FINAL REPORT OF MINE EXPLOSIONS
SAYRETON NO. 2 MINE, REPUBLIC STEEL CORPORATION
SAYRETON, JEFFERSON COUNTY, ALABAMA
AUGUST 28-29, 1943

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Openings

The mine is opened by two slopes and one airshaft. The slopes are driven in the coal bed from the outcrop, pitching from 26 to 14 percent for a distance of 2,200 feet, and from 14 to 3 percent for a distance of 2,400 feet. At the bottom of the slopes, the coal bed ranges from level to a pitch of 5 percent. The airshaft is about 130 feet deep.

Nature of the Coal Bed

The mine is operated in the Mary Lee coal bed, which is a medium-volatile, friable, bituminous coal. The average thickness is 84 inches at this mine. The usual bands of impurities characteristic of the Mary Lee coal bed are present.

The immediate roof consists of a hard blue shale of variable thickness. The main roof is composed of hard blue shale and sandstone of variable thickness. Pots are found frequently in the immediate roof.

The floor is hard and smooth. It consists of about 15 inches of shale which is underlain with sandstone.

Analysis of Coal

A composite of two samples of coal collected by the Bureau of Mines on February 5, 1915, in the adjacent Sayreton No. 1 mine, was analyzed in the coal laboratory of the Bureau of Mines at Pittsburgh, Pa. This sample, representative of the coal in the Sayreton No. 2 mine, contained 2.34 percent moisture, 29.74 percent volatile matter, 57.97 percent fixed carbon, and 9.95 percent ash.

The analysis shows that the ratio of volatile matter to total combustible matter, as calculated by the formula

$$\frac{\text{Volatile Matter}}{\text{Volatile Matter + Fixed Carbon}} = \frac{29.74}{29.74 + 57.97} = 0.34.$$

Bureau of Mines tests and experiments have shown that coal dust having a volatile matter to total combustible matter ratio in excess of 0.12 is explosive. The explosibility of coal dust increases as this ratio increases. It is obvious, therefore, that the coal dust in this mine is highly explosive and would readily propagate an explosion.

UNDERGROUND MINING METHODS, CONDITIONS, AND EQUIPMENT

Methods of Mining

The room-and-pillar system of mining is employed. Both mechanical and hand-loading methods are used.

The main entries were driven triple to 13 right. The cross or room entries were driven in pairs during the past development of the mine. The present development consists of 4 sets of six parallel entries.

The entries are 20 to 22 feet wide. The entry pillars are about 50 feet in width and the distance between crosscuts is 70 feet. Cross entries have been driven at intervals of 300 to 375 feet.

Rooms are turned on 80- and 90-foot centers and are driven 20 to 35 feet in width. Rooms are turned from both the heading and air course and are driven to the adjacent entry.

Pillars are recovered by the open-end method; however, a definite fracture line is not maintained. The pillars do not show any visible signs of excessive weight. Posts are not recovered and the gob falls lag somewhat behind the extraction of the pillar coal. The total recovery is said to be about 85 percent.

Twelve pairs of room entries have been driven from the main slope to the boundary line on the left side of the mine. Three entries corresponding to 13 left have been driven from the main slope, parallel with the boundary line on the left of the main slope to serve as bleeders. All entries on the left of the main slope outby 9 left have been abandoned, except for use as return airways.

Three entries, known as 9 left slope, have been driven to the right from 9 left, midway between the main slope and the property boundary line. From the 9 left slope, 10 and 11 left room entries have been driven through to the 7 left slope, which is parallel to the boundary line on the extreme left side of the property.

The 13 left and 7 left slope chain pillars adjacent to the boundary line have been left intact to provide a bleeder entry along the property line. The extraction of pillars in 11 left has been completed, except for the chain pillars outby No. 3 room. All of the pillars off 10 left air course have been recovered, except those outby the second crosscuts in Nos. 3 and 4 rooms. The room and chain pillars of 10 left inby No. 8 have been extracted.

Line rooms 1 and 2 have been driven from 10 and 11 left headings to the air courses of 9 and 10 left respectively. Two rooms, Nos. 6 and 7, were being driven from 10 left heading. These rooms were advanced approximately 75 and 180 feet respectively, with a crosscut connecting the No. 7 room to the worked-out No. 8 room.

The coal is cut with arcwall mining machines to a depth of about 9 feet. The cutting is done in the upper bench of the coal bed immediately

above the largest rock parting. The top bench of the coal is blasted and, with the machine cuttings, is loaded into mine cars by mobile-loading machines. The "middleman", or parting, is then blasted and gobbed, either by hand or with the mobile-loading machines. The bottom bench of coal is then blasted and loaded into mine cars by the mobile-loading machines.

Ventilation and Gas

The ventilating current for this mine is induced by means of an electrically driven 5- by 10-foot centrifugal fan, operated exhausting against a water-gage reading of minus 3.7 inches. The fan is housed in a fireproof structure, offset about 40 feet from the airshaft. Doors for reversing the air current are provided. The fan duct is equipped with pressure-relief doors.

A 200-horsepower internal-combustion engine is installed to provide reserve power. This engine is tested daily. The time required to change from electric power to reserve power is four to ten minutes.

Both "U"-type and continuous recording-type water gages are used. A signal device is installed to give warning when the fan slows down or stops. However, this device does not automatically cut off the power from the mine when the fan slows down or stops.

The fan is operated continuously and is inspected daily.

The air enters the mine through the haulage and manway slopes. It is conducted into the mine through the main haulageway and the parallel manway. The volume of air in circulation is divided into three primary splits and one secondary split.

One primary split enters 12 right and is coursed through the pillared area between 8 and 12 right, the return air passing over 7 right overcast, thence to the fan.

The remaining intake air enters 13 right where two splits are effected in the 13 right slope. One of these primary splits is coursed through the active workings of 14 and 8 right slopes, and the temporarily abandoned area between the 8 and 14 right slopes. The return air from this split passes through old worked-out and abandoned areas, thence to the main return airways to the fan.

The remaining primary split is conducted through the 13 right slope, the main slope, and then to the 9 left slope. A secondary split is taken from this split at 13 left which ventilates the worked-out and

abandoned areas between the main slope and 9 left slope. The return from these splits passes through worked-out and abandoned areas to the main return, thence to the fan.

A local dip at the intersection of the 9 left slope with 13 left is completely filled with water, thus preventing the flow of air through the bleeder paralleling the property line behind the 9 left slope gob. By the present method of ventilation, a negative pressure is created on the 9 left slope pillar line, thus creating a tendency for any gas which is liberated in the robbed area to escape into the active workings, in which nonpermissible mining equipment is operated.

The airways are of sufficient number and of adequate size to provide an ample volume of air for the working sections. The stoppings along the main haulageways and the cross entries are constructed of refuse material and are plastered on the intake-air side with a clay and cement mortar. In the recent development of the main slope, 8, 13, and 14 right slopes, the stoppings are constructed with Slagtex blocks laid in mortar. Small doors are provided in stoppings at convenient locations to permit access to the return airways. Canvas stoppings are used in room crosscuts. As many as three temporary canvas stoppings are used in the development headings.

Doors are erected in pairs throughout the mine, except in 9 left slope where single doors are used.

Overcasts are substantially constructed of concrete block side walls and reinforced-concrete tops. The approaches are graded so as to offer the least possible resistance to the passage of air. Line brattices are used for conducting the air current from the last open crosscut to the working faces.

Wooden regulators are used to regulate the volume of air in the various splits.

The mine is rated gassy by the State of Alabama, Department of Industrial Relations, Division of Safety and Inspection. Gas is detected frequently in the working places and sudden liberations of gas have occurred in this mine.

Air samples taken during the investigation and after normal ventilation was partially restored are shown in table 1.

Table 1 - Analyses of Air Samples Collected in Sayreton No. 2 Mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama August 31 and September 3, 1943

Bottle No.	Location in Mine	Percent				Cu.Ft. Air Per Minute	Cu.Ft. Methane in 24 hours
		Carbon Dioxide CO_2	Oxygen O_2	Methane CH_4	Nitrogen N_2		
208	Break in floor 10 left air course at No. 4 room	0.07	20.68	0.77	78.48	Still	
187	9 left overcast return	0.05	20.84	0.22	78.89	25,480	80,721
188	Intake to 9 left slope at 11 right off 9 left slope	0.09	20.74	0.52	78.65	24,120	180,611
249	9 left slope inby 11 rt.	0.05	20.80	0.55	78.60	4,900	38,808
280	No. 3 room crosscut 10 left	0.08	20.51	1.82	77.59	Still	
281	Face 6 room 10 left	0.11	20.47	1.26	78.16	Still	
359*	Main slope return inby 13 left	0.05	20.77	0.60	78.57	46,800	404,352
934	10 left crosscut opposite 7 room	0.09	19.95	3.93	76.03	Still	
935	Face 7 room 10 left	0.14	20.39	1.67	77.80	Still	
999	On gob 4 room 10 left air course	0.09	19.48	6.26	74.17	Still	
1000	Main slope return inby 13 left	0.08	20.75	0.64	78.53	46,800	431,309
194	Last crosscut #4 air course 13 right	0.05	20.88	0.21	78.86	12,324	37,268
196	Face #1 air course main slope	0.05	20.72	0.69	78.54	Still	
204	Face #1 air course 13 right slope	0.04	20.85	0.36	78.75	Still	
291	8 right haulage 400 feet inby doors	0.09	20.70	0.54	78.67	41,395	321,888
292	13 right slope haulageway inby line rooms from old 14 right	0.05	20.79	0.39	78.77	18,525	104,036
343	Face #6 air course slope	0.05	20.74	0.64	78.57	Still	
444	200' outby face 1st left air course of 8 rt. slope	0.05	20.72	0.36	78.87	19,090	98,963

* Bottle No. 359 showed a trace of carbon monoxide, less than 0.01 percent.

Table 1 (Cont'd.) - Analyses of Air Samples Collected in Sayreton No. 2 Mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama
August 31 and September 3, 1943

Bottle No.	Location in Mine	Percent				Cu.Ft. Air Per Minute	Cu.Ft. Methane in 24 hours
		Carbon Dioxide CO_2	Oxygen O_2	Methane CH_4	Nitrogen N_2		
932	Outby last crosscut at face of #5 air course on 8 right slope	0.07	20.70	0.86	78.37	26,361	326,455
206	Return from left side of mine on overcast over main slope	0.08	20.73	0.56	78.63	78,225	630,806
965	Face 9 left entry	0.31	19.98	1.82	77.89	Still	

From table 1 it will be noted that all of the samples collected contained methane ranging from 0.21 to 6.26 percent.

It will be observed that samples 359 and 1,000, collected in the 13 right slope and main-slope split return near 13 left, contained 0.60 and 0.64 percent methane respectively, which is above the maximum safe limit of 0.5 percent. A part of this return air is used for ventilating the 9 left slope section. The ventilating current entering the 9 left slope section contains more than 0.50 percent methane as shown by samples 188 and 249, which contained 0.52 and 0.55 percent methane respectively.

Because of numerous openings it was impossible to collect a representative sample of the return air from the 9 left slope section; however, sample 206 was collected in the main return from the left side of the mine on the overcast over the main slope and contained 0.56 percent methane. This sample shows that the 13 right slope, main slope, 9 left slope, and abandoned area on the left of the main slope is liberating approximately 630,000 cubic feet of methane every 24 hours.

Air samples collected in this mine during a Federal inspection in February 1943, by Messrs. Smith and Benson, show approximately the same methane content.

The present practice of ventilating an active working section with the return air current from other active sections is undesirable, especially when such air currents contain more than 0.5 percent methane, which is above the maximum safe limit for split returns.

The attention of the management was called to this situation during the Federal inspection in February 1943 and again in the final coal mine inspection report of this mine, which was submitted to the management in June 1943.

Fire bosses are employed to make pre-shift examinations of all working places for gas and other dangers before each shift enters the mine. Following each daily inspection, the fire bosses make written reports of conditions found. Tests for gas are also made by the mine foremen, section foremen, and safety inspector during visits to working places; by machine men before entering a place with a mining machine; and by shot-firers before and after blasting.

From the analyses of the air samples collected during this investigation, it is obvious that explosive gas is being liberated in large quantities in this mine, and that a dangerous condition could result when the ventilating air currents are short-circuited, or otherwise interrupted, even for a short period of time.

Drainage

The mine is reasonably dry, however, water accumulates in the local dips. Centrifugal- and plunger-type pumps are used for unwatering.

Dust

The principal sources of coal dust in this mine are the operations of cutting, loading with mobile-loading machines, blasting, hand-loading into mine cars, and transportation of coal from the underground workings to the surface.

The ribs, roof, and roadways are generally dry. No method of humidifying the air is used. Accumulations of coal dust are not thoroughly removed. Machine cuttings are not loaded out before blasting. The coal spilled along the roadways in mechanical-loading places is loaded by hand into mine cars.

Water for allaying coal dust is used on the cutting chain of the mining machine while cutting; however, the necessary pipe fittings and connections are not provided in all working places. A garden hose is used for applying water to the coal pile during mechanical loading. The water pressure is low and a fine spray is not used; consequently, a considerable amount of fine coal dust is thrown into suspension and carried off by the ventilating current and deposited on the ribs, roof, and floor. Water for allaying coal dust is not used before blasting, or at the unloading head of mobile-loading machines, and on loaded and empty trips.

Rock dust is applied by hand in the active workings. A locally designed low-pressure rock-dusting machine is used on the haulageways where trolley wire is installed. Redusting is not done in the rooms, air courses, and trackless places. Since electric power is not available on the main slope haulageway from the surface to the bottom of the slope, rock dust is applied by hand.

The quantity of rock dust distributed in the face areas traversed by the explosions was not sufficient to prevent the propagation of flame.

The Bureau of Mines has determined, by numerous experiments and tests at the experimental mine, that the dust on ribs, roof, floor, and timbers must contain at least 65 percent incombustible material to afford protection against the propagation of flame, and the incombustible content of the dust should be increased 1 percent for every 0.1 percent of methane present in the air current.

A total of 32 samples of roof, rib, and floor dust were collected in connection with this investigation. The samples were analyzed at the coal laboratory of the Bureau of Mines, Pittsburgh, Pa., and the results of the analyses are shown in table 2.

Table 2 - Analyses of Dust Samples Collected in Sayreton No. 2 Mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama
August 31 - September 1, 1943

Can No.	Location in Mine	Kind of Sample	Percent			Remarks (Coked particles present)
			Combustible V.M.+F.C.	Incombustible moisture + ash	Through 20-mesh	
R-378	9 left haulageway 40' outby overcast	Floor	42.1	57.9	73.0	Large amount
R-384	do.	Rib and roof	17.9	82.1	93.5	Medium amount
R-301	Room 8, off 9 left haulageway 30' inby 1st crosscut	Floor	11.3	88.7	91.6	do.
R-106	do.	Rib and roof	15.1	84.9	85.2	do.
R-227	10 left No. 1 line room 40' inby 1st crosscut	Floor	36.0	64.0	70.9	Very large amount
R-133	do.	Rib and roof	34.8	65.2	71.7	Large amount

Table 2 (Cont'd.) -Analyses of Dust Samples Collected in Sayreton No. 2 Mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama
August 31 - September 1, 1943

Can No.	Location in Mine	Kind of Sample	Percent			Remarks (Coked particles present)
			Combustible V.M.+F.C.	Incombustible moisture +ash	Through 20-mesh	
R-363	10 left No. 2 line room 40' inby 1st crosscut	Floor	56.4	43.6	78.6	Very large amount
R-53	do.	Rib and roof	45.8	54.2	73.4	Largest amount (very large)
R-214	10 left 9 L. slope 80' outby No. 1 line room	Floor	55.4	44.6	65.0	Large amount
R-144	do.	Rib and roof	39.7	60.3	72.1	do.
R-72	10 lt. a.c. 80 outby No. 1 line room	Floor	47.6	52.4	90.2	do.
R-73	do.	Rib and roof	42.3	57.7	74.4	Medium amount
R-136	No. 2 room off No. 2 line room 10 lt. a.c. at loading machine	Floor	56.5	43.5	58.4	Large amount
R-177	do.	Rib and roof	73.0	27.0	46.7	Medium amount
R-197	Room 5, 10 left 25' outby face	Floor	74.6	25.4	62.2	Small amount
R-294	Room 5, 10 left 25' outby face	Rib and roof	75.9	24.1	54.4	Trace
R-92	11 lt. a.c., 100' inby 9 lt. slope	Floor	70.6	29.4	56.1	Medium amount
R-40	do.	Rib and roof	63.7	36.3	50.6	Small amount
K-649	9 lt. haulageway 75' inby No. 4 room	do.	38.3	61.7	78.2	Trace
K-785	do.	Floor	30.3	69.7	42.5	Small amount
G-931	9 lt. haulageway at No. 6 room	Rib and roof	42.5	57.5	70.1	Medium amount
K-919	do.	Floor	58.5	41.5	62.3	Small amount

Table 2 (Cont'd.) - Analyses of Dust Samples Collected in Sayreton No. 2 Mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama
August 31 - September 1, 1943

Can No.	Location in Mine	Kind of Sample	Percent			Remarks (Coked particles present)
			Combustible V.M.+F.C.	Incombustible moisture + ash	Through 20-mesh	
K-800	30' inby 2 crosscut No. 10 room off 9 lt. haulageway	Rib and roof	32.6	67.4	88.0	Medium amount
J-223	do.	Floor	21.0	79.0	84.1	Medium amount
R-130	Face room 2 off No. 2 line room 10 lt. a.c.	Floor	77.8	22.2	53.9	Large amount
V-409	do.	Rib and roof	71.6	28.4	56.6	Very large amount
	Samples collected in unaffected sections of the mine					
R-532	Main slope No. 6 a.c. 50' from face	Floor	58.8	41.2	59.7	Rock-dusted area
R-636	8 rt. heading 300' inby the airlock doors	do.	26.9	73.1	73.7	do.
F-162	do.	Rib and roof	52.7	47.3	57.6	do.
K-614	Main slope No. 6 a.c. 50' from face	do.	34.7	65.3	70.1	do.
L-643	In 14 rt. No. 3 a.c. No. 9 slant	Floor	62.5	37.5	57.6	do.
G-669	do.	Rib and roof	33.0	67.0	70.4	do.

The analyses of the 26 dust samples collected in the explosion area show that the incombustible content of the rib and roof samples varies from 24.1 to 84.9 percent, with an average of 54.36 percent. The samples collected from the floor, at the same locations, indicate the incombustible content to range from 22.2 to 88.7 percent, with an average of 50.9 percent.

Six dust samples were collected in the unaffected part of the mine. The analyses of roof-and-rib and floor-dust samples, collected in the No.

6 air course main slope, approximately 50 feet outby the face, indicate the incombustible content to be 65.3 and 41.2 percent respectively.

Analyses of dust samples collected in the 8 right heading, approximately 300 feet inby the air-lock doors, indicate the incombustible content of the rib and roof dust to be 47.3 percent. The floor dust at the same location contained 73.1 percent incombustible.

The analyses of roof-and-rib and floor-dust samples, collected in 14 right, No. 3 air course, No. 9 slant, indicate the incombustible content to be 67.0 and 37.5 percent respectively.

Rock-dusting, to be effective, must be done thoroughly and must be well maintained. All underground openings, of every description, should be thoroughly rock-dusted. Before rock-dusting is done, all combustible matter, such as machine cuttings and loose coal accumulated along the ribs in working places and spilled along the haulage roads, should be loaded out. Preferably, all passageways and openings should be washed down with water prior to the application of rock dust. Active workings should be rock-dusted first. The rock dust should be applied from the faces outby and the rock-dust applied as the faces are advanced. The surfaces of all cross-cuts, entries, pillar workings, and air courses should be kept rock-dusted to within at least 40 feet of the face. Air courses and trackless entries should be rock-dusted by means of tubing extending from a high-pressure rock-dusting machine to the trackless entries, through doors or "capped" pipes leading through the stoppings. These doors should be kept tightly closed when not in use.

To establish and maintain the required incombustible content of the mine dust, it is necessary to collect dust samples at frequent intervals throughout the entire mine. The incombustible content of these samples can be readily determined by means of a volumeter.

Haulage

The main haulage from the lower chain yard to the surface is accomplished with a rope-haulage system, a distance of about 4,800 feet. The grade in the slope ranges from level at the lower chain yard to 26 percent near the slope portal. Secondary haulage is accomplished with electric trolley locomotives. Some of the haulageways are ventilated with intake air, while others are ventilated with return air. Gathering haulage is accomplished with 6-ton combination trolley-and-cable-reel locomotives. The gathering haulageways are in return air.

Lighting

Incandescent electric lights are well installed at the chain yards, dispatcher's station, and underground repair shop.

Permissible electric cap lamps are used by all underground employees for illumination; however, the permissibility of many of the lamps was voided because of the absence of seals on the head pieces.

Permissible flame safety lamps are used by the underground officials, shot-firers, and machine operators for gas-testing purposes.

Smoking is not permitted underground and signs stating that "smoking or possession of smoking materials underground are prohibited" are posted at the entrance to the mine. The employees are not searched for smoking material. Numerous burned matches were found in 9 left and 9 left slope during the investigation.

Electricity and Machinery Underground

Alternating current at 2,300 volts is transmitted into the mine through armored cables, which extend from the airshaft to the underground hoist. The armor of the cables is grounded only at the surface where the cables enter the airshaft. The cables are installed on the floor in the trackless airways, so as to be away from trolley wires.

The substation is conveniently located on the surface and direct current at 250 volts is transmitted into the mine through cables placed in boreholes. Suitable controls and switches are provided for the alternating- and direct-current transmission lines.

Trolley wires are supported securely by insulated hangers, and are 5 to 6 feet above and about 4 inches outside the rails. The wires are guarded adequately at crossings and at points where men must pass under them, except at doors where the guards extend only 6 to 8 feet on each side of the door.

Both rails of the main-line track are bonded. Only one rail of the cross- and room-entry track is bonded. Cross-bonds are spaced at 200-foot intervals.

The underground electrical equipment consists of the hoist, three pumps, nine locomotives, four arcwall mining machines, six track-mounted mobile-loading machines, four hand-held coal drills, one portable air compressor, and the rock-dusting machine. All of the underground electrical equipment is nonpermissible. Originally, the track-mounted

mobile-loading machines were permissible; however, because of the lack of proper maintenance, loose covers and bolts, bolts missing from the frames and covers, the use of improper bolts, holes in frames, covers missing from openings, open packing glands, and other defects, including cable connections to the power circuit, the permissibility has been voided.

Cable-reel locomotives, with open-type resistance and open-type controllers and having defective covers and exposed "live" parts, are operated in face areas on unbonded track. The locomotives receive power from a single-conductor trailing cable, attached to the trolley wire with hooked nips; consequently, all return circuits are through unbonded track in face areas.

The twin-conductor rubber-covered trailing cables of mining and loading machines are connected to the trolley wire and rail by hooked nips. None of the cables in the affected area were provided with fuses.

Temporary splices in cables are made inside the mine by machine operators. Ring-type splicers are used and the joints are insulated with friction tape. Numerous splices were noted in the cables and in many instances the conductors were exposed at the splices.

Nonpermissible electrical mining equipment such as drills, locomotives, and mining and loading machines are operated in face regions and in return air currents likely to contain methane. In some instances such equipment is operated in return air currents containing methane in excess of 0.5 percent, as determined by chemical analysis.

The mechanical equipment is maintained in fair condition, but regular inspections are not made and records are not kept.

Explosives and Blasting Practices

Workmen employed as hand-loaders carry explosives from the explosives-storage magazine on the surface to the underground working places in paper bags. Shot-firers carry the detonators into the mine in leather bags.

Small wooden boxes, equipped with a hinged lid and locking device, are provided for storing explosives and detonators underground. The storage boxes are kept at least 15 feet apart, either in worked-out places, along the ribs, or in crosscuts, a minimum distance of 100 feet from the active working faces.

Shots are fired at any time during the shift by shot-firers, who make tests for gas immediately before and after blasting.

Permissible, Collier "C", explosives are used for blasting. The cartridges are 1-1/4- by 8-inch in size and weigh about 5 ounces each. The average charge is said to be three to four cartridges; however, during the investigation, four primed charges were found made up in the shot-firer's bag. These charges contained 6 and 7 cartridges, which is in excess of the allowable permissible limit of 1-1/2 pounds.

Holes are drilled from six to eight feet apart to an average depth of about eight feet. The holes are drilled by the mining-machine crew before the working places are cut. Rock dust, in prepared paper cartridges, is used for stemming. Wooden tamping bars are used.

The charges are detonated by No. 6 electric detonators, having 10-foot copper leg wires, which are kept shunted until ready to blast. Duplex rubber-covered blasting cables 100 feet or more in length are used by the shot-firers.

A single-shot nonpermissible electric cap-lamp battery is used to fire the shots.

First Aid and Mine Rescue

It is reported that about 75 percent of the employees have received first-aid training, but no general training or retraining has been done since January 1941, at which time 38 employees received additional first-aid training. Twelve employees have been trained in mine rescue but additional training has not been given since 1941.

The company maintains a mine rescue station equipped with five oxygen breathing apparatus, twelve All-Service gas masks, an oxygen pump, an inhalator, and carbon-monoxide detector, which are kept in good condition. This station is at the Sayreton No. 1 mine about 2 miles from the Sayreton No. 2 mine.

Only the employees trained in mine rescue are instructed in the use of barricades.

Underground first-aid stations are provided in each section, but these are not equipped with an adequate supply of materials.

Safety Organization

A safety director (now deceased) was employed to supervise the safety program at all company mines. In addition, two safety inspectors are employed at the Sayreton mines, one of whom devotes his entire time to the night shift. These men make mine inspections, take air measurements and methane-detector readings, a nd investigate all accidents.

Safety meetings, in which employees and management participate, are not conducted. Regular meetings of the foremen and members of the safety department are held at each mine. Bulletin and poster boards are maintained and printed safety rules are furnished to all employees.

Supervision and Discipline

The number of supervisors employed is sufficient to thoroughly examine the mine and direct the working force. An average of 30 men are under the supervision of each faceboss. The facebosses report that they visit each working place from two to eight times during the shift, and as many as ten visits are made to each working place by officials during a shift. The facebosses are not hurried in their visits because of the size of the territory, and are not required to perform other than supervisory work.

A total of 15 certified facebosses are employed. Fourteen shot-firers are employed; eleven possessing mine foremen's certificates issued by the State of Alabama. Mining machine and mechanical-loader operators use permissible flame safety lamps for making tests for methane, but are not required to be certified by the State.

Employees required to make tests for gas are given an examination by company officials to ascertain that they are thoroughly familiar with the use and limitations of flame safety lamps, and that their eyes are in good condition.

Fire Fighting

Water lines are installed throughout the mine with taps provided at or near the face of most of the active working places. Hose stations are not provided underground; however, each loading and mining machine is equipped with a 50-foot length of 3/4-inch hose.

Carbon-tetrachloride and soda-acid fire extinguishers are placed in the underground hoist room, pump, and dispatcher's rooms. Several sacks of rock dust and a supply of brattice cloth are available in each section.

An underground fire-fighting organization is not maintained. Fire extinguishers have not been provided for locomotives or other portable electrical equipment underground.

Previous Explosions in this or Nearby Mines

The available records do not indicate that explosions or fires of a major nature have occurred in this mine; however, two men were burned by a methane ignition in the main-slope section of the mine on May 22, 1943.

Thus ignitions are not unknown in this mine, yet the necessary explosion-prevention measures have not been heeded.

A number of major mine disasters have occurred in mines operated in the same coal bed in the Birmingham district. The following is a list of some of these disasters:

Date	Mine	Type of Explosion	No. of Men Killed
1910	Palos No. 3	Gas and dust	83
1911	Banner	Gas and dust	128
1916	Bessie	Gas and dust	30
1920	Parrish	Gas	12

Mine Conditions Immediately Prior to the Disaster

The weather was clear and the usual high temperature prevailed during the day on which the explosion occurred. A copy of the barograph obtained from the Weather Bureau, Birmingham, Alabama, about 2 air-line miles from the mine, indicated a gradual rise in atmospheric pressure from 29.18 inches of mercury at 3:00 p.m. Saturday, August 28, 1943 to 29.24 inches at 11:00 p.m. August 28; then a gradual drop to 29.12 inches at 3:00 a.m. At no time during the 72 hours preceding the disaster did the atmospheric pressure change more than 0.16 inches. It is doubtful if the slight change in atmospheric pressure had any appreciable effect on the liberation of explosive gas into the mine workings.

The mine was being operated according to the normal procedure on the night of the explosion. No apparent changes had been made in the ventilating system prior to the disaster, and the recording-pressure gage at the fan shows the normal flow with no appreciable change in pressure, which would be indicated had short-circuiting of the air current been involved.

About the usual number of men were working in the affected section and the usual gas-testing procedure was apparently followed. Reportedly, the foremen, shot-firers, and machine operators carry flame safety lamps and are supposed to test for gas frequently during the shift. The territory involved is concentrated in a small area and it would have been possible for the foremen to visit each place every 10 minutes if such procedure was deemed necessary. The flame safety lamps found in the area after the explosion were tested and found to be in good condition.

STORY OF THE EXPLOSIONS AND RECOVERY OPERATIONS

The portion of the story concerning the explosions and the recovery work performed in the interval between the explosions is taken from the testimony of persons who escaped after the explosions, and those who assisted with recovery work immediately after the first blast.

The first evidence of the blast known to anyone in the immediate vicinity, but not in the direct path of the explosion forces, was noted by E. C. Tate, haulage foreman, whose station is near the entrance to 9 left (the entry leading to the affected area and about 1,500 feet from the scene of the disaster). Mr. Tate related the following account of events:

"A steel door, which separates my station from the manway slope, was opened forcibly by a rush of air, but this had happened on numerous occasions when the roof subsided in the pillar areas of 9 left slope section and the event had no significance to me. I remained at my station and a few minutes later Calvin Bates, main-line motorman, and James Pryor, coupler, appeared from the 9 left section, calling for assistance. A few minutes after the arrival of these men, J. C. Moore, 9 left section motorman, appeared. The three men were burned and Bates told me that an explosion had occurred in 10 left off 9 left slope. I assisted the men into a slope train and then telephoned to the surface to announce the occurrence and have the mine power lines deenergized. While I was using the telephone, Mr. Vineyard, night mine foreman, arrived at my station. I directed a main-line motorman, who arrived from another section of the mine, to inform all persons in the unaffected parts of the mine to report to the lower chain yard near my station for transportation to the surface. I then accompanied Mr. Vineyard into 9 left and we met 3 men at the air-lock doors, which are about 150 feet inby the junction of 9 left and the main slope. After ascertaining that these men were not injured (these three were retimbering 9 left entry and were not within the limits of the forces of the explosion), we proceeded to 9 left slope where a ventilation door had been torn from its anchors and moved against a retaining wall. The atmosphere was filled with dust to the extent that visibility was poor. At this point we decided that it would be well to open the air-lock doors, thus short-circuiting the major portion of the ventilating current from its normal course to the 9 left entry to remove the dust and add pure air direct to the affected section, or as near as possible. I opened the doors and returned to 9 left slope to join Mr. Vineyard. We then decided that probably the complete short-circuit of the air might affect the other sections of the mine and I was to partly close the doors. I had gone a short distance when Mr. Vineyard recalled me and stated that he heard someone calling from the direction of the affected area. We proceeded inby along 9 left slope about 100 feet and found Charlie Smith groping his way to 9 left. We assisted Smith to 9 left, where he collapsed, and Mr. Vineyard asked me

to bring stretchers from the chain yard. I obtained the stretchers and partly closed the air-lock doors on my return trip to 9 left slope. Some other men accompanied me on this trip and we carried Smith to the lower chain yard. I remained at the telephone during the succeeding maneuvers."

The recovery operations from this point are taken from the story of Curtis Vineyard, night mine foreman. "After the stretcher bearers departed with Smith, I heard repeated calls from the vicinity of 10 left and proceeded in that direction. I had only gone a short distance when I met two men and assisted them to the junction of 9 left and 9 left slope, where some employees from unaffected sections had congregated. These men assisted the injured to the chain yard and I returned to 10 left, where I found Ernest Smith, a coupler, who told me that the explosion occurred immediately after a rock fall in the pillar area. I then found two other men and assisted them to the 9 left slope junction. About this time Mr. Ferguson, assistant mine superintendent, arrived and we traversed the entire section. During our travels we counted 14 dead men and found another who was unconscious, but still alive. This man was removed to the fresh air at 9 left slope junction and then to the main slope. We inspected the section for gas and fires, but discovered neither, at least no active fires and if smouldering ones were present we overlooked them in the smoky, dusty atmosphere. While contemplating our next move, we were joined by William Goodwin, chief mine inspector for the company, and Mike Loebler, Jr., day mine foreman. Messrs. Goodwin, Loebler, Ferguson, and myself made another trip through the explosion area and then one victim was removed. Mr. Ferguson suggested reestablishing normal ventilation so far as possible by closing the air-lock doors at the entrance to 9 left and a discussion ensued. Several ideas were advanced as to the effect of this move and finally the doors were closed. A temporary brattice cloth stopping was erected to replace the door at the entrance to 9 left slope and force the air into 10 left to facilitate removal of the bodies, because the air in the section was filled with dust and smoke since normal air circulation was interrupted."

From this point, the account related by F. E. Cochran seems the most plausible and reads as follows: "When I arrived in 10 left, Messrs. Goodwin, Ferguson, Leobler, and Vineyard were in the slant driven from 10 left entry to the companion airway discussing the situation, and upon making a gas test I found methane and informed these men of my discovery. They asked me to make another test, which I did with the same results. Other short exploration trips were made and then the discussion concerning the restoring of normal ventilation ensued. Mr. Ferguson suggested closing the air-lock doors at the entrance to 9 left and erecting a brattice-cloth stopping at 9 left slope junction. Mike Loebler started to close the doors and then Mr. Goodwin decided against this move and I was sent to overtake Loebler, which I did. Mr. Loebler instructed me to stay at the doors and await further orders. In about 15 minutes Mr. Loebler called

to me saying, 'Close the doors'. The doors were closed immediately. About 5 minutes later E. J. Mc Crossin, Chief, State of Alabama, Department of Industrial Relations; C. E. Saxon, Bureau of Mines; M. S. Bailey, chief mine inspector, Woodward Iron Company; John Frame, assistant superintendent Sayreton No. 1 mine; Milton Ferguson, deputy sheriff, Jefferson County; Messrs. Neal and Nail, section foremen; Joe Melton, safety inspector Sayreton Nos. 1 and 2 mines; and others arrived at the air-lock doors. These men proceeded toward 9 left slope to where Messrs. Goodwin, Loebler, and Ferguson were. In a few minutes Mr. Neal returned to the air-lock doors for a carbon-monoxide detector, which he procured immediately and returned to the affected section. Approximately 15 minutes after Mr. Neal left, the second blast occurred. There were several of us between these doors, and the force of the blast moved us, but fortunately no one was injured. I didn't see any flame, but the air was filled with dust and the temperature increased rapidly. My first thought was to run, which I did, but I regained control of myself quickly and returned to the air-lock doors, which were now open."

Joe Melton states as follows: "I propped the doors open as soon as I recovered from the temporary shock of the blast. I had been looking through an opening in the inby air-lock door when the explosion occurred, and was moved several feet by the blast, losing my equilibrium during this sudden forced motion, but fortunately I was only affected momentarily, and my first thought was to open the doors to permit fresh air to reach those in the affected area."

In order to relate proceedings of the recovery crew after they left the air-lock doors, it is necessary to again quote Mr. Vineyard: "When the group comprised of Messrs. Mc Crossin, Saxon, Bailey, Milton Ferguson, Neal, Nail, and others arrived at the junction of 9 left slope and 9 left, a short conference was held concerning the foregoing maneuvers, and the group then decided to explore the explosion area before preparations were made to remove the victims. Seventeen persons were present and many of this number had flame safety lamps. M. S. Bailey suggested leaving some of the flame safety lamps at this point, and seven of the men were asked to remain. Nine men, Messrs. Mc Crossin, Goodwin, Bailey, Saxon, George Ferguson, William Ferguson, Nail, Neal, and myself, passed through the brattice-cloth stopping and proceeded toward 10 left. Methane was encountered near the entrance to 10 left (about 2 percent), and George Ferguson stated that the gas was probably being liberated from the caved area adjacent to 9 left slope, since stoppings between this entry and the caved area were demolished by the first explosion. Our group then proceeded to 10 left and into No. 1 room off 10 left air course. The entire group was within a radius of 30 feet, discussing matters pertaining to the previous blast, when the second explosion occurred. I was knocked down and I saw plenty of flame, which seemed to come from the caved area adjoining this room. I didn't lose my lamp and was conscious all the

time. The air was filled with dust and smoke, and I crawled to 9 left slope. Mr. Neal accompanied me and he was severely burned and bewailing the fact, but we continued to 9 left where we met John Wayne. Mr. Wayne was calling for help and he accompanied Mr. Neal and I to the chain yard, where we boarded a train and were hauled to the surface."

The men stationed at the entrance to 9 left slope were burned but made their way unassisted to the lower chain yard on the main slope.

Joe Melton relates the following incidents, which occurred immediately after the second blast: "Several men came from 9 left a few minutes after the blast, and I helped remove the burning clothing from some of them. I assisted these injured and burned men to the slope train, and then procured a pair of stretchers and started into 9 left. I met Messrs. McCrossin and Loebler at the air-lock doors, and they said that they could make their way to the slope train and for me to try to reach Mr. Saxon, who was still in 10 left. Andy King, a coal driller, accompanied me, and when I asked if he could use an All-Service gas mask he replied that he couldn't. We proceeded into 9 left and then into 9 left slope, but could only go a short distance because of the foul atmosphere. We retreated to 9 left sidetrack, where we met Mr. Watt, superintendent Sayreton Nos. 1 and 2 mines. I told Mr. Watt of my attempt to reach Mr. Saxon, and he decided that we should try again. When we reached 9 left slope, Mr. Watt donned his All-Service gas mask, and instructed me to wait a few minutes while he explored inby along the slope. In a few minutes he called to me and I followed him. When I reached Mr. Watt, he had removed his gas mask, but I did not remove mine. We found Mr. Saxon, who informed us that all of the men inby him were dead. We loaded Mr. Saxon on a stretcher, and retreated toward 9 left. Just inby the air-lock doors we were relieved by two men, who saw us from the lower chain yard."

Mr. D. J. Parker, supervising engineer, district D, was informed of the explosion by E. J. McCrossin, chief, State of Alabama, Department of Industrial Relations, Division of Safety and Inspection, at 11:15 p.m., August 28, 1943. Mr. Parker immediately called Mr. Saxon, and instructed him to proceed to the mine at once, which he did, arriving there about 11:50 p.m. According to a statement by a company representative, Messrs. Saxon, McCrossin, and others boarded the slope train about 11:55, and were lowered into the mine.

Mr. Parker contacted Messrs. Bradford and Stahl soon after he had relayed the message to Mr. Saxon, and instructed them to proceed to the mine.

Messrs. Bradford and Stahl arrived at the mine about 12:15 a.m., or about 25 minutes before the second explosion occurred. Upon arrival,

Bradford and Stahl announced their presence to Mr. B. W. Norton, general superintendent, Republic Steel Corporation, and H. J. Gentry, chief State mine inspector, who seemed to be jointly in charge of surface operations, and were told to await information from underground. A few minutes later a telephone message announced the second explosion, together with the fact that most of the recovery crew was trapped, and immediate assistance was needed. The slope train was underground, but in only a minute or so it emerged from the mine, and mine rescue and first-aid supplies were loaded at once. R. B. Watt, superintendent Sayreton Nos. 1 and 2 mines; Dr. Rountree, company physician; W. J. Bailey, superintendent Sayre mine, Republic Steel Corporation; Bradford and Stahl, Bureau of Mines, and others boarded the train, and were lowered into the mine. Upon arrival at the lower chain yard, Messrs. Watt and Bailey left the train, and proceeded to 9 left without informing anyone of their intentions. Bradford and Stahl were in a quandary, not being familiar with the mine, and they went to the haulage-foreman's station to learn the whereabouts of the blast, and what had been accomplished. Those present were upset by the events, and definite information was difficult to obtain. While information was being sought, M. S. Bailey appeared at the station. Mr. Bailey was severely burned and the doctor enlisted the aid of Bradford and Stahl to prepare Bailey for transportation to the surface. Only seconds later, Messrs. McCrossin and Loebler arrived at the station. Mr. McCrossin was placed on a stretcher, and made as comfortable as possible, but Mr. Loebler insisted that he wished to sit erect in the slope train. These men were loaded in the train and sent to the surface. During these latter operations, Mr. Bradford walked down the slope a short distance and was hailed by Messrs. Watt and Melton, who were bearing Mr. Saxon from the explosion area. Mr. Bradford and Mr. Doughty, safety inspector Virginia mine, who had followed him, relieved Messrs. Watt and Melton and carried Mr. Saxon to the haulage-foreman's station. Only a glance showed that Mr. Saxon was critically burned, and he was loaded in the slope train immediately. During this procedure H. J. Gentry, chief State mine inspector; R. B. Perry, mining engineer, Republic Steel Corporation; A. G. Crane, Dabney Ramseur, and J. H. Chapman, State mine inspectors, and others arrived at the haulage-foreman's station.

A short conference was held and preliminary recovery plans formulated. Since two blasts had already occurred in the area, extreme caution seemed mandatory, if others were to be averted. It was decided after a study of the mine map and ventilation scheme that further manipulation of the ventilating apparatus would be dangerous, and that the safest apparent procedure was to leave the 9 left air-lock doors open, thus short-circuiting the major portion of the ventilating current from the affected area. Mr. Gentry, in charge for the State after Mr. McCrossin's disability, asked Stahl to direct operations and Bradford to assume charge of the mine rescue equipment and crews.

A volunteer exploration party was formed, equipped with All-Service gas masks, flame safety lamps, and carbon-monoxide detectors, and assigned definite areas to explore. R. B. Perry assumed charge of the party, since he was familiar with every part of the explosion area. During this exploratory tour, several small fires were found and extinguished with rock dust and water. After the preliminary trip had been completed, it was decided that all places adjacent to the affected area should be examined before exposing a large number of men to the dangers of another explosion. When all concerned were reasonably sure that no fire remained in the area, stretcher crews were organized, and the fifteen bodies removed from the blast area. The last victim was sent to the surface about 6:00 a.m. Sunday, August 29, 1943. During the removal operations, the position of each body and any identifying evidence was carefully marked for reference.

The mine rescue equipment was loaded in a slope train, and, when all the recovery personnel had been accounted for, the remaining members of the recovery crews boarded the train, which arrived on the surface about 7:30 a.m., August 29, 1943.

It was suggested that the affected area be patrolled until the absence of fire be assured beyond question, but no further action was taken until about 2:00 p.m. Sunday afternoon, when a group, including company officials and officials from neighboring mines, went underground to inspect the explosion area prior to reestablishing ventilation. Explosive concentrations of methane were encountered while the bodies of the blast victims were being removed. During this later inspection, one small fire was found and extinguished. This latter fire might well have ignited gas, which was present in large quantities and might have caused a third explosion.

INVESTIGATION OF CAUSES OF EXPLOSIONS

The investigation of the disasters was postponed until Tuesday, August 31, 1943, so that the affected area could cool completely, and ventilation be partly restored to facilitate the investigative work. The investigation party on August 31, 1943 consisted of H. J. Gentry, J. H. Chapman, O. H. Youngblood, Dabney Ramseur, and A. G. Crane, State of Alabama, Department of Industrial Relations, Division of Safety and Inspection; E. B. Winning, W. G. Hipperd, N. E. Thompson, R. B. Watt, and R. B. Perry, Republic Steel Corporation; and R. D. Bradford, J. B. Benson, H. N. Smith, and R. W. Stahl, Bureau of Mines. A general survey was made of the explosion area, and data were collected to enable the investigators to form some conclusions concerning the origin of the blast, and the source of the methane. Another tour of the affected area was made on Thursday, September 2, 1943, during which the former party,

with the exception of Messrs. Winning and Smith, were accompanied by John E. Jones and Harrison Combs, representatives of the Health and Safety Division, Coal Mines Administration and further data were collected.

A final survey of the entire mine was made on Friday, September 3, 1943, at which time a detailed study of the explosion area was made by R. B. Perry and R. W. Stahl, in order to attempt to segregate the points of origin, and the path followed by the separate explosions. During these inspections, samples of mine air and dust were collected, and other pertinent information was charted. The results of these studies are included in the appendix of the report.

The property damage was slight, consisting of the demolition of a few gob-wall stoppings, one wooden door, a telephone, and some wooden trolley-wire guards. None of the equipment in the explosion area was damaged, except for the removal of wooden covers from the locomotives, a broken trolley pole on one locomotive, and the dislodgment of trolley wires from the hangers. A telephone line was released from the anchors, and a few check curtains were destroyed by the forces of the blast.

The destruction attributable to the explosion could have been repaired within 48 hours with sufficient labor. However, several changes in the ventilating scheme were deemed necessary to avert a recurrence, and to properly make the proposed changes would require about one week, providing sufficient labor was available. Construction materials were not a matter of concern, since none of those necessary may be termed strategic, and ample supplies are available in the district.

Forces (First Explosion)

The fact that two explosions occurred in relatively the same area, and traversed practically the same territory made the task of determining the exact path of travel difficult, if not confusing; however, bits of information gleaned from the testimony of the recovery party following the first explosion was useful in trying to reconstruct the occurrences pertaining to the separate blasts.

After a careful study of the area, and the location of objects moved by the forces of the explosion, it is concluded that gas was ignited by the controller of a combination trolley-and-cable-reel locomotive, which was in operation just outby the junction of No. 1 room and No. 2 line room off 10 left section. The forces radiated from this point, gathering momentum rapidly as coal dust was thrown into suspension and ignited. Evidence of travel in all directions from this point is indicated by the direction in which brattice-cloth curtains, powder boxes, and other articles were

moved. The forces extended to the caved area adjacent to 11 left entry, to the right parallel airway of 9 left slope entry, throughout the 10 left section, and through the 9 left entry to the main slope. Sufficient force extended outward toward the main slope to open a pair of air-lock doors at the entrance to 9 left, and a steel door at the dispatchers, about 200 feet outby the junction of the main slope and 9 left entry. Three stoppings between the air-lock doors were partially demolished, but the doors were not damaged. The forces were not extremely violent, as shown by the fact that heavy objects were not moved any great distance, and no timbers were dislodged. A door at the entrance to 9 left slope was torn from the hinges, and a telephone was blown from the anchor posts at the entrance to No. 2 line room left off 10 left entry, and moved to the opposite side of the room neck, being completely destroyed during the movement. Three steel mine cars were derailed near the entrance to No. 1 line room off 10 left entry. These cars might have been derailed by the second explosion, since no definite information is available concerning this occurrence.

Forces (Second Explosion)

The investigators believe that the second explosion originated just inby the neck of No. 7 room off 10 left entry. The burned fragments of an overall jacket were hanging on a post at this point, which was only about 50 feet from methane liberated from the adjoining gob area. It is believed that the jacket was ignited by the first explosion, and remained in a smouldering condition, which was unnoticed by the exploration party, and ignited gas forced to it by the ventilation manipulation previous to the second explosion.

Forces seemed to radiate from this point, and extend through all the area traversed by the first blast. The forces of the second explosion definitely reached the main slope; forced the air-lock doors open, and moved men sitting between the doors. Reportedly, the second blast was the most violent; therefore, just how much of the relatively meager destruction may be attributed to each blast is doubtful.

The large open territory in the blast area undoubtedly prevented violence, since the forces could expand readily and dissipate rapidly.

The direction of the forces of the first explosion are shown by heavy solid arrows, while those of the second explosion are shown as outline arrows on the map in appendix "B" of the report.

Evidence of Heat and Flame

Intense heat and flame was evident throughout the active workings off 10 left entry, and the flame extended to the caved area adjacent to 11 left entry, to the pillars between 9 left slope entry and right airway, outby

along 9 left entry about 200 feet outby from the overcast into the necks of rooms contiguous to 9 left entry, and into 9 left air course adjacent to the explosion area. The flame was apparently cooled at the boundaries, or limited by the presence of rock dust and water, and further propagation was prevented by these fire-retarding agents. Had not the territory immediately surrounding the explosion area been rock-dusted, plus the presence of water inby 11 left entry, a widespread explosion might have resulted. The persons in the explosion area were burned severely, timbers were charred, and coke particles were present on timbers, ribs, and roof, all of which represent the presence of intense heat. The extent of flame is shown on the map in appendix "B".

Details of Evidence

The explosions originated in the 10 left section off 9 left slope. Since some of those in the area survived the explosions, their testimony is taken as bona fide evidence of the origin of the first blast. A few men belonging to an exploration party after the first explosion experienced the second blast and survived, but none of these can definitely say where the second explosion originated.

J. C. Moore, section motorman, stated as follows: "I was fixing to pick up empties and also get a hand-loaded car. I put the motor on about two points, and I heard rock working back up in No. 1 room, and I think inby No. 2 room also. The rock sounded like it was fixing to fall. When I heard the noise, I pulled my motor back up above the switch toward the main line and put it on center, waiting for the rock to fall. I waited about 3 or 4 minutes. I heard the rock starting to fall gradually, and I opened up on the motor again, thinking I might move the motor out of the way of the rock fall, but the sound was so severe that I decided I could not, and the wind from the force of the fall was on me, and I stopped the motor and snapped the control back to center. When I shut it back so quick, one of the fingers caught and an arc from the controller flashed and the gas lit off".

This story is verified by the testimony of Calvin Bates, main-line motorman, who was awaiting Moore's arrival at the entrance to the slant driven from 10 left entry to No. 2 line room. Bates operated the shuttle locomotive between 10 left section and the main slope chain yard. From his point of vantage, Bates could see the locomotive operated by Moore, and he relates the following story of the explosion: "We (Bates and James Pryor, coupler) were sitting there on the motor waiting for the other motor to bring the trip out. I seen a little light and it looked near about like a blown cable. I was looking toward the locomotive operated by J. C. Moore. In about a minute, I heard a roaring and I didn't know whether it was a rock fall or what. Then I saw fire come from around the curve."

Further questioning revealed that Bates heard the movement of the rock before he saw the flash.

The conclusion as to the point of origin of the second blast is drawn from the fact that the burning jacket was the closest fire to impounded methane, and the ventilation manipulation would tend to move the gas to this source of ignition.

The map of the mine, appendix "A", shows the position of the affected area, with respect to the other workings and excavations of the mine. This map also shows the coursing of the air.

The large scale map of the explosion area, appendix "B", shows the location of equipment, the bodies of workmen as found after the explosions, clothing, tools, and other articles found in the explosion area. This print also shows the extent of flame, the direction of forces; areas adjoining the explosion area; the area of impounded water, which obstructed air-circulation through the bleeder entries surrounding the caved area contiguous to the explosion area; and points at which methane readings were taken to verify the contention that the caved area immediately adjacent to the affected area was evidently filled with methane.

A graph drawn from the recording pressure gage chart, appendix "C", is included, because it definitely shows when the explosions occurred and also indicates when the air-lock doors were opened and closed, which it is believed played a major part in causing the second ignition.

The Point of Origin (First Explosion)

The origin of the first blast was definitely determined from the testimony of J. C. Moore, which was substantiated by Calvin Bates, as being about 30 feet outby the intersection of No. 1 room and No. 2 line room off 10 left entry. The igniting agent was an arc from the open-type controller of a combination trolley-and-cable-reel locomotive.

The Point of Origin (Second Explosion)

The point of ignition of the second explosion was agreed upon by the investigators after a thorough study of the affected area, including the ventilation scheme and the possible affect of the air-lock-door manipulation on the liberation and movement of gas prior to the second explosion.

Methane had undoubtedly accumulated in the caved area adjoining the 10 left section and, of course, the portion adjacent to the "live" workings would be burned during the first explosion, or at least that portion necessary to combine with the available oxygen to produce rapid combustion. When the air-lock doors were opened after the first blast,

a major part of the air current, originally coursed through the 13 right and main slope sections thence through the affected area, would be short-circuited into 9 left entry, and the direct path to the fan would be through the rooms driven toward 8 left; thus a negative pressure would possibly be exerted in the affected area. Such negative pressure along the gob line or caved area adjoining 10 left would augment the flow of the gas from the caved area into the active working places, and little time would be required to fill the active working places with methane.

When the air-lock doors were closed, which they were previous to the second blast, and a temporary stopping was erected at the entrance to 9 left slope, almost normal air circulation would be effected, thus forcing the methane inby toward the face of 10 left entry. A stopping, which closed the crosscut just outby and across from No. 7 room off 10 left, was partly destroyed by the first explosion, and normal air circulation would force methane directly from the caved area toward No. 7 room. It is known that the jacket just inby the neck of 7 room was consumed, but it cannot be definitely stated that it was burning after the first explosion; however, several persons had been through the area and noted no fires before the second blast. Thus, the jacket appears as a likely source of ignition, since it could have been smouldering and overlooked by the explorers. The jacket, being cotton, would have a tendency to smoulder rather than burn rapidly. Also the locations of the other fires are such that re-establishing ventilation would have a tendency to force the gas away, rather than toward them.

The locations of the fires, the jacket, and the presumed gas reservoir are indicated on the map, appendix "B".

Source of the Gas

Although the intake air for the section was contaminated with at least 0.5 percent methane before it reached the active working places in 10 left section, the most likely source of the gas, which was ignited and caused the first blast, is the pillared area adjoining the 10 left section. This area was undoubtedly a reservoir filled with methane, because the ventilating current was coursed along the edge of the caved area to the return airway; thus any methane liberated in the caved area would be held in the area, because a slight positive pressure was directed toward the pillar line, but a negative pressure was not maintained around the area by coursing a volume of air through the bleeder entries, which were left for this purpose.

This contention is verified by the fact that the first explosion would surely consume the gas in the working places, and the contaminated air current was short-circuited from the area following the first explosion,

although stoppings were partly demolished between 9 left slope entry and the gob area to the right of this entry, and gas could have flowed from this area toward the 10 left section. This, however, appears unlikely and the methane content of the air coursed through this area is not nearly so high as that found along the pillar line adjoining the active working places of 10 left section. Air is coursed around all sides of the gob area adjacent to 9 left slope, which should have a tendency to induce gas liberation and prevent accumulations, while the area adjacent to 10 left section is not so ventilated.

The following methane readings were taken at various points along the pillar line adjacent to 10 left section during the investigation, and in the authors' opinion prove conclusively that a large volume of methane was, and is, impounded in the caved area:

Location in Mine	Percent Methane
Crosscut off No. 3 room 10 left	1.82
Crosscut opposite No. 7 room 10 left	3.93
At edge of fall No. 4 room 10 left	6.26
Face of 9 left entry	1.82

Similar methane readings could be obta..... the above points after ventilation was restored to the affected section.

Extent to Which Coal Dust Entered Into the Explosion

The 10 left section, in which the explosions occurred, was comparatively dry, and large accumulations of coal dust were present on the ribs and floor, especially near the faces of the working places. Water lines were installed in every working place, and hose were available for sprinkling.

Rock dust was distributed by hand in the face areas, and the quantity applied in the explosion area was certainly not enough to prevent coal-dust ignition. Widespread coke deposits on timbers, ribs, roof, and equipment throughout the explosion area indicate that coal dust was extensively involved in this explosion.

It is entirely possible that had water been used in an effective manner to allay the coal dust, and rock dust applied properly, and in sufficient quantities to render the dust inert as the faces were advanced, more of the men in the first explosion would have escaped, and many of the numerous fires would not have been present.

State Inspectors' Conclusions

The State inspectors agree with the Bureau of Mines investigators concerning the source of the gas, but feel that smoking may have been the igniting agent for the first explosion, while any one of two or three fires may have been unnoticed by the explorers after the first blast, and have ignited methane causing the second explosion.

Coroner's Verdict

According to a statement from the Coroner's office, an inquest was deemed unnecessary, but an inquiry was made concerning the cause of the blast. No verdict was given in the memorandum.

Summary of Evidence

1. Evidence indicates that the forces of the first blast radiated from a point just outby No. 1 room off No. 2 line room. The forces spread through all openings connected with this point.

2. J. C. Moore states that an arc in the controller of the locomotive which he was operating, ignited the gas.

3. J. C. Moore states that an extensive subsidence was expected in the pillared area, and he definitely heard the noise of the fall before the ignition.

4. Apparently, the fall of roof forced gas into the working area, since testimony substantiates the fact that gas tests were made several times before the subsidence, and the working places were found to be free of methane.

5. Evidence indicates that the second explosion was initiated just inby the neck of No. 7 room, and the forces seemed to radiate from this point.

6. Several men had traversed the area prior to the second explosion, and fires were not observed; therefore, it was concluded that the jacket could have been smouldering and not have been noticed.

7. A careful study of the conditions, such as the possible sources of methane and the location of fires, leads the investigators to believe that the supposedly burning jacket was the most likely source of ignition.

8. Methane in large quantities was present near the location of the jacket during the investigation, and high percentages of methane could be

detected at several points along the pillared area adjacent to the 10 left working places.

9. The course of air flow was changed during the recovery operations following the first explosion, and these manipulations certainly would effect gas liberation from the caved areas.

10. The igniting agent of the gas which caused the second explosion was undoubtedly a fire, because all power wires in the affected area were deenergized immediately after the first blast.

11. No blasting had been done immediately prior to the first explosion, and no evidence could be found that would indicate that explosives were involved in the blast.

12. Since the point of ignition of the first blast is definitely known, the movements of the various employees at the time of the explosion are of no real importance.

13. Any of the electrical equipment in the explosion area would have ignited gas, so ignition sources were plentiful.

14. Numerous burned matches were found along the 9 left entry outby the explosion area, indicating that smoking was practiced, but in this case smoking was not the source of ignition.

15. The widespread deposits of coke indicate that coal dust played a major part in propagating flame through the area.

16. The fact that water was permitted to obstruct the bleeder entries indicates that little thought was given to the possibility of methane becoming impounded in the pillared area.

17. Methane-contaminated air was used to ventilate the active working places in the affected area, in which so many sources of ignition were present at all times.

18. The protection afforded by permissible equipment seemed to be questionable at this mine, because no attempt was made to maintain it.

Probable Causes of the Explosions

The cause of the first explosion is known, since the man at the source of ignition survived. Methane forced from a pillared area by roof subsidence was ignited by an arc in the controller of a trolley locomotive.

The investigators agree that gas drawn into the working places by ventilation manipulation prior to the second explosion was most likely ignited by a smouldering overall jacket ignited by the flame of the first blast.

Lessons to be Learned from the Conditions as They Relate to this Explosion

1. Sudden and unusual liberations of explosive gas can occur in any coal mine; therefore, all coal mines should be operated so that ignition sources will not be present when such liberations occur.

2. In this case, the plan by which the area was to be ventilated was not followed. The fault lies not with the plan, but with those responsible for executing it. Bleeder entries were maintained around the pillared area, but water was permitted to accumulate to the extent that air circulation around the area was entirely excluded.

3. Known methane-contaminated air (0.5 percent methane) was coursed through an abandoned area, then along a pillar line before it reached the active working places. Such air certainly is not of the proper quality to be directed through areas where igniting agents are prevalent.

4. Pillared areas are always ready reservoirs where methane will accumulate if ordinary precautions are not observed. In this case a well-devised scheme of ventilation was ignored, as were the ventilation recommendations made in a Federal coal mine inspection report 6 months before the explosion.

5. The well-known fact that section isolation, with numerous splits of fresh air, is necessary to prevent methane ignitions was entirely ignored in a known gassy mine.

6. If disasters are to be prevented, the ventilation scheme must be altered and kept in step with the extraction methods. Antiquated ventilation procedures eventually lead to distressing situations.

7. Rock dust must be applied in ample quantities as the faces are advanced if dust-ignition and flame-propagation are to be prevented.

8. Electrical equipment, whether permissible or otherwise, must be maintained in good repair to prevent excessive arcing and consequent ignition of explosive gases, which may be present in the atmosphere.

9. The first explosion in this particular case could have been averted had the power wires in the section been deenergized when the

rock began moving, which was evidently known several minutes before the explosion. When large falls are expected, as in this case, special precautions appear mandatory.

Recommendations

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

Method of Mining:

1. Pillars should be extracted so that a definite fracture line is maintained in order to facilitate the ventilation of pillar lines, and eliminate the possibility of large spans of roof being partly supported on posts or small stumps, with consequent sudden subsidence in a large area.

Ventilation and Gas:

1. Each room entry or set of development entries, designed as a mobile-loading section, should be ventilated with a separate split of intake air, and the return air from the section directed to the main-return airways.

2. Air that has passed through abandoned workings, or through caved areas should not be coursed through active working places.

3. All accessible portions of caved areas and abandoned workings should be carefully inspected for methane at least daily, and when the gas must be removed by passing the methane-contaminated air through active sections, the power wires should be deenergized, and all men except those necessary for removal of the gas should be removed from the section.

4. When the methane content in the return air from any split exceeds 0.5 percent, the volume of air coursed through the split should be increased at once.

5. Positive pressure should be maintained against all pillar areas from the working area side, and a negative pressure maintained by means of bleeder entries around the caved area, so that it is not likely for methane to be impounded in caved sections.

6. All haulageways should be ventilated with intake air.

7. The use of nonpermissible electrical equipment should be confined to areas ventilated with intake air, or at least air free from explosive gas.

8. Water should be kept removed from the bleeder entries near the intersection of 13 right and the 9 left slope, so that air may be circulated around the gob area inby 10 left.

9. Permanent stoppings between entries should be maintained to within one crosscut of the face to eliminate the excessive use of check curtains.

10. Where doors are necessary, they should be erected in pairs to form air locks.

Dust:

1. Coal dust should not be permitted to accumulate at any point in the mine. If the dust and spilled coal are removed, as the places are advanced, accumulations are not likely to occur.

2. Rock dust should be applied to all exposed surfaces in the mine, so that the incombustible content of the mine dust will not be less than 65 percent, plus 1 percent for each 0.1 percent methane in the ventilating current. The rock dust should be kept within 40 feet of the faces at all times, and the area between the face and the rock-dusted surface kept wet.

3. A high-pressure rock-dust distributor should be available, so that hose may be utilized to effectively apply dust to areas where the track is removed.

4. Representative samples of the mine dust should be collected and analyzed at least monthly, and those sections or areas not fully protected by rock dust, should be redusted immediately.

5. Effective water sprays should be installed where dust is produced; such as on the cutter bars of mining machines, at the transfer hopper, and discharge end of mobile-loading machines. The coal pile should be sprayed before loading.

Lighting:

1. The seals should be kept intact on the head pieces of all electric cap lamps to prevent tampering, and maintain the lamps in a permissible condition.

2. Smoking should be strictly prohibited, and the employees should be searched frequently for smoker's articles to assure that flame-making devices and matches are not carried into the mine.

Electricity and Machinery Underground:

1. The armor of all armored cables should be grounded at the bottom of boreholes, and at frequent intervals throughout its entire length, to prevent possible electrocution should a section of armor become charged through an insulation failure.

2. Trolley or power wires should be guarded for at least 16 feet on both sides of all doors.

3. All rail joints should be bonded when the track is used as the return circuit.

4. Permissible electrical equipment should be maintained in permissible condition at all times.

5. A nip, equipped with a fuse, should be used to make the contact between cables and trolley or power wires, unless the cables terminate with clamps, in which case a protective fuse should be inserted in the circuit to protect the cable.

6. Every electrically operated machine should be frame-grounded, and equipped with fuses of the proper type and capacity.

7. All cable splices should be effectively insulated with self-vulcanizing rubber tape, unless vulcanizing equipment is available, then splices should be vulcanized.

8. Electrical equipment should be inspected by a competent person at least once each week, and the results of the inspection should be recorded and the report signed by the mine foreman and superintendent as evidence of their having noted the condition of the equipment.

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4. The hazardous practice of preparing several primed charges, prior to loading the holes, should be prohibited.

5. Holes for blasting should be drilled after the undercut, topcut, or shear is made.

6. Only permissible shot-firing devices should be used.

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1. All employees should receive first-aid training at least annually.

2. At least 12 employees should receive additional mine rescue training monthly.

3. All underground employees should be instructed in the use of barricades.

4. Adequate material, to treat major injuries, should be maintained in usable condition in the underground first-aid stations.

5. Joint safety meetings, in which the employees participate actively, should be held at least once each month.

6. Consideration should be given to equipping underground employees with self-rescuers.

Fire Fighting:

1. An underground fire-fighting organization should be established, definite procedure outlined, and fire drills held at least 4 times a year.

ACKNOWLEDGMENT

The authors herewith acknowledge the courtesies and assistance extended by the Republic Steel Corporation, and the members of the United Mine Workers of America during the investigation.

The cooperation of H. J. Gentry, chief coal mine inspector, State of Alabama, Department of Industrial Relations, Division of Safety and Inspection, and the several State mine inspectors who were present is hereby gratefully recognized.

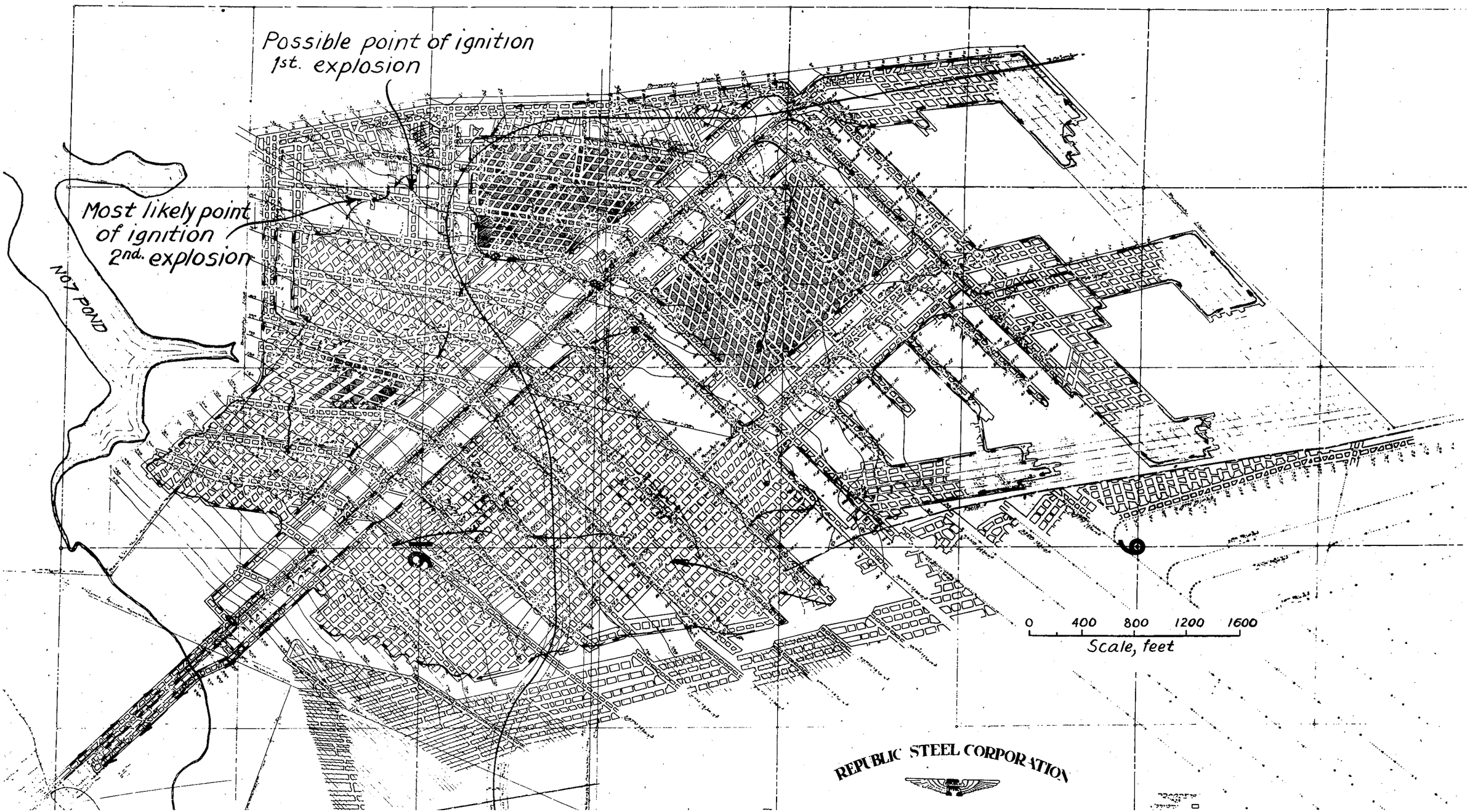
Respectfully submitted,

R. W. Stahl,
Senior Coal Mine Inspector.

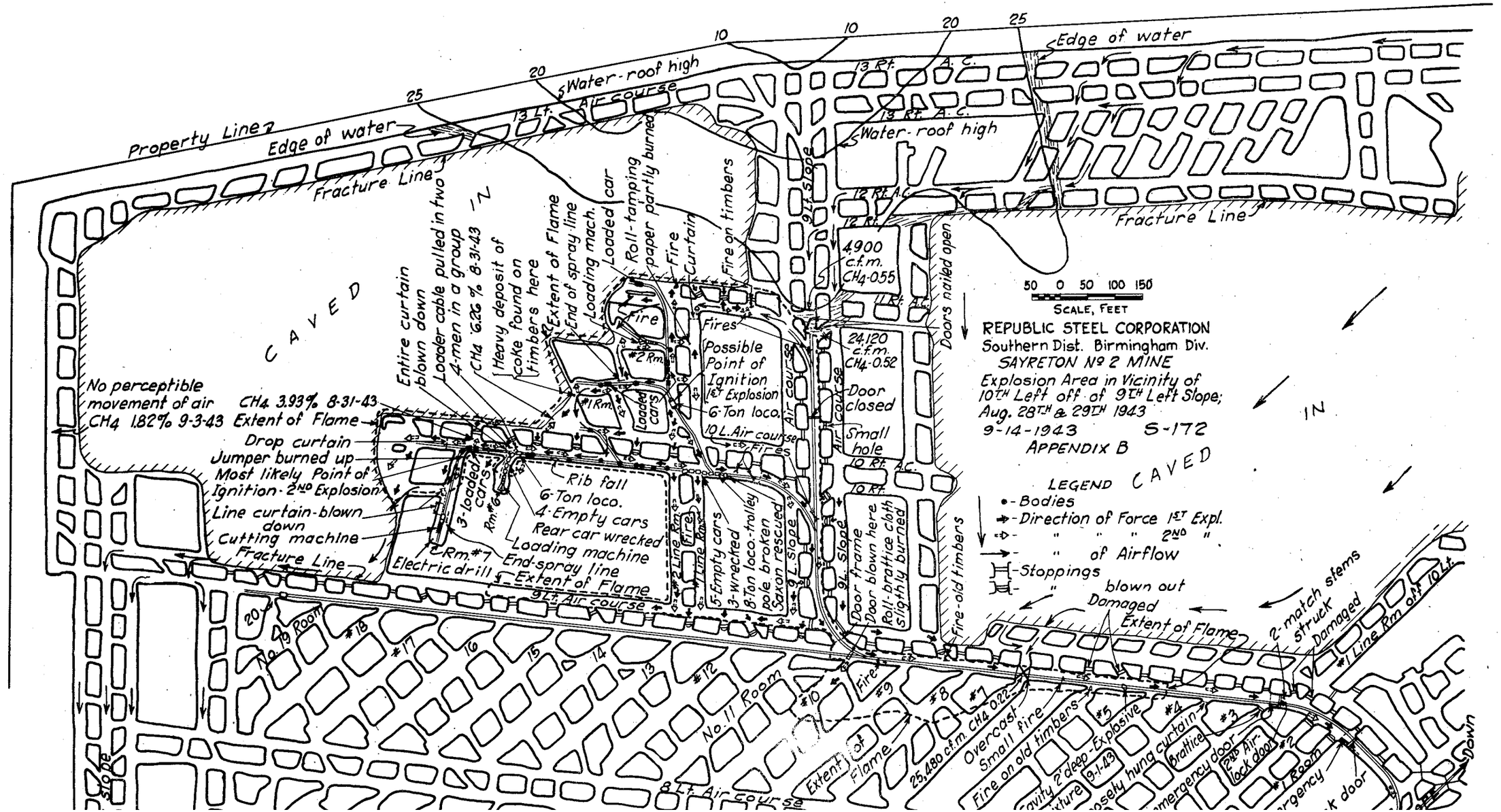
Jas. B. Benson,
Senior Mining Engineer.

D. HARRINGTON,
Chief, Health and Safety Service.

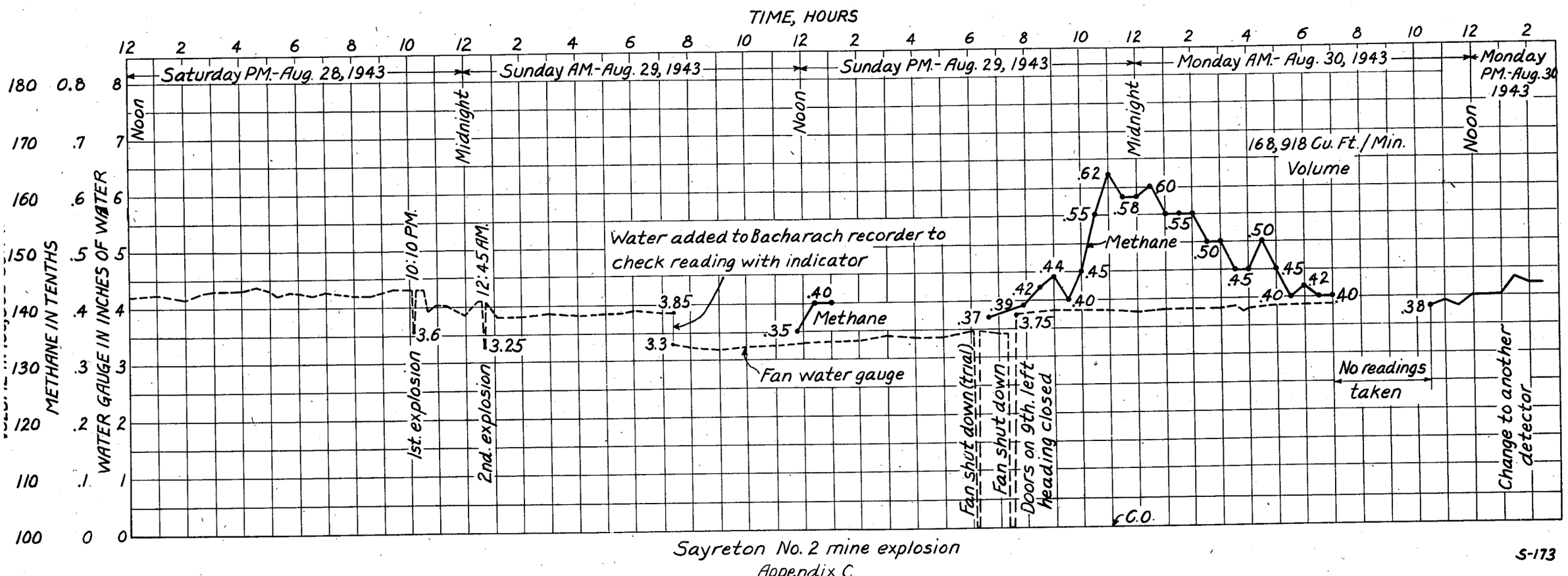
APPENDIX A


Possible point of ignition
1st. explosion
Most likely point
of ignition
2nd. explosion
NO7 POND
0 400 800 1200 1600
Scale, feet
REPUBLIC STEEL CORPORATION

APPENDIX B


Property Line
Edge of water
Water - roof high
Air course
13 Ft.
Fracture Line
CAVED
Entire curtain blown down
Loader cable pulled in two
4-men in a group
CH4 6.26 % 8-31-43
Heavy deposit of coke found on timbers here
Extent of Flame
End of spray line
Loading mach.
Loaded car
Roll-tamping paper partly burned
Fire
Curtain
Fire on timbers
9 Lt. slope
12 Rt. A.C.
4900 c.f.m. CH4-0.55
Doors nailed open
Fires
Possible Point of Ignition 1st Explosion
6-Ton loco.
#2 Rm.
#1 Rm.
Loaded cars
10 L. Air course
24,120 c.f.m. CH4-0.52
Door closed
Small hole
10 Rt.
No perceptible movement of air
CH4 1.82% 9-3-43
CH4 3.93% 8-31-43
Extent of Flame
Drop curtain
Jumper burned up
Most likely Point of Ignition - 2nd Explosion
Line curtain-blown down
Cutting machine
Fracture Line
3-loaded cars
Rm. #6
Rm. #7
Electric drill
Rib fall
6-Ton loco.
4-Empty cars
Rear car wrecked
Loading machine
End-spray line
Extent of Flame
9 Lt. Air course
2 Line Rm.
Fire
1 Line Rm.
5-Empty cars
3-wrecked
8-Ton loco.-trolley pole broken
Saxon rescued
9 L. slope
Door frame
Door blown here
Roll-brattice cloth slightly burned
Fire-old timbers
50 0 50 100 150
SCALE, FEET
REPUBLIC STEEL CORPORATION
Southern Dist. Birmingham Div.
SAYRETON No 2 MINE
Explosion Area in Vicinity of 10TH Left off of 9TH Left Slope;
Aug. 28TH & 29TH 1943
9-14-1943 S-172
APPENDIX B
LEGEND
- Bodies
- Direction of Force 1ST Expl.
" " " 2ND "
" of Airflow
Stoppings
" blown out
Damaged
Extent of Flame
2-match stems struck
Damaged
#1 Line Rm off 10 Lt.
No. 19 Room
No. 11 Room
8 Ft. Air course
Extent of Flame
25,480 c.f.m. CH4 0.22
Overcast
Small fire
Fire on old timbers
cavity 2' deep-Explosive
9-1-43
Loosely hung curtain
Brattice
Emergency door
2nd Air-lock door
#1 Room
Emergency
Down
Slope

APPENDIX C



Sayreton No. 2 mine explosion
Appendix C.

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APPENDIX D

APPENDIX D

VICTIMS OF THE EXPLOSIONS

(First Explosion)

Name	Occupation	No. of Dependents under 18 years of age
Woodie E. Faucett	Coal driller	3
James M. McCombs	Mining machine operator	1
Simon C. Oldacre	Rockman	0
J. V. Sharit	Timberman	2
W. M. Pennington	Miner	5
Tom McAlpine	Loading machine operator	2
H. E. Hann	Shot-firer	1
G. J. W. Sellers	Mining machine helper	5
H. E. Gilley	Track helper	5
W. H. Abel	Miner	2
Joe Davenport, Jr.	Timber helper	2
J. L. Davis	Loading machine operator	1
Amos McGruder	Motorman	3
J. W. Guthrie	Track helper	0
Willie Jiles	Coupler	4
Bud Jones	Timber helper	3
Thomas Peebles	Loading machine helper	4
	(Second Explosion)	
William Goodwin	Chief safety engineer, Republic Steel Corporation.	0
E. J. McCrossin	Chief, State of Alabama, Department of Industrial Relations, Division of Safety and Inspection.	0
M. S. Bailey	Chief safety inspector, Woodward Iron Company.	3
Milton F. Ferguson	Deputy Sheriff, Jefferson County, Alabama.	2
George T. Ferguson	Asst. Superintendent, Sayreton No. 2 mine, Republic Steel Corporation.	1
John Frame	Asst. Superintendent, Sayreton No. 1 mine, Republic Steel Corporation.	3
Will Neal	Section foreman	0
J. M. Nail	Section foreman	2
R. B. Bennett	Section foreman	3
C. E. Saxon	Principal Safety Instructor, U. S. Bureau of Mines	1

APPENDIX E

APPENDIX E

MEN INJURED (NON-FATAL) IN EXPLOSIONS

(First Explosion)

Name	Occupation	Extent of Injury
A. R. Pesnell	Section foreman	Several burns
James Pryor	Motorman	do.
Charlie Smith	Rock helper	do.
J. C. Moore	Motorman	Burns
Ernest Smith	Coupler	do.
Calvin Bates	Motorman	Minor burns
C. W. Scott	Trackman	Burns
W. E. Armstrong	Rockman	do.
F. J. Loggins	Trackman	Severe burns
Lonzey McNeily	Rock helper	Heart condition (induced by fright)

(Second Explosion)

Curtis Vineyard	Section foreman	Minor burns
Mike Loebler	Mine foreman	Severe burns
James Frame	Section foreman	Severe burns
Robert Allen	Shot-firer	Burns
P. R. Ragland	Electrician's helper	do.
A. F. Fenley	Shot-firer	do.
J. W. Bishop	Miner	do.
John Waine	Safety inspector	Severe burns

Revised version
10/29/43

FINAL REPORT OF MINE EXPLOSIONS SAYRETON NO. 2 MINE, REPUBLIC STEEL CORPORATION, AT SAYRETON, JEFFERSON COUNTY, ALABAMA AUGUST 28-29, 1943

By
R. W. Stahl and Jas. B. Benson

INTRODUCTION

A gas and coal dust explosion occurred in the Sayreton No. 2 mine of the Republic Steel Corporation at about 10:10 p.m., August 28, 1943. A second explosion occurred about two and one-half hours later.

There were 107 men in the mine at the time of the first explosion.

The explosions were local in character, being confined to the 9 left and 9 left slope sections.

There were 30 men in the area affected by the first explosion; 3 escaped uninjured, 3 were injured and escaped unassisted, 9 were injured and were assisted from the mine (three of these died later), and 15 men were killed outright. The 77 men in the unaffected portion of the mine escaped unassisted. Total number of deaths from the first explosion to date (October 25, 1943) is 18. (Note) F. J. Loggins, trackman, shown in Appendix F, "Men Injured (Non-fatal)" died October 23, 1943.

About 12:40 a.m., August 29, 1943, or two and one-half hours after the first explosion, a second explosion occurred in the same area, at which time there were 18 members of a rescue party in the affected section. Two men of the rescue party were killed and 16 were injured. Eight of the sixteen injured died after being removed to the hospital. Total number of deaths from second explosion to date (October 25, 1943) is 10.

The first explosion was caused by the ignition of a body of methane by an electric arc in the controller of a cable-reel locomotive. The second explosion is believed to have been caused by the ignition of a body of methane by a smouldering fire resulting from the first explosion. Word of the explosion was received by D.J. Parker, Supervising Engineer, District D, Bureau of Mines, about 11:15 p.m. Mr. Parker in turn notified the personnel of the Birmingham office of the Bureau of Mines.

Mr. C.E. Sasen arrived at the mine about 11:50 p.m. with the Bureau of Mines rescue truck and equipment. Shortly thereafter he entered the mine in company with Messrs. E.J. McCrossin, Chief, Alabama Department of Industrial Relations; H.S. Bailey, chief inspector, Woodward Iron Company; Milton Ferguson, deputy sheriff, Jefferson County and others. Messrs. R.W. Stahl and R.D. Bradford arrived at the mine about 12:15 a.m. Mr. H.N. Smith arrived at the mine about 3:00 a.m. Messrs. D.J. Parker and J.B. Benson arrived at the mine about 6:00 a.m.

The Bureau of Mines representatives participated actively in the recovery operations underground and in perfecting a surface organization to supplement the underground work. Close cooperation existed between the representatives of the Bureau of Mines and the State of Alabama, Department of Industrial Relations, Division of Safety and Inspection, and officials and employees of the company.

was critically burned, and he was loaded in the slope train immediately. During this procedure H. J. Gentry, chief State mine inspector; R. B. Perry, mining engineer, Republic Steel Corporation; A. G. Crane, Dabney Ramseur, and J. H. Chapman, State mine inspectors, and others arrived at the haulage-foreman's station.

A short conference was held and preliminary recovery plans formulated. Since two blasts had already occurred in the area, extreme caution seemed mandatory, if others were to be averted. It was decided after a study of the mine map and ventilation scheme that further manipulation of the ventilating apparatus would be dangerous, and that the safest apparent procedure was to leave the 9 left air-lock doors open, thus short-circuiting the major portion of the ventilating current from the affected area. Mr. Gentry, in charge for the State after Mr. McCrossin's disability, asked Stahl to direct operations and Bradford to assume charge of the mine rescue equipment and crews.

A volunteer exploration party was formed, equipped with All-Service gas masks, flame safety lamps, and carbon-monoxide detectors, and assigned definite areas to explore. R. B. Perry assumed charge of the party, since he was familiar with every part of the explosion area. During this exploratory tour, several small fires were found and extinguished with rock dust and water. After the preliminary trip had been completed, it was decided that all places adjacent to the affected area should be examined before exposing a large number of men to the dangers of another explosion. When all concerned were reasonably sure that no fire remained in the area, stretcher crews were organized, and the fifteen bodies removed from the blast area. The last victim was sent to the surface about 6:00 a.m. Sunday, August 29, 1943. During the removal operations, the position of each body and any identifying evidence was carefully marked for reference.

The mine rescue equipment was loaded in a slope train, and, when all the recovery personnel had been accounted for, the remaining members of the recovery crews boarded the train, which arrived on the surface about 7:30 a.m., August 29, 1943.

It was suggested that the affected area be patrolled until the absence of fire be assured beyond question, but no further action was taken until about 2:00 p.m. Sunday afternoon, when a group, including company officials and officials from neighboring mines, went underground to inspect the explosion area prior to reestablishing ventilation. Explosive concentrations of methane were encountered while the bodies of the blast victims were being removed. During this later inspection, one small fire was found and extinguished. This latter fire might well have ignited gas, which was present in large quantities and might have caused a third explosion.

INVESTIGATION OF CAUSES OF EXPLOSIONS

The investigation of the disasters was postponed until Tuesday, August 31, 1943, so that the affected area could cool completely, and ventilation be partly restored to facilitate the investigative work. The investigation party on August 31, 1943 consisted of H. J. Gentry, J. H. Chap man, O. H. Youngblood,

Extent to Which Coal Dust Entered Into the Explosion

The 10 left section, in which the explosions occurred, was comparatively dry, and large accumulations of coal dust were present on the ribs and floor, especially near the faces of the working places. Water lines were installed in every working place, and hose were available for sprinkling.

Rock dust was distributed by hand in the face areas, and the quantity applied in the explosion area was certainly not enough to prevent coal-dust ignition. Widespread coke deposits on timbers, ribs, roof, and equipment throughout the explosion area indicate that coal dust was extensively involved in this explosion.

It is entirely possible that had water been used in an effective manner, to allay the coal dust, and rock dust applied properly, and in sufficient quantities to render the dust inert as the faces were advanced, more of those men in the first explosion would have escaped, and many of the numerous fires would not have been present.

State Inspectors' Conclusions

The State inspectors agree with the Bureau of Mines investigators concerning the source of the gas, but feel that smoking may have been the igniting agent for the first explosion, while any one of two or three fires may have been unnoticed by the explorers after the first blast, and have ignited methane causing the second explosion.

Coroner's Verdict

According to a statement from the Coroner's office, an inquest was deemed unnecessary, but an inquiry was made concerning the cause of the blast. No verdict was given in the memorandum.

Summary of Evidence

1. Evidence indicates that the forces of the first blast radiated from a point just outby No. 1 room off No. 2 line room. The forces spread through all openings connected with this point.

2. J. C. Moore states that an arc in the controller of the locomotive which he was operating, ignited the gas.

3. J. C. Moore states that an extensive subsidence was expected in the pillared area, and he definitely heard the noise of the fall before the ignition.

4. Apparently, the fall of roof forced gas into the working area, since

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1. An underground fire-fighting organization should be established, definite procedure outlined, and fire drills held at least 4 times a year.

ACKNOWLEDGMENT

The authors herewith acknowledge the courtesies and assistance extended by the Republic Steel Corporation, and the members of the United Mine Workers of America during the investigation.

The cooperation of H. J. Gentry, chief coal mine inspector, State of Alabama, Department of Industrial Relations, Division of Safety and Inspection, and the several State mine inspectors who were present is hereby gratefully recognized.

Respectfully submitted,

R. W. Stahl

R. W. Stahl,
Senior Coal Mine Inspector.

Jas. B. Benson

Jas. B. Benson
Senior Mining Engineer.

D. Harrington

D. HARRINGTON,
Chief, Health and Safety Service.

Progress ~~Report~~ 2. File

Air Mail

Birmingham 3, Alabama,
September 9, 1943.

U.S. BUREAU OF MINES
PITTSBURGH, PA.
SEP 11 1943
RECEIVED

Mr. C. W. Owings,
U. S. Bureau of Mines,
College Park, Md.

Sayreton No 2 explosion

Dear Mr. Owings:

Enclosed are the original and 4 copies of the preliminary report of the mine explosions in the Sayreton No. 2 mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama, on August 28-29, 1943. This report was prepared by R. W. Stahl and R. D. Bradford. A copy of this report is being sent to Mr. Denny at Pittsburgh and Mr. Harrington at Washington.

It is requested that a copy of this report be sent to B. W. Norton, general superintendent, Republic Steel Corporation, Empire Building, Birmingham, Alabama.

Very truly yours,

D. J. Parker

Enclosures
cc: ~~Mr. Denny~~
Mr. Harrington

Carbon
M. J.

PRELIMINARY REPORT OF MINE EXPLOSIONS, SAYRETON NO. 2 MINE REPUBLIC STEEL CORPORATION SAYRETON, JEFFERSON COUNTY, ALABAMA AUGUST 28-29, 1943

By
R. D. Bradford and E. W. Stahl

A local gas and dust explosion occurred in the Sayreton No. 2 mine of the Republic Steel Corporation, Sayreton, Jefferson County, Alabama, about 10:10 p.m., August 28, 1943. There were 107 men in the mine at the time, of which 30 were in the area affected by the blast. The 77 men in the unaffected portion of the mine escaped unassisted, and of the 30 men in the explosion area, 3 escaped uninjured, 3 were injured and escaped unassisted, 10 were injured and were assisted from the mine (one of these died later), and 14 men were killed.

About 12:40 a.m., August 29, 1943, 2-1/2 hours after the first explosion, a second explosion occurred in the same area, at which time there were 17 members of a rescue party in the affected section. Two men of the rescue party were killed and fifteen were injured. Eight of the fifteen died after being removed to the hospital.

Oxygen breathing apparatus were not used during the recovery work; however, gas masks were used to explore the affected area following the second explosion.

The mine is operated in the Mary Lee coal bed, which is a medium-volatile bituminous coal, and has an average thickness of 84 inches in this mine. The mine is opened by two slopes and one airshaft. The slopes were driven in the coal bed from the outcrop, and pitch from 26 to 14 percent for a distance of about 2,200 feet, and from 14 to 5 percent for a distance of about 2,400 feet. At the bottom of the slopes the coal bed ranges from level to a pitch of 5 percent.

The room and pillar system of mining is employed, and the coal is loaded mechanically with track-mounted loading machines.

The mine is rated gassy by the State of Alabama, Department of Industrial Relations, Division of Safety and Inspection, and permissible-type electric cap lamps are used by employees for underground illumination. Permissible flame safety lamps are provided for gas-detection purposes.

The coal is friable and considerable coal dust was present along the entries and in face areas. Analysis of the coal shows the coal dust to be highly explosive.

Cutting is done in the coal bed with permissible-type mining machines, but these machines are not maintained in a permissible condition, and the holes are drilled with nonpermissible hand-held drills before the places are cut. Nonpermissible combination trolley-pole and cable-reel locomotives are used to serve cars to the loading machines, and nonpermissible trolley-pole locomotives transport the cars to the bottom of the main hoisting slope.

Rope haulage is employed between this point and the surface.

Permissible explosives are used to blast the coal, and a sufficient number of holes is drilled in each face to break down the coal; the number depending on the width of the face. The shots are fired with a nonpermissible shot-firing device attached to the cap-lamp battery.

Rock dust is supposed to be applied by hand to within 15 feet of the faces of all live workings, and later the hand-dusting is supplemented by machine distribution, with a locally-designed low-pressure rock-dusting machine on the haulageways where trolley wire is installed; however, the rock dust distribution in the face areas traversed by the explosion did not meet this standard, and the quantity of rock dust distributed was not adequate to prevent propagation of the explosion by the coal dust.

Water lines are installed in each working place, and water is said to be used on the cutter chain of the mining machines as well as on the coal pile while loading. Spray devices are not provided and the hose stream would not afford an effective dust allaying medium.

Air circulation in the mine is induced by an exhausting fan, which is offset 40 feet from the return airshaft, and the air enters the mine through the haulage and manway slopes. The volume of air in circulation is divided into three primary and one secondary splits. The split used to ventilate the section where the explosions occurred is coursed through active workings on the right side of the mine, and passes through caved areas on the left side of the mine before entering the active workings where the explosion originated. The air current is contaminated with at least 0.5 percent methane before it is coursed to the explosion area.

The disaster was definitely an explosion caused by an ignition of methane and propagated by gas and coal dust. The area traversed by the explosion was small, being confined to the workings off the 9 left slope.

The mine damage was slight, consisting of one broken door, the demolition of several gob stoppings, the destruction of one telephone, and some wooden trolley guards, together with the wooden covers of the haulage locomotives in the sections.

Previous to the first explosion the mine was being operated according to the normal routine of operations. The first evidence of the blast known to anyone in the immediate vicinity, but not in the direct path of the explosion forces, was noted by E. C. Tate, haulage foreman, whose station is near the entrance to 9 left. Mr. Tate states that a steel door which separates the haulage foreman's station from the manway was opened forcibly by a rush of air, but since this had occurred numerous times when the roof subsided in the pillar areas of 9 left slope section, the occurrence had no real significance to him. He remained at his post and a few minutes later Calvin Bates, main-line motorman, and James Pryor, coupler, appeared from the 9 left section calling for help. A few minutes after the arrival of these men, J. C. Moore, 9 left section motorman, appeared. All three

men were injured and were sent to the surface at once. Before leaving the dispatcher's station, Bates informed Tate that an explosion had occurred in the 10 left section off 9 left slope. Mr. Tate informed the surface employees of the blast and about this time Mr. Vineyard, night mine foreman, arrived from the right section of the mine. Mr. Tate directed a main-line motorman to notify all employees in the unaffected sections of the mine to proceed to the chain yard for transportation to the surface and then accompanied Mr. Vineyard to the explosion area. At the second door of the 9 left air lock, 3 uninjured men were met and after ascertaining that these men needed no assistance Messrs. Vineyard and Tate proceeded to the explosion area. Numerous trips were made to 10 left by Mr. Vineyard and others, including Mr. George Ferguson, assistant superintendent, who had joined the rescue party. The air-lock doors were opened by Mr. Tate during the early recovery operations to permit fresh air to enter the 9 left entry and facilitate the recovery work. During succeeding manoeuvers, all of the living persons were assisted to the lower chain yard for transportation to the surface.

Messrs. Ferguson and Vineyard made another inspection of the explosion area after the survivors were removed, counted 14 dead men, and reported the area free of gas and fires. About this time Mr. William Goodwin, safety director, and Mike Loebler, Jr., mine foreman, arrived and they explored the affected area.

According to reports, Mr. Ferguson then suggested that the air-lock doors at the entrance to 9 left be closed and a curtain be erected at the entrance to 9 left slope in order to partially restore normal ventilation and expedite recovery of the bodies from the explosion area. This work was accomplished and sometime during this period Messrs. E. J. McCrossin, Chief, Alabama Department of Industrial Relations, Staples Bailey, chief inspector, Woodward Iron Company, C. E. Saxon, Bureau of Mines, Milton Ferguson, deputy sheriff Jefferson County, and others joined the party. Reportedly some discussion took place and the party, 17 in all, proceeded through the air-lock doors to 9 left slope. Several men were left between the air-lock doors, Mr. Joe Melton, company safety inspector, being one of those left.

According to Mr. Vineyard, 5 flame safety lamps were left at the entrance to 9 left slope and 7 of the party were asked to remain at this point.

Messrs. Goodwin, McCrossin, Bailey, Loebler, Neal, Nail, George Ferguson, William Ferguson, Saxon, and Vineyard passed through the temporary brattice-cloth stopping and proceeded inby along 9 left slope. About 2-percent methane was encountered along the slope, but the party proceeded into 10 left entry. The group had reached a crosscut driven to the right off the No. 1 room and apparently were discussing their next move when the second blast occurred. The forces of this blast extended through the entire area previously traversed by the first explosion, and the flame extended into the 9 left entry burning the seven men left at the entrance to the 9 left slope. The force of the blast opened the air-lock doors and moved some of the persons near the doors, however, no serious

injuries were received by those at the air-lock doors. These doors were propped open by Joe Melton as soon as he recovered from the temporary shock of the blast.

Mr. Melton proceeded to the telephone to inform the surface personnel about the second explosion and then assisted the survivors emerging from the explosion area to the main slope bottom or lower chain yard. Fourteen, or all but three (Messrs. George Ferguson, William Goodwin, and C. E. Saxon) made their way unassisted from the scene of the explosion to the air-lock doors at 9 left junction. Some of the survivors were assisted from this point to the chain yard.

Messrs. Bradford and Stahl arrived at the mine about 12:15 a.m., or about 25 minutes before the second explosion occurred. They immediately, upon arrival, announced their presence to Mr. H. W. Horton, general superintendent, and H. J. Gentry, chief State mine inspector, and were told to await information from underground. A few minutes later a telephone message announced the second explosion and the fact that the rescue party was trapped and assistance was needed. The slope train emerged from the portal and rescue equipment and first-aid supplies were loaded in the cars at once. E. B. Watt, superintendent Sayreton Nos. 1 and 2 mines, Dr. Roundtree, company physician, W. J. Bailey, superintendent Sayre mine, Bradford and Stahl, Bureau of Mines, and others boarded the train and were lowered into the mine. Ropes were shifted at an underground hoist station, since two hoists are used to lower the cars from the surface to the lower chain yard near the intersection of 9 left and the main slope.

Upon arrival at the lower chain yard, a trainload of injured men were noted awaiting removal to the surface. Messrs. Watt and Bailey left the party at once without informing anyone of their intentions, and proceeded into 9 left. While Bradford and Stahl were trying to secure information concerning conditions and where the affected area was located, Staples Bailey appeared. Mr. Bailey was severely burned and the assistance of Bradford and Stahl was enlisted by the doctor. Only seconds later Messrs. McCrossin and Loebler appeared. These men, being severely burned, were made as comfortable as possible and loaded in the slope train. While this was being done, Mr. Bradford walked toward what appeared to be the entry from which the men came, and was hailed by Messrs. Watt and Melton, who were bearing Mr. Saxon on a stretcher. Mr. Bradford assisted these men to the chain yard and Mr. Saxon was loaded in a slope train for transportation to the surface.

During this procedure, Mr. H. J. Gentry, chief State mine inspector, R. B. Perry, mining engineer, Republic Steel Corporation, Arthur Crane, Dabney Kemseur, and J. H. Chapman, state mine inspectors, and others arrived at the underground station near 9 left.

A short conference was held and preliminary recovery plans made. It was decided that any further manipulation of the ventilating apparatus would be dangerous and that the safest apparent procedure was to leave the air-lock doors open, thus short-circuiting the major portion of the

air current from the affected area. Mr. Gentry asked Stahl to direct operations and Bradford to assume charge of the mine rescue apparatus and crews.

A volunteer exploration party was formed, equipped with gas masks, flame safety lamps, and carbon monoxide detectors, and assigned certain definite areas to explore. R. E. Perry had charge of the exploration party. During the exploration several small fires were found and extinguished. When all concerned were reasonably sure that no fire remained in the area, stretcher crews were organized and the fifteen bodies recovered from the explosion area. The last victim was sent to the surface about 6:00 a.m., August 29, 1943.

All rescue equipment was gathered and loaded in cars, and the remaining recovery men boarded the same train which arrived on the surface about 7:30 a.m.

All operations ceased until about 2:00 p.m. Sunday afternoon, when a group of officials was sent underground to make an inspection of the affected section, and assure that no fire remained in the area, because considerable methane was found while the bodies were being removed. During this inspection, a small fire was discovered and extinguished.

The most likely conclusion concerning the origin of the first explosion is drawn from the testimony of a motorman in the affected area when the explosion occurred. According to this motorman, a fall of rock occurred in the pillar area, followed a few seconds later by the explosion. A cable-reel locomotive was in operation at the time with the cable nip resting on the trolley wire. An arc caused by the cable nip sliding along the wire could have ignited methane forced from the caved area by the fall of rock. However, definite knowledge of the ignition source has not been advanced and the operators of the cable-reel locomotive in question are not in fit physical condition to be interviewed at present.

The consensus of opinion is that the second blast originated at the entrance of No. 7 room off 10 left entry where an overall jacket was completely consumed. This jacket might well have been ignited during the first blast and remained in a smouldering condition, which was unnoticed by the exploration parties after the first explosion. Methane was present in a crosscut opposite this point after the second explosion and was issuing from this point during the investigation. Explosive mixtures of methane could be detected within 25 feet of the jacket. Any change in the coursing of the air would have a tendency to force the gas toward the jacket which was the closest fire to the impounded methane. However, other fires in the affected area could have ignited the methane, which undoubtedly accumulated in the workings during the door manipulations prior to the second explosion.

Any of the electrical equipment would ignite gas being open-type and containing defective wiring and cable splices, but indications are that the cable-reel nip was the most likely source since the motorman was definite in his statement that the explosion originated in the vicinity

of this locomotive. Apparently the only other machine in operation at the time was another cable-reel locomotive in the 10 left entry, but this survivor states that no flame was observed in the vicinity of the 10 left entry locomotive.

Further study and possible interviews with survivors when they recover may make it possible to state definite ignition points, but unless this procedure throws more light on the subject, only suppositions may be made since the second explosion obliterated evidence left by the first.

The State of Alabama, Department of Industrial Relations, Division of Safety and Inspection was represented by E. J. McCrossin, Chief, (deceased), H. J. Gentry, chief mine inspector, and Dabney Ramseur, O. H. Youngblood, J. H. Chapman, A. G. Crane, and F. L. Keeton, state mine inspectors.

The Bureau of Mines representatives included D. J. Parker, C. E. Saxon (deceased), J. B. Benson, H. E. Smith, R. D. Bradford, and R. W. Stahl.

The Bureau representatives hereby acknowledge the courtesies extended by the State of Alabama, Department of Industrial Relations, Division of Safety and Inspection, officials of Republic Steel Corporation, and mine rescue teams from neighboring mines.

The majority of the following suggested changes seem mandatory before operations are resumed, and the others listed are deemed necessary to assure safe operations.

RECOMMENDATIONS

1. The ventilation system of the entire mine should be revamped and several independent air splits made. The 9 left slope section should be ventilated with a separate split of air coursed through the 9 left haulageway and independent of other sections of the mine. Additional air splits are also necessary to effectively ventilate and isolate other working sections from pillared and caved areas.

2. In no case should air which has passed through abandoned areas or caved places be used to ventilate active working sections. Air containing methane, as was the case in this mine, should never be coursed through working places where nonpermissible electrical equipment is operated.

3. Nonpermissible equipment should not be operated in air which is likely to contain methane.

4. All accessible portions of caved areas and abandoned workings should be carefully inspected for methane at least daily, and when methane is detected operations should be stopped in the affected area and the gas removed regardless of the location or quantity before operations are resumed.

5. Positive ventilating pressure should be maintained against all gob or caved areas from the working area side, and a negative pressure maintained by means of bleeder entries around the caved area so that it is not possible for explosive gas to be impounded in caved sections.

6. All haulageways should be ventilated with intake air.

7. Methane readings should be made in the return air from all splits at least weekly, and when the methane in the return air exceeds 0.5 percent, the quantity of air passing through the section should be increased immediately.

8. The accumulations of coal dust should be removed from the entire mine and the mine thoroughly rock-dusted. Rock dust should be distributed as the places are advanced and the incombustible content of the mine dust maintained in excess of 65 percent plus 1 percent for each 0.1 percent methane in the ventilating current. With the present system of operations, each working place should receive an application of rock dust each week with a high-pressure rock-dust distributor. This system would permit effective rock-dusting to be maintained within 40 feet of the working faces at all times. Hand distribution of rock dust as the places are advanced should not be considered permanent protection and preclude machine distribution of rock dust.

9. The present dust-allaying apparatus is ineffective and should be altered to provide a major degree of protection from possible coal-dust ignitions. Effective water sprays, not just hose streams, should be installed on the mining machines so that a finely divided spray is directed near the source of dust formation. Similar sprays should be attached to the coal-loading machines and the coal faces should be wet before blasting, and the coal pile wetted before loading.

10. The electrical equipment should be repaired; all bolts missing from controller and resistance compartments replaced, inspection covers replaced, and the wiring repaired. Covers of locomotive controllers should be repaired or replaced and fuse protection provided for all equipment.

11. The trailing cables should be repaired and all splices effectively insulated. Cable nips, equipped with fuses, should be used instead of the present hook-type wire nips.

Respectfully submitted,

R. W. Stahl

R. W. Stahl,
Coal Mine Inspector.

R. D. Bradford

R. D. Bradford,
Coal Mine Inspector.

Charge to the account of _____ $_____

CLASS OF SERVICE DESIRED			
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NEWCOMB CARLTON, CHAIRMAN OF THE BOARD
J. C. WILLEVER, FIRST VICE-PRESIDENT

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WANT A REPLY?
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Birmingham, Ala.
9-7-43

Bureau of Mines

With the death of one additional victim Monday total dead resulting from Sayreton No. 2 mine explosion reached 25. Of the 18 remaining in hospital 3 or 4 were reported in a critical condition. Washington notified.

Parker

Recd. and phoned 9-7-43 at 8:31 a.m. by RB

~~Mr. Denny~~

cc Miss Shoup

Birmingham 3, Alabama
September 7, 1943

Mr. John E. Jones
Ambassador Hotel
Washington, D. C.

Dear Mr. Jones:

We have assurances that Sayreton No. 1 mine, Republic Steel Corporation will resume production September 8.

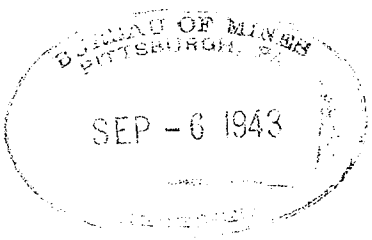
Maps which you requested, of Sayreton No. 1 and 2 mines, by wire, will be forwarded to you as soon as available.

Very truly yours,

D. J. Parker

ep
cc: Mr. Harrington
Mr. Denny

Birmingham 3, Alabama
September 4, 1943



Mr. D. Harrington
Bureau of Mines
Washington 25, D. C.

Dear Mr. Harrington:

In accordance with Mr. Forbes' instructions, Messrs. Stahl and Bradford have prepared "preliminary account of events incident to the double explosion at Sayreton No. 2 Mine, Republic Steel Corporation, Sayreton, Alabama." Enclosed you will please find triplicate copies of this report, one of which is for Mr. Forbes.

The regular preliminary report is now in course of preparation and will be forwarded to you immediately upon completion. The final report will be completed at the earliest date possible.

Very truly yours,

D. J. Parker

DJP/cw
cc: Mr. Denny

Birmingham, Alabama
September 4, 1943

BUREAU OF MINES PITTSBURGH, PA SEP - 6 1943 RECEIVED

Preliminary account of events incident to the double explosion at Sayreton No. 2 mine, Republic Steel Corporation, Sayreton, Alabama.

An explosion occurred in the 9 left slope section of the Sayreton No. 2 mine about 10:10 P.M. August 28, 1943. A second blast occurred in the same area about 12:40 P.M. or approximately 2-1/2 hours after the first was reported.

The following account is based larely upon incomplete evidence gleaned from conversation with persons in and near the affected area and the obversations made in a partial investigation conducted after the blast.

At the time of the explosion, the mine was being worked according to the regular procedure with the ordinary complement of employees and equipment.

The area being worked consisted of one entry and companion airway from which rooms were turned from both the entry and air course. As soon as the rooms were completed, pillars were extracted including the entry pillars on full retreat. The machinery in use consisted of one track-mounted arcwall cutting machine, two track-mounted mobile loading machines, one hand-held electric drill and two cable-reel locomotives. Some of this equipment was permissible type but at the time of inspection was not maintained as such. Bolts were missing from electrical compartments, inspection covers were missing and numerous defective cable splices and wiring connections were evident. Trolley wire was installed in both the entry and air course and trolley locomotives moved cars from this section to the slope sidetrack.

The main ventilating current is split near the face of the main slope with one portion being conducted through active workings on the right side of the mine. The other split of air passes through the 14 right (an active section), thence through 13 right off 9 left slope where a secondary split is effected. (This air when measured Tuesday, August 30, 1943, was as follows: Volume 46,800 CH_4 content 0.54 percent W-8 methane detector reading - Bottle samples were taken to verify detector reading.) A portion of this quantity of air passes through a caved area, thence to the main return airway while the remainder is conducted through abandoned places, along the edge of pillar falls to the active working section off 9 left slope. This methane-contaminated air is passed through the working places where the numerous ignition sources are present, then through the trolley locomotive haulageway and is deflected into the return airway by a single door. Air-lock doors are installed several hundred feet outby near the junction of 9 left and the main slope. If the single door at the junction of 9 left and 9 left slope were left open the only effect would be to permit a more direct course for the air to the main return airway and the exposure of more trolley haulage to return air. Thus methane-laden air was used to ventilate a section where methane was being liberated and in which numerous ignition sources were present.

C. W. Roleof
M. E.

Some rock dust had been distributed in the affected area but large accumulations of coal dust were present throughout the active working section. Presumably only a small quantity of rock dust was distributed and in no place did the rock dust in place appear adequate to prevent a coal dust ignition. Dust samples were collected to verify the visual observation.

Story of Recovery Operations

Mr. D. J. Parker, supervising engineer, District D, was informed of the explosion about 11:15 P.M. August 28, 1943, and he in turn immediately instructed Mr. G. E. Saxon to proceed to the scene of disaster with the mine rescue equipment. Messrs. Stahl and Bradford were informed about 11:20 P.M. and they also proceeded to the mine.

Mr. Saxon arrived at the mine about 11:30 and went underground soon thereafter.

According to reports, numerous visits had been made to the explosion area by mine officials and employees prior to Mr. Saxon's arrival. Injured men had been removed and the area explored. According to one statement, the air-lock doors at the entrance to 9 left had been opened for a period of time and then closed. Such manipulation of the doors would materially effect air circulation in the explosion area. When the doors are open, a greater portion of the air would pass direct to the main return airway thus creating a negative pressure and cause the gas impounded in caved areas to flow into the section. When the doors were closed, the gas would then be distributed through the section. Messrs Saxon and E. J. McCrossin, chief, State of Alabama Department of Industrial Relations, Division of Safety and Inspection, having arrived at the entrance to 9 left (air-lock doors) found the doors closed according to Joe Melton, safety inspector, who had been instructed to remain at the doors. According to Mr. Melton, Messrs Saxon and McCrossin were informed about some of the previous events and probably anticipating that all was well and knowing that Messrs Goodwin, Ferguson and others (company officials) were in the explosion area, proceeded to these men at once.

Mr. Melton said that he was observing the procedure so far as possible from his station near the inby door of the air lock. About 15 minutes after Messrs Saxon and McCrossin's lights disappeared from view in 9 left slope, a second explosion occurred. The force opened the air-lock doors and moved Mr. Melton several feet outby along the entry. As soon as Mr. Melton recovered from the temporary shock caused by the blast, he propped the air-lock doors in the open position and then telephoned to the surface for assistance since most of the recovery party were injured or killed by the second explosion.

After calling the surface, Mr. Melton assisted the injured men who were emerging from the explosion area to the slope sidetrack.

Messrs. Bradford and Stahl arrived at the mine a few minutes before the second blast occurred. They were informed by Mr. Gentry, State mine inspector to await information from underground. Only a few minutes later the news of the second explosion was announced and the slope train was hoisted to the surface. Emergency equipment was loaded hurriedly and Mr. Watt, superintendent of Sayreton Nos. 1 and 2 mines, Dr. Roundtree, company physician, William Bailey, superintendent Sayre mine, Republic Steel Corporation, Messrs. Bradford and Stahl and others boarded the train and were lowered into the mine. Some time was used in this trip because two hoists are used, one installed along the slope and a wrecked car had been left inby the underground hoist.

Upon arrival at a dispatcher's station a few hundred feet outby the 9 left entry, several injured men were found awaiting transportation to the surface. Messrs. Stahl and Bradford were at a loss as to the location of the explosion area since Messrs. Watt and Bailey had gone to the area without informing anyone of their intentions. While trying to ascertain where to go or what was being done Staples Bailey, safety engineer, Woodward Iron Company, arrived at the station having made his way unassisted from the explosion area. He was severely burned and the doctor asked for assistance which was rendered by Bradford and Stahl. A few minutes later E. J. McCrossin, Chief, State Department of Mines, and Mike Loebler, Jr., mine foreman arrived at the station on foot. They were also severely burned. These men were made as comfortable as possible and loaded in mine cars for transportation to the surface.

Messrs. Bradford and Stahl then proceeded to gain information as to where the explosion area was and Mr. Bradford walked down the slope a few hundred feet. A company employee following informed him that he should turn left and this he did. He had proceeded only a short distance when he was hailed by someone inby in the 9 left entry. Mr. Bradford and the employee rushed to the person who had hailed them and found Messrs. Watt and Melton bearing Mr. Saxon on a stretcher. Mr. Saxon was burned severely and was immediately, after a short examination by the doctor, sent to the surface.

Mr. Gentry and other State mine inspectors had arrived underground during these maneuvers and he asked Mr. Bradford to assist in assembling the rescue equipment and fitting the crews. Stahl was asked to direct the procedure from the fresh air base and a crew headed by Robert Perry, mining engineer, Republic Steel Corporation, was equipped with gas masks and directed to explore a certain portion of the affected area. Several small fires were discovered and extinguished with rock dust and water before a complete survey was completed. As soon as the entire area was explored and reported free of fires, the 15 bodies were removed from the explosion area.

During the removal of the bodies, methane in explosive concentrations, was detected in the working places and the volume of methane was increasing rapidly abetted however by the limited quantity of air reaching the working section. It was not considered safe to reestablish ventilation with a possible undiscovered fire in a caved area. The last bodies were sent to the surface about 6:00 a.m. Operations were then suspended except for fire bosses to patrol the area for undiscovered fires until it was deemed safe

to reestablish the ventilation sufficiently to make an investigation.

The damage to the mine was slight consisting of the demolition of a few wooden doors and gob-wall stoppings, plus the distribution of debris (waste material and posts) through the section. The machinery was not damaged.

Several changes, however, appear mandatory before operations are resumed, such as:

1. Revamping of the ventilating system: several additional splits of air.

2. Removal of coal dust from the affected area.

3. Repair of defective electrical equipment.

4. Changes in the water spray system.

5. Complete and thorough rock dusting of the entire mine.

This account of the disaster is subject to revision concerning the time, the persons in each exploration party after the first explosion and other details pertinent to the recovery work performed between explosions because the authors were not present until shortly before the second explosion occurred and exact details have not been available because of the many casualties to relatives of the best informed persons and the critical condition of some of the victims. When all accounts can be scrutinized, weighed and correlated an accurate report will be submitted. However, the information concerning the ventilating system, condition of the electrical equipment, dust-allaying procedure and rock-dusting practices is correct being gathered from actual observation of conditions.

Respectfully submitted,

R. D. Bradford

R. D. Bradford,
Coal Mine Inspector.

R. W. Stahl

R. W. Stahl,
Coal Mine Inspector.

PROGRESS REPORT ON PROPOSED CHANGES IN VENTILATION IN SAYRETON NO. 2 MINE REPUBLIC STEEL CORPORATION, SAYRETON, ALABAMA

A conference was held at Sayreton on September 2, 1943 and the conferees included: officials of the Republic Steel Corporation; members of the State of Alabama, Department of Industrial Relations, Division of Safety and Inspection; two members of the Health and Safety Division of the Solid Fuels Administration, and representatives of the U. S. Bureau of Mines. The conference was called to outline proposed changes in the ventilation system in Sayreton No. 2 mine.

At this conference, it was mutually understood that the ventilation of the main slope and right side of the mine would be changed from two to four splits, thereby ventilating each of the four sections on the right side of the main slope with a separate split of air, with the haulage roads in intake air. A separate split was also to be provided for the 9 left slope section.

On September 13, 1943, a joint inspection, to determine the results of the changes made to date, was made by representatives of the State Department of Mines, officials of the company, the employees safety committee, and members of the Bureau of Mines.

The proposed changes in the 9 left and the 9 left slope sections are still not complete and this area was not included in the joint inspection.

The main-slope section was formerly ventilated with the return air current from 13 right slope, but this procedure has been changed so that the main slope section is on a separate split.

Approximately 52,000 cubic feet of air a minute is entering the main slope section. The air current travels via the haulageway to the face of No. 1 heading, where approximately 4,800 cubic feet of air a minute is passing through the last open crosscut between the Nos. 1 and 2 headings. From No. 2 heading, the air current passes through the last open crosscuts to No. 6 heading. Air measurements show that approximately 16,000 cubic feet of air a minute is passing through the last open crosscut between Nos. 5 and 6 headings. Gas tests made with a permissible methane detector reveal that the air current immediately outby the last working place of the main slope section contains 0.20 percent methane. The return air current from the main slope section travels in the same manner as formerly; that is, through the No. 6 heading adjacent to the boundary line, thence through old worked-out and abandoned areas on the left of the main haulage slope, and through 9 left slope section, thence to the fan.

Air measurements taken in the main slope split return, opposite 14 right, show that approximately 42,000 cubic feet of air a minute is passing this point. Gas tests made with a permissible methane

indicator in the main-slope-split return, reveal that the main slope return contains 0.18 percent methane. Permissible methane indicator readings taken in this return prior to the change in ventilation revealed that the air current contained as much as 0.50 percent methane.

The proposed overcast on 13 right near the main slope has been completed. A volume of 82,422 cubic feet of intake air a minute is passing in the haulageway at this point and this volume of air is being used to ventilate the 13 and 14 right slope sections by separate splits; the splits being effected in the 13 right slope.

From the total volume of 82,422 cubic feet, 35,401 cubic feet is entering the 14 right slope section and the remaining air is being circulated through the 13 right slope split. The return air from the 13 right section is coursed over the newly-constructed overcast, through the abandoned workings from 12 to 8 right, thence over the overcast at 7 right to the fan. An attempt was made to measure the volume of air in the last open crosscut from the face between Nos. 1 and 2 air courses 13 right slope, but the velocity was too low to obtain a reading with an anemometer. A reading was then made inby the line curtain in No. 2 air course which showed 4,640 cubic feet of air passing.

Only one line of permanent stoppings is being constructed in the 13 right slope entries; these stoppings are installed in the crosscuts between Nos. 3 and 4 air courses, and are not completed promptly as the passageways are advanced. As many as three and four crosscuts from the working faces are closed with temporary stoppings of brattice cloth, resulting in short-circuiting of the air current before it reaches the farthest inby points.

The total volume in the return from the 13 right, as shown by measurements taken at the 13 right overcast, is 30,550 cubic feet of air a minute. These readings indicate that the intake air is being short-circuited into the return airway before reaching the active workings.

The proposed changes in the 14 right slope and 8 right slope were to ventilate each section with a separate split. The return from 14 right section to be coursed through the 11 right slope entries to the overcast in 7 right; and from this overcast through the old workings to the fan.

The proposed plan included that the 8 right section be ventilated with a separate split by coursing the intake air through the 7 right haulageway; the return air to be coursed into old workings, thence to the fan, by making connections through two rooms between 7 and 8 right.

Other than effecting the separate split for intake air into the 14 right section, no changes have been made in 14 and 8 right sections. The return air from the 14 right slope section remaining the same as

before the proposed change is still being used to ventilate the 8 right section and is returned through the 7 right haulageway.

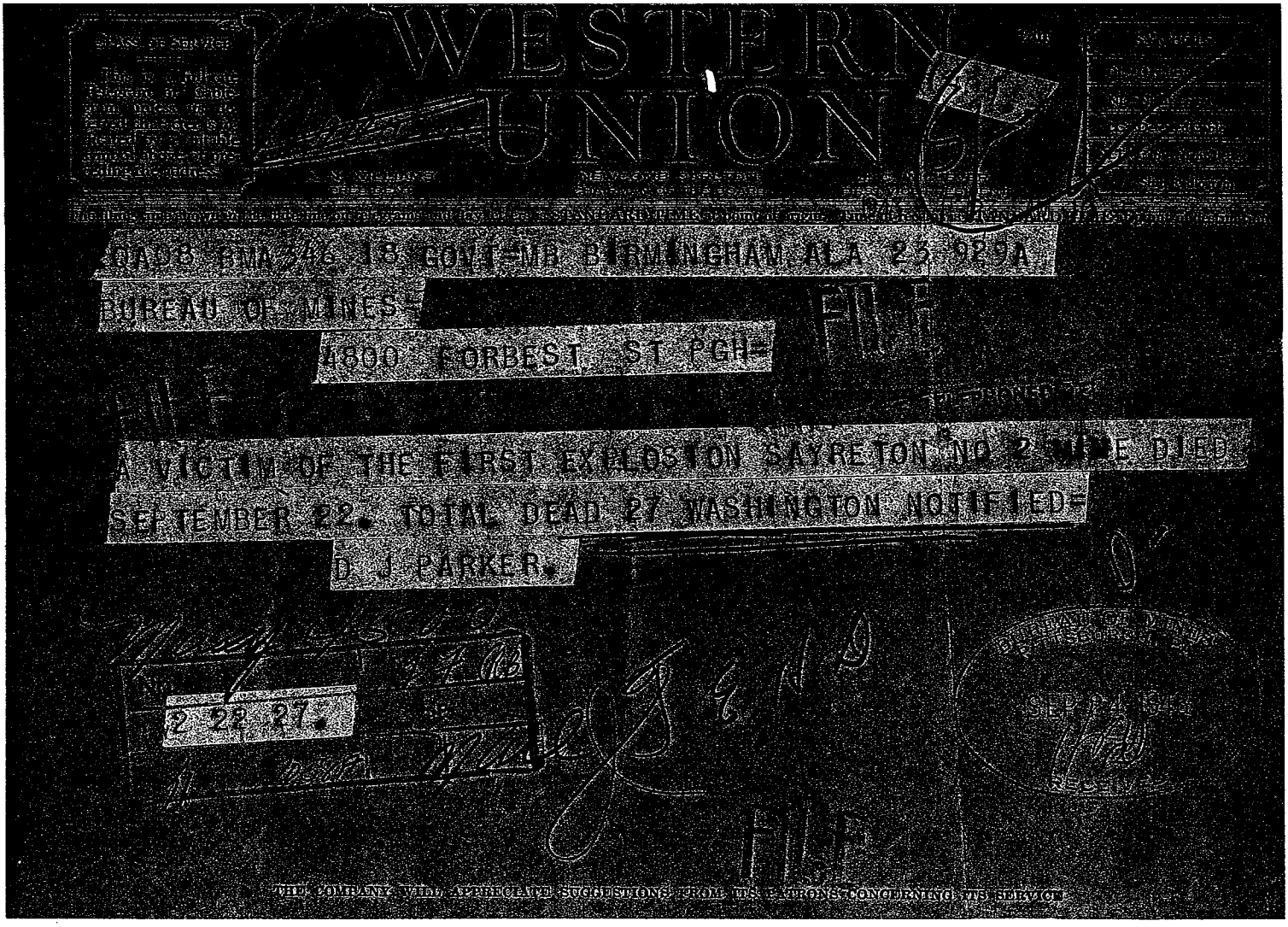
Respectfully submitted,

H. N. Smith

H. N. Smith,
Coal Mine Inspector.

Jas. B. Benson

Jas. B. Benson,
Coal Mine Inspector.


WESTERN UNION
1 DA 58 BMA 246 18 GOVT=MB BIRMINGHAM ALA 23 922A
BUREAU OF MINES=
4800 FORBES ST PGH=
A VICTIM OF THE FIRST EXPLOSION SAYRETON AND 2 MORE DIED
SEPTEMBER 22. TOTAL DEAD 27 WASHINGTON NOTIFIED=
D J PARKER.
2 22 27.
SEP 23 1927
RECEIVED

Dale

STANDARD FORM No. 14
APPROVED BY THE PRESIDENT
MARCH 10, 1926

WESTERN UNION

TELEGRAM

OFFICIAL BUSINESS—GOVERNMENT RATES

FROM D. J. Parker, Supervising Engr., Dist.

BUREAU of Mines, Birmingham, Alabama

CHG. APPROPRIATION Night Letter

U. S. GOVERNMENT PRINTING OFFICE 10—1723

BUREAU OF MINES
PITTSBURGH, PA
SEP - 9 1943
RECEIVED

Birmingham, Alabama, September 6, 1943

Bureau of Mines
4800 Forbes Street
Pittsburgh, Pa.

Sayreton No 2
Explosion

With the death of one additional victim Monday, the total dead resulting from Sayreton No. 2 mine explosion reached 25. Of the 18 remaining in hospital three or four were reported in a critical condition. Washington notified.

PARKER

Confirmation ✓

Phoned Western Union 8:18 p.m., 9/6/43

Charge to the account of

CLASS OF SERVICE DESIRED			
DOMESTIC		CABLE	
TELEGRAM		ORDINARY	
DAY LETTER		URGENT RATE	
SERIAL		DEFERRED	
OVERNIGHT TELEGRAM		NIGHT LETTER	
SPECIAL SERVICE		SHIP RADIOGRAM	

WESTERN UNION

1206

CHECK

ACCOUNTING INFORMATION

TIME FILED

A. N. WILLIAMS
PRESIDENT

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEVER
FIRST VICE-PRESIDENT

Send the following telegram, subject to the terms on back hereof, which are hereby agreed to

WANT A REPLY?
"Answer by WESTERN UNION" or similar phrases may be included without charge.

Birmingham, Ala.
9-16-43

Mr. Denny

Another victim of second explosion Sayreton No. 2 mine died September 15. Total dead 26. Washington notified.

D. J. Parker

Recd. and phoned 9-16-43 at 3:24 p.m. by RB

Mr. Denny
~~[illegible]~~

CLASS OF SERVICE

This is a full rate telegram or cable-gram unless its deferred character is indicated by a suitable symbol above or preceding the address.

WESTERN UNION

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

A. J. WILLIAMS
PRESIDENT

J. C. WILLEVER
FIRST VICE-PRESIDENT

SYMBOLS

DL = Day Letter
NL = Night Letter
LC = Deferred Cable
NLT = Cable Night Letter
Ship Radiogram

The 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

QB 90 BMB 365 17 GOVT=MB BIRMINGHAM ALA 16 1511
1943 SEP 16 PM 3 12

BUREAU OF MINES=
4800 FORBES ST PGH=

ANOTHER VICTIM OF SECOND EXPLOSION SAYRETON NO. 2
MINE DIED SEPTEMBER 15. TOTAL DEAD 26. WASHINGTON NOTIFIED
=D J PARKER.

2 15 26.

BUREAU OF MINES
PITTSBURGH, PA.
SEP 16 1943
RECEIVED

WESTERN UNION

QA7 BMC 96 41 GOVT=MB BIRMINGHAM ALA 2 311P

PU S BUREAU OF MINES=

4800 FORBES ST PGH=

DUPLICATE OF TELEPHONED TELEGRAM

SEP 2

TWO ADDITIONAL DEATHS REPORTED RESULTING FROM SAYRETON NO 2 MINE EXPLOSION. TOTAL DEAD 24 - JONES AND COMBS REPORTED MINE THIS MORNING. CONFERENCE HELD WITH COMPANY OFFICIALS STATE AND BUREAU REPRESENTATIVES PARTY PROCEEDED INTO MINE THIS AFTERNOON TO COMMENCE INVESTIGATION. WASHINGTON NOTIFIED= PARKER.

Reasons

BUREAU OF MINES

No 24

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

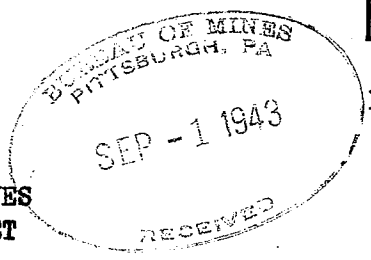
STANDARD FORM No. 14
APPROVED BY THE PRESIDENT
MARCH 10, 1926

POSTAL
TELEGRAM

OFFICIAL BUSINESS—GOVERNMENT RATES

FROM D. J. Parker, Supervising Engineer
BUREAU of Mines, Birmingham, Alabama
CHG. APPROPRIATION Fast Day Message

U. S. GOVERNMENT PRINTING OFFICE 10—1723



BIRMINGHAM, ALABAMA, AUGUST 29, 1943

U S BUREAU OF MINES
4800 FORBES STREET
PITTSBURGH PA

LOCAL EXPLOSION REPORTED SAYRETON NO. 2 MINE NEAR BIRMINGHAM, REPUBLIC STEEL CORPORATION. TWO MEN SUFFERING FROM BURNS WALKED OUT OF MINE AND 12 MEN UNACCOUNTED FOR IN AFFECTED SECTION. STAHL, BRADFORD AND SAXON ENROUTE. WASHINGTON NOTIFIED.

PARKER

Confirmation
Phoned Postal Telegraph 12:14 a.m., 8/29/43

Charge to the account of

CLASS OF SERVICE DESIRED	
DOMESTIC	CABLE
TELEGRAM	ORDINARY
DAY LETTER	URGENT RATE
SERIAL	DEFERRED
OVERNIGHT TELEGRAM	NIGHT LETTER
SPECIAL SERVICE	SHIP RADIOGRAM

WESTERN UNION

A. N. WILLIAMS, PRESIDENT — NEWCOMB CARLTON, CHAIRMAN OF THE BOARD — J. C. WILLEVER, FIRST VICE-PRESIDENT

CHECK

ACCOUNTING INFORMATION

TIME FILED

Send the following telegram, subject to the terms on back hereof, which are hereby agreed to

WANT A REPLY? "Answer by WESTERN UNION" or similar phrases may be included without charge.

August 31, 1943
10:24 A.M.
Birmingham, Alabama

U. S. Bureau of Mines:

M. S. Bailey, safety engineer, Woodward Iron Co., died this morning from injuries received in second explosion Sayreton No. 2 mine. Total dead 22. Washington notified.

Parker

Recd. and phoned 8-31-43 at 1:45 pm. by ed

Mr. Denny
cc: C. V. Shoup

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

A. N. WILLIAMS
PRESIDENT

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

J. C. WILLEVER
FIRST VICE-PRESIDENT

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0A58 BMB147 26 GOVT=MB BIRMINGHAM ALA 31 1024A

US BUREAU OF MINES=

DUPLICATE OF TELEPHONED TELEGRAM

4800 FORBES ST PGH=

M S BAILEY SAFETY ENGINEER WOODWARD IRON COMPANY DIED THIS MORNING FROM INJURIES RECEIVED IN SECOND EXPLOSION SAYRETON NUMBER 2 MINE. TOTAL DEAD 22 WASHINGTON NOTIFIED

PARKER.

2 22.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

STANDARD FORM NO. 14
APPROVED BY THE PRESIDENT
MARCH 10, 1926

WESTERN UNION

TELEGRAM

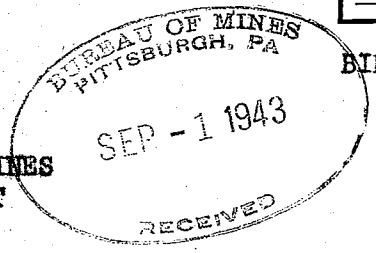
OFFICIAL BUSINESS—GOVERNMENT RATES

FROM D. J. Parker, Supervising Engineer

BUREAU of Mines, Birmingham, Alabama

CHG. APPROPRIATION Fast Day Message

U. S. GOVERNMENT PRINTING OFFICE 10—1723



BIRMINGHAM, ALABAMA, AUGUST 30, 1943

U. S. BUREAU OF MINES
4800 FORBES STREET
PITTSBURGH, PA.

TOTAL DEAD SAYRETON NO. 2 MINE EXPLOSION TWENTY-ONE. SAXON'S FUNERAL WILL BE HELD 4 O'CLOCK WEDNESDAY AFTERNOON AT RIDOUT'S, EIGHT FIFTEEN SOUTH TWENTIETH STREET, BIRMINGHAM. WASHINGTON NOTIFIED.

PARKER

Confirmation ✓
File

WESTERN UNION

QA13 BMA221 37 GOVT=BIRMINGHAM ALA 29 1374

BUREAU OF MINES=

4800 FORBES ST PGH=

SECOND EXPLOSION SATRETON NUMBER TWO MINE KILLED SEVERAL MEN INCLUDING E J MCCROSSIN CHIEF STATE INSPECTOR, C E SAXON WAS INJURED AND IS IN HOSPITAL. TOTAL KNOWN DEAD FIFTEEN INJURED 26 RECOVERY WAS NOT COMPLETED. WASHINGTON NOTIFIED=

PARKER.

26.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Charge to the account of

CLASS OF SERVICE DESIRED	
DOMESTIC TELEGRAM	CABLE
TELEGRAM	ORDINARY
DAY LETTER	NIGHT DAY
SERIAL	DEFERRED
OVERNIGHT TELEGRAM	NIGHT LETTER
SPECIAL SERVICE	AIR DISPATCH

WESTERN UNION

NEWCOMB CARLTON, CHAIRMAN OF THE BOARD

J. C. WILLEVER, FIRST VICE-PRESIDENT

A. N. WILLIAMS, PRESIDENT

Send the following telegram, subject to the terms on back hereof, which are hereby agreed to

WANT A REPLY
"Answer by WESTERN UNI
or similar phrase may
included without charg

Birmingham, Ala.
August 30, 1943

Bureau of Mines

G. G. Saxon died at 1.20 Monday morning, August 30, from injuries received in second explosion, Sayreton No. 2 mine. Washington notified.

Parker

Received and phoned 8/30/43 at 8.30 a.m. by lgf.

Mr. Denny
cc: Miss Shoup

STANDARD FORM NO. 14
APPROVED BY THE PRESIDENT
MARCH 10, 1926

WESTERN UNION

TELEGRAM

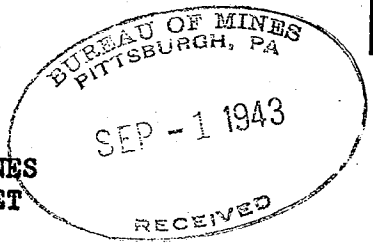
OFFICIAL BUSINESS—GOVERNMENT RATES

FROM D. J. Parker, Supervising Engineer

BUREAU of Mines, Birmingham, Alabama

CHG. APPROPRIATION Fast Day Message

U. S. GOVERNMENT PRINTING OFFICE 10—1723



BIRMINGHAM, ALABAMA, AUGUST 30, 1943

U S BUREAU OF MINES
4800 FORBES STREET
PITTSBURGH PA

C. E. SAXON DIED AT ONE TWENTY MONDAY MORNING, AUGUST THIRTIETH FROM INJURIES RECEIVED IN SECOND EXPLOSION SAYRETON NO. 2 MINE. WASHINGTON NOTIFIED.

PARKER

Confirmation
Phoned Western Union 1:40 a.m., 8/30/43

Charge to the account of ______ $

CLASS OF SERVICE DESIRED	
DOMESTIC	CABLE
TELEGRAM	ORDINARY
DAY LETTER	URGENT RATE
SERIAL	DEFERRED
OVERNIGHT TELEGRAM	NIGHT LETTER
SPECIAL SERVICE	SHIP RADIOGRAM

WESTERN UNION

A. N. WILLIAMS, PRESIDENT — NEWCOMB CARLTON, CHAIRMAN OF THE BOARD — J. C. WILLEVER, FIRST VICE-PRESIDENT

CHECK

ACCOUNTING INFORMATION

TIME FILED

Send the following telegram, subject to the terms on back hereof, which are hereby agreed to

WANT A REPLY? "Answer by WESTERN UNION" or similar phrases may be included without charge.

Birmingham, Ala.
August 30, 1943

Bureau of Mines

[illegible] Saxon No. 2 mine explosion, 21. Saxon's funeral will be held 4:00 Wednesday afternoon at Ridout's, 815 South 20th Street, Birmingham. Washington notified.

Parker

Received and phoned at 3:45 p.m. on 8/30/43 by igr.

[illegible] Danny
[illegible] Miss Shoup

STANDARD FORM No. 14
APPROVED BY THE PRESIDENT
MARCH 10, 1926

WESTERN UNION

TELEGRAM

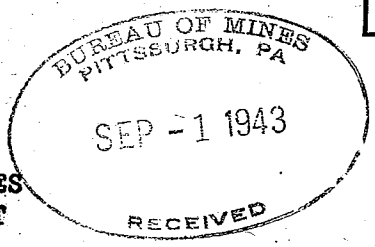
OFFICIAL BUSINESS—GOVERNMENT RATES

FROM D. J. Parker, Supervising Engineer

BUREAU of Mines, Birmingham, Alabama

CHG. APPROPRIATION Fast Day Message

U. S. GOVERNMENT PRINTING OFFICE 10—1723



BIRMINGHAM, ALABAMA, AUGUST 29, 1943

U S BUREAU OF MINES
4800 FORBES STREET
PITTSBURGH PA

RECOVERY WORK COMPLETED SAYRETON NO. 2 MINE. TOTAL DEAD 19. TOTAL INJURED 20. FIRST EXPLOSION AT TEN FIFTEEN SATURDAY NIGHT. SECOND EXPLOSION TWO HOURS LATER. THREE KILLED IN SECOND EXPLOSION INCLUDING COMPANY SAFETY INSPECTOR GOODWIN, MCCROSSIN AND SUPERINTENDENT NO. 2 MINE FERGUSON. SAXON SEVERELY BURNED CONDITION CRITICAL. INVESTIGATION PROBABLY MONDAY. EXPLOSION LOCALIZED, DAMAGE SLIGHT. WASHINGTON NOTIFIED.

PARKER

Confirmation
Phoned Western Union 10:15 a.m., 8/29/43

ANDARD TIME INDICATED
CEIVED AT

TELEPHONE YOUR TELEGRAMS TO POSTAL TELEGRAPH

Postal Telegraph

Mackay Radio
Commercial Cables
All America Cables
Canadian Pacific Telegraphs

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1943 AUG 29 AM 8 33

G. CB31 C. BMB25

LA13BM 36 (FOUR)=BO BIRMINGHAM ALA 29 1235P

1943 AUG 29 AM 5

BUREAU OF MINES 4800 FORBES ST

PITTSBURGH PENN)=

mrl 1145 TO GET DAM
AUG 8-2943

LOCAL EXPLOSION REPORTED SAYRETON NUMBER TWO MINE NEAR BIRMINGHAM REPUBLIC STEEL CORP TWO MEN SUFFERING FROM BURNS WALKED OUT OF MINE AND TWELVE MEN UNACCOUNTED FOR IN AFFECTED SECTION STAHL BRADFORD AND SAXON ENROUTE WASHINGTON NOTIFIED=

PARKER.==

BUREAU OF MINES
PITTSBURGH, PA
AUG 30 1943
RECEIVED

mrl 500

STANDARD FORM No. 14
APPROVED BY THE PRESIDENT
MARCH 10, 1926

WESTERN UNION

TELEGRAM

OFFICIAL BUSINESS—GOVERNMENT RATES

FROM D. J. Parker, Supervising Engineer

BUREAU of Mines, Birmingham, Alabama

CHG. APPROPRIATION Fast Day Message

U. S. GOVERNMENT PRINTING OFFICE 10—1723

BUREAU OF MINES
PITTSBURGH, PA
SEP - 1 1943
RECEIVED

BIRMINGHAM, ALABAMA, AUGUST 29, 1943

U S BUREAU OF MINES
4800 FORBES STREET
PITTSBURGH PA

SECOND EXPLOSION SAYRETON NO. 2 MINE KILLED SEVERAL MEN INCLUDING E. J. MCCROSSIN, CHIEF STATE INSPECTOR. C. E. SAXON WAS INJURED AND IS IN HOSPITAL. TOTAL KNOWN DEAD 15, INJURED 26. RECOVERY WORK NOT COMPLETE. WASHINGTON NOTIFIED.

PARKER

Confirmation
Phoned Western Union 7:30 a.m. 8/29/43

TELEGRAM

Postal

~~Western Union~~

(Name of Company, Western Union or Postal)

TO Bureau of Mines

From Birmingham Ala.
(City)

Aug 29 1943
(Date)

Message reads:

Local explosion reported
Drayton No 2 mine Birmingham ala
Republic Steel corporation 2 men suffering
from burns walked out of mine 12 men
unaccounted for in ~~affected~~ section
Steel Bradford Safety enroute ~~Wash~~ Wash
notified

Received by Myrtle Dodson

At 11:45 am Aug 29.
(Date and hour)

Parker
(Signed).. Name of Sender

TELEGRAM

Western Union
(Name of Company, Western Union or Postal)

TO Bureau of Mines

From Birmingham Ala
(City)

Aug 29 1943
(Date)

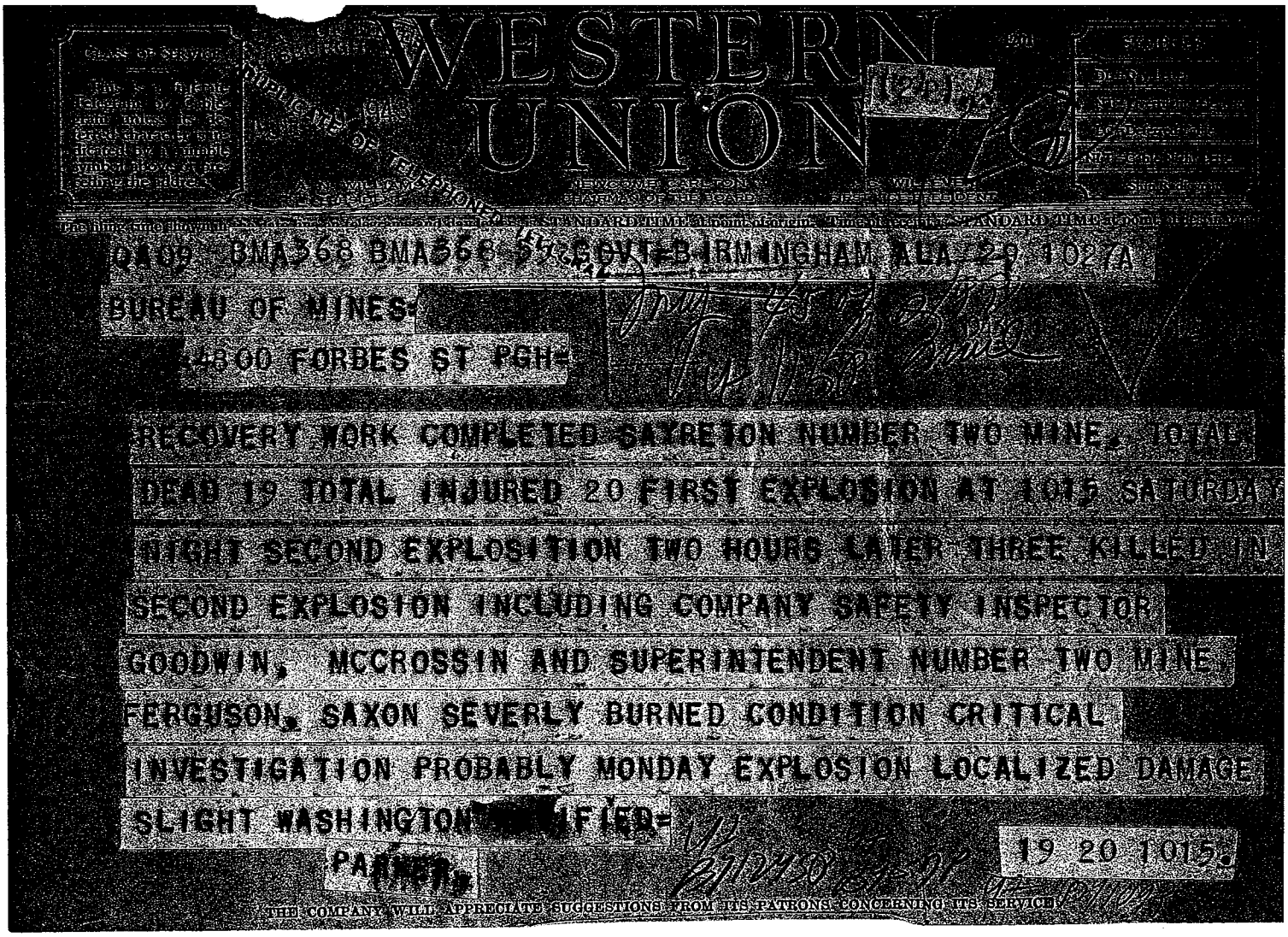
Message reads:

Second explosion Sayreton No 2 Mine
Several men killed including E J McGrossan
Chief State inspector E. E. Sapon was
injured and is in Hospital total known dead
15 injured 26 recovery work not completed ×
Wash Notified

Received by Myrtle Gordon

At Aug 29 9:00 Am
(Date and hour)

Parker
(Signed).. Name of Sender



CLASS OF SERVICE

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PUBLICITY BY TELEPHONE

WESTERN UNION

NEWCOMB CARLTON CHAIRMAN OF THE BOARD

WILLIAM R. WILLCOX PRESIDENT

SYMBOLS

DL = Day Letter

NL = Night Letter

LC = Deferred Cable

NLT = Cable Night Letter

Ship. Rad.

The time shown in the date line is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

QA09 BMA368 BMA366 55=GVT=BIRMINGHAM ALA 29 1027A

BUREAU OF MINES=

4800 FORBES ST PGH=

RECOVERY WORK COMPLETED SAXRETON NUMBER TWO MINE, TOTAL DEAD 19 TOTAL INJURED 20 FIRST EXPLOSION AT 1015 SATURDAY NIGHT SECOND EXPLOSION TWO HOURS LATER THREE KILLED IN SECOND EXPLOSION INCLUDING COMPANY SAFETY INSPECTOR GOODWIN, MCCROSSIN AND SUPERINTENDENT NUMBER TWO MINE FERGUSON, SAXON SEVERLY BURNED CONDITION CRITICAL INVESTIGATION PROBABLY MONDAY EXPLOSION LOCALIZED DAMAGE SLIGHT WASHINGTON [redacted] FIED=

PALMER.

19 20 1015.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

MINE BLAST PROBE WILL START TODAY

21 Dead And 23 Others In Hospitals; Rescue Workers Die

With 21 men dead and 23 others in hospitals, some of them seriously hurt in the two Sayreton Mines blasts of Saturday night, preliminary investigation of the explosion was to start this afternoon Meanwhile, work of cleaning up the interior of the shaft was under way. The mine is owned by the Republic Steel Corp.

C. J. Gentry, state chief mine inspector under E. J. McCrossin, director, who was killed in the second blast while working with rescue crews, said the investigation will start after Mr McCrossin's funeral.

101 In Mine

Of the 101 men in the mine at the time of the blast, all of the dead and injured had been removed yesterday morning with the help of rescue crews and those who escaped.

The first explosion came at 10:20 p. m. The second was at 12:40, and it killed four of the rescue crew, including George T. Ferguson, assistant superintendent of Sayreton No. 2 mines.

Company deputies, highway patrolmen, county deputies, and Birmingham police handled the crowds at the mine.

Police Commissioner Eugene Connor and Acting Police Chief C. F. Eddins directed local police and yesterday sent two crews to Norwood Hospital and Brown-Service Funeral Home to handle anxious relatives crowding about the places. Saturday night the police radio was utilized to summon additional ambulances.

Deputy Burned

Included in the injured in the rescue work was Milton Ferguson, county deputy, who was burned. Four other rescue workers were hurt.

Clifford E. Saxon, for 20 years with the U. S. Bureau of Mines first aid crews, and Will Neal, section foreman, died at hospitals this morning to bring the toll to 21.

Injured are being treated at Norwood and Jefferson Hospitals.

Following are the dead and injured:

List Of Dead

James Madison McCombs, 2201 35th-av, n, 43, machine runner, married; Woodie Ervin Paucett, Pinson, Route 1, 44, coal driller, married; Amos McGruder, 2032 29th-av, n, 35, motorman, Negro, married; Bud Jones, Birmingham, Route 3, 57, ttimber helper, married; Simon Oldacre, Mulga, 63, rockman, single;

(See Mine, Page Six)

Tragic Blows Hit Family In Sayreton Explosion

A tragic figure of the Sayreton mine blast in which her husband, George T. Ferguson, was killed Saturday night, little more than 48 hours after their daughter, Mrs. Vivian Elizabeth Sullivan, was buried, is Mrs. Elizabeth Ferguson, shown above as she sadly gazes at a picture of her husband, Mr. Ferguson, assistant superintendent of the mine, left a sick-bed to go into the mine with rescue crews where he was killed in a second blast. His nephew, Deputy Sheriff Milton Ferguson, with the same rescue crew, was critically injured.

Pittsburgh, Pa.
February 18, 1944 HJS:FT

Mr. D. J. Parker
Bureau of Mines
1241 Martin Building
Birmingham 3, Alabama

D-2474 Mines

Through: Mr. E. H. Denny

Dear Mr. Parker:

Please refer to my letter dated February 17 in regard to the Explosion Report on Sayreton No. 2 mine, Republic Steel Corporation.

I find that I was in error in the second paragraph of this letter in speaking of this report as a "published (confidential) report." Inasmuch as this is a published public report, care was exercised that nothing in the text was changed except the references to appendices to take care of the elimination of one mine map as explained in the previous letters of February 11 and 17.

Changes in lettering on the maps were necessary to provide legibility when the maps are lithographed for the final publication.

Very truly yours

H. J. Sloman

H. J. SLOMAN
Mining Engineer

cc-D.Harrington
Files

Pittsburgh 13, Pa.
February 17, 1944 HJS:MF

D-2474
Mines

Mr. D. J. Parker
Bureau of Mines
1241 Martin Building
Birmingham 3, Alabama

SUBJECT: Explosion Report on Sayreton No. 2 Mine, Republic Steel Corp.

Dear Mr. Parker:

Thank you for your letter dated February 14, 1944, in reply to our letter of February 11, 1944, and your acceptance of the change in the maps for the final report on Sayreton No. 2 mine explosion.

We neglected to explain that the two maps, Appendices B and C respectively, were being combined for the final mimeographed report. It was necessary to delete information of small or no importance in order to reproduce a map for the published (confidential) report which will be readable.

It is not the intention to change the report except the reference to the Appendices. Appendix B will be combined with Appendix C because the information of both is on the map which you approved, therefore, the text of the report will be altered only to the extent of taking care of the elimination of one map.

We trust that this will clarify the question which your letter indicates, and the modification will not affect your original transmittal to the Republic Steel Corporation.

Very truly yours,

H. J. SLOMAN
For E. H. DENNY

cc-D. Harrington
Files

ADDRESS ALL COMMUNICATIONS TO
THE DIRECTOR, U. S. BUREAU OF MINES
WASHINGTON, D. C.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

February 1, 1944.

BUREAU OF MINES
PITTSBURGH, PA
FEB - 4 1944
RECEIVED

D-2474
Min

Mr. E. H. Denny,
Bureau of Mines,
4800 Forbes Street,
Pittsburgh 13, Pa.

Dear Mr. Denny:

We have just completed the final reading of the Sayreton No. 2 explosion report, Republic Steel Corporation, Sayreton, Alabama, prior to having it mimeographed.

An order is being placed today for cutting the stencils and the mimeograph job. It is presumed that the work will be done in Pittsburgh; and I am calling attention at this time, so that you may get in touch with Mr. Clements, to some changes which should be made in the maps with the sketches which accompany the report. In Appendix B, page 36, the lettering is anything but legible. I think it would be a good idea to look into the possibility of improving on this lettering. In Appendix C, the lettering is fairly good but it too could be greatly improved for legibility.

In all likelihood it will be a couple of weeks before the stencils and the mimeograph job on the report are finished. In the meantime I would appreciate your checking into the above sketches so that they will be in readiness when the report is ready for assembly.

Yours truly,

D. Harrington.
D. HARRINGTON, Chief,
Health and Safety Service.

2/4/44 No copy of report here & negative copy (have ordered photostats & orig maps from Mr. [illegible]) + He found negatives of the sketches prefers to discuss them at your convenience. J.T.

(over)

[illegible] to Clements for [illegible]

FOR VICTORY
BUY
UNITED STATES
WAR
BONDS
AND
STAMPS

File

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES
Birmingham 3, Alabama
February 14, 1944

Air Mail

BUREAU OF MINES
PITTSBURGH, PA.
FEB 17 1944
RECEIVED

Mr. E. H. Denny,
U. S. Bureau of Mines,
4800 Forbes Street,
Pittsburgh 13, Pa.

D-2474

Dear Mr. Denny:

In compliance with your request in letter of February 11, 1944 concerning proposed changes in the disaster report on Sayreton No. 2 mine, this matter was referred to the authors for reply. After checking the enclosed print, they inform me that the change is acceptable if deemed necessary. The reason for this change is not apparent, since the report containing the original photostats and subject matter was transmitted to Mr. W. J. Wysor, president, Republic Steel Corporation and all others concerned on October 29, 1943. A copy of the transmittal letter is filed in this office.

Very truly yours,

D. W. Parker

cc: Mr. Harrington
Files

Pittsburgh, Pa.
February 11, 1944 EHD:FF

AIR MAIL
Mr. D. J. Parker
Bureau of Mines
1241 Martin Building
Birmingham 3, Alabama

D-2474 Sayreton

SUBJECT: Explosion Report on Sayreton No. 2 Mine, Republic Steel Corp.

Dear Mr. Parker:

In reference to the subject report, you furnished us two photostats marked Appendices B and C, respectively, which were quite similar except that the one marked Appendix B covered a little more of the mine territory than Appendix B.

It was necessary for us to delete some of the lettering on the photostats because when reproduced it would be unreadable. The lettering which was deleted was largely information of little or no importance with regard to the explosions, and had it remained on the final drawing it would have interfered with the readability of the important information.

I am enclosing a print of the redrawn mine section which includes everything of importance contained on the photostats marked Appendices B and C. It would, therefore, seem unnecessary to have two drawings showing practically the same things. I am requesting that you examine the enclosed print and would appreciate your reply as to whether or not it would meet with your approval. If you approve of this drawing we will alter the text of the report to take care of the deletion, such as relettering subsequent appendices and altering the text to conform therewith.

Your prompt attention and reply will be appreciated.

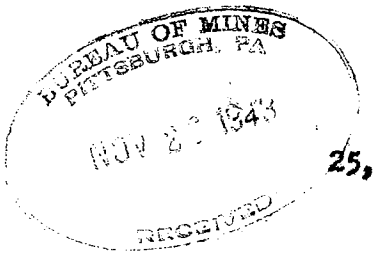
Very truly yours

E. H. DENNY

Encl.

cc-D.Harrington
Files

File



25, D.C. November 24, 1943.

DH:wr

Mr. R. W. Stahl,
U. S. Bureau of Mines,
Birmingham 3, Alabama.

Through: Mr. D. J. Parker.

D-2474

Dear Mr. Stahl:

Your letter of November 4 protesting against the alterations made in the final report on the Sayreton disaster was on my desk upon returning from a 3 weeks trip to the West and the emotional statements contained in your letter lack much of adding to your prestige in this organization.

Alterations thought to be essential to the effectiveness of our reports always have been made in this office (and always will be made as long as I'm in charge), and any person who reads the Sayreton report as transmitted and finds any trace of appeasement in it has a peculiar idea of the term; certainly the mining company will find little of that nature in it.

Very truly yours,

D. Harrington

D. HARRINGTON,
Chief, Health and Safety Service.

cc: ~~Mr. E.H. Denny~~, Pittsburgh, Pa
Safety Division
W. O. Files

Final Report of Mine Explosions
Sayreton No.2 mine, Republic Steel Corp.
at Sayreton, Alabama, Aug.28-29, 1943.

The following changes were made in Mr. Harrington's office before the report was transmitted:

Retyped: Pages 1, 20, 26, 28, 30, 31, and 32, as per copies attached.

Corrections made:

Page 8. Under the heading of "Drainage", the last word of the second line - "dewatering" was changed to "unwatering". Under the heading "Dust", in the fifth paragraph, the words "by the coal dust" following the word "flame", have been deleted.

Page 16. Part of the first paragraph under the heading "Story of The Explosions and Recovery Operations" was deleted. The deleted portion follows: "because the authors did not arrive underground until about 15 minutes after the second explosion."

Page 24. Under the heading "The Point of Origin (Second Explosion)", in the second paragraph, 9th line, the word "possibly" was inserted between "would" and "be" and the word "The" before "negative" was changed to "Such". That line now reads as follows: "pressure would possibly be exerted in the affected area. Such negative pressure along".

Page 29. At the top of the page, the number "10" was changed to "9"; under the heading "Ventilation and Gas" the word "never" in the second line of recommendation 2, has been changed to "not"; the 11th word in the 3rd line of recommendation 5 has been changed from "possible" to "likely"; in recommendation 8, the word "kept" has been inserted in the first line between the words "be" and "removed"; recommendation 9 has been changed to read: "Permanent stoppings between entries should be maintained to within one crosscut of the face to eliminate the excessive use of check curtains.

cc: Safety Division
E.H.Denny, Pittsburgh.
C.W.Owings, College Park.
R. W. Stahl, Birmingham, Ala.
Jas. B. Benson, Birmingham, Ala.
D. J. Parker, Birmingham, Ala.
W. O. Files

BUREAU OF MINES
PITTSBURGH, PA
NOV - 1 1943

R 160
File

25, D. C. October 29, 1943. DH:jmk

Mr. W. J. Wysor, President,
Republic Steel Corp.,
Cleveland, Ohio.

D-2974
Report

Dear Mr. Wysor:

Enclosed is a copy of a report of two explosions which occurred on August 28-29, 1943, in your Sayreton No. 2 mine, Sayreton, Alabama. This investigation was made by R. W. Stahl, coal mine inspector, and Jas. B. Benson, mining engineer, both of the Bureau of Mines. After careful consideration of the recommendations made in the report, it will be appreciated if you will inform us what changes are made in accordance with these suggestions. If there are any errors or misstatements of fact, please call attention to them.

Very truly yours,

D. HARRINGTON, Chief,
Health and Safety Service,
For
R. R. SAYERS, Director.

File

Martin Building
xxxxxxxxxxxx

October 25, 1943

BUREAU OF MINES
PITTSBURGH, PA.
OCT 27 1943
RECEIVED

D-2474
D-Pure

AIR MAIL - SPECIAL DELIVERY

Mr. D. Harrington,
U. S. Bureau of Mines,
Interior Building,
Washington 25, D. C.

Dear Mr. Harrington:

This will acknowledge receipt of your letter of October 23 relative to discrepancies with respect to number of men killed in the two explosions at the Sayreton No. 2 mine. The following is a correct statement of the figures as they now stand.

Page 1, Paragraph 4 - There were 30 men in the area affected by the first explosion: 3 escaped uninjured, 3 were injured and escaped unassisted, 9 were injured and were assisted from the mine (three of these died later), and 15 men were killed outright. The 77 men in the unaffected portion of the mine escaped unassisted. Total number of deaths from the first explosion to date (October 25, 1943) is 18. (Note) F. J. Loggins, trackman, shown in Appendix F, "Men injured (Non-fatal)" died October 23, 1943.

Page 1, Paragraph 5 - About 12:40 a.m., August 29, 1943, or two and one-half hours after the first explosion, a second explosion occurred in the same area, at which time there were 18 members of a rescue party in the affected section. Two men of the rescue party were killed and 16 were injured. Eight of the sixteen injured died after being removed to the hospital. Total number of deaths from second explosion to date (October 25, 1943) is 10.

Total number of deaths from both explosions is now 28.

Very truly yours,

D. J. Parker,
Supervising Engineer, District D

DJP:mw

cc: Mr. Denny

Noted on Card 10/28/43
M. F.

File

Birmingham 3, Alabama,
October 13, 1943.

BUREAU OF MINES
PITTSBURGH, PA
OCT 15 1943
RECEIVED

Mr. D. Harrington,
U. S. Bureau of Mines,
Interior Building,
Washington 25, D. C.

Re Sayreton #2 Explosion

Dear Mr. Harrington:

Enclosed are the original and 9 copies of the final report of the mine explosion which occurred in the Sayreton No. 2 mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama, on August 28-29, 1943, by R. W. Stahl and Jas. B. Benson. Attached are copies of the air and dust analyses reports.

It is requested that a copy of this report be sent to the following:

W. J. Wysor, president, Republic Steel Corporation, Cleveland, Ohio.

E. I. Evans, general manager, Republic Steel Corporation, Gadsden, Alabama.

H. J. Gentry, chief mine inspector, Division of Safety and Inspection, Alabama Department of Industrial Relations, Protective Life Building, Birmingham, Alabama.

Lt. Col. C. P. Noland, Ord. Dept., Chief, Continuous Security Branch, Internal Security Division, Fourth Service Command, Atlanta, Georgia.

Very truly yours,

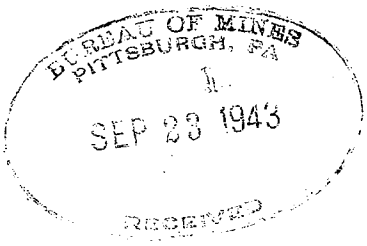
D. J. Parker

DJP:W

Enclosures

cc: ~~Mr. Denny~~
Mr. Owings

File



18 Federal Building
Duluth 2, Minnesota

September 21, 1943

MEMORANDUM TO: Mr. D. Harrington Subject: Sayreton No. 2 Explosion

Unless for some reason prohibited, I would like to read the preliminary and final reports on the Sayreton No. 2 Explosion when available and before the final mimeographed form is distributed.

The information will be treated confidential and the reports returned as designated as soon as read.

FRANK E. CASH

FEC/gs

cc- ~~E. H. Denny~~

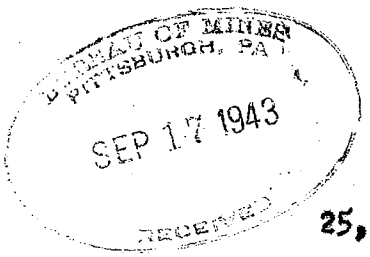
I think that you will agree, in order for the company to carry out all of the recommendations in "toto", in all likelihood this mine would be closed for a considerable period. It is highly important that this mine be put in the safest possible condition and that production of coal be resumed at the earliest possible date.

After you have conferred with the management of this company please write me, sending triplicate copies, of what steps have been taken by the company to comply with the recommendations for making this a safe mine.

Yours truly,

D. HARRINGTON, Chief,
Health and Safety Service.

File



Mr. D. J. Parker,
Bureau of Mines,
Room 1241, Martin Building,
Birmingham 3, Alabama.

25, D. C. September 14, 1943.

JJF:nan

Dear Mr. Parker:

We have just finished reading and studying the preliminary report of the mine explosions at the Sayreton No. 2 mine, Republic Steel Corporation, Sayreton, Jefferson County, Alabama, which occurred August 28-29, 1943, prepared by Messrs. R. W. Stahl and R. D. Bradford.

I think it inadvisable to send this report to the management of this company since it may be necessary to alter some of these preliminary recommendations upon receipt of the laboratory reports on air and dust analyses, and after more careful study of the details of evidence. It is believed a decidedly better procedure would be for you to discuss the recommendations contained in the preliminary report with the management and endeavor to clarify some of these recommendations.

Reference is specifically made to recommendations making it mandatory to use permissible equipment. It is not our desire to imply, in making this statement, that we should not recommend the use of permissible equipment, but it is almost impossible to purchase permissible equipment at the present time and get delivery on it for a period of from six to ten months. It is noted that some permissible equipment was used in this mine in face regions, but apparently, it was not maintained in a permissible condition. The company should use every possible effort to purchase the necessary parts to place this equipment in permissible condition. If this office can be of aid to the company in making application for priority rating in the purchase of parts for permissible equipment, we shall be glad to do so.

As concerns the recommendation for the removal of coal dust accumulations for the entire mine prior to rock-dusting - you and I, of course, know the intent of this recommendation, but I think, here again, you can make it clear to the company that what is intended is the removal from passageways of dust accumulations and other debris, as far as practicable, preparatory to rock-dusting.

Since the primary cause of this explosion was defective ventilation, it is considered highly important that recommendation No. 1 in the preliminary report be carried out so that face equipment will be operated on separate air splits. Mr. Forbes tells me that this recommendation was discussed in detail with the management at a conference held in the mine office of the company, and that the company was impressed with the Bureau's plan of ventilating No. 2 mine, as recommended by our inspectors. In your letter I should like for you to give me the details of the new ventilating plan for No. 2 mine.

cc-D. Harrington
J. J. Forbes
E. H. Denny - Pittsburgh
W. J. Fene
John Jones - Room 3130

Files

File

BUREAU OF MINES
PITTSBURGH, PA.
SEP - 8 1943
LIBRARY

Birmingham 3, Alabama
September 6, 1943

Mr. John E. Jones
Ambassador Hotel
Washington, D. C.

Subj: Sayreton No. 1 Mine
Republic Steel Corporation

Dear Mr. Jones:

In accordance with your request last Saturday, regarding resumption of operations at Sayreton No. 1 mine, I am pleased to advise you that an inspection of the mine is being made this afternoon and if conditions warrant, it is hoped that the mine will be placed in production tomorrow, September 7.

Very truly yours,

D. J. Parker

ep
cc: Mr. Harrington
Mr. Denny

Sayreton Mine In Bad Shape

Washington, Aug. 31.—(UP)—The Sayreton No. 2 mine of the Republic Steel corporation at Sayreton, Ala., where 22 persons were killed in a double explosion Saturday night, was found by Bureau of Mines inspectors last February to be "gassy" and to contain "nonpermissible electrical equipment and bare wires."

Inspection was made under the federal coal mine inspection act which gives the right to enter the mines and make recommendations but contains no enforcement authority. Bureau inspectors, in a preliminary report posted at the mine and a final report submitted recently to the operators, said the mine was liberating methane, an explosive gas, and urged "extreme caution."

No information has yet been received by the bureau, however, which would indicate the cause of the two explosions Saturday night, according to Director R. R. Sayers.

Secretary of Interior Harold L. Ickes revealed today that the new health and safety divisions of his coal mines administration, as well as the Bureau of Mines, had already begun investigations.

Lackawanna

Continued from Page 1

RITES CONDUCTED FOR MINE VICTIM

Funeral services were held today at 9:30 a. m. at St. Paul's Church for Erwin Julian McCrossin, 46, of 3314 Cliff-rd, a victim of the mine explosion, early yesterday at the Sayreton No. 2 mine of the Republic Steel Corp. Father Flynn officiated and burial was in Elmwood Cemetery. Ridout's Brown-Service directed.

Mr. McCrossin, who died while attempting to help rescue men pinned in the mine, was chief state mine inspector. He was the son of the late Edward James McCrossin and Bessie Wilson McCrossin, and was born in Birmingham in 1896. He received his education in the public schools here and was graduated from the University of Alabama's Engineering School in 1920.

He served in World War I as a lieutenant in the Field Artillery. After the war, he was employed by Norton Coal Mining Co., Nortonville, Ky. He then returned to Birmingham and was associated with the Alabama Fuel & Iron Co., and later as chief engineer of the De Bardeleben Coal Corp. He became chief mine and safety inspector with the Department of Industrial Relations under appointment of Gov. Frank Dixon in 1939.

Mr. McCrossin was a past chairman of the American Society of Safety Engineers, an official of the International Association of Mining Engineers, a director of the Birmingham Engineers' Club, state chairman of the National Committee for Conservation of Manpower in War Industries and state mining co-ordinator for war production. He was a member of the Kiwanis Club and the Birmingham Country Club.

Surviving are five sisters, Miss Florence McCrossin, Miss Emee McCrossin, Mis Ireta McCrossin, and Mrs. James B. Garber, all of Birmingham, and Mrs. Thomas J. Hill, Tuscaloosa.

Pallbearers were B. L. Wyman, Dr. J. Sharpe Gillespy, Marcus McClellan, A. Key Foster, H. J. Gentry, Gray Hanlin, Al C. Garber and Henry Perry.

MR. AND MRS. FERGUSON

Tale Of Sorrow, Loyalty, Heroism Comes Out Of Mine Blast

A gripping story of double tragedy for one family, heroism and loyalty of kinship and friendship came out of the Sayreton mine explosion.

George H. Ferguson, 30, assistant superintendent of Sayreton Mine No. 2, where the blast happened, buried his daughter, Mrs. Vivian Elizabeth Sullivan, 25, mother of a three-week-old baby, Thursday afternoon. She died Tuesday afternoon.

Saturday night he left his bed where he had been ordered confined for three weeks following illness and gave over the death of his daughter and went into the mines with rescue crews. He was killed by the second blast in the mine a little more than 48 hours after Mrs. Sullivan's funeral.

Burned Badly

Milton Ferguson, 22, Jefferson County deputy sheriff, brother of Mr. Ferguson and father of the month-old baby, was among the first officers to reach the scene. He went into the mines with his uncle. [illegible] of the victims, being [illegible] friends. [illegible] from his uncle. Deputy Ferguson was a victim of the same blast and is at Hillman Hospital in critical condition from burns and shock.

Friends of Assistant Superintendent Ferguson said he arrived at the mines soon after the mutual blast. After finding out about the trouble and the extent of the tragedy he called to miners and rescue workers, "Come on, boys, let's go."

Accompanying him and killed in the same way was William Goodwin, coal mine safety inspector for Republic. They were close friends and several years ago were fellow officers in the uniform ranks of the Woodmen of the World.

Mr. and Mrs. George Ferguson have two boys in the service, Robert in Iceland, and Sergt. Carl Ferguson stationed in Florida. Mrs. Sullivan's husband, Rupert Sullivan, also was in the service.

Possible point of ignition
1st. explosion

Most likely point
of ignition
2nd. explosion

NO 7 POND

0 400 800 1200 1600
Scale, feet

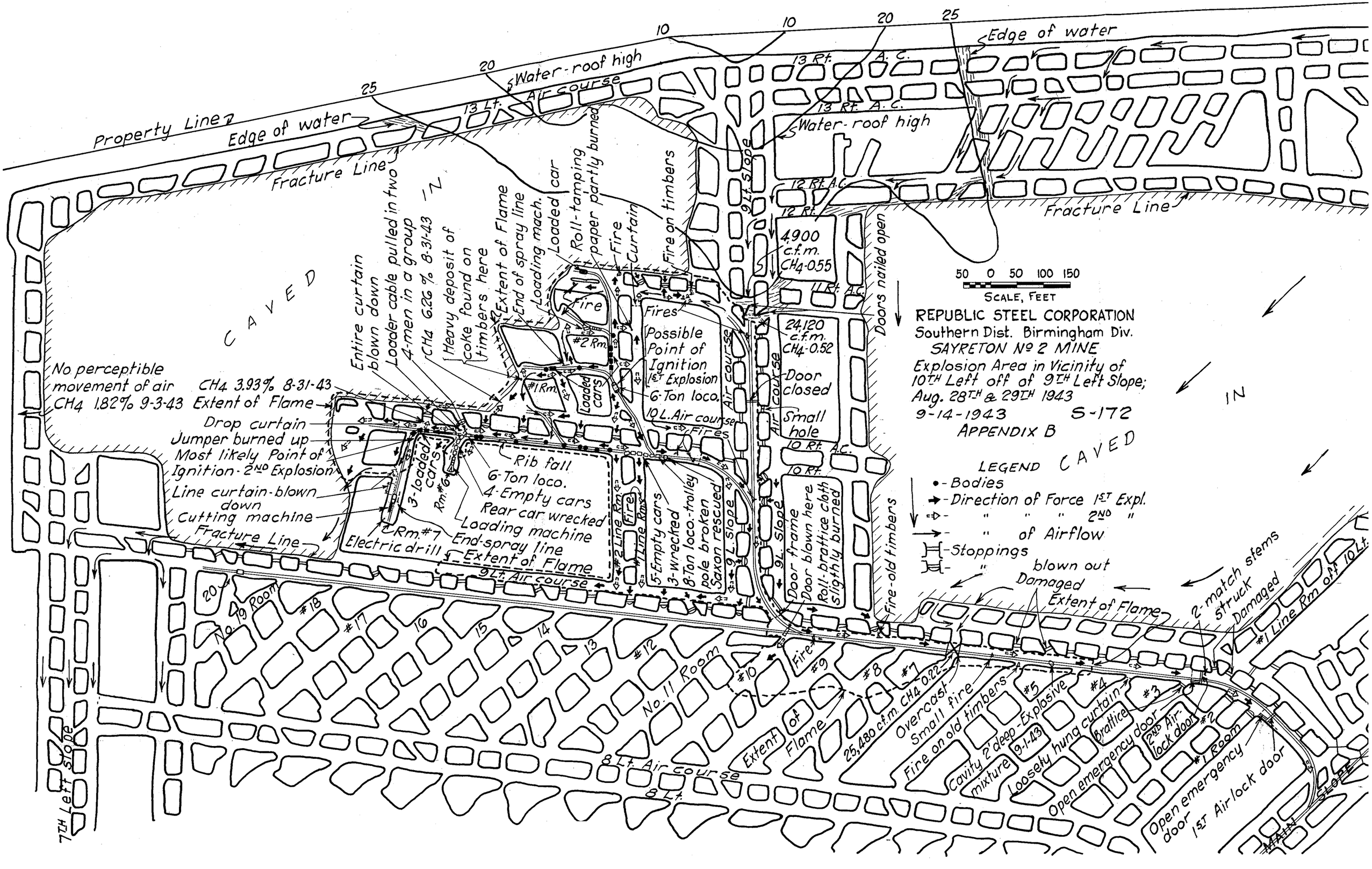
N

REPUBLIC STEEL CORPORATION

SAYRETON NO. 2 MINE

Township 17 South
Range 3 West
Jefferson County, Alabama

S-171


Property Line
Edge of water
Fracture Line
Water-roof high
Air course
13 Lt.
10
20
25
13 Rt. A.C.
Edge of water
Water-roof high
9 Lt. slope
12 Rt. A.C.
12 Rt.
4,900 c.f.m. CH4-0.55
11 Rt. A.C.
Doors nailed open
Fracture Line
CAVED
Entire curtain blown down
Loader cable pulled in two
4-men in a group
CH4 6.26 % 8-31-43
Heavy deposit of coke found on timbers here
Extent of Flame
End of spray line
Loading mach.
Loaded car
Roll-tamping paper partly burned
Fire Curtain
Fire on timbers
Fire
#2 Rm.
#1 Rm.
Loaded cars
Fires
Possible Point of Ignition 1ST Explosion
6-Ton loco.
10 L. Air course
Air course
24,120 c.f.m. CH4-0.52
Door closed
Small hole
10 Rt. A.C.
10 Rt.
No perceptible movement of air
CH4 1.82% 9-3-43
CH4 3.93% 8-31-43
Extent of Flame
Drop curtain
Jumper burned up
Most likely Point of Ignition - 2ND Explosion
Line curtain-blown down
Cutting machine
Fracture Line
3-loaded cars
Rm. #6
Rib fall
6-Ton loco.
4-Empty cars
Rear car wrecked
Loading machine
End-spray line
Extent of Flame
Rm. #7
Electric drill
2 Line Rm.
1 Line Rm.
Fire
5-Empty cars
3-wrecked
8-Ton loco.-trolley pole broken
Saxon rescued
9 L. slope
Door frame
Door blown here
Roll-brattice cloth slightly burned
Fire-old timbers
9 Lt. Air course
20
No. 19 Room
#18
#17
16
15
14
13
#12
No. 11 Room
#10
Fire
#9
#8
#7
CH4 0.22
Overcast
Small fire
Fire on old timbers
25,480 c.f.m.
Extent of Flame
8 Lt. Air course
8 Lt.
7TH Left slope
#5
#4
#3
#2
#1 Room
Cavity 2' deep - Explosive mixture
9-1-43
Loosely hung curtain
Brattice
Open emergency door
2ND Air-lock door
1ST Air lock door
Open emergency door
2" match stems struck
Damaged
Extent of Flame
#1 Line Rm off 10 Lt.
50 0 50 100 150
SCALE, FEET
REPUBLIC STEEL CORPORATION
Southern Dist. Birmingham Div.
SAYRETON Nº 2 MINE
Explosion Area in Vicinity of 10TH Left off of 9TH Left Slope;
Aug. 28TH & 29TH 1943
9-14-1943
S-172
APPENDIX B
LEGEND
• - Bodies
→ - Direction of Force 1ST Expl.
⇨ - " " " 2ND "
→ - " of Airflow
- Stoppings
- " blown out
CAVED
N