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DIAMOND DRILL HOLE REPORT
ON
GROUP XI

Liard Mining Division
104 I/1W
by
T. Terriff
Esso Minerals Canada

Sept. 23/80

8395

DIAMOND DRILL HOLE REPORT

on

JEFF 63-64, 101-116, 135-138,
JENN 1-9 AND MOE 1 MINERAL CLAIMS

GROUP XI

Liard Mining Division
104 I/1W
58° 12' N 128° 21' W

for

Eso Minerals Canada
600-1281 West Georgia Street
Vancouver, B.C.

Report by: Terry Terriff

September 23, 1980

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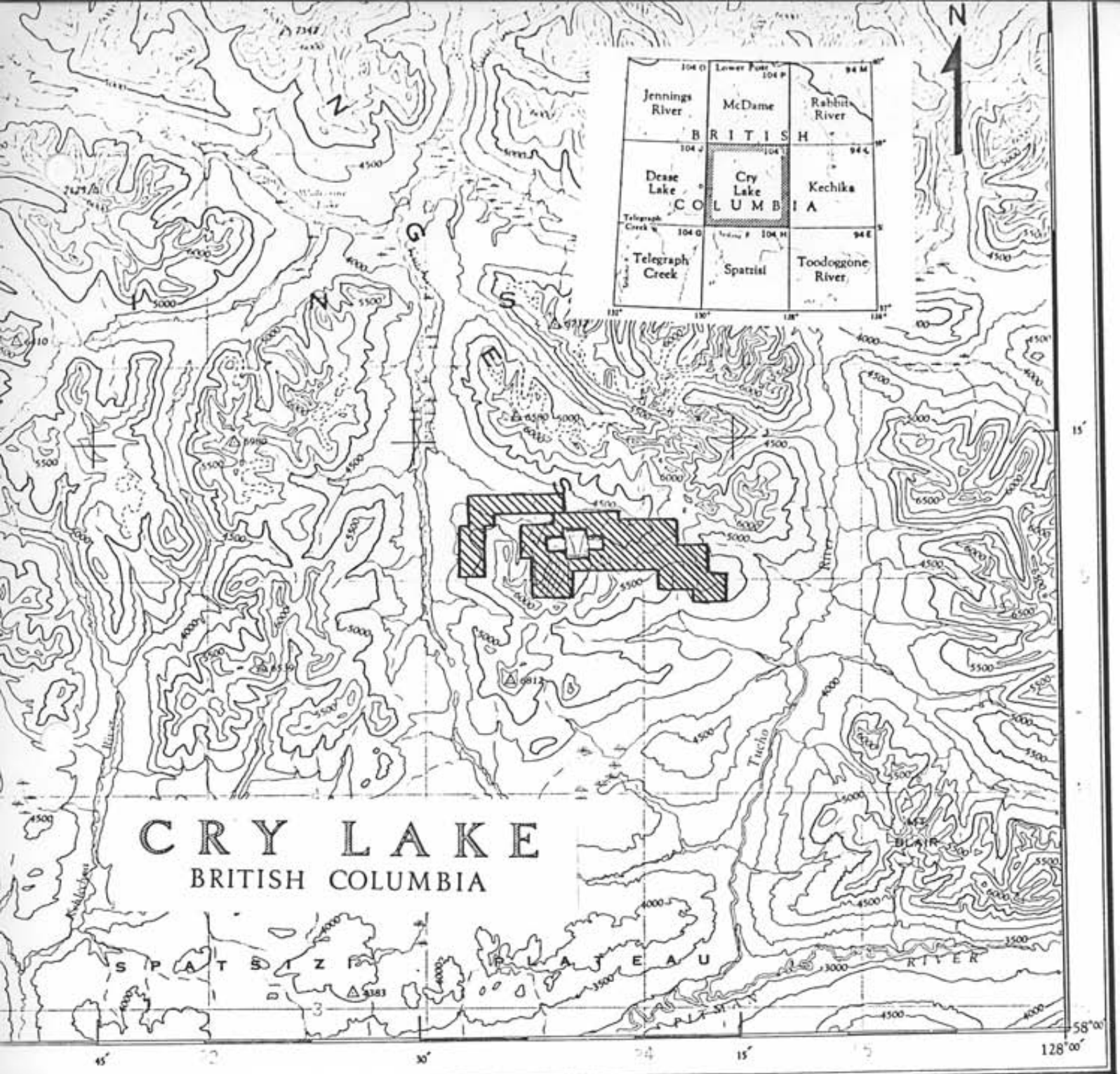
INTRODUCTION

The Kutcho Creek property is located in mountainous terrain in the Cassiar Mountains. The exploration camp is located at an elevation of 1530 m on the south side of a tributary of Kutcho Creek. Exploration is done from elevations 1400 m to 1500 m.

The property is centered about 21 km south-south east of Railbow Lake and 9 km east-south-east of the Kutcho Creek airstrip. Access from the airstrip to camp is by helicopter. The location of Esso Minerals' claims is shown on Index Map No. 1.

The property is owned and operated by Esso Minerals Canada, a division of Esso Resources Canada Limited.

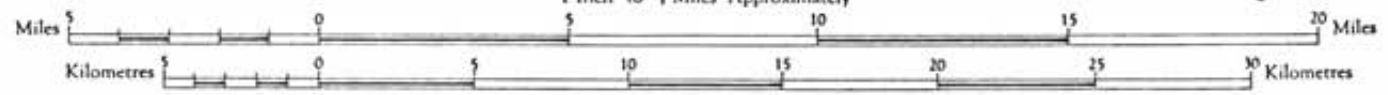
This report describes 246.0 m of BQ diamond drilling on the Jeff claim. One hole was drilled.

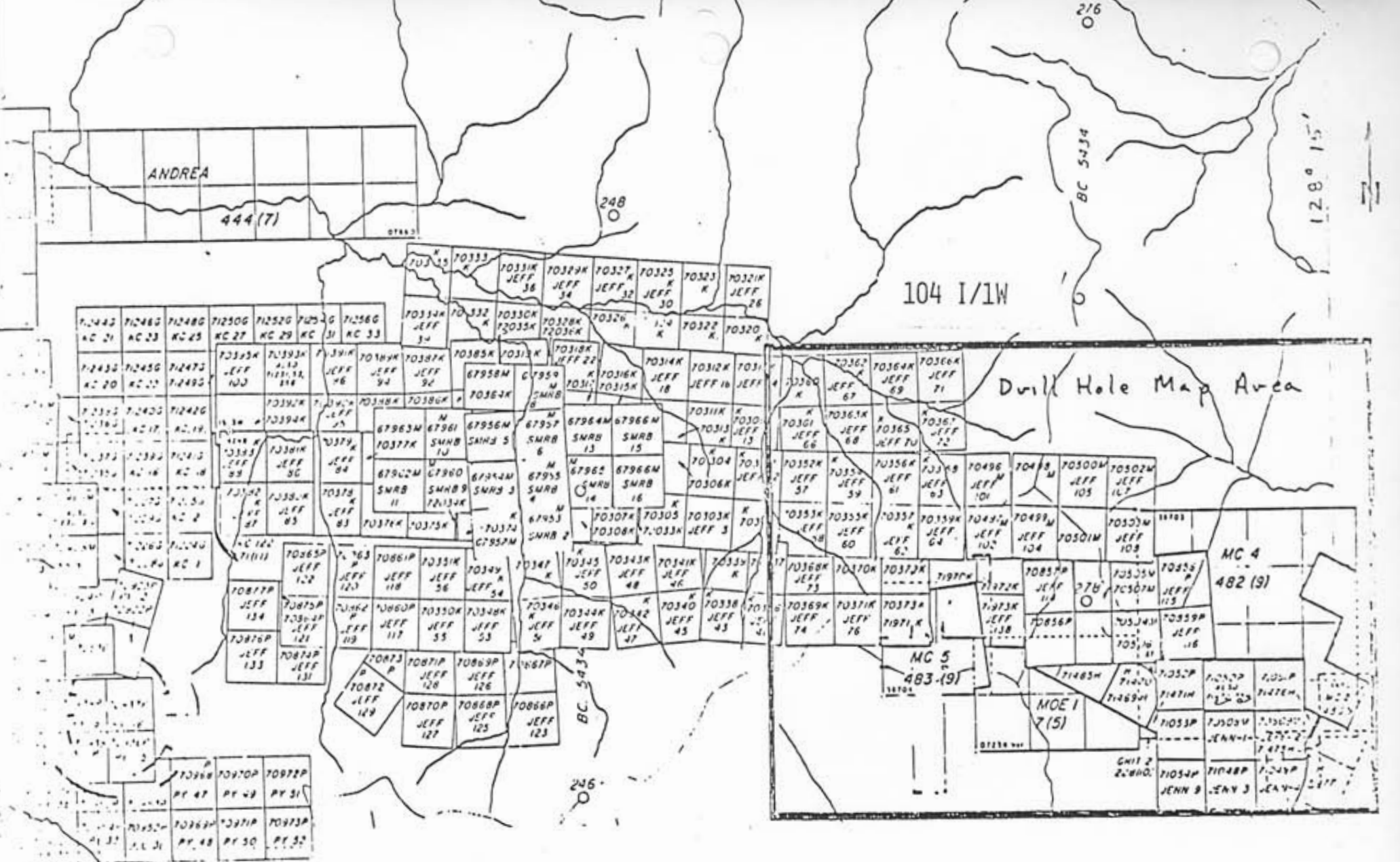


Index Map No. 1: Location of Esso Minerals Canada's Kutcho Creek Mineral Claims in 104 I.

Scale 1 : 250,000
1 Inch to 4 Miles Approximately

Page 2.





INDEX MAP FOR GROUP XI LOCATION OF DIAMOND DRILL HOLE MAP

GEOLOGY

Mineralization at Kutcho Creek consists of stratiform, volcanogenic massive pyrite with base metal sulphides. The sulphides occur near the transition from volcanic to mixed volcanic and sedimentary rocks within the Triassic or older Kutcho assemblage.

The following is a description of the lithologic units encountered in drilling on the Kutcho property. They are arranged from youngest to oldest which is the sequence in which they are encountered in drilling. The quoted thicknesses are the maximum apparent true thicknesses encountered in drilling prior to 1979 or an estimate:

Limestone, 125 m

Massive recrystallized limestone.

Conglomerate, 150-160 m

Strongly foliated polymictic conglomerate composed of predominately silicic clasts derived from the volcanic pile. The base of the conglomerate unit has been intersected in 6 holes. It is always underlain by rocks of the basic unit.

Tuff-Argillite Unit, 350 m in area north of Esso's camp to 440 to 470 m thick 3 km west

This unit represents a conformable transition from the underlying silicic volcanic rocks to very fine-grained, silicic, graded waterlain tuffs, argillite, siltstone and epiclastic rocks. It consists mainly of tuffs and slightly argillaceous tuffs metamorphosed to quartz-chlorite-sericite-biotite schists. Fine laminations, graded bedding and quartz phenocrysts are unaffected by the development of foliation.

A black, calcareous, graphitic argillite commonly occurs a few meters above the base of the unit. A mixed unit of argillite and argillaceous tuff commonly occurs approximately 100 to 150 m above the base

of the tuff-argillite unit. The main lithology in the upper portion of the unit is a silicic siltstone with minor megascopically visible biotite. Minor disseminated pyrrhotite ± pyrite is ubiquitous in the tuff-argillite unit.

Basic Unit, Variable Thickness

Basaltic to andesitic flows and tuffs? occur from immediately below the ore horizon to the base of the conglomerate unit. They are most abundant within the stratigraphic interval of the tuff-argillite unit. Here they account for 33 to 82% of the section and generally make up 50% of the section directly overlying the ore horizon.

The basic unit rocks were previously called metagabbro. They include massive basalt, basic schist, amphibolitic flows, amphibolitic flows with plagioclase phenocrysts, plagioclase porphyries and plagioclase porphyries with minor quartz phenocrysts. Variations from massive, amphibolitic units to plagioclase porphyries are the most common rocks in the basic unit.

The basic rocks are commonly weakly foliated and contain chlorite, epidote-clinozoisite and biotite. Locally they are intensely altered to carbonate-sericite.

Quartz Feldspar Crystal Tuff (QFCT), 200 m

The QFCT and Phylolite Tuff units overlie the ore horizon. The ore zones occur slightly up-dip (south) of a facies change between the QFCT and Rhyolite Tuff units. The QFCT unit is graded and tuffaceous at the top but could be a flow.

Two main phases occur in the QFCT. The most abundant phase is a very homogeneous quartz-feldspar-sericite-chlorite-carbonate schist with abundant quartz phenocrysts, commonly up to 1 cm, and fewer plagioclase phenocrysts. The rock has a distinctive porphyritic or crystal tuff texture and is variably sericitic or chloritic. Immediately above ore it is intensely sericitized.

A coarse breccia phase occurs in the middle to upper parts of the unit but is not always present. It contains small to 1 m fragments texturally identical to the matrix and minor fine-grained chloritic fragments. The breccia phase is commonly heavily altered to epidote-clinozoisite.

Rhyolite Tuff, 155 m

This unit is facies equivalent with the QFCT unit. It develops along the down-dip (north) edge of the massive sulphide zones and commonly occupies most of the interval between the ore horizon and the Tuff-Argillite unit north of the sulphide zones.

The Rhyolite Tuff unit consists of quartz and sericite \pm chlorite and carbonate schists. It has a relict fragmental texture and minor, large quartz phenocrysts, commonly altered to carbonate. Colors vary from white to green and it commonly has a pink to purple tone due to hematite.

Sericite Schist, 300 m

A rhyolitic lapilli tuff metamorphosed to quartz + sericite \pm chlorite \pm carbonate schist. The unit consists of lustrous, white to medium green schists with a relict fragmental texture and rare, fine quartz phenocrysts.

A quartz-chlorite schist and a rhyolite breccia horizon have been observed near the middle of the sericite schist unit.

Dolomite lenses are common within the upper 30 m of the sericite schist unit and at the top of the massive sulphide horizon.

Massive Sulphide Horizon, 29 m

A main massive sulphide lens and thin, discontinuous, hanging wall lenses occur near or at the top of the sericite schist unit. Mineral-

ization consists of massive and disseminated pyrite with disseminated sphalerite, chalcopyrite, bornite and chalcocite.

Distal to the sulphide zones the ore horizon consists of minor, disseminated, sphalerite and chalcopyrite with pyrite in schist or carbonate.

Disseminated pyrite with a very minor base metal content occurs in the sericite schists below the massive sulphide body.

DIAMOND DRILLING

DDH 96 was drilled to further test a Charge potential anomaly. The top 186.3 m drilled were in Amphibolite and from 186.3 to 246.0 m, felsic tuffs of various composition were encountered. No significant sulphide mineralization was intersected.

The detailed drill logs are in the Appendix.

The drill core is stored at the Esso Minerals camp at Kutcho Creek.

COST STATEMENT DDH 96

Dates Drilled:

August 19, 1980 - August 22, 1980

Direct Drilling Costs:

500 ft. @ \$14.25/ft.	\$ 7,125.00
308 ft. @ \$14.75/ft.	4,543.00
254 gal. fuel @ \$1.75/gal.	698.50
33 coreboxes @ \$5.00 each	165.00

Helicopter Support

50 hours @ \$370/hr.	1,850.00
115 gals. fuel @ \$3.25/gal.	373.75

Geologist

5 days @ \$100/day	500.00
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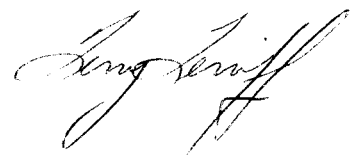
Assistant

3 days @ \$60/day	180.00
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Camp Costs

40 man-days @ \$30/day	<u>1,200.00</u>
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TOTAL COST

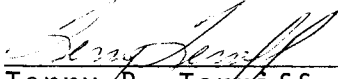
\$ 16,635.25


STATEMENT OF QUALIFICATIONS

I, Terry R. Terriff of Vancouver, British Columbia hereby certify the following qualification:

I obtained a B.Sc. in 1975 in geology from the University of Calgary, Calgary, Alberta.

I have been practising my profession as a geologist in Canada for 5 years.



Terry R. Terriff
Esso Resources Canada Limited

STATEMENT OF QUALIFICATIONS

I, David C. Tucker of Vancouver, British Columbia hereby certify the following qualifications:

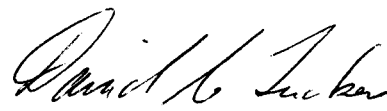
I obtained a B.Sc. degree in Geology in 1968 from the University of Melbourne, Melbourne, Victoria, Australia.

I obtained a B.Sc. (Hons) degree in Geology in 1972 from the James Cook University of North Queensland, Townsville, Queensland, Australia.

I obtained an M.Sc. degree in Exploration and Mining Geology in 1975 from the James Cook University of North Queensland, Townsville, Queensland, Australia.

I practised my profession as a geologist in Australia from 1969 until the end of 1979, excluding a period of 12 months in 1971-72 and 16 months in 1974-74 while attending James Cook University.

I have continued practising my profession as a geologist since arriving in Canada in 1980.



David C. Tucker

Esso Resources Canada Limited



LEGEND FOR DETAILED LOGS

The detailed drill logs are at a scale of 1 inch to 10 feet. All main units have been converted to metres.

The following is a list of abbreviations used in the drill logs:

c.a.	core axis
f.g.	fine grained
frag	fragment
qtz	quartz
hbl	hornblende
py	pyrite
ser	sericite
s c	approximately equal proportions of sericite and chlorite.

IMPERIAL OIL LIMITED
MINERALS SECTION
DRILL LOG

PROJECT <i>KUTCHO</i>	GROUND ELEV. <i>1734.2 m</i>
HOLE NO. <i>96</i>	BEARING —
LOCATION <i>21,485 m N ; 42,373 m E</i>	DIP <i>-90°</i>
	TOTAL LENGTH <i>807' (246 m)</i>
LOGGED BY <i>D.C. Tucker</i>	HORIZONTAL PROJECT
DATE	VERTICAL PROJECT
CONTRACTOR <i>ARCTIC D.D.</i>	ALTERATION SCALE  <ul style="list-style-type: none"> absent slight moderate intense
CORE SIZE <i>B.Q</i>	
DATE STARTED <i>19 Aug 1980</i>	TOTAL SULPHIDE SCALE  <ul style="list-style-type: none"> traces only < 1% 1% - 3% 3% - 10% > 10%
DATE COMPLETED <i>22 August, 1980</i>	
DIP TESTS	
COMMENTS	LEGEND

PAGE 1 OF 8		PROJECT:			HOLE NO. 76						
TH (I-EET)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACT INTENSITY	
					A	B	C	D	E		
				0-4 (0-1.2m) <i>Dereburden</i>							
				4-611.2 (1.2-186.3m) <i>Amphibolite</i>							
				4-23.1 coarse grained amphibole (hbl) feldspar porphyry, dark grey to black. 1-5mm quartz and carbonate vein lts at 30° and 60° to core axis							
				23.1-28.8 little coarse grained amphibolite with the feldspars strongly epidatized.							
				28.8-41.6 coarse grained amphibole feldspar porphyry. 34.0-34.7 quartz-chlorite-carbonate vein. Fractures // to core are hematite coated and slickensided.							
				41.6-60.0 epidatized coarse grained amphibolite as above 56.3-56.6 quartz-chlorite carbonate vein at 60° to c.a. Fractures // to core with hematite coating and slickensiding.							
				60.0-80.1 coarse grained amphibole feldspar porphyry as above 71.5-71.6 Qtz vein at 70° to c.a. with strong abradation of amphiboles 10cm above and below vein.							
				80.1-92.0 strongly epidatized amphibolite as above.							
				92.0-99.2 coarse grained amphibole feldspar porphyry as above 95.5-95.7 quartz-chlorite-carbonate vein at 60° to c.a.							

David H. Fisher

DEPTH (FEET)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACT INTENSITY
					A	B	C	D	E	
				99.2-109.2 strongly epidotized amphibolite as above.						
				109.2-132.3 coarse grained amphibole feldspar porphyry as above. 1-5mm quartz and carbonate veins at 60-80° to c.a.						
				117.0-117.4 quartz carbonate breccia vein						
				132.3-162.5 coarse grained epidotized amphibolite as above.						
				162.5-173.6 coarse grained amphibole feldspar porphyry as above.						
				173.6-265.5 strongly epidotized amphibolite as above. Occasional quartz/carbonate veins up to 10cm thick at 50-80° to c.a.						
				207-211 Affine of no epidote alteration.						
				265.5-334.8 coarse grained amphibole feldspar porphyry, 1-5mm carbonate veins cutting core at variety of angles between 10° and 80° to c.a.						
				277.0-277.4 Siliceous, carbonate, chlorite vein at 10° to c.a.						
				290.3-290.6 g/lz vein with strong chloritization and not silicification of amphibolite for ~60cm above chlorite vein, contacts irregular at ~30° to c.a.						
				334.8-419.3 coarse grained amphibolite with strong epidotization of feldspars and weak disseminated carbonate throughout. Contacts are irregular and above and below over 2-3m. 1-5cm g/lz carbonate-chlorite veins at						

V. Smith-Lester

PAGE 5 OF 8		PROJECT:		HOLE NO. 96											
DEPTH (FEET)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION					ALTERATION					FRACT INTENSITY	
				A	B	C	D	E							
				334.8-419.3 (cont.) 372.0, 376.0, 379.0, 386.5 + 395.4 with contacts at ~25° to c.a.											
				419.3-444.0 coarse grained amphibole (hb) feldspar porphyry											
				444.0-602.0 coarse grained strongly epidotized amphibolite. Silica-carbonate chlorite veins up to 1cm thick occur sporadically every 5-10' at 20°-50° to c.o.											
				505.3-505.6 quartz carbonate chlorite vein. lower contact 25° to c.a. upper contact 80° to c.a. Last 5' gradually becomes finer grained and less epidotized.											
				602.0-611.2 Strongly chloritized amphibolite, medium green colour Last 1' gradational to unchloritized schist.											
				611.2-636.4 (186.3-194.0) Lapilli tuff fine grained quartz sanicite chlorite schist, medium green colour SSC few large bomb sized fragments.											
				636.3-645.0 gtz vein with irregular contacts at ~45° to c.a.											
				636.4-697.7 (194.0-212.7) Lapilli crystal tuff gtz sanicite chlorite schist with abundant gtz crystals, medium green colour, SSC											
				677.7-678.0 } gtz veins // to 695.0-695.8 } foliation at 666.5-666.6 } 30-45° to c.o.											
				697.7-715.8 (212.7-218.2) white medium grained gtz fld, sanicite schist with silica gtz crystals and rare small lapilli											
				702.9-703.3 gtz vein											

David C. Tucker

PAGE 6 OF 8

PROJECT:

HOLE NO. 96

MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	INTERVAL	WIDTH	ASSAY NUMBER	%	%	%		COMPOSITE ASSAYS
<i>620-611.2 occasional py cubes up to 5mm</i>									

DEPTH (FEET)	% Core Recy	LITHOLOGY	STRUCTURE	GEOLOGICAL DESCRIPTION	ALTERATION					FRACT INTENSITY
					A	B	C	D	E	
				715.8-723.0 (218.8-220.4m) Dark grey quartz feld. peritite/ chlorite schist, small feld porphyroblasts. Last 1" is strongly sheared. gouge zone						
				723.0-730.3 (220.4-222.6) Feldspar porphyry dyke - alkalifeldspar and hornblende porphyroblasts in f.g. dark grey ? andesitic matrix.						
				730.3-735.7 (222.6-224.2m) Dark grey quartz feld. peritite/ chlorite schist, small feld porphyroblasts. Top 0.4' sheared gouge along dyke contact.						
				735.7-746.4 (224.2-227.5m) Weld. gneiss gtz schist, white to pale grey with scattered gtz crystals. Unit generally becomes lighter in color towards base.						
				746.4-805.4 (227.5-245.5m) Silica rich gtz peritite schist with scattered quartz crystals, leucite and rhyolitic bombs. Rhyolite flows become prominent below 767						
				805.4-807.0 (245.5-246.0) Qtz feldspar chlorite schist with abundant small feldspar porphyroblasts - unit is dark green. Few 1-5mm gtz veins parallel to foliation (45 to ca) and pre foliation in dge.						

John C. Fisher

PAGE 8 OF 8		PROJECT:						HOLE NO. 96				
MINERALIZATION DESCRIPTION	TOTAL SULPHIDE	INTERVAL	WIDTH	ASSAY NUMBER	%	%	%	COMPOSITE ASSAYS				
715.8-723.0 26 py in fg. pyritic bands up to 5 mm thick.												
730.3-735.7 26 py in fg. pyritic bands up to 5 mm thick.												
735.7-746.4 <1% py in few 1-5 mm bands of massive py.												
746.4-805.4 patchy trace disseminated py in chert in fogs and flows.												

[Handwritten signature]

TRAVERSE TABLE			
STATION	NORTH METERS	EAST METERS	ELEVATION FEET
IP 5122	24,882.47	39,872.35	5410.6
IP 5202	22,708.85	36,824.43	5081.9
IP 5244	21,796.91	36,391.86	5371.3
IP 5249	22,689.07	36,280.81	5353.9
IP 5289	21,698.75	41,201.850	5844.3
IP 1551	20,272.73	42,635.805	5682.0
IP 1552	20,513.035	42,864.360	5578.7
IP 1553	20,812.035	42,569.810	5548.7
IP 1554	20,998.095	42,402.035	5561.2
IP 1555	21,028.445	42,172.265	5472.0
IP 1556	21,301.010	42,144.035	5490.0
IP 1558	21,252.410	41,733.525	5297.9
IP 1559	21,186.185	41,692.290	5261.2
IP 1560	21,257.275	41,694.045	5382.4
IP 1561	21,197.820	42,469.825	5663.3
IP 1562	20,955.105	42,817.395	5596.1
IP 1563	20,600.280	42,970.330	5377.0
IP 1565	21,011.645	41,878.390	5276.0
IP 1566	21,285.000	41,520.990	5273.9
IP 1567	21,373.705	41,281.860	5223.3
IP 1568	21,385.735	40,838.185	5678.1
IP 1569	20,970.305	40,861.025	5433.4
IP 1570	20,624.295	41,297.455	5140.3
IP 1571	20,011.520	41,223.270	5128.3
IP 1572	21,392.505	40,408.915	5831.1
IP 1573	20,915.750	40,408.465	5673.3
IP 1574	20,848.685	39,960.825	5628.7
IP 1575	20,798.900	39,526.690	5974.5
IP 1576	21,398.100	39,554.765	5533.0
IP 1577	21,400.475	39,981.900	5736.9
IP 1578	23,099.575	44,962.590	5682.8
IP 1579	23,542.840	42,234.385	6063.0
IP 1580	22,013.525	42,870.115	5225.9
IP 1581	22,074.170	42,446.635	5422.6
IP 1582	22,097.130	42,088.960	5673.5
IP 1583	22,116.685	41,592.850	5950.0
IP 1584	22,111.835	41,671.345	5650.7
IP 1585	22,809.685	41,958.590	5577.3
IP 1586	22,998.300	42,391.860	5352.3
IP 1587	22,411.615	42,782.115	5955.1
IP 1588	22,217.290	43,176.260	5059.1
IP 1589	22,013.420	43,575.990	4897.5
IP 1590	21,204.305	42,897.870	5455.2
IP 1591	21,136.600	43,170.370	5388.5
IP 1592	21,459.329	42,819.665	5387.9
IP 1593	21,276.825	43,222.540	5480.1
IP 1594	21,013.875	43,586.600	5353.2
IP 1595	20,916.335	43,987.940	5359.7
IP 1596	20,735.505	44,387.240	5303.6
IP 1597	20,546.220	44,782.455	5027.9
IP 1598	20,725.090	43,736.325	5456.5
IP 1599	20,779.520	43,308.275	5076.7
IP 1700	22,817.880	41,512.470	5421.1
IP 2862	22,850.340	41,075.100	5256.4
IP 2863	23,038.940	41,190.560	5096.9
IP 2864	20,542.335	43,312.975	5479.5
IP 2865	19,915.585	43,302.960	5182.5
IP 2866	19,903.785	43,732.875	5088.5
IP 2867	20,323.025	43,730.515	5299.4
IP 2868	20,208.850	43,764.880	5230.8
IP 2869	20,000.755	44,204.895	5040.5
IP 2870	20,401.480	43,366.910	5477.0
IP 2871	19,801.450	44,815.810	4886.9
IP 2872	19,593.375	43,927.855	4935.8
IP 2873	19,487.635	43,730.185	4841.9
IP 2874	20,239.995	42,880.945	5658.2
IP 2875	19,434.170	43,707.130	4825.4

N 23,000

N 22,000

N 21,000

N 20,000

N 19,000

N 18,000

N 17,000

N 16,000

N 15,000

N 14,000

N 13,000

N 12,000

N 11,000

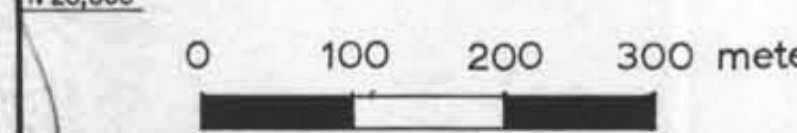
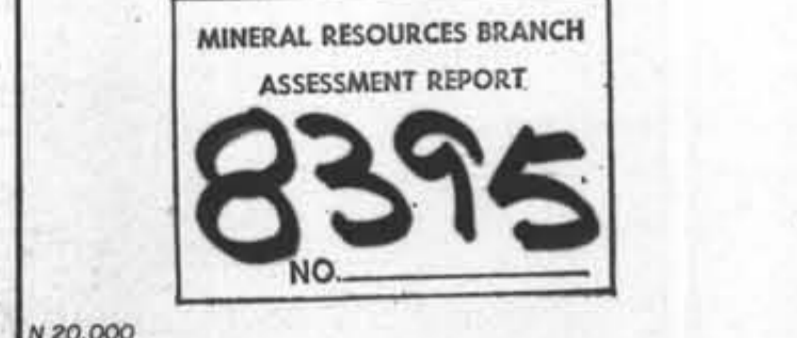
N 10,000

N 9,000

N 8,000

N 7,000

N 6,000



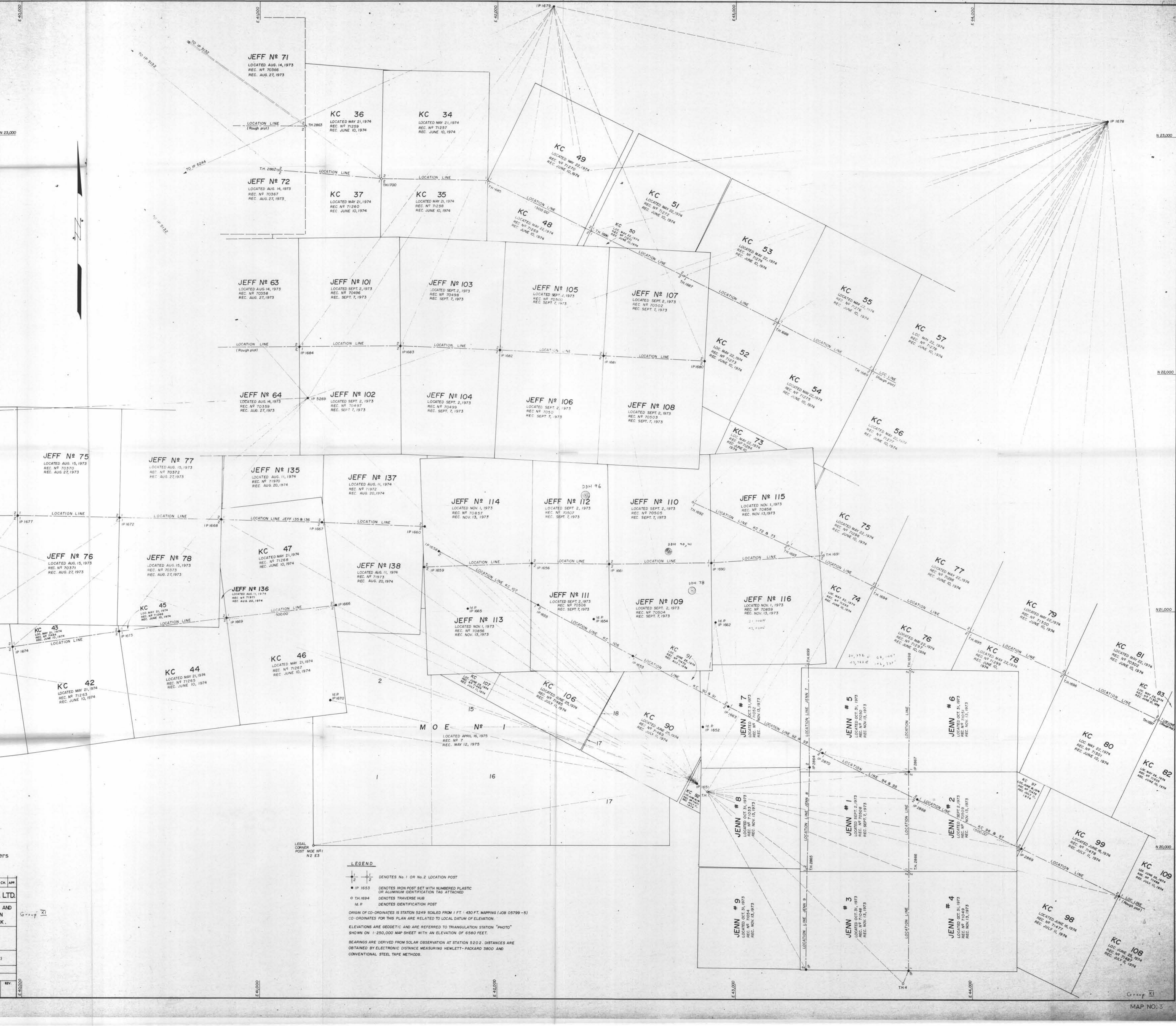
SUMITOMO METAL MINING CANADA LTD.
 LOCATION LINE SURVEY OF KC, JEFF, JENN AND MOE #1 GROUPS OF MINERAL CLAIMS IN LIARD MINING DIVISION, KUTCHO CREEK.

McELHANNEY ASSOCIATES
 PROFESSIONAL LAND SURVEYORS
 Vancouver, B.C.

DESIGNED: []
 DRAWN: []
 CHECKED: []
 APPROVED: []

CLIENT DWG. NO. []
 MASSOC DWG. NO. []
 REV. []

MAP NO. 3



LEGEND

- IP 1653 DENOTES IRON POST SET WITH NUMBERED PLASTIC OR ALUMINUM IDENTIFICATION TAG ATTACHED
- TH 1694 DENOTES TRAVERSE HUB
- IP 1653 DENOTES NO. 1 OR NO. 2 LOCATION POST
- IP 1653 DENOTES IRON POST SET WITH NUMBERED PLASTIC OR ALUMINUM IDENTIFICATION TAG ATTACHED
- TH 1694 DENOTES TRAVERSE HUB
- IP 1653 DENOTES NO. 1 OR NO. 2 LOCATION POST

ORIGIN OF CO-ORDINATES IS STATION 5249 SCALED FROM 1 FT = 430 FT. MAPPING (JOB 05799-5)
 CO-ORDINATES FOR THIS PLAN ARE RELATED TO LOCAL DATUM OF ELEVATION.
 ELEVATIONS ARE GEODETIC AND ARE REFERRED TO TRIANGULATION STATION "PHOTO"
 SHOWN ON 1:250,000 MAP SHEET WITH AN ELEVATION OF 5360 FEET.
 BEARINGS ARE DERIVED FROM SOLAR OBSERVATION AT STATION 5202. DISTANCES ARE OBTAINED BY ELECTRONIC DISTANCE MEASURING NEWLETT-PACKARD 3800 AND CONVENTIONAL STEEL TAPE METHODS.