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FINAL REPORT
SUMMER 1964

ERICKSEN-ASHBY MINES LIMITED PROPERTY

Tulsequah, B.C.

OPERATIONS:

On May 10th, in meeting with the contractors in Vancouver, it was agreed that the barge would arrive at Tulsequah on May 12th, the Crew would be flown in May 13th and the airlift to the mountain started on May 14th or 15th.

On May 11th, in Juneau, I was informed by Ritchie Transport that the barge was still tied up at Wrangell but would be on its way on Wednesday, May 13th or, certainly, Friday, May 15th. On Friday I was informed it would certainly leave Monday. On Monday I was told one barge had sunk and the other was aground and that it would be a week or ten days.

I went to Wrangell on May 19th to determine the true situation and was informed that the other riverboat was damaged, that there was still a considerable amount of Kennco stuff to move to Anuk River and that our material could not move much before the end of the month. While I was in Wrangell the one riverboat that they finally got operative got stuck on sandbars in the mouth of the Stinkine River at least twice because the pilot missed the high tides. Each day, our stuff was to be the next load and on Saturday, May 30th, they told me the barge that was to take our equipment was on its way back from Anuk River. I checked this by aircraft and found that the barge not only was not on the way back but was being loaded at the main barge for another trip to Anuk River.

On May 30th, the tug captain was told by me to load our material on the tug and move out for Taku Inlet. Saturday night by telephone I had located a smaller barge in Juneau that said he could and would move our stuff to Tulsequah.

On June 1st, the tug and smaller barge met in Taku Inlet and it was immediately apparent that the smaller motor barge could not take the load its owner had specified and also that he was discouraged at the size and weight of equipment we had. He said we would try one load and he did but managed to get it only to within about five miles of the border.

Finally, it was decided to airlift the entire load directly to Ericksen Mountain. Helicopters were obtained and the camp was finally established on June 8th. Work on the tunnel began on June 9th and the first drift round into the mountain was blasted on June 17th.

The tug which brought the material to the salt chuck could not of course bring the bulk diesel fuel. It is interesting to note that the barge carrying the diesel fuel, which was supposed to arrive at Tulsequah on May 12th, finally arrived there on June 29th. By this time about 130' of drifting had been completed. In retrospect, it might be interesting to note that if we had waited for the Ritchie Barge to arrive the tunnel would have been started about July 3rd and the first round taken about July 11th. Because the tunnel took 42 days to drive, it would have been completed about August 22nd. The present operation was closed down, i.e. the diamond drilling, because the pond went dry on August 23rd. Thus, none of the 8000' of diamond drilling, which had been contracted for, could have been completed.

SURFACE EXPLORATION:

Prior to the work of this summer, there were no showings between the so-called 'lower showing' - the No. 5 Zone, and the No. 3 Zone. Mr. Waller began prospecting shortly after the camp had been established and after about two weeks work had definitely established the presence of a new zone, now designated as the No. 8 Zone. The zone was found, under quite heavy cover of soil and vegetation, about 700' northeast of our camp. The first work consisted of stripping and trenching with grubhoes and shovels.

When enough places had been opened up, the Winkie portable drill was set up and an attempt made to assess the potential of the zone with 11 short drill holes. The chert wall rock of the mineralization was found to be too hard for the capabilities of the drill resulting in very high carbon loss in the bits. X-ray size bits were ordered to replace the larger AXL bits and produced some improvement in footage, the average rising from approximately 2' per bit to 12' per bit.

Drilling provided sufficient information to conclude that the only satisfactory method of obtaining any kind of representative sample from the showings would be by blasting out quite large samples and then reducing them in size, paying particular attention to conservation of fine grained (soft) sulphides as well as the larger fragments of tough, hard, chert. It was suggested that a small crushing and pulverizing unit, that could be driven by portable gasoline engines, would allow the treatment of samples of no less than 500 lbs. (and preferably 1000 lbs.) and would give truly representative results. The suggestion was rejected.

In the last three weeks of the programme, and Atlas Copco Cobra, gas driven plugger was used to drill and blast the mineralization exposed by trenching. Due to topography and, moreso, to the fact that only one man was available for this work, it was not possible to trench clear across the zone, at right angles to the strike. (Note: it had been hoped that some of the diamond drillers who were off-shift would like to earn some extra money while working on the drilling and blasting. One or two worked a few hours but most were mainly satisfied with their diamond drilling wages.)

The work on the No. 8 Zone has indicated an area which strikes northwest and southeast and which is about 80' long and 30' wide. The walls of the mineralizatien have not been exposed anywhere within this area. Two trenches, about 20' apart and at about 30° to the angle of strike were chip sampled by me with the following results:

Trench which includes Winkie Hole - S4:

Au.	Ag.	Pb.	Zn.	Sb.
0.03	9,2	2.27	3.09	0.27

Trench which includes Winkie Hole - S3:

0.01	6.8	2.53	5.24	0.11

Mr. Waller, who is a vendor in connection with the property and who did the prospecting and most of the Cobra work, also samples the showings and his results are included in this report as Appendix A.

Some Cobra work was also carried out on the upper end of the No. 5 zone. These showings were also sampled by Mr. Waller and are included as Appendix B.

It is possible to make a definite conclusion in regard to the area which includes the No. 5 zone and the No. 8 zone at the present time. The area has been shown to have a potential length of 700' and a minimum width of 30'. The mineralization is composed of the manganese (rhodonite and rhodochrosite)- pyrrhotite gangue which contains fine-grained disseminated galena and sphalerite, upon which are superimposed irregular veins and lenses of galena and sphalerite. This type of mineralization is exactly the same as that encountered in the tunnel and in the diamond drilling that was completed. The structural control of the mineralization is a brecciation in chert beds in the Ericksen Formation. Any attempt at casual, visual assessment of either the continuity or the grade of the mineralization in these zones is unrealistic and the only satisfactory method of assessing their commercial potential is by bulk sampling. Likewise, it is very

doubtful that diamond drilling would be of much avail except to extend the zone after the establishment of commercial values to which the diamond drill results could be referred and to which they could be compared. This recommendation in regard to sampling is not meant to imply a thin margin between what might be ore and what is ore but is based on long established practise which is dictated by the mode of aggregation of the commercially valuable minerals.

UNDERGROUND EXPLORATION:

At the conclusion of my examination in 1963, I recommended that underground exploration was justified and that because it would be too dangerous and too expensive to set up on the surface of the mountain, a tunnel should be driven and diamond drilling carried out from the tunnel. I made three traverses up the mountain above the portal this summer and I am more firmly convinced than ever that not only was the surface epproach not feasible but that drillers (at least the crew we had on the property) would have refused to work on the steep rocky faces that were fog-bound during about 50% of the summer season.

It had originally been planned to collar the adit in the No. 3 showing but when camp had finally been established, and the mining crew wanted to get to work, there was still too much snow covering the No. 3 to start the tunnel there. As a result, a portal site was chosen about 100' due south of the No. 3. The tunnel wes driven to a point about 120' from the portal on a line of S 50° E which is approximately the strike of the 'country' and also the mineralized zones which were known.

At 120' from the portal, Mr. Ives visited the property and suggested that the tunnel line which was being carried would put the diamond drill station too far in the hanging wall. Accordingly, the drift was turned to a bearing of due east. Within about 20' of advance, the drift encountered a zone of heavy faulting with clay gouge, breccia, etc. A 16' test steel was obtained from Polaris Mine and driven in. It seemed to hit firm ground so timber was cut, helicoptered to the portal and put in place for the drift to advance. Four sets were placed (about 5' apart) when it was realized that the broken ground was not going to become solid and the face was abandoned.

The heading was returned to the S 50° E strike, from the face where it had been abandoned to turn east, and within one round, mineralization had been encountered. The drift continued in this mineralized material for a distance of 127' when the sulphide zone disappeared suddenly into the right wall as the drift advanced out of the favourable chert horizon into the crystalline limestone which, so far, is completely unfavourable to ore occurrence.

The mineralization in this zone is composed of a breccia made up of quite large, angular fragments of chert wallrock, cemented by the manganese-pyrrhotite gangue. The gangue contains some disseminated galena and sphalerite. A sample of the gangue, which was chosen because it did not show any significant amounts of sphalerite or galena, gave the following assay:-

Grab-rhodonite, rhodochrosite, pyrrhotite:-

Au	Ag	Pb	Zn
0.01	4.9	1.70	2.93

On July 10th, at a point 160' from the portal, the mineralization began to constitute at least 50% of the face and a sample was taken of muck from 4 cars in the round. The assay was as follows:-

Au	Ag	Pb	Zn
0.01	4.8	0.98	2.50

Because no reduction facilities were available the sample was mostly of fines from the cars and may not be representative.

On July 16th, in the vicinity of the first drill station that was cut about 200' from the portal, several samples were taken with the following results:-

	Au	Ag	Pb	Zn	
Muck - 4 cars	Tr.	9.8	2.76	11.10	
3 chip samples	0.01	12.0	4.94	10.29	True width 5.2'
Round & slash diamond drill sta.	Tr.	7.0	2.34	4.51	5 cars
Round 25' from 1st D.D. Sts.	Tr.	12.4	3.69	5.48	6 cars.

Two rounds from the above sample the ore ended abruptly in the drift and turned off on a very narrow stringer into the right wall. Since it had been decided to line-drive to the drill station, no attempt was made to slash and follow the ore.

The drift and large slash at the end were completed on August 1st and diamond drilling was started on August 3rd. Just prior to the completion of the tunnel, a drill programme was laid out by Messrs. Ives-Knutson and Beaton who visited the property. Approximately 4000' of drilling was planned. The general plan was to drill a flat hole out under the No. 1 showing. If this was negative, a second hole was

to be drilled on the same section at plus 47°. If this cut ore a third hole was to be drilled on the same section at plus 34°. If the first hole and second hole were both negative, the drill was to be turned about 15° off section, first to the left and a flat hole drilled. If this hole was negative, a second hole was to be drilled at plus 47° on this section. If this hole cut ore a third hole was to be drilled at about plus 35°. If all the drilling on the second section was negative, the drill was to be swung to the right and the same procedure followed.

Hole U-1 was drilled according to the assigned plan but failed to cut any mineralization at all. Accordingly, the drill was turned up and the 47° hole drilled. This hole not only failed to out any mineralization but also encountered the greenstone much sooner than in the flat hole, indicating, without question, that the sediment-greenstone contact had been offset a minimum of about 160'. The offset is probably related to the fault which occurs in the second diamond drill station. This fault strikes at right angles to the drift and dips toward the portal at 45°.

Due to the uncertainty resulting from the geologic conditions made apparent by Holes U-1 and U-2, it was decided to digress from the assigned plan and establish at least one 'total' cross section of information before proceeding. Accordingly, Hole U-3 was laid out on the same line as U-1 but pointing in the opposite direction. The Hole was to be drilled to the hanging wall volcanics in order to establish the width and nature of the Ericksen (sedimentary) Formation.

At 11 feet and 16 feet, Hole U-3 cut mineralization, After the hanging wall volcanics had been reached it was decided to extend, if possible, the mineralization cut in the hole. Accordingly Holes U-4, U-5, U-6 and U-7 were drilled. The following summary gives the results of this drilling, from northwest to southeast:-

	Au	Ag	Pb	Zn	Cd	Sb
Hole U-4 (38.9-39.7)	0.05	7.4	0.94	0.30	Nd	Nd
Hole U-3 (36' Se along strike)						
11.1-12.1	0.01	1.1	0.55	2.05	Nd	Nd
16.1-16.8	0.10	10.8	5.48	9.98	0.06	Nd
Hole U-5 (16' SE along strike)						
18.2-20.2	0.02	4.4	1.41	5.59	Nd	Nd
20.2-21.5	0.02	6.3	2.45	25.20	Nd	Nd
Hole U-6 (26' SE along strike)						
38.8-42.6	0.02	28.1	12.63	21.21	0.36	0.54
Hole U-7 (1[illegible]' SE along strike)						

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In Hole U-6, a rock not previously encountered on the property was cut. The Hole showed 4.4' of lamprophyre which was dark green and quite basic. This rock occurred in contact with the sulphide intersection. In Hole U-7, 15.2' of lamprophyre were cut with no evidence of sulphide on either the hanging or the footwall side.

Relationships in the drill core suggest that the lampro-phyre is probably post-ore and because of this I consider the presence of the rock in U-7 an important indication that the mineral bearing zone continues southeastward. In my experience, I have found that post-ore basic intrusives may frequently occupy a portion of a mineralized break.

Due to the convergence of hole-bearing and strike, it was not possible to drill a hole past U-7. Accordingly it was decided to drill another hole as laid out in the assigned plan and hole U-8 was drilled to the footwall in a section 30° to the left of U-1.

About ten days prior to the collaring of U-8, it had become apparent that the small pond which supplied the drill water was dropping rapidly and was receiving no further water from the mountain, either on surface or from underground. Delays of from 4 to 6 hours per 10 hour shift were becoming common when the drillers had to wait for water. Drill return water was lost in all the holes. U-8 was drilled to a depth of 271' and abandoned because of water supply failure. It was feared that the entire hole would be lost by burning in bits as the drillers tried to make footage with barely enough water. While the word - abandoned - has been used it should be noted that the hole was entirely blank as far as any mineralization was concerned and had penetrated 82' of rocks which were more closely related to the footwall volcanics than to the favourable Ericksen Formation sediments.

Finally, in regard to drilling, it was decided that there might be enough water to drill a shorter hole (a deeper wireline hole using a large volume of water) and it was decided to try to get an intersection below tunnel level on the mineralized shoot in the hanging wall of the drift. U-9 was drilled down at 40° under U-5 to a depth of 92'. The hole remained in the unfavourable limestone formation and was just getting into the favourable chert formation when a final and complete failure of the water supply shut the job down.

CONCLUSIONS:

Judging from accounts of other exploration ventures as reported in the mining press there can be no doubt that the programme on Mount Ericksen came to a successful even though premature conclusion.

In Kerr's original report on the area he spoke of patches of limestone (Ericksen Formation of this report) which seemed to imply that the limestone areas were erosional remnants that might not have any depth. Because the mineralization on Mount Ericksen (also on the New Taku Mines find) is confined to the Ericksen Fromation, there was some doubt that either the limestone or the mineralization it contained would 'go down'.

The summer's programme has proven conclusively that the limestones and especially the chert beds, in which all of the mineralization occurs, are members of a definite stratigraphic sequence and not isolated patches or skins. In addition, the programme has shown that ore grade mineralization occurs at the 3200 level, 650' below the outcrop of the No. 1 and approximately 1000' below the No. 2.

Surface work has indicated the presence of a mineralized zone, the tenor of which can be assessed only he some sort of on-the-job bulk sampling programme. There is no question that such an assessment is justified.

As to the nature of the ore occurrences, all that can be said is that the Ericksen Formation, in general, has been found to be favourable and the chert horizons are favourable specifically, No mineralization of any significance whatsoever was found in either the volcanics or the crystelline limestone horizons. Within the Ericksen Formation, no definite structural control was established. One observer noted that the vein located by drilling in the hanging wall of the drift was 'too small'. I would consider it unrealistic to beleive, in an operation of this kind, that failure to find 'big' ore bodies can classify the summer's work as unsuccessful. I would also reject any notions, not based on fact, which suggest that the ore shoots can only be this or that size or this or that depth because of any characteristics they display on surface or in the tunnel.

The ultimate fact is that a definite zone of mineralization has been established at the 3200 level and, again in retrospect, my major regret of the season is that I did not swing the drift and stay on the mineralized zone. The reason I did not do this was that it was made clear to me that insofar as possible, the programme laid out the winter before was to be adhered to. Also, the mining crews showed great reluctance to turn and this reluctance was manifested by various forms of 'slow down' attitudes. With so much of the season already gone, time could be regained only by line-driving.

RECOMMENDATIONS:

Underground

1. Crosscut No. 1

50' into the hanging wall from the first diamond drill station cut in the drift. Fan down holes with a JV type air drill, moving the clumsy wireline rig to the No. 8 Zone for surface drilling.

2. Crosscut No. 2

50' into the hanging wall from the main drill station at the end of the drift, along the line of Hole U-3. Fan down holes.

3. Drifting

Drift to the southeast from Crosscut No. 2 to explore the intersections obtained in U-5, U-6 and the zone beyond.

In connection with the above recommendation, it should be noted that there is a very strong possibility that the zone encountered on the 3200 (tunnel) level is, in fact, the same break as that along which the No. 1 and the No. 2 zone occur on surface. There is nothing to suggest that either the No. 1 Zone or the No. 2 Zone must die out in any direction. Few ore bodies show consistency in widths either laterally or vertically. There is no reason why the mineralized zones cannot pinch and swell both along strike and down dip nor why they should not vary in tenor, both laterally and vertically.

Also in connection with the above recommendation, it should be noted that an extremely careful selection of the right type of miner will be necessary. The 'smash everything' type of individual employed in driving the tunnel would be useless. The crosscutting and drifting should be for the purpose of obtaining information - not the payment of bonus. It is possible that a somewhat older and more experienced type of miner could be found who, with somewhat less stamina than that required by the bonus type miner, could perform the work well, if more slowly.

Surface

1. Two rock trenches should be excavated completely across the strike of the No. 8 Zone to a depth of at least five feet. The muck from the trenches should be systematically bulk sampled. This programme will require:-

(A) At least one Copco Cobra drill with sharpener and ten sets of steel, starter, 2', 4' and 6'.

(B) A gas-engine driven crusher, slightly larger than the normal laboratory crusher.

(C) Brunton sample splitter and pans.

(D) Lumber for small storage bin, coning and quartering platform, etc.

(E) Grubhoes, axes, etc.

Sufficient powder, caps and fuse are on the property for this programme.

2. If 1. above shows commercial values, the wireline drill should be used to explore along strike and down dip.

Of great importance, in connection with any further work, is the fact that the working season, as far as water supply is concerned, must be limited to the two months from June 15th to August 15th. Weather changes could make a difference but unless water can be pumped from the Taku River, there will not be any guarantee that the supply on the mountain will last in sufficient quantities for any extensive drilling, especially surface drilling.

In view of the complications encountered in the movement of men and materials through the Alaska Panhandle, serious thought should be given to an "All-Canadian" supply line via Whitehorse and Atlin. The final lift to the mountain would still be most efficiently carried out by Livingston Copters of Juneau, Diesel fuel should be shipped in barrels. If this is not considered feasible, the oil should be stored - at Tulsequah - in a tank from which barrels can be filled by gravity instead of pumping.

Yours very truly,

George A. Russell, P.Eng. (Manitoba and B.C.)

APPENDIX A

Waller Samples - No. 8 Zone - Trench which includes Winkie Hole S-4, cf. Russell sample page 3, this report.

Note: Russell sample on page 3, this report is a composite of five chip samples taken at 5' intervals, across the strike. Mr. Ives instructed Mr. Waller to take a series of samples according to apparent values. It should be emphasized that the trench is at no more than 30° to the strike of the formation so that both my samples and Waller's represent an exposed width of approximately 4 feet.

Further, I note that Waller did not get lead and zinc assays on some samples (probably an attempt at economy) so that average figures cannot be calculated. I have written to the assayers to have them do the 'missing' lead and zinc assays and I have left blank spaces in the following tables for them.

Sample	Feet	Au.	Ag.	Pb	Zn	Cd	Sb
59724	1.0	Tr.	7.3	1.62	0.70		
59725	0.5	0.01	8.1	2.14	0.12		
59759	1.0		28.5	11.63	20.98	0.23	
59760	2.6		6.9	2.40	Tr.		0.96
59761	5.0	Tr.	17.1	6.44	11.75		
59762	4.0		3.9	1.45	0.08		
59763	6.5		25.6	3.45	0.20		2.24
59764	1.0	0.02	25.2	3.69	4.14		0.11
59765	0.3	0.01	14.6	4.80	7.09		

Notes: 59724, 59725 and 59765 not in at this writing.

Note high silver and relatively low lead in 59765 which might indicate tetrahedrite in the sample.

APPENDIX B

Waller Samples - No. 5 Zone - Trench in which S-1 and S-2 Winkie Holes were drilled. Trench at 45° to strike - sample represents an exposed width of 8 feet.

Sample	Feet	Au	Ag	Pb	Zn	Cd	Sb
59751	2.0		3.5	1.98	0.70		0.11
59752	0.8	Tr	6.4	13.22	Tr.		0.16
59753	3.0		2.2	4.19	3.77		0.27
59754	1.2		2.7	1.90	1.72		0.03
59756	2.0		1.1	1.57	0.40		0.53
59757	1.0		3.2	2.00	3.42		0.05
59758	4.0		0.80	0.35	0.42		0.05

While undoubtedly of little quantitative significance and assuming all the missing assays in Appendix A and Appendix B as being blank, I believe the following average of all samples taken from the so-called Lower Showings, is of interest:

Silver	9.1 oz/ton
Lead	3.29%
Zinc	3.49%

I believe the following comparison is also of qualitative interest:

	Ag.	Pb.	Zn.
Average of all samples From Lower Showings	9.1	3.29	3.49
Add in and Average all surface samples from Upper Showings	12.1	3.97	6.62
Six-car sample, inclusive free mineralization in drift - 4' of sulphide, 2' of barren wall-rock in round	12.4	3.69	5.48