Report

-:- EXPLOSION AT BUSBY No. 2 MINE -:-

of the

GREAT WESTERN COAL AND COKE COMPANY

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WILBURTON, OKLAHOMA.

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At 2:05 o'clock on the morning of March 31, 1910, an explosion occurred at Busby Mine No. 2 of the Great Western Coal and Coke Company at Wilburton, Oklahoma, which resulted in the death of six men.

LOCATION OF MINE:

Busby Mine No. 2 is located one and one-half miles east of Wilburton, in Latimer County, Oklahoma, on the C. R. I. & P. Ry.

GEOLOGICAL AND GENERAL FEATURES:

The Great Western Coal and Coke Company has had four mines at Wilburton, but at present only Nos. 2 and 3 are being operated. Nos. 1, 2 and 3 are on the Upper Hartshorne Seam, while No. 4 is on the Lower Hartshorne Seam. A slope was also driven on the Lower Hartshorne Seam at No. 2 Mine, but both this slope and No. 4 Mine have been discontinued for some

time due to the fact that the coal had streaks of slate in it, making it very difficult and costly to obtain clean coal.

All of these mines are slope mines with a dip varying from 20 - 25 degrees. The mines are all dry, the only water pumped being from the sump at the bottom of the slope. The mine is equipped throughout with water pipes and the slope and entries are sprinkled regularly by means of hose.

There are about 125 men employed at Mine No. 2, and the average daily output is 300 tons.

THICKNESS AND CHARACTER OF SEAM:

The Upper Hartshorne Seam averages four feet or a little better at this mine. The coal has no partings and is very regular in character.

The roof is an argillaceous shale of medium quality. Steam has a very bed effect on it. It starts to chip as soon as the steam comes in contact with it, and for this reason, in fighting mine fires with water, it is necessary to timber very carefully and thoroughly as one advances toward the fire.

The floor is a hard fireclay.

The mine makes some gas, but has never caused any trouble and open lights are used generally.

PLAN OF THE MINE:

The mine is opened on the three-entry system,; a haulage slope which is also the intake, and two aircourses, one on either side of the main slope, which act as the return airways. The slope is driven toward the

north and the entries or lifts are driven east and west from the slope.

Twelve lifts have been driven on each side of the slope and the thirteenth was about to be driven on the east side. The rooms are driven up the dip from the haulage entries and are driven at an angle of 45 degrees to the entries. This is done because the dip is not great enough for chute rooms to be used and too great to pull the cars up into the rooms if the rooms are driven at right angles to the entries.

No pillars are pulled until all the rooms on a lift have been driven up, then the work is started at the inbye end and proceeds toward the slope.

METHOD OF MINING:

All coal is shot off the solid. Two holes, one two feet above the other, are drilled parallel to the rib and one foot to eighteen inches from it. These holes are charged with six to seven sticks of 40% dynamite and fired. The effect of these holes is to pulverize the coal to the full depth of the hole, six to seven feet usually. The shattered coal is raked out and a shearing completed. The next shot is drilled on the other side of the entry and is called the back shot. It is charged with FF black powder.

Sometimes this hole is drilled ten feet; that is, four feet in advance of the shearing cut. The coal is broken for six feet and is pulverized for the remaining four feet. This pulverized coal is raked out and a four foot shearing cut completed for the next dynamite shot.

In driving the slope entries, no black powder is used, all holes being charged with dynamite.

EXTENT OF THE EXPLOSION:

The greatest damage resulted between the tenth and third entries of the main slope. The slope above the third had some debris on the tracks, but no timbers were blown down. Most of the slope stoppings were blown out but few of the entry stoppings.

Many fires resulted from the explosion. The rescuing party were delayed in getting to the men by a bad fire in the seventh east, but this was put under control in a couple of hours. Later fires were found in seventh west, eighth west, two in the eighth east, one in the ninth west, one in the tenth west, and two in the eleventh east.

The fires most distant from the slope were probably those in the eleventh east and tenth west which were four to five hundred feet in.

CAUSE OF THE EXPLOSION:

There were eight men working in the night shift in which the explosion occurred. Six of these men were miners and were doing entry work, four of them in the slope and slope air-courses, while the other two were driving the twelfth east air-course. The rope-rider and the pumpman were the remaining two men, and both of them left the mine a short time before the final shot was fired.

The shots fired just previous to the explosion were the slope and slope air-course shots. These holes were charged with dynamite, and as this shift was the last one that would fire any shots before the suspension, pending a settlement of the wage scale took place, they may have had heavier shots than usual so that the last pay would be a large one.

I was unable in either of my two trips to the mine to reach the face of the slope so that I did not see the evidence that indicated the shot that caused the explosion, but the company inspectors and the state inspectors stated that a slanting shot in the slope air-course was undoubtedly the cause. The coal had been broken clean from the rib to the full depth of the hole and had been thrown back a considerable distance from the face, showing that a great excess of powder had been used. The flame from the shot had ignited the fine dust resulting from the overcharge of dynamite and had caused the explosion.

That part of the slope between the rails was very wet due to the run off from a heavy rain which fell the day before, but there was some dry dust along the ribs and considerable "upper dust" and these furnished the material necessary for the propagation of the flame.

No sprinkling had been done in this mine for a considerable time on account of the drouth, and if the rain had not soaked the slope, a much worse explosion would have occurred.

LOCATION OF THE BODIES:

The six men had gotten into the trip after lighting the fuses and had belled the engineer to raise the trip. The trip had been raised to the tenth level when the engineer noted the rope slacken and he immediately stopped the trip and telephoned the superintendent. The superintendent ordered him to raise the trip as far as possible. The trip was raised to the eighth level but could not be brought beyond this point.

A rescue party was collected as soon as possible and the work of

substituting temporary canvas brattices for the permanent ones that had been blown out was prosecuted with the greatest speed possible. When they reached the seventh level, the advance work was halted temporarily while the fire in the seventh was put out. About half past six o'clock, or four hours and a half after the explosion occurred, they reached the trip and found that the men were not in it. A short time afterwards, the first man was found lying beside the track about half way between the 9th and 10th west. Four others were found lying below the first man. These five men had gotten out of the trip when it stopped and had started up the slope, but had been suffocated before they had gone very far.

The sixth man was not found until 7:30 and he was found lying just inside the tenth west. This man had gone down the slope from the trip, trying to reach the refuge place shown on the map, but had been unable to reach it before he was overcome by the afterdamp.

All of these men were burned somewhat, but I do not think that any of them were burned so badly that they would have died from the burns. The backs of their hands were blistered and the hair of the mustache and head singed.

THE TRIP TO THE MINE WITH HELMETS:

The superintendent, Mr. Thomas, telephoned Mr. J. C. Reid, general manager of the company, at McAlester immediately after the explosion occurred. I was notified shortly afterwards and requested to take the rescue apparatus to the mine to see whether something could be done to rescue the men. The only information we had at that time was than an explosion had occurred and that eight men were still in the mine.

There were three helmets in McAlester, the property of three distinct mining companies. The helmets were in the Coal Operator's Building, but had never been unpacked and tested in accordance with the request of Mr. Mingramn, who desired to unpack them himself.

I had brought four Linde tanks with me from Pittsburgh, but did not have the reducer nor the pipe connection. We had no electric lights either.

Mr. Busby, Jr. called up the Street Railroad manager and obtained a supply of flashlights while I telephoned to Mr. Evans of the Rock Island Coal Company at Hartshorne to bring his two helmets and Draeger electric lights to the Rock Island depot at Hartshorne so that we could get them when we passed through Hartshorne.

We had been called at 3:30 a. m., and by 5 o'clock, we had our equipment at the station ready for the train. We met Mr. Evans at Hartshorne and received his apparatus. We were now supplied with five helmets and a dozen flashlights, the Draeger lights failing to burn.

We arrived at Wilburton at 6:30 and were met by a wagon to take the apparatus to the mine, one and a half miles distant. When we arrived at the mine, we were told that the rescue party were still in the mine, but they had sent out word that they could see the men lying along the track and that they were all dead. Inasmuch as it was only a question of a few minutes until they would be able to reach the men, we did not use the helmets.

TRIP INTO THE MINE:

I changed my clothes as quickly as possible and started in with

another man. We were able to reach the third entry with little difficulty, as the props had not been blown out and there were practically no falls. Three or four of the brattices had been blown into the aircourses, showing that the greatest force had been in the main slope. I did not take any notes concerning the brattices or falls, as we went down as quickly as possible, so that we might aid the rescue party if there was anything we could do.

Below the third, some of the timbers were down and traveling became more difficult. At the fourth, there was a large tangle of timbers and we were forced to crawl on our hands and knees to get by. The slope was in a similar condition down to the point where the trip was wedged near the eighth level.

The first evidence of coking was noted at the seventh level and was on the outbye side of a prop. The deposits of coke increased from this point down, the heaviest deposits being on the outbye side of the caps.

Practically all of the stoppings were blown into the aircourses all the way down to the tenth level.

At the sixth level, I met a party of six men bringing out the first body on a stretcher of brattice cloth. At intervals of fifty feet were other parties carrying the remaining four men.

The advance party was between the ninth and tenth entries when I reached them and we were forced to wait there a few minutes for the air to clear the blackdamp away, for it was quite bad here. After a wait of fifteen minutes, we proceeded down the slope and found the last man, Belcher, lying just inside the corner of the tenth level. The last squad carried this man up the slope. They were all very tired and requested me to go out

as quickly as possible and get others to help them bring up the bodies.

I hastened out and got a party of ten or twelve men to go down and help the last two squads to bring up the bodies. When we reached these squads, we found that two of the advance rescue party were too weak to walk up the slope. They had been fighting the fire for several hours in the seventh level and the damps had affected them. We almost had to carry the pit boss out as he was quite sick. Dr. Smiley, the Red Cross man, had come out to the mine with me and he examined the men when they came out. He found them in good condition and said that they would be all right after they had rested for a time.

I unpacked one of the helmets and put it on one of the miners and explained its workings to the men that were gathered around the slope. A great many questions were asked as to the use of the helmet and great interest was shown.

When we saw that we could do nothing more, Dr. Shields and myself returned to McAlester on the noon train so that we might keep a date that we had made to lecture at Adamson that night.

TRIP OF APRIL 5th:

Inasmuch as I had been unable to do any investigating upon my first trip to the mine and we were to hold a meeting in the Opera House at Wilburton the night of the fifth, I took the first train going to Wilburton on the morning of the fifth so that I might made another trip into the mine.

I reached the mine at 9:30, and shortly after I arrived, the pit boss and a friend came out of the mine and said that they had found a fire in the 11th east and were going back in a few minutes as soon as they could

collect a party of miners to aid in putting the fire out.

The fire was along the lower rib of the 11th east about 500 feet from the slope. The smoke from it was going up through a room opposite the fire. We were able to get inbye the fire by going through the 11th aircourse and after setting up six or eight timbers, we threw on about four kegs of water. The smoke and steam rushed back toward us so that we were compelled to work from the outbye side of the fire which compelled us to carry water from a greater distance. The carrying of the water in powder kegs was very hard work, but necessary, as the regular water pipes were broken and we couldn't use hose.

We placed a row of eight to ten timbers down the middle of the entry from the fire and strung canvas from the next room outbye the fire up to the fire. The steam then would come back from the fire was carried along upper side of this canvas and passed up through the room neck. In this manner, we were enabled to work very close to the fire. As fast as water was thrown on the fire and it cooled somewhat, it was dug out and thrown back on the entry. Any hot pieces were cooled by another pail of water. Working in this way, we had dug out the greater part of the fire by three in the afternoon and the pit boss sent two of the men to go through the other side of the mine to see whether there were any fires in those entries.

They returned in half an hour and said they had discovered a fire in the tenth west. The party was divided and I went with the party to fight the new fire. This fire was under the gob on the lower side of the track about the same distance as the other from the slope. We proceeded in the same way that we had fought the other fire; carrying water from a sump

in the aircourse 200 feet distant, throwing it on the fire, and digging out the quenched portion. We continued this work until 6:30 and by that time had excavated a hole 10'x3'x3'.

Our party of five was very tired and hungry since we had been working continuously from 9:30 until 6:30 without rest or food. The other party had finished and gone out when we got to the slope, so we proceeded to the top.

I had been so busy all day that I had been unable to do any more investigating than I had done the first trip.

(Note: Both of these fires are supposed to have been caused by smoldering pieces of curtain that had been burning since the explosion. Gob fires from spontaneous combustion are unknown in this mine.)

GENERAL CONDITION OF THE MINE:

The mine as a whole was rather dry and had considerable dust. I understand that they had been accustomed to sprinkle regularly, but had been unable to do so lately on account of the scarcity of water.

There was considerable dust on the timbers of the main slope and this dust probably added considerably to the violence of the explosion.

PROSECUTION:

The State inspector, Mr. Hanraty, has had Mr. Hughes, the pit boss, arrested for violating the law in two particulars; namely, for having more men than shotfirers in the mine at the time the shots were fired, and for failing to notify the inspector when the explosion occurred.

The company claims that the law requires shotfirers when the men

working in a shift number more than ten, and as there were less than ten men in this shift, a shotfirer was not required. If there was no regular shotfirer required, then the law requires all but the shotfirer to be out of the mine when the shots are fired does not apply in this case. The State inspector's answer to this argument is that the man that fires the shots is the shotfirer, whether that is his sole work or not, and all other men should be out of the mine.

The company also claim that they had given instructions that one man should act as shotfirer and that the others should come out before the shots were fires, and that they did not know that this rule was being disobeyed. They claim that this rule was made on their own initiative and not because they understood the law required it.

REFUGE PLACES:

I am attaching a blueprint of the slope of No. 2 mine showing the slope and the location of the refuge place. The shotfirers are supposed to go to these refuge places when the shots are firing. In case of an explosion or a "windy" shot, they remain in these refuge holes, receiving fresh air through the compressed air pipe, until the afterdamp has cleared away and they can go to the top.

You will note from the attached copy of a letter from Mr. Thomas to Mr. Reid, which I obtained through the courtesy of Mr. Reid, that these refuge holes are practical and have been the means of saving lives on a number of occasions.

Mr. Belcher, the last man that was found after this explosion,

was found below the point where the trip was stopped, showing that he was going down the slope to the refuge hole. It happens that even though he had reached the hole, he would not have saved his life, for although the refuge place was intact, the compressed air line pipe had been broken in two places farther up the slope.

By burying the compressed air pipe, the danger of its breaking in the case of an explosion would be greatly diminished and the efficiency of the refuge places increased.

I think that the installation of these refuge places in the other mines in this district would decrease the mortality among shotfirers. I suppose a great many of them would not use them, but the more intelligent and careful ones would.

Respectfully submitted,

McAlester, Okla.,
April 25, 1910.

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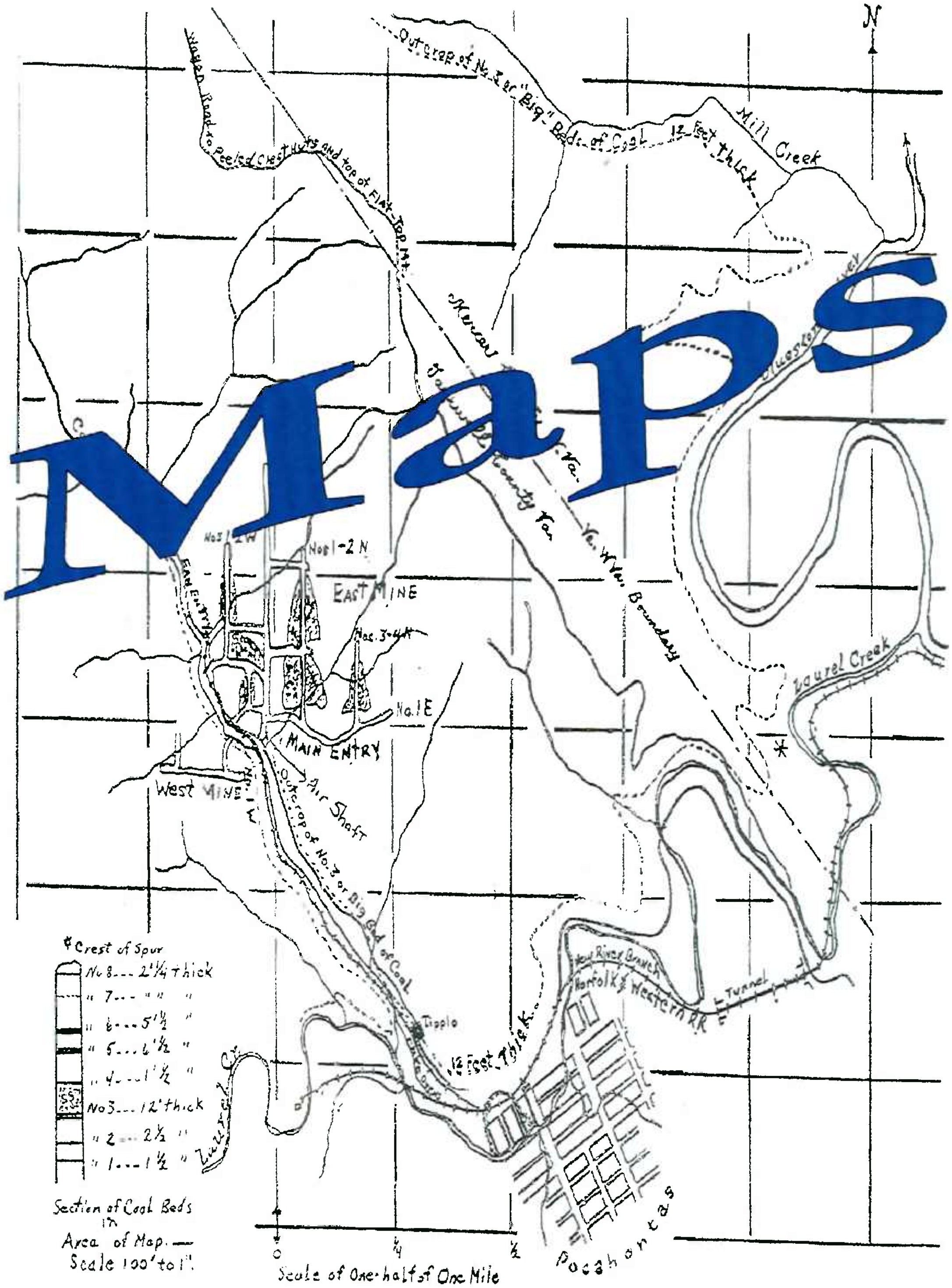
Maps

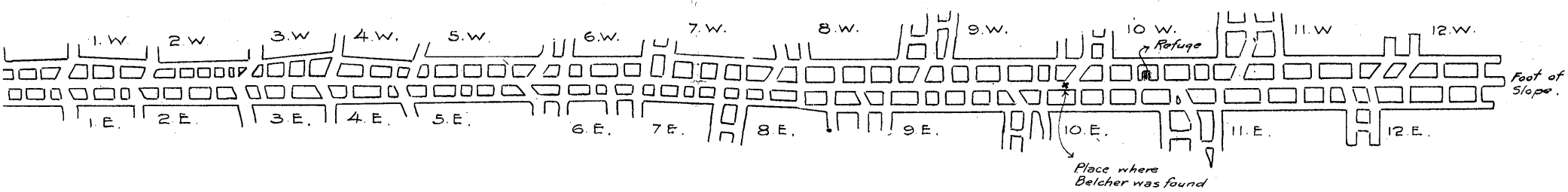

N
Mill Creek
Laurel Creek
Mercer County W. Va.
Tazewell County Va.
Va. W. Va. Boundary
East Mine
West Mine
Main Entry
No. 1 E
Nos. 3-4 N
Air Shaft
Tipple
Tunnel
New River Branch
Norfolk & Western RR
12 Feet Thick
Pocahontas
Crest of Spur
No 8 --- 2 1/4 Thick
" 7 --- " "
" 6 --- 5 1/2 "
" 5 --- 6 1/2 "
" 4 --- 1 1/2 "
No 3 --- 12' thick
" 2 --- 2 1/2 "
" 1 --- 1 1/2 "
Section of Coal Beds in Area of Map.
Scale 100' to 1".
0
1/4
1/2
Scale of One-half of One Mile

Map

Great Western Coal & Coke Co.

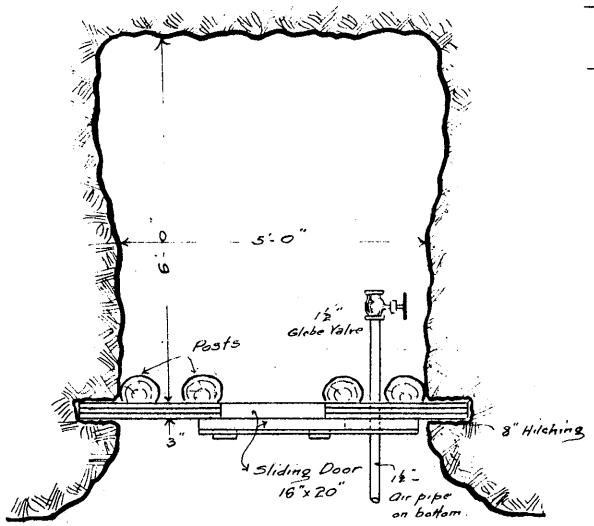
Plat of Slope #2 Wilburton, Okla.

Scale 100 to 1"

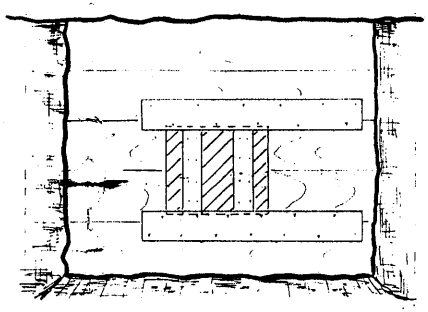


Detail of Refuge Place in Mine #2 Wilburton, Okla.

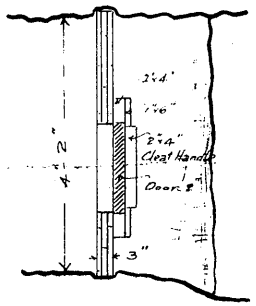
Scale ½" to 1 foot



Plan



Elevation



Section