REPORT ON SAFETY CONDITIONS

at the mines of

THE UNION PACIFIC COAL COMPANY

by

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Monmouth, Wyoming

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# INDEX

SUPERIOR

"B" MINE

On August 20th, I examined "B" Mine, Superior, with Safety Engineer Murray and Mine Foreman Hutchison.

I found the track in excellent condition, well laid, and very clean.

The timbers along the secondary haulageway are well taken care of, as shown by some timber that had been replaced.

Where track lacks clearance, a red light is placed as a warning.

All switches and frogs are well blocked. Safety blocks or derail switches are used where required.

Shelter holes well maintained.

Red signal lights are used on rope and motor trips.

Ventilation

The R. P. M. of the fan was 172 per minute, the water gauge 1.9 inches, producing about 75,000 cubic feet per minute, which is sufficient for all purposes. This is divided by six separate splits.

Blower fans are used to ventilate the working faces.

As the Code of Standards calls for tubing to be kept within 40 feet of face, and tubing comes in 50 foot lengths, I would suggest a short piece of tubing for each working place.

Although shooting is done during working hours, which is necessary under the present system of extraction, it appears to have

no ill effect on the workmen, as the ventilation is fairly good, the smoke soon clears away.

Since making the examination, the ventilation has been increased to about 93,600 cubic feet per minute.

Rock Dusting and Rock Dust Barriers

The roof and sides on the haulage roads are well rock dusted, and rock dust barriers are in good condition.

Where height does not permit rock dust barriers over track, some are placed on side of track, the entries being skipped for that purpose.

Rooms, entries also well rock dusted.

Sprinkling

Water is used on all cutter bars of mining machines, and all loaded cars sprinkled when leaving the parting.

Electrical Equipment

Generators are well located, and well ventilated. Fire extinguishers and rock dust in barrels are on hand in case of fire.

The 2,300 volt current is well strung in insulated armored cable, supported with wire, secured to roof or timbers.

Cables under tracks are laid in heavy steel pipes.

Trolley wires are guarded at all partings and crossings.

All partings and switches are well lighted, and generator set rooms and mine foreman's cabin well lighted. The light wires being installed in metal conduit.

Switchboards are well placed as to clearance, and grounded, the same as all other electrical equipment.

Rubber floor mats or insulated platforms are used where necessary.

All underground stations are properly fenced off and danger signs posted.

Extraction

Casco and Kickhoff loaders are used.

The general plan is to drive entries to the boundary, and in doing this, props with a good cap piece are only used, but in driving rooms a distance of 300 feet, a more systematic form of timbering was required, and has been adopted.

As soon as one center shot is fired, only enough coal is loaded out that will allow a short cross bar to be set with a screw jack in the center. The corners are then shot and loaded out, and the short cross bar replaced by a longer one.

When pulling pillars, the coal is taken out to cross cut, then breaking props are set. Inside timbers are pulled by regular timber crews, which allows the roof to cave, relieving the weight from the working area. By this method a very large percentage of timber is recovered.

Unit Foremen are employed to supervise all timbering and the moving from place to place of loading machinery.

## Material

Plenty of props and crown bars and cap pieces are on hand.

Short timbers are taken in in mine cars, and long timbers in special timber trucks.

First Aid supplies and stretchers with blankets are available when required.

## Safety Rules

All persons are checked in and out of the mine.

All wear safety hats and goggles.

No smoking or the carrying of smoking material allowed.

The Foreman and all unit foremen carry the Wolfe flame testing lamp, lighted and locked at all times. No violations were observed.

Would recommend all entries be plainly marked, as to number and direction.

## Powder

Permissible powder only is used and is taken in the mine in special constructed insulated cars, when only a few men are in the mine, and distributed in sufficient quantities for one day's work to each loading unit.

Electric blasting caps are used, and carried to each loading unit in leather containers.

Caps and powder are stored in separate wooden boxes and separated from each other by not less than 25 feet.

Mantrip

Cars for mantrip are special built cars, equipped with safety rope pull length of trip.

Some of the new steel cars in this mine have no brakes. I would recommend all cars to have brakes.

"C" MINE

On August 29th, I examined "C" Mine, along with Superintendent Hicks, Safety Engineer Murray, and Mine Foreman Wilkes.

Haulage track well laid with heavy steel and very clean.

Haulways and airways in good condition, with rock dust barriers and rock dusting, the same as "B" Mine.

All motor-generator sets, power lines, are installed according to the Code of Standards.

Explosives are delivered to loading units the same as "B" Mine.

Water is used on all cutting machines, and loaded cars sprinkled at all partings.

The ventilation in this mine is good, the fan producing about 60,000 cubic feet per minute, which is divided into four (4) separate splits.

Blower fans are used to ventilate the working faces.

Extraction

The general plan of extraction is something similar to "B" Mine.

In driving entries, about eighteen (18) inches of coal top is left, but must be timbered, especial care to be taken where there is a wet top, as under these conditions roof breaks occur more readily.

In room work, close supervision by unit foremen and the cooperation of the workmen is necessary, as the roof in this mine requires forepoling, supported by short cross bars with screw jacks until room is made for longer cross bars.

Cenco and Mickhoff shaker loaders are used.

In the extraction of blocks, practically the same method is used as in "B" Mine.

"E" MINE

On August 30th, I examined "E" Mine, with Ventilation Engineer Knill and Mine Foreman Law.

I found all heavy track clean and in good condition, with small track moderately clean.

Ventilation good, fan producing 51,500 cubic feet per minute, divided into four (4) separate splits.

Airways in good condition, considering the nature of the roof, wood cross bars in some sections of the airways are being replaced by steel timbers.

Motor-generator sets, pumps, hoists, and all electrical equipment are installed according to the Code of Standards, the same as "B" and "C" Mines.

Roof and sides well rock dusted, and rock-dust barriers in good condition.

Water is used on all cutter bars, and cars sprinkled before going to tipple.

All slopes where men are working are protected from runaway cars by a 60 lb. rail safety device. This applies to "B", "C" and "E" Mines.

Powder and detonators are delivered to loading units the same as in "B" and "C" Mines.

Trolley wires are guarded at all partings and crossings.

The stable is clean, well ventilated and lighted. Hay is stored in fire-proof room.

All lights in generator rooms, hoists, Mine Foreman's cabin, and stable, are in metal conduit.

## Extraction

The method of extraction is practically the same as "B" and "C" Mines, and under the supervision of unit foremen, railroad ties are now being used for cross bars.

## OUTSIDE

On August 31st, I examined Superior Outside, along with Engineer Knill.

"B" and "E" tipple is a wood structure, but well built, is equipped with fire extinguishers and steel barrels filled with anti-freeze solution, with sufficient hose attached to water line to reach any part of tipple. There is also 450 feet of hose in hose house near lamp house.

Blacksmith shop is fire-proof.

"B" Mine hoist is well equipped with rock dust and fire extinguishers.

"B", "C" and "E" Mine fans are fire-proof, equipped with a protection against overheated bearings.

I would suggest that a stand pipe or something similar be placed outside of the track of the rock dump incline, to prevent the rope coming too far out of track.

Bath houses are fire-proof.

Main storage powder magazines are well located from mine openings and other buildings, fire-proof construction and well built. Magazines for electric detonators are built at a safe distance.

"C" tipple is also a wood structure, but well supplied with a non-freezing solution in steel water barrels, also rock dust in buckets and Pyrene extinguishers and sufficient hose attached to water line.

Outside stable built of wood, was clean, with no rubbish around, with fire extinguishers and rock dust in buckets.

Blacksmith shop is practically fire-proof.

Store is built of wood, with concrete basement, very clean, and well supplied with sufficient hose attached to city water line.

## MEMO.M

### NO. 3 MINE

On September 4th, I examined No. 3 Mine, Winton, with Safety Engineer Murray and Superintendent Foster.

We visited all working places.

The haulage track is in good condition, clean, and kept moist with sprays. The secondary haulage, where 20 lb. rails are used, is fairly good.

Haulage roads and manways are rock dusted. Rock dust barriers are in good condition.

Self-closing gates with warning signs are placed where manway crosses haulage way.

All working places are sprinkled and water is used on cutter bars.

Although there is considerable rock in some parts of the airway, ventilation is good, the fan producing about 77,000 cubic feet per minute divided into five (5) separate splits.

Motor-generator sets, high voltage cables, trolley wires, signal wires and telephone wires are installed according to the Code of Standards.

Explosives handled the same as other mines.

Stretchers and First Aid outfits are on hand when required.

Safety blocks and derail switches are placed where necessary.

Extraction

Shaker Conveyors with Duckbills are used, and scraper loaders are used to extract blocks left by the shaker loaders.

Unit Foremen are employed to supervise the timbering, which consists of short crown bars, that extend as far as possible over scraper loader.

Fire Zone

All stoppings are in excellent condition, with no apparent leakage. Stoppings are examined regularly by certified men.

Mine Foreman and Unit Foremen carry the Wolfe flame safety lamp at all times.

No. 3 MINE

On September 5th, with Safety Engineer Murray and Superintendent Foster, I examined Mine No. 3, Winton, and Outside.

Ventilation is good, fan producing 63,000 cubic feet per minute, divided into five (5) separate splits.

Haulage track in good condition.

A rock tunnel now connects No. 3 with No. 2, through which most of No. 3 coal is pulled by electric locomotive to No. 1 Slope.

Manways and airways in good condition.

Explosives are taken in and distributed as in other mines.

Roof and sides rock dusted and rock dust barriers in good condition.

Electrical equipment is installed according to Code.

Water used freely on all cutter bars.

Switches and frogs are blocked, and all switches have the ground thrown according to standard.

First Aid supplies and stretchers and blankets are available at all stations.

Mantrip cars are well built and equipped with safety devices.

All workmen wear hard hats and goggles.

I saw no violations of rules.

In the rock tunnel connecting No. 1 with No. 3, I noticed considerable slipping off the sides. As there is not any too much clearance, I would suggest that the timbers be side lagged.

Extraction

Practically the same as No. 3. Shaker conveyors with Duckbills and scraper loaders.

Close supervision is necessary, as roof breaks are common.

SURFACE

Tipple is a well-built frame construction, well provided with fire extinguishers and steel barrels filled with an anti-freezing solution, with hose and hydrants situated a convenient distance from building.

Machine shop and blacksmith shop is a wood building, not far from tipple, well supplied with fire extinguishers and 400 feet of hose in hose house 100 feet distant.

No. 1 and No. 3 fan houses are fire-proof buildings with fire extinguishers and rock dust in barrels, also equipped with a warning device if for any reason the fan is stopped, such as power off, or overheated bearings.

Hoist houses are well protected with Pyrene extinguishers that may be used on electric live parts, also a good supply of rock dust in barrels.

Powder magazines are located a safe distance from any other buildings.

Detonators are stored in a separate building from the powder building.

First Aid outfits, stretchers and blankets are available at tipple and machine shop.

The city water pumps are housed in a well-constructed building, equipped with fire extinguishers, and is very clean.

RELIANCE

No. 4 MINE

On September 6th, I examined No. 4, Reliance, along with Safety Engineer Murray and Mine Superintendent Medill.

We travelled the mainway, haulage ways and airways.

The haulageways are in excellent condition, well lighted and rock dusted top and sides, and rock dust barriers in good condition.

More heavy track was being laid in preparation for larger cars.

All cables are insulated and well strung to roof or timbers.

Trolley wires are guarded at switches and crossings.

Red lights are used on all empty and loaded trips.

All entries well marked as to number and direction.

Powder and detonators delivered to working places as in other mines.

Mainways and airways in good condition.

Water is used on all cutter bars.

The improved Cesco shaker conveyer with Duckbill, develops entries and rooms.

Blocks are extracted by scraper loaders.

Although the roof in this mine is fairly good, I would recommend that a unit foreman be with a scraper loading crew at all times, as there is from 12 to 15 feet left open the full length of the block to allow the scraper to work, and when mining under creek

beds (which often occurs) extreme caution must be taken as the roof in these trenchesrun on account of water.

Ventilation is very good.

All electrical equipment according to Standard.

First Aid supplies are at all stations.

OUTSIDE

Hoist house is tile and concrete, well supplied with fire extinguishers and rock dust.

Powder magazines well built and located far from other buildings.

Stable, wood structure, clean, fire extinguishers and rock dust in buckets.

Fans well located, houses wood frame with metal lath, well supplied with fire extinguishers.

Fans equipped with warning device against stoppage.

Tipple is wood structure, well supplied with fire extinguishe s and steel barrels filled with a non-freezing solution, also supplied with water line and hose with city pressure.

Bath house fire proof.

Machine shop and blacksmith shop frame with corrugated sheet covering. Fire extinguishers are on hand in case of fire.

## HANNA

### No. 4 MINE

On September 10th and 11th I examined Hanna No. 4 with Safety Engineer Murray and Superintendent Sharrer.

I found the manways and airways well rock dusted and in good condition. Rock dust barriers well suspended.

All hoists firmly set on concrete bases, guarded and grounded.

All cables and trolley wires well strung.

Stable clean and well supplied with fire extinguishers and hose attached to water line.

Motor-generator sets are installed in clean ventilated rooms.

Water is sprinkled in all rooms.

Method of mining is by panel, room, and pillar.

In blocking panels off, after pillars have been worked out, enough barrier pillar is left to insure the stoppings from crushing out.

Practically no timbering is necessary, as about 5 or 6 feet of coal is left for top.

Only enough powder and detonators are carried in the mine for one day's work.

All coal loaded with Joy machines.

Well built mantrip cars equipped with safety device.

Fire extinguishers and shale dust are on hand at all station, also a good supply of First Aid equipment.

Bottom of air shaft in good condition.

Ventilation is good.

The Foreman and Unit Foremen carry the Wolfe safety lamp at all times.

No violations of rules were found.

I have no recommendations to make.

OUTSIDE:

On September 11th, with Safety Engineer Murray and Superintendent Shearer, I examined the Outside of Mine No. 4.

The tipple is a frame building, well built, well protected against fire with a number of perforated pipes fastened to the top of the building. Water may be turned on either on the tipple or below the tipple, water being supplied by city or mine water line.

The boilers and generator sets are housed in fireproof building. Generator room installed with rubber mats.

Fan is steam driven and is provided with warning signal in case of stoppage of fan.

Fan house is not fireproof, but has good fire protection.

The warehouse, stable, machine shop, carpenter shop and office are wood buildings, well supplied with fire extinguishers and hydrants with hose near by, with good pressure from city water line.

All moving machinery in machine shop and carpenter shop is well guarded.

Gasoline filling station is built of brick and concrete.

Store is two-story wood building, with rock basement, well

supplied with extinguishers, and sufficient hose connected to water line.

Community and theater buildings are wood structures, well built, very clean, no rubbish around, well supplied with fire extinguishers, with city fire hydrants with hose attached close by.

Powder magazines are located in the hills the required distance from the highway and other buildings.

Detonators are stored in a separate building from the powder magazine.

ROCK SPRINGS

OUTSIDE

On September 7th, I examined No. 4 and No. 8, Rock Springs, Outside.

Both No. 4 and No. 8 Tipples are well built frame structures, protected by fire extinguishers and steel barrels filled with anti-freeze solution, also water line with hose attached.

Hose houses containing sufficient hose with hydrants near by, are supplied with city water.

Office, warehouse, electric, machine, carpenter shops, and other buildings, all kept very clean, well supplied with fire extinguishers and water pressure as above.

Bath house is fire proof and kept clean.

Blacksmith shop built of rock and lumber, corrugated sheet roof, well supplied with fire extinguishers.

There is a plentiful supply of First Aid material outside.

All men around the tipples wear hard hats and goggles.

No. 4 hoist house built of tile. Buckets of shale dust on hand, also Pyrene extinguisher.

The main powder magazines are well constructed and located a safe distance from any other building.

Detonators are stored in a separate fire proof building.

Fan and fan house is all steel construction.

Fan is provided with thermo-static control.

NO. 8 MINE

On September 12th, with Ventilation Engineer Knill, I examined No. 8 Mine, Rock Springs.

General conditions in this mine are similar to the rest of the mines.

Haulage track, airways, manways and rock dust barriers in good condition.

Examined bottom of ventilating shaft.

Ventilation good. A large steel reversible fan supplying air for both No. 4 and No. 8 Mines, is now producing 235,000 cubic feet per minute, but is built to produce about 400,000 cubic feet per minute.

Generator sets, pumps and hoists, high voltage cables, and all electrical equipment are installed according to the Code of Standards.

First Aid equipment at all stations.

Examined No. 18 Entry. This entry is being driven into the lower workings of the Idon Coal Corporation, where there is an uncertain amount of water. Every precaution is being taken by drilling holes sixteen (16) feet in advance of working face and water is allowed to drain out before work is again permitted in said place.

Extraction is by Casco shaker conveyors and scraper loaders.

Insulated powder cars are used to take the powder in the mine and carried to each section in a leather sack. Only enough for one day is taken at one time. All detonators are carried in standard leather containers.

On September 13th, with Safety Engineer Murray, I examined No. 6 Mine.

No. 2 Entry fire stoppage is in good condition, with no apparent leakage.

Visited the North Entries where contract men, using Northern Leaders, are shooting and loading entry stumps off the solid. Every place is sprinkled before shooting. A certified man tamps and lights the shots.

These men are working along old caved-in places, and close supervision is necessary, for it requires good timbering.

There are a few old stub switches in some of these entries which ought to be blocked, or removed entirely, for the reason that cars being pushed by motors have a possible chance to get off the track.

I noticed the motor pushing fifty (50) loaded cars to the tipple. The pushing of cars should be avoided as much as possible.

The hoist for No. 1 Plane is installed in a well ventilated room, guarded and grounded, a Pyrene fire extinguisher, also shale dust in buckets in case of fire.

NO. 4 MINE

On September 17th, with Ventilation Engineer Knill and Mine Foreman McLeod, I examined Mine No. 4, Rock Springs.

Haulways, airways, and the heavy haulage track in good condition.

Rock dust barriers in good condition.

Hoists, generator sets, pumps, high voltage cables, trolley wire, telephone and signal wires are all installed according to the Code of Standards.

Explosives are handled the same as other mines.

Extraction is by Conco chuking conveyors.

About twenty (20) inches of coal is left for a top in Entries.

All cars are sprinkled both going in and out of partings.

First Aid equipment at all stations.

## RECOMMENDATIONS

All new steel cars, and all wood cars in the same mine, should be equipped with brakes.

The pushing of big trips should be avoided.

## SUMMARY

In the foregoing report, you will note the conditions are stated, as found, for each individual mine.

The general condition of all mines is practically the same.

The installation of all electrical equipment, both inside and outside the mines, such as fans, hoists, generator sets, and pumps, the hanging of high voltage cables, trolley wires and other wire lines, is to be highly commended, as it is the best I have seen.

The haulage track, especially where heavy steel is laid, the airways, and manways, the installation of rock dust barriers, rock dusting, and the sprinkling of water on track and face is all that could be desired.

The extraction of the coal is practically the same at all mines in the Rock Springs field.

Hanna is a mine by itself, and is well supervised.

I was pleased to note that there seemed to be a general understanding between the Superintendents, Foremen, and Unit Foremen, as to cooperation, which makes for better supervision.

The Safety movement, under the Safety Engineer and other officials, is to be commended, for the training of Mine Rescue and First Aid crews, and who see that Safety rules are put into practice.

I would suggest a large bulletin board where Safety First signs in large type can be posted and changed from time to time. Such as:

"Don't put sand on the rail with your hand when running the motor."

A Foreman making his rounds will sometimes say to a workman, "Don't do that." If it is a violation of rules, make a Safety Sign out of it.

"There is a right and a wrong way to do anything."

"Don't put the cap piece on the prop the wrong way."

A workman should be penalized for violating a rule a second time.

The above "don'ts" are merely suggestive of the type that may be used.

In closing:

I thank those who were with me during the examination, in making this report possible.

(Sgd) Chas. Catterall, Jr.