MINERAL EXPLORATION REPORT

2298

GEOLOGICAL, GEOPHYSICAL & GEOCHEMICAL SURVEYS

AX - ZIP CLAIM GROUP

PEMBERTON AREA

LILLOOET MINING DIVISION

BRITISH COLUMBIA

CANADA

FOR

CERRO MINING COMPANY OF CANADA LIMITED

SUITE 401, 44 VICTORIA STREET

TORONTO 1, ONTARIO

LATITUDE 50° 15' N

LONGITUDE 122° 45' W

BY

M.D. KIERANS, P. ENG.

CONSULTING GEOLOGIST

MARCH 25, 1970

MINERAL EXPLORATION REPORT

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PEMBERTON, LILLOOET M.D. B.C.

FOR

CERRO MINING COMPANY OF CANADA LIMITED

M.D. KIERANS

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ILLUSTRATIONS

SUMMARY

This report summarizes and puts in assembled form the reports prepared by various consultants and exploration services on the AX - ZIP group of claims held by agents for Cerro Mining Company of Canada Limited.

All the consultants worked under my field direction. In addition, the results of field mapping, rock and soil sampling, carried out by myself or my employees, are included. This report is prepared for assessment purposes.

The sixty claim group is aligned along the south-west side of Lillooet Lake about nine miles east of Pemberton, B.C. Pemberton is on the P.G.E. railroad about 95 miles from Vancouver by road and rail. Access to the claims is by road (9 miles) and boat (1 mile). There is no road to the claims. Previous work reported by Cairnes (1) aroused our interest in the area.

Two adits on the Lake and Eagle showings, a few diamond drill holes and some trenching and a short diamond drill hole on the Boulder Creek showing and a few other trenches are the extent of previous work done before 1924, about 1935 and also about 1959. The above work was reported in B.C. Minister of Mines Annual Reports and in assessment reports 263 and 264 (see References).

Continued ....

The work on AX - ZIP claims is part of a larger project for Cerro Mining Company of Canada Limited, on the Pemberton "Pendant" of highly deformed Triassic volcanic and sedimentary rocks. The Pendant is about 30 miles long by 10 miles wide at its widest point. Granitic rocks intrude the pendant and surround it. The general geology is only imperfectly known as the area has not het been mapped regionally by government geologists. The most important structural lineament is the N-W trending Owl Creek structure. North-east cross fractures and dikes appear to be economically important structural elements.

Detailed geophysical and geological surveys and sampling projects were carried out in the vicinity of the Lake and Eagle showings. The result of this work was disappointing. The potential of the showings themselves is limited but a larger target evolved from the detailed work. So far the result of this broader work on the N-W trending Eagle shear zone, which apparently controlled massive magnetite (with low grade chalcopyrite) concentrations, is inconclusive. Our soil sampling program indicated a number of "open" soil anomalies on the N-W extension of the Eagle shear zone. In all about 600 samples were collected from the B_2 horizon along the shore of the lake on the AX - ZIP group. These were tested for zinc and copper and soil maps prepared. Geological mapping indicates that most of the property is underlain by a thick volcanic sequence with at least one marble skarn horizon,

Continued ...

which is directly related to the known sulphides on the property. The "Skerl" pyrite-chalcopyrite showing at Boulder Creek is in a sheared acidic phase of the volcanics. The soil dispersion patterns located all the known mineralized zones and a few soil anomalies not related to known mineralization (south of the Lake adit) deserves additional detailed field mapping. Some of these are "open" upslope which may indicate shears parallel to the N-W trending Eagle shear zone. Additional field geological mapping in the vicinity of the zinc-copper soil anomalies is warranted.

MINERAL EXPLORATION REPORT

GEOLOGICAL, GEOPHYSICAL & GEOCHEMICAL SURVEYS

AX - ZIP CLAIM GROUP

PEMBERTON, LILLOOET M.D., B.C.

FOR CERRO MINING COMPANY OF CANADA LIMITED

INTRODUCTION

In February 1969, the writer recommended to Cerro Mining Company of Canada Limited, a primary exploration project on the Pemberton "roof pendant" of volcanic and sedimentary rocks near Lillooet Lake and the town of Pemberton. As part of this project sixty claims were staked in the spring and early summer of 1969 for Cerro on the south west shore of Lillooet Lake not far from the delta formed by Lillooet River. During the summer, due to personnel problems, much of the proposed work on the broad regional primary exploration ore search project was suspended and our activities were concentrated on a geological, geochemical and geophysical assessment of the mineral potential of the showings on the AX - ZIP group and in search for economic mineralization within this staked property.

During this more limited work project, personnel of Eagle Geophysics Ltd. of Vancouver, J.R. Woodcock Consultants Ltd., Associated Geological Services, Geotronics Surveys, and my own employees worked under my direction in the field. Except for Geotronics Surveys (who supplied a crew of two for blasting and trenching) the above

companies supplied reports on their work which are included here as appendices to this report. The purpose of this report is to present and discuss results of the exploration field work done on the AX - ZIP claims and to offer conclusions and recommendations.

LOCATION AND ACCESS

The AX - ZIP 60 claim group is aligned along the south west shore of Lillooet Lake. The northern-most claims touch the shores of Lillooet River. The southern-most claims of the group straddle Ure (or Boulder) and Schist Creeks. The length of shoreline of the lake covered by the claim group is about 4 miles and the maximum width is about one mile from shore. The Location Map shows the regional location of the property and Figure 1 shows the details of property location in relation to Lillooet Lake. Inset maps supplied with the maps of A.G.S. and Eagle Geophysics (pocket) show the property in relation to Pemberton and other major local topographic features.

Access is by two-wheel drive vehicle on good gravel road from Pemberton to the north-east side of the north end of Lillooet Lake, not far from where Joffre Creek enters the lake. Distance by road from Pemberton is nine miles. There is no road access to the claims. From several launching sites used during the summer an outboard driven boat was used to cross the lake (about one mile). There

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are a number of landing spots which were used on the south east side of the lake for our work there. There are a few, very rough, foot trails in the vicinity of the Lake adit and Boulder Creek, otherwise, foot travel on the claims was on claim lines and blazed compass lines. A useable light helicopter landing pad is located about one hundred feet from the portal of the Lake adit. This pad was strengthened and a few nearby trees cut during the project. One landing was made during the summer on this pad.

The general accessibility of the area is very good. Pemberton is on the Pacific Great Eastern Railway (about three hours from Vancouver). Pemberton is 95 miles by good all weather road from Vancouver. The population of Pemberton and nearby Mount Currie is about 800. There are a hotel, stores, gasoline and service garage, etc. in Pemberton. This town was the base from which work was done on the claims. We did not establish a field camp during the project but travelled daily by jeep and boat to the property from an office in Pemberton.

PROPERTY AND OWNERSHIP

The AX - ZIP claim group consists of the following sixty located claims:

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CLAIM NAME	RECORD NUMBER	REGISTERED HOLDER
ZIP # 1-4 (incl.)	30002 - 30005 (incl.)	A.B. Baldwin, Suite 401, 44 Victoria Street, Toronto 1, Ontario. FMC # 78691 Issued May 8, 1969
AX # 5-12 (incl.)	29906 - 29913 (incl.)	M.D. Kierans, Apt. 801, 1414 Barclay Street, Vancouver, B.C. FMC # 66931 Issued April 11, 1968
AX # 13 - 38 (incl.)	29922 - 29947 (incl.)	M.D. Kierans, Apt. 801, 1414 Barclay Street, Vancouver, B.C. FMC # 66931 Issued April 11, 1968
AX # 39 - 44 (incl.)	30341 - 30346 (incl.)	M.D. Kierans, Apt. 801, 1414 Barclay Street, Vancouver, B.C. FMC # 66931 Issued April 11, 1968
AX # 45 - 58 (incl.)	30347 - 30360 (incl.)	M.D. Kierans, Apt. 801, 1414 Barclay Street, Vancouver, B.C. FMC # 77057 Issued March 27, 1969
AX # 57 - 58 (incl.)	30708 - 30709 (incl.)	A.B. Baldwin, Suite 401, 44 Victoria Street, Toronto 1, Ontario. FMC # 78691 Issued May 8, 1969

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PREVIOUS WORK

Our interest in this area was aroused by Cairnes' account of previous work done on the Lake, Eagle and Boulder Creek showings (1). A photocopy of the account in Cairnes' report is attached as Appendix D. In the Minister of Mines reports for various years there are other accounts of work done on these showings after 1925 and presumably before 1935.

Three long diamond drill holes were drilled by Howe Sound Company about 1929 near and under the Lake and Eagle showings (see Fig. 5 for location of these holes). A fourth short diamond drill hole was drilled probably in the fifties, by persons unknown, just above the Lake adit. See page 5 of Cross' report for account of physical work done on showings of AX - ZIP claim group. To our knowledge the area between Boulder Creek showing (Skerl's showing) and the Eagle showing has never been systematically soil-sampled or geologized.

(arggh!)

REGIONAL GEOLOGY

The best description (and only comprehensive government geological report) of the regional geology of the Pemberton area is by C.E. Cairnes (1).

The Pemberton Pendant of highly deformed volcanic and sedimentary rock lies to the north-east of a somewhat similar pendant of

roughly similar size centered near Alta Lake on the P.G.E. railroad. Further to the south-west is the smaller roof pendant of sedimentary and volcanic rocks which contains the Britannia Mine ore bodies. All these pendants are, of course, set in the granitic rock of the Coast Range Intrusives.

The AX - ZIP group lies near the south-west edge of the Upper Triassic Pemberton volcanic-sedimentary complex. Batholithic rocks of the Coast Range intrusives surround and intrude the "pendant". Mineral deposits occur in the batholithic and pendant rocks but most of our detailed exploration work was within the volcanic-sedimentary assemblage. The pendant as a whole trends N-W and is at least 30 miles long by about 10 miles wide at its widest point. There is some evidence, according to Cairnes, for multiple intrusive action in the batholithic rocks. Below is a table of Formations copied from Cairnes' report.

ERA	PERIOD	DESCRIPTION
Quaternary	Pleistocene and Recent	Morainic deposits; gravel, sand, and clay
Mesozoic ..	Cretaceous?	Sandstone, slate, and conglomerate
	Post-Upper Triassic: possibly in part or entirely Cretaceous	Batholithic intrusives, chiefly granodiorite and quartz diorite
	Upper Triassic	Andesitic lavas; pyroclastic rocks including tuffs, breccias, and agglomerates; limestone, and conglomerate; chloritic, sericitic, and talcose schists

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Within the non-intrusive rocks there are numerous north-west trending fractures, faults and rock contacts. Of particular economic importance, according to Cairnes (and our work corroborated his deductions) are north-east trending fractures and dikes, e.g., the lamprophyre dike of the Lake adit (with its boundary fractures) which is spatially related to sulphide mineralization in the Lake adit.

An important lineament within the Pemberton Pendant which appears to be related to sulphide mineralization is the Owl Creek lineament which trends north-east across the pendant. The Tenquille Creek showings, the Owl Creek showings, the Margery showings and the prospects of the AX - ZIP group appear to bear a spatial relationship to this lineament. This lineament may follow the Lillooet river valley to the west of Pemberton Meadows and Lillooet Lake east of the Boulder Creek (Skerl) mineralized area.

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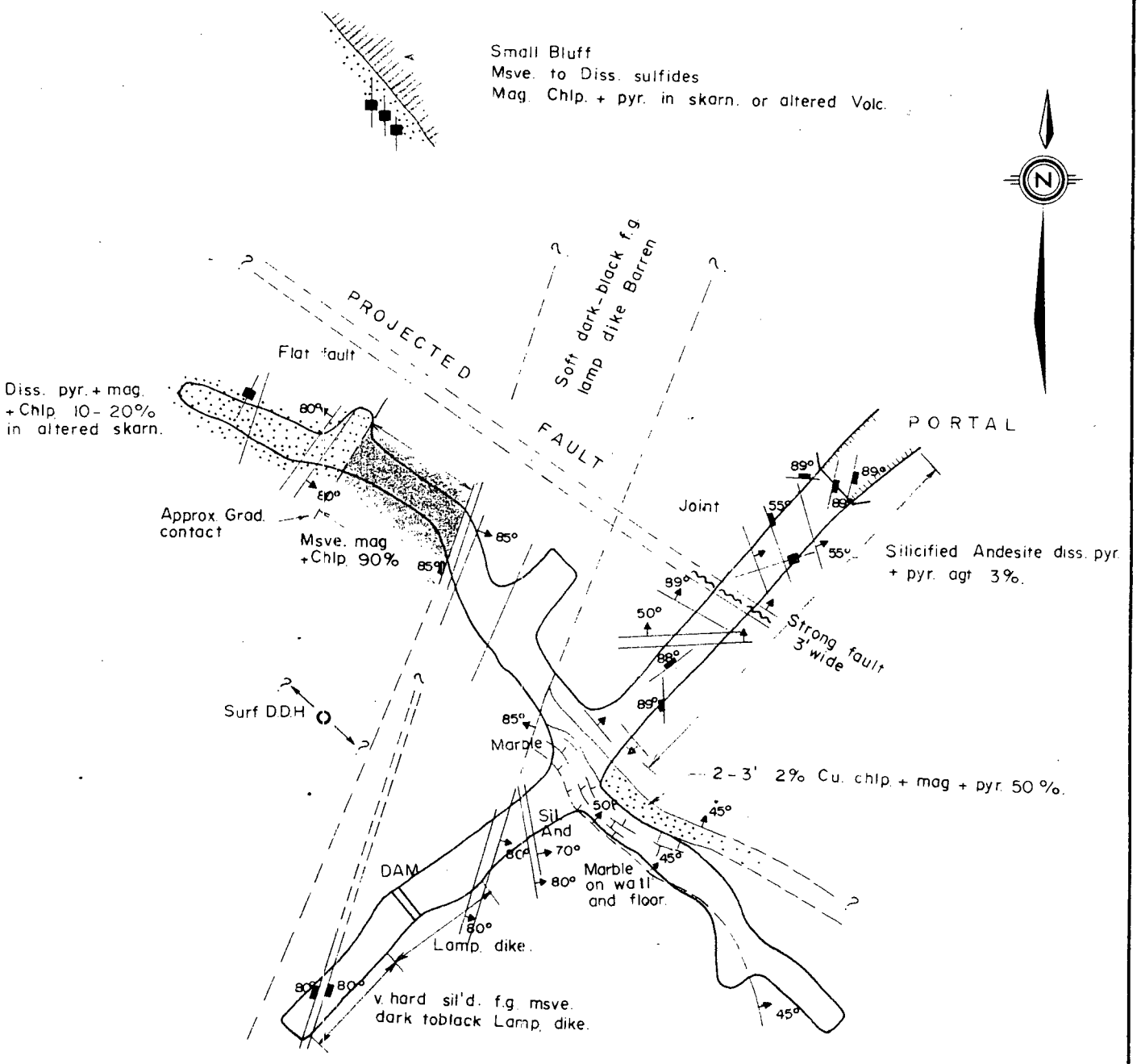
GEOLOGY OF LAKE AND EAGLE SHOWINGS AND GEOPHYSICAL SURVEYS NEAR LAKE AND EAGLE SHOWINGS

For a description of the geology of the Lake and Eagle showings please see Appendix B by J.R. Woodcock, P. Eng. Cross' account (Appendix A) is also useful.

Figures 6 and 7 show at 1" = 20' scale the geology and assay pattern of the sulphide-magnetite mineralization found in the adit and on the surface near the portal of the adit. The writer of this report mapped and directed the sampling of the adit.

The control for sulphide mineralization near and in the adit is not definitely established. The chalcopyrite-pyrite-magnetite mineralization (both the disseminated and massive type) may be related structurally (a) to the N-E trending (vertically dipping) lamprophyre dike where it intersects the limestone-marble-skarn horizon, (b) to the narrow diorite dike noted by Woodcock, (c) or to N-W trending faults (d) or to combinations of the above three structural elements. There are three types of mineralization in the adit; (a) weakly disseminated pyrite-chalcopyrite in altered skarn (argillized), (b) more massive magnetite-pyrite-chalcopyrite mineralization on the west side of the massive mineralized zone, (c) massive magnetite-chalcopyrite-pyrite-pyrrhotite mineralization on the west contact of the black, soft, fine-grained lamprophyre dike, (d) the narrow, 2'-3' thick band of massive mineralization (chalcopyrite, magnetite, pyrite),



Surv. by Brunton Tripod + Tape
Geology Waist High

M.D. Kierans

CERRO MINING CO. OF CANADA LTD.
WESTERN DIVISION
VANCOUVER B.C.

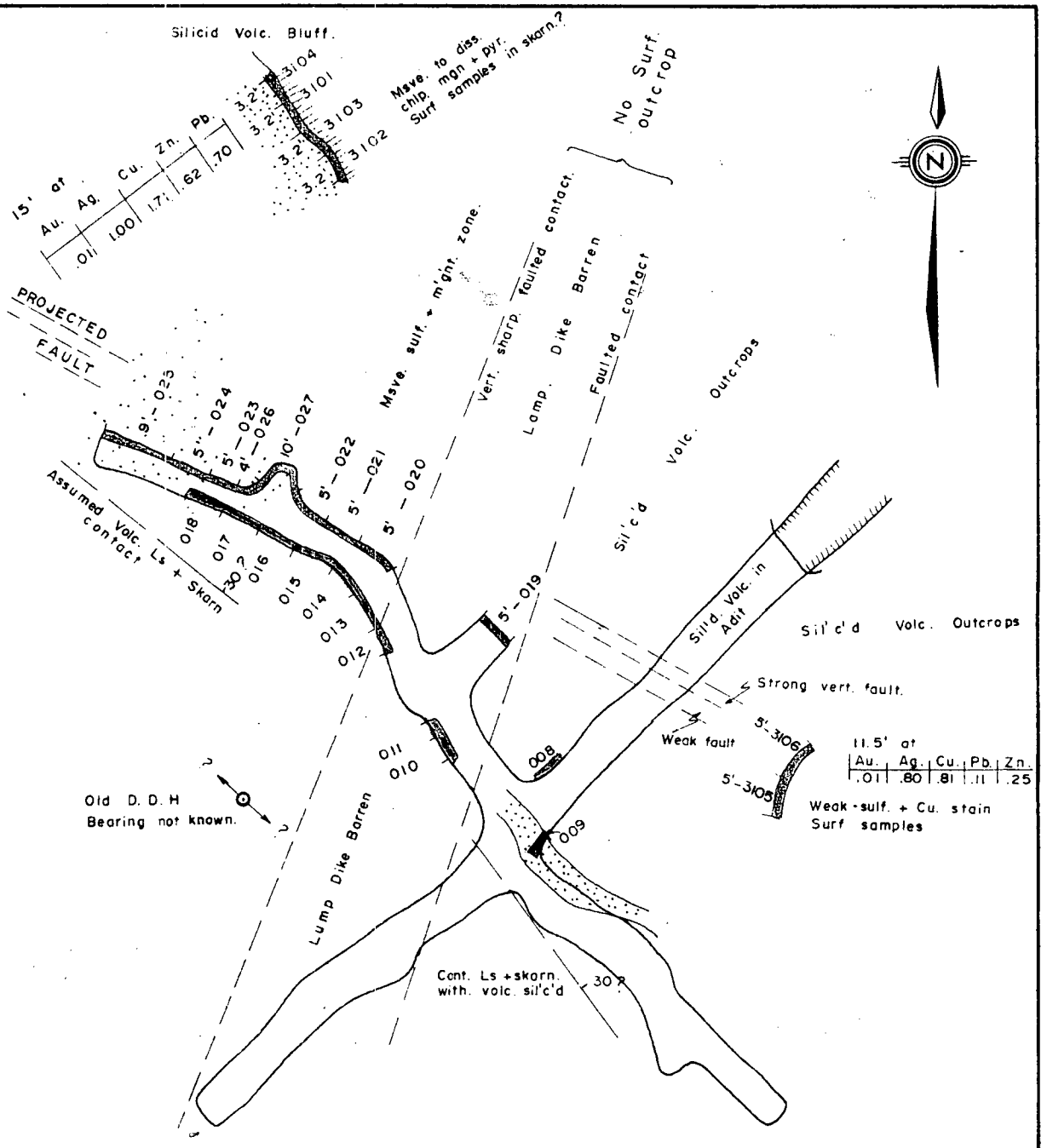
PEMBERTON PROJECT

LAKE ADIT
UNDERGROUND GEOLOGICAL PLAN
AX — ZIP GROUP

Geology by M.D.K.
Survey by J. Mc C. & J.C.

FIG. 6

M.D. KIERANS, P. ENG., CONSULTING GEOLOGIST | March 1970 Drawn by A.O. | Scale 0 20' = 20 feet



ASSAY RESULTS

Sample no.	Cu.	Pb.	Zn.	Au	Ag.
40008	2.33	.05	19	.02	.2
9	1.55	.12	.22	04	.2
10	1.28	.10	.46	Tr.	.1
11	.70	Tr.	.29	.04	1.1
12	.63	.20	.12	.005	.1
13	.90	.12	.15	.01	.2
14	.68	.10	.22	Tr	.1
15	1.08	.15	.22	.02	.2
16	1.06	.13	.34	.02	.1
17	1.76	.12	1.11	.02	.4
18	1.03	.10	4.08	.005	.6
19	.10	.15	.36	Tr.	Tr.
20	1.64	.20	.17	.04	.2
21	1.54	.05	.17	.02	.3
22	.89	Tr.	.10	.02	.1
23	.39	.20	.80	Tr.	.1
24	.37	.10	2.08	.01	.2
25	.21	.13	4.42	Tr.	Tr.
26	.11	.05	.24	.09	.4
27	.95	.05	3.24	Tr.	Tr.
40003 - 1	.06	—	—	.005	.8
40003 - 2	.07			Tr.	.8

Assayd by COAST ELDRIDGE Au Ag. July 3, 1969.
Cu.— June 26, 1969 Pb. Zn. July 3, 1967

		Cu %	Ag %	Zn %
Av. Msve. Zone	7 sample	1.07	.09	.36
Av. Cont. Zone	8 sample	.99	.07	3.66
Av. Diss. Zone	4 sample	.27	.16	3.38
Av. Min'z'n. Zone	2 sample	1.99	.08	15

FIG. 7

CERRO MINING CO. OF CANADA LTD.
WESTERN DIVISION
VANCOUVER B.C.

PEMBERTON PROJECT

LAKE ADIT — SAMPLE AND GENERALIZED GEOLOGICAL PLAN

AX GROUP

M.D. KIERANS, P. ENG.
CONSULTING GEOLOGIST

March 1970
Drawn by A.O.

Scale 0 20'
1" = 20 feet

near the limestone horizon. The sulphides appears to be related to a flat (dip 45°) fault just below the narrow band of massive fair grade copper "ore", i.e., 2% Cu. Figure 2 shows the results of sampling of the above different mineralization types. In general, the main economic conclusion is that the ore zone is too small and too low grade to be of interest to Cerro, i.e., about 5,000 tons at 1.00% Cu and about 3.00% Zn. However, open-cut methods could be used on the steep hillside to mine and cheap magnetic concentration methods could be used to up grade the "ore".

The N-E trending structural trend is rather clearly outlined by the magnetometer contours near and below the adit (Figures 9, 10, and 11). It should be noted that the presumably negative holes drilled by Howe Sound (Figure 5) have eliminated any large tonnage potential in the immediate vicinity of Lake and Eagle showings.

We recognized rather early in our work that tonnage potential of the Lake showing was limited but our exploration attention was attracted to the Eagle showing only 200' to the north. Here a wide (200') zone of sheared siliceous volcanics (possibly silicified and schistose andesite - or rhyotite as mapped by Woodcock) contained scattered concentrations of low grade magnetite and chalcopyrite, apparently related to steep N-W trending faults and shears. This zone apparently trended N-W (as observed in foliation trends in outcrop on the hillside

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directly below the adit). The shear zone is wide and long enough to contain important concentrations of copper mineralization. It was decided to carry out a limited magnetometer and EM survey over the extension of the N-W trending sheared zone to the south-east on the talus and overburdened slope below and to the south-east of the Lake adit. The results (see Walcott's report, Eagle Geophysics, Appendix C) were disappointing. However, as will be discussed later under Geochemistry there remains a possibility of an extension of the mineralized shear zone into overburdened and talus covered ground to the north-west.

GEOLOGY OF AX - ZIP CLAIM GROUP

Cross mapped part of the geology of the claims between the Lake and Eagle area and "Skerl's" showing on Schist Creek (3). It should be noted that in our work we used Skerl's geological map (3) at 1" = 200' in the vicinity of Skerl's showing. Figure 5 shows the results of Cross' work. His original map was at 1" = 400' on claim and compass-blazed lines and reduced for this report to 1" = 1000'. Additional traverses are needed to complete the picture here and to check out all of the soil anomalies located. Cross' report (Appendix A) gives a good description of the general geology of the claims and of the rocks and structures in the immediate vicinity of some of the soil anomalies and need not be repeated here.

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GEOCHEMICAL SURVEYS OF AX - ZIP CLAIM GROUP

The purpose of this section is to supplement Cross' report (Appendix A) on our geochemical work on AX - ZIP claims. 697 soil samples in all were collected. 697 were tested for copper content and 575 soil samples were tested for zinc content. For screening, analysis procedures, etc. see Appendix E. Samples were taken by a crew of three, under W. Havdale (U.B.C. senior student), with a shovel at a depth of 10" - on the average. The samples were put in standard soil sample paper envelopes using a plastic spoon. The location, soil type of samples, etc. were recorded in the field on standard soil sample forms which are on file with Cerro Mining Company of Canada Limited. The horizon sampled was the B_2 (where available). Quite a few samples were taken from talus slopes on soil pockets. It is quite evident that the sampling procedures produced reliable results because all known mineralized areas on the claims were reflected in the dispersion patterns.

In the preparation of Figures 3 and 4 the writer used a lower anomalous rating for zinc and copper values than was used by Cross. The results were generalized slightly by the writer to extend the anomalous or dispersion patterns somewhat beyond Cross' original interpreted anomalies. Cross' maps were prepared at 1" = 400'. For this report they are reduced to 1" = 1000' by photographic methods.

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I also included a few small zones on the soil maps which were left out of Cross' original maps so that the table of soil anomalies in Cross' report is not quite complete. Also Cross refers to Figures 2 and 3 for zinc and copper. In my adaptation of Cross' original map I changed the Figure numbers to 3 and 4. The following brief notes on the maps are included to supplement Cross' interpretation.

1. Anomalies Z_3 to C_6 confirm the known mineralization of Havdale's showing at the north end of the group.
2. Anomalies C_7 to Z_6 confirm the known mineralization of "Skerl's" showing near Schist Creek.
3. The north end of Z_1 and the south part of C_1 confirm the known mineralization of the Lake adit area.
4. Anomalies C_4 and C_5 and Z_{11} and Z_4 may be part of the N-W extension of the Eagle shear zone. Note that these zones are "open" uphill.
5. Anomalies Z_2 and part of C_1 may be a new mineralized zone on the Eagle shear closer to the known Eagle shear mineralization.
6. Z_9 and C_3 are small anomalous areas which may be part of the larger Z_{10} anomaly. The up-slope extension of Z_{10} should be given careful field evaluation.

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7. Anomalies Z_7, C_8 and C_9 are small insignificant zones east of Boulder Creek on recce lines.
8. Z_5 and Z_8 are also small zones west of Boulder Creek.
9. C_2 and south part of Z_1 are quite important and large anomalous areas which must be carefully geologically checked in the field. These may represent new mineralized zones. Depending on results of field checks additional follow-up work may be needed.

Respectfully submitted,

M. D. Kierans

M. D. Kierans

M.D. Kierans, P. Eng.

REFERENCES

(1) CAIRNES, C.E. Pemberton Area, Lillooet District, British Columbia from Summary Report 1924, Part A, G.S.C.

(2) MINISTER OF MINES REPORTS B.C. - 1928 and 1932

(3) SKERL, A.C. Assessment Report 263 and 264, Department of Mines & Petroleum Resources, B.C. Geological and Geochemical Reports MAC Nos. 1 and 3, M.D. Boulder Creek Property April 1959.

CERTIFICATE

I. Martin D. Kierans of 1733 Comox Street, (Apartment 2704), Vancouver, B.C. with Consulting Geological Engineers office at 415, 736 Granville Street, Vancouver, B.C. do hereby certify that I am:

1. A Consulting Geological Engineer with business office at above address.
2. A Resident Member of the Association of Professional Engineers of the Province of British Columbia No. 4497.
3. A member of C.I.M.M. and Associate Member of A.I.M.E.
4. A graduate in Geological Sciences of the University of British Columbia (M.A. 1952), and McGill University (B. Sc. 1949).
5. I have practiced my profession as geological engineer and mine geologist for 19 years.
6. My knowledge of the property discussed in this report is based on field direction of the work by my employees and various consultants, on study of government and assessment reports for the area and in field mapping and sampling of some of the important showings.
7. At present I have no interest, directly or indirectly, in the shares of Cerro Mining Company of Canada Limited, nor do I expect to obtain such interest in the future.

Dated this 25th day of March, 1970 at Vancouver, B.C.

M. D. Kierans

M.D. Kierans, P. Eng.
Consulting Geologist.

A P P E N D I X " A "

REPORT

ON THE

AXE-ZIP CLAIMS

TABLE OF CONTENTS

LOCATION AND ACCESS

The Axe-Zip claims are on the southwest shore of Lillooet Lake, approximately 10 miles from Pemberton, British Columbia. Access is by all-weather gravel road to the western end of the lake, then approximately one mile by boat to the claim group.

MINERAL CLAIMS

The Axe-Zip group consists of 24 mineral claims, the Axe No's 5 to 38, Axe No's 45 to 58, and the Zip No's 1 to 4.

PREVIOUS WORK

A. Geological Reports:

C. A. Cairnes in his 1924 G. S. C. report describes the adit and skarn showings. All trenching and tunnelling was probably done during the period of World War I. Dr. A. G. Skerl examined the Schist Creek mineralized area bearing his name.

B. Physical Work:

1. Trenching and diamond drilling on Skerl's showing
2. Excavation and attempt at tunnelling on Havdale's showing
3. Trenching on showings between the Adit and Eagle showings
4. Present (1969) blasting and excavating on Eagle showings
5. Tunnelling (12 feet) just east of the Eagle showing
6. Tunnelling from portal of Adit Showing for 120 feet, crosscutting in tunnel for 110 feet.

PROPERTY GEOLOGY

A. Structure and Rock Types

A plutonic body of granodiorite composition borders the north-eastern edge of the claims, and has an external discordant contact with the country rocks to the south. Most of this latter area is overlain by andesitic lavas which are several hundreds of feet thick, and which dip gently to the south (20° - 25°) in blocky, massive 4-foot layers. Major north-south block faults disrupt these layers and syngenetic shearing is expressed in prominently parallel north-south joints and shears. These have provided conduits for mineralizing hydrothermal solutions, and andesitic and dioritic dyke intrusions.

A basal limestone rests unconformably under the lavas and outcrops in a very few places on the claims.

Contact metasomatic copper-zinc deposits occur where the basement limestone is in contact with the younger andesite extrusive lavas.

B. Mineral Showings (See Figure No. 1)

1. The ADIT is on line 4 west and is centrally located in the claim group. The 110' long tunnel intersects a cross cut of approximately the same length. Lamprophyre and younger dykes offset a zone of mineralization in the west cross cut from continuing its prominence in the east cross-cut. A small zone of skarn copper-zinc mineralization occurs in the east cross-cut. An average of twenty-eight five-foot channel samples gave assays of:

Gold	0.16 oz/t
Silver	0.24 oz/t
Copper	0.96 %
Lead	0.13 %
Zinc	0.65 %

II Eagle Showing is approximately 800 feet west of the adit. A series of skarn and vein deposits occur between this showing and the adit (See Figure No. 1) The Eagle Showing borders a prominent magnetite outcrop on its west side. A diorite dyke has been replaced by 3' thick layers of massive pyrite. Arsenopyrite, chalcopyrite and sphalerite are accessary minerals.

North-south shearing seem to offset the continuity of the skarn zone from the Eagle showing to the Adit.

III The Havdale showing lies 4000' west of the adit. Here surficial skarn mineralization has been trenched out, leaving the marble barren. Normal to this zone, and 5 feet to the north of it, two massive pyrite dykes (3' and 2' thick respectively) intrude the andesite country rock.

IV Skerl's showing occurs in the Boulder Creek area, just off Schist Creek, and is approximately 150' north of Schist Creek on Line 3. A dioritic dyke intrusion seems to disrupt the continuity of tuffaceous beds rich in white mica. Two diamond drill holes reported by Dr. Skerl in 1960 were not located. Boxes of cores on the ground showed poor copper-zinc mineralization.

Assay of outcrop sampled ran:

Copper	0.3 %
Lead	0.01 %
Zinc	0.15 %

C. Alteration

The most common alteration product seen in the field is epidote, although silicification is quite common in hand specimens under the microscope. This green product occurs in hydrothermally altered zones throughout the property, but is best seen in a 100' wide silicified zone just west of the Eagle Showing. Elsewhere, epidote is inherent in normal rock decay in the andesites throughout the claim group.

GEOCHEMICAL SURVEY FOR COPPER AND ZINC (See Figure No's 2 and 3

A. Reconnaissance soil sampling was done on the eastern end of the claim group along location lines No's 1, 2 and 3, spaced 3000 feet apart. Samples were collected at 100-foot intervals along these lines.

B. Detailed soil sampling covered the area to the west of (A) above, and extends throughout the length of the claim group, parallelling Lillooet Lake. Here a base line runs over 9 claims with parallel lines (4E, 8E, 4W, 8W and 12W) at 400 foot spacing throughout the 9 mineral claims.

STATISTICAL INTERPRETATION DATA

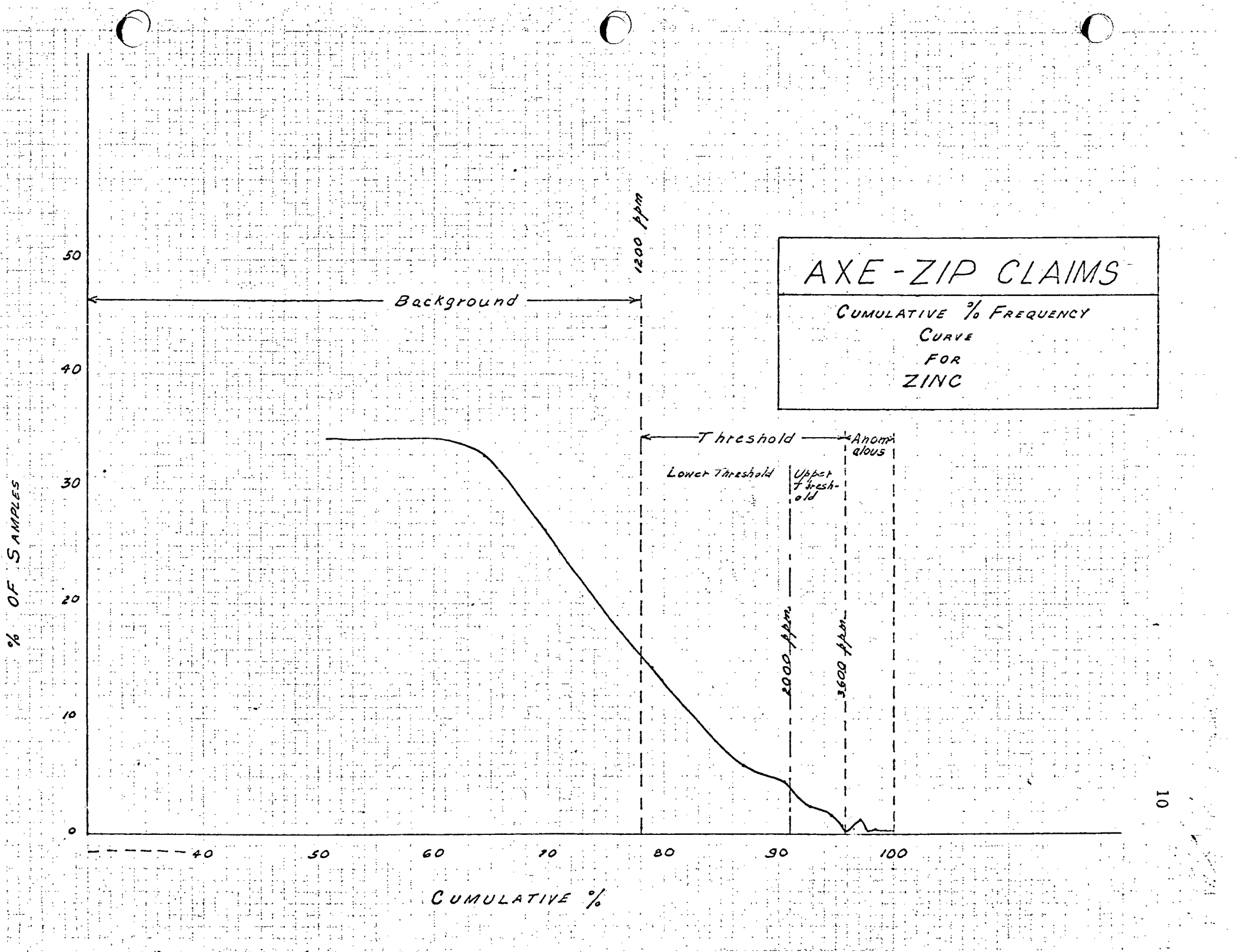
Parts per million (ppm) ranges for Background, Lower and Upper Thresholds, and anomalous values were selected by inspection of inflection points on the Cumulative Percentage Frequency curves for copper and zinc.

Metal	Background (ppm)	Threshold (ppm)				Anomalous (ppm)
		Lower		Upper		
		From	To	From	To	
COPPER	Less than 130	130	200	200	250	Greater than 250
ZINC	Less than 1200	1200	2000	2000	3600	Greater than 3600

No. of Samples analyzed for Copper = 697

No. of Samples analyzed for Zinc = 575

Method of Analysis: Atomic Absorption Spectrophotometer


AXE-ZIP CLAIMS
CUMULATIVE % FREQUENCY CURVE FOR ZINC
1200 ppm
Background
Threshold
Anomalous
Lower Threshold
Upper Threshold
2000 ppm
3600 ppm
% OF SAMPLES
CUMULATIVE %
0
10
20
30
40
50
40
50
60
70
80
90
100

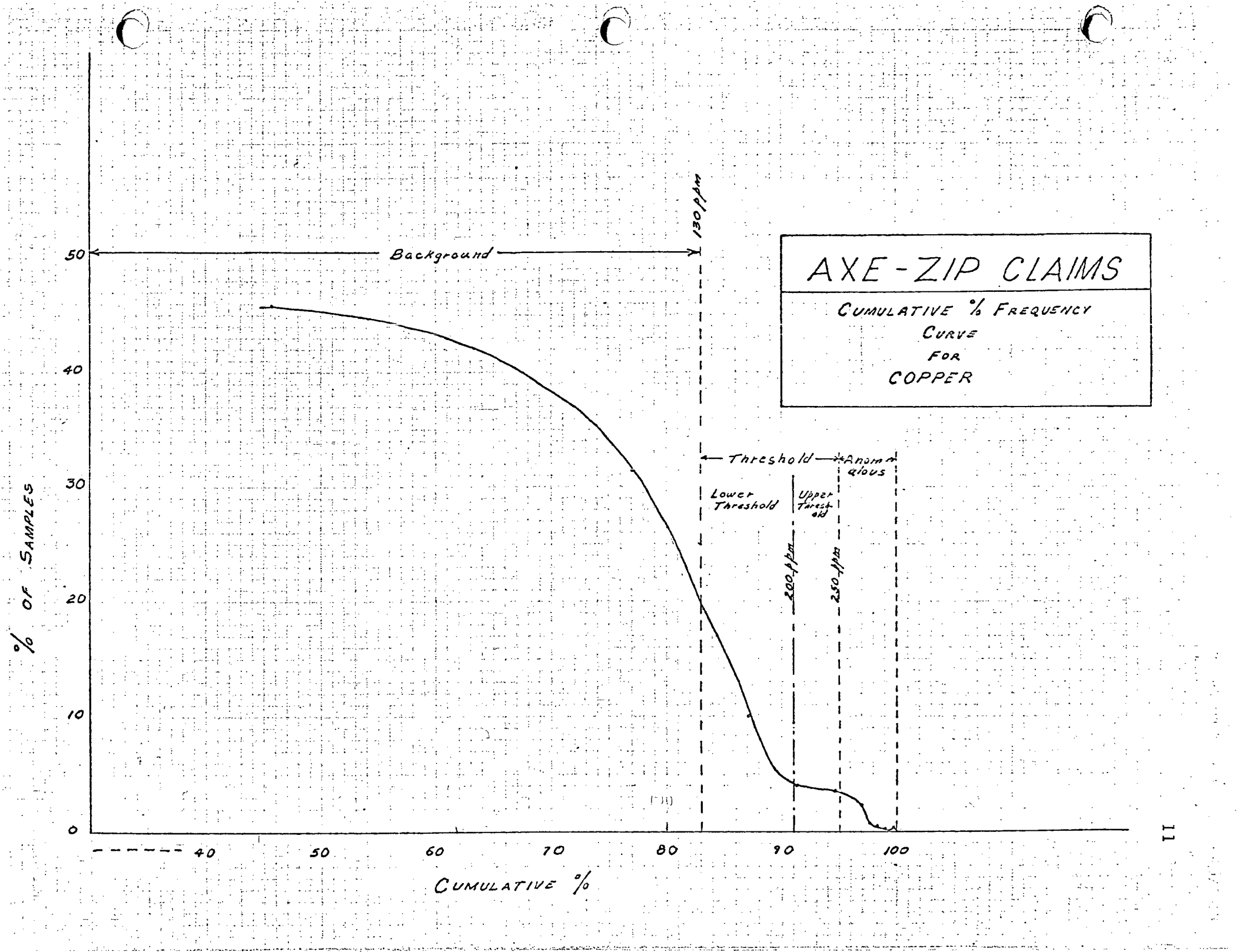

AXE-ZIP CLAIMS
CUMULATIVE % FREQUENCY CURVE FOR COPPER
130 PPM
Background
Threshold
Anomalous
Lower Threshold
Upper Threshold
200 ppm
250 ppm
% OF SAMPLES
CUMULATIVE %
0
10
20
30
40
50
40
50
60
70
80
90
100

TABLE I

COPPER ANOMALIES C1 TO C9

Anomaly No:	Size	Peak Value	Remarks	Significance
C1	800'x3000'	3000 ppm	Partial overlap with anomalies Z1 & Z2 Contains Eagle Showing, and anomalies M2, M3 and M4 Possible contamination of peak value due to adit showing up slope	Largest anomaly Up to 1% Chalcopyrite - Bornite seen in outcrops. Important anomaly
C2	400'x1300'	875 ppm	Anomalous area devoid of outcrops. Copper anomaly not supported by high zinc ppm values Anomaly may reflect two separate mineralized zones	May reflect overburden-covered mineralization
C3	400'x 600'	1700 ppm	Anomalous area devoid of outcrops in glaciated area around rim of glacial end-moraine	Small, strong anomaly. Importance questionable
C4		1400 ppm	"Point Anomaly," downslope from Havdale showing	Reflects Havdale Showing i. e. 5' wide mineralized vein assaying 0. 63% Cu 3. 0% Zn Merits further investigation to East

Anomaly No:	Size	Peak Value	Remarks	Significance
C5	150'x400'	365 ppm	Sample area devoid of outcrops. Anomalous value probably due to humic soil in area. Not supported by high zinc values	Weak anomaly Importance questionable
C6	200'x400'	346 ppm Open	Two small areas of Pyrite-Chalcopyrite mineralization in outcrops (less than 1.0% visual estimate) Within anomaly No. Z4 Open to south	Worth further investigation to south.
C7	200'x200'	760 ppm	Skerl's Showing i.e. 0.3% Cu 0.01% Pb 0.15% ZN Supported by Anomaly No. Z6 Open to north and south	Reflects known bedrock mineralization
C8	200'x500'	310 ppm	In zone of epidote alteration Not supported by zinc anomaly. Open to north and south	Merits further investigation to north and south.
C9	200'x600'	335 ppm	On granodiorite/ andesite contact in humic soil. Not supported by zinc high. Open except to east	Merits investigation to north and south and also west

TABLE II

ZINC ANOMALIES Z1 TO Z6

Anomaly No:	Size	Peak Value	Remarks	Significance
Z1	500'x2400'	8000 ppm (2000 ppm Cu)	Partial overlap with south end of Anomaly C. Contains anomalies M1, M3, Adit showing and Eagle showing	Most important anomaly-eastern end of anomaly worth detailed investigation.
Z2	600'x1000'	5200 ppm	Partial overlap with north end of anomaly C1. In pyrite-chalcopyrite mineralized area (Less than 1.0% visual estimate)	Worth detailed investigation
Z3	300'x1100'	6300 ppm (3000 ppm Cu)	Contains Anomaly C4 Open to north	Eastern end worth detailed investigation
Z4	700'x800'	5640 ppm	Contains anomaly C6 Supported by mineralized outcrop in area Open to south	Merits further detailed work
Z5	200'x200'	2810 ppm	Probably related to high copper sample site 300' up slope Open on north and south	Possible extension of Skerl's showing across boulder and Schist Creeks
Z6	200'x200'	2440 ppm	Coincides with Anomaly C7 Open on north and south	Reflects known mineralization i.e. Skerl's showing 0.3% Cu - 0.01% Pb 0.15% Zn

TABLE III

MAGNETOMETER ANOMALIES M1 - M4

Anomaly No:	Size	Peak Value	Remarks
M1	100'x100'	3,880 ɣ	Coincides with Anomaly EM1 On southeastern end of Anomaly Z1 on talus slope
M2	50'x100'	23,485 ɣ	Within Anomaly Z1 Between Anomalies EM1 and EM2
M3	100'x200'	4,160 ɣ	On southeast edge of Anomaly C1
M4	50'x 50'	1,150 ɣ	Within Anomaly No's Z1 and C1 Downslope from mineralized skarn zone
M5	100'x100'	1,225 ɣ	On southeast edge of Anomaly C1
M6	50'x 50'	2,470 ɣ	Within Anomaly C1 on north edge of Anomaly Z1

TABLE IV

ELECTROMAGNETIC ANOMALIES EM1 - EM3

Anomaly No:	Size	Remarks
EM1	30'x400'	Coincides with Anomaly No. M2 and the skarn mineralization in the adit area. Strongest EM anomaly: dip angle -4.5° high frequency Both low and high frequency peaks coincide within Anomaly No. Z1 open-ended
EM2	35'x100'	Within Anomaly No. Z1 open-ended Dip Angle - 0.2° High Frequency
EM3	60'x75'	Within Anomaly No. Z1, open-ended Dip Angle -0.2° High Frequency

CONCLUSIONS AND RECOMMENDATIONS

1. Extend detailed geochemical surveys to delimit the extent of anomalous zones C6, C7, C8, C9, Z3, Z4, Z5 and Z6

2. The Electromagnetic survey carried out in the Adit area defines the mineralized skarn zone. Geochemically anomalous zones should be subjected to detailed E. M. surveys, especially in areas of coincident Copper-Zinc anomalies and those of sparse outcrop.

QUALIFICATIONS OF PETER G. CROSS, GEOLOGIST

FOR ASSOCIATED GEOLOGICAL SERVICES LTD., VANCOUVER, B.C.

ACADEMIC

1957 - 1962	McGill University	Honours Geology	Degree Level
1962 - 1965	Loyola College (University of Montreal)	Honours Chemistry	B. Sc.

1. July 22, 1968 - April 14, 1969	Sherritt Gordon Mines Mine Geologist / Open Pit Geologist
2. May 1968 - July 15, 1968	Rio Algom / Rio Tinto Field Geologist / Mine Geologist
3. March 1967 - December 1967	Government of Malaysia Geologist / Geochemist
4. July 1965 - February 1967	Domtar Pulp & Paper Ltd. Mill Chemist / Process Engineer
5. Summer 1964	New Jersey Zinc Exploration Co. Ltd. Party Chief Geologist
6. Summer 1963	British Newfoundland Exploration Ltd. Assistant Geologist
7. Summer 1962	Anaconda American Brass Ltd. Assistant Geologist
8. Summer 1961	Quebec Cartier Mining Co. Ltd. Assistant Geologist
9. Summers 1960, 1959, 1958	British Newfoundland Exploration Ltd. Assistant Geologist
10. Sept. 1956 - Sept. 1957	St. Benedicts College High School Teacher
11. Sept. 1953 - Sept. 1956	Dominion Oil Ltd. Geological Assistant
12. Jan. 1949 - Sept. 1953	Texaco Oil Ltd. Chemical Assistant

J. R. Woodcock Consultants Ltd.

1521 PEMBERTON AVENUE, NORTH VANCOUVER, B.C., CANADA PHONE: 604-988-2171

August 1, 1969

Mr. Martin Kierans
Cerro Mining Company of Canada Ltd.
Suite 415 - 736 Granville Street
Vancouver, British Columbia

Dear Martin:

Enclosed is my brief report and maps on the geology of the Eagle prospects of your Pemberton project. I am also returning your publication by C. E. Cairnes, the reports by Dr. Skerl and your assay record book.

I believe I have mapped enough area on a scale of 1" = 20 feet and so have drafted a final map. The drafting is free-hand so you may wish to have it re-done.

The complex nature of the geology, the necessity to break fresh rock on most exposures, the difficult terrain, and the use of a compass for control tended to slow the progress on the 20-scale map. Therefore the map on the scale 1" = 100 feet was not completed. However, the data that I collected is plotted on the accompanying rough map. This data can be further extended by the data on the detailed map. I have not done this as you suggested that it could be done by one of your assistants.

If you have any further questions please give me a call.

Yours very truly,

J. R. Woodcock

J. R. Woodcock

JRW:mb
encl.

AUG - 4 1969 N.B. Original mailed to AB Baldwin, Toronto, Aug 1/69

A P P E N D I X " B "

CERRO MINING COMPANY OF CANADA LTD.

GEOLOGY OF EAGLE PROSPECT - (AX CLAIMS)
Lillooet Lake Area

J. R. Woodcock Consultants Ltd.

North Vancouver, B. C.— August 1, 1969

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MAP

EAGLE PROSPECT, AX CLAIMS

LILLOOET LAKE, BRITISH COLUMBIA

INTRODUCTION

The mineral showings on the Eagle property and the geology of the Pemberton area are included in the report by C. E. Cairnes (Summary Report, 1924, Part A, Geological Survey of Canada, page 76A to 99A). The present writer's report makes reference to Cairnes' work and utilizes Cairnes' rock units and nomenclature.

The writer spent seven days at Pemberton, mainly mapping the area of the Eagle mineral showings on a scale of 1" = 20 feet. Compass and chain were used for control and the map was tied to the grid used by the geophysicists in their prior surveys. Some information was also obtained in the area between the mineral showings and Lillooet Lake and this has been plotted on a map scale 1" = 100 feet. Additional time was spent in compiling the data and writing a report.

ROCK TYPES

Volcanic Rocks

Cairnes has stated that the volcanic rocks south of Lillooet Lake are of Upper Triassic age and include andesitic volcanic flows and fragmental types such as tuffs, breccias and tuffaceous sediments. He states that a hard, fine-grained, almost black, fragmental rock commonly mineralized with disseminated grains of pyrite is a prominent rock type. It may be of tuffaceous origin and its hardness may be the result of induration by silica.

In the present mapping the basic volcanic rocks were not subdivided; however a variety of textures can be observed in the field. Of particular interest is the dense, black material — possibly a fragmental, found in the North Eagle adit. This may be the silicified tuff described by Cairnes.

The rocks forming high cliffs south and southwest of the mineral showings are relatively coarse-grained and are probably massive andesite flows. Possibly a sequence of massive andesite flows overlies a sequence of flows and pyroclastics and the mineralized horizon is near the boundary between these two major units.

Basic volcanics exposed on the shore of Lillooet Lake are criss-crossed by replacement veins of epidote. In places, these epidote-rich, light-coloured veins form a parallel series. In poor exposures, the rock could be easily mistaken for banded tuffs.

Limestone

Narrow lenses of limestone occur in the Triassic volcanics and many of the mineral showings along the south side of Lillooet Lake are associated with these limestone lenses. At the Eagle prospects the limestone has been converted to marble or skarn. Epidote and garnet are the common lime-silicate minerals. Magnetite is also abundant; but is treated in this report as part of the mineralization.

Diorite Dikes

Diorite dikes, probably related to the batholithic intrusions of the region, are common in the district. At the South Eagle prospect, a northwesterly-striking vertical diorite dike, two to four feet thick, is exposed in the adit and in one of the surface trenches. This diorite is relatively fine-grained and could be readily mistaken for an andesitic rock.

Another vertical diorite dike is exposed 150 feet northwest of the portal. This second dike strikes in a northeasterly direction and is quite regular. The diorite is coarser grained than that found in the little dike of the adit.

Where the diorite dikes cut the marble, they are bounded by a narrow zone of cherty greenish altered rock which is probably largely lime-silicates. Whether the lime-silicate skarn is all related to emplacement of dikes or whether some is related to regional intrusions of batholithic rocks is not known.

Acidic Dikes

Large exposures of a white acidic igneous rock with cherty aphanitic matrix occur in the area. These are probably the dikes of acidic felspar porphyry mentioned by Cairnes.

The best exposures of the acidic rock occur over a width of 700 feet immediately north of the North Eagle prospect. Two bands of basic igneous rock occur within this acid porphyry area. The band on the southwest, approximately five feet thick, is probably a dike. The other volcanic (?) band may indicate that the acidic rock has been repeated by faulting.

Additional exposures of the acidic igneous rock are found near Lillooet Lake. In the exposure at Line 12N, 8+70E the acidic dike is in contact on the southwest with the basic volcanics. This contact strikes in a northwesterly direction. The exposure of acidic rock at Line 12N, 9+80E displays considerable schistosity which also strikes in a northwesterly direction.

Lamprophyre Dikes

One lamprophyre dike has been mapped in the South Eagle adit. This lamprophyre material erodes readily and would not form good out-

crops. However at the South Eagle adit it does not come to the surface, as limestone is exposed vertically above parts of the dike.

STRUCTURE

Cairnes states that the volcanic and sedimentary rocks near these adits strike about N25°W and dip at high angles to the northeast. The present writer suggests that a relatively gentle dip (about 40°) to the southwest is a distinct possibility. One gets this impression when examining the attitudes of the mineralized zones at the North Eagle prospect, the South Eagle prospect and at the small East Eagle skarn zone (about 250 feet east of the North Eagle prospect). The cross sections of the South Eagle prospect also seem to indicate a probable southwesterly dip.

If the above data on attitude and rock types is correct, then the limestone lenses are in the general vicinity of the geological boundary between abundant pyroclastics below, and the massive andesites (exposed in the cliffs) stratigraphically and topographically above.

The intrusion of the dikes has complicated the structure to a certain extent. Moreover, the subsequent faulting in several directions, especially in a northwesterly direction, with the accompanying vertical displacement, has caused considerable discontinuity of any specific horizons.

MINERALIZATION

In the area mapped by the writer, three specific areas of mineralization occur. These include the main zone at the South Eagle prospect, the North Eagle prospect, and the small East Eagle skarn.

South Eagle Prospect

At the South Eagle prospect, the mineralization consists of magnetite, pyrite, chalcopyrite and minor sphalerite in almost massive bodies. The black cherty rock within the adit east of the mineralized zone has a brownish hornfelsed appearance and contains considerable disseminated pyrite.

An examination of the limited exposures and of the cross section through the adit leads to the suggestion that the mineralization probably occurs adjacent to the thin diorite dike and that this mineralization spreads outward under the limestone (along its contact with the underlying volcanics).

Additional mineralization is exposed in outcrops and small ex-

ploration adits at distances of 80 feet, 140 feet, and 180 feet northwest of the portal. These all occur along the limestone-volcanic contact which has been structurally complicated by faulting and some folding. In the central mineralized exposure (at 140 feet) the mineralization appears to be gently dipping or almost flat and lies on top of volcanic rock and beneath limestone (see cross-section). A second diorite dike cuts this central mineralized zone; however its genetic relationship to the mineralization is not known.

North Eagle Prospect

At the North Eagle prospect a band of mineralization, approximately 15 feet thick, appears to dip gently (about 30°) to the west into the hill. This mineralized zone represents an almost complete replacement by hematite and magnetite. A few traces of chalcopyrite occur in the volcanic hanging wall.

On the southernmost part of the exposure, remnants of marble and skarn indicate that the iron minerals probably replaced a limestone lens.

The North Eagle prospect is bounded by a vertical northwest-striking fault on its south side. On its north side it is separated from a major acidic porphyry dike by a thin sliver of basic volcanic rock.

East Eagle Skarn

The East Eagle skarn (250 feet east of the North Eagle prospect) is merely some skarn and magnetite-rich rock bounded above by barren volcanics and bounded below by barren volcanics. It may have been a limy lens which was replaced by the iron minerals and lime-silicate minerals.

No sulphide mineralization was noted by the writer in his quick examination. A gently plunging drill hole (drilled to the west) appears to have been collared underneath the mineralized zone.

Mineralization Controls

The mineralization at the Eagle prospects is controlled by limy horizons within the volcanic rock. Some control by dikes is also probable. Whether this control is merely structural or whether the intruding dikes chemically prepared the ground for replacement is not known.

There is some similarity of these prospects to the copper-bearing magnetite deposits on Vancouver Island, Texada Island and Queen Charlotte Islands. The deposits on the islands replace Karmutsen (Triassic) volcanics beneath Quatsino limestone (a major Triassic formation) at the contacts of diorite stocks.

The writer suggests that the strata dip relatively gently to the southwest. Therefore the search for the limy horizon would have to extend along strike to the northwest and to the southeast, or down dip to the west. However the normal faulting which is so prevalent may have sifted this horizon enough so that it might also occur elsewhere.

The vertical movement along numerous faults and the probable discontinuous nature of the limestone horizons would make for difficult exploration and small ore shoots.

J. R. Woodcock

August 1, 1969

A P P E N D I X " C "

A REPORT

ON

A GROUND MAGNETIC &

ELECTROMAGNETIC SURVEY

Pemberton Area,

British Columbia

FOR

CERRO MINING COMPANY OF CANADA LIMITED

Toronto, Ontario

BY

PETER E. WALCOTT & ASSOCIATES LIMITED

Vancouver, B.C.

JULY 1969

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INTRODUCTION

Between June 12th and July 5th, 1969, Eagle Geophysics Limited carried out a linecutting, and a ground magnetic and electromagnetic survey programme over part of a property, located in the Pemberton Area of British Columbia, held by agents of Cerro Mining Company of Canada Limited.

The surveys were carried out over handcut or blazed lines on two grids, Ax and Zip grids, which were turned off at right angles from N 30° W and N 35° E baselines, under the supervision of Peter E. Walcott P.Eng. of Eagle Geophysics Limited.

The results are shown on plan maps of the line grids, Map E-153-1 to 3, that accompany this report, with the data being presented on contoured form in the case of the magnetometer survey, and in profile form in the case of the E.M. work.

The following is a report on the above mentioned surveys from data made available to the writer by Cerro Mining Company of Canada Limited.

PROPERTY, LOCATION AND ACCESS

The property consists of the following mineral claims:

AX 5 to 38, 45 to 58

ZIP 1 to 4

The claims are situated in the Lillooet Mining District of British Columbia, and are located on the west side at the north end of Lillooet Lake, some 8 miles east of the town of Pemberton.

Access can be obtained to the east side of the lake by two wheel drive vehicle along the Pemberton-Lillooet road, and thence to the west side by boat.

PURPOSE

The purpose of the surveys was to investigate the possible occurrence of an economic sulphide deposit (s) as conceivably indicated by magnetite sulphide mineralization in and around an old adit on the Ax claims.

GEOLOGY

The reader is referred to a report on "Pemberton Area, Lillooet District, British Columbia", by C. E. Cairns from Summary Report, 1924, part A, Geological Survey, Canada, and to correspondence and reports of Cerro Mining Company of Canada Limited who have mapped the property.

SURVEY SPECIFICATIONS

The basic principle of any electromagnetic survey is that when conductors are subjected to primary alternating fields secondary magnetic fields are induced in them. Measurements of these secondary fields give indications as to the size, shape and conductivity of conductors. In the absence of conductors no secondary fields are obtained.

The electromagnetic survey was carried out using a Crone J.E.M. unit. This system utilizes the "shoot back" technique, which requires a receiver and transmitter in each unit. Each unit measures the direction of the total magnetic field (in degrees from the horizontal) in turn while the other unit acts as the transmitter. On addition of the two measured angles the resultant reading obtained is independent of substantial differences in elevation, and is plotted midway between the two coils.

Readings with this instrument were taken every 50 feet along the picket lines using a frequency of 1800 cycles per second on the Ax grid, and every 100 feet on the Zip grid. In addition readings were taken every 50 feet on the Ax grid using the low frequency of 480 cycles per second.

The magnetometer survey was carried out using a Sharpe M.F.1 Fluxgate Magnetometer. This instrument makes measurements of the vertical component of the earth's magnetic field to an accuracy of plus or minus 10 gammas. Corrections for diurnal variations were made by tying-in to previously established base stations at intervals not exceeding two hours. Readings were taken every 25 feet along the picket lines.

DISCUSSION OF RESULTS

The magnetic survey as carried out at 25 foot intervals on lines 200 feet apart with additional readings on closer spaced lines in the vicinity of the old adit on the Eagle Prospect (Map E-153-1 and 3) gave readings characteristic of those expected over volcanic rocks with little or no overburden cover.

Several small magnetic highs and magnetic dipoles can be noted. These are attributable to an increase in the magnetic content of the rocks or to local concentrations of magnetite in the volcanics.

On the detail grid over the Eagle Prospect (Map E-153-3) the indicated zones of concentrations of magnetite and possible associated sulphides shows good agreement with those mapped by Woodcock (Geology of Eagle Prospect - Lillooet Lake Area by J. R. Woodcock Consultants Ltd., August 1969).

Unfortunately the extremely rough terrain and/or overburden and rock cover make pinpointing of the larger concentrations of magnetite impossible as a small concentration exposed on surface will give a higher magnetic response than will a somewhat larger concentration at a depth of some 25 feet, particularly when the magnetite mineralization is irregular.

The Crone E.M. Survey showed essentially negative results over the entire grid systems with the only anomalous reading being obtained in the vicinity of the old adit (Map E-153-2). This would seem to negate to a depth of some 100 feet the presence of any massive mineralized body of reasonable size.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

From June 12th to July 5th, 1969, Eagle Geophysics Limited carried out a linecutting and ground magnetic and electromagnetic survey programme over part of a property held by agents of Cerro Mining Company of Canada Limited.

The property is located in the Lillooet Mining District of British Columbia, some 8 miles east of the town of Pemberton.

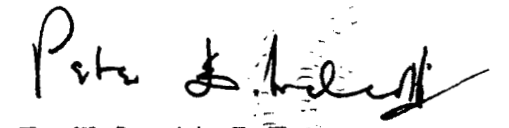
The magnetometer survey gave readings characteristic of those expected over volcanic rocks with little or no overburden cover, and indicated zones of concentrations of magnetite and possible associated sulphides. These were later shown to bear good correlation with those mapped by Woodcock.

The E.M. Survey failed to detect the presence of any conductors that could be associated with any massive mineralization of reasonable size.

As a result the writer concludes that possible mineralized zones indicated by the magnetic survey are too small to be of economic significance, and recommends no further geophysical work be done on that part of the property survey.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATED LIMITED



Peter E. Walcott P.Eng.
Geophysicist

Vancouver, B.C.
July 1969

APPENDIX

CERTIFICATION

I, Peter E. Walcott, of the Municipality of Coquitlam, British Columbia, hereby certify that:

1. I am a Graduate of the University of Toronto in 1962 with a B.A.Sc. in Engineering Physics, Geophysics Option.
2. I have been practising my profession for the last seven years.
3. I am a member of the Association of Professional Engineers of British Columbia, Ontario and the Yukon Territory.
4. I hold no interests, direct or indirect, in the securities or properties of Cerro Mining Company of Canada Limited nor do I expect to receive any.

Peter E. Walcott, P.Eng.

Vancouver, B.C.
July 1969

A P P E N D I X " D "

volume of the mineralization depends upon a number of factors such as the temperature of the mineralizing solutions and the character of the wall-rock. Such mineral deposits are likely to prove more persistent, both in length and in depth, than the limestone replacements previously referred to. They are, also, more regular in outline. Characteristic examples of this type of deposit are certain zones of mineralization on the Boulder Creek properties. In addition, the Pemberton mine, on Onemile creek, the Gold King and Crown claims south of Tenquille creek, and, north on this creek, Moffat and White's properties, contain deposits which may be referred to this type of mineralization.

There are, finally, certain vein deposits which may be either close to, or at some distance from, the intrusive regarded as genetically related to the mineralization. In those deposits, particularly, that are far from the supposed parent intrusive, the minerals are such as are commonly regarded as having formed under somewhat lower temperature conditions than those composing the replacement deposits, and are represented chiefly by pyrite, arsenopyrite, galena, and sphalerite in about that order of abundance. Quartz is commonly an abundant gangue mineral. The veins may be simple or may occur in zones of shearing in rocks that have suffered little or no replacement. Usually the walls are well defined, but some dissemination of ore minerals may occur in the wall-rock adjoining the veins. Most of the deposits on the Li-li-kel property at the head of Tenquille creek are mineral veins. Vein deposits also occur on other properties in the area, but are mostly of minor importance.

DESCRIPTION OF PROPERTIES

Boulder Creek Properties

The Boulder Creek properties, discovered in 1915, include thirty-four claims on either side of Boulder creek, and extend northwesterly parallel to the shore of Lillooet lake. This stream enters the southwestern side of the lake about 3 miles from its head. From the head of the lake—opposite the properties—a wagon road 5 miles long connects with the railway at Owl Creek station, 63 miles by rail from tidewater at Squamish.

The properties include four groups of claims, namely: the Boulder group of eight claims lying on either side of the creek and including the Copper King Crown-granted mineral claim; the Apex group of eight claims adjoining the Boulder group to the southeast; the Lake group of eight claims adjoining the Boulder group to the northwest; and the Eagle group of ten claims lying to the northwest of the Lake group and extending to the head of Lillooet lake.

The most abundant rocks on these properties are regarded as Triassic and consist of volcanic and sedimentary members, of which the former are the more abundant. These volcanic rocks include sericitic and chloritic schists, fine-grained and more massive greenstones, and bedded pyroclastic rocks ranging from tuffs to coarse breccias or agglomerates. The sedimentary members are chiefly argillaceous, but include some very cherty varieties. Small beds or lenses of limestone were also observed at different points to the northwest of Boulder creek. All these rocks stand at high angles and have a fairly uniform trend of north 45 degrees west.

In addition to these older rocks there are batholithic and dyke intrusives varying both in composition and in texture. Collectively these intrusives have greatly metamorphosed the older rocks and are genetically related to the mineralization that has taken place. The largest area of intrusive rocks is exposed along the shore of Lillooet lake below the delta at the mouth of Boulder creek. Its contact with the older rocks follows up the valley of a steep gulch about a mile east of Boulder creek and swings to the west around the head of Schist creek. The hills towards the west of Schist creek are said to be composed of a similar intrusive type which is dominantly a hornblende-biotite granodiorite or quartz diorite. At certain points within this batholithic area dyke-like bodies of pinkish granite were observed. A smaller area of a dioritic intrusive occurs along the southern bank of Lillooet river immediately above the head of the lake and opposite Indian Reserve No. 3. Between the two areas of batholithic intrusives the older Triassic rocks are penetrated by a large number of dykes which are probably closely related to the batholithic rocks that, no doubt, everywhere underlie the Triassic beds. The dykes are not all of the same age, for some were observed to cut others, and the older dykes are, in part, considerably sheared and mineralized, characteristics not pertaining to the younger dykes.

The several groups of claims are traversed in a northwesterly direction by a zone of mineralization 3½ miles or more long and varying up to about 600 feet in width. On the Apex group this zone reaches a height of nearly 6,000 feet, but at Boulder creek and farther to the northwest its average elevation is less than 1,000 feet above Lillooet lake. The principal mineralized areas along this zone, and, consequently, the points where most development work has been done, occur near the ends and at its intersection by Boulder creek. Elsewhere mineralization is indicated only by a brownish red iron oxide stain on the rock surface. The strike of the zone coincides with the main axis of deformation of the enclosing rocks. The zone is a sheared belt along which ascending mineral vapours, solutions, and magmas found comparatively easy access. The country rock adjoining, and included in, the zone has been greatly altered, and its original character is in many cases difficult to determine. The limestone members in places have been completely altered to lime-silicate rocks composed chiefly of epidote, garnet, and quartz. Usually this alteration is accompanied by some replacement by such ore minerals as magnetite, hematite, pyrrhotite, and pyrite and, to a lesser extent, by chalcopyrite and sphalerite. The volcanic and other sedimentary members, especially where most sheared and schistose, are, in places, very noticeably impregnated by iron sulphides and, to a lesser extent, by copper sulphides.

The principal showings on the Eagle group occur about 700 feet above, and within half a mile of, Lillooet lake. Here an adit 110 feet long has been driven southwesterly through a series of volcanic and sedimentary rocks that strike about north 25 degrees west and dip at high angles to the northeast. They show considerable shearing and faulting and a general sparse mineralization by pyrite. About 50 feet from the portal the adit intersects a 5-foot band of heavily mineralized greenstone cut by a narrow diorite dyke. Adjoining this rock to the northeast is a band of altered limestone about 5 feet wide which also shows some mineralization. The

ore minerals are chiefly pyrite and magnetite with subordinate proportions of chalcopyrite, pyrrhotite, and sphalerite.

A few yards to the southwest of the adit are a couple of open-cuts showing conspicuous mineralization across a width of several feet of country rock composed chiefly of crystalline limestone and lime silicate rock (garnetite). The mineralization in these open-cuts is similar to that encountered in the adit except that the proportion of chalcopyrite appears to be a little higher. It is difficult to say whether these showings, and the one in the adit, are parts of one ore-body which has been disrupted by faulting or whether they are separate ore-shoots diagonally crossing the general trend of the main zone of mineralization. Some post-mineral faulting has occurred, but its significance could not be determined.

About 200 feet northwest of these open-cuts is a prominent gulch striking up the hillside at about north 60 degrees west. The gulch is noticeable from a distance by reason of the coating of reddish iron oxide on the rocks. Here an adit 20 feet long has been driven along a heavily mineralized deposit about 30 feet wide developed in altered rocks, including some limestone, near the contact of an acid feldspar porphyry dyke. The central part of the deposit is composed chiefly of solid hematite. On either side the deposit is composed mostly of mixed magnetite and pyrite, but contains a varying proportion of country rock as gangue. Very little other ore minerals are present and in spite of the heavy mineralization the values in copper, silver, and gold are reported to be very low. The deposit can be traced by the reddish oxide stain for 100 feet or more up the gulch, but the average width of heavy mineralization was not ascertained.

The principal showings on the lake group occur on the Red Jacket claim and include a type of mineralization very similar to that on the Eagle group. At the principal showing a number of dykes, some later than others, intersect a limestone bed and some chloritic greenstones of uncertain origin. Pyrite is conspicuously disseminated across a width of about 18 feet of these greenstones and the mineralization appears to follow the trend of the main ore zone of which it forms a part. Locally, other minerals, including chalcopyrite, pyrrhotite, sphalerite, and magnetite, are fairly abundant. No systematic sampling has been attempted on this showing and the work done is not sufficient to prove its value either at the surface or in depth.

On the Copper King claim of the Boulder group a very fine natural section of the main mineralized zone has been exposed in the canyon of Boulder creek, near the mouth of its tributary Schist creek. Considerable stripping and open-cut work have been done at this point. The mineral zone has a width of over 300 feet and is abundantly impregnated with pyrite whose oxidation products have produced a rusty stain over the surface exposures. The rocks in this section vary in composition and structure. In part they are slaty argillaceous types; in part cherty fragmental rocks; in part what may be altered limestone; and in part dark green chloritic rocks of probable volcanic origin. These types are interbanded and strike northwestward. They are intersected by a number of narrow porphyrite dykes. The mineralization shows little uniformity in either character or distribution. Pyrite is the most abundant ore mineral and occurs either

finely disseminated through the country rock or locally concentrated into blebs or bunches. In certain beds chalcopyrite is an important constituent, and over widths of a few inches may give high assay values in copper. In addition to pyrite and chalcopyrite some magnetite, sphalerite, and pyrrhotite were also observed. The section shows much faulting and shearing in at least two main directions, one nearly parallel with the general trend of the rocks and the other 20 degrees or so farther to the west, a direction corresponding closely to the general trend of the dyke intrusions, and the one that appears to coincide most closely with the more important mineralized shoots or veins. A series of four samples[1] obtained over widths of 15, 20, 20, and 30 feet, respectively, across the mineralized zone, gave the following assay returns:

Sample No.	Width sampled	Copper	Silver	Gold
	Feet	%	Oz. per ton	
1	15	1·5	0·68	Trace
2	20	0·45	0·22	"
3	20	0·10	0·52	"
4	30	0·30	0·54	$1.40 per ton

Regarding these samples Dr. Uglow says, in part:

"Although the samples taken are below the limit of present commercial value, it is to be remembered that they were taken practically across the outcrop where the sulphide minerals in the shear zones have undergone thorough oxidation and leaching. It is probable, therefore, that samples taken across corresponding widths of the unoxidized rock would give results higher in copper values."

The showings on the Apex group of claims occur at about 5,000 feet above the level of the lake and at the southeast end of the principal mineralized zone. The mineral deposits occur near the main intrusive contact in rocks that are chiefly, at least, of volcanic origin, facts that may possibly account for the occurrence of a somewhat different proportion in the ore minerals than at the localities previously described. The zone has here a maximum width of about 600 feet. The most abundant mineral is pyrrhotite, which at one point forms a nearly solid dyke from 8 to 10 feet wide striking more or less in line with the intrusive contact. Elsewhere the ore zone on these claims shows an extensive impregnation by iron sulphides, chiefly pyrrhotite, but in spite of the abundant mineralization assay returns have shown only low values in gold, silver, or copper.

In addition to the main ore zone, which includes the mineral deposits so far described, there are other evidences of mineralization on these properties (particularly in the steep canyon of Boulder creek between the main zone of mineralization and the lake shore), that may indicate the presence of other zones running nearly parallel with the main one. Only a little prospecting has been done at these places which are more densely timbered and, consequently, more difficult to explore. Some mineralization was also noted close to the lake shore below the principal showing on the

[1] Report to owners by Dr. W. L. Uglow, of British Columbia.

Lake and Eagle groups of claims, but no important concentrations of ore minerals were observed in this locality.

General impressions of these Boulder Creek properties may be summed up as follows. The ore mineralization is probably related to the larger intrusive bodies in the locality rather than to the numerous dykes encountered at the various showings. Many of the dykes appear to be, and probably are, post-mineral in age. It is evident that they were intruded at different times as some intersect others and the older dykes in some instances are sheared and mineralized, features absent in the younger dykes. The positions of the chief centres of mineralization are within the main zone of mineralization, which is a zone of fracturing and shearing. This line of weakness corresponds in direction to the general trend of deformation of the older rocks, a deformation induced prior to the intrusive activity in the area. The position of the principal centres of mineralization appears to be related to a series of intersecting lines of movement which cross the main zone at different angles, but most commonly in a direction of about north 65 degrees west. The heaviest mineralization is at those points of intersection where there are limestone beds or other rocks whose original composition or subsequent deformation has rendered them most susceptible to replacement by mineralizing solutions. The bulk of ore minerals on these properties is, undoubtedly, very great. Unfortunately the grade, except locally, is extremely low, although, in respect to the copper values at least, better returns may be obtained below the zone of oxidation. The properties have the advantage of being near transportation, and ample waterpower could be furnished by Boulder creek.

Margery Group

The Margery group lies about 1½ miles northeast of the wagon road crossing Pemberton portage between the head of Lillooet lake and the Pacific Great Eastern railway. A trail, passable for horses only part of the way, leads to the cabin and workings which lie about 2,400 feet above the wagon road. The distance from the foot of the trail to Owl Creek station is about 5 miles. A brief reference to this property is given by Brewer,[1] and in 1917 Camsell made an examination of its mineral deposits.[2] Little work has been done on the property since that time.

The ore mineralization occurs in lenses of limestone and other members of the Triassic rocks of the area. These rocks have been intruded by dykes of diorite and porphyrite in the vicinity of the showings, and by a large belt of batholithic rocks farther up the mountain slope. Considerable metamorphism of the older rocks has resulted from these intrusions and the limestone, in particular, has undergone change to a "garnetite" rock in which the minerals garnet, epidote, calcite, and quartz are the essential constituents. Simultaneously with, or closely following, this metamorphism the ore minerals were introduced. These include pyrite, magnetite, sphalerite, arsenopyrite, and chalcopyrite.

The two principal showings occur a few hundred yards to the east and north, respectively, of the cabin. The more easterly deposit appears to follow a zone of shearing or fracturing extending about north 45 degrees

[1] Rept. of Minister of Mines, B.C., 1918, p. 249.
[2] Geol. Surv., Can., Sum. Rept., 1917, pp. 19 B-20 B.

A P P E N D I X " E "

Vancouver Geochemical Laboratories Ltd.
1521 PEMBERTON AVENUE NORTH VANCOUVER, B.C., CANADA TELEPHONE: 604-988-2171

J. R. WOODCOCK
CONWAY CHUN

TO: Cerro Mining Company of Canada Ltd.
#415 - 736 Granville Street
Vancouver, B. C.

Attention - Mr. Martin Kierans

FROM: Mr. Laurie Nicol, Supervisor Chemist
Vancouver Geochemical Laboratories Ltd.
1521 Pemberton Avenue
North Vancouver, B.C.

SUBJECT: Analytical procedure used to process acid soluble Cu and Zn in geochemical samples received from

1. Sample Preparation

(a) Geochemical soil, silt and rock samples were received in the laboratory in wet-strength 3½ x 6½ Kraft paper bags.

(b) The wet samples were dried in a ventilated oven.

(c) The dried soil and silt samples were sifted, using an 80-mesh stainless steel sieve. The plus 80-mesh fraction was rejected and the minus 80-mesh fraction was transferred into a new bag for analysis later.

(d) The dried rock samples were crushed and pulverized to minus 80-mesh. The pulverized sample was then put in a new bag for later analysis.

2. Methods of Digestion

(a) 1.00 gram or 0.50 gram of the minus 80-mesh samples was used. Samples were weighed out by using a top-loading balance.

(b) Samples were heated in a sand bath with nitric and perchloric acids (15% to 85% by volume of the concentrated acids respectively).

Continued . . . . .

2. Methods of Digestion (Continued)

(c) The digested samples were diluted with demineralized water to a fixed volume and shaken.

3. Method of Analysis

Cu and Zn analyses were determined by using a Techtron Atomic Absorption Spectrophotometer Model AA4 or Model AA5 with their respective hollow cathode lamp. The digested samples were aspirated directly into an air and acetylene flame. The results, in parts per million, were calculated by comparing a set of standards to calibrate the atomic absorption unit.

4. The analyses were supervised or determined by Mr. Conway Chun, or Mr. Laurie Nicol and their laboratory staff.

L.J. Nicol

VANCOUVER GEOCHEMICAL LABORATORIES LTD.

LJN/ati

TO:

Mr. D. Kierans

415 - 736 Granville Street

Vancouver, B.C.

Certificate of Assay

COAST ELDRIDGE

PROFESSIONAL SERVICES DIVISION

WARNOCK HERSEY INTERNATIONAL LIMITED

125 EAST 4TH AVE. VANCOUVER 10, B.C., CANADA

PHONE: 876-4111
TELEX: 04-50353
CABLE ADDRESS: ELDRICO

FILE NO. A.3-K.1-69-6673

DATE July 10, 1969

We Hereby Certify that the following are the results of assays made by us upon submitted ORE samples

MARKED	GOLD		SILVER	Copper (Cu)	Lead (Pb)	Zinc (Zn)			
	OUNCES PER TON	VALUE PER TON	OUNCES PER TON	PER CENT.	PER CENT	PER CENT	PER CENT.	PER CENT.	
40,001-8 etc.		$							
40 - 008	0.02	0.70	0.2	2.33	0.05	0.19			
40 - 009	0.04	1.40	0.2	1.55	0.12	0.22			
40 - 010	Trace	-	0.1	1.28	0.10	0.46			
40 - 011	0.04	1.40	1.1	0.70	Trace	0.29			
40 - 012	0.005	0.18	0.1	0.63	0.20	0.12			
40 - 013	0.01	0.35	0.2	0.90	0.12	0.15			
40 - 014	Trace	-	0.1	0.68	0.10	0.22			
40 - 015	0.02	0.70	0.2	1.08	0.15	0.22			
40 - 016	0.02	0.70	0.1	1.06	0.13	0.34			
40 - 017	0.02	0.70	0.4	1.76	0.12	1.11			
40 - 018	0.005	0.18	0.6	1.03	0.10	4.08			
40 - 019	Trace	-	Trace	0.10	0.15	0.36			
40 - 020	0.04	1.40	0.2	1.64	0.20	0.17			
40 - 021	0.02	0.70	0.3	1.54	0.05	0.17			
40 - 022	0.02	0.70	0.1	0.89	Trace	0.10			

Gold calculated at $ ..... per ounce

Note. Rejects retained one week.
Pulps retained one month.
Pulps and rejects may be stored for a maximum of one year by special arrangement.

/jp Unless it is specifically stated otherwise, gold and silver values reported on these sheets have not been adjusted to compensate for losses and gain inherent in the fire assay process.

cc. NSB. July 10/69

JUL 11 1969

H. Shaples

Provincial Assayer

TO:

Mr. D. Kierans (2)

Certificate of Assay

COAST ELDRIDGE

PROFESSIONAL SERVICES DIVISION

WARNOCK HERSEY INTERNATIONAL LIMITED

125 EAST 4TH AVE. VANCOUVER 10, B.C., CANADA

PHONE: ( ) 876-4111
TELEX: 04-50353
CABLE ADDRESS:
ELDRICO

FILE NO. A.3-K.1-69-6673

DATE July 10, 1969

We Hereby Certify *that the following are the results of assays made by us upon submitted* ORE *samples*

MARKED	GOLD		SILVER	Copper (Cu)	Lead (Pb)	Zinc (Zn)			
	OUNCES PER TON	VALUE PER TON	OUNCES PER TON	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.	PER CENT.
		$							
40 - 023	Trace	-	0.1	0.39	0.20	0.80			
40 - 024	0.01	0.35	0.1	0.37	0.10	2.08			
40 - 025	Trace	-	0.2	0.21	0.13	4.42			
40 - 026	0.04	1.40	Trace	0.11	0.05	0.24			
40 - 027	Trace	-	0.4	0.95	0.05	3.24			

40,001-27

Gold calculated at $ ..... *per ounce*

Note. Rejects retained one week.
Pulps retained one month.
Pulps and rejects may be stored for a maximum of one year by special arrangement.

Unless it is specifically stated otherwise, gold and silver values reported on these sheets have not been adjusted to compensate for losses and gain inherent in the fire assay process.

JUL 11 1969

H. Hayes

Provincial Assayer

1 ASBESTOS CORP
2 CLINTON CREEK (CASSIAR ASBESTOS)
3 CANADIAN JOHNS-MANVILLE
4 YUKON CONS. GOLD CORP.
5 UNITED KENO-HILL
6 CREST EXPLORATION
7 DISCOVERY MINES
8 MT. NANSEN MINES
9 DYNASTY MINES (ANVIL MINING)
10 VANGORDA CREEK (KERR ADDISON)
11 CONWEST EXPLORATION
12 CANADA TUNGSTEN
13 NEW IMPERIAL MINES
14 YUKON ANTYMONY
15 ARCTIC MINING & DEVT.
16 CASSIAR ASBESTOS CORPOR.
17 LETAIN ASBESTOS
18 STIKINE COPPER (KENNCO)
19 SILVER STANDART-A.S.B.R.
20 GRANDUC MINES
21 SILBAK PREMIER
22 CASSIAR CONS.
23 DOLLY VARDEN MINES
24 BC MOLYBDENUM (KENNCO)
25 CROYDON MINES
26 BUTTLE LAKE MINES
27 SOUTHWEST POTASH
28 NEW CRONIN BABINE
29 NORANDA (NEWMAN)
30 GRANISLE (GRANBY)
31 COPPER RIDGE
32 PLATEAU METALS (S.W FOTASH)
33 KENNKO
34 ENDAKO MINES
35 NITHI MOUNTAIN
36 BANKS ISLAND (FALCONBRIDGE, McINTYRE)
37 WESFROB MINES
38 MASTODON-HIGHLAND BELL
39 JEDWAY IRON ORE
40 BONE LAKE (PHELPS DODGE)
41 CARIBOO GOLD QUARTZ
42 BOSS MOUNTAIN (NORANDA)
43 FALCONBRIDGE NICKEL
44 ACE MINING
45 BRALORNE PIONEER
46 N J ZINC
47 MINOCA MINES
48 COAST COPPER
49
50 ZEBALLOS IRON
51 MT WASHINGTON COPPER
52 WESTERN MINES
53 CATFACE COPPER (FALC.)
54 BRYNNOR MINES (NORANDA)
55 COWICHAN COPPER
56 IERICHO
57 HIGHMONT
58 BETHLEHEM COPPER
59 LORNEX
60 LYTTON MINERALS
61 CHATAWAY
62 CRAIGMONT
63 TEXADA
64 BRITANNIA
65 GIANT MASCOT
66 BRENDA MINES
67 BLUE STAR
68 JOHNSBY
69
70 BLUE BELL (COMINCO)
71 SULLIVAN MINE (COMINCO)
72 GIANT SOU
73 CANADIAN EXPLN.
74 REEVES MACDONALD
75 H&B MINE (COMINCO)
76 RED MOUNTAIN MINE
77 MASTODON HIGHLAND BELL
78 GRANBY (PHOENIX)
79 UTICA
80 CANAM COPPER
81 VALLEY FORGE
82 KALCO VALLEY MINES
83 BRAGG PROPERTY
84 RECO SILVER MINES
85 LIGHTNING PEAK
86 MANSON CREEK
87
88 WEST JOINT VENTURES SYN.
89 GIBRALTER
90 LAURA MINES LTD
91
92 ZENITH MINING CO LTD
93 MACSAN
94 BIG ONION (NORRANCO)
95 SALAL CREEK
96 DN (NORRANCO)
97 DAVID (NORRANCO)
98 MATT BERRY
99 TRANS YUKON (QUIET LAKE)
100 CARIBOO-BELL
101 HIGHMONT
102 PLESKETT
103 BAKER PROPERTY
104 BEARDSLEY
105 HAYWIRE
106
107 PEMBERTON
108 RAM (FAWN BAY)
109 RUSTY (VALUE LINE MINERALS)

CERRO MINING CO. OF CANADA LTD.
WESTERN DIVISION
VANCOUVER, B.C.

LOCATION MAP

SCALE: 1" = 140 MILES APPROX.

0 100 200 300 400 miles

2298

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2298 MAP #1

2298

LILLOOET LAKE

LINE 3 — LINE 2 — LINE 1 — BASE LINE

SCHIST CREEK — BOULDER CREEK

AX 1 — AX 2 — AX 3 — AX 4 — AX 5 — AX 6 — AX 7 — AX 8 — AX 9 — AX 10 — AX 11 — AX 12 — AX 13 — AX 14 — AX 15 — AX 16 — AX 17 — AX 18 — AX 19 — AX 20 — AX 21 — AX 22 — AX 23 — AX 24 — AX 25 — AX 26 — AX 27 — AX 28 — AX 29 — AX 30 — AX 31 — AX 32 — AX 33 — AX 34 — AX 35 — AX 36 — AX 37 — AX 38 — AX 39 — AX 40 — AX 41 — AX 42 — AX 43 — AX 44 — AX 45 — AX 46 — AX 47 — AX 48 — AX 49 — AX 50 — AX 51 — AX 52 — AX 53 — AX 54 — AX 56 — AX 57 — AX 58

ZIP 1 — ZIP 2 — ZIP 3 — ZIP 4

C1 — C2 — C3 — C4 — C5 — C6 — C7 — C8 — C9

EAGLE ADIT — LAKE ADIT — Sharp Showing

L 12 W — L 8 W — L 4 W — BASE LINE — L 4 E — L 8 E

LEGEND

Black & White representation of results – Copper concentration in parts per million (ppm)

- Background value . . . . . < 150 ppm
- Lower threshold . . . . . 150-250 ppm
- Upper threshold . . . . . 250-750 ppm
- Anomalous . . . . . > 750 ppm
- No Sample

SYMBOLS

- Base metal showing
- Mine dump, trench excavations
- Significant Copper ion dispersion pattern in soils
- Sample site
- Claim post; Witness post

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #5

Sampling–From B_h horizon – where available
Preparation:–Hot acid (HNO_3 – HCl_4) extraction
Analysis:– Atomic absorption spectrophotometer
Number of samples:– 597

NOTE:
To accompany geological and geochemical report by M.D. Kierans P. Eng., on AX – ZIP Group near Lillooet Lake, Lillooet Mining Division.
Dated: March 20th, 1970.

M. D. Kierans

ASSOCIATED GEOLOGICAL SERVICES LTD, VANCOUVER I, B.C.
CERRO MINING COMPANY (CANADA) LTD

RECONNAISSANCE
GEOCHEMICAL SOIL SURVEY
FOR
COPPER
AX & ZIP CLAIMS

LILLOOET LAKE — PEMBERTON, B.C.

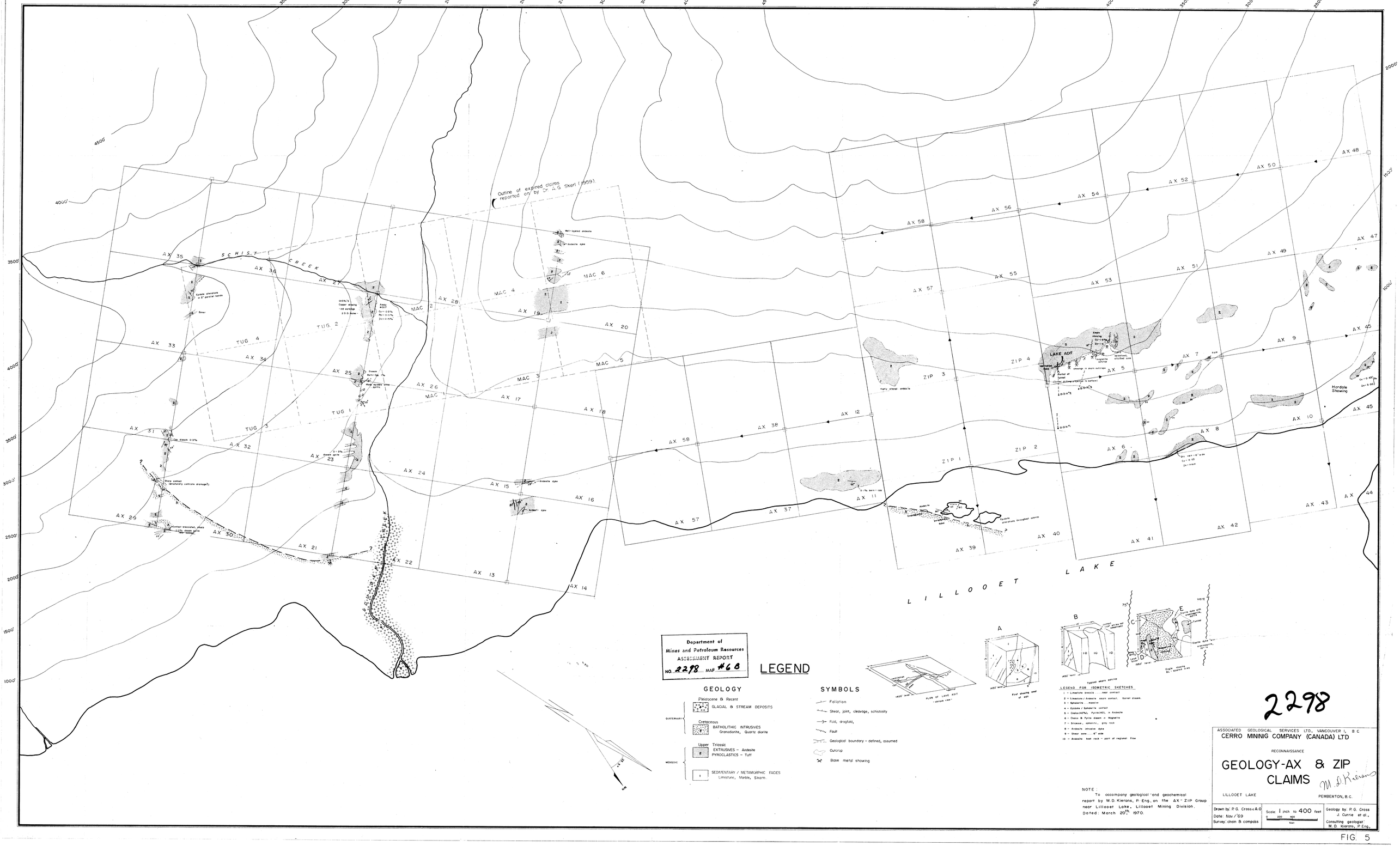
Drawn by: P. G. Cross & A.S.
Date: Nov / '69
Survey: chain & compass

Scale: 1 inch to 400 feet
1 cm = 400 cm

Sampling by: Howdale, Kierans, et al.,
Consultants: P.G. Cross, M.D. Kierans, P. Eng.

2298

FIG. - 4



Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2278 MAP #6

LEGEND

GEOLOGY

QUATERNARY
- Pleistocene & Recent — GLACIAL & STREAM DEPOSITS

MESOZOIC
- Cretaceous — BATHOLITHIC INTRUSIVES — Granodiorite, Quartz diorite
- Upper Triassic — EXTRUSIVES – Andesite; PYROCLASTICS – Tuff
- SEDIMENTARY / METAMORPHIC FACIES — Limestone, Marble, Skarn

SYMBOLS

- Foliation
- Shear, joint, cleavage, schistosity
- Fold, drag fold,
- Fault
- Geological boundary – defined, assumed
- Outcrop
- Base metal showing

NOTE:
To accompany geological and geochemical report by M.D. Kierans, P. Eng., on the AX - ZIP Group near Lillooet Lake, Lillooet Mining Division.
Dated: March 20th, 1970.

2298

ASSOCIATED GEOLOGICAL SERVICES LTD., VANCOUVER 1, B.C.
CERRO MINING COMPANY (CANADA) LTD

RECONNAISSANCE

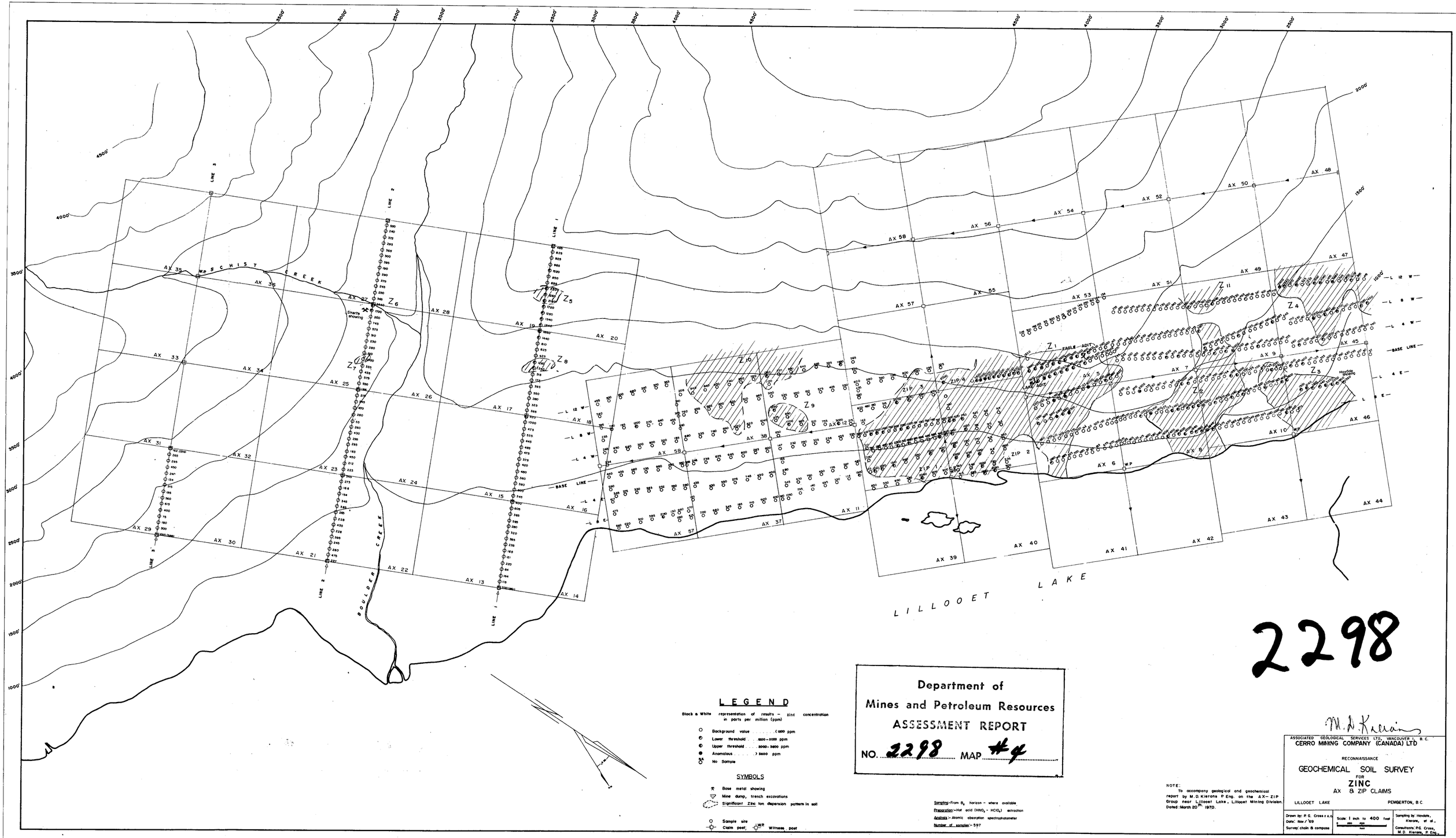
GEOLOGY-AX & ZIP CLAIMS

LILLOOET LAKE — PEMBERTON, B.C.

M.D. Kierans

Drawn by: P.G. Cross & A.O. Date: Nov / 69 Survey: chain & compass	Scale: 1 inch to 400 feet (0 200 400 feet)	Geology by: P.G. Cross, J. Currie et al., Consulting geologist: M.D. Kierans, P. Eng.

FIG. 5



LEGEND

Black & White representation of results – zinc concentration in parts per million (ppm)

- Background value ..... < 1200 ppm
- Lower threshold ..... 1200 – 2000 ppm
- Upper threshold ..... 2000 – 3600 ppm
- Anomalous ..... > 3600 ppm
- No Sample

SYMBOLS

- Base metal showing
- Mine dump, trench excavations
- Significant Zinc ion dispersion pattern in soil
- Sample site
- Claim post; WP Witness post

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #4

Sampling – From B_f horizon – where available
Preparation – Hot acid (HNO_3 – $HClO_4$) extraction
Analysis – Atomic absorption spectrophotometer
Number of samples – 597

NOTE:
To accompany geological and geochemical report by M.D. Kierans P.Eng. on the AX – ZIP Group near Lillooet Lake, Lillooet Mining Division. Dated: March 20th, 1970.

M.D. Kierans

ASSOCIATED GEOLOGICAL SERVICES LTD., VANCOUVER, B.C.
CERRO MINING COMPANY (CANADA) LTD

RECONNAISSANCE
GEOCHEMICAL SOIL SURVEY
FOR
ZINC
AX & ZIP CLAIMS

LILLOOET LAKE PEMBERTON, B.C.

Drawn by: P.G. Cross F.A.G.
Date: Nov / '69
Survey: chain & compass

Scale: 1 inch to 400 feet
0 400 800 1200

Sampling by: Howlett, Kierans, et al.,
Consultants: P.G. Cross, M.D. Kierans, P. Eng.

2298

FIG. 3

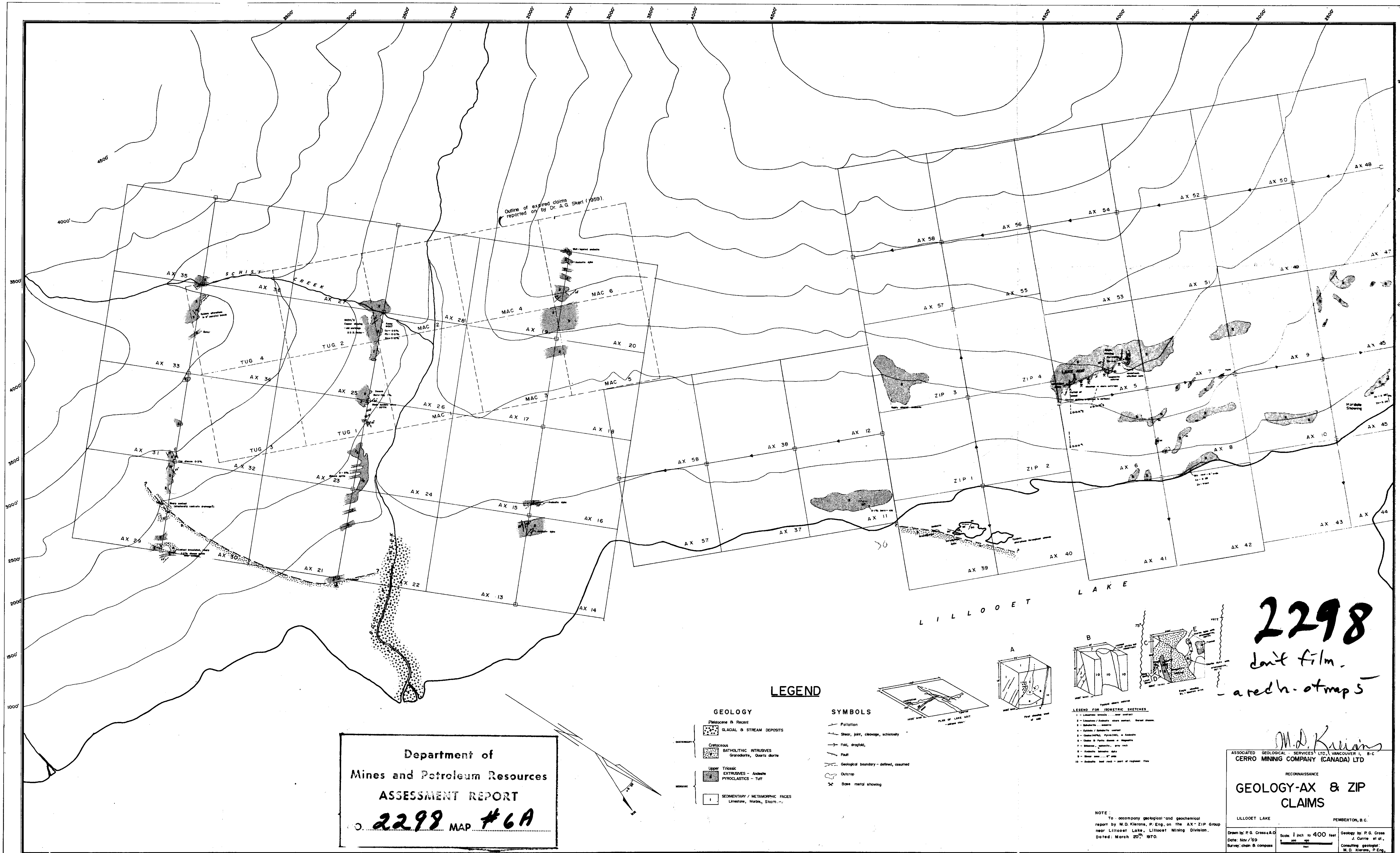

2298
don't film.
- arech-otmaps
LILLOOET LAKE
SCHIST CREEK
Outline of expired claims reported on by Dr. A.G. Skerl (1959).
AX 35
AX 36
AX 27
AX 28
AX 19
AX 20
AX 33
AX 34
AX 25
AX 26
AX 17
AX 18
AX 31
AX 32
AX 23
AX 24
AX 15
AX 16
AX 29
AX 30
AX 21
AX 22
AX 13
AX 14
MAC 1
MAC 2
MAC 3
MAC 4
MAC 5
MAC 6
TUG 1
TUG 2
TUG 3
TUG 4
AX 58
AX 38
AX 12
AX 57
AX 37
AX 11
AX 39
AX 40
AX 41
AX 42
AX 43
AX 44
AX 45
AX 47
AX 48
AX 49
AX 50
AX 51
AX 52
AX 53
AX 54
AX 55
AX 56
AX 5
AX 6
AX 7
AX 8
AX 9
AX 10
ZIP 1
ZIP 2
ZIP 3
ZIP 4
LEGEND
GEOLOGY
QUATERNARY
Pleistocene & Recent
GLACIAL & STREAM DEPOSITS
Cretaceous
BATHOLITHIC INTRUSIVES
Granodiorite, Quartz diorite
MESOZOIC
Upper Triassic
EXTRUSIVES – Andesite
PYROCLASTICS – Tuff
SEDIMENTARY / METAMORPHIC FACIES
Limestone, Marble, Skarn
SYMBOLS
Foliation
Shear, joint, cleavage, schistosity
Fold, dragfold,
Fault
Geological boundary – defined, assumed
Outcrop
Base metal showing
A
B
C
D
E
LEGEND FOR ISOMETRIC SKETCHES
NOTE:
To accompany geological and geochemical report by M.D. Kierans, P. Eng., on the AX-ZIP Group near Lillooet Lake, Lillooet Mining Division. Dated: March 20th, 1970.
ASSOCIATED GEOLOGICAL SERVICES LTD., VANCOUVER 1, B.C
CERRO MININIG COMPANY (CANADA) LTD
RECONNAISSANCE
GEOLOGY-AX & ZIP CLAIMS
LILLOOET LAKE
PEMBERTON, B.C.
Drawn by: P.G. Cross & A.O
Date: Nov/'69
Survey: chain & compass
Scale: 1 inch to 400 feet
0 200 400
feet
Geology by: P.G. Cross
J. Currie et al.,
Consulting geologist:
M.D. Kierans, P.Eng.,
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #6A

FIG. 5

high cliffs

high cliffs

high cliffs

high cliff

cliffs

high cliffs

NORTH EAGLE PROSPECT

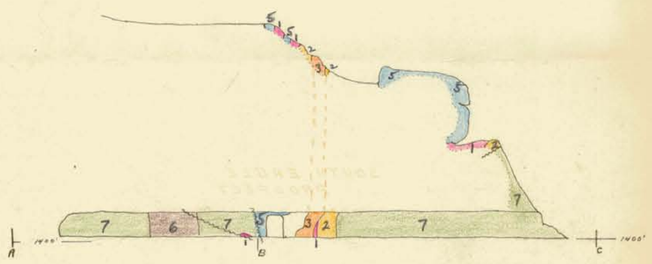
area of rock slides

1400 foot terrace cliffs

SOUTH EAGLE PROSPECT

D.D.H.

X-Section through diorite dike
(looking northwest)



X-Section through South Eagle Adit
(looking northwest)

2298

LEGEND

ROCK TYPES

1 — Mineralized Rock : mixture of skarn, magnetite hornfels, sulfides, limonite
2 — Altered Rock : hornfels, etc.
3 — Diorite
4 — Acid feldspar Porphyry
5 — Marble & Skarn
6 — Lamprophyre dikes
7 — Basaltic & Andesitic flows and pyroclastics

SYMBOLS

Limit of outcrop
Contact
Probable bedding contact
Underground workings

CERRO MINING CO. CANADA LTD.

PEMBERTON PROJECT

GEOLOGY

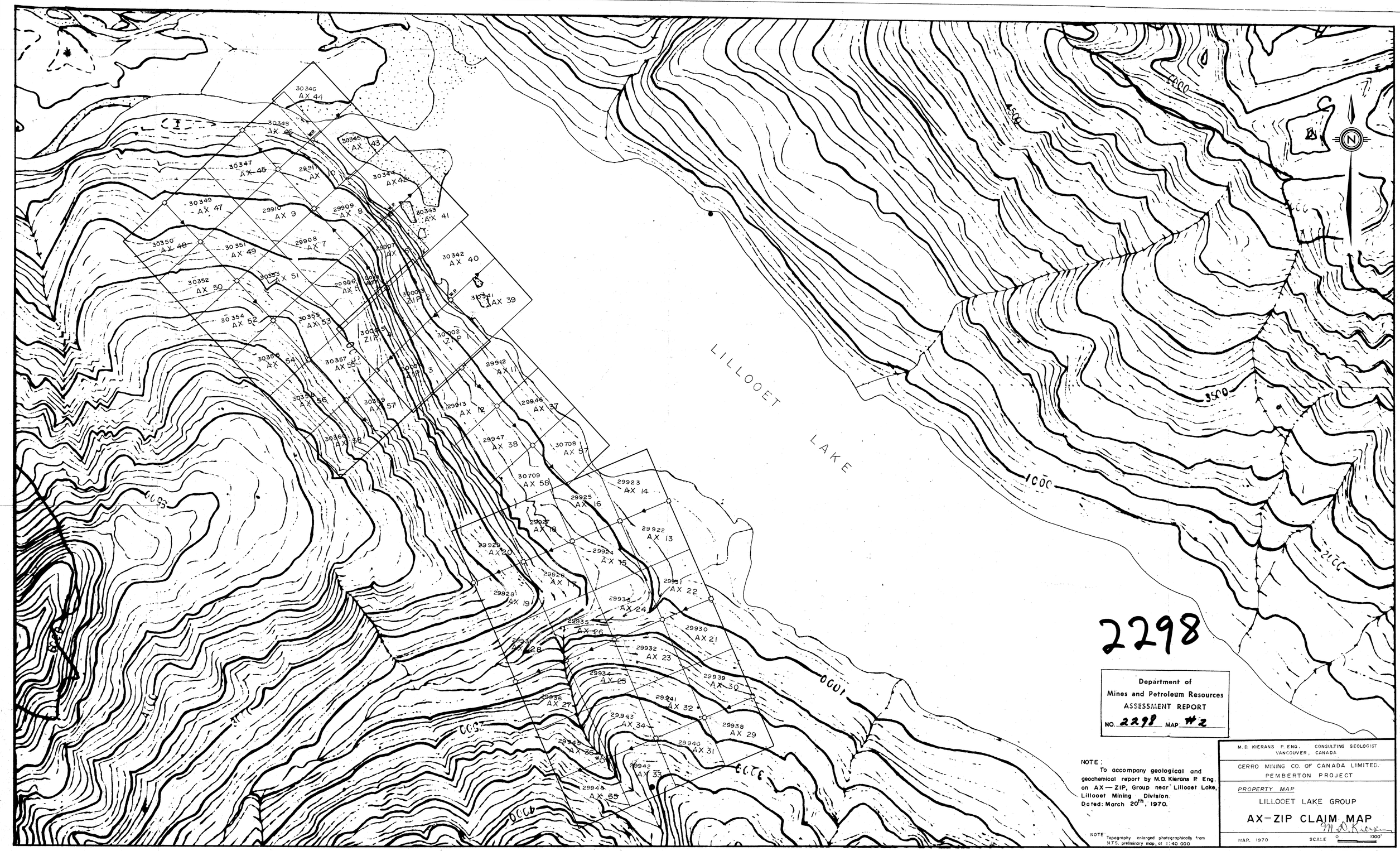
EAGLE PROSPECT, AX CLAIMS
LILLOOET M.D., BRITISH COLUMBIA

SCALE : 1"=20' (horizontal & vertical)
CONTOUR INTERVAL : 10'

J.R. WOODCOCK CONSULTANTS LTD.

Manager
J.R. Woodcock July, 1969

Fig 8



2298

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #2

NOTE:
To accompany geological and geochemical report by M.D. Kierans P. Eng. on AX — ZIP, Group near Lillooet Lake, Lillooet Mining Division.
Dated: March 20th, 1970.

NOTE Topography enlarged photographically from N.T.S. preliminary map, at 1:40 000

M.D. KIERANS P. ENG. CONSULTING GEOLOGIST
VANCOUVER, CANADA

CERRO MINING CO. OF CANADA LIMITED.
PEMBERTON PROJECT

PROPERTY MAP

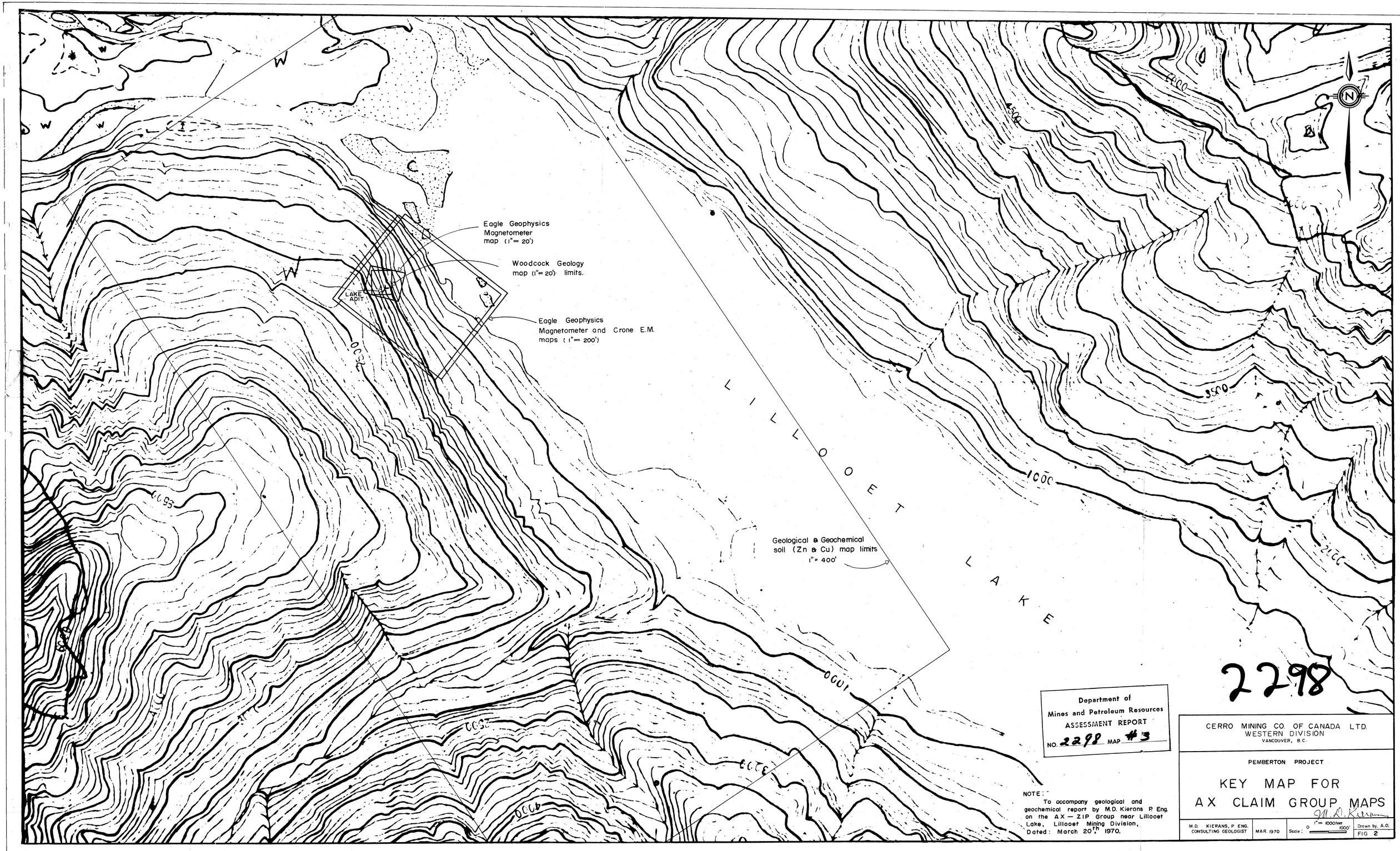
LILLOOET LAKE GROUP

AX-ZIP CLAIM MAP

M.D. Kierans

MAR. 1970 SCALE 0 1000'

FIG. 1



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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #3

NOTE:
To accompany geological and geochemical report by M.D. Kierans P. Eng. on the AX — ZIP Group near Lillooet Lake, Lillooet Mining Division, Dated: March 20th, 1970.

CERRO MINING CO. OF CANADA LTD.
WESTERN DIVISION
VANCOUVER, B.C.

PEMBERTON PROJECT

KEY MAP FOR AX CLAIM GROUP MAPS

M.D. KIERANS, P. ENG.
CONSULTING GEOLOGIST

MAR. 1970

Scale: 1"= 1000 feet (0 — 1000')

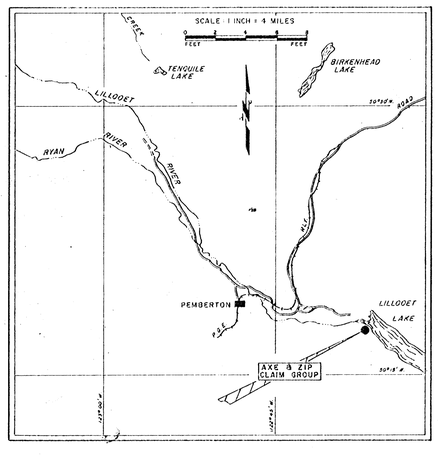
Drawn by: A.O.

FIG 2

L 3+00S. L 2+00S. L 1+00S. L 0+00 L 1+00N. L 2+00N. L 3+00N.

4+00 W.
3+50 W.
3+00 W.
2+50 W.
2+00 W.
1+50 W.
1+00 W.
0+50 W.
0+00
0+50 E.
1+00 E.
1+50 E.
2+00 E.

AXE 5
AXE 6
ZIP 4
ZIP 2
L 8+00
GRILL COLLAR
ADIT ENTRANCE
INITIAL POSTS OF AXE 5 and 6
CLAIM POST



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #12

LEGEND

- INTERVAL - 250 GAMMAS
- INTERVAL - 1000 GAMMAS
- MAGNETIC DEPRESSION
- DRILL COLLAR
- ADIT ENTRANCE
- CLAIM POSTS AND BOUNDARY
- POSSIBLE MAGNETIC CONCENTRATION

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CERRO MINING COMPANY of CANADA LIMITED

PEMBERTON AREA

AXE and ZIP CLAIM GROUP, LILLOOET MINING DISTRICT, B.C.

MAGNETOMETER SURVEY

SCALE: 1 INCH = 20 FEET

20 10 0 20 10 50 FEET

MAP No. E-153-3

TO ACCOMPANY A REPORT
BY PETER E. WALCOTT, P.Eng.
DATED JULY, 1969.

EAGLE GEOPHYSICS LIMITED
JUNE, 1969

FIG. 11

AXE 5

AXE 6

3+00 N.
2+00 N.
1+00 N.
0+00 N.
1+00 N.
2+00 N.
3+00 N.

12+00 N.

LILLOOET

ZIP 2

ZIP 4

8+00 N.

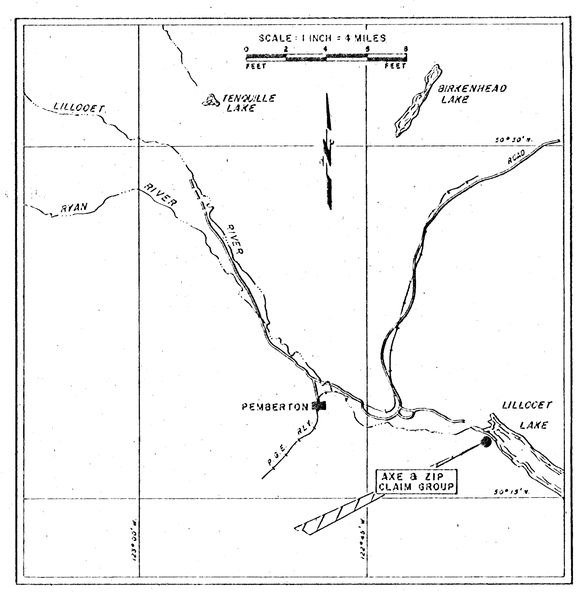
LAKE

4+00 N.

0+00 N.

ZIP 3

ZIP 1



LEGEND

DIP ANGLE PROFILE

HIGH FREQUENCY — 1800 Hz.

LOW FREQUENCY — 480 Hz.

CLAIM POST AND BOUNDARY

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #11

2298

CERRO MINING COMPANY of CANADA LIMITED

PEMBERTON AREA

AXE and ZIP CLAIM GROUP, LILLOOET MINING DISTRICT, B.C.

CRONE ELECTROMAGNETIC SURVEY

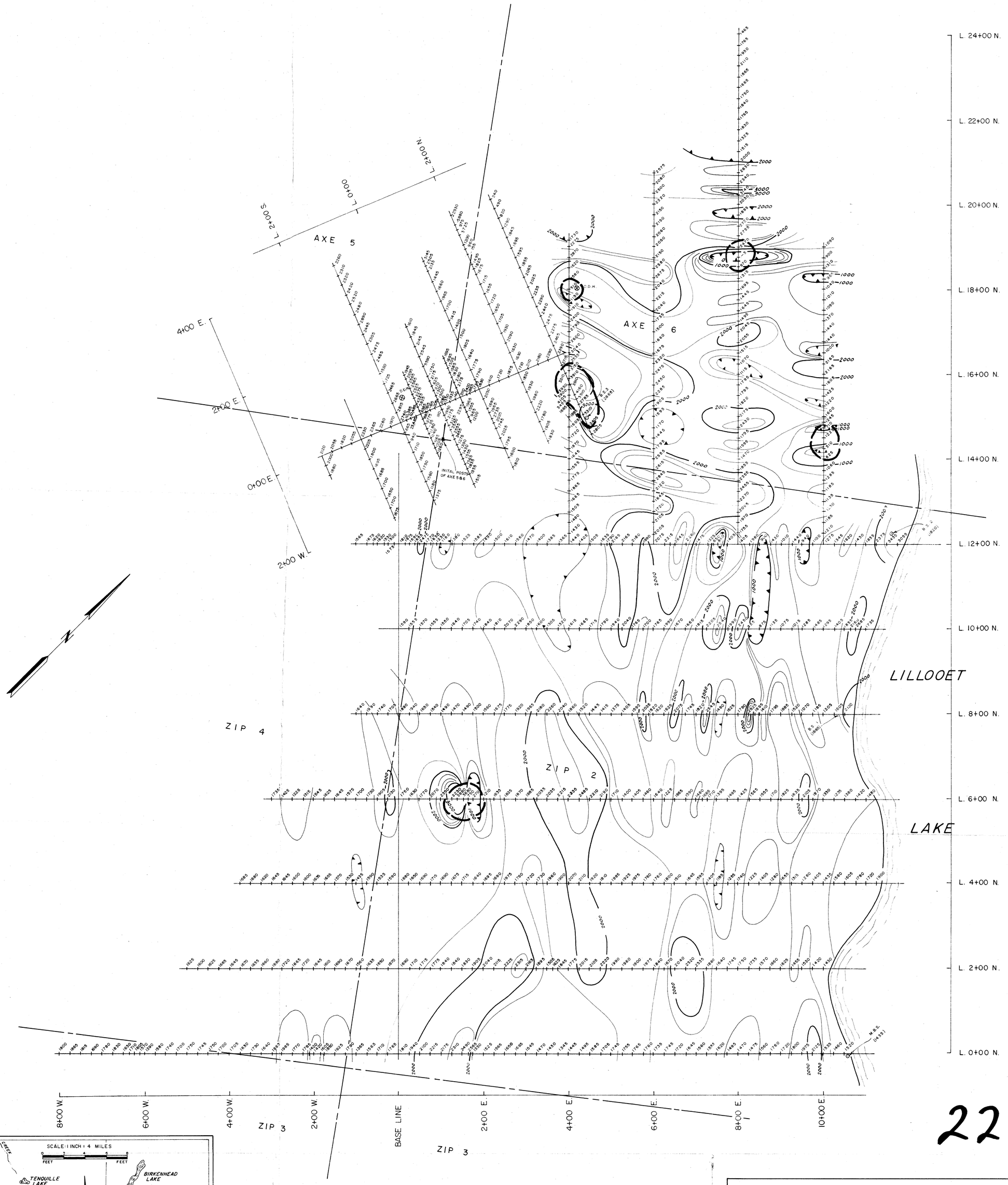
SCALE: 1 INCH = 100 FEET

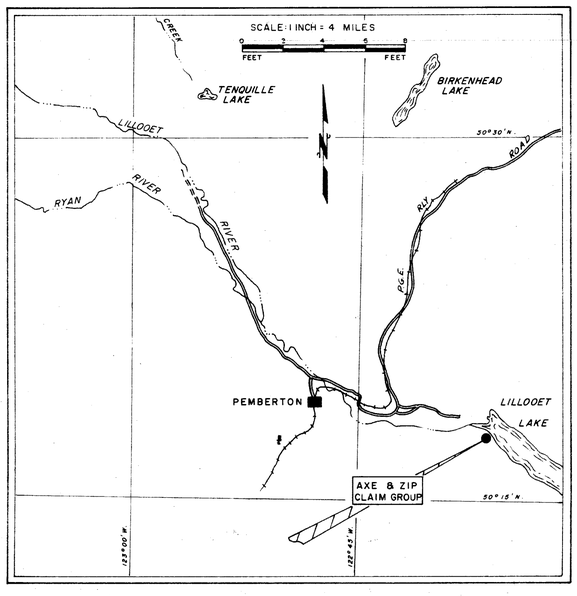
10 5 0 10 20 30
FEET FEET

MAP No. E-153-2
TO ACCOMPANY A REPORT
BY PETER E. WALCOTT, P.Eng.
DATED: JULY, 1969.

EAGLE GEOPHYSICS LIMITED
JUNE, 1969.

FIG. 10





LEGEND

- INTERVAL - 250 GAMMAS
- INTERVAL - 1000 GAMMAS
- MAGNETIC DEPRESSION
- B.S. 2 ..... BASE STATION
- ⊗ D.D.H. ..... DRILL COLLAR
- CLAIM POSTS AND BOUNDARY
- POSSIBLE MAGNETIC CONCENTRATION

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2298 MAP #10

2298

CERRO MINING COMPANY of CANADA LIMITED

PEMBERTON AREA

AXE and ZIP CLAIM GROUP, LILLOOET MINING DISTRICT, B.C.

MAGNETOMETER SURVEY

SCALE 1 INCH = 100 FEET

100 50 0 100 200 300
FEET FEET

MAP No. E-153-1
TO ACCOMPANY A REPORT
BY PETER E. WALCOTT, P. Eng.
DATED JULY, 1969.

EAGLE GEOPHYSICS LIMITED
JUNE, 1969.

FIG. 9