be working around three rooms.

Q. You mean 18, 19 and 20? A. Yes.

Q. You heard no sounds beyond 20? A. No.

Q. How far are they from 28 on 17 Right? A. I don't know.

BY THE CORONER:

Q. You don't know what room now is on 16 Right opposite 28 room on 17 Right? A. Yes.

Q. Do you know that? A. I think it was opposite that.

Q. I am asking you if you know what room was opposite 28 room, 18 Right, or what room was opposite it in 17 Right? A. I don't know exactly because I wasn't working in 17.

BY MR. GEORGE:

Q. Raymond, when you heard a noise at 18 heading stump in 16 Right would there be any possibility that that sound, being deceiving, perhaps you might have thought it came from 16 Right and yet it may have been coming from some other direction? Do you think that is possible for you to be able to detect the direction sound travels and comes through the roof? A. No. I think it was right around where we were at.

Q. Right close to where you were at? A. Yes.

Q. You aren't certain about the direction from which it came? A. No.

BY MR. STULL:

Q. If it is shown Room 19 on 16 Right is opposite 28 on 17 Right, might it be possible there might have been some working in 28 and the sound coming through 19? A. It really didn't sound that way.

Q. It sounded as though it was from 19? A. Sounded from there.

Q. Was that toward the position you were occupying at the time,-- that would be 18? A. Yes.

Q. How long previous to the day of the explosion had you heard this rumbling noise at different times, for what period of time? A. Well, them rooms have been caving in down there below, that is around 16 and 17 room; they have been caving in ever since I have been working there.

Q. That has been how long? A. Three or four weeks.

Q. Is that the small noises you are talking about, local noises? A. Yes.

Q. That has nothing to do with the high up noise? A. No, that is the first we heard that, the day of the explosion.

Q. That was on the day of the explosion? A. Yes.

Q. This other noise had been constant over a period of three or four weeks down there? A. Yes.

Q. You never heard that noise at any other time except the day of the explosion? A. No, I didn't.

BY A JUROR:

Q. How long after you heard this loud noise did the explosion take place? A. I figure it was about half an hour.

CLARENCE HUFFORD, Called, Sworn.

EXAMINATION BY MR. GEORGE:

Q. Clarence, were you working in 16 Right on the morning of July 15, 1940, the day of the explosion? A. Yes, I was.

Q. Were you working there as a miner? A. I was.

Q. What heading stump were you working on, do you recall? A. Between 17 and 18.

Q. You were splitting the stump between 17 and 18 room? A. Yes.

Q. Do you have a miner's certificate? A. I do.

Q. Did you see the fire boss on the morning of the explosion? A. I did.

Q. Did you see his mark indicating his first run of that morning? A. Yes.

Q. Did you see the assistant mine foreman on the morning of the explosion? A. I seen him coming down on the trip.

Q. Did he visit the working places? A. He wasn't in yet.

Q. Clarence, did you hear this high rumbling sound? A. I did.

Q. Did it appear to be very high? A. It sounded pretty high.

Q. What did the sound appear to be like? A. Well, it just sounded like a railroad engine going over the place.

Q. Did you ever hear a sound like that before? A. No, sir.

Q. Did you see any flame at the time of the explosion? A. I did not.

Q. Did you hear any of the men cry out "explosion?" A. No, I didn't.

Q. Were you burned in any way? A. No, I was just hurt.

Q. Was your hair singed? A. No.

Q. You were struck by a flying object of some kind, were you? A. Some kind of an object struck me on the right arm and shoulder.

Q. Right arm and shoulder? A. Yes.

Q. Do you think you were knocked down by the flying object or from the concussion of the explosion? A. I was knocked down by the concussion of the explosion.

Q. Were you struck by a flying object after you had been knocked down or before you were knocked down? A. Oh, I don't know, it happened so quick.

Q. You don't know whether it was before or after? A. No.

Q. Clarence, you heard the testimony of Raymond McIntosh you were one of the men who escaped with the other four from 16 Right to the dilly road? A. Yes.

Q. Do you have anything else to offer that hasn't already been covered that might throw any light as to the cause of this explosion? A. No, I don't.

Q. Do you care to make any statement from any angle, or contradict any statement you heard here? A. No.

BY MR. YOUNKER:

Q. Clarence, had they ever found gas in that place there? A. Not that I know of.

Q. Is that the only heading stump you worked in, No. 16 Right? A. That's the only one.

Q. It was never endangered off on account of gas. A. No.

Q. Did you ever hear any of the men discuss the dangerous condition of the mine, or that they thought the mine was dangerous, or that section was dangerous? A. No.

Q. No one ever told you he thought it was dangerous? A. No, nobody.

Q. The assistant foreman didn't come into your place? A. He wasn't in our place yet at that time.

Q. Was he in the shift before? A. Yes, I think he was.

Q. And the condition of the dust, in your opinion was it dangerous? A. It was.

Q. That is your opinion? A. Yes.

Q. When the explosion occurred was the machine in operation, was the machine running at all, whether it was cutting or pulling onto the truck? A. He was pulling onto the truck.

Q. It was in operation? A. Yes.

Q. You couldn't have heard the motor running anyhow? A. No.

BY MR. STULL:

Q. I would like to ask you when you heard this unusual noise high up in the roof did it alarm you at all, make you apprehensive of danger at the time? A. No.

Q. You didn't feel any fear of anything happening? A. No.

Q. Was it discussed among the men, or did you make any comment? A. The whole six of us was sitting there and we were laughing at the sound.

Q. None of you expressed any fear or had any fear? A. No.

Q. Although you had never heard any noise like that before? A. Never heard it before.

BY A JUROR:

Q. Where were you when the explosion took place, were you out in the heading? A. No, I was below.

Q. In off the heading? A. In 17 room.

Q. You were in 17 room? A. Yes.

HEARING ADJOURNED UNTIL AUGUST 15, 1940, 9 A.M.

MORNING SESSION, AUGUST 15, 1940,
9:00 A.M.

LESLIE STEELE, Recalled.

EXAMINATION BY MR. SHETTIG:

Q. Mr. Steele, some of the witnesses who have appeared before the Inquest have spoken of the fact that at one time there were two assistant mine foremen in this particular section of the mine which is affected here, and that at some particular period that number was reduced to one. In order that the jury may have the benefit of the entire situation, will you tell what the situation was prior to the change, what the change consisted of and why the change was made? A. When the two assistants were there, there was a fire boss who worked three hours and made the first run in there. He then went off and went on company work of any nature whatsoever. Then the assistants' work consisted of making one run as assistant mine foreman, two runs, the next run as fire boss, which was the way the book was signed, and he was just taking care of those official duties as necessities required by law, one visit by the assistant, one by the fire boss. This didn't look very satisfactory to me or the other officials of the mine because these three hour fire bosses weren't officials in the full sense of the word, and that's what we wanted them to be,- in other words, a man should either be an official or a mine worker in our opinion. So, we proceeded to change. There were eight three hour fire bosses and twelve full time assistants. When this change was made, there were six full time fire bosses and two who stayed on the three hours, which we couldn't eliminate at that time, and eight full time assistants, which made a difference in the entire mine of four hours less under the new set up for inspection purposes so far as that was concerned. Of course this inspection could be completed in about three of these hours, and I visited that section at that time and found that the fire boss had plenty of time to make his first run. Therefore, I could see no reason why the assistant couldn't make the entire run without it being too much work for him at that time. It shows that was the entire aim and thought in the change at that time. There was very little difference in the number of hours spent in inspection of the mine by officials.

Q. What if any instructions were given to the assistant foremen with respect to having some one else make the run when they weren't able to do so in this section? A. Within three months prior to the time of this change, I instructed my assistant mine foremen that it was absolutely necessary for them to run every place which they had under their charge, and if for any reason they couldn't run these places they were to select a man in their section, a qualified and certified man if possible and if not to select a man in whose judgment they had entire confidence, so that every place got a visit daily, once each shift.

Q. Mr. Steele, Mr. Monteith was a good, faithful employee, was he not, in the mine? A. He seemed to me to be.

Q. This change, I believe was made the first of September of last year? A. Yes.

Q. Did it affect the safety conditions in any respect, or to any degree? A. Not that I could see, according to my knowledge of mining and my having traveled the section at that time and the check I made. I couldn't see that it affected any appreciable change.

Q. Some of the witnesses seem to have in mind that change, as well as other matters they spoke of, was dictated by some budget consideration; is that correct? A. It absolutely was not. The primary purpose was to have our men either be mine officials or mine workers.

BY MR. MAIZE:

Q. Mr. Steele, was there always a man available in that section who had a certificate to do this extra work? A. Yes, sir.

Q. There was a man available in your mine with a certificate to do this extra work? A. Yes, sir. I had quite a number of those that same time. There was a man available in James Monteith's section with a fire boss' certificate, he was available up to about a month or six weeks ago when I put him on other work.

Q. Who was that? A. Le Roy Etienne.

Q. You say prior to six weeks ago there was a man available who was put on as an extra man to assist Mr. Monteith? A. I know he did once or twice, that I am positive of, absolutely positive of. He had specific instructions to do so if for any reason he couldn't make the run.

Q. Do you know whether or not Mr. Monteith designated a certified man to do this work or an uncertified man? A. I don't know. I know he used the certified fire boss on one or two occasions.

Q. But you don't know whether or not he used an uncertified man? A. No, sir, I don't know as he did. In fact if he did he didn't say anything. In other words, the man who made the run was supposed to sign the book.

Q. If he designated a certified man to make a part of his run,--you know he did that sometimes? A. Yes.

Q. Did that certified man make a report in the assistant foreman's report book, who made that run? A. That was the instruction. I think you will find that.

Q. Do you know that is a fact? A. I believe so. I can't recall that exactly.

Q. Were there any records made in the assistant mine foreman's record book by an uncertified man as having examined part of Monteith's section? A. No, sir.

Q. Do you believe in view of the fact there was no record made there by an uncertified man Mr. Monteith hadn't put on an uncertified man to assist him? A. That would seem to be the fact of the thing, yes, sir. If he did he didn't carry out my instructions, because he was supposed to report to me and tell me why he didn't make the run, and

the man that made any part of the run was supposed to report for him.

BY MR. SHETTIG:

Q. Did you say if he put on an uncertified man he wasn't carrying out your instructions? A. If he did use an uncertified man in making the run for him he wasn't carrying out my instructions. If he did use an uncertified man there was no report in any assistant's report book and therefore he wouldn't be carrying out my instructions, and for that reason I don't believe he did.

Q. Your instruction to him was to use a certified man if available?
A. Yes.

Q. If he wasn't available to use some intelligent man capable, whom he thought was capable of performing the duties? A. Yes.

Q. Was that in compliance with the mining laws? A. Possibly not. That would be much better than for a place not to be visited.

Q. You mean since you have a gaseous mine, determined so by the department, and there cannot be too many safety precautions? A. Yes. Of course we have always had some available man there.

BY MR. MAIZE:

Q. So far as you know no inspection was ever made by an uncertified man? A. No, sir.

Q. Now, why should you give him instructions to have an examination made by an uncertified man merely because there was no certified man in the section and you would have certified men in other parts of the mine? Why didn't you arrange to send one of them down and give him those instructions if it was a violation of the law? A. That might have been very hard to do at the latter part of the shift if something had gone wrong that took his attention so he couldn't come to the section, and possibly the man in his section at that time would be on the south and until you got him over the shift would be over. It was to be an absolute emergency if they used an uncertified man to run any place for them. It was better to have a man, which there are numerous ones in every section, of average intelligence who could do that job rather than not visit it at all.

Q. What kind of a man did you pick out as the man to do this extra work who did not have a certificate? A. Well, one whom we knew was at least interested in mining and knew what was going on in the section and knew what dangers were expected to be encountered.

Q. Would you restrict him to a shot-firer, for instance, who has a certificate and knows something about gas, or a machine runner who has a machine runner's certificate? A. I admit I didn't restrict them.

Q. You didn't indicate who? A. No.

Q. How many runs do the fire bosses make in this section? A. In this section?

Q. In the section under consideration? A. At the time of the explosion?

Q. Yes? A. Two.

Q. He made two runs in seven hours? A. Yes, sir.

Q. Now, then, why couldn't the assistant make one run in seven hours? A. I am sure I don't know. I didn't check the section lately. It has been sometime since I checked it. I know I ran over half of it; that would be possibly three or four months ago, and I ran half of it until half past nine.

BY MR. SHETTIG:

Q. Did you know until this inquiry developed the fact that Mr. Monteith had not been making his run, going around to the working places daily? A. No, sir. At all times I had been in the section down there I found Mr. Monteith in the section going about his work and had no reason to think he had not been making his daily visits.

BY MR. STULL:

Q. Mr. Steele, Rule 77, Article XI, which covers trolley system and open type electric machines, defines where and under what conditions the open type may be used. It says that it is unlawful for electric haulage by locomotive to be used on a trolley system in a gaseous mine "except when the portion in which the locomotive operates is free of accumulated explosive gas, and the highest methane content of the air-current in which the locomotive operates is not in excess of five tenths of one per cent." Those are exceptions when they may be used. What is your practice, or interpretation of that rule in practice in your mine? Specifically, if you found one of these elements and not the other, would you still feel you could operate? A. Let's have the thing again.

Q. The exception is, "when the portion in which the locomotive operates is free of accumulated explosive gas, and the highest methane content of the air-current in which the locomotive operates is not in excess of five tenths of one per cent." A. Either one of those two, of course, causes you to quit operating.

Q. In other words, if you found an accumulation of explosive gas you would feel that would deter you from operating? A. Yes, sir.

Q. Or, if you found no accumulation of gas, but found an excessive methane content above the permissible, you would feel you could not operate? A. Yes.

Q. You consider those as inseparable exceptions, they would be incorporated with one another? A. You may find an accumulation you have to move; it would have to be moved from the trolley wire and the power removed.

Q. You couldn't operate at that time? A. No, sir. As far as the check for one half of one per cent, we had nothing but a flame safety lamp and two weeks' analysis of the return to govern our operating, where there might be in excess of one-half of one per cent on the trolley wire at the split return.

Q. The point I am making is, if you found either of those conditions, any one, you would still feel you are bound to cease operating the locomotive?
A. Yes, sir.

BY MR. GEORGE:

Q. Mr. Steele, in your opinion does a man acting in a dual capacity break down his moral authority? A. I believe so.

Q. Did the first set-up have any overlapping of authority, and if it did, did the second set-up eliminate the overlapping there? A. Well, it certainly,-- I don't know, really.

Q. Did the one fire boss serve under two assistant foremen? A. Yes, one fire boss served under two assistant foremen; in fact the one fire boss served under two assistant foremen in two ways, in the south. In other words there were two fire bosses under three assistants.

Q. It would be, to some extent, an overlapping of authority? A. Very much so. Under the set-up as made the one assistant had his own fire boss and the fire boss reported to him and they had their section in their entire control.

BY MR. MAIZE:

Q. But that wasn't your reason for making the change; the reason was the fact you felt a man should not be an official and a miner? A. He should either be an official or a miner.

Q. That was the reason for the change? A. Yes. There was a lot of things appeared, of course, but that was primarily the purpose.

BY A JUROR:

Q. Mr. Steele, the first day you were giving testimony there was some instruction about you having one of your bratticemen taken off and placed him on coal, was that right? A. Yes, sir.

Q. Did you feel at that time in making the change your air was advanced to such an extent, and the brattice work up to such an extent that would warrant you to make that change owing to your air conditions being advanced that way? A. Particularly at the face, all the stoppings were up.

Q. Working faces? A. Yes, sir.

BY THE CORONER:

Q. There is considerable discussion throughout the community, not only in the immediate vicinity but from where I come, relative to the time it took to reach those that were entombed. Mr. Steele, what time did the explosion occur? You satisfied yourself what time it occurred? A. I am satisfied. I satisfied myself from verification of others. So far as I know, I don't know, but I am satisfied it occurred approximately at twenty minutes of eleven.

Q. Then of course you immediately got in touch with the outside? A. I called Mr. Duras from 17. That's the first time I talked to him, and I asked him if he notified the various state men.

Q. What time was that? A. I have no way of knowing but I would say probably twenty minutes after eleven, or eleven thirty. It wasn't any later than that, I feel sure.

Q. Then you have any recollection what time the Mine Inspector arrived? Do you know what time he was notified? A. What time I was notified?

Q. No, what time the Mine Inspector was notified? A. No, sir, I don't. All I know is when I called Mr. Duras he said he had already done that.

Q. Upon the arrival of the Mine Inspector, representing the Department of Mines, then you felt they were in charge? A. Yes, sir, I felt I was under their directions, absolutely.

Q. That is the consensus of opinion among mine men, when the Mine Inspector arrives on the scene? A. Well, I don't know. Of course I helped all I could. I don't know who was in charge but I feel Mr. Thomas and Mr. Filer took charge when they got there.

Q. Do you know what time they got there? A. No, sir, not by any means. I don't remember anything about time from the time of six o'clock in the morning. I hadn't looked at my watch. I know this much, that I am very familiar with that section, and except for one lapse of receiving a few supplies of half an hour or so that work couldn't have been carried out any faster under any conditions.

Q. With the exception of what? A. One lapse of receiving material of possibly half an hour, that work wouldn't have been carried out any faster.

Q. What would you say in your experience as a Mine Foreman relative to self-rescuers, assuming those men had been equipped with self-rescuers? Have you any idea how a man could have gotten out. A. Well, of course this is a personal opinion, but I suppose fifty would have gotten out of this particular area, but, it has been proven, and I have read of a number of cases, where those with self-rescuers started out and died, and those that stayed in are living today.

BY A JUROR:

Q. It is your opinion, then, Mr. Steele, that your fire boss made two runs in seven hours and the assistant could at least make one run, visit all working places in seven hours? A. Yes, sir, absolutely.

BY MR. HESS:

Q. You made the statement you felt in your mind if these men had self-rescuers probably fifty of them would have gotten out, is that right? A. Yes, sir.

Q. By what route would they have used, in your opinion? A. Down through the airs, both 16 and 17, in my opinion, they could have come down.

Q. Mr. Steele, how long will a self-rescuer supply oxygen? A. Under serious conditions, -it won't supply oxygen; after all oxygen has to be present. If there was no oxygen present they cannot use them. Under the most severe conditions, it is a very small percentage which doesn't heat the machine up enough to dry the moisture and it will last thirty minutes;

Q. Is the practice of taking samples of air in order to have it analyzed for methane content one of the practices followed in your inspections?

A. Yes, sir.

Q. That, I believe is not required by the law of Pennsylvania, is it?

A. I'm not very familiar with the law, but I have not come across that yet.

Q. You haven't found it in the law? A. No.

Q. Have you, since your organization has taken over the operation of this mine, installed improvements in the way of safety matters? A. Yes, sir.

Q. In your opinion, from what you have known of the situation, and what you have had reported to you by your assistants, have you done all that is possible to do to bring this mine up to a proper standard of safety?

A. I think so at the present time, as fast as we could get to them.

Q. Will you state whether or not you have knowledge that these mines, owing to financial difficulties of the old company, were pretty badly run down when you took them over. A. Oh, yes, very much so.

Q. Did that apply to safety measures as well as other features? A. Absolutely.

Q. If I understand you, you have been doing your best from that time on to put them on a par with other operations under your charge? A. That's right.

Q. Some of the witnesses seem to think that safety matters were concerned in the budget for operation, is that correct? A. There was never any budget on safety.

Q. Safety is a separate matter, just like advertising? A. Yes, sir.

Q. Is there anything more you could say which might be of interest to the jurors, Mr. Lindley, in their arriving at the facts from your standpoint as a safety man? A. I don't know whether I quite understand.

Q. Is there anything you would like to say, anything I haven't asked you about which you feel might be of interest to the jurors? A. Well, we make fairly regular inspections of the mines, take note of all the conditions, and we have a system of rating each section as to the ventilation, timbering standards, slate and such things as that, anything that comes along in the mine, you know, and we expect each section to rate not less than eighty percent; and then, in addition to that, to try and take care of conditions as we find them. I might say right at the time we have a form we use that the inspector writes down what he finds. The form is in three petitions. In the middle petition he recommends what should be done, and on the bottom part of it, that is to be filled out by the man who does the work to show what he did, how he took care of the situation. And I might add that the tonnage of Sonman Shaft Coal Company has greatly increased, that is, as to lost-time accidents, since we took it over, yearly, and is one of the mines in this district that have one of the best accident records so far as lost-time accidents go. They also have a good rating, very good rating.

Q. If I understand you correctly, Mr. Lindley, your efforts have been successful in reducing the number of accidents which I believe are usually spoken of in reference to the thousand tons of coal mined? A. Very much so, yes, sir.

BY MR. YOUNKER:

Q. Mr. Lindley, you say that the duty of your department is to see that the mine is kept safe and the law obeyed, is that right? A. Yes, sir.

Q. Did you have any knowledge of the fact that they had 93 men in this split? A. No, I didn't.

Q. Then your plant inspector that has charge of this plant, or covers this plant, is it your opinion that they could have that many men on the split without his knowledge? A. I wouldn't think so.

Q. Did he ever make a report to your office of that violation? A. No, he reports directly to the Superintendent.

Q. That information never reached your office? A. No.

Q. Concerning the recommendations of the District Mine Inspector of the State, the recommendation he made concerning the changing of that air, was that ever brought to your attention? A. Not until recently.

Q. Do you think your plant inspector had knowledge of this recommendation? A. I don't know; I can't say.

Q. You said this came to your knowledge recently, how recently?
A. Since the explosion.

Q. You had never known about that before? A. No.

Q. Yet that recommendation had been made quite some time ago; do you consider that all possible effort was made to fulfill this recommendation by the management here? A. Well, I do know that they have been working toward the completion of that recommendation.

Q. Don't you think that was rather a serious matter that should have gotten the attention of both your department and the operation department?
A. There was good ventilation in that section two, as they call it, on the last report I got from one of my assistants.

BY THE CORONER:

Q. The ventilation was good, you say? A. That was the report.

Q. But it was a change in the system of ventilation that the Mine Inspector had requested? A. Yes.

Q. You say your work is along the line of supply of air in the mine, ventilation and so on? A. Everything.

Q. Do you think that was a good system to have the intake of the air come over the abandoned sections of the mine? A. No, not from a practical standpoint.

Q. Then, of course, the recommendation that the Mine Inspector made was a good recommendation and should have been carried out, that is, as soon as possible? A. As soon as possible.

Q. I guess it was permissible for them to continue working so far as that is concerned? A. Yes.

Q. But had they anticipated or expected anything like this then of course it shouldn't have been in, the air should have been changed?
A. Yes.

Q. Does your work also include the method of mining? A. Oh, yes, to some extent.

Q. What would you say, Mr. Lindley, in respect to the partial removal of the pillars in order to keep the roof up--that is, we know it can't keep all the roof up because there is bound to be local caves, but it would protect part. What is your opinion of that system? It may serve the purpose of keeping the water back but is it likely to do something else? A. Personally I don't like the system.

BY MR. HESS:

Q. Mr. Lindley, you said you thought the management was making progress in the changing of this air, is that right? A. Yes.

Q. Do you think they were making enough progress to take the man off in charge of this work and put him on coal? A. I'm not familiar with that particular situation, but as I said awhile ago, the last report I got from one of my assistants was to the effect they had extra men catching up on all permanent brattices and as soon as they got them completed they would have splendid ventilation in that section, and they completed it, according to his report, before they took any man off. That is my understanding.

Q. We are talking about the change of the air recommended by the Mine Inspector in this district. A. What is that question?

Q. Do you know there wasn't anybody doing that work at all while this man was loading coal? A. No, I didn't.

BY MR. MAIZE:

Q. Mr. Lindley, who made the report to you that the ventilation was excellent in that air split? A. He said it would be as soon as they got the brattices completed.

Q. Who made that report? A. That was Mr. Simpson.

Q. Did you ever travel with Mr. Simpson in this mine to make an inspection? A. No, not in this mine.

Q. Do you know whether or not when Mr. Simpson made the inspection of this mine he measured the air? A. I know he has measured it along with Mr. Ray according to the reports I got from time to time, but we didn't make a practice of measuring it every time.

Q. He didn't make a practice of measuring every time he went in?
A. No.

BY MR. STULL:

Q. Mr. Lindley, I believe you said in your examination you weren't familiar with the Pennsylvania law with respect to the duty of your department or any of your assistants to make any measurements? A. I didn't specify anything; I said I wasn't very familiar with Pennsylvania law.

Q. Are you familiar with the portion of law which requires analyses in taking samples for methane content of the air? A. I don't remember reading it.

Q. Do you know who has to and under what circumstances the measurements must be taken? A. The analyses?

Q. Yes. A. I can't say I remember reading that, whose responsibility it is for taking the air analyses.

Q. Section 4 of Article IX, as amended by the Act of 1937, July 1, says "The quantity of air passing a given point shall be ascertained by an anemometer, the measurements to be taken by the mine foreman or an assistant mine foreman, once every week, at or near the main inlet and outlet airway in the mine, and also at the last cut-through in the last room, and in the entry beyond the last room turned, and when requested by the inspector, the mine foreman and/or the superintendent shall once each week direct and see that the methane content of the ventilating current or currents is determined by analyses, or by an instrument capable of accuracy to five one-hundredths of one per centum. The samples or the determinations shall be taken on the return end of the air circuit or circuits just beyond the last working place, unless otherwise directed by the inspector, and a correct report of these determinations shall be promptly furnished to the inspector. Said measurements, determinations, or samples shall be taken on days when the men are at work." Were you familiar with that portion of the law? A. No, not as familiar as I am now.

Q. Do you know whether or not there are general instructions in your organization to comply with that law? Aside from the general instructions to obey all mining laws, was there any specific instruction given as to that specific feature? A. Oh, yes, instructions were given to take samples and analyses.

Q. By whom? A. Well, it is company policy for one thing, and I have required that of all the operations, to take these samples.

Q. Were they required to be taken at the time and in the manner designated by this act? A. Yes, about the same thing.

Q. In your knowledge as head of the department for safety, do you know whether or not the act was complied with in that respect? A. Yes, sir.

Q. Do you know of any times it was not complied with? A. You mean as regular procedure?

Q. Yes, it calls for regular times? A. No, I don't remember of any. We have been getting these samples pretty regular.

Q. Do you make a note of it when you get the samples? A. Oh, yes.

Q. Would the record show if you failed to get samples at the regularly required times? A. Oh, yes.

BY MR. MAIZE:

Q. Mr. Lindley, do you know where the samples were taken, of which you received a report? A. Well, it says on the report where they were taken.

Q. You didn't hear Mr. Ray's testimony, did you? A. No.

Q. Mr. Ray testified under oath that he took the samples for analyses at the return end of the split at the regulator on 15 Left. Would you

consider that was complying with this provision of the law? It says "determinations shall be taken on the return end of the air circuit or circuits just beyond the last working place." A. I would say that wasn't the right place if there wasn't any working places on 15 Left.

Q. You would say that wasn't the correct place? A. If there wasn't any working place on 15 Left, but it is practiced.

Q. You mean that is your practice? A. No, I say it is practiced.

Q. It is practiced? A. There is really no working place anywhere near where he takes the samples, perhaps, but it is still the main return from the last working place.

Q. Yes, but would that analysis give you a true record of the amount of gas that was in the air current, - in other words, had you or your men taken the analysis just outside of the last working place in 1 face, 18 Right, would that have shown the same gas content as it shows on 15 Left at the regulator? A. Of course I don't know whether it would or not.

Q. Do you know whether or not there would be any fresh air coming in from the main slope into the left side to dilute the gas? A. Possibly there would.

Q. Off 15 Left at the regulator is how far away from the 18 Right, No. 1 face, just outside of the last cross-cut, approximately? A. Several thousand feet.

Q. Would you give us how many thousand, five, four or three? A. I can't guess.

Q. Estimate it. A. I would be around three thousand.

Q. Around three thousand feet? A. Yes.

Q. Well, would that be indicative of the actual conditions of the air current just after it left 18, last working place in 18 Right? A. No, I don't think so.

BY MR. HESS:

Q. Mr. Lindley, you said your organization is interested in ventilation in this mine also? A. Oh, yes.

Q. Does your organization receive the readings from the findings of the air current in different splits? A. No, except when it comes from the mine air analyses.

Q. How could you be interested, if you don't receive it? A. Well, whenever I come around I look at the mine records.

Q. You just look at the records? A. Yes.

Q. What I was getting at, if your organization is interested and you look at the mine records, as you said, and you didn't know how many men was working this split, how would you be able to determine whether or not this quantity of air would be sufficient if you didn't know how many men was working? A. I don't know whether I quite get your question there.

Q. If you didn't know how many persons was in this split of air how would you know whether or not the quantity of air traveling through this split would be sufficient for them people? A. If I didn't know how many were in there?

Q. Yes. A. I wouldn't know.

Q. You said you didn't know how many men was working in split No. 2? A. No.

Q. Still your organization is interested in ventilation? A. Sure.

Q. If it is the purpose of the organization to be interested in ventilation, it should be interested in the number of persons inside, in that split. Now, Mr. Lindley, don't you think it would have been proper, if you were so interested in the ventilation as you said, that you should have checked on how many men worked on each split when you checked the readings at the mine office? A. Well, it may be so. I have twenty-six mines and there are a number of sections in those mines, and to a great extent I have to depend on other people to check on those things. It is hard to keep track of all those details when you have to cover so much territory, I guess you realize that.

Q. In other words, the man who was in charge of this mine in your organization under your direction was entirely responsible for those readings? A. The plant inspector?

Q. That's right? A. Not according to mining law.

Q. Under your direction? A. Not according to mining law.

BY MR. MAIZE:

Q. Will you examine the record book and check the amount of air opposite that, which the mine foreman had put in the record book, and the number of men in that split? A. Yes.

Q. Therefore, if there had been an excessive number of men recorded in the record book, then you could have probably checked it, - in other words, when you examined the record book you also look for the number of men on the split? A. Yes.

Q. You didn't see in the record book any excessive number of men opposite your air current? A. Not at the time I looked at the record.

Q. An examination of the record book wouldn't exactly tell you what was there? A. No.

BY THE CORONER:

Q. You are what is known as the safety organization? A. Yes.

Q. Does it have any executive power, that is, does your organization have any power above more of a recommendation proposition? A. More of a recommendation proposition, follow-up, educational. We have a certain set-up.

Q. If you see something wrong you call the attention of the management to it? A. Yes, sir.

BY MR. STULL:

Q. Mr. Lindley, in your organization set-up, what position is occupied by the highest man responsible for these things we have been talking about, the matter of checking air and ventilation,-- who is the highest officer responsible in your organization? A. The mine superintendent.

Q. You depend upon him to carry out the policy of the company and comply with the mining laws in respect to the operation of that company? A. Yes.

BY MR. MAIZE:

Q. Mr. Lindley, your organization has no legal standing under the Bituminous Mining Law? A. No.

Q. Who is the highest authority who has legal jurisdiction or responsibility under the mining law at this mine? A. The mine superintendent.

Q. Therefore, your organization was just an advisory organization and had no legal status, or no legal standing? A. That's right.

Q. There was no requirement of the law to have your department organized in any manner, shape or form to try to comply with the law? A. No, not to my knowledge.

BY MR. YOUNKER:

Q. Mr. Lindley, if your department, as you say, found something wrong in one of these mines that you felt was a safety or danger hazard and you told the local superintendent that you wanted that changed, in your set-up with your company could you force that change, or would it be entirely up to the superintendent to do it at his discretion? A. Well, no. If we thought it ought to be done--we naturally wouldn't recommend it unless we did--and he agreed to do it, we would give him reasonable time to do it; if it wasn't done, we would follow up and if we didn't get action then we would report to the higher officials.

Q. Then you could force a compliance with your recommendation; if he just differed with you and in his opinion felt your recommendation was unreasonable and you felt it was reasonable in line of safety, and he refused to do it, you could force him through other means in your organ-

ization to comply with it? A. I couldn't force him. I could put it up to the other officials above in trying to get it done, or in trying to get some decision on it.

BY A JUROR:

Q. Mr. Lindley, you are in charge of this safety department that you mentioned; is there some rule or some standard whereby at regular intervals you receive a report from your safety man at any particular mine and have a stipulated time between reports? A. You mean for inspection?

Q. Yes, sir. A. No.

Q. Suppose you have a local inspector here, do you ask him for a report weekly, semi-monthly or monthly, or how regularly? A. No, he reports directly to the plant superintendent. The assistants I have report directly to me every week, sometimes daily. It depends on what they find.

Q. The supposition would have it that one of your assistants or advisory men in your personnel would make a recommendation or for a hazard; now, is it the policy of your department to check on the hazard and also check their progress made to remove that hazard? A. Oh, yes, absolutely.

Q. In your past record has there been anything mentioned in reports to you that you didn't have adequate air for the number of men employed, or, are you familiar with the fact it necessitated two hundred cubic feet per man per minute? In the safety department I would think that would be paramount, that would be an important factor of a safety department or safety man. Is there any check made on the individual, or near about, of the amount of air given him per minute for consumption? A. Not to us. There wasn't any report made to us. The plant inspector might have got a report, I don't know.

Q. In the testimony here the jury learned that in the safety department you have the problem of rock dust. In some of your headings,- it has been classified in testimony given to this jury that in some parts of that mine, particularly in that area, there has been a dust condition there; you had a record of that? A. You mean dry dust conditions?

Q. Yes, sir. A. No.

Q. There was also testimony given to the jury that this one particular person worked there over a year and that particular area to his knowledge wasn't rock-dusted; did you have a record of that? A. I don't have a record of it, no.

BY MR. STULL:

Q. Mr. Lindley, is it a fact that so far as compliance with the law is concerned, the mining law, your whole department could be abolished or wiped out and still be within the law, the safety department? In other words, does the law require you to maintain a safety department in your organization such as you are heading? A. There was some mention made . . . (interrupted).

Q. Do you understand my question? You have testified your organization maintains a safety department and you are the head, you have several assistants and inspectors under these assistants; does the law, the mining law, to your knowledge require your company to maintain such a department, or, do you do it just as a matter of company policy?
A. It is a company policy.

Q. But you don't understand it is required by law to be maintained?
A. I don't remember reading that in this law.

BY A JUROR:

Q. If that isn't required by law, this safety department, of various inspections and one thing or other, purely, as I see it, it would be done to have a better rate of insurance; is that the idea of the maintenance of an adequate safety department? A. No, sir, that isn't the only reason by any means. We want safety; we want to keep the men from getting hurt and killed.

BY MR. MAIZE:

Q. In Pennsylvania the matter of a better rate wouldn't be affected. Who carries your insurance, does the company carry its own insurance?
A. Yes.

BY A JUROR:

Q. You mentioned that you are bringing all the means under your safety department to bear as fast as you can get around to it to bring the mine up to the standard of safety; did you get around to the "E" slope mine, particularly in air split No. 2 where the explosion was? A. We are getting around to it.

Q. Did you get around to it? A. No.

BY MR. MAIZE: Mr. George, as Chairman of the Commission which was appointed by me as Acting Deputy Secretary of Mines, is going to read his authority for acting as a member of this Commission. He is going to read it into the record.

BY MR. GEORGE:

"COMMONWEALTH OF PENNSYLVANIA, Harrisburg, August 5, 1940. To Mine Inspectors Richard E. George, R. D. Joseph, Geo. J. Steinheiser, and M. W. Thomas. From Joseph J. Walsh, Deputy Secretary of Mines:

This will confirm your appointment by Acting Deputy Secretary Richard Maize as a Commission to investigate the cause of the explosion in the Sonman 'E' Slope Mine on July 15, 1940, in which 63 lives were lost, and to make recommendations for the prevention of a similar occurrence in the future. (Signed) J.J.W."

J.J.W. are the initials of Joseph J. Walsh, Deputy Secretary of Mines, whose title and name are typewritten in this order.

BY MR. MAIZE:

Mr. R. D. Joseph, are you the R. D. Joseph mentioned in this authority, and were you a member of the Commission which made the investigation?

BY MR. JOSEPH:

Yes, I was a member of the Commission.

BY MR. MAIZE:

Mr. George J. Steinheiser, you heard the question asked Mr. Joseph; are you also the George J. Steinheiser mentioned here as a member of this Commission?

BY MR. STEINHEISER:

Yes.

BY MR. MAIZE:

Mr. M. W. Thomas, you have heard the question asked; are you the M. W. Thomas mentioned in this authority as a member of this Commission?

BY MR. THOMAS:

I am. I am a member of the Commission.

JOHN BAKER, Called, Sworn.

EXAMINATION BY MR. MAIZE:

Q. Mr. Baker, you are the engineer for Sonman Shaft Coal Company?

A. Yes, sir.

Q. You are responsible for making the surveys and making the maps for that mine? A. That's right.

Q. Would you identify the maps that are on the wall, state what they represent, and then whether or not they are a true copy of the workings of that portion of the mine as indicated by the map? A. These blueprints?

Q. We would like to have you identify them as "A", "B", "C", etc. Start with "B", the map to your left; identify that map, tell the scale and what it shows. Identify Exhibit "B" and tell us what it is. A. The "B" map is a 400-foot map showing the work of the Sonman Slope Mine on a scale of 400 feet to an inch, taken from a 100-foot map.

Q. What does it show? A. That map shows the workings and the ventilation in color.

Q. Exhibit "C", what does it indicate? A. The "C" map is tracing made, or blueprint made from the tracing showing the workings and the explosion area of the Sonman Slope Mine. The scale is 100 feet to an inch.

Q. Exhibit "E" is the small one below that, what does that show? A. That is the barricade, area of the barricade showing the barricade built by the men, scale, 10 feet to the inch.

Q. Exhibit "D", this one, what does it show? A. "D" is a map showing the explosion area of the Slope Mine. The scale is 100 feet to an inch and the data furnished there is by the Bureau of Mines.

Q. This data was furnished, not by the Bureau of Mines men? A. The data which was put on there was given us by the Bureau of Mines men to put on the tracing.

Q. The United States Bureau of Mines, not the Department of Mines? A. The United States Bureau of Mines, not the Department of Mines.

Q. What does the large map indicate and represent? A. The large map is a photostat map taken from the 100-foot map, enlarged 50 feet to an inch.

Q. That is "C"? A. That is taken from your "C" map.

Q. It is a copy of "C"? A. Yes.

Q. We aren't submitting that as an exhibit; we are going to use that to trace the ventilation. Did you put the color on this large map, Mr. Baker? A. That's right.

Q. Under whose direction? A. Under the print handed to us by the Mine Inspectors.

Q. Will you tell us briefly what each color represents or indicates? A. The red indicates the flame zone; the green indicates the disturbed area.

RICHARD E. GEORGE, Called, Sworn.

BY MR. GEORGE:

For the benefit of the jurors I wish to briefly outline the 400-foot map, Exhibit "B". The blue outline on the 400-foot map represents the main intake air coming from the slope opening and the opening known as the Shoemaker. The various places in the mine are in different color. The affected area is the area colored in green. The return from the various places enters the main return and are indicated in brown coming through the main return fan. The ventilation on the map known as Exhibit "C" is the detailed ventilation of the affected area of split No. 2. It is our purpose to try to build up in the minds of the jury a mental picture to better fit them to follow the report to be read immediately after my explanation. The air enters No. 2 through 17 and

16 Right entries, the major portion of the air coming in 17 Right. It is conducted to the stump area immediately inbye No. 5 face on the north dip, and is directed through the stump area and along 17 Right to the No. 3 haulway, through the working places involved in that area, and passing in a direction toward 16 Right. The small volume of air that is entered through regulator 16 Right passed along 16 Right entry and is deflected through the stump area across the section known as the stump workings in 16 Right. The volume at the No. 3 haulway and intersection of 16 Right is conducted through 16 Right entry to the face of the entry and the working places between that point and face are diverted by deflection airchecks which deflects and directs the ventilation around the working places, then returned into 16 Right aircourse, brought back to 16 Right aircourse to a point at the intersection of 16 Right aircourse with the No. 3 haulway aircourse, and further conducted through the working places on 17 Right, between No. 3 haulway and the junction of 17 Right and 17 Butt entries. Then it is directed to the face of 17 Right entry, around face to the aircourse and returned back to the No. 5 haulway connection between 17 Right and 17 Butt. It is then brought to the face of 17 Butt, around the face and through the face of the aircourse and returned back through 17 Butt aircourse to the No. 4 haulway connecting 17 Right with 18 Right entry. Part of it is deflected and coming back down the aircourse between No. 5 and 4 haulway and No. 3, where it comes down and enters the No. 4 face on 18 Right, part of the air coming down the aircourse from 3 haulway to 3 and 4 face entries on 18 Right. It then is conducted to the face of 18, around the intervening working places, around the face to the return, which is known as 1 and 2 faces. Your return from the split is coming down the No. 1 and 2 faces and passes and crosses the north main entries, north dip entries to the left side of the north dip, circulated up the 18 Right through the No. 2 haulway, - into the 18 Left, rather, through No. 2 haulway to 17 Left, then conducted to the face of 17 Left, around the working places in that entry back to the No. 1 haulway connecting 17 Left and 16 Left, then conducted to 16 Left, around its working faces and brought back to 15 Left, where it unites, or passes over the regulator, through the regulator and enters the full return, and returns to the fan by way of 14 Left, 13 Left and old workings outbye. This map in itself is self-explanatory. I will elaborate on it, however, in pointing out that the arrows lead to the various working places and indicate the places in which the men were employed on the morning of the explosion. The small map known as Exhibit "E" represents the barricade which was constructed by the entombed men after the explosion, and is located on the No. 5 haulway between 16 Right and 17 Right. The approximate distance where the barricade was built involves a distance of 48 feet from the permanent brattices which had been erected sometime prior to the explosion and the barricade brattice which was erected by the entombed men sometime after the explosion. The big one, which is an enlarged copy of "C" has been partially explained to you. The area tinted in red represents the approximate area involved in flame at the time of and after the explosion. The area tinted in green represents the area in which there was some disturbance and destruction, however, occurring in the area tinted in red. The arrows, the force of direction is also shown on that print by arrows showing the direction of the force. We also have a semi-arrow shown on that print establishing the path of the flame.

BY A JUROR:

Q. How does the air get across from 18 Right on the South to the north side? A. From 18, from north to south?

Q. Yes. A. This isn't a part of the south section.

Q. I mean the right side to the left? A. The air comes down the aircourse and is deflected; there is a set of locked doors on the No. 2 face on 18 Right. The air comes down both entries to the point of your inside lock, airlock door; from that point it is deflected directly into No. 1 face, passes through the cross-cut connections into 1, 2, 3 and 4 face, across here and back through No. 3 and 4 faces on 18 Left, and is conducted by 18 Left and around the working faces.

Q. It don't go over an overcast across the main haulage? A. No, flows through the cross-cuts on the face of the workings in the main dip. There is a set of airlock doors here and brattices through here and doors, across your faces. There is a permanent stopping erected on No. 3 face.

BY THE CORONER: We will now have Mr. Roy Joseph read the report of the Commission.

The following report is read by Mr. Joseph:

REPORT OF EXPLOSION
SONMAN "E" MINE, SONMAN SHAFT COAL COMPANY
SONMAN, PORTAGE TOWNSHIP, CAMBRIA COUNTY, PENNSYLVANIA
JULY 15, 1940

This is a report compiled by the commission who investigated the explosion which occurred in the Sonman "E" Slope Mine, of the Sonman Shaft Coal Company, at about 10:40 A.M., July 15, 1940, in which a total of sixty-three (63) men lost their lives. The lives lost can be imputed as follows: fifty (50) to the afterdamp or poisonous gas, ten (10) to burns and the afterdamp, and three (3) directly to the forces of the explosion.

Ninety-three (93) men were employed in the area affected; of the ninety-three (93) men, eighty-one (81) men were employed in the area immediately affected by the flame of the explosion and poisonous gases. Eighteen (18) of the eighty-one (81) men escaped miraculously from the zone to fresh air by abandoning or passing through the zone of mine atmosphere which was contaminated to some extent by poisonous gases.

Upon ascertainment that an explosion had happened and with no knowledge as to the extent, the mine superintendent directed that the District Inspector and Inspectors from adjoining districts be notified. At approximately 12:30 P.M., three (3) Inspectors of the Department of Mines were at the scene of the accident and assumed charge of the recovery work. Under their direction the recovery work was continued, supplementing that which had been started immediately following the explosion.

Subsequent emergency calls to the Department of Mines and the United States Bureau of Mines brought additional State Mine Inspectors and other experienced mine recovery men, who continued with the recovery, both on the surface and underground, until completed. The recovery work was made possible and expedited by mine rescue apparatus crews, supplied by neighboring companies, volunteer labor and supervisory help from the Sonman Shaft Coal Company's mines and from mines located in the several adjoining inspection districts.

Scope of the Investigation

The investigation consisted of a study of the mine records, maps and legal record books; a complete examination of the section involved, including explosive gas determinations with a methane gas detector; and a study of all evidence found relating to the explosion. Further study was made of data compiled by the United States Bureau of Mines, such data being the result of analyses of coal, mine dust, deposits made by the explosion and mine atmosphere samples.

The investigation was directed only in that portion of the mine in which the explosion occurred, and recommendations are made to correct conditions found therein.

The commission making the investigation was accompanied by observers; those who represented the United States Bureau of Mines; mine officials, who represented the interest of the employees and the company; a member of the local Union, and a representative of District No. 2 of the United Mine Workers of America represented the miners. The coroner of Cambria County, who represented the public and all concerned, was invited and did attend sessions at which witnesses were interrogated.

During the interrogation of witnesses observers were excluded, excepting the coroner and those representing the group from which the witness was selected.

Employment and Production

The Sonman "E" Slope Mine, operated by the Sonman Shaft Coal Company, works two (2) seven (7) hour shifts in a twenty-four (24) hour period, beginning at 7:00 A.M. and 7:00 P.M., employing six hundred and seventeen (617) men underground and fifty-two (52) men on the surface. The mine produces an average of 2,700 tons of coal daily.

The mine is divided into two divisions, known as the North and South Slopes, with an approximate equal number of men employed in each division.

The mine officials directly in charge of the operation of this mine are Victor Duras, Superintendent, and Leslie L. Steele, Mine Foreman.

Coal Bed and Openings

The mine operates in the Upper Freeport coal bed which ranges in thickness from forty-eight (48) to fifty-eight (58) inches, including

a bone coal at the top of the seam of an average thickness of five (5) inches.

The coal bed lies on the eastern slope of the Wilmore syncline and has an average dip of seven (7) percent.

The bed is reached through two slopes and one drift and is penetrated in this area by two shafts. The main hoisting slope has a pitch of twenty-five percent (25%) and intersects the coal bed approximately five hundred (500) feet inbye the portal. This slope with a drift forms the intake airways; the other slope being used as the main return to the fan. One shaft, which penetrates the coal bed and serves as a hoisting shaft for another mine, is segregated from this mine by stoppings, providing an escapeway for men employed in the Sonman "E" Slope Mine. The other shaft is completely segregated from this mine by clay-packed brick stoppings.

The workings in this bed are also connected with the workings in the Lower Kittanning coal bed by means of slopes which pass through an intermediate seam, such connected workings are separated by means of fire proof doors erected in the lower slope.

The cover over the coal bed ranges in thickness from one hundred (100) to seven hundred and fifty (750) feet. The cover over the area in which the explosion occurred has an average thickness of six hundred (600) feet.

The immediate roof consists of black slate and shale which has an average thickness of twenty-five (25) feet, fairly consistent, though somewhat interspersed with clay veins and roof rolls.

Mining Methods

The development of the main division is provided for by driving five (5) main entries, as slopes, on the pitch of the seam, from which the bounding territory is developed and mined, also, by driving right and left room headings above the strike of the seam, to provide drainage and grades in favor of the loaded cars. Rooms are then turned on sixty (60) foot centers to the rise of the seam. These rooms and the separating pillars are extracted as the room headings advance.

In the area in which the explosion occurred and the area opposite on the North Main Division, the system had been changed whereby an area of coal was being developed by two (2) room headings of two (2) faces each, and one main heading consisting of four (4) faces. Haulage roads were directed from the main entry, intersecting the room headings forming panels of various lengths. In these panels the room and pillar system of mining is used, with the rooms driven and the pillars partially extracted as the entries advance. The coal recovered approximates seventy-three percent (73%). The remaining coal is left as a support for the roof, intending to exclude general caving and reduce the possible emission of roof gases and water.

Both room and entry faces are driven on an average of twenty-four (24) feet wide. The coal is extracted by undermining, drilled by hand augers and blasted by the individual miners.

Ventilation and Gases

The mine is ventilated with a Jeffrey 8' x 4'8", double-inlet, centrifugal fan, operating on the exhaust system, not provided with explosion doors. The fan is driven by a 150 horsepower, 2,200 volt, three-phase synchronous motor at a speed of 332 R.P.M. creating a water gauge of approximately 4.1 inches, which is recorded by use of a Bristol pressure recording gauge. The fan produces approximately 90,000 cubic feet of air per minute, which is divided into four splits.

The split ventilating the area affected by the explosion is known as air split No. 2. The intake air enters this No. 2 split by way of the sixteen (16) and seventeen (17) right headings, travels through the stumped area and working places, and collects at the intersection of the sixteen (16) right and the No. 3 haulage road. It then ventilates the faces of all working places in the sixteen (16) right, seventeen (17) right, seventeen (17) butt and eighteen (18) right headings, passing to the faces in the sixteen (16) left heading and into the main return.

The deflection of the air current to the faces is made by means of line brattices and canvas doors. Double air-locking doors make positive the air circulation into the sixteen (16) right and the seventeen (17) right headings to the intersection of the No. 2 haulage road. All inbye circulation through the various room headings is controlled by single doors.

Air measurements taken and recorded for the week ending July 12, 1940 in the No. 2 split are as follows:

	<u>Area</u>	<u>Velocity</u>	<u>Quantity</u>
16 right heading - north dip	65	250	16,250
17 right heading - north dip	65	230	14,950
18 right heading - north dip	65	210	13,650

The number of men employed on one shift in the split, as recorded, indicated thirty (30) men in sixteen (16) right, eighteen (18) men in seventeen (17) right, and thirteen (13) men in eighteen (18) right, making a total of sixty-one (61) men. No accounting is made of the men employed on the opposite shift.

The mine is considered gaseous by the Pennsylvania Department of Mines and is operated as such by the operating company. The percentage of methane in the full return from each split was determined periodically by analyses of mine atmosphere and by the use of a methane detector.

Prior to the installation of the present ventilating equipment, the Slope "E" Mine and Shaft "B" Mine were being ventilated by one and the same fan, which was operating on the force system, with the return

air passing through the main haulage entries. This system of ventilation had been used for a period of approximately twenty-eight (28) years. The present ventilating equipment being used to ventilate the Slope "E" Mine, which operates on the exhaust system, was installed and put into operation during January of 1938. Since this date, the ventilation on all air splits has been reversed, except air split No. 2.

Haulage

Coal and waste material are transported from the working faces to the room headings by means of conveyor or car with animal haulage. From the room headings the loaded cars are hauled to the north and south dips by trolley locomotives, then taken to the main hoisting slope by both rope and locomotive, and from thence to the surface by means of rope haulage. The system prevails throughout the mine, with the exception that the conveyors are used in the south division.

Six (6) trolley locomotives; four hundred and seventy-five (475), 4400-lb. capacity, mine cars; eighty (80) horses or mules; four (4) permanently located main line electric hoists and one steam hoist are used in the transportation system.

Lighting

Permissible Edison electric cap lamps are being used for general illuminating purposes; magnetically locked Wolf flame safety lamps are used by mine officials, machinemen and pumpers. Incandescent lamps are used at practically all heading junctions.

Underground Machinery

Seventeen (17) electric-driven, centrifugal and reciprocating pumps are used in this mine; fourteen (14) are used as collecting pumps and three (3) delivering water to the surface. One pump on the north dip division was not on the intake airway at the time of the explosion. Six (6) electric trolley locomotives are used in the transportation of coal and waste material. Twelve (12) mining machines of permissible or approved type are used to undercut the coal. Portable electric-driven air compressors are being used to provide air for drilling purposes.

Explosives

Permissible explosives are used for blasting all coal and rock, all blasting being done by the use of permissible shotfiring units.

Coal Dust

The coal seam is not excessively friable, however, in the process of mining and transportation some dust is produced and deposited along roadways and adjacent openings. Dust, prevalent on the top, sides and floor in the affected area, is in a damp condition and contains sufficient moisture to deter it from being readily thrown into suspension. Roadways outbye the explosion zone are reasonably free of accumulations of dry coal dust.

Analysis and Explosibility of the Coal Seam

The average analysis of the Upper Freeport coal seam in the vicinity of the explosion is as follows:

	<u>Percent</u>
Moisture	3.1
Volatile Matter	18.5
Fixed Carbon	72.7
Ash	5.7
Total	<u>100.0</u>
B.T.U.	14,660

The ratio of the volatile matter to the total combustible shows that coal dust from this coal seam is explosive. This ratio is .203. The ratio of the volatile matter to the total combustible is derived as follows:

$$\frac{\text{Volatile}}{\text{Volatile} + \text{Fixed carbon}} = \frac{18.5}{18.5 + 72.7} = .203$$

According to the United States Bureau of Mines, it is definitely known that coal having a ratio of volatile matter to total combustible above .12 will explode violently if ignited.

Rock Dusting

The mine was partially rock dusted. The extent of rock dusting in the north dip division extended from the bottom of the Main Slope to the entrance of the eighteen (18) right heading. Seventeen (17) right heading had been rock dusted from the north dip entry to twenty-five (No. 25) room. All other headings on air split No. 2 had never been rock dusted.

Supervision

The supervisory personnel of the mine consists of one (1) superintendent, one (1) mine foreman, eight (8) assistant mine foremen, eight (8) fire bosses and one (1) safety inspector.

The Superintendent directs the operation of this and another mine. The mine foreman, subject to the control of the superintendent or operator, has charge of the mine and the persons employed therein. Four (4) assistant mine foremen and four (4) fire bosses are employed on each shift, supervising and firebossing the four (4) sections. The section lines of the assistant foremen and fire bosses are similar. The safety inspector has charge of the general safety in this mine and devotes a portion of his time to this work. Officials employed are certificated by the Pennsylvania Department of Mines for the position in which they are employed.

The official record books required by law are kept in the mine office on the surface. The inside fire bosses' record books are kept in fire proof vaults, installed in permanent fire boss stations. The north dip station is located on the intake airway at eleven (11) right heading.

Explosion

Preceding and on the day of the explosion, the section involved, as well as all other sections of the mine, were examined by fire bosses and reported safe. The fire boss of the No. 2 air split had completed his second examination and subsequently reported that he had found it safe. He, the fire boss, was en route to the surface when the forces built up by the explosion were felt. At the same time the D.C. electric current, which was being supplied through an automatic circuit breaker, was interrupted.

The safety inspector, who was traveling on foot along the north dip slope, between fourteen (14) and fifteen (15) lefts, was thrown by the forces to the floor.

The air traveling inbye along the north dip appeared to have stopped, started in a counter direction, then resumed its course.

The men in the face workings of the eighteen (18) right entry, who later escaped, were thrown to the floor by the tremors of the explosion and were distressed by the tremendous pressure developed. The men working in the sixteen (16) right stumps, who also escaped, were thrown to the floor, witnessed flame and one was burned slightly.

The destruction in the path of the explosion and the accompanying destruction, brought about by the concussive forces developed, was such as to disestablish the ventilation in the zone of the explosion and outbye to fourteen (14) left. This destruction was of such nature as to render it impossible to re-establish the ventilation in a short period of time, making it necessary to progressively establish the air current as a part of the recovery work.

Likewise, this destruction formed a zone or pocket of irrespirable air which entombed those persons who were not killed by the explosion. For those entombed to reach fresh air, or for those at fresh air to reach the entombed, involved twenty-five hundred (2500) feet of travel through an atmosphere contaminated with variable amounts of poisonous or noxious gases.

The Escape

An escape from the area directly affected by the explosion was made by eighteen (18) men. Five (5) men, working in the stump section of sixteen (16) right, made their escape by traveling out the abandoned section of sixteen (16) right to the north dip, a distance of approximately fifteen hundred (1500) feet. The thirteen (13) men working at the face of eighteen (18) right, after considerable discussion and meditation as to their avenue of escape, tried several means of egress and

finally made their way out of No. 1 face, eighteen (18) right, to the north dip, a distance of approximately three thousand six hundred (3,600) feet. The area, through which the men from sixteen (16) right and eighteen (18) right made their escape, was obstructed at points with local roof falls and accumulations of water. The atmosphere in this area was contaminated with variable concentrations of smoke and afterdamp.

The miraculous escape made by these men required outstanding courage, leadership and endurance on their part.

In addition to the eighteen (18) men who escaped from the area directly affected by the explosion, twelve (12) men also escaped from the sixteen (16) left and points on the north dip headings which were ventilated by the same split of air.

Recovery

Recovery work began immediately following the explosion by those who were near the explosion zone. This was conducted under the direction of the mine foreman. These men re-established the ventilation along the north dip by erecting temporary stoppings to replace doors which had been blown out at the fourteen (14) right, seventeen (17) and eighteen (18) lefts, and then closing the lock doors in the eighteen (18) right.

Upon completion of this step, State Mine Inspectors assumed charge of the work and proceeded to explore the seventeen (17) right to the junction of the No. 3 haulage road. Recovery was then directed up the No. 3 haulage road to sixteen (16) right, thence to the face of sixteen (16) right.

The recovery crews were then returned to the junction of seventeen (17) right and the No. 3 haulage road, from which central point the seventeen (17) right, seventeen (17) butt, the No. 3 haulage road below seventeen (17) right and a portion of the eighteen (18) right haulage road were explored and recovered.

In the recovery work off the main haulage road, it was necessary to re-establish temporarily the ventilation through the seventeen (17) right, up the No. 3 haulage road to sixteen (16) right, up the seventeen (17) right inbye the No. 3 haulage road and in the seventeen (17) butt. Such work required the construction of canvas and board stoppings.

The recovery of the mine and those entombed was not particularly retarded due to the amount of construction work necessary. Some little delay was due to the time taken up in getting material to the fresh air base. However, the movement of the crews was controlled largely by the airflow in the section. The air, while plentiful in volume, was not present in sufficient velocity to move the poisonous and noxious gases and provide for a more rapid recovery. The volume of air, due to the system of mining, was spread over such a large area, making it impractical to attempt to centralize the airflow.

As the recovery work proceeded apparatus crews, wearing self-contained breathing apparatus, were used to explore in advance of the fresh air base for fires, gases and possible barricades. As the apparatus crews advanced beyond the fresh air base a reserve crew, under oxygen, was kept at the base for emergency purposes. Ventilation crews erected the necessary stoppings, supply crews carried in the material from the north dip, and stretcher bearers carried the bodies to the main haulage road.

Recovery work began at approximately 11:30 A.M., July 15, and was carried on without stoppage until the last body was recovered at about 8:30 A.M., July 16. The time worked was twenty-one (21) hours.

During the process of the recovery work two barricades were found in sixteen (16) right. The first one was located on sixteen (16) right haulage road between twenty-six (26) and twenty-seven (27) rooms. It was constructed of two brattices of single ply brattice cloth erected fifty-two (52) feet apart. It was so located as to be in the direct course of the air travel that it afforded little, if any, protection to the men. Two (2) bodies were found in the enclosure and thirty-two (32) bodies were found between the innermost brattice and the number thirty (No. 30) room on the sixteen (16) right. The area, in which the larger number of bodies was found, was not isolated from the mine workings which were affected by the explosion.

The second barricade was found in the number five (No. 5) motor road, near the intersection of the sixteen (16) right air course. The barricaded area was formed by two (2) stoppings, the first one was constructed of brick laid in cement, built around a two-foot square wooden door set in the stopping. This stopping was previously used to deflect the air current and was erected six (6) feet from the junction of the sixteen (16) right air course and the number five (No. 5) motor road. The second stopping, erected by those entombed, was forty-eight (48) feet inbye the brick stopping. This stopping was built of mine waste material and filled with fine refuse. The men who constructed the stopping used their shirts and jackets as packing near the roof to prevent an inward leakage of poisonous gas and smoke. The total area enclosed in the barricade was twenty-three hundred (2300) cubic feet, and there were no bodies found in the area.

The men who had escaped from the eighteen (18) right, before escaping, had erected a single brattice cloth closing off the number two (No. 2) face and a crosscut. The barricading of the area in eighteen (18) right was apparently not completed and the area was not occupied.

Property Damage and Course of Explosion

Property damage in the explosion area is limited to the destruction of doors and stoppings, the demolishing of line brattices and the scattering of mine debris along road and travelingways. Doors destroyed were constructed of wood. Stoppings forced down were constructed of brick, built in dry wall, cement faced; those constructed of mine refuse, built in dry pack wall, were also forced down.

Stoppings and wing walls of doors, which were constructed of brick laid in cement, were not destroyed; mine timber was not displaced; and there was no caving brought about by the explosion.

The paths in which the explosion traveled are definitely indicated by the direction in which the damaged material and debris were blown. These paths lead in all directions from the junction of the sixteen (16) right and the number three (No. 3) haulage road. The main course seems to have been directed from that point outbye through the sixteen (16) right air course to number twenty-eight (No. 28) room, off the seventeen (17) right, traveled down this room, then inbye on seventeen (17) right. It joined these forces on the number three (No. 3) haulage road, and traveled down the number three (No. 3) haulage road to the eighteen (18) right, then outbye on this entry to the number two (No. 2) haulage road through which it traveled to the seventeen (17) right heading, where it stopped. Forces directed from this main path apparently diminished rapidly, particularly those expended in the direction of the working faces.

Findings and Conclusions

The following findings and conclusions are based upon facts disclosed or substantiated in the report, the appendix of the report, and in the attached testimony or in supporting records:

1. That ninety-three (93) men were employed in the number two (No. 2) air split, one continuous circuit of air, and that the employment of more than seventy-(70) men, legally allowed on this air split, did not contribute as to either cause or propagate the explosion.
2. That the control of the air current in the number two (No. 2) air split by single doors did not provide a constant supply of fresh air as required by law.
3. That the air door situated at the junction of seventeen (17) right and the number three (No. 3) haulage road, which was found open and so secured following the explosion, did interrupt the air flow in the sixteen (16) right, and that this interruption did not contribute to either cause or propagate the explosion.
4. That coal dust, present in variable quantities along the roadways, travelingways, and airways, was thrown in suspension, carried by the explosion and subsequently deposited, did not contribute as to initiate the explosion and played little part, if any, in its propagation.
5. That the fresh intake air used to ventilate the number two (No. 2) air split, and which traversed the roadway in which trolley wire was suspended from the roof and from which an open type electric trolley locomotive was operating, was first passed through an area in which pillars were

mined to such an extent as to permit abandonment, and mined to such an extent as to cause caving.

6. That caving occurred in the number twenty-eight (No. 28) room off seventeen (17) right and that such caving was induced by the partial extraction of the coal seam, and was superinduced at this place by the presence of clay veins and a barrier pillar.

7. That the caving in the number twenty-eight (No. 28) room off seventeen (17) right occurred just prior to the explosion and continued for some time afterward.

8. That explosive gas was suddenly liberated in considerable volume from the fall which occurred in the number twenty-eight (No. 28) room and was carried in the air current.

9. That a trolley locomotive operating in the sixteen (16) right heading was in the path of explosive gas contaminating the mine atmosphere.

Conclusion

That the explosion which occurred was initiated by the ignition of explosive gas in the mine atmosphere, by an arc or spark from a trolley locomotive operating at or near the junction of the number three (No. 3) haulage road and the sixteen (16) right heading, and was propagated by gas in the mine atmosphere. We further conclude that the ignition was indirectly brought about by the failure of the system of mining, which failure might have been anticipated, yet was not expected.

Recommendations

1. That the ventilating air current in the number two (No. 2) split be so conducted as not to pass through any abandoned area, abandoned by reason of total or partial coal extraction; nor should the air current pass by the open roads to such areas.

2. That the air current used to ventilate areas abandoned by reason of total or partial extraction be so conducted as not to pass over any open type electrical equipment.

3. That no live trolley wire or open type electrical equipment be permitted to remain or be installed in places ventilated by the air current inbye the first active pillar or entry stump being partially extracted.

4. That legally qualified shot-firers be employed to charge, tamp, and fire all holes properly placed by the miner.

5. That the definition of pillared areas or pillaring be established by law to convey the meaning that all areas in mines in which room and entry pillars are mined, or are being mined to any extent beyond the legally required cut-throughs or cross-cuts, or in areas in which mining is so conducted as to be conducive to caving, or in areas in which any system of mining is used which results in the extraction of coal to the point of abandonment, be considered as pillared areas or pillaring.

6. That Rule 77, Article XI, of the Bituminous Mining Law, be so amended or changed to define a gaseous portion of a mine as "all workings and roadways being traversed by the same continuous air current, in which portions explosive gas has been generated in sufficient quantity to be detected by an approved safety lamp, within a period of two (2) years", and to limit the use of electric equipment, operated from a trolley, to entries in which air currents are established.

And to further limit the use of open type electric equipment by the open entrances to places in which pillars have been drawn, and in atmosphere which has ventilated or passed through such places.

7. That an effort be made by State Agencies, through the operating company, to disseminate among persons employed in bituminous mines, information and educational material concerning the necessity, construction and location of barricades following mine explosions and mine fires.

Acknowledgment

This Commission wishes to acknowledge the cooperation and assistance given by members of the safety division of the United States Bureau of Mines in the rescue and recovery operations, and in supplying data acquired through the facilities of the Pittsburgh Experimental Station. The Commission wishes also to acknowledge the ready cooperation of the management, officials and employees of the Sonman Shaft Coal Company, and all other persons who assisted in the recovery and investigation.

Respectfully submitted.

(Signed) M. W. Thomas
M. W. Thomas, Inspector
24th Bituminous District

(Signed) R. D. Joseph
R. D. Joseph, Inspector
6th Bituminous District

(Signed) R. E. George, Chairman
R. E. George, Inspector
18th Bituminous District

(Signed) Geo. J. Steinheiser
Geo. J. Steinheiser, Inspector
25th Bituminous District

BY MR. JOSEPH:

In submitting the report, the following appendix was attached to the report:

- A. Names of men involved in the explosion area.
- B. 400 foot map showing the mine and its ventilation.
- C. 100 foot map showing detail of the section, ventilation and trolley.
- D. 100 foot map showing place of workmen.
- E. 100 foot map showing details of explosion
- F. Mine Inspectors' Inspection report.
- G. Atmosphere analysis reports.
- H. Coal dust analysis reports.
- I. Transcript of testimony before the Commission

BY MR. MAIZE:

We are now going to poll the committee and ask them if they signed the report and concur in it.

Mr. R. E. George, Mine Inspector, did you sign this report?

BY MR. GEORGE:

I signed this report and concur in its findings.

BY MR. MAIZE:

Mr. George J. Steinheiser, did you sign this report and concur in the findings?

BY MR. STEINHEISER:

Yes, sir.

BY MR. MAIZE:

Q. Mr. M. W. Thomas, you heard the question; did you sign the report and concur in the findings? A. Yes, sir.

BY MR. MAIZE:

Q. Mr. Joseph, did you sign the report and concur in the findings?

BY MR. JOSEPH:

Yes, sir.

A RECESS IS TAKEN UNTIL 1:00 O'CLOCK, P. M.

AFTERNOON SESSION

BY MR. STULL:

At this time we desire to offer in evidence Exhibits "B", "C", "D" and "E", they having been identified, together with the appendices attached to the report, "G", "H" and "I." Also as illustrative, but not necessarily in the evidence, enlarged map of Exhibit "C", with the reservation that they may all be withdrawn after the purposes with the jury may have been served. The Commission desires to state that they are willing at this time to be interrogated with respect to their report.

BY THE CORONER:

Any questions Mr. Hess or Mr. Younker? Do you desire to ask this Commission any questions relative to their investigation and report?

BY MR. HESS:

Q. I might ask the Commission at what time July 15 did they take full charge of the recovery work?

BY MR. MAIZE:

Before you start, I think we will let the Commission member, whichever one is familiar with that, answer.

BY MR. THOMAS:

We took full charge of all recovery work between one-thirty and two o'clock.

QUESTIONS BY MR. HESS:

Q. To relieve the minds of some of my people, I would like to ask the Commission, with the help of this map, this intake air to the affected area, 16 and 17 Right, at the time there was a small barricade or door, two by two door, ventilation door in 16; knowing that the majority of the men were employed in this section, couldn't it have been possible to have reached these men with fresh air sooner by barricading this off below 16, chasing the air up through here (indicating position on map) instead of coming down here with your air and going up 17?

BY MR. JOSEPH:

It would have been possible for the recovery crews to enter 16 Right and make the recovery from that entry had the men in charge of recovery work known that this entry was accessible, but the testimony that the men who took charge of the company work got from the men who escaped made them believe this entry was almost impassible and it would be impossible to

take recovery crews through this entry. And the same testimony was derived by those in charge of the recovery work in the inside from the officials. We determined from the statements made by those men employed in the mine that this entry was impassible, 16 Right.

Q. Is it not true the men who escaped from the stumps in 15 and 16 Right from approximately No. 18 room came down that heading?

BY MR. JOSEPH: It is true.

Q. Did you find that heading open in the investigation from that point up?

BY MR. JOSEPH: The entry was found open in the investigation from the No. 20 room back to the approximate location of No. 14 room. No exploration was made of the entry outbye that room.

Q. Do you think, Mr. Joseph, if the air would have been taken up 16 it would have relieved the situation in any way?

BY MR. JOSEPH: After the explosion was over, and knowing that the men were in the 16 entrance, it probably would have relieved the situation some, but the recovery men had no knowledge as to where these men might be located.

Q. Do you have any recollection of any conversation being passed among the recovery men that all the hopes were that the men were barricaded in 16 Right heading?

BY MR. JOSEPH: No, I don't remember any conversation of that nature. However, I do remember a conversation where somebody said they possibly would be located in the 17 Right entry. It was intended to direct recovery work in the 17 Right and 17 Butt entries, but after consideration it was decided not to expose the men engaged in the recovery work in this area, with the unknown area above them filled with contaminating atmosphere. The air from this point would be coming down against the men effecting the recovery and there would possibly have been some lives lost.

Q. At the time the Commission took full charge of recovery work at that time, did they learn the men employed in 18 Right had been brought to fresh air safely, or got out themselves?

BY MR. JOSEPH: Yes.

Q. Then the recovery work was all concentrated to 16 and 17 Right, is that correct?

BY MR. JOSEPH: 16 and 17 Right. At the completion of the recovery work, it was necessary to go into 18 Right to recover some men.

Q. But you knew the majority of men down there, practically all

the men employed in 18 Right were out?

BY MR. JOSEPH: Yes, we were well informed of that.

Q. How long do you think it would have taken a helmet crew, Mr. Joseph, from the time of their arrival on the scene to travel to the place where the men were barricaded?

BY MR. JOSEPH: Well, I presume it would take at least an hour, or an hour and fifteen minutes for men to travel that distance with apparatus.

Q. Is it true the apparatus that the men carry had oxygen in their tanks?

BY MR. JOSEPH: That is true.

Q. Is it true no time the apparatus crew was more than two or three hundred feet ahead of the Commission?

BY MR. JOSEPH: That is not true.

Q. How far did they advance ahead of the Commission?

BY MR. JOSEPH: I would say between five and six hundred feet.

Q. Do you think it would have been an unsafe condition to let them go farther?

BY THE CORONER: He is referring to the Commission. Was the Commission formed at that time? I think he means the Inspectors in charge.

Q. I am referring to the inspectors in charge. Do you think it would have been unsafe to let the rescue team advance to a farther distance?

BY MR. JOSEPH: Very much unsafe to send men with apparatus, particularly since apparatus are subject to failure, especially in low coal. They have hard traveling and there was nothing to indicate to us what the type of travel would be.

Q. What is your theory of the statement Mr. Steele made concerning self-rescuers? He made the statement he thought that fifty of the men would have been rescued if they had been wearing self rescuers?

BY MR. JOSEPH: That is merely conjecture. We didn't know what the atmosphere was at all times between the rescuers and the entombed men. If we were to know the analysis of the air we could tell you whether it was possible for the men to travel through. To get the analysis would have been impossible. I might add to that we encountered no atmosphere in which a self-rescuer would not have been of some use to the men.

Q. I presume, Mr. Joseph, when the inspectors in charge took charge that they received information from the mine management as to where the men were employed in these particular sections?

BY MR. JOSEPH: I didn't get your question.

Q. I presume when the inspectors in charge took charge that they received information from the mine management as to where the men were employed in these particular sections?

BY MR. JOSEPH: No, information was not received from the mine management. The superintendent on the surface gave us a general idea of the section and about where the men might be working, although information as to the location of the working places was not inquired into until we made use of the services of Mr. Seese, the fire boss, who was very familiar with everything in the section. Mr. Steele was with us also, but Mr. Seese pointed out the particular places in which these men were working.

BY MR. YOUNKER:

Q. I ask the Commission: In their opinion was this explosion caused by any particular violation of the mining law by the management?

BY MR. GEORGE: As Chairman of that Commission I refer you to our findings and report.

BY THE CORONER: Owing to the fact that every one has not a copy of the findings I think it would be a good idea to read that particular subject.

BY MR. JOSEPH: It will be necessary to read all the findings and conclusions to ascertain that fact.

1. That ninety-three (93) men were employed in the number two (No. 2) air split, one continuous circuit of air, and that the employment of more than seventy (70) men, legally allowed on this air split, did not contribute as to either cause or propagate the explosion.

2. That the control of the air current in the number two (No. 2) air split by single doors did not provide a constant supply of fresh air as required by law.

3. That the air door situated at the junction of seventeen (17) right and the number three (No. 3) haulage road, which was found open and so secured following the explosion, did interrupt the air flow in the sixteen (16) right, and that this interruption did not contribute to either cause or propagate the explosion.

4. That coal dust, present in variable quantities, along the roadways, travelingways, and airways, was thrown in suspension, carried by the explosion and subsequently deposited, did not contribute as to initiate the explosion and played little part, if any, in its propagation.

BY THE CORONER: Q. Was there sufficient coal dust along the highway as to be a violation of the mining law?

BY MR. JOSEPH: This finding says that coal dust, present in variable quantities along the roadways, travelingways, and airways, was thrown in suspension, and did not contribute as to either initiate the explosion and played little part, if any, in its propagation.

BY THE CORONER: The question is, was this a violation of the law?

BY MR. JOSEPH: No.

5. That the fresh intake air used to ventilate the number two (No. 2) air split, and which traversed the roadway in which trolley wire was suspended from the roof and from which an open type electric trolley locomotive was operating, was first passed through an area in which pillars were mined to such an extent as to permit abandonment, and mined to such an extent as to cause caving.

BY THE CORONER: No. 5, was that a violation of the mining law?

BY MR. JOSEPH: No.

6. That caving occurred in the number twenty-eight (No. 28) room off seventeen (17) right and that such caving was induced by the partial extraction of the coal seam, and was superinduced at this place by the presence of clay veins and a barrier pillar.

7. That the caving in the number twenty-eight (No. 28) room off seventeen (17) right occurred just prior to the explosion and continued for some time afterward.

8. That explosive gas was suddenly liberated in considerable volume from the fall which occurred in the number twenty-eight (No. 28) room and was carried in the air current.

9. That a trolley locomotive operating in the sixteen (16) right heading was in the path of explosive gas contaminating the mine atmosphere.

Conclusion. That the explosion which occurred was initiated by the ignition of explosive gas in the mine atmosphere, by an arc or spark from a trolley locomotive operating at or near the junction of the number three (No. 3) haulage road and the sixteen (16) right heading, and was propagated by gas in the mine atmosphere. We further conclude that the ignition was indirectly brought about by the failure of the system of mining, which failure might have been anticipated, yet was not expected.

BY MR. YOUNKER:

Q. Then is it the opinion of the Commission that if the law would have been fully lived up to by the management that this explosion would have occurred anyway? Is that the conclusion of the Commission?

BY MR. GEORGE: In substance that is the conclusion of the Commission,

under the same circumstances, yes.

Q. I want to ask another question. In the opinion of the Commission is the law now adequate to prevent future occurrences of this kind?

BY MR. GEORGE: I can answer that by saying the Commission recommended that the law be changed, or amended.

Q. I know you did, but there is another thing that enters into this; I want to get clear in my mind, in referring to the testimony of the State Mine Inspector in charge of this district, he made certain recommendations concerning the change of air in this particular split. Is it the opinion of the Commission that he has enough power under the laws as now are to enforce compliance with his findings in a reasonable time, or immediately, or at all? Do you think the law is adequate enough in that respect?

BY MR. GEORGE: In regard to Article XI, Section 77, I see that he does not have, but further state that in my opinion the law is not adequate to take care of such an unexpected condition.

Q. Could the law be made adequate to take care of such an occurrence, to safeguard against it?

BY MR. GEORGE: Yes, if the Legislature so chooses.

BY THE CORONER:

Q. That is, you feel your recommendations will prevent a similar occurrence?

BY MR. GEORGE: If it is made law.

BY MR. STULL: In view of the inquiry and answer, it might be pertinent at this point to read into the record the rule referred to,-- Rule 77, Article XI of the Mining Code, as amended by Act. No. 464, July 1, 1937. "Electric haulage by locomotive operated from a trolley wire is not permissible in any gaseous portion of a mine, a gaseous portion of a mine as used herein being all the workings and roadways traversed by the locomotive and ventilated by the same continuous air current and in which portion explosive gas has been generated in sufficient quantity to be detected by an approved safety lamp within a period of two years, except when the portion in which the locomotive operates is free of accumulated explosive gas, and the highest methane content of the air-current in which the locomotive operates is not in excess of five tenths of one per cent, and except where the air-current is so guided and directed that the opening or closing of a door will not interrupt or seriously diminish the air flow passing into and through the portion of the

mine in which the locomotive operates.

Moreover, it shall be unlawful in any gaseous portion of a mine as defined in this rule to run or operate a locomotive fed directly or indirectly from a trolley wire by the open entrances to worked-out places where in the pillars have been drawn, or places in which the pillars have not been drawn, but in which places the roof has collapsed, unless such places are constantly and thoroughly ventilated and examined as frequently for explosive gas as active working places are examined."

BY THE CORONER:

Q. Mr. George, coming down to specific cases, does the Mine Inspector have the authority to enforce a recommendation in regard to the air?

BY MR. GEORGE: Not over and above that which is specified by law.

Q. Well, taking this particular case, where he recommended that the air be reversed, did he have the authority to force compliance with that request?

BY MR. GEORGE: He did not.

Q. To the next phase, in reference to the system of mining, I think we should get some explanation from the Commission in regard to the system of mining and just what their opinion is in regard to that, and the reason why they recommended a different system of mining, just what this present system is likely to cause by sagging. I think you should make some explanation to this jury in regard to your recommendation in that respect.

BY MR. GEORGE: In the first place, in regard to the system of mining here, where it was being mined on a percentage basis to primarily prevent falls in the area involved, it has a tendency, in our opinion, to create some subsidence of the overlying strata due to the fact that as the area expands your subsidence becomes greater. With the nature of the overlying strata, - that is, the strata immediately overlying the coal seam in this particular case, - according to the best information from drill hole records that I have been able to get, we find that the immediate strata overlying the coal seam approximates about 25 feet of black slate and shale to the sandrock. If I might be able to present a picture here by making the explanation that as this coal in the process of mining progresses, and this coal is extracted, there is a certain sag in your immediate strata between the top of the coal seam and your sandrock, and if there is any gas generation in that strata it is naturally going to settle in the sag or vacant place between the immediate roof and your sand. As the mining progresses, that area becomes a little larger, that sag becomes a little greater, allowing just a little more accumulations of gas. Finally, after the sagging has taken place, or expanded to the point that any further movement throws additional weight in any direction, the roof has a tendency of snapping or shearing at the point of solid stump, - for instance, the pillar left between 28 room and 3 haulway at this point, and the pillar which was left as a support between 14 room and 16 room at the No. 2 haulway.

BY THE CORONER:

Q. What would be the approximate thickness of these two pillars?

BY MR. GEORGE: These pillars run about 150 feet by 350 feet. If this area was mined and sagging took place with this stump located on the No. 2 haul-way as a pillar of support, it is our opinion that as this stump was extracted in the process of mining, it produced another channel or area for the roof to follow through by the weight that had already been established on the pillared areas, and as a result that weight became so excessive that it spread through this pillared area and concentrated along this pillar, with the ultimate result that when the resistance of your pillar equaled the resistance or pressure created by that roof, you had a break down of your roof, or shearing on this rib. It is my opinion that that breakdown was created primarily by the stump of this block which acted as a support in the center of this area. Naturally, when the shearing took place, with the possibilities of accumulation of gas in the area between your immediate roof and your sand, you had a sudden inrush of gas at this particular point.

BY MR. YUNKER:

Q. To the Commission: If in their judgment, -if this air had been reversed in compliance with the recommendation of the Mine Inspector, would there have been a possibility that this explosion could have been eliminated by the reversal of that air, with the air sweeping up the other way instead of the way it did?

BY MR. GEORGE: Not unless the open entrances to the working places were sealed, and that would depend entirely on where your trolley locomotive was operating at that particular point.

Q. You can't be definite as to whether it could have been avoided or not?

BY MR. GEORGE: Not definite, but there would be a far greater chance of it being eliminated had the air been reversed than there was while it was in its present course. However, there are machines operating in that mine too, and don't forget the fact these machines were of a permissible or approved type.

BY THE CORONER:

Q. Following that question, with the air traveling in its present course it carried the gas toward the motor which was operating on 16 Right?

BY MR. GEORGE: That is our opinion

Q. With the air reversed it would have been carrying it away from the motor, would it not?

BY MR. GEORGE: Where the motor was located at that particular moment?

Q. Yes?

BY MR. GEORGE: That's right. However, if the motor would have been on the other side, you would have had a possibility of the same occurrence.

Q. But you wouldn't have had,- it is your contention, then, that it wouldn't have occurred at the point it did or at the time it did?

BY MR. GEORGE: Not with the locomotive at that point.

BY MR. YOUNKER:

Q. To the Commission: Did you incorporate,- I can't remember,- did you incorporate in your recommendations a change in the mining law, or an addition that would give the Mine Inspector authority to have carried out in a reasonable time his recommendations or orders on ventilation, or any other dangerous condition of the mine? Did you incorporate that proposal in your recommendation?

BY MR. GEORGE: I don't quite get that.

BY MR. YOUNKER:

Q. Strike that out, I want to rephrase it. In my opinion, I don't think the Mine Inspector under the present law has enough authority to force compliance with his recommendations. Now, did you incorporate that in your proposal, in the law, to give them that right?

BY MR. GEORGE: In my opinion, if the proposed changes become law it will not be necessary for him to have additional power to enforce it; it will become an established law, but it will be his duty to see that that particular part of the law is complied with.

BY THE CORONER:

Q. Your recommendation will cover that particular question he asked?

BY MR. GEORGE: As far as we know it will; it makes it mandatory, not discretionary.

BY MR. YOUNKER:

Q. To the Commission: In their findings,- this refers to the findings too,- it refers some to the inspectors in charge of the recovery work, the method of reaching these entombed men, as to the progress and the time limit. Did the Commission establish the latest time of life in there?

BY MR. GEORGE: The most definite information we have been able to collect was made available yesterday through a transcribed note, in foreign language. If that note was transcribed and translated correctly, the latest time of

life was known to be 6:00 p. m. on the evening of July 15, 1940.

Q. In conducting your recovery work safely and not jeopardizing your recovery men too much, could it have been possible to reach them before that time?

BY MR. GEORGE: Under the conditions that existed here by virtue of the system of ventilation, I say that it would have been impossible, that all possible speed was made to the extent that we had at least some respect for the lives of the men who were involved in the process of recovery. And I hope that you will not, in consideration of that statement, forget to realize the responsibility of the men in charge of recovery as far as the lives of the men with whom they are working is concerned.

Q. That's what I wanted to bring out, Mr. George, that enforcing recovery work too fast can jeopardize the lives of the men doing the work?

BY MR. GEORGE: Very much so.

BY THE CORONER: Any other questions?

BY MR. HESS:

Q. Mr. George, I asked Mr. Joseph a question, and he said the way up 16 Right heading, from the information received from some of the different men who escaped from this point was impassible, but due to the fact they came down, do you think if the air had been chased up, that air would have reached the entombed men before the rescue workers did? Do you think if the air had been chased up, - we have a regulator here (indicating on map), if the regulator had been removed and the velocity of air traveling would have been chased up this heading to where the men were entombed up here, do you think that air would have reached that point before the rescue workers reached them coming this way?

BY MR. GEORGE: That is a very definite question, indefinite as well. In the first place, the information, according to Mr. Joseph's testimony, from the men who escaped through 16 Right was that they had passed over a very congested area. They intimated it was so low in places they had to crawl, if I understand the testimony correctly. If the air was taken into 16 Right first on a larger volume, you would have had a considerable amount more of work to do to convey that ventilation and keep your fresh air with your rescue crew than you would have had by going in on 17 because you had solid barrier pillars here and only cross-cuts between 17 and 17 aircourse to be concerned about, but if you would have gone through this way on the first procedure of recovery, you would have had every one of these openings to seal on both sides before you would have been able to advance.

Q. You remember this check or regulator was open six inches?

BY MR. GEORGE: According to the testimony.

Q. Do you think that was a sufficient amount of air going up there at that time?

BY MR. GEORGE: That is a very uncertain question, for this reason: When recovery work started it was necessary for the recovery crews to keep with them the largest possible volume of air available.

Q. I don't see why half the velocity of air, due to the fact these were both on the intake air,- I don't see why half the velocity of the air coming down here wasn't sent up here?

BY MR. GEORGE: Well, I'm not in any position to try to convince you against your will that it should be or should not be.

Q. You remember the air in 14 Right north was checked and only allowing 5,000 cubic feet to enter that heading?

BY MR. GEORGE: If you will pardon me, I wasn't in on the first crew of recovery, therefore to proceed with the proper understanding of that I will turn those questions over to Mr. Joseph, who was there. I don't have fair knowledge of that.

BY MR. JOSEPH: In answer to that question, on the quantity of air in 16 Right, you will notice in the report we state that recovery work was retarded to some extent due to the loss in velocity of air. Following the explosion, and in our investigation, we discovered that these stoppings shown in yellow here were all in place, and that there was no possible opening for the air to go up this aircourse, or go through 17, which was all right from the standpoint of ventilation. There was a canvas check which had a tendency to deflect the air in this direction, which blocked the 17 Right entry as an airway. All the intake air that was entering 17 Right heading was being deflected to the 16 Right, so, had we taken the air and put it in 16 Right entry the consequences would have probably been the same.

Q. Mr. Joseph, as you said, the air that was going into 17 Right was deflected to 16,- by what? A. Through these open pillars.

Q. It is possible, going through these open pillars, it would have been carrying all the gas and blackdamp?

BY MR. JOSEPH: It would naturally carry anything in the path of the air, in the atmosphere. We couldn't give you any determinations as to the atmosphere, but those engaged in the recovery work will probably recall when we reached 15 room after passing the aircourse around this fall we absolutely had no velocity of air. We couldn't get a reading with an anemometer or any other indication.

Q. To relieve the minds of my people, I ask this question: If the air had the velocity of air traveling in the intake in 16 and 17 Right, and had been sent up to 16, could fresh air reach those men before the hour of six o'clock? A. No.

BY MR. YOUNKER:

Q. Did the Mine Inspectors in charge of the recovery have enough available assistance to carry on the work most expeditiously?

BY MR. JOSEPH: We had sufficient help as far as labor was concerned, and sufficient help as far as removal of the bodies was concerned. We were retarded some little bit by the lack of material, but that retarding didn't amount to very much because had we erected a certain number of stoppings we would have had to stop anyhow until this thing cleared out the heading. There wasn't sufficient air to move everything away.

BY THE CORONER: Do the Jurors have any questions to ask?

BY A JUROR:

Q. What was on the main dip entry below 17 to direct that current of air in on that 17?

BY MR. JOSEPH: There are permanent stoppings. There was nothing on the 17 entrance. The permanent stoppings were below 18, and there were a number of block doors on 18 Right, which meant the air couldn't come down and in.

Q. The inside velocity went out 17 Right?

BY MR. JOSEPH: Went up 17 Right. From the standpoint of time in recovery work at some stage, I don't know what hour it would be, we were notified this area was filling up with water. There was no pump in operation because the power was taken off the mine. It was necessary to send crews down in here and put a block across this entry. It was necessary then to send an apparatus crew down to this area, open certain doors and stoppings so that we could by-pass the air in that area. Stoppings had to be removed on both sides.

BY MR. MAIZE:

Q. The question was asked as to why you didn't reach the 16 Right?

BY MR. JOSEPH: Yes.

Q. Suppose you had knocked down the stoppings in 16 Right to deflect the air in 16 Right, weren't the doors and stoppings knocked out below 17 and instead of coming back to 16 Right it would have been short-circuited down to 18 and, therefore, never gone back to 16?

BY MR. JOSEPH: That would have been true. We would have had to walk across here and lock all avenues back to the return, that is, to establish the air in 16 Right.

Q. Well, weren't the doors broken down? A. There was no door on 17.

Q. I mean wasn't that air short-circuited directly down to 18 and return?

BY MR. JOSEPH: It would have unless we carried line brattice with us. That would have been impossible in this area.

BY MR. HESS:

Q. To the Commission: In your investigation was the room sealed at the neck where the pillars have been drawn?

BY MR. JOSEPH: No.

Q. Should they have been sealed?

BY MR. JOSEPH: Not according to law.

Q. Then it is true the intake air was traveling through those old workings?

BY MR. JOSEPH: The report states the intake air was passing through this area.

Q. Through the old workings?

BY MR. JOSEPH: Yes, through the old workings.

Q. According to law shouldn't these old workings be visited as many places daily, or as many times daily as the working places?

BY MR. JOSEPH: Could I read that portion of the law for you? "Moreover, it shall be unlawful in any gaseous portion of a mine as defined in this rule to run or operate a locomotive fed directly or indirectly from a trolley wire by the open entrances to worked-out places wherein the pillars have been drawn, or places in which the pillars have not been drawn, but in which places the roof has collapsed, unless such places are constantly and thoroughly ventilated and examined as frequently for explosive gas as active working places are examined." I might explain that the unlawful system in there doesn't apply to the use of trolley wire, but applies to the operation of a locomotive. It doesn't apply unless the place has collapsed.

BY A JUROR:

Q. What type of motor is used?

BY MR. JOSEPH: It is an open type trolley electric locomotive.

Q. What precautionary measures are taken in the rescue work in cases of this kind toward the prevention of a second explosion?

BY MR. JOSEPH: Well, there are no particular precautionary measures taken. However, we make certain determinations, make certain explorations to determine whether or not there is any smoke coming off the air, and if

we find a condition like that we have to withdraw the recovery men; but in this particular case we found no evidence of fires, smoke coming off the air. However, we did find several small fires, material burning.

Q. In case the gas would still have been generating, then there would have been a possibility a second explosion could take place in the same area?

BY MR. JOSEPH: That is why you must explore the area ahead of you, to determine whether or not there are any fires in there before you send the balance in there.

Q. What type trolley wheel was on this motor, contact?

BY MR. JOSEPH: Just ordinary trolley.

Q. How many people did you send in the rescue team ahead?

BY MR. JOSEPH: It depends on the type of mine when you get beyond a thousand feet.

Q. What was considered safe in this case?

BY MR. JOSEPH: We had no occasion to send them one thousand feet because everything was open. We felt about four or five hundred feet was sufficient to determine whether there was any air or not.

Q. You wouldn't send them a thousand feet without fresh air?

BY MR. JOSEPH: No.

BY MR. THOMAS: If it would have been possible to get to the entombed men there would have been no way to bring them out in that atmosphere, with noxious or poisonous gas. If you had done that there would be a chance of they dying coming out.

Q. Would it have been possible, as you mentioned, if the rescue men would have gotten to the entombed men to put an apparatus on those entombed men to come out?

BY MR. JOSEPH: The only apparatus available were those worn by the crew. In order to send one crew ahead into the tomb we must have fresh air for us to rescue him if he collapses. We had no extra apparatus. These men in the area, a good many of them wouldn't be able to wear apparatus anyway; they must have experience, must be experienced men.

BY THE CORONER:

Q. There has been considerable questioning along the line of rock dusting in this particular section. Did you people catch their findings in regard to rock dusting? They say in their report that didn't increase the force of the explosion, or had no part in propagating or initiating the explosion.

in this part of the slope mine? A. Four months, nearly, up until the time of the examination.

Q. Did you know at that time they were working 93 men on No. 2 air split for 70 men? A. I did not.

Q. Did you inquire from the management as to how many men was employed in that particular air split? A. I got that from the record book, that there was only 61 men, I think, or maybe 69.

Q. The record book showed there was only 61 or 69 men actually working there? A. Yes, sir.

Q. And on the contrary there was 93 men working there for a period of at least one year by testimony of the mine foreman? A. I don't know.

Q. Is that or is that not a violation of the state mining law? A. The working of more than 70 men without permission of the Inspector up to 90 men is a violation of law.

Q. Do you have legal power to prefer charges against any certificated man or company official for a violation of the state mining law in this respect? A. I do.

Q. Of course your intentions are to comply with the laws? A. Yes, sir.

Q. Do you have legal power to prefer charges against any mine foreman or company official for entering false figures in the daily report book? A. I do.

Q. And of course that will be complied with as pertaining to the law?

BY THE CORONER: If it is pointed out to the jury that there has been a disregard of the mining laws, I think the jury should be allowed to recommend.

BY MR. HESS: This is a public Inquest and if there are violations of the law it should be known to the public generally.

BY THE CORONER: I think his past performance would be a subject matter for the jury. His intentions, possibly, may not be. But, if he has had any failings in the past in failing to comply, or compel compliance with the mining law, then I think it is subject matter for this jury.

BY MR. HESS: I am through with the witness.

BY THE CORONER: We don't want to cut you off.

BY MR. HESS: I am through anyway.

BY MR. YOUNKER:

Q. Mr. Filer, had you made any other recommendations in the past that weren't fulfilled in a reasonable length of time in this mine?

A. I would say not unreasonable.

Q. You had no knowledge of any other split of air being overloaded in violation of the law? A. I did not.

Q. You had no knowledge of this either? A. I did not.

Q. How often do you make inspections at this mine? A. At least once every four months.

Q. What is the law regarding inspections of mines by the mine inspector, the maximum length of time allowed between inspections? A. Four months.

Q. Had there ever been any dangerous condition drawn to your attention at this mine that was supposed to exist at this mine by the miners employed at Sonman Slope? A. Not to my knowledge. I found conditions myself where I withdrew men when I thought it was unsafe,- specifically 13 right stumps in this same side of the mine, due to an excessive amount of dust.

Q. You withdrew these men when it came to your attention? A. I happened to go in there and found this condition and stopped the men, stopped the machine, and I don't think it ever worked afterward.

Q. On your inspection tours, Mr. Filer, did you visit each and every place that was supposed to be working at the time of your inspection? A. I took what I thought was a good cross-section for that portion of the mine, sometimes every other place, or probably I would go three or four places and if there was any condition there to indicate that there was a possibility of gas or bad roof or anything at all, I would check every place in a condition of that kind.

Q. In your examination of the pillared section of the mine, did you pay particular attention to that? A. I did.

Q. Every place where they had pillared sections? A. Yes, sir.

Q. Did you take any air readings in any of those places when you made the inspection? A. Always.

Q. And you found,- in other words, what did you find? A. The quantity of air as required by law, with the exception of two places on my last examination, which is recorded in the records of this company.

Q. In your recommendations? A. Yes.

Q. You recorded the fact they weren't according to law? A. Yes.

Q. Of sufficient amount according to law? A. Yes. But inasmuch as I considered it was temporary, due to some possibility of a door being knocked out down at the lower end of the dip, which would probably take an hour or so to fix up, or with the possibility of two doors being open over which I had no control at the time, that is what I considered was the trouble. I found the ventilation as I was going in; I had ventilation when I was going out, but just the place where I happened to be there, a few minutes, I didn't get a reading. There was ventilation going but I didn't get a reading.

BY MR. STULL:

Q. Mr. Filer, the question was asked concerning your knowledge of 93 men working in this mine, in this air split; did you ever have any knowledge from any source on any of your inspections that there were as many as 93 men working in that split? A. No.

Q. Or that there were in excess of 70 men working in that split? A. No.

Q. At the time of your last inspection, how many men did you find there? A. I didn't find them.

Q. In the report, I mean? A. Either 61 or 69, I'm not sure which, in one of my reports; I'm not sure whether it was the last one showed 61 or 69.

Q. It wasn't in excess of the permissible 70? A. As far as I knew.

BY MR. YOUNKER:

Q. Mr. Filer, had this company, had the management of this company at this mine ever requested from you permission for more than 70 men on a split? A. Not to my knowledge, I don't believe they ever did. Sometimes, - just answering your question and to elaborate on it a little, - sometimes it is possible they will ask for permission to put a few extra men in to do some necessary work to comply with the law, and if they have enough ventilation on that split for those men, as long as it doesn't exceed 90 I wouldn't hesitate to give them permission if it complies with the law.

Q. You heard the interpretation of the law, the intention of the law as stated by some of the witnesses at this Inquest, concerning what constitutes men. They explained a little by saying they felt it had to be 70 miners, not counting company men; what is your interpretation? A. 70 persons, regardless of the work.

Q. You take the position a company man is the same as a loader? A. Absolutely.

BY THE CORONER: Now, Mr. Hess, Mr. Younker, or the Jurors, do you have any questions?

BY A JUROR:

Q. When you recommended the reversing of this air current in this particular split, did you see any potential hazard in there that you made this recommendation? A. No.

Q. You did not? A. No. As I said before, if there was an immediate danger in my opinion I would have withdrawn them.

BY THE CORONER:

Q. Mr. Filer, did you have in mind a condition of gas accumulating back in the old workings and being brought out on the trolley wires?
A. That is always in your mind and you check to find out whether that is so or not, whether you have gas or not, at least I do, I don't mean you.

BY THE CORONER: Are there any further questions by anyone?

BY A JUROR:

Q. Was this company, Mr. Filer, or the officers you dealt with, were they always satisfied to comply with your requests? A. Not always. Request is one thing, requirement is another.

Q. Don't you think a request for safety of the men and requirement, that if a little judgment would be put in it would help the thing along?
A. I have, for your information, reasonably good cooperation from the mine foreman who was there at that time. I think he has done very well considering the type of job to be done.

BY THE CORONER:

Q. Do you want to qualify that, considering what size job was to be done? A. Several things, especially on ventilation up to this point of changing the air, and that was only a request and not a requirement. I talked to him about that, and on my last inspection there, just as good mining practice, and he said they had that in mind and were going to do it just as soon as they could get at it, and they have done a lot with regard to changing the ventilation in this mine. To elaborate on that, I should say this: Six years ago, the gas, or the air, the intake air came from entries of acres of worked out gob area, taken over trolley wires and over the mine. At that time I started, and I knew at that time there was no way of rescuing in case something happened without going through 200 feet, approximately, of irrespirable air, or by dropping down the shaft on rope. That was one of my first considerations. I know that explosions and fires happen when we least expect them. That was one reason why I wanted the ventilation changed. Then the next reason was to keep the air, or to keep those old gobs that gave off gas on the return and make it safer for the men. However, the job wasn't yet finished. That is what I wanted done and what would have been done soon, I think, to have brought that lower fatality region into the same category as the rest of the mine. And the reason I didn't enforce that, - one of the reasons I didn't enforce it, was that I have no legal power. Another reason, I seen no immediate danger, and, unless there is an immediate danger, if in the judgment of the Inspector there is immediate

danger, he has the right and should take it up with the Commission, or the Department of Mines, when he withdraws the men from the premises. I think I am entirely in order to say that there has been some very keen remarks regarding myself . . . (interrupted).

BY THE CORONER: That has nothing to do with this. You may explain the reasons for your recommendation.

BY MR. HESS:

Q. Mr. Filer, according to the statement you just made, you said you requested the change of this air in order to make this a good method of mining? A. Good mining practice to carry your air to your ripe workings first.

Q. Then the practice in force now is not good mining practice? A. Not a bad mining practice, but a better one if changed.

Q. Why is it not good mining practice? A. Because it takes the air over your worked out area on to the men after it has passed the worked out area, and if you have any falls, the possibility of which there always is though you don't expect them, that it takes the air the opposite way from the men.

Q. You mean it decreases the velocity of the air to a certain extent? A. No.

Q. Changes the course of the air? A. No, only just changes the course in the opposite direction.

BY MR. SHETTIG:

Q. Mr. Filer, was this mine in your inspection district as far back as 1935? A. Yes, sir.

Q. You know that in 1935, just about five years ago, the former owners of this mine had to give it up on account of financial distress? A. So I heard.

Q. You would know what the conditions were in the mines at that time, it being within your inspection district? Is it not a fact at that time you found that both the shaft mine in the "B" seam and the Slope Mine in the "E" seam were supplied with air by one fan? A. Yes, sir.

Q. That wasn't satisfactory, was it? A. Not inasmuch as the air was going the wrong way.

Q. Since the present management has taken hold they have put in separate ventilating systems for the two mines, have they not? A. They have.

Q. In this slope mine they have reversed the air in accordance with your thought as to better mining practice in practically all the mine with the exception of this affected section, is that correct?

A. It is.

Q. They have been making progress in the direction which you considered to be beneficial in affording greater safety to the men, is that right? A. They have, yes.

BY MR. HESS:

Q. Mr. Filer, you said that you received cooperation in the work you asked of them in changing the air; do you think it is cooperation, Mr. Filer, to have the man in charge of this work laid off and put on loading coal? A. I didn't know of that. The direction of the working force is entirely with the owner, not by any person or persons, or organization or organizations.

BY THE CORONER: Any other questions by anybody in interest here?

(No reply.)

TESTIMONY CLOSES

BY THE CORONER:

I want to take this opportunity, because after the jury retires probably the people interested will probably disperse, of acknowledging my appreciation in conducting this Inquest with the help that has been extended by the Department of Mines, the Federal Bureau of Mines, the Jamestown Local, the District Organization, the District Attorney's Office, and all others I may have missed. I also compliment the Department of Mines on their able report, with the way they compiled it and the way it was presented. I think this has been the largest Inquest, - at least it is the largest I have attended and I hope I am never called upon to conduct a similar one.

These Inquests are necessary, Jurors, in disasters of this kind, also where another contributes to the loss of life, for various reasons. The first reason is, where it is shown by the testimony criminal negligence has figured in the loss of life, then to recommend proper prosecutions by the proper authorities. Where criminal negligence has not been established, then for the purpose of exoneration, thereby removing the stigma that may follow those persons during the balance of their lives. Another reason, for the purpose of recommending the removal of a policy or a hazardous condition.

Going back to the criminal negligence in this case, in order to prove criminal negligence in this catastrophe it is necessary to establish through testimony that the management of this particular mine was guilty of wilful or reckless indifference to the welfare of those in their charge. I think that is the greatest, - or it is the extent of the crime, criminal negligence, in this case, if it exists, if it is present.

You have heard testimony here showing that there were numerous violations on behalf of the officials, but no testimony to show that they were connected, or that those violations were responsible for this explosion. In connection with the violations of the mining law the Department of Mines, as set up, was instrumental in getting certain laws passed for the purpose of protecting the employees in and around the coal mines of this state, and should take care of that. Those laws should be enforced and complied with, no question about that; they are for the safety of the employees. And especially when the management is enforcing on the employees compliance with the laws, they should comply themselves in carrying out the laws as regards the safety of their employees.

You gentlemen have heard the testimony; you have sat here for days patiently listening to this testimony. No doubt you remember it as well as I do. It becomes your duty now to determine from the testimony that has been given here whether or not any of the officials were guilty of criminal negligence in causing this explosion. I said by the testimony, and that is what you are guided by.

After arriving at a conclusion as to your findings, you will write your findings in this report, and below the statement of facts make whatever recommendations that you may see fit in accordance with the evidence. I think the recommendations offered by the Department of Mines are something worth while. After all, we are not only interested in prosecuting those who may be criminally responsible in a case of this kind, if there is any one criminally responsible, but we are interested in averting a recurrence of anything of this kind. Those recommendations as offered were offered in good faith by this Commission, with this end in view,- with the end of eliminating a similar occurrence in the future.

Now, does any one take any exception to these instructions?

(No reply)

With those instructions I am going to turn over the Inquisition papers to you, and after your deliberations, and your findings, write them in here. I am going to give you additional paper in case this space isn't large enough for you to make your report, or to report your findings and recommendations, which can be attached to these Inquisition papers.

(JURY RETIRES TO DELIBERATE)

FINDINGS OF THE JURY

COMMONWEALTH OF PENNSYLVANIA, }
 } SS:
CAMBRIA COUNTY }

INQUISITION indented and taken at Portage, Pa. in the County of Cambria aforesaid, on the Thirteenth (13), (14) & (15) day of August, A.D. 1940, before me, PATRICK McDERMOTT, Coroner of the county aforesaid, upon the view of the body of Freeman George, Portage, Pa. and 62 other names attached then and there lying dead, upon the oaths and affirmations of Arthur Barr, John Sloan, John Franey, Frank Grescik, John Castel, good and lawful men of the county aforesaid, who being duly sworn and affirmed diligently to inquire and true presentment make on behalf of the said Commonwealth, when, where, how and after what manner the said deceased came to their deaths and having heard the evidence, hereby certify and return, upon their oaths and affirmations aforesaid, that the death of said deceased being of a suspicious nature or character, and there being strong suspicion of unlawful violence or other unlawful violence or other unlawful acts at the hands of some other person or persons, this Inquest was held, in Loyal Order of Moose Hall, Portage, Pa. and having heard the evidence, do further certify and return that the said Freeman George and 62 others of Portage, Pa. aged 38 years, came accidentally to their deaths on the 15th day of July, 1940, at Sonman, Pa. in said County of Cambria, from asphyxiation and First and Second degree burns in slope of Sonman Shaft Coal Co. Sonman by gas explosion on July 15th, 1940, Gas being ignited by a trolley locomotive. The ignition was superinduced by the failure of system of mining and negligence of officials directly in charge of mine management at the time of explosion.

(Victor Duras, Superintendent)

(L. L. Steele, Foreman)

(Guy Wahl, Asst. Foreman)

We recommend the adoption and furtherance of recommendations submitted by the Commission of Inspection.

IN WITNESS WHEREOF, as well the said Coroner as the Jurors aforesaid, have to this Inquisition set their hands and seals. Dated the day and year and at the first place above written.

PATRICK McDERMOTT (SEAL)

JOHN M. SLOAN (SEAL)

FRANK GRECEK (SEAL)

JOHN P. CASTEL (SEAL)

ARTHUR BARRS (SEAL)

JOHN FRANEY (SEAL)

Floria Passo	42	Married	Portage
John Hebda	51	Married	Jamestown
John Inman	28	Married	Cassandra
John Thomas	49	Married	Portage -x
William Wisnewoski	37	Single	Portage -x
John Nowebelski	25	Single	Cassandra
William Flynn	31	Single	Portage
Andrew J. Rudash, Jr.	20	Single	Portage
John Rudash	26	Single	Portage
Thomas Hough	24	Single	Portage
Harry McVicker	41	Married	Portage
Theodore Pitman	33	Married	Portage -x
Frank Chileski	40	Married	Portage
Alexandra Bobroweiz	47	Married	Portage -x
Leo Etienne, Jr.	19	Single	Portage -x
Thomas Shaw	28	Married	Portage
Angelo Constantino	55	Married	Lilly
Chester Bradley	31	Married	Cassandra -x
Philip Hufford	31	Married	Lilly, R.D.
John Kent	30	Married	Portage -x
Joseph Kusne	51	Married	Portage -x
John Prestash	35	Single	Jamestown
Alex Weas	43	Married	Cassandra
John Smurdak	29	Married	Portage
John MacKoviak	27	Single	Jamestown
George Stovski	23	Married	Portage
August Bern	21	Single	Portage, R.D.
Walter F. Sibis	30	Married	Lilly
John Miterko	27	Single	Portage
John Paryak	26	Single	Sonman
Mike Sarnosky	23	Single	Portage
John Simo	24	Single	Portage
Joseph Simo	22	Single	Portage
Mike Simo, Sr.	53	Married	Portage
Stanley Kalvansky	53	Single	Jamestown
George Lutz	26	Single	Sonman
Steve Sarvash	22	Single	Cassandra
Joseph S. Gavlak	22	Single	Portage
George Zimmerman	47	Married	Portage
Charles Klatt	58	Married	Portage, R.D.
Joseph Holliday	35	Married	Jamestown
Clayton Brunett	29	Married	Portage, R.D.
John Trunak	23	Married	Cassandra
Laird Zimmerman	20	Single	Portage
Melvin Owen	26	Married	Wilmore
Steve Doman	32	Married	Beaverdale
James Monteith	45	Married	Ebensburg, R.D.
Louis Mantell	52	Married	Ebensburg, R.D.
Sheldon McDonald	20	Single	Portage
Edward Mantell	42	Single	Ebensburg, R.D.
Horace Chappell	43	Married	Portage
August Snyder	34	Married	Beaverdale
Emmett Moyer	34	Married	Gallitzin
John Lester	27	Single	Sonman
John Kuberlis	27	Married	Portage

Arthur McDonald	26	Single	Portage
Frank Szura	53	Married	Jamestown
Walter Szura, Jr.	23	Single	Portage
Joseph B. Smith	32	Single	Cassandra
Thomas Leap	47	Married	Cassandra
Melvin Leap	24	Married	Cassandra
Homer Leap	20	Single	Cassandra

STENOGRAPHER'S CERTIFICATE

I hereby certify that the proceedings and evidence taken before the Coroner at Moose Hall, Portage, Pa. on August 13, 14 and 15, 1940, before a Jury selected to inquire into the cause of death of Freeman George, Portage, Pa. and 62 others named in the Inquisition Papers at the time of an explosion in Sonman "E" Slope Mine, Portage Township, Cambria County, Pa. on July 15, 1940, are fully contained and accurate in the notes taken by me and that this copy is a true and correct transcript of the same.

(Signed) Clair W. Luther
 Official Stenographer, 47th Judicial
 District, Pennsylvania.

August 8, 1940

Honorable Joseph J. Walsh,
Deputy Secretary of Mines
Harrisburg, Pennsylvania

0-2188

Dear Sir:

We, the undersigned commission of Bituminous Mine Inspectors, appointed by you to investigate and report on the explosion which occurred at Sonman "E" Slope of the Sonman Shaft Coal Company, July 15, 1940 have performed that duty and submit our findings and recommendations, which are enclosed herewith.

Yours very truly,

R. E. George (signed)
R. E. George, Chairman
Inspector of Mines
18th Bituminous District

R. D. Joseph (signed)
R. D. Joseph
Inspector of Mines
6th Bituminous District

Geo. J. Steinheiser (signed)
Geo. J. Steinheiser
Inspector of Mines
25th Bituminous District

M. W. Thomas, (signed)
M. W. Thomas,
Inspector of Mines
24th Bituminous District

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REPORT OF EXPLOSION
SONMAN "E" MINE, SONMAN SHAFT COAL COMPANY
SONMAN, PORTAGE TOWNSHIP, CAMBRIA COUNTY, PENNSYLVANIA
July 15, 1940

This is a report compiled by the commission who investigated the explosion which occurred in the Sonman "E" Slope Mine, of the Sonman Shaft Coal Company, at about 10:40 A.M., July 15, 1940, in which a total of sixty-three (63) men lost their lives. The lives lost can be imputed as follows: fifty (50) to the afterdamp or poisonous gas, ten (10) to burns and the afterdamp, and three (3) directly to the forces of the explosion.

Ninety-three (93) men were employed in the area affected; of the ninety-three (93) men, eighty-one (81) men were employed in the area immediately affected by the flame of the explosion and poisonous gases. Eighteen (18) of the eighty-one (81) men escaped miraculously from the zone to fresh air by abandoning or passing through the zone of mine atmosphere which was contaminated to some extent by poisonous gases.

Upon ascertainment that an explosion had happened and with no knowledge as to the extent, the mine superintendent directed that the District Inspector and Inspectors from adjoining districts be notified. At approximately 12:30 P.M., three (3) Inspectors of the Department of Mines were at the scene of the accident and assumed charge of the recovery work. Under their direction the recovery work was continued, supplementing that which had been started immediately following the explosion.

Subsequent emergency calls to the Department of Mines and the United States Bureau of Mines brought additional State Mine Inspectors and other experienced mine recovery men, who continued with the recovery, both on the surface and underground, until completed. The recovery work was made possible and expedited by mine rescue apparatus crews, supplied by neighboring companies, volunteer labor and supervisory help from the Sonman Shaft Coal Company's mines and from mines located in the several adjoining inspection districts.

Scope of the Investigation

The investigation consisted of a study of the mine records, maps and legal record books; a complete examination of the section involved, including explosive gas determinations with a methane gas detector; and a study of all evidence found relating to the explosion. Further study was made of data compiled by the United States Bureau of Mines, such data being the result of analyses of coal, mine dust, deposits made by the explosion and mine atmosphere samples.

The investigation was directed only in that portion of the mine in which the explosion occurred, and recommendations are made to correct conditions found therein.

The commission making the investigation was accompanied by observers: those who represented the United States Bureau of Mines; mine officials, who represented the interest of the employees and the company; a member of the Local Union, and a representative of District No. 2 of the United Mine Workers of America represented

the miners. The coroner of Cambria County, who represented the public and all concerned, was invited and did attend sessions at which witnesses were interrogated.

During the interrogation of witnesses observers were excluded, excepting the coroner and those representing the group from which the witness was selected.

Employment and Production

The Sonman "E" Slope Mine, operated by the Sonman Shaft Coal Company, works two (2) seven (7) hour shifts in a twenty-four (24) hour period, beginning at 7:00 A.M. and 7:00 P.M., employing six hundred and seventeen (617) men underground and fifty-two (52) men on the surface. The mine produces an average of 2,700 tons of coal daily.

The mine is divided into two divisions, known as the North and South Slopes, with an approximate equal number of men employed in each division.

The mine officials directly in charge of the operation of this mine are Victor Duras, Superintendent, and Leslie L. Steele, Mine Foreman.

Coal Bed and Openings

The mine operates in the Upper Freeport coal bed which ranges in thickness from forty-eight (48) to fifty-eight (58) inches, including a bone coal at the top of the seam of an average thickness of five (5) inches.

The coal bed lies on the eastern slope of the Wilmore syncline and has an average dip of seven (7) per cent.

The bed is reached through two slopes and one drift and is penetrated in this area by two shafts. The main hoisting slope has a pitch of twenty-five per cent (25%) and intersects the coal bed approximately five hundred (500) feet inbye the portal. This slope with a drift forms the intake airways; the other slope being used as the main return to the fan. One shaft, which penetrates the coal bed and serves as a hoisting shaft for another mine, is segregated from this mine by stoppings, providing an escapeway for men employed in the Sonman "E" Slope Mine. The other shaft is completely segregated from this mine by clay-packed brick stoppings.

The workings in this bed are also connected with the workings in the Lower Kittanning coal bed by means of slopes which pass through an intermediate seam, such connected workings are separated by means of fire proof doors erected in the lower slope.

The cover over the coal bed ranges in thickness from one hundred (100) to seven hundred and fifty (750) feet. The cover over the area in which the explosion occurred has an average thickness of six hundred (600) feet.

The immediate roof consists of black slate and shale which has an average thickness of twenty-five (25) feet, fairly consistent, though somewhat interspersed with clay veins and roof rolls.

Mining Methods

The development of the main division is provided for by driving five (5) main entries, as slopes, on the pitch of the seam, from which the bounding territory is developed and mined, also, by

driving right and left room headings above the strike of the seam, to provide drainage and grades in favor of the loaded cars. Rooms are then turned on sixty (60) foot centers to the rise of the seam. These rooms and the separating pillars are extracted as the room headings advance.

In the area in which the explosion occurred and the area opposite on the North Main Division, the system had been changed, whereby an area of coal was being developed by two (2) room headings of two (2) faces each, and one main heading consisting of four (4) faces. Haulage roads were directed from the main entry, intersecting the room headings forming panels of various lengths. In these panels the room and pillar system of mining is used, with the rooms driven and the pillars partially extracted as the entries advance. The coal recovered approximates seventy-three per cent (73%). The remaining coal is left as a support for the roof, intending to exclude general caving and reduce the possible emission of roof gases and water.

Both room and entry faces are driven on an average of twenty-four (24) feet wide. The coal is extracted by undermining, drilled by hand augers and blasted by the individual miners.

Ventilation and Gases

The mine is ventilated with a Jeffrey 8' x 4'8", double-inlet, centrifugal fan, operating on the exhaust system, not provided with explosion doors. The fan is driven by a 150 horsepower, 2,200 volt, three-phase synchronous motor at a speed of 332 R.P.M., creating a water gauge of approximately 4.1 inches, which is recorded

by the use of a Bristol pressure recording gauge. The fan produces approximately 90,000 cubic feet of air per minute, which is divided into four splits.

The split ventilating the area affected by the explosion is known as air split No. 2. The intake air enters this No. 2 split by way of the sixteen (16) and seventeen (17) right headings, travels through the stumped area and working places, and collects at the intersection of the sixteen (16) right and the No. 3 haulage road. It then ventilates the faces of all working places in the sixteen (16) right, seventeen (17) right, seventeen (17) butt and eighteen (18) right headings, passing to the faces in the sixteen (16) left heading and into the main return.

The deflection of the air current to the faces is made by means of line brattices and canvas doors. Double air-locking doors make positive the air circulation into the sixteen (16) right and the seventeen (17) right headings to the intersection of the No. 2 haulage road. All inbye circulation through the various room headings is controlled by single doors.

Air measurements taken and recorded for the week ending July 12, 1940 in the No. 2 split are as follows:

	<u>Area</u>	<u>Velocity</u>	<u>Quantity</u>
16 right heading - north dip	65	250	16,250
17 right heading - north dip	65	230	14,950
18 right heading - north dip	65	210	13,650

The number of men employed on one shift in the split, as recorded, indicates thirty (30) men in sixteen (16) right, eighteen (18) men in seventeen (17) right, and thirteen (13) men in eighteen (18) right, making a total of sixty-one (61) men. No accounting is made of the men employed on the opposite shift.

The mine is considered gaseous by the Pennsylvania Department of Mines and is operated as such by the operating company. The percentage of methane in the full return from each split was determined periodically by analyses of mine atmosphere and by the use of a methane detector.

Prior to the installation of the present ventilating equipment, the Slope "E" Mine and the Shaft "B" Mine were being ventilated by one and the same fan, which was operating on the force system, with the return air passing through the main haulage entries. This system of ventilation had been used for a period of approximately twenty-eight (28) years. The present ventilating equipment being used to ventilate the Slope "E" Mine, which operates on the exhaust system, was installed and put into operation during January of 1938. Since this date, the ventilation on all air splits has been reversed, except air split No. 2.

Haulage

Coal and waste material are transported from the working faces to the room headings by means of conveyor or car with animal haulage. From the room headings the loaded cars are hauled to the north and south dips by trolley locomotive, then taken to the main hoisting slope by both rope and locomotive, and from thence to the

surface by means of rope haulage. The system prevails throughout the mine, with the exception that the conveyors are used in the south division.

Six (6) trolley locomotives; four hundred and seventy-five (475), 4400-lb. capacity, mine cars; eighty (80) horses or mules; four (4) permanently located main line electric hoists and one steam hoist are used in the transportation system.

Lighting

Permissible Edison electric cap lamps are being used for general illuminating purposes; magnetically locked Wolf flame safety lamps are used by mine officials, machinemen and pumpers. Incandescent lamps are used at practically all heading junctions.

Underground Machinery

Seventeen (17) electric-driven, centrifugal and reciprocating pumps are used in this mine; fourteen (14) are used as collecting pumps and three (3) delivering water to the surface. One pump on the north dip division was not on the intake airway at the time of the explosion. Six (6) electric trolley locomotives are used in the transportation of coal and waste material. Twelve (12) mining machines of permissible or approved type are used to undercut the coal. Portable electric-driven air compressors are being used to provide air for drilling purposes.

Explosives

Permissible explosives are used for blasting all coal and rock, all blasting being done by the use of permissible shot-firing units.

Coal Dust

The coal seam is not excessively friable, however, in the process of mining and transportation some dust is produced and deposited along roadways and adjacent openings. Dust, prevalent on the top, sides and floor in the affected area, is in a damp condition and contains sufficient moisture to deter it from being readily thrown into suspension. Roadways outside the explosion zone are reasonably free of accumulations of dry coal dust.

Analysis and Explosibility of the Coal Seam

The average analysis of the Upper Freeport coal seam in the vicinity of the explosion is as follows:

	<u>Per cent</u>
Moisture	3.1
Volatile Matter	18.5
Fixed Carbon	72.7
Ash	<u>5.7</u>
Total	100.0
B. T. U.	14,660

The ratio of the volatile matter to the total combustible shows that coal dust from this coal seam is explosive. This ratio is .203. The ratio of the volatile matter to the total combustible is derived as follows:

$$\frac{\text{Volatile}}{\text{Volatile} \cancel{+} \text{fixed carbon}} = \frac{18.5}{18.5 \cancel{+} 72.7} = .203$$

According to the United States Bureau of Mines, it is definitely known that coal having a ratio of volatile matter to total combustible above .12 will explode violently if ignited.

Rock Dusting

The mine was partially rock dusted. The extent of rock dusting in the north dip division extended from the bottom of the Main Slope to the entrance of the eighteen (18) right heading. Seventeen (17) right heading had been rock dusted from the north dip entry to twenty-five (No. 25) room. All other headings on air split No. 2 had never been rock dusted.

Supervision

The supervisory personnel of the mine consists of one (1) superintendent, one (1) mine foreman, eight (8) assistant mine foremen, eight (8) fire bosses and one (1) safety inspector.

The Superintendent directs the operation of this and another mine. The mine foreman, subject to the control of the superintendent or operator, has charge of the mine and the persons employed therein. Four (4) assistant mine foremen and four (4) fire bosses are employed on each shift, supervising and fire bossing the four (4) sections. The section lines of the assistant foremen and fire bosses are similar. The safety inspector has charge of the general safety in this mine and devotes a portion of his time to this work. Officials employed are certificated by the Pennsylvania Department of Mines for the position in which they are employed.

The official record books required by law are kept in the mine office on the surface. The inside fire bosses' record books are kept in fire proof vaults, installed in permanent fire boss stations. The north dip station is located on the intake airway at eleven (11) right heading.

Explosion

Proceeding and on the day of the explosion, the section involved, as well as all other sections of the mine, were examined by fire bosses and reported safe. The fire boss of the No. 2 air split had completed his second examination and subsequently reported that he had found it safe. He, the fire boss, was en route to the surface when the forces built up by the explosion were felt. At the same time the D. C. electric current, which was being supplied through an automatic circuit breaker, was interrupted.

The safety inspector, who was traveling on foot along the north dip slope, between fourteen (14) and fifteen (15) lefts, was thrown by the forces to the floor.

The air traveling inbye along the north dip appeared to have stopped, started in a counter direction, then resumed its course.

The men in the face workings of the eighteen (18) right entry, who later escaped, were thrown to the floor by the tremors of the explosion and were distressed by the tremendous pressure developed. The men working in the sixteen (16) right stumps, who also escaped, were thrown to the floor, witnessed flame and one was burned slightly.

The destruction in the path of the explosion and the accompanying destruction, brought about by the concussive forces developed, was such as to disestablish the ventilation in the zone of the explosion and outbye to fourteen (14) left. This destruction was of such nature as to render it impossible to re-establish the

ventilation in a short period of time, making it necessary to progressively establish the air current as a part of the recovery work.

Likewise, this destruction formed a zone or pocket of irrespirable air which entombed those persons who were not killed by the explosion. For those entombed to reach fresh air, or for those at fresh air to reach the entombed, involved twenty-five hundred (2500) feet of travel through an atmosphere contaminated with variable amounts of poisonous or noxious gases.

The Escape

An escape from the area directly affected by the explosion was made by eighteen (18) men. Five (5) men, working in the stump section of sixteen (16) right, made their escape by traveling out the abandoned section of sixteen (16) right to the north dip, a distance of approximately fifteen hundred (1500) feet. The thirteen (13) men working at the face of eighteen (18) right, after considerable discussion and meditation as to their avenue of escape, tried several means of egress and finally made their way out of No. 1 face, eighteen (18) right, to the north dip, a distance of approximately three thousand, six hundred (3,600) feet. The area, through which the men from sixteen (16) right and eighteen (18) right made their escape, was obstructed at points with local roof falls and accumulations of water. The atmosphere in this area was contaminated with variable concentrations of smoke and afterdamp.

The miraculous escape made by these men required outstanding courage, leadership and endurance on their part.

In addition to the eighteen (18) men who escaped from the area directly affected by the explosion, twelve (12) men also escaped from the sixteen (16) left and points on the north dip headings which were ventilated by the same split of air.

Recovery

Recovery work began immediately following the explosion by those who were near the explosion zone. This was conducted under the direction of the mine foreman. These men re-established the ventilation along the north dip by erecting temporary stoppings to replace doors which had been blown out at the fourteen (14) right, seventeen (17) and eighteen (18) lefts, and then closing the lock doors in the eighteen (18) right.

Upon completion of this step, State Mine Inspectors assumed charge of the work and proceeded to explore the seventeen (17) right to the junction of the No. 3 haulage road. Recovery was then directed up the No. 3 haulage road to sixteen (16) right, thence to the face of sixteen (16) right.

The recovery crews were then returned to the junction of seventeen (17) right and the No. 3 haulage road, from which central point the seventeen (17) right, seventeen (17) butt, the No. 3 haulage road below seventeen (17) right and a portion of the eighteen (18) right haulage road were explored and recovered.

In the recovery work off the main haulage road, it was necessary to re-establish temporarily the ventilation through the

seventeen (17) right, up the No. 3 haulage road to sixteen (16) right, up the seventeen (17) right inbye the No. 3 haulage road and in the seventeen (17) butt. Such work required the construction of canvas and board stoppings.

The recovery of the mine and those entombed was not particularly retarded due to the amount of construction work necessary. Some little delay was due to the time taken up in getting material to the fresh air base. However, the movement of the crews was controlled largely by the airflow in the section. The air, while plentiful in volume, was not present in sufficient velocity to move the poisonous and noxious gases and provide for a more rapid recovery. The volume of air, due to the system of mining, was spread over such a large area, making it impractical to attempt to centralize the airflow.

As the recovery work proceeded apparatus crews, wearing self-contained breathing apparatus, were used to explore in advance of the fresh air base for fires, gases and possible barricades. As the apparatus crews advanced beyond the fresh air base a reserve crew, under oxygen, was kept at the base for emergency purposes. Ventilation crews erected the necessary stoppings, supply crews carried in the material from the north dip, and stretcher bearers carried the bodies to the main haulage road.

Recovery work began at approximately 11:30 A. M. July 15, and was carried on without stoppage until the last body was recovered at about 8:30 A. M., July 16. The time worked was twenty-one (21) hours.

During the process of the recovery work two barricades were found in sixteen (16) right. The first one was located on sixteen (16) right haulage road between twenty-six (26) and twenty-seven (27) rooms. It was constructed of two brattices of single ply brattice cloth erected fifty-two (52) feet apart. It was so located as to be in the direct course of the air travel that it afforded little, if any, protection to the men. Two (2) bodies were found in the enclosure and thirty-two (32) bodies were found between the innermost brattice and the number thirty (No. 30) room on the sixteen (16) right. The area, in which the larger number of bodies was found, was not isolated from the mine workings which were affected by the explosion.

The second barricade was found in the number five (No. 5) motor road, near the intersection of the sixteen (16) right air course. The barricaded area was formed by two (2) stoppings. The first one was constructed of brick laid in cement, built around a two-foot square wooden door set in the stopping. This stopping was previously used to deflect the air current and was erected six (6) feet from the junction of the sixteen (16) right air course and the number five (No. 5) motor road. The second stopping, erected by those entombed, was forty-eight (48) feet in by the brick stopping. This stopping was built of mine waste material and filled with fine refuse. The men who constructed the stopping used their shirts and jackets as packing near the roof to prevent an inward leakage of poisonous gas and smoke. The total area enclosed in the barricade was twenty-three hundred (2300) cubic feet, and there were no bodies found in the area.

The men who had escaped from the eighteen (18) right, before escaping, had erected a single brattice cloth closing off the number two (No.2) face and a crosscut. The barricading of the area in eighteen (18) right was apparently not completed and the area was not occupied.

Property Damage and Course of Explosion

Property damage in the explosion area is limited to the destruction of doors and stoppings, the demolishing of line brattices and the scattering of mine debris along road and travelingways. Doors destroyed were constructed of wood. Stoppings forced down were constructed of brick, built in dry wall, cement-faced; those constructed of mine refuse, built in dry pack wall, were also forced down.

Stoppings and wing walls of doors, which were constructed of brick laid in cement, were not destroyed; mine timber was not displaced; and there was no caving brought about by the explosion.

The paths in which the explosion traveled are definitely indicated by the direction in which the damaged material and debris were blown. These paths lead in all directions from the junction of the sixteen (16) right and the number three (No. 3) haulage road. The main course seems to have been directed from that point outbye through the sixteen (16) right air course to number twenty-eight (No. 28) room, off the seventeen (17) right, traveled down this room, then inbye on seventeen (17) right. It joined these forces on the number three (No. 3) haulage road, and traveled down the number three (No. 3) haulage road to the eighteen (18) right,

then outbyo on this entry to the number two (No. 2) haulage road through which it traveled to the seventeen (17) right heading, where it stopped. Forces directed from this main path apparently diminished rapidly, particularly those expended in the direction of the working faces.

Findings and Conclusions

The following findings and conclusions are based upon facts disclosed or substantiated in the report, the appendix of the report, and in the attached testimony or in supporting records:

1. That ninety-three (93) men were employed in the number two (No. 2) air split, one continuous circuit of air, and that the employment of more than seventy (70) men, legally allowed on this air split, did not contribute as to either cause or propagate the explosion.
2. That the control of the air current in the number two (No.2) air split by single doors did not provide a constant supply of fresh air as required by law.
3. That the air door situated at the junction of seventeen (17) right and the number three (No. 3) haulage road, which was found open and so secured following the explosion, did interrupt the air flow in the sixteen (16) right, and that this interruption did not contribute to either cause or propagate the explosion.

4. That coal dust, present in variable quantities along the roadways, travelingways, and airways, was thrown in suspension, carried by the explosion and subsequently deposited, did not contribute as to initiate the explosion and played little part, if any, in its propagation.
5. That the fresh intake air used to ventilate the number two (No. 2) air split, and which traversed the roadway in which trolley wire was suspended from the roof and from which an open type electric trolley locomotive was operating, was first passed through an area in which pillars were mined to such an extent as to permit abandonment, and mined to such an extent as to cause caving.
6. That caving occurred in the number twenty-eight (No. 28) room off seventeen (17) right and that such caving was induced by the partial extraction of the coal seam, and was superinduced at this place by the presence of clay veins and a barrier pillar.
7. That the caving in the number twenty-eight (No. 28) room off seventeen (17) right occurred just prior to the explosion and continued for some time afterward.
8. That explosive gas was suddenly liberated in considerable volume from the fall which occurred in

the number twenty-eight (No. 28) room and was carried in the air current.

9. That a trolley locomotive operating in the sixteen (16) right heading was in the path of explosive gas contaminating the mine atmosphere.

Conclusion

That the explosion which occurred was initiated by the ignition of explosive gas in the mine atmosphere, by an arc or spark from a trolley locomotive operating at or near the junction of the number three (No. 3) haulage road and the sixteen (16) right heading, and was propagated by gas in the mine atmosphere. We further conclude that the ignition was indirectly brought about by the failure of the system of mining, which failure might have been anticipated, yet was not expected.

Recommendations

1. That the ventilating air current in the number two (No.2) split be so conducted as not to pass through any abandoned areas, abandoned by reason of total or partial coal extraction; nor should the air current pass by the open roads to such areas.
2. That the air current used to ventilate areas abandoned by reason of total or partial extraction be so conducted as not to pass over any open type electrical equipment.
3. That no live trolley wire or open type electrical

equipemnt be permitted to remain or be installed in places ventilated by the air current inbye the first active pillar or entry stump being partially extracted.

4. That legally qualified shot-firers be employed to charge, tamp, and fire all holes properly placed by the miner.
5. That the definition of pillared areas or pillaring be established by law to convey the meaning that all areas in mines in which room and entry pillars are mined, or are being mined to any extent beyond the legally required cut-throughs or cross-cuts, or in areas in which mining is so conducted as to be conducive to caving, or in areas in which any system of mining is used which results in the extraction of coal to the point of abandonment, be considered as pillared areas or pillaring.
6. That Rule 77, Article XI, of the Bituminous Mining Law, be so amended or changed to define a gaseous portion of a mine as "all workings and roadways being traversed by the same continuous air current, in which portions explosive gas has been generated in sufficient quantity to be detected by an approved safety lamp, within a period of two (2) years", and to limit the use of electric equipment, operated from a trolley, to entries in which air currents are established.

And to further limit the use of open type electric equipment by the open entrances to places in which pillars have been drawn, and in atmosphere which has ventilated or passed through such places.

7. That an effort be made by State Agencies, through the operating company, to disseminate among persons employed in bituminous mines, information and educational material concerning the necessity, construction and location of barricades following mine explosions and mine fires.

Acknowledgment

This Commission wishes to acknowledge the cooperation and assistance given by members of the safety division of the United States Bureau of Mines in the rescue and recovery operations, and in supplying data acquired through the facilities of the Pittsburgh Experimental Station. The Commission wishes also to acknowledge the ready cooperation of the management, officials, and employees of the Sonman Shaft Coal Company, and all other persons who assisted in the recovery and investigation.

Respectfully submitted,

M. W. Thomas (signed)
M. W. Thomas, Inspector
24th Bituminous District

R. D. Joseph (signed)
R. D. Joseph, Inspector
6th Bituminous District

R. E. George (signed), Chairman
R. E. George, Inspector
18th Bituminous District

Geo. J. Steinheiser (signed)
Geo. J. Steinheiser, Inspector
25th Bituminous District

Pittsburgh, Pa.
July 23, 1940

MEMORANDUM TO MR. J. J. FORBES

Dear Mr. Forbes:

Relative to inspection and tests of Wolf flame safety lamp from Sonman mine of Koppers Coal Company:

This lamp received July 20, 1940, from Mr. H. H. Schrenk carried a No. 21 on the fount under the lower inlet shroud and three filed notches on the lower edge of the fount. It had numerous dinges in both fount and bonnet and an irregular hole of about 1/10 square inch cross section in the side of the bonnet at the lower center line of louvers. There was a coal-dust coating over the lamp internally and externally. There was no evidence that the gauzes had been overheated or exposed to external flame.

The lamp carried an approval plate and was properly assembled. The lamp still had sufficient fuel for the test and lighted readily with one operation of the relighter. The lamp had a brass outer gauze and a steel inner, the latter being slightly rusted.

Two tests were made: the first, made before the lamp was opened for inspection, consisted of repeated operations of the relighter in still and turbulent mixtures of 7-1/2 to 8-1/2 percent natural gas, causing a series of explosions within the lamp. The second, made after examination, was in moving mixtures of 8-1/2 percent natural gas at 2500 feet per minute horizontally against the lamp and at 45° downward.

The lamp performed normally in each test without external ignition.

The lamp as received was in a permissible condition.

Yours very truly

A. B. Hooker

Table 1. - Analysis of coal, Sonman "E" mine,
Sonran Shaft Coal Co., Sonman, Pa.,
July 23, 25, 26, 1940

Labor- atory No.	Location in mine	Coal--as received percent					Coal-Moisture-and ash-free Percent				
		Mois- ture	Vol. matter	fixed carbon	Ash	Sul- phur	B.t.u.	Vol. matter	Fixed carbon	Sul- phur	B.t.u.
B-54946	16 right air course off north dip, 155 ft. inby No. 5 haulage air course	3.5	18.5	71.8	6.2	1.4	14,210	20.5	79.5	1.6	15,740
B-54947	18 right off north dip, face No. 2 entry	2.7	18.5	73.6	5.2	1.0	14,470	20.1	79.9	1.1	15,720
B-54948	15 left main heading, off south dip, 75 ft. inby room 27	3.4	15.8	73.6	7.2	2.2	14,010	17.7	82.3	2.5	15,680

Section of bed								
B-54946			B-54947			B-54948		
Material	Ft.	In.	Material	Ft.	In.	Material	Ft.	In.
*Bone and coal		5	Coal	2	3	*Bony coal		6
Coal	1	10	*Bony coal		5- $\frac{1}{2}$	*Slate		1
*Bony coal		6- $\frac{1}{2}$	*Dark shale		1- $\frac{1}{4}$	Coal	2	3- $\frac{1}{2}$
*Slate		1- $\frac{1}{2}$	Coal	1	1	*Bony coal		7
Coal		11	*Dark shale		2	*Slate		1- $\frac{1}{2}$
*Dark shale		2- $\frac{1}{2}$	*Fireclay			Coal	1	3
						*Slate		2
						*Bony		2- $\frac{1}{2}$

*Sections not included in sample.

Table 2. - Gas and Air analysis, Sonman "E" mine,
Sonman Shaft Coal Company,
July 1940

Labor- atory No.	Location in mine	Date of samp- ling	Percent			Nitro- gen, N ₂	Quantity Methane lib- of air, erated in cu.ft. 24 hours per min cu. ft.	
			Carbon dioxide, CO ₂	Oxygen O ₂	Methane, CH ₄			
65923	Room 23- $\frac{1}{2}$ off 16 right	7/19	0.26	20.43	0.26	79.05		
65922	16 right air course at 28 room at edge of fall	7/19	0.3	15.5	21.9	62.3	No vel.	
65921	Face 16 right air course	7/19	0.25	20.09	0.79	78.87	No vel.	
65924	Face of room 24 off 16 right (clay vein)	7/19	0.33	19.74	1.08	78.85	No vel.	
65937	Face of 17 right off north dip	7/24	0.27	20.20	0.38	79.15		
65914	15 left regulator from No. 2 split (rubber bag)	7/15 10:30 a.m.	0.11	20.36	0.18	79.35	13,600	35,251
65939	18 right off north dip, outby 3rd crosscut from face 1 entry	7/25	0.25	20.23	0.43	79.09	13,500	83,592
65936	17 butt off 17 right off north dip, outby from next to last crosscut	7/24	0.21	20.29	0.38	79.12	7,700	42,134
65934	North dip 5 face, 25ft. north of 14 right haulage	7/25	0.20	20.53	0.19	79.08	14,600	39,946
65935	15 left haulage, 5ft. outby 1st slant	7/25	0.24	20.25	0.34	79.17	18,590	91,017
65938	South dip 5 face, 50ft. inby 12 right air course	7/26	0.21	20.24	0.17	79.38	14,025	34,333
65931	12 left air course off south dip, 50 ft. inby 1 face	7/26	0.17	20.50	0.09	79.24	28,500	36,936
65932	Main return inby fan at Portage slope; Orchard St., Portage	7/26	0.34	20.21	0.14	79.31	110,330	222,425
65933	do.	7/26	0.34	20.17	0.13	79.36	110,330	206,538

Table 3. - Analysis of dust samples collected in Sonman "E" mine, Sonman Shaft Coal Company, July 25-26, 1940

Laboratory No.	Location in Mine	Kind of sample	Percent combustible			Percent incombustible			Percent Through 20-mesh	Cumulative 100% through 20-mesh Percent through			Amount of coke present	Remarks
			Volatile matter	Fixed carbon	Total combustible	Moisture	Ash	Total incombustible		48-mesh	100-mesh	200-mesh		
B-54950	16 right heading, north dip, 50 ft. outby room 21	Roof & Rib	18.4	63.5	81.9	2.1	16.0	18.1	60.3	37.0	13.2	6.4	Small	In explosion area
B-54949	16 right heading, north dip, 50 ft. outby room 21	Floor	12.4	41.1	53.5	1.3	45.2	46.5	69.0	39.9	11.3	5.6	Very Small	do.
B-54951	16 right heading, north dip, 125 ft. outby No. 3 haulage	Roof & Posts	15.6	67.2	82.8	2.2	15.0	17.2	90.7	-	-	-	Large	do.
B-54952	do.	Floor	18.0	64.3	82.3	1.6	16.1	17.7	60.1	58.8	33.3	20.8	do.	do.
B-54991	16 right heading, north dip, at No. 3 haulage	Top of Motor	17.4	68.8	86.2	2.0	11.8	13.8	90.0	48.3	23.2	13.1	do.	do.
B-54992	16 right heading, north dip, 9 ft. inby room 40	Floor	17.3	70.3	87.6	1.7	10.7	12.4	46.3	39.6	17.4	9.3	None	Inby explosion area
B-54993	16 right air course, north dip, 18 ft. inby No. 5 haulage off 17 right	Floor	18.8	72.5	91.3	1.5	7.2	8.7	54.1	51.2	23.9	12.0	do.	do.
B-54954	16 right heading, north dip, 25 ft. inby room 14	Roof & Posts	18.0	67.8	85.8	1.9	12.3	14.2	68.1	66.2	44.6	34.3	Small	Outby explosion area
B-54953	do.	Floor	16.6	61.2	77.8	2.0	20.2	22.2	62.0	50.3	21.1	10.3	Very Small	do.
B-54955	16 right air course, north dip, 55 ft. inby room 14 (170 ft. in station 359)	Roof & Posts	18.0	70.6	88.6	2.4	9.0	11.4	92.3	-	-	-	Large	do.
B-54956	do.	Floor	19.3	68.0	87.3	2.3	10.4	12.7	54.6	44.3	23.3	14.8	Medium	do.
B-54986	17 right heading, north dip, 20 ft. outby 27 room	Roof & Rib	19.5	58.9	78.4	2.3	19.3	21.6	87.7	-	-	-	do.	In explosion area; rock dust present
B-54985	do.	Floor	17.0	67.7	84.7	2.6	12.7	15.3	60.3	64.6	40.3	26.0	do.	do.
B-54984	17 right air course, north dip, 15 ft. inby slant opposite room 27	Roof & Rib	16.4	68.5	84.9	2.7	12.4	15.1	86.2	-	-	-	Large	do.
B-54983	do.	Floor	17.4	67.6	85.0	3.6	11.4	15.0	60.6	54.8	34.2	21.5	Medium	do.
B-54982	17 butt heading off 17 right, north dip, 65 ft. inby No. 5 haulage air course	Roof & Rib	16.9	70.1	87.0	1.6	11.4	13.0	72.5	-	-	-	Small	Inby explosion area
B-54981	do.	Floor	19.8	68.2	88.0	2.2	9.8	12.0	55.0	47.7	22.9	13.5	None	do.
B-54980	17 butt air course off 17 right, north dip, 110 ft. inby slant opposite No. 5 haulage	Roof & Rib	17.9	67.6	85.5	1.6	12.9	14.5	33.9	-	-	-	Small	do.
B-54979	do.	Floor	18.5	71.2	89.7	1.3	9.0	10.3	59.4	46.0	21.2	10.3	None	do.
B-54988	17 right heading off north dip, 20 ft. inby room 6	Roof & Rib	19.0	56.9	75.9	2.3	21.8	24.1	65.8	-	-	-	Trace	Outby explosion area;
B-54987	do.	Floor	15.8	55.0	70.8	3.5	25.7	29.2	69.5	55.0	21.8	11.5	do.	do.
B-54990	17 right air course off north dip, opposite point between 6 and 7 rooms	Roof & Rib	17.8	66.6	84.4	2.5	13.1	15.6	100.0	-	-	-	Very Small	do.
B-54989	do.	Floor	16.9	61.7	78.6	2.5	18.9	21.4	57.9	85.8	76.7	72.4	None	do.

Table 3 - (Continued)

Labor- atory No.	Location in Mine	Kind of Sample	Percent combustible			Percent Incombustible			Percent Through 20-mesh	Cumulative 100% through 20- mesh Percent through			Amount of coke present	Remarks
			Vola- tile matter	Fixed carbon	Total com- bus- tible	Mois- ture	Ash	Total incom- bus- tible		48- mesh	100- mesh	200- mesh		
B-54966	18 right heading off north dip, 450 ft. inby No. 2 haulage	Roof & Rib	16.7	69.4	86.1	1.6	12.3	13.9	48.3	63.4	41.4	27.8	Large	In explosion area
B-54965	do.	Floor	16.0	65.2	81.2	2.9	15.9	18.8	55.1	61.6	33.0	17.0	do.	do.
B-54967	3 face entry, 18 right off north dip, 500 ft. inby No. 2 haulage	Posts	15.3	74.5	89.8	2.2	8.0	10.2	95.0	-	-	-	do.	do.
B-54968	do.	Floor	17.0	71.1	88.1	4.1	7.8	11.9	57.2	56.6	30.2	18.5	do.	do.
B-54978	18 right heading off north dip, 15 ft. inby No. 4 haulage	Roof & Rib	18.8	64.8	83.6	2.1	14.3	16.4	70.7	-	-	-	Trace	Inby explosion area
B-54977	do.	Floor	15.8	62.5	78.3	1.5	20.2	21.7	67.5	50.7	20.8	11.7	do.	do.
B-54976	1 face entry, 18 right off north dip, at a point oppo- site No. 4 haulage	Roof & Rib	19.3	65.4	84.7	2.5	12.8	15.3	69.6	-	-	-	None	do.
B-54975	do.	Floor	19.1	74.0	93.1	1.7	5.2	6.9	34.5	-	-	-	do.	do.
B-54962	2 face heading, 18 right off north dip, at 1st slant	Roof & Rib	17.5	63.3	80.8	4.7	14.5	19.2	52.5	55.5	31.9	21.8	Small	Outby explosion area
B-54961	do.	Floor	15.2	58.5	73.7	3.5	22.8	26.3	53.0	43.4	16.4	8.7	do.	do.
B-54964	1 face entry, 18 right off north dip, at point oppo- site No. 1 haulage	Rib & Posts	19.1	68.8	87.9	2.0	10.1	12.1	79.9	66.8	35.1	17.5	Medium	do.
B-54963	do.	Floor	17.4	71.6	89.0	4.5	6.5	11.0	38.5	34.6	12.6	4.9	None	do.
B-54960	North dip haulage, 50 ft. outby 15 right	Roof & Rib	-	-	58.0	3.8	38.2	41.0	54.6	65.4	45.6	33.5	do.	Unaffected portion; rock dust present
B-54959	do.	Floor	19.8	63.8	83.6	2.4	14.0	16.4	52.1	58.0	29.9	16.2	Trace	do.
B-54958	North dip haulage at 11 right	Roof & Rib	-	-	69.5	3.0	27.5	30.5	61.9	71.9	51.0	36.2	None	do.
B-54957	do.	Floor	20.0	66.5	86.5	3.1	10.4	13.5	62.8	58.1	30.2	15.2	Trace	do.

Table 4. - Summary of dust samples collected in
Sonman "E" mine, Sonman Shaft Coal Company;
incombustible content as received at the
laboratory

Locations	Kind of samples	Total number of samples	Average % incomb. Moisture plus ash	Lowest percentage	Highest percentage	Samples with coke particles	
						Greater amt.	Lesser amt.
Non-rock-dusted locations	(Roof and rib	14	14.5	10.2	19.2		
	(Floor	17	16.8	6.9	46.5		
Rock-dusted locations	(Roof and rib	7	32.8	15.1	70.0		
	(Floor	7	26.3	13.5	35.2		
Locations in explosion area	(Roof and rib	6	16.0	10.2	21.6	5	1
	(Floor	6	20.9	11.9	46.5	5	1
Locations inby explosion area	(Roof and rib	4	14.8	13.0	16.4	None	3
	(Floor	6	12.0	6.9	21.7	None	1
Locations outby explosion area	(Roof and rib	6	16.1	11.4	19.2	2	4
	(Floor	6	20.5	11.0	29.2	1	3

Results of sizing tests on samples from entire mine

21 roof and rib samples averaged	71.8 percent through a	20-mesh screen
7 " " " " " "	25.4 " " " "	200-mesh "
24 floor " " " "	52.0 " " " "	20-mesh "
19 " " " "	16.9 " " " "	200-mesh "

TELEGRAM

OFFICIAL BUSINESS—GOVERNMENT RATES

GOVERNMENT PRINTING OFFICE 6-7134

FROM INTERIOR DEPARTMENT

BUREAU ~~of Mines, J. I. Forbes, Super-~~
vising Engr., Safety Division

CHG. APPROPRIATION ~~Collect telegram—Charge~~
Bureau of Mines, Washington, D.C.

~~JTY:ET~~

Pittsburgh, Pa., Aug. 27, 1940

TELEGRAM

D. Harrington
Bureau of Mines
Interior Building
Washington, D. C.

Send copy Sonman explosion report to P. C. Thomas, vice
president, Sonman Shaft Coal Co., Koppers Building, Pittsburgh, Pa.

Forbes

Phoned W.U., 11:55 a.m., 8/27/40 by FF

Confirmation

cc-Files ✓

CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

WESTERN UNION

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEVER
FIRST VICE-PRESIDENT

1201

SYMBOLS

DL=Day Letter

NL=Night Letter

LC=Deferred Cable

NLT=Cable Night Letter

Ship Radiogram

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

PA1278-38 COLLECT GOVT=TDZ CRESSON PENN 15 1025P.

BUREAU OF MINES=PGH=

1940 JUL 15 PM 10 40

ABOUT SIXTY MEN IN NORTH PIT SECTION 14 BODIES RECOVERED
EXPLORATION WORK PROGRESSING SATISFACTORILY ABOUT 1800 FT
IN EACH OF THREE ENTRIES REMAINING UNEXPLORED STATE
INSPECTOR COMPANY OFFICIALS AND BUREAU MEN COOPERATING
IN RECOVERY WORK ~~PITTSBURGH ADVISED=~~

J J FORBES.

*Washington notified (the
were advised*

May 45.00

to 1056 P. J.S.

mail

14 1800.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

TELEGRAM

OFFICIAL BUSINESS—GOVERNMENT RATES

GOVERNMENT PRINTING OFFICE 6-7134

FROM INTERIOR DEPARTMENT

BUREAU of Mines, J. J. Forbes, Supervising
Engineer, Safety Division

CHG. APPROPRIATION Collect telegram--Charge
Bureau of Mines, Washington, D. C.

JJF:GHO:FF

Pittsburgh, Pa., August 16, 1940

TELEGRAM

D. Harrington
Bureau of Mines
Washington, D. C.

Relet Sonman disaster we returned last night from Coroner's investigation which lasted three days. Large number witnesses testified. Jury brought in following verdict: QUOTE Freeman, George and 62 others came accidentally to their deaths by asphyxiation and first and second degree burns in slope of Sonman Shaft Coal Company at Sonman by gas explosion on July 15, 1940, Gas being ignited by a trolley locomotive. Ignition was superinduced by the failure of system of mining and negligence of officials (Victor Duras, Leslie Steele, mine foremen, Guy Wahl, assistant mine foreman) directly in charge of mine management at time of explosion UNQUOTE Jury further recommended adoption and furtherance of recommendations submitted by commission of inspectors who made investigation. We are doing everything possible to expedite completion of report, expect to have it in your hands by about middle next week.

Forbes.

Phoned W.U., 11a.m., 8/16/40 by FF

Files ✓

[Handwritten signature]

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WESTERN UNION

R. B. WHITE
PRESIDENT

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEVER
FIRST VICE-PRESIDENT

(18)

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WA187 41 GOVT=ID WASHINGTON DC 12 207P

AUG 12 PM 2 21

J J FORBES=

US BUREAU OF MINES 4800 FORBES ST PGH=

APPEARANCE AT SONMAN DISASTER INQUEST BY YOU AND OTHERS OF YOUR ORGANIZATION WHO HAVE BEEN SUBPOENAED IS AUTHORIZED AND YOU SHOULD TESTIFY AS TO FACTS STOP BUREAU TESTIMONY AS TO ANALYSES SHOULD BE CONFINED TO SUBMISSION OF CERTIFIED COPIES OF ANALYSES=

R R SAYERS DIRECTOR.

may 4500 S.H.C. mail
5/ 233 P
Recd 3:33 PM 8/12

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

JUL 18 1940

R. B. WHITE
PRESIDENTNEWCOMB CARLTON
CHAIRMAN OF THE BOARDJ. C. WILLEVER
FIRST VICE-PRESIDENT

SYMBOLS

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AZ193 17 GOVT COLLECT=PRR CRESSON PENN 17 545 PM 6 27

J J FORBES=

DUPLICATE OF TELEPHONED TELEGRAM

220 MAIL U'S BUREAU OF MINES 4800 FORBES ST PGH=

NORMAL VENTILATION ALMOST FULLY RESTORED. FACES OF ALL
ENTRIES EXAMINED. OFFICIAL INVESTIGATION TOMORROW MORNING.
WASHINGTON ADVISED=

ANKENY

TB

640P

THB

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

TELEGRAM

OFFICIAL BUSINESS—GOVERNMENT RATES

GOVERNMENT PRINTING OFFICE 6-7134

FROM INTERIOR DEPARTMENT

BUREAU of Mines, J. J. Forbes, Supervising
Engineer, Safety Division

CHG. APPROPRIATION ~~Collect telegram—Charge~~
Bureau of Mines, Washington, D. C.

~~JJF:GRO:FF~~

Pittsburgh, Pa., July 16, 1940

TELEGRAM

D. Harrington
Bureau of Mines
Interior Building
Washington, D. C.

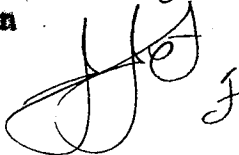
Forbes and Grove returned Pittsburgh; Ankeny, Pero, Lindeman assisting in restoring ventilation, truck and apparatus with Burdelsky, Ristedt remaining Sonman mine. Mine in which explosion occurred is slope mine having rope, electric trolley pole and animal haulage. Permissible electric mining machinery and cap lamps used and permissible explosives fired by miners at any time during shift used for blasting. Mine said to have been rock-dusted but no evidence of rock dust in affected area. About 80 men in affected section, 63 killed, remainder escaped. 34 men found dead behind barricade and 7 found dead in end room not barricaded. Explosion had little violence with exception of few stoppings and doors knocked out practically no damage done. At least 50 of those killed were killed by afterdamp. State, company, and Bureau will make joint investigation but separate reports. Bureau representatives to be Forbes, Grove, Ankeny, Lindeman. Investigation expected to start Thursday morning. Until investigation completed no cause can be given.

Forbes.

Phoned W.U., 5:00 p.m., 7/16/40 by FF

Confirmation

Files ✓



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WESTERN UNION

1201

SYMBOLS

DL=Day Letter
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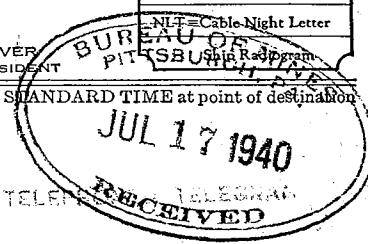
R. B. WHITE
PRESIDENT

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEVER
FIRST VICE-PRESIDENT

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

3 F14 SB 22 COLLECT GOVT



PRR CRESSON PENN 855A JULY 16

C W OWINGS

74 BUREAU OF MINES 4800 FORBES ST PGH

LAST BODY SONMAN EXPLOSION RECOVERED ABOUT 815 AM TOTAL DEAD 63 NO
DEFINITE INDICATIONS OF ORIGIN INVESTIGATION STARTS TOMORROW WASHINGTON

ADVISED

FORBES

919A

W *May 4500*
3K 930A
UKCH65

Rec'd 10:25 AM
7/16

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

file

TELEGRAM

OFFICIAL BUSINESS—GOVERNMENT RATES

GOVERNMENT PRINTING OFFICE 6-7134

FROM INTERIOR DEPARTMENT

BUREAU ~~of Mines, J.I. Forbes, Supervising~~
Engineer, Safety Division
CHG. APPROPRIATION ~~Collect telegram—Charge~~
Bureau of Mines, Washington, D. C.

Pittsburgh, Pa., July 15, 1940 *GH0:FF*

Telegram

D. Harrington
Bureau of Mines
Interior Building
Washington, D. C.

FF

Filer, State mine inspector, just called saying mine explosion,
Sonman Shaft, Koppers Coal Company, near Portage, Pa. He could not or
would not give any details but requested assistance. Grove, Ankeny,
Ristedt, Burdelsky, Pero, and I leaving for mine.

Forbes

Phoned W.U., 2:10 p.m., 7/15/40 by FF

Confirmation

cc-H.P.Greenwald ✓
Files

[Signature]