

CANADA
YUKON TERRITORY)

Record of the investigation held at the Pueblo Mine, second of April, 1917, and White Horse, third of April, 1917, to inquire into accident, which occurred at the Pueblo Mine on Wednesday the 21st day of March, 1917, whereby six (6) men, namely: Andrew Bechir, Robert Collins, V. Levich, Mike Knazovich, T.M. McFadden, and Tom Zukoff lost their lives; taken before A. L. Bell, Inspector Royal Northwest Mounted Police, and Daniel J. McDonald, Manager Copper King Mine, who were duly appointed by the Administrator of the Yukon Territory, under Section 8, chapter 45 of the ~~Yukon Territory~~ Miners Protection Ordinance of the Yukon Territory.

This deponent, W. D. Greenough, on his oath saith as follows: On the morning of the 21st of March, I went to the 500 level with Mr. Berg. I was in the habit of going to the 500 level every morning in order to keep in close touch with the development work being done on this level. This particular morning, Mr. Berg accompanied me at my request with the view of determining and locating some Diamond Drill work to be done on this level. After checking up the development work and determining the directions of the proposed drill holes, I came on top.

Mr. Berg came up to report to me about 10:00 A.M. that the 400 stope was taking weight, and that he had taken his men out of the stopes. I was satisfied that he had done everything necessary in taking his men out and attached no particular importance to the timbers taking weight.

Mr. Berg then went back underground and at about a quarter to 12:00 o'clock sent for me to come down to the 300 level, stating that he had a cave in the mine.

In company with Fred Porter, the Engineer, I went to the 300 level and found that the west slope had caved, also ascertained that 9 men were either in or behind the cave. Mr. Berg with the day bosses, Adams and Domitrovich had already started rescue work. I sent for Norman McLeod, the night boss, and the rescue work was continued as fast as possible until the evening of the 29th, when it was found necessary to abandon the rescue work together with the underground equipment and machinery owing to the unsafe condition of the shaft.

When the rescue work was started, I cautioned Adams, Domitrovich, McLeod, and Supt. Berg to be particular and note any signs of the shaft taking weight. On the 29th at noon, I thought it advisable to have a careful survey of the shaft made with a view to giving the rescue party every possible protection. At noon on this day, I requested Mr. Berg to take Dennis P. Dwyer and make a very careful inspection of the shaft. I chose Mr. Dwyer because he was acting in the capacity of utility man and had put in more than 2 months actual time in the shaft on repair work. Therefore he would be familiar with the shaft from the collar to the 500 level. They made the inspection and reported to me at about 4:00 o'clock. The report was not favorable. I then called in Norman McLeod and Angus McDougall and had them go over the shaft with Berg and Dwyer. They reported at 7:00 o'clock that the shaft was unsafe and recommended that the men working on rescue work should be taken out immediately. This recommendation was immediately carried out, abandoning all the underground equipment and machinery.

In my opinion the cave was caused due to the action of the water passing through some slips on the hanging wall side. This action continued until it made a weak point, which might have been either below or above the 300 stope; and was unavoidable owing to the fact that it could not and was not noticed by any of the mine staff or the miners.

Mr. Bart was particularly attentive to his work and gave practically all of his time and attention in directing the underground work. His shift bosses, Norman McLeod, Robert Adams, and George Domitrovich were competent and experienced miners.

The mine was exceptionally well timbered and all apparent weak points were bulkheaded. The least distance of solid ground between the 300 level and top of the workings on the 400 level was 40', and at this point the ground was only mined 3 sets wide by 2 sets long, a space of 15' x 10' and one of these sets was on the solid or footwall, thereby leaving a space of only 5 square sets well timbered.

Therefore, I do not believe that the workings on the 400 level was directly the cause of the cave.

Q You are the manager of the Yukon Copper Ltd. Mr. Greenough?

A Yes sir.

Q You have spent practically all of your life in mining?

A Quite a number of years.

Q You have mined in the Copper D'Alencas? A Yes sir.

Q In your opinion you consider that the Pueblo Mine was properly timbered on all the 5 levels? A Yes sir.

Q At any time did any of your officers, shift bosses, or miners make any complaint to you of the mine being unsafe?

A Never.

Q In the event of the hanging wall sloughing, what action did you take to stop the same?

A. We never had an occasion of that kind Mr. McDonald. This stope stood apparently well. We had it timbered, and there was no sloughing there nor any running of mud to my knowledge.

Q. What in your opinion, Mr. Greenough was the cause of the cave?

A. I believe that it was caused due to the action of the water passing through some slips on the hanging wall side. This action continued until it made a weak point, which might have been either below or above the 300 stope; and was unavoidable owing to the fact that it could not and was not noticed by any of the mine staff or the miners.

there was not evident any opportunity to get into the stope or to work safely or advantageously under the cave at this point. I therefore instructed one of the timbermen, Paddy Coyle, to board up the raise at the bottom so that we could leave it and instructed the shift boss to clear out No. 1 left cross-cut preparatory to starting a drift in the footwall.

This drift was started at 7:00 o'clock P.M. on the evening of the 21st. While this drift was being driven toward the men in the far end of the stope, we also started the Diamond Drill work on the 200 level in an attempt to drill down into the top floors of the stope, hoping by this means to get some information as to the likelihood of there being anyone alive in the stope, and in the event that there should be anyone there, we could feed them through the drill pipes until such time as it would be possible to reach them. This Diamond Drill work resulted in the completion of two holes into the top of the stope but shouting into the pipes and pounding on them did not reward us with any sign or sound of life in the stope.

At about this same time, Mr. Porter and I went up into the west stope on 200 level and worked our way out on 3th floor to the cave. We found that the 200 stope was cut off as by a knife at a point about 60' from the station, that the timber was all down and that the top of the cave had run back into the hanging wall and its limits were not determinable.

The rescue drift was completed about 7:00 P.M. on the night of the 24th. The rescued men were Radovich, Graham, and Davies. After getting the men out of the far drift, Demitrevich Adams, McLeod, and myself went into the drift in order to see whether it would be possible to get into the stope at this end. I found that at a point 10' toward the shaft from where the rescue drift broke into the main drift the timber was broken down and the drift was caved full. I was able to see up into the set above the drift and saw that the second floor was caved absolutely full and tight with muck and debris and that there was no point at which one could enter the stope.

This deponent, J. E. Berg, on his oath saith as follows: I am employed as Superintendent of the Pueblo Mine. It has been my usual procedure to go through the stopes of the mine the first thing in the morning with the shift bosses, commencing on the 200 station, and working down through the west end of the 300 level up into the east end, then going down to the 400 and finally ending up at the 500 level.

Due to the recent development work on the 500 level, this level was the principal point of interest for me, and had been so for the last two weeks previous to the accident.

On this particular morning, I went first to the 500 level with Mr. Greenough, looked the work over there, saw that everything was going nicely, and then stopped to discuss the probable location of some Diamond Drill holes with Mr. Greenough and to line up the future work on that level.

About 9:00 o'clock, we went out to the station, and I flashed for the cage in order to go up to the 400 level. When the cage appeared at the 500, I saw George Lomitrovich on the cage just before it stopped, beckoning to me. As I was stepping on the cage he told me that the 400 stope was taking weight. I immediately asked him if the men were out of the stope to which he replied in the affirmative.

This conversation took place while the cage was moving from the 500 level to the 400 level. We went out to the 400 west, up the first manway, and through the stope and came out the opposite end. Our inspection was rather hurried because of the fact that the timber was cracking and taking weight, and a little rock was dropping here and there in the stope. We were greatly puzzled to know what was going on, because the timber was all in and well blocked, and we could not understand what ground could be coming loose. On coming out of the stope, I delayed on the sill waiting to see any

further developments. After staying around for sometime, I went to the surface and went up to see Manager Greenough to whom I gave this information regarding the 400 stope. I then returned to the mine and went back down to the 400. This was about 10:30. I went again in to the stope to see if any further developments had occurred. The ground was acting about the same as when I left. George Domitrovich, the shift boss, was also waiting there to see if anything further would happen, and in discussing the stope and anything further that could be done as precautionary measures, we decided that it would be best to cover the raise, which came down from the 300 level into the Wheelbarrow and N.E. stope. I therefore asked George Domitrovich to go to the 300 and tell Robert Adams, the shifter on that level, what was going on and to cover said raise. After delaying for 5 or 10 minutes, I followed. When I got to the 300 level, I found Adams and Domitrovich at No. 1 chute east. My first inquiry of Adams was, "How is everything on the 300" and he answered that everything was all right. He had just come from the west side. I also spoke to him about covering the raise going down into the 400, and then left Adams and Domitrovich at the station and went on top. This was about 11:00 o'clock or a little later, and so having been quite busy during the morning, and because of the near approach of noon, I decided I would postpone my trip through the 300 stopes until after lunch and therefore went on top.

While washing in the dry room, the cager notified me that there was a cave on 200 and the shift boss wanted me there. I dropped down to the 200 level, found about a dozen men standing around apparently frightened, and on asking Adams what was the matter, he said the west stope had caved and that there were nine men somewhere in the cave.

I went into the west drift on 200 to a point about 75' from the shaft and saw that the drift was cut off there, that the timber was cracking, and the ground was still in slow movement.

I went back out to the station and not knowing how many men were on the 300 level in case they should be needed for rescue work, I asked 6 men to get on the cage at the 200 level and drop down to the 300. Through some mistake after getting there they came right back up again and I asked one man to stop off the cage, I myself got on in his place and went to the 300 station and then into the west drift.

What I found there was that the W. drift at a point 70' from the shaft had caved in full, that the bottom had apparently dropped out of the level and that the ground there was still settling on the timber. The air line was broken down and lying on the track. I called about 6 men to start work putting in helping posts under the caps of the drift sets nearest to the cave, to remove the pipe line, and clear the drift. I also instructed the cage to take the rest of the men up on top, and asked James Brennan to notify Mr. Greenough that I desired his presence immediately.

Noticing that No. 1 chute had muck in it, it occurred to me that we might draw the muck from this for an entrance into the stope. This we did immediately, took the gate off the chute and put ladders up into the raise. George Domitrovich and Dick Adams were working on this at that time. When Mr. Greenough arrived I told him what had happened and he sent for the night shift boss Norman McLeod. He arrived about 12:30. After showing him and explaining to him what had happened, I asked him to organize a rescue crew of 6 or 8 men and come down at about 2:00 o'clock to relieve the men who were working and who had not yet eaten.

We decided to start the rescue crews on a "4-hour-on-and-8-hours-off" basis, and McLeod's shift came down at 2:00 o'clock. We managed to get up as far as the 4th floor of the No. 1 chute raise. I went up into the chute to this height and saw that everything was a mass of broken twisted timber and rock and

there was not evident any opportunity to get into the stope or to work safely or advantageously under the cave at this point. I therefore instructed one of the timbermen, Paddy Coyle, to board up the raise at the bottom so that we could leave it and instructed the shift boss to clear out No. 1 left cross-cut preparatory to starting a drift in the footwall.

This drift was started at 7:00 o'clock P.M. on the evening of the 21st. While this drift was being driven toward the men in the far end of the stope, we also started the Diamond Drill work on the 200 level in an attempt to drill down into the top floors of the stope, hoping by this means to get some information as to the likelihood of there being anyone alive in the stope, and in the event that there should be anyone there, we could feed them through the drill pipes until such time as it would be possible to reach them. This Diamond Drill work resulted in the completion of two holes into the top of the stope but shouting into the pipes and pounding on them did not reward us with any sign or sound of life in the stope.

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The rescue drift was completed about 7:00 P.M. on the night of the 24th. The rescued men were Andorich, Graham, and Davies. After getting the men out of the far drift, Demitrevich Adams, McLeod, and myself went into the drift in order to see whether it would be possible to get into the stope at this end. I found that at a point 10' toward the shaft from where the rescue drift broke into the main drift the timber was broken down and the drift was caved full. I was able to see up into the set above the drift and saw that the second floor was caved absolutely full and tight with muck and debris and that there was no point at which one could enter the stope.

We then all went to the surface to change clothes and get some food, and to hold a consultation as to our next method of procedure. The rescue crew was kept at work on this drift cleaning up the muck and enlarging the opening in the far west drift.

The three shift bosses and Manager Greenough and myself after discussing the matter at great length decided to abandon the rescue drift. The reason for this was the nature of the rock driven through, the proximity of the rescue drift to the caved area, the large quantity of water coming down the slide into the drift, and the fact that the ground was sloughing from the back of the drift at many places; but most seriously at the point where the drift broke through into the far west drift.

The only other means open to us for getting into the stope and at the same time protect the lives of the rescue men was to drive an incline raise from the 300 station to the east end of the stope and also to drive a raise from the 400 level to the far west drift in order to work into the stope from that end in the hope of recovering some of the bodies.

After we had reached this decision, I went down to the mine, called the crew from the rescue drift, told them to consider it condemned, to leave all their tools where they were, and to nail it up so that no one could go into it. I also issued instructions for starting the incline raise from the station. This raise was begun on the evening of the 24th, was completed about 3:30 on the morning of the 27th. Somitrovich was on shift. I sent up for McLeod and Adams and Mr. Greenough in order that they might be there when we broke through. Because of the bad caving nature of the ground through which the raise was driven and because the stope was unsafe due to the working of the ground under the timber, also because at this end of the stope as well as the west end it was impossible to get further in to the stope, we decided to stop work at this point.

Another reason was that said work could not be carried on without greatly endangering the lives of the workmen, and it was essential above all things to protect the rescue crew.

The proposed raise from the 400 to the 300 was continued unceasingly until the night of March 29th.

On the afternoon of the same day, I decided to inspect the shaft to see whether there had been any effect on it as the result of the cave. To accompany me on this work, I chose Dennis Dwyer. Mr. Dwyer has done considerable work in the shaft for us. In fact, he has spent about 2 months of his time in the shaft catching up water, repairing ring dams, and insulating the pipe lines, and because of his knowledge of the condition of the shaft previous to the cave, I valued his information and trusted that he more likely than anyone else would be able to see any movement of timbers.

We went down from the 200 level to the 300 level in the manway compartment, back up from the 300 to the 200 in the pipe compartment, and then rode the hood of the cage from the surface to the 500 in an examination of the guides of the skip compartment.

We found everything apparently O.K. in the skip and pipe compartments, but in the manway compartment, which was the nearest to the cave, we found that some old guides, which had been left in that compartment were bent out of their natural state indicating a movement of this compartment of the shaft.

We also went up into the west stops on 200 level where Porter and I had previously been and I showed Mr. Dwyer the near limit of the cave. We then went to the office and reported our findings to Mr. Greenough.

Because of the unfavorableness of this report, Mr. Greenough called in Mr. McLeod and Angus McDougal to also examine and report on the condition of the shaft.

After covering the same ground that Mr. Dwyer and I had covered, it was the unanimous opinion of us all that the shaft was not safe because of the possible movement of the ground at the edge of the cave and the influence that this movement of ground might have on the safety of the shaft.

We therefore decided that since there was no possibility of any of the men in the cave being alive, we could not endanger the lives of the rescuers, and therefore it would be policy to abandon the mine.

In the operation of the mine on the day shift because of the activity of the cave and the consequent inconvenience and impossibility for one shift boss to have charge of all levels, and in order to lessen the responsibility and territory covered by each shift boss, I had put one shift boss, George Docitrovich, in charge of the 400 and 500 levels, and the other shift boss, Robert Adams, in charge of the 200 and 300 levels. This gave each shifter an opportunity to cover his work more thoroughly and often and to spend much time with the muckers and miners to see that the ore was properly mined and sorted.

The stopes on the 400 and 300 were all timbered up and blocked tight so that as far as we could see everything was in the very best shape. It is a fact that the west stope was nearly worked out and consequently at this time, we did not have as many men in there as the week previously, and they were well scattered. The timber in the west stope was in good shape. Some of the posts were leaning, but Diamond braces had been put in, all butt caps and butt blocks were in good shape, there was evidently no weight on the timbers, and everything was resting lightly and in very good shape.

The relation between the 300 workings and the 400 workings from a mining stand point was apparently a very good one. The N.W. stope was only 3 sets wide and was filled above the 4th floor. A pillar 15' thick existed between the N.W. stope and the old Wheelbarrow stope, which was filled up to the second floor. A rib of rock in place about 40 to 42' in thickness was between the back of the N.W. stope and the 300 level. There was not sufficient opening in either the Wheelbarrow or N.W. stopes to cause us to fear anything in the nature of a cave. This pillar between the N. W. and the Wheelbarrow was left as a precaution to make it easier to undermine the Wheelbarrow stope.

The only plausible cause for the occurrence of the cave to my mind is that some weak point developed below the 300 level due to the soft formation of the ground, slips and fault seams, which abounded, and the presence of water; and that when pressure developed on this point, it gave way allowing the hanging wall of the 300 west stope to fall, crushing the timber of the stope; and this initial cave in the hanging wall was likely immediately followed by a subsequent cave in the old 200 workings.

The fact that the shift boss had been in the west stope only a few minutes before the cave, that George Kozoff, a miner, had just come out of the stope only a minute before the cave, that each reports everything was resting easily in the stope; and that there was not any evidence of any movement of timber or ground whatsoever is evidence that this cave came so instantaneously and so absolutely without warning that no measures could possibly be taken to prevent it, to escape from it, or to get the men out of it.

In the daily performance of my duties, I kept in very close touch with everything being done underground. I spent the greater part of both morning and afternoon going through the stopes in order to check up the sorting and handling

of the ore, as well as the mining and timbering. In addition to this, I had arranged with our Engineer, Mr. Porter, to make a sampling trip after the night shift had blasted and before the day shift had gone down. This was therefore an additional source of information to me as to conditions in the mine before I had actually gone below surface. I also made it a point to see the night shift boss every evening at the shaft, before his shift went down, to see what his line up was and to issue any special instructions, I thought necessary, and if there was any particular piece of work I wanted done, I would accompany the shift boss underground to the spot and explain matters to him, so that I could be sure of a complete understanding between us.

Q When did you generally do your blasting in this stope?

A The shift bosses on both shifts were instructed not to blast in this stope going off shift, that is, the end of the shift. They either blasted at noon time or during shift, as it was not inconvenient to blast and go back in.

Q Mr. Berg. There is a rumor around that the mine had been robbed to the detriment and safety of the miners. What do you think about that?

A I do not understand that rumor except that it is an assertion not based on facts.

Q There has been a great deal of development work in the mine, has there not? A Yes Sir.

Q Just what?

A This report is a report, which I made monthly to Mr. Greenough, and embraces development work in the mine completed between April 1st, and the date of the report. This particular report embraces operations from April 1st to December 31st, 1916.

Drifts and cross-cuts, none on the 200 level. In explanation of this, I will say that the 200 level was practically worked out when the mine was opened last spring.

Drifts and cross-cuts on the 300 level - 1000 feet.

Drifts and cross-cuts on the 400 level - 487 feet.

Drifts and cross-cuts on the 500 level - 475 feet.

Total drifts and cross-cuts 1962 feet.

Raises on 200 level - 80'

Raises on 300 level - 134'

Raises on 400 level - 291'

Raises on 500 level - 65'

Total raises 620'

In addition to this, the Company sunk a shaft 6'x16' over all 3 compartments from a depth of 445' to a depth of 620', or a total of 175' of shaft. A 300 station 25'x10'x10' was cut. The 300 ore and waste pockets were cut. The 500 station 35x15x12 was cut. A 500 sump 15x15x10. A 500 ore and waste pocket, the ore pocket alone consisted of a 60' raise in the solid granite, up to December 31st.

Q Approximately what development work has taken place since the first of January, this year?

A The development work since January has been confined practically to the 500 level. In addition to drifts and cross-cuts since about February 1st, our development work has consisted largely in Diamond Drill work, of which a total of 5000' was drilled.

Q Everything in your estimation then was done for the safety of the miners as you progressed in your work? A Yes Sir.

- Q How far from the 300 did this cave in extend, to the 400?
- A Yes Sir.
- Q Did it spread out on the 400?
- A It was confined in area there to about 4 sets and came through to the level in only 2 sets.
- Q How how many feet square would that be? A A set is 25 square feet.
- Q Mr. Berg when you said this was taking weight at the 400 level or timbers were taking weight as you express it, what did you think that was, where was the pressure coming from?
- A The pressure was coming from above, and I thought simply that it was local. It is a fact that the ore bodies in this mine always have had soft hanging walls and foot walls and consequently it is nothing new to us to have a little local sloughing covering a few sets, and we have never had any trouble in catching up ground of this nature.
- Q Had you had on any of the other levels to the same extent the pressure as you had on the 400 level at this time?
- A Yes sir. We had pressure on the timber in the east stope on the 300 level, where the timber gradually took the weight of the ground as it was mined above us, and we were able to watch this, put in helping posts and bulkheads, work in it, and keep everything in good shape.
- Q Had there been anyone working in the 300 level at the time this weight or pressure you speak of took place?
- A There were 9 men working on the 300 level.
- Q Are those the men that are still in the mine?
- A 6 of them are still in the mine.
- Q How many men did you send up from the 400?
- A There were 5 men in the 400 stope when it was taking weight and these were taken out together with the machines. The stope was abandoned.
- Q Those men were sent up to the 300 were they? A Yes Sir.

Q How many men were on the 300 level at the time of the cave in on the 300 level?

A There were about 25 men on the 300 stopes. The shift boss will be able to give you the exact roll their.

Q Have you any plan of the workings in blue print prepared showing these different levels and stopes?

A Yes. Our engineer has prepared plans of each of the levels showing the stopes and workings.

Q They can be filed and placed with the commission? A Yes sir.

Q Has anyone else any question to ask Mr. Berg?

Q That is all.

OLD WORKINGS

RAISE TO SURFACE

CAVED AREA

STATION

STATION