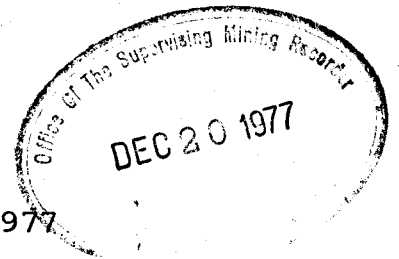


Geochemical Survey

Lucky Joe Option

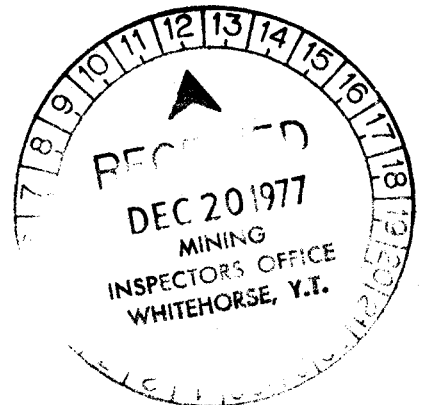
Lat. 63°35' Long. 139°30'

J. McClintock May 30 to July 20, 1977



Complete List of Claims

<u>Claims</u>	<u>Numbers</u>	<u>Due Dates</u>
B 1-12	Y56956-67	November 10, 1982
B 15-18	Y56970-73	"
BJB 1-8	Y99779-86	"
BJB 9-17	Y99868-76	"
SUNEP 1-14	Y99745-58	"
SUNEP 18-24	Y99759-65	"
SUNEP 26-34	Y99766-74	"
ASH 1-44	Y99883-926	"
PAX 1-10	Y9926-36	"



090251

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GEOCHEMICAL SURVEY
OF THE
LUCKY JOE OPTION
LUCKY JOE CREEK AREA, Y.T.

INTRODUCTION

In the spring of 1975 Rio Tinto Canadian Exploration Limited acquired by option from Silver Standard Mines Ltd., (NPL) a block of 16 mineral claims, the 'B' claims, located in the Dawson area, Yukon Territory. After acquisition of this property 101 mineral claims, the SUNEP, BJB, ASH and PAX claims, were staked peripheral to the 'B' claims for protection purposes.

The 'B' claims were staked in 1970 to cover a copper showing discovered by Silver Standard earlier that year. During 1970 and 1975 a soil sampling survey was carried out over the 'B' claims, 'SUNEP' and 'BJB' claims. This survey revealed a broad copper soil anomaly to exist on the property.

During the 1977 field season two additional soil sampling surveys, known as Grid II and Grid III, were carried out over the northern and northwestern portions

of the property by Riocanex. The purpose of the survey was to determine if anomalous copper values in soil existed to the north and northwest of the previously discovered soil anomaly. This programme was carried out under the supervision of Mr. John McClintock.

Results of the 1977 survey are discussed in the following report.

LOCATION AND ACCESS

The claim block is situated in west central Yukon within map sheet 115-0-12. The claims overlie the head waters of Lucky Joe Creek approximately 48 km south of Dawson City and 8 km east of the Yukon River. Centre of the property occurs at Latitude $63^{\circ}36'$ and Longitude $139^{\circ}31'$.

The claims are shown on the accompanying drawing L-6292 and are described in detail in the Schedule of Claims, Appendix I.

Currently the property is only accessible by helicopter. The closest helicopter is a Bell 206 B, operated by Trans North Turbo Air out of their permanent base at Dawson City.

A 36 km long unimproved cat trail leads from the mouth of Quartz Creek to the centre of the property. This trail could be improved to allow access by tracked vehicle to the property.

GEOLOGICAL SETTING

The area was mapped at a scale of 1 inch to 4 miles by the G.S.C. in 1934 and 1935 (G.S.C. Map 711 A; Bostock, 1942). This work shows the property to be situated over a north-south trending belt of Yukon Group gneiss and schist, sandwiched between two large bodies of gneissic granite. Outcrop and float noted during the 1977 survey suggests this work to be reasonably accurate.

SAMPLING, SAMPLE PREPARATION AND ANALYTICAL PROCEDURE

The soil sampling programme was carried out by a three man crew working from two separate base-camps. Locations of the two camps are shown on drawing L-8472. A total of 621 soil samples were taken on grids II and III.

Soil samples were collected at 50 metre intervals along 200 metre spaced northeast-southeast^{west} trending lines. Samples were taken from the 'B' soil horizon. Where 'B' horizon material could not be obtained no sample was collected and the sample site marked as N.S.

All samples were placed in Kraft paper envelopes and shipped to the Riocanex Laboratory in North Vancouver, B.C. Samples were oven dried at approximately 60°C. Dried samples were sieved through 80-mesh bolting cloth and oversized material discarded. Analysis was carried out on the minus 80-mesh fraction by atomic absorption spectrometer after digestion with hot nitric and perchloric acid. All samples were analysed for Cu, Pb and Zn.

INTERPRETATION OF RESULTS

The results of the soil sampling programme are shown on the four accompanying drawings all at the scale of 1:5,000. Sample locations are shown on drawing L-8472. The values in ppm obtained for the elements Cu, Pb and Zn are shown on drawings GC-8473 to GC-8475 inclusive.

As nearly all the 1977 samples were anomalous, the threshold and anomalous levels for each of the metals of interest have been derived from the 1975 sampling and are shown in Table 1. The statistical calculations were carried out on approximately 1243 samples. Previous work in this part of the Yukon has shown all of the elements of interest to show a log normal distribution and so, statistical manipulations were carried out on the logs of the values. Threshold and anomalous levels were taken at mean plus two standard deviations and mean plus three standard deviations, respectively, for each of the metals investigated.

TABLE I

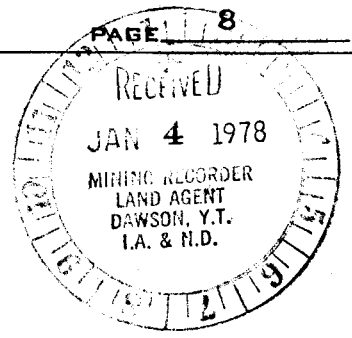
Threshold and Anomalous Metal Values in 'B' Horizon Soils.
Lucky Joe Creek Area.

<u>Metal</u>	<u>Threshold Value</u>	<u>Anomalous Value</u>
Cu	124	152
Pb	38	52
Zn	140	198

(Data on the minus 80-mesh fraction; analysis on the atomic absorption spectrometer after digestion with hot nitric and perchloric acid).

Analysis of the soil samples revealed large and strong copper anomalies within both Grid II and Grid III. On Grid II a 1500 metre by 400 metre 'fish hook' shaped zone of anomalous copper values occurs. On Grid III a large irregular zone of copper anomalous samples is present. This irregular zone can be divided into two northwest trending zones separated by 500 metres of weakly anomalous to background values. The Grid III anomalies are 600 metres by 400 metres and 400 metres by 400 metres and are both open to the northwest.

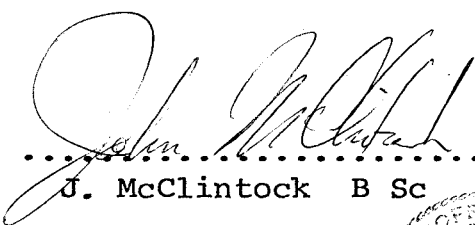
Neither zinc nor lead show a concentration of anomalous values. Occasional sporadic high zinc and lead values do occur on both grids, however, these anomalous values are generally separated by background values.

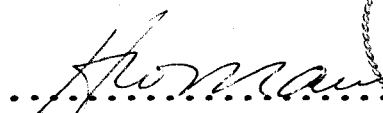


CONCLUSIONS AND RECOMMENDATIONS

The recent soil survey succeeded in locating two large areas previously not thought to contain anomalous copper values in soils. Other metals within the areas sampled are generally low. The large areas of high copper values are thought to outline the areas of greatest potential for copper mineralization.

Additional programmes should concentrate on the areas of high copper values on both Grid II and Grid III. Work should include detailed mapping, an induced polarization survey and soil sampling on extensions of Grid III.


.....
J. McClintock B Sc


.....
H.W. Marsh P. Eng.



APPENDIX I

LUCKY JOE OPTION CLAIMS STATUS AS OF 1 DECEMBER 1977

GROUP: 7701 NUMBER OF CLAIMS = 12

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
ASH 15	Y99897	1	821110
ASH 16	Y99898	1	821110
ASH 17	Y99899	1	821110
ASH 19	Y99901	1	821110
ASH 33	Y99915	1	821110
ASH 34	Y99916	1	821110
ASH 35	Y99917	1	821110
ASH 37	Y99919	1	821110
ASH 39	Y99921	1	821110
ASH 41	Y99923	1	821110
ASH 42	Y99924	1	821110
ASH 43	Y99925	1	821110

GROUP: 7702 NUMBER OF CLAIMS = 16

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
B 1	Y56956	1	821110
B 2	Y56957	1	821110
B 3	Y56958	1	821110
B 4	Y56959	1	821110
BJB 14	Y99873	1	821110
SUNEP 30	Y99770	1	821110
ASH 18	Y99900	1	821110
ASH 20	Y99902	1	821110
ASH 21	Y99903	1	821110
ASH 23	Y99905	1	821110
ASH 29	Y99911	1	821110
ASH 31	Y99913	1	821110
ASH 36	Y99918	1	821110
ASH 38	Y99920	1	821110
ASH 40	Y99922	1	821110
ASH 44	Y99926	1	821110

LUCKY JOE OPTION CLAIMS STATUS AS OF 1 DECEMBER 1977

GROUP: 7703 NUMBER OF CLAIMS = 16

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
BJB 1	Y99779	1	821110
BJB 2	Y99780	1	821110
BJB 13	Y99872	1	821110
BJB 15	Y99874	1	821110
SUNEP 18	Y99759	1	821110
SUNEP 19	Y99760	1	821110
SUNEP 20	Y99761	1	821110
SUNEP 21	Y99762	1	821110
SUNEP 29	Y99769	1	821110
SUNEP 31	Y99771	1	821110
SUNEP 33	Y99773	1	821110
SUNEP 34	Y99774	1	821110
ASH 5	Y99887	1	821110
ASH 6	Y99888	1	821110
ASH 7	Y99889	1	821110
ASH 9	Y99891	1	821110

GROUP: 7704 NUMBER OF CLAIMS = 16

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
B 17	Y56972	1	821110
B 18	Y56973	1	821110
BJB 3	Y99781	1	821110
BJB 4	Y99782	1	821110
BJB 6	Y99784	1	821110
BJB 8	Y99786	1	821110
BJB 10	Y99869	1	821110
BJB 12	Y99871	1	821110
SUNEP 22	Y99763	1	821110
SUNEP 23	Y99764	1	821110
SUNEP 24	Y99765	1	821110
SUNEP 32	Y99772	1	821110
ASH 1	Y99883	1	821110
ASH 3	Y99885	1	821110
ASH 8	Y99890	1	821110
ASH 10	Y99892	1	821110

LUCKY JOE OPTION CLAIMS STATUS AS OF 1 DECEMBER 1977

GROUP: 7705 NUMBER OF CLAIMS = 15

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
B 16	Y56971	1	821110
BJB 5	Y99783	1	821110
BJB 7	Y99785	1	821110
BJB 9	Y99868	1	821110
BJB 11	Y99870	1	821110
SUNEP 14	Y99758	1	821110
ASH 2	Y99884	1	821110
ASH 4	Y99886	1	821110
PAX 4	Y99930	1	821110
PAX 5	Y99931	1	821110
PAX 6	Y99932	1	821110
PAX 7	Y99933	1	821110
PAX 8	Y99934	1	821110
PAX 9	Y99935	1	821110
PAX 10	Y99936	1	821110

GROUP: 7706 NUMBER OF CLAIMS = 14

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
B 5	Y56960	1	821110
B 6	Y56961	1	821110
B 7	Y56962	1	821110
B 8	Y56963	1	821110
B 9	Y56964	1	821110
B 10	Y56965	1	821110
B 11	Y56966	1	821110
B 12	Y56967	1	821110
B 15	Y56970	1	821110
SUNEP 3	Y99747	1	821110
SUNEP 5	Y99749	1	821110
SUNEP 26	Y99766	1	821110
SUNEP 27	Y99767	1	821110
SUNEP 28	Y99768	1	821110

LUCKY JOE OPTION CLAIMS STATUS AS OF 1 DECEMBER 1977

GROUP: 7707 NUMBER OF CLAIMS = 14

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
SUNEP 1	Y99745	1	821110
SUNEP 2	Y99746	1	821110
SUNEP 4	Y99748	1	821110
SUNEP 6	Y99750	1	821110
SUNEP 7	Y99751	1	821110
SUNEP 8	Y99752	1	821110
SUNEP 9	Y99753	1	821110
SUNEP 10	Y99754	1	821110
SUNEP 11	Y99755	1	821110
SUNEP 12	Y99756	1	821110
SUNEP 13	Y99757	1	821110
PAX 1	Y99927	1	821110
PAX 2	Y99928	1	821110
PAX 3	Y99929	1	821110

GROUP: 7708 NUMBER OF CLAIMS = 14

CLAIM NAME	TAG NUMBER	TOTAL YEARS	NEXT DUE DATE
=====	=====	=====	=====
BJB 16	Y99875	1	821110
BJB 17	Y99876	1	821110
ASH 11	Y99893	1	821110
ASH 12	Y99894	1	821110
ASH 13	Y99895	1	821110
ASH 14	Y99896	1	821110
ASH 22	Y99904	1	821110
ASH 24	Y99906	1	821110
ASH 25	Y99907	1	821110
ASH 26	Y99908	1	821110
ASH 27	Y99909	1	821110
ASH 28	Y99910	1	821110
ASH 30	Y99912	1	821110
ASH 32	Y99914	1	821110

TOTAL NUMBER OF CLAIMS = 117

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 3

NUMBER	COPPER	LEAD	ZINC
7707135.0	350.0	9.0	56.0
7707136.0	290.0	16.0	50.0
7707137.0	210.0	11.0	40.0
7707138.0	112.0	6.0	35.0
7707139.0	55.0	6.0	24.0
7707140.0	48.0	5.0	35.0
7707141.0	25.0	8.0	36.0
7707142.0	29.0	9.0	40.0
7707143.0	31.0	7.0	45.0
7707144.0	40.0	8.0	67.0
7707145.0	70.0	13.0	104.0
7707146.0	72.0	12.0	62.0
7707147.0	85.0	6.0	85.0
7707148.0	29.0	75.0	148.0
7707149.0	22.0	46.0	92.0
7707150.0	32.0	22.0	84.0
7707151.0	55.0	17.0	48.0
7707152.0	32.0	13.0	30.0
7707153.0	24.0	13.0	34.0
7707154.0	26.0	8.0	44.0
7707155.0	31.0	5.0	34.0
7707156.0	41.0	6.0	36.0
7707157.0	53.0	7.0	31.0
7707158.0	84.0	7.0	36.0
7707159.0	125.0	13.0	29.0
7707160.0	180.0	7.0	46.0
7707161.0	175.0	5.0	64.0
7707162.0	210.0	7.0	76.0
7707163.0	440.0	8.0	95.0
7707165.0	170.0	8.0	68.0
7707166.0	103.0	5.0	52.0
7707167.0	62.0	5.0	46.0
7707168.0	79.0	4.0	42.0
7707169.0	290.0	5.0	77.0
7707170.0	147.0	4.0	56.0
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7707172.0	55.0	3.0	40.0
7707173.0	31.0	3.0	43.0
7707174.0	22.0	2.0	47.0
7707175.0	26.0	2.0	52.0
7707176.0	43.0	2.0	55.0
7707177.0	23.0	5.0	46.0
7707178.0	44.0	4.0	72.0
7707179.0	82.0	1.0	80.0
7707180.0	55.0	5.0	64.0
7707181.0	28.0	4.0	44.0
7707182.0	28.0	2.0	45.0
7707183.0	25.0	4.0	52.0
7707184.0	19.0	3.0	48.0
7707185.0	38.0	3.0	44.0
7707186.0	24.0	5.0	48.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 4

NUMBER	COPPER	LEAD	ZINC
7707 ⁶ 187.0	35.0	6.0	46.0
7707189.0	33.0	4.0	66.0
7707190.0	24.0	4.0	42.0
7707191.0	19.0	5.0	24.0
7707192.0	24.0	4.0	30.0
7707193.0	36.0	4.0	32.0
7707194.0	68.0	4.0	30.0
7707195.0	24.0	3.0	62.0
7707196.0	71.0	6.0	46.0
7707197.0	44.0	3.0	38.0
7707198.0	73.0	5.0	24.0
7706199.0	35.0	5.0	55.0
7706200.0	27.0	6.0	50.0
7706201.0	51.0	9.0	72.0
7706202.0	34.0	8.0	58.0
7706203.0	42.0	8.0	72.0
7706204.0	65.0	8.0	76.0
7706205.0	60.0	8.0	62.0
7706206.0	122.0	17.0	530.0
7706207.0	45.0	3.0	36.0
7706208.0	19.0	6.0	42.0
7706209.0	48.0	10.0	45.0
7706210.0	13.0	11.0	32.0
7706211.0	48.0	9.0	74.0
7706212.0	44.0	5.0	53.0
7706213.0	56.0	6.0	17.0
7706214.0	53.0	6.0	18.0
7706215.0	49.0	7.0	16.0
7706216.0	104.0	8.0	26.0
7706217.0	200.0	11.0	37.0
7706218.0	190.0	8.0	32.0
7706219.0	230.0	4.0	52.0
7706220.0	141.0	6.0	20.0
7706221.0	128.0	9.0	33.0
7706222.0	98.0	4.0	37.0
7706223.0	154.0	4.0	61.0
7706224.0	34.0	4.0	68.0
7706225.0	24.0	4.0	56.0
7706226.0	47.0	4.0	36.0
7706227.0	17.0	4.0	36.0
7706228.0	11.0	4.0	48.0
7706229.0	45.0	4.0	42.0
7706230.0	14.0	4.0	55.0
7706231.0	21.0	7.0	62.0
7706232.0	13.0	4.0	25.0
7706233.0	195.0	3.0	138.0
7706234.0	140.0	3.0	70.0
7706235.0	84.0	4.0	68.0
7706236.0	59.0	4.0	76.0
7706237.0	102.0	4.0	82.0
7706238.0	20.0	6.0	76.0
7706239.0	22.0	4.0	57.0
7706241.0	27.0	3.0	82.0
7706242.0	19.0	4.0	58.0
7706243.0	17.0	4.0	86.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 5

NUMBER	COPPER	LEAD	ZINC
7706244.0	16.0	6.0	60.0
7706245.0	21.0	4.0	39.0
7706246.0	13.0	6.0	44.0
7706247.0	13.0	7.0	114.0
7706248.0	12.0	6.0	114.0
7706249.0	590.0	9.0	114.0
7706250.0	350.0	4.0	62.0
7706251.0	170.0	7.0	69.0
7706252.0	72.0	10.0	48.0
7706253.0	86.0	10.0	52.0
7706254.0	44.0	6.0	58.0
7706255.0	41.0	3.0	48.0
7706256.0	50.0	3.0	48.0
7706257.0	48.0	3.0	55.0
7706258.0	46.0	1.0	65.0
7706259.0	46.0	4.0	50.0
7706260.0	25.0	3.0	48.0
7706261.0	50.0	4.0	68.0
7706262.0	52.0	2.0	38.0
7706263.0	71.0	1.0	42.0
7706265.0	28.0	3.0	26.0
7706267.0	56.0	8.0	50.0
7706268.0	42.0	11.0	62.0
7706269.0	86.0	23.0	138.0
7706271.0	42.0	40.0	75.0
7706272.0	52.0	7.0	72.0
7706273.0	53.0	7.0	48.0
7706273.1	76.0	6.0	36.0
7706274.0	82.0	11.0	115.0
7706275.0	48.0	15.0	55.0
7706276.0	54.0	16.0	54.0
7706277.0	142.0	5.0	48.0
7706279.0	145.0	3.0	52.0
7706280.0	79.0	3.0	42.0
7706281.0	37.0	1.0	48.0
7706282.0	20.0	5.0	34.0
7706283.0	80.0	4.0	58.0
7706284.0	39.0	3.0	54.0
7706285.0	33.0	2.0	56.0
7706286.0	53.0	2.0	72.0
7706287.0	102.0	1.0	75.0
7706288.0	94.0	1.0	75.0
7706290.0	111.0	2.0	69.0
7706292.0	73.0	2.0	64.0
7706293.0	250.0	2.0	49.0
7706294.0	82.0	4.0	56.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 6

NUMBER	COPPER	LEAD	ZINC
7706295.0	135.0	1.0	58.0
7706296.0	56.0	3.0	44.0
7706298.0	54.0	3.0	46.0
7706299.0	17.0	2.0	40.0
7706304.0	22.0	1.0	25.0
7706306.0	50.0	3.0	74.0
7706307.0	42.0	4.0	78.0
7706308.0	52.0	1.0	70.0
7706309.0	44.0	2.0	62.0
7706310.0	128.0	3.0	114.0
7706311.0	180.0	2.0	66.0
7706312.0	530.0	3.0	156.0
7706313.0	125.0	2.0	70.0
7706314.0	1950.0	2.0	130.0
7706315.0	190.0	6.0	50.0
7706316.0	250.0	4.0	58.0
7706317.0	430.0	5.0	84.0
7706319.0	182.0	3.0	38.0
7706320.0	101.0	5.0	30.0
7706321.0	84.0	3.0	32.0
7706322.0	120.0	3.0	35.0
7706324.0	320.0	3.0	42.0
7706325.0	1040.0	5.0	54.0
7706326.0	240.0	9.0	52.0
7706327.0	132.0	11.0	42.0
7706328.0	92.0	7.0	30.0
7706329.0	24.0	8.0	19.0
7706330.0	30.0	7.0	32.0
7706331.0	37.0	3.0	28.0
7706332.0	17.0	7.0	30.0
7706333.0	14.0	9.0	42.0
7706334.0	10.0	8.0	33.0
7706335.0	34.0	8.0	52.0
7706336.0	32.0	9.0	22.0
7706337.0	52.0	8.0	28.0
7706338.0	26.0	22.0	38.0
7706339.0	44.0	13.0	38.0
7706340.0	89.0	7.0	34.0
7706341.0	280.0	11.0	56.0
7706343.0	570.0	7.0	75.0
7706344.0	530.0	3.0	72.0
7706345.0	290.0	6.0	58.0
7706346.0	195.0	5.0	36.0
7706348.0	180.0	4.0	29.0
7706349.0	1080.0	5.0	102.0
7706350.0	50.0	6.0	52.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

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NUMBER	COPPER	LEAD	ZINC
7706351.0	30.0	3.0	58.0
7706352.0	23.0	1.0	76.0
7706354.0	112.0	3.0	64.0
7706355.0	79.0	3.0	62.0
7706356.0	37.0	4.0	48.0
7706357.0	27.0	4.0	46.0
7706358.0	16.0	6.0	36.0
7706359.0	26.0	5.0	40.0
7706360.0	20.0	4.0	25.0
7706361.0	17.0	6.0	44.0
7706362.0	17.0	9.0	32.0
7706364.0	69.0	5.0	56.0
7706365.0	38.0	4.0	31.0
7706368.0	27.0	4.0	50.0
7706369.0	20.0	4.0	56.0
7706370.0	47.0	4.0	64.0
7706371.0	32.0	6.0	63.0
7706372.0	56.0	4.0	64.0
7708601.0	184.0	6.0	78.0
7708602.0	350.0	4.0	215.0
7708603.0	350.0	2.0	80.0
7708604.0	550.0	2.0	88.0
7708605.0	182.0	0.	62.0
7708606.0	49.0	3.0	60.0
7708607.0	66.0	3.0	61.0
7708608.0	94.0	5.0	70.0
7708609.0	192.0	3.0	95.0
7708610.0	152.0	1.0	92.0
7708611.0	42.0	1.0	63.0
7708612.0	50.0	7.0	82.0
7708613.0	34.0	1.0	56.0
7708614.0	50.0	1.0	78.0
7708616.0	15.0	2.0	49.0
7708619.0	22.0	4.0	32.0
7708621.0	66.0	3.0	19.0
7708622.0	86.0	9.0	47.0
7708623.0	72.0	7.0	115.0
7708624.0	26.0	9.0	48.0
7708625.0	47.0	16.0	44.0
7708626.0	15.0	9.0	66.0
7708627.0	18.0	9.0	82.0
7708630.0	19.0	9.0	90.0
7708631.0	13.0	5.0	42.0
7708634.0	30.0	6.0	78.0
7708635.0	46.0	5.0	95.0
7708636.0	22.0	3.0	68.0
7708637.0	17.0	3.0	70.0
7708638.0	12.0	4.0	50.0
7708639.0	15.0	7.0	54.0
7708640.0	18.0	6.0	60.0
7708642.0	50.0	8.0	112.0
7708643.0	20.0	6.0	53.0
7708644.0	36.0	4.0	65.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 8

NUMBER	COPPER	LEAD	ZINC
7708646.0	66.0	5.0	62.0
7708647.0	96.0	6.0	84.0
7708650.0	18.0	3.0	48.0
7708653.0	24.0	3.0	87.0
7708654.0	21.0	4.0	66.0
7708655.0	40.0	11.0	20.0
7708656.0	18.0	8.0	62.0
7708657.0	42.0	34.0	118.0
7708658.0	21.0	8.0	84.0
7708659.0	18.0	6.0	60.0
7708660.0	36.0	11.0	100.0
7708663.0	12.0	5.0	68.0
7708664.0	20.0	4.0	72.0
7708665.0	25.0	9.0	77.0
7708667.0	20.0	4.0	51.0
7708668.0	14.0	4.0	30.0
7708669.0	16.0	6.0	52.0
7708671.0	15.0	7.0	58.0
7708672.0	12.0	5.0	40.0
7708673.0	16.0	6.0	52.0
7708674.0	16.0	3.0	60.0
7708675.0	30.0	4.0	52.0
7708676.0	16.0	4.0	44.0
7708676.1	16.0	3.0	32.0
7708677.0	22.0	0.	62.0
7708678.0	30.0	3.0	65.0
7708680.0	62.0	2.0	60.0
7708681.0	100.0	11.0	52.0
7708682.0	74.0	4.0	20.0
7708683.0	98.0	5.0	39.0
7708685.0	28.0	4.0	53.0
7708686.0	16.0	3.0	56.0
7708687.0	10.0	4.0	26.0
7708688.0	16.0	2.0	56.0
7708689.0	12.0	4.0	38.0
7708691.0	58.0	4.0	74.0
7708693.0	66.0	0.	64.0
7708694.0	66.0	2.0	50.0
7708695.0	340.0	1.0	66.0
7708696.0	71.0	3.0	48.0
7708697.0	46.0	4.0	18.0
7708698.0	80.0	0.	67.0
7708699.0	16.0	4.0	32.0
7708700.0	22.0	4.0	33.0
7708701.0	19.0	2.0	52.0
7708702.0	12.0	5.0	24.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

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NUMBER	COPPER	LEAD	ZINC
7708713.0	132.0	0.	76.0
7708714.0	36.0	2.0	52.0
7708715.0	39.0	4.0	40.0
7708716.0	34.0	4.0	33.0
7708717.0	115.0	3.0	56.0
7708718.0	24.0	3.0	68.0
7708719.0	47.0	4.0	64.0
7708720.0	28.0	4.0	34.0
7708721.0	64.0	5.0	52.0
7708722.0	60.0	3.0	65.0
7708723.0	80.0	2.0	48.0
7708724.0	32.0	6.0	8.0
7708725.0	15.0	8.0	34.0
7708726.0	12.0	7.0	20.0
7708727.0	28.0	2.0	47.0
7708728.0	58.0	3.0	76.0
7708729.0	36.0	2.0	92.0
7708730.0	14.0	4.0	38.0
7708731.0	13.0	6.0	45.0
7708732.0	32.0	3.0	94.0
7708733.0	34.0	0.	152.0
7708734.0	68.0	5.0	104.0
7708739.0	54.0	4.0	55.0
7708740.0	19.0	4.0	50.0
7708741.0	22.0	5.0	40.0
7708742.0	41.0	5.0	64.0
7708743.0	38.0	4.0	72.0
7708744.0	48.0	2.0	40.0
7708745.0	70.0	2.0	90.0
7708746.0	37.0	6.0	70.0
7708747.0	43.0	5.0	166.0
7708748.0	34.0	6.0	64.0
7708749.0	28.0	4.0	20.0
7708750.0	28.0	6.0	52.0
7708751.0	38.0	3.0	56.0
7708752.0	28.0	5.0	42.0
7708753.0	24.0	4.0	45.0
7708754.0	35.0	5.0	82.0
7708755.0	34.0	7.0	82.0
7708756.0	21.0	10.0	48.0
7708757.0	30.0	8.0	87.0
7708758.0	24.0	5.0	72.0
7708759.0	42.0	3.0	47.0
7708760.0	34.0	6.0	69.0
7708761.0	60.0	3.0	110.0
7708762.0	75.0	3.0	155.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 10

NUMBER	COPPER	LEAD	ZINC
7708763.0	34.0	8.0	70.0
7708764.0	14.0	6.0	58.0
7708765.0	20.0	9.0	94.0
7708766.0	33.0	5.0	88.0
7708767.0	24.0	1.0	69.0
7708768.0	49.0	6.0	214.0
7708769.0	71.0	8.0	100.0
7708770.0	86.0	2.0	73.0
7708771.0	18.0	8.0	76.0
7708772.0	43.0	6.0	82.0
7708773.0	44.0	4.0	65.0
7708774.0	122.0	4.0	96.0
7708775.0	88.0	4.0	48.0
7708776.0	142.0	4.0	44.0
7708777.0	91.0	5.0	18.0
7708778.0	45.0	7.0	28.0
7708779.0	270.0	12.0	48.0
7708780.0	63.0	6.0	54.0
7708783.0	16.0	4.0	24.0
7708786.0	26.0	4.0	26.0
7708788.0	132.0	5.0	50.0
7708790.0	500.0	4.0	64.0
7708791.0	800.0	6.0	70.0
7708792.0	530.0	5.0	50.0
7708793.0	37.0	6.0	55.0
7708794.0	111.0	8.0	25.0
7708795.0	320.0	7.0	44.0
7708797.0	60.0	7.0	50.0
7708798.0	660.0	6.0	65.0
7708799.0	310.0	4.0	46.0
7708800.0	260.0	6.0	50.0
7708801.0	2700.0	5.0	132.0
7708802.0	330.0	5.0	52.0
7708803.0	470.0	7.0	66.0
7708804.0	250.0	7.0	32.0
7708805.0	89.0	7.0	46.0
7708806.0	138.0	4.0	40.0
7708807.0	37.0	4.0	30.0
7708808.0	24.0	5.0	34.0
7708809.0	67.0	5.0	34.0
7708810.0	320.0	7.0	44.0
7708811.0	108.0	5.0	5.0
7708812.0	137.0	11.0	105.0
7708814.0	210.0	10.0	38.0
7708815.0	480.0	6.0	38.0
7708816.0	550.0	6.0	38.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 11

NUMBER	COPPER	LEAD	ZINC
7708817.0	200.0	8.0	62.0
7708818.0	370.0	13.0	144.0
7708819.0	183.0	7.0	38.0
7708820.0	250.0	6.0	22.0
7708821.0	41.0	7.0	22.0
7708822.0	62.0	6.0	45.0
7708823.0	51.0	5.0	82.0
7708824.0	51.0	17.0	148.0
7708825.0	76.0	13.0	118.0
7708826.0	165.0	8.0	24.0
7708827.0	550.0	15.0	74.0
7708828.0	270.0	5.0	36.0
7708829.0	240.0	6.0	42.0
7708830.0	210.0	6.0	54.0
7708831.0	29.0	5.0	42.0
7708832.0	13.0	5.0	50.0
7708833.0	20.0	5.0	44.0
7708834.0	18.0	5.0	38.0
7708835.0	15.0	4.0	50.0
7708836.0	17.0	4.0	36.0
7708837.0	10.0	4.0	38.0
7708838.0	18.0	10.0	76.0
7708840.0	26.0	3.0	19.0
7708841.0	28.0	7.0	50.0
7708843.0	23.0	5.0	35.0
7708844.0	21.0	3.0	49.0
7708849.0	37.0	8.0	54.0
7708850.0	15.0	7.0	76.0
7708851.0	35.0	8.0	84.0
7708852.0	57.0	7.0	95.0
7708853.0	40.0	6.0	47.0
7708854.0	16.0	5.0	30.0
7708855.0	105.0	5.0	24.0
7708856.0	182.0	7.0	34.0
7708857.0	173.0	8.0	23.0
7708858.0	178.0	25.0	68.0
7708859.0	210.0	22.0	56.0
7708860.0	72.0	12.0	50.0
7708861.0	154.0	10.0	92.0
7708862.0	127.0	10.0	70.0
7708863.0	148.0	11.0	95.0
7708864.0	168.0	12.0	88.0
7708865.0	119.0	13.0	65.0
7708866.0	127.0	10.0	52.0
7708867.0	123.0	8.0	45.0
7708871.0	32.0	5.0	26.0

LUCKY JOE 1977 GEOCHEMICAL RESULTS

PAGE 12

NUMBER	COPPER	LEAD	ZINC
7708872.0	39.0	4.0	44.0
7708873.0	46.0	6.0	50.0
7708876.0	24.0	4.0	44.0
7708877.0	32.0	2.0	24.0
7708878.0	6.0	6.0	24.0
7708879.0	36.0	7.0	22.0
7708880.0	59.0	7.0	32.0
7708881.0	35.0	6.0	20.0
7708882.0	13.0	8.0	36.0
7708883.0	21.0	5.0	48.0
7708884.0	35.0	6.0	72.0
7708885.0	117.0	5.0	88.0
7708886.0	49.0	5.0	32.0
7708889.0	27.0	4.0	24.0
7708890.0	68.0	5.0	28.0
7708892.0	148.0	7.0	40.0
7708893.0	170.0	8.0	54.0
7708894.0	420.0	4.0	58.0
7708895.0	172.0	10.0	65.0
7708896.0	162.0	10.0	56.0
7708897.0	230.0	10.0	70.0
7708898.0	34.0	7.0	21.0
7708899.0	25.0	5.0	34.0
7708900.0	108.0	10.0	49.0
7708901.0	77.0	5.0	67.0
7708902.0	14.0	5.0	30.0
7708903.0	10.0	5.0	33.0
7708904.0	10.0	7.0	45.0
7708905.0	10.0	6.0	51.0
7708906.0	46.0	5.0	36.0
7708907.0	22.0	9.0	84.0

675 RECORDS SELECTED FOR PROCESSING FROM

675 RECORDS READ

***** PROGRAM FINISHED *****

ELECTROMAGNETIC TRAVERSES

Lucky Joe Option

Lucky Joe Creek Area, Yukon

NTS 115-0-11, 12

J. A. McCance

December 1977



090251

115-0-11,12
 LUCKY JOE OPTION
 YUKON
 ELECTROMAGNETIC TRAVERSES, 1977



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APPENDICES

- Appendix I (Complete List of Claims)
- Appendix II (List of Personnel Employed plus J. A. McCance Qualifications)
- Appendix III (Specifics on completed traverses)

LIST OF ILLUSTRATIONS

Location Map reproduction of Dwg. L-6385

Geophysical Profiles

EM and Magnetics 1:5,000 . . . Dwg. E-2762-1

Dwg. E-2762-2

115-0-11, 12

LUCKY JOE OPTION

YUKON

Electromagnetic Traverses, 1977

SUMMARY

In the summer of 1977 six lines from a 1975 geophysical grid were resurveyed on a property located 48 kilometres south of Dawson in the Yukon Territory. This series of electromagnetic tests were completed to determine the applicability of such low cost methods including airborne reconnaissance EM methods in this terrain. Test results were correlated with data obtained from surface mapping, topographical profiles and magnetic and drill results. Several conductors of variable amplitude and shape were observed. The most pronounced EM features may provide an indirect aid to geological mapping while weak features exhibit some promise of direct correlation with copper mineralized stringer sulphide horizons with in a biotite muscovite schist unit. The existence of a significant level of oxidation and spurious conductive effects from a near surface active layer in the permafrost were recognized from these results. Further ground EM and magnetic or I.P. and magnetic surveys may prove useful in defining targets for a continued search for such stratabound copper deposits. However, airborne techniques do not appear suitable for such exploration.

This report contains a detailed interpretation of the test results with recommendations.

LUCKY JOE OPTION

YUKON

Electromagnetic Traverses, 1977

NTS: 115-O-11, 12

1. INTRODUCTION

In July 1977, a limited test of the horizontal loop electromagnetic method was completed over selected grid lines on a property held by Rio Tinto Canadian Exploration (Riocanex) Ltd., in the Dawson Area, Yukon Territory.

The aim of this series of test traverses was to determine -

- (1) if anomalous conductivity or conductive horizons were detectable
- (2) if detected would conductivity anomalies aid further indirect or direct exploration for stratiform copper deposits in the Lucky Joe Creek area
- (3) the suitability of airborne electromagnetic systems for further exploration.

Field work was carried out by both permanent and temporary staff of Riocanex under the supervision of D. Sexsmith. Upon completion, these data were forwarded to Toronto for draughting and profiling. J. A. McCance was responsible for direct supervision of the overall program, for report preparation and for interpretation as presented in this final report.

2. LOCATION, ACCESS AND TOPOGRAPHY

The claim block is situated in the west central part of the Yukon Territory within map sheets 115-0-11 and 115-0-12. The claims, as listed in appendix I, overlie the headwaters of Lucky Joe Creek approximately 48 Km by air south of the city of Dawson and 8 Km east of the Yukon River. The centre of the property occurs at Latitude $63^{\circ}36'$ and Longitude $139^{\circ}31'$. The geophysical traverse lines for the grid 1 area are outlined on the xerox reduction of drawing L-6385 enclosed. Further details and accurate location drawings can be obtained by reference to a report by J. McClintock entitled:

"Geochemical Survey Lucky Joe Option"
Lucky Joe Creek Area, Yukon
May 30 - July 20, 1977

Currently the property is accessible only by helicopters which are generally available during the summer months from several operators temporarily or permanently based at Dawson City. A Bell 206-B, operated by Trans-west was used during mobilization and demobilization phases of this geophysical program.

The average elevation over the property is on the order of 915 metres (3,000 feet) with local relief on the order of 400 metres (1,200 feet). The area has not been glaciated but permanently frozen ground exists with a thin active layer occurring only on south facing slopes.

3. GENERAL GEOLOGY

The region was mapped at a scale of one inch to four miles by the Geological Survey of Canada in 1934 and 1935 (G.S.C. Map 711A; H.S. Bostock, 1942). Bostock shows the property to lie within a north south trending belt of Precambrian Yukon Group

gneisses, schists and amphibolites flanked to the east and west by gneissic granite. Detailed geological mapping of the property during 1975 and 1976 by Riocanex has confirmed these G.S.C. findings. Structurally, these units have been folded into a broad, open, northwest trending anticline with adjacent synclines. Sulphide mineralization, consisting of chalcopyrite, pyrite, pyrrhotite and minor molybdenite, appears stratiform and is confined to distinct horizons within biotite-muscovite and quartz-muscovite schist units.

4. SURVEY PROCEDURE

4.1 Geophysical Grid.

The traverse lines used during these tests were recovered segments of a larger geophysical grid established in 1975. For the 1975 survey, a base line striking N135°E (True) was established and was designated 00N. Eleven cut survey lines were laid out perpendicular to this base line at intervals of 250 metres where practicable. A line in the vicinity of the best known mineralization was designated 00E. This grid currently designated grid 1, extends from 1,250mE to 1,250mW (Dwg. L-6385).

Test work on line 400E, grid 2 was also completed. For specifics regarding the location of this line, reference should be made to the above mentioned report by J. McClintock "Geochemical Survey LUCKY JOE Option".

A table outlining the traverse lines, coil separations and frequencies used is included with this report as appendix III.

4.2 Electromagnetic Survey.

The instrument used for this EM test work was an Apex Max-Min II portable EM system. This unit was operated at frequencies

of 444, and 1777 Hz in a max-coupled, horizontal loop mode using coil separations of 50, 150 and 250 metres during separate traverses. The instrument receiver measures the in-phase and quadrature components of the secondary field, relative to a reference signal produced by the coplanar transmitting coil fed directly to the receiver console through an unshielded reference cable. All receiver values are read directly as a percentage of the primary field. The relative strengths of the real (in-phase) and imaginary (quadrature) components are plotted as profiles for each frequency and coil separation and are a guide to the conductivity - width product of a buried conductor. This parameter is said to be directly related to the quantity of conducting minerals present. In-phase or Quadrature values more negative than background generally indicate the presence of conductive material as based on generalized dyke and half plane models. A simple rule-of-thumb can be applied to such profiles to determine the approximate location and width of the conductive zone.

However, the form of these EM response curves varies relative to the coil separation used; to the geometry of the conductive source i.e. body width, depth and thickness and also relative to the frequencies involved. Consequently, by using multi-frequency, multi-coil separation EM techniques in horizontal loop measurements it is often possible to:

- 1) determine anomalies due to overburden effects and to distinguish these sources from more important bed rock sources.
- 2) Acquire information suitable for a detail evaluation of both the lateral and vertical parameters of

conductors observed as horizontal loop anomalies.

- 3) Detect weaker or multi-source conductors even under difficult terrain conditions and attempt an evaluation of the associated body width, depth and conductivity-thickness parameters.

A test program report prepared and widely disseminated by J. E. Betz, consultant, for APEX PARAMETRICS, the manufacturer of Max-Min II equipment is recommended for further discussion on the system components, field performance and handling characteristics of this instrument.

A list of system parameters employed for the various traverses forms appendix III. No corrections have been made to the observations even though in-phase values exhibit a distortion resulting from "short cable effects" on line 400E grid 2 and line 00, grid 1. Such effects would appear to be unavoidable under the existing terrain conditions and may require mathematical removal in future.

5. PRESENTATION OF RESULTS

5.1 Magnetic Results.

The 1975 magnetic data, corrected for hourly drift and diurnal variation are presented as profiles at a scale of 1cm = 250 gammas. This data is provided along with the relevant geological/topographic sections and information from drilling and geochemistry, where available, to facilitate a 'geological understanding' of the EM results. All data are plotted using a horizontal scale of 1:5000.

5.2 Electromagnetic Results.

In-phase and quadrature values obtained using frequencies and coil separations as indicated in appendix III are presented as

Dwg. E 2762-1 for lines 00 and 500E. In -phase and quadrature values at one and two frequencies and a coil separation of 150 metres are presented for lines 1000W, 500W, 1000E, 1250E as part of Dwg. E 2762-2. Interline spacing for these profiles is not to scale and geological/topographic sections and other information are not available for these traverses.

Similar EM values obtained on line 400E grid 2 using a 250 m coil separation and two frequencies are additionally presented on Dwg. E 2762-2. Relevant geological and topographic information is presented with these latter profiles but no magnetic data is available.

All data are plotted at a horizontal scale of 1:5000 and all elevation data is presented with no vertical exaggeration.

6. DISCUSSION OF GEOPHYSICAL RESULTS

Some EM anomalies were observed during these traverses. Three anomalies are recognized from traverses on line 00 using coil separations of 50m, 150m and 250m. Results, presented in Dwg. E 2762-1 indicate narrow zones that most commonly are weakly conductive. A source which appears to correlate with the copper mineralized biotite muscovite schist is recognized as an EM anomaly located at 050S. It appears, from the weak response recorded using a short coil separation that significant weathering and oxidation exist to depths of approximately 25 metres between 300S and 100N on this line. Strongest conductivity is apparent from the low frequency observations at 150m separation. This profile is interpreted to represent a narrow conductor and this interpretation is supported by high frequency results observed at

a 250m separation indicating weak conductivity. The lack of response from observations at 444Hz using a 250 metre separation may suggest a depth limitation to this conductor.

A second conductor is recognized at 180S. The anomalous response is most recognizable at 444 Hz using a separation of 150m. Depth to top for this narrow body must be greater than 25 metres from the absence of response when using the short cable. A narrow band of graphitic schist positioned geologically at a depth of 35 metres at this location is interpreted as the probable source. A near vertical dip is indicated towards grid south. The slight decrease in amplitude with increasing coil separation and the change in apparent conductivity from good to weak with increasing separation support the interpretation as a narrow body. The lack of response at 1777 Hz is puzzling but may reflect the presence of a significant zone of oxidation near surface. The 'positive buildup' recognized on the large separation profile which would seemingly reflect a dip direction for the narrow band of graphitic schist is however, believed to result from discrepancies in coil separation over the valley feature centred at 325S. This "short cable" effect was also recognized as a positive distortion of the inphase component on line 400E, grid 2.

The most prominent EM anomaly was observed using a 250 metre coil separation and a frequency of 1777 Hz. A narrow, weak conductor is interpreted at 300S with short cable effects influencing the anomalous 'shape' at 325S. The quadrature effect from a shortened cable is puzzling but results from a single value that may be erroneous. The position of a narrow source at 300S appears to correlate with the interpreted edge of a strong magnetic feature related to Group 3 rocks consisting of biotite gneiss and

amphibolite. A sheared contact dipping steeply grid south at 300S is suggested as an explanation of this electromagnetic anomaly. An alternative interpretation that 2 narrow sources are located respectively at 250S and 375S is possible; however, such an interpretation would provide no additional encouragement as neither conductor would appear to reflect any increase in sulphide content within the favourable biotite-muscovite unit. Such features are not recognized along strike and consequently this anomaly appears to be of little use even as an indirect aid to exploration.

A better correlation, with the mineralized schists, is apparent on line 500E with an EM anomaly observed near 00 interpreted to result from a narrow source located at 010S. This location appears to correlate with the upslope limit of a significant Cu in soils geochemical anomaly and the northern edge of a trench. Predominantly a broad quadrature response which improves with increased coil separation at both frequencies this feature may reflect a zone of shallow dip at or below the lower limit of an oxidized zone. This latter zone may prove to be relatively deep in the vicinity of the trench and as such the results from trenching could prove misleading in regards to the sulphide content of the host unit.

Results from traverses on line 500W and line 1000W are non-anomalous. Only a single frequency and coil separation as outlined in appendix III were employed, however; from the results on line 00 these parameters would appear to have been optimal for these traverses.

Dual frequency results on line 1000E and line 1250E are somewhat anomalous. Two anomalies located respectively at 075S and 225N on line 1000E are most recognizable on the higher

frequency profiles. These features appear narrow and are moderate conductors. Short cable effects, reflected as positive peaks on the inphase profiles at both operating frequencies, are evident near 00 on this line. On line 1250E, a short cable effect positive peak is recognized adjacent to a cross-over type anomaly located at 135N. North from this point the high frequency data becomes wavy with both inphase and quadrature profiles tracking one another. In this segment of line 1250E dense overgrowth on a south facing slope suggests the presence of a near surface active layer within permafrost. Such effects as indicated at 135N and farther north along line 1250E are interpreted as indicating minor conductive effects within this active permafrost zone and not necessarily sulphide mineralization. With the exception of a weak response at 400S which is not well understood, no additional anomalies are recognized on line 1250E.

A single traverse on line 400E, grid 2 has identified two high frequency anomalies. Weakly conductive narrow sources are interpreted at 725S and 330S. Neither feature is well understood but correlation with the geological section indicates these sources are located within interbedded biotite quartz gneisses and schists; a unit generally outside any zone of economic interest. Short cable effects recognized between 125S and 025N on line 400E grid 2, correspond with a 'suspicious' positive response on the high frequency quadrature profile. Re-surveying using a shorter cable between 500S and 300N is recommended to allow verification of this latter response geologically associated with an amphibolite unit.

7. CONCLUSIONS

Several EM anomalies were identified which reflect rather isolated locales of variable conductivity. Sources of these anomalies are not well understood but are interpreted as narrow sheet-like bodies which may reflect Cu sulphide stringer zone occurrences within the favourable biotite muscovite schist unit. This latter possibility, although speculative, is generally associated with weak EM responses with the 075S line 1000E response, classed as moderate, being the exception. Stronger higher frequency responses observed over the biotite feldspar gneiss and stronger low frequency responses observed over a band of graphitic schist may prove suitable indirect aids in exploration, however; these test results remain insufficient to support this possibility conclusively.

Significant depths of oxidation are indicated in the area about line 00. Although oxidation phenomena are therefore expected to be general throughout this area, an implied depth of 25 metres should not be considered generally applicable as a large variation in depth of oxidation is expected. An active layer within the permafrost regime on the north half of line 1250E exhibits some conductivity response. These phenomena make EM prospecting for such weakly mineralized stratiform deposits unsuitable with short coil separations of 50 metres or less. However, some results are possible using coil separations of 150 metres or larger.

Should such narrow, weak anomalies be selected as targets which could correlate with stringer sulphides in a favourable schist zone, they would prove an extremely challenging, high risk objective on which to initiate a helicopter-borne reconnaissance survey over this heavily oxidized permafrost terrain. High mobilization and support costs, limited line length requirements for such target horizons and the depth of oxidation would additionally mitigate against using such helicopter borne sensors for "quick look" detail exploration situations.

8. RECOMMENDATIONS

It is recommended that several additional EM traverses over the favourable schist unit be completed. Such cost effective exploration for weakly conductive zones within this favourable host could provide some targetable locales to our alternative of wildcat drill tactics in a continued search for improved copper grades. Such additional surveying should not be attempted using coil separations less than 100 metres and should be supported by magnetic observations.

The use of helicopter borne sensors either for regional reconnaissance purposes or "quick look" detail exploration is not recommended.

Where geological correlations have been attempted a review by the project geologist is recommended.

Use of induced polarization and magnetic techniques might provide as applicable an alternative to these recommendations however, with this one exception, no other geophysical activity is recommended.

115-O-11, 12
 LUCKY JOE OPTION
 YUKON
 Electromagnetic Traverses, 1977

APPENDIX NO. 1
COMPLETE LIST OF CLAIMS

<u>Claims</u>	<u>Numbers</u>	<u>Due Dates</u>
B1-12	Y56956-967	November 10, 1982
B15-18	Y56970-973	all claims
BJB 1-17	Y99779-786	November 10, 1982
	Y99868-876	all claims
Sunep 1-14	Y99745	
Sunep 18-24	incl. - to	November 10, 1982
Sunep 26-34	Y99774	all claims
Ash 1-44	Y99883-926	November 10, 1982
Pax 1-10	Y99927-936	November 10, 1982

115-O-11, 12

LUCKY JOE OPTION

YUKON

Electromagnetic Traverses, 1977

APPENDIX II

LIST OF PERSONNEL EMPLOYED

D. N. Sexsmith	Party Chief, Geophys. draughting	(Toronto)	29/7 to 6/8/77 5 days
J. McClintock	Property Geologist	(Vancouver)	29/7 to 6/8/77
J. Lindsey	Geophys. Assistant	(Toronto)	29/7 to 6/8/77
G. Albino	Geophys. Helper	(Toronto)	29/7 to 6/8/77
J. A. McCance	Chief Geophysics	(Toronto)	10 days

C E R T I F I C A T E

I, JOHN A. McCANCE of the Borough of North York, Metropolitan Toronto, Province of Ontario do hereby certify:

1. That I am a geophysicist and reside at 113 Hendon Avenue, Willowdale, Ontario.
2. That I graduated from Queen's University at Kingston in 1970 with a degree of Bachelor of Science, Faculty of Applied Science and have completed post-graduate training at the University of Western Ontario, London.
3. That I am a member of the Association of Professional Engineers of the Province of Ontario (Mining Branch).
4. That I have been practising my profession for a period of six years.
5. That I am employed by Rio Tinto Canadian Exploration Limited as Chief Geophysicist.
6. That I supervised this survey program.

Date December 9, 1977

J. A. McCance, P.Eng.



115-0-11, 12

LUCKY JOE OPTION

YUKON

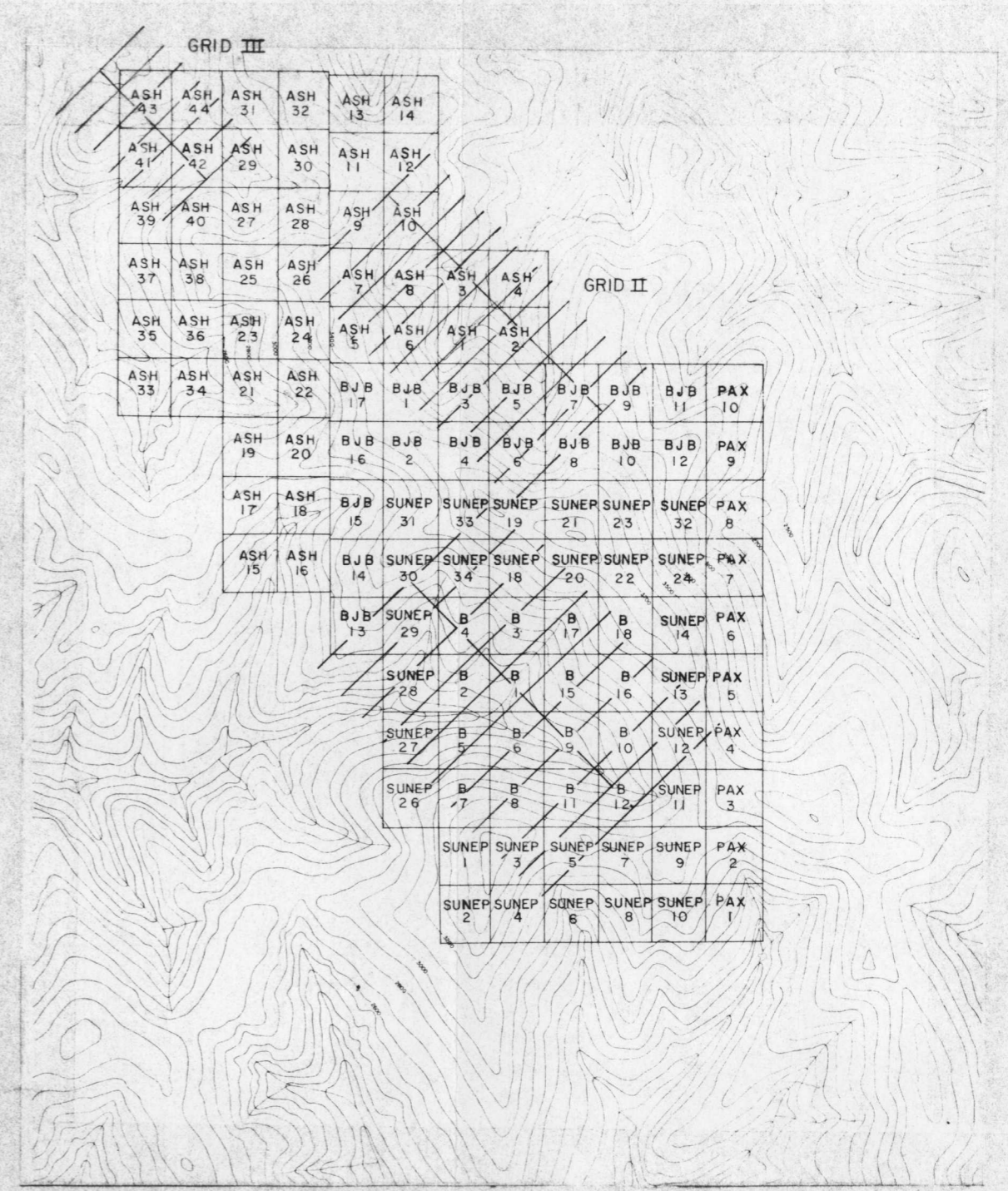
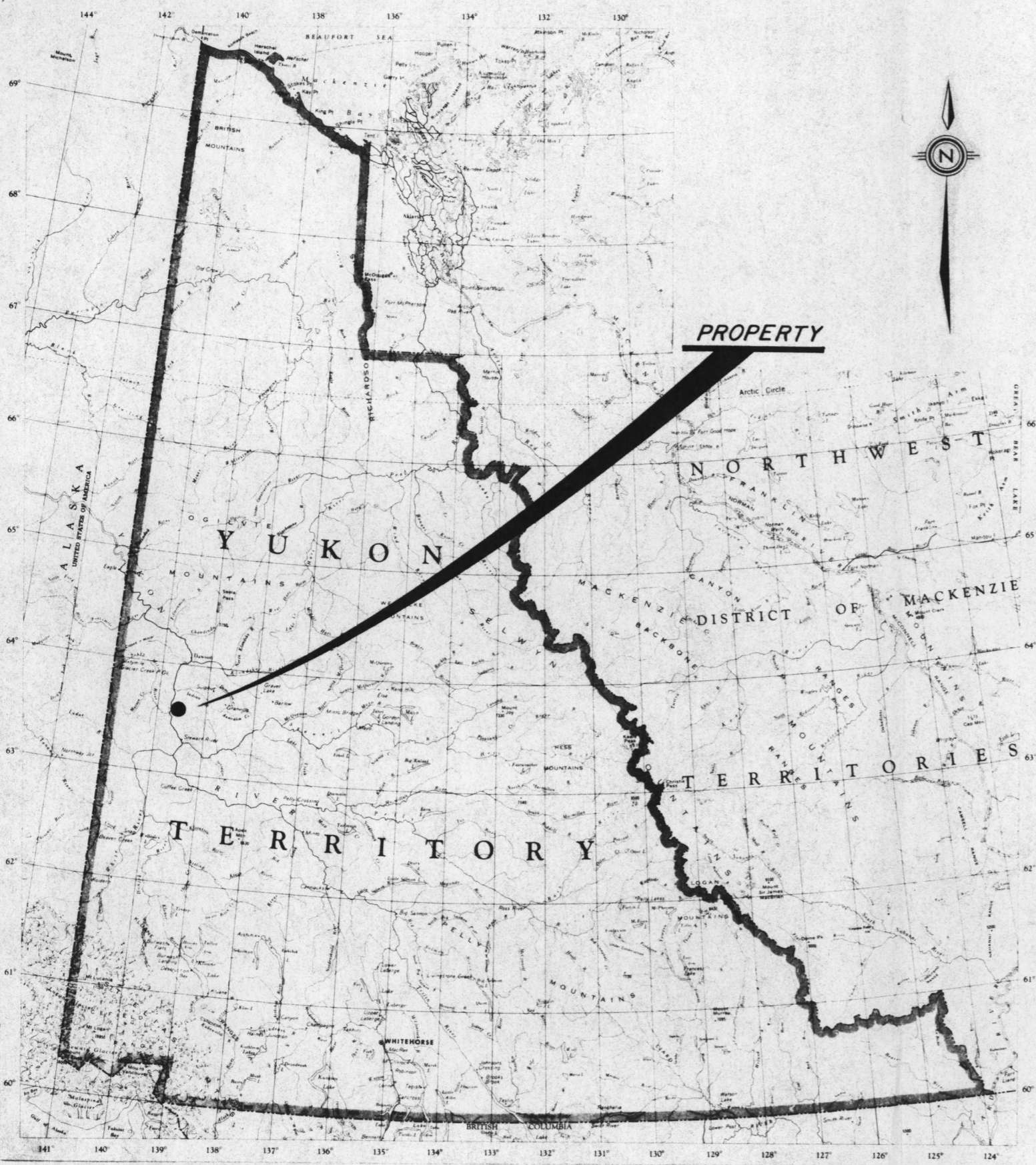
Electromagnetic Traverses, 1977

APPENDIX 111

SPECIFICS ON COMPLETED TRAVERSES

A Max-Min 11 unit (serial No 660) was used in the horizontal loop mode for these tests. The traverse lines and system parameters are outlined below:

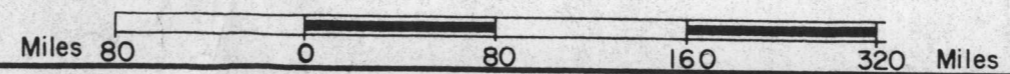
Grid	Line	Coil Separation (metres)	Frequencies (Hz)	Station Interval (metres)
1	1000W	150	444	50
1	500W	150	444	50
1	00	50,150,250	444,1777	25,50,50
1	500E	150,250	444,1777	50,50
1	1000E	150	444,1777	50
1	1250E	150	444,1777	50
2	400E	250	444,1777	50



SCALE 1: 50,000

N.T.S. 1150/11,12

SCALE: One Inch = 80 Miles



RIO TINTO CANADIAN EXPLORATION LTD.

LUCKY JOE OPTION

PROPERTY LOCATION

JAN. 1976

J.M./y.m.

DWG. L. - 6385

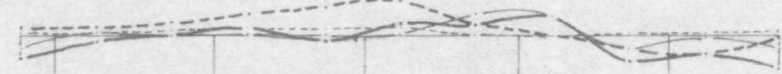
LINE 00



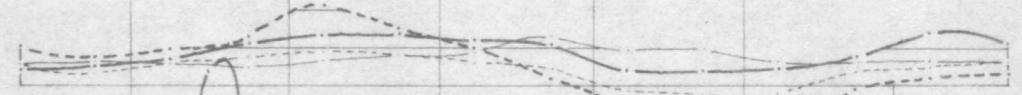
HLEM
cs = 50m

LINE 500E

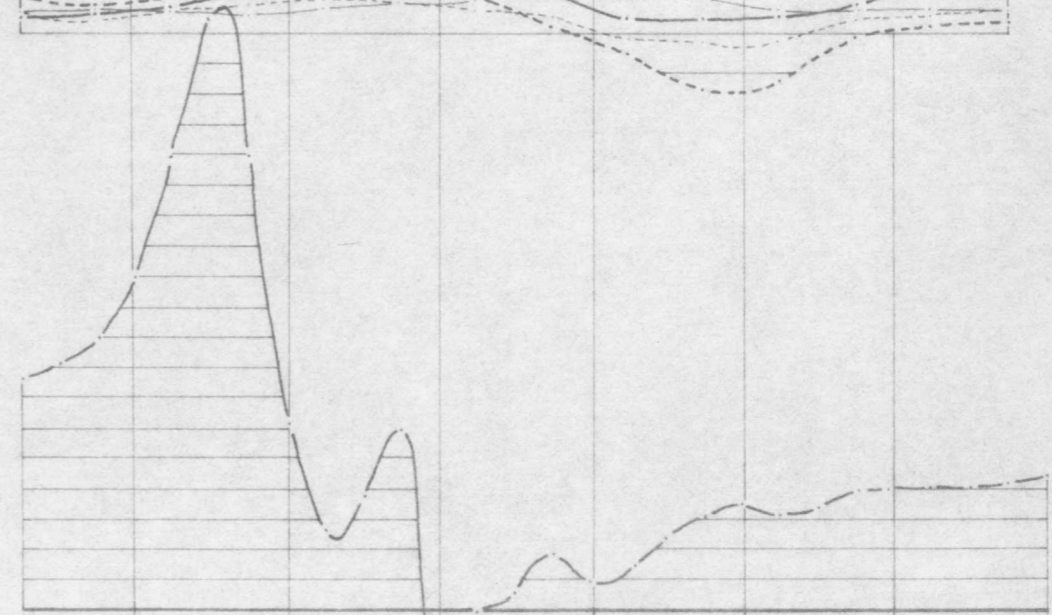
HLEM
cs = 150m



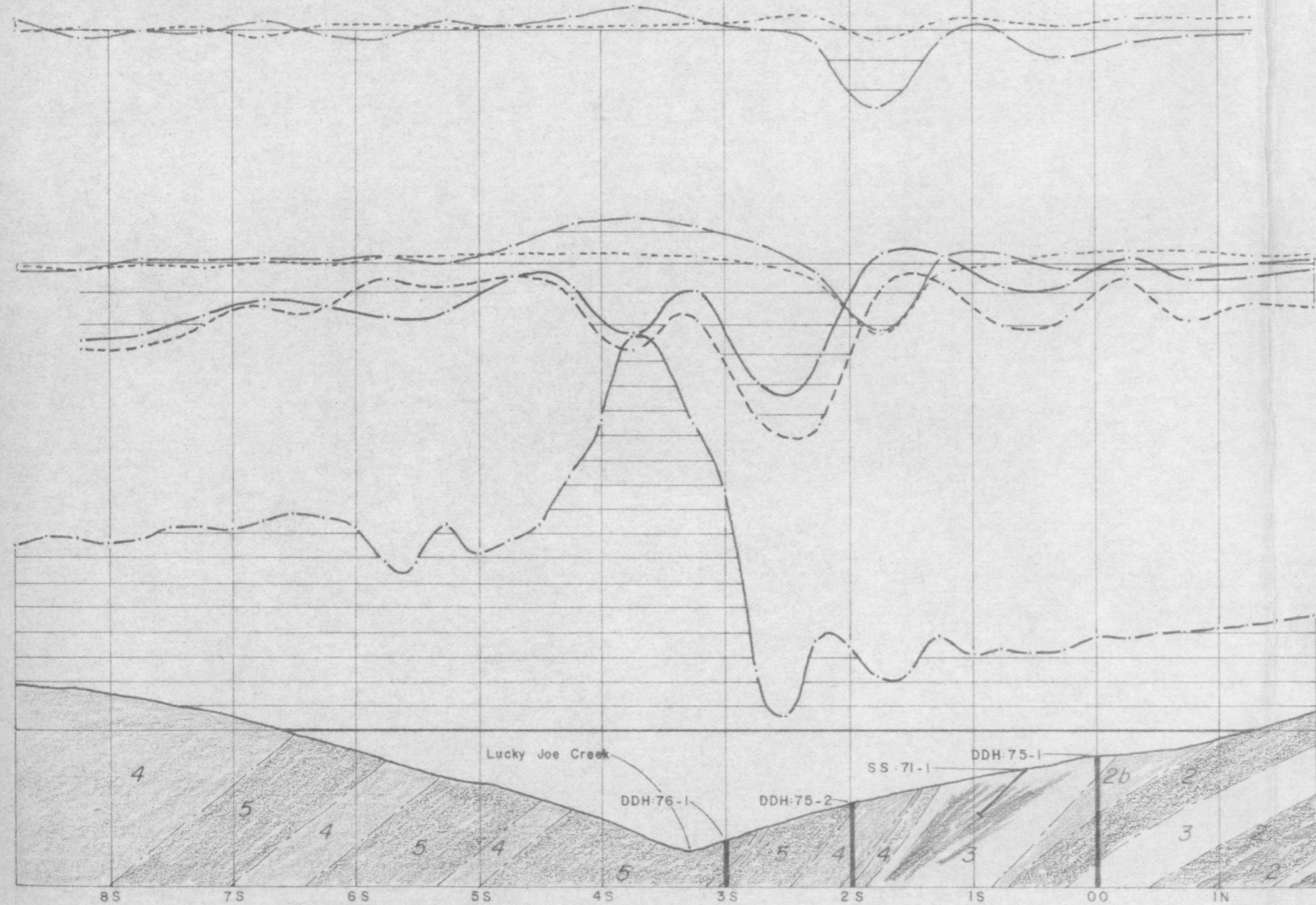
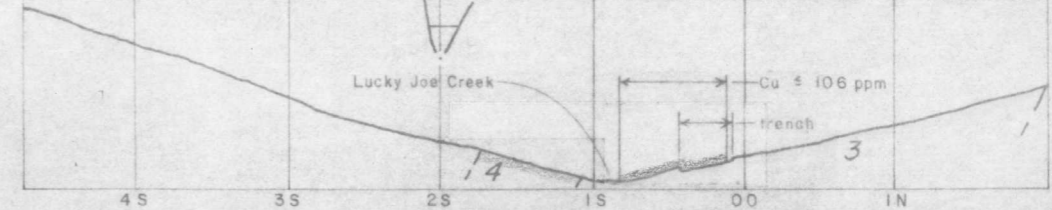
HLEM
cs = 250m



magnetics

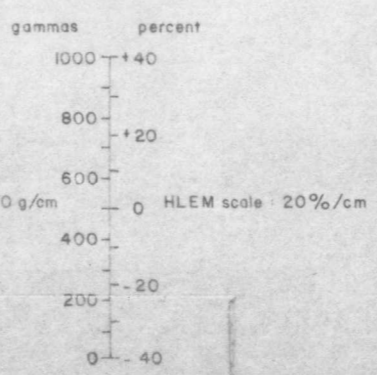
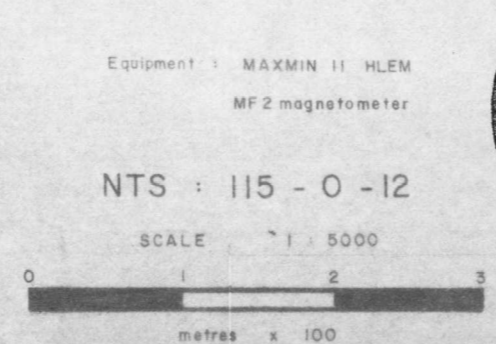


topo/geology



- 5 Biotite Feldspar Gneiss
 - 4 Amphibolite
 - 3 Biotite Muscovite Schist
 - 2 Quartz Biotite Quartz Gneiss, Minor Muscovite Schist
 - 2a Cal-Silicate Marble
 - 2b Graphitic Schist
 - 1 Copper mineralized Biotite Muscovite
- Geology from Y.T. no. 52 by J. McCLINTOCK
- coil separation (cs) as listed
- Equipment: MAXMIN II HLEM MF 2 magnetometer
- NTS: 115 - 0 - 12
- SCALE 1:5000
- metres x 100

LEGEND



RIO TINTO CANADIAN EXPLORATION LTD.

LUCKY JOE OPTION : YUKON

GEOPHYSICAL PROFILES

NOV 1977 JAMC/DS / ds DWG. E 2762-1

GRID 1

GRID 1, LINE 1000 W

GRID 1, LINE 500 W

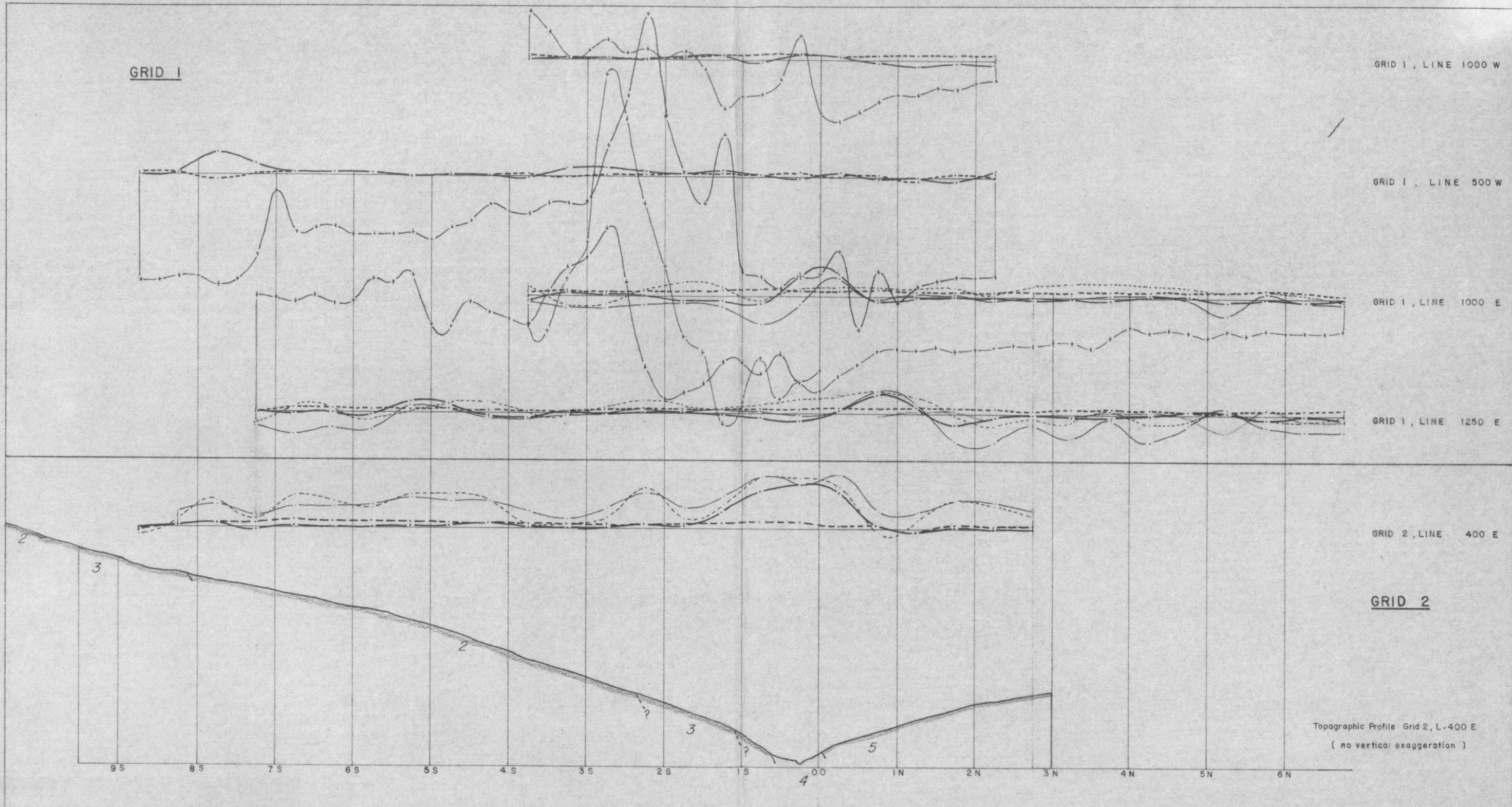
GRID 1, LINE 1000 E

GRID 1, LINE 1250 E





GRID 2, LINE 400 E

GRID 2

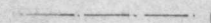




Topographic Profile: Grid 2, L-400 E
(no vertical exaggeration)



LEGEND

-  Biotite Feldspar Gneiss
-  Amphibolite
-  Quartz muscovite schist (pyrite)
-  Biotite quartz gneiss & schist

(geology: J. McClintock)

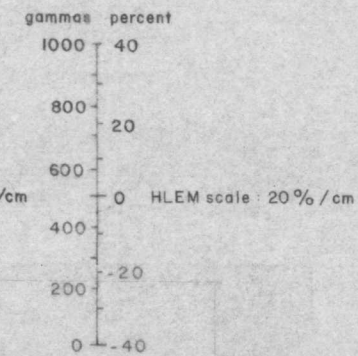
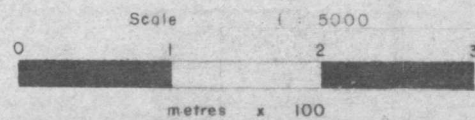
-  R 1777 Hz
-  Q
-  R 444 Hz
-  Q
-  magnetic profile

HLEM coil separations: Grid 1 = 150 metres
Grid 2 = 250 "

Equipment: MAXMIN II HLEM

MF 2 magnetometer

NTS 115-0-12



RIO TINTO CANADIAN EXPLORATION LTD.

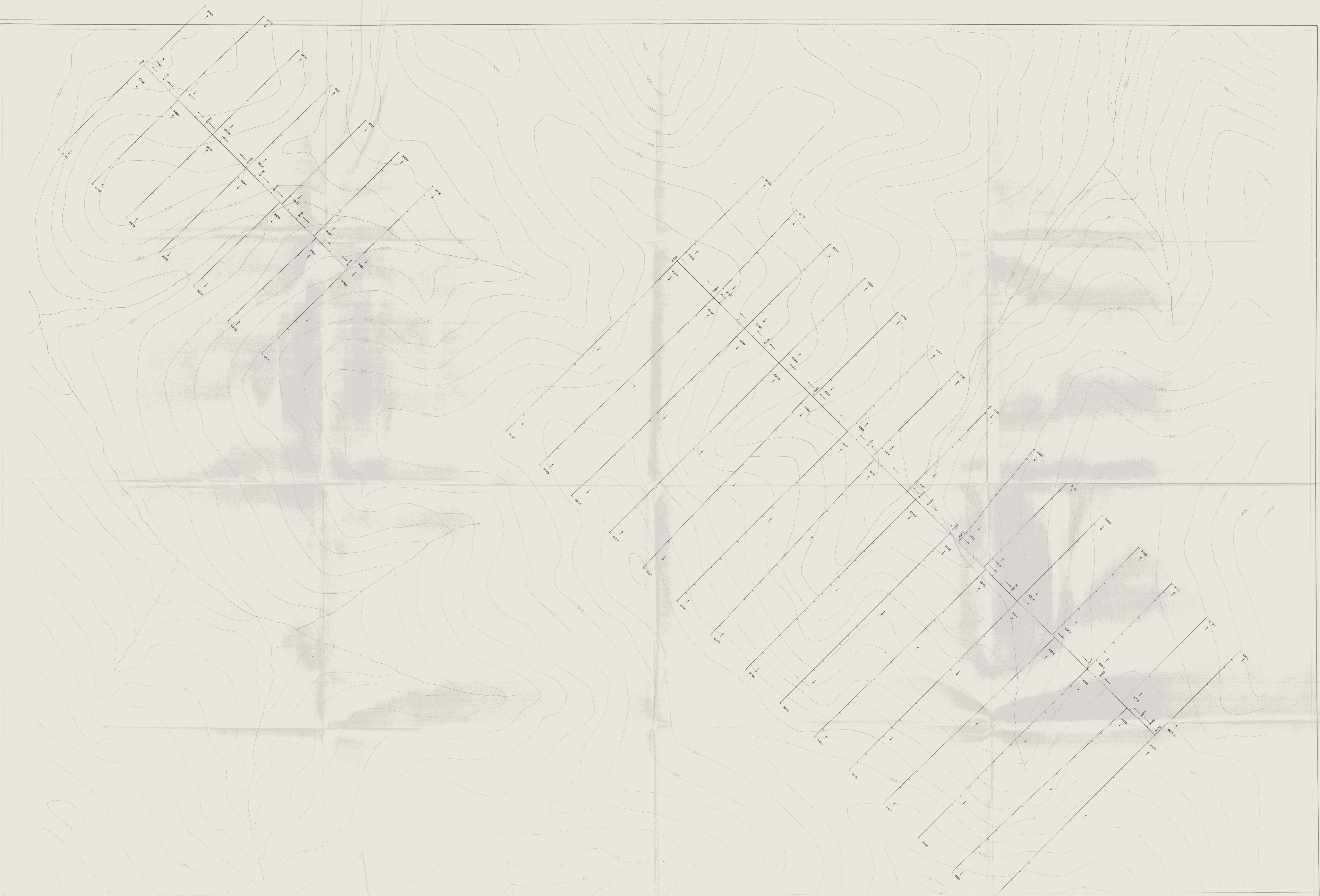
LUCKY JOE OPTION : YUKON

GEOPHYSICAL PROFILES

NOV 1977

JAmc/DS/ds

DWG. E 2762-2



LEGEND

Grid line with sample location numbers

RTS 150/12
SCALE 1:5000
METRES 100 50 0 100 200 300 400 METRES

RIO TINTO CANADIAN EXPLORATION LIMITED





LUCKY JOE OPTION

GEOCHEMISTRY
SAMPLE LOCATION MAP

DEC. 1977 J.M./y.m. L. - 8583



LEGEND

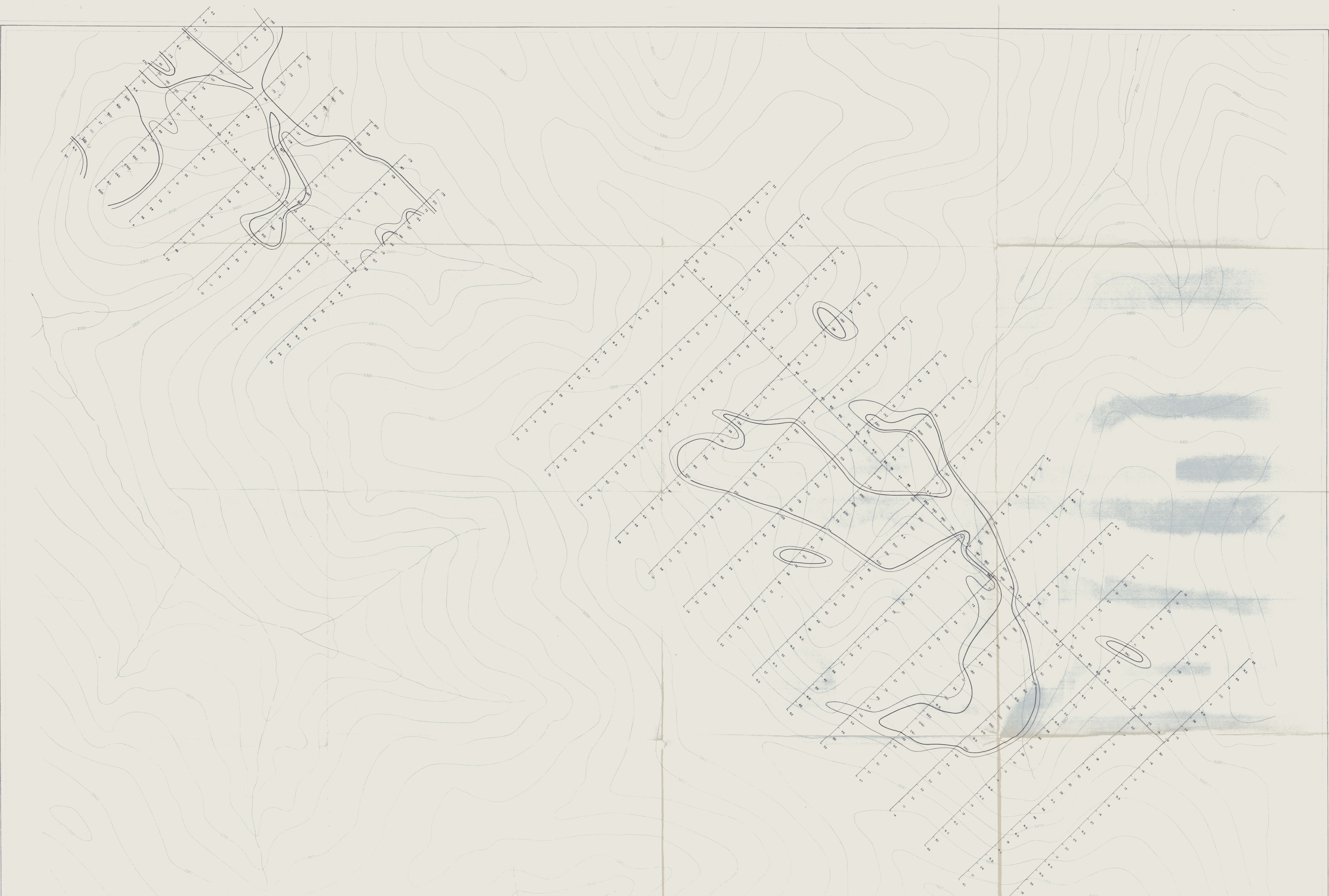
-  Grid line with sample location
-  Lead in ppm
-  Lead >= 30 ppm
-  Lead >= 50 ppm




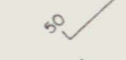


RIO TINTO CANADIAN EXPLORATION LIMITED

LUCKY JOE OPTION

GEOCHEMISTRY
Pb RESULTS in ppm




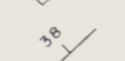


LEGEND

-  Grid line with sample location
-  Copper in p.p.m.
-  Copper >= 124 p.p.m.
-  Copper >= 152 p.p.m.

NTS 450/2
 SCALE 1:5000
 METRES 0 50 100 200 300 400 METRES



LEGEND

-  Grid line with sample location
-  Zinc in ppm
-  Zinc >= 140
-  Zinc >= 198

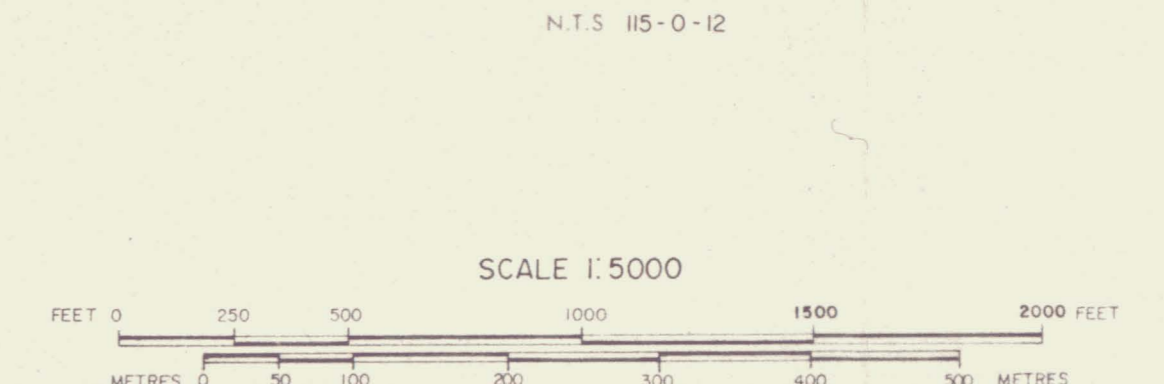
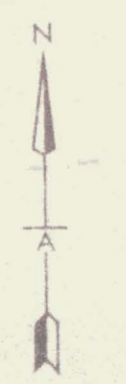
NTS 1:5000
 SCALE 1:5000
 METRES 100 50 0 100 200 300 400 METRES

RIO TINTO CANADIAN EXPLORATION LIMITED

LUCKY JOE OPTION

GEOCHEMISTRY
 Zn RESULTS in ppm

DEC. 1977 J.M./y.m. G.C. - 6584



N.T.S. 85-0-12

R. Bennett
AUG 27, 1975

RIO TINTO CANADIAN EXPLORATION LIMITED
 LUCKY JOE OPTION
 YUKON TERRITORY
MAGNETOMETER SURVEY
 AUG 1975 J.M./ym DWG. M.8350