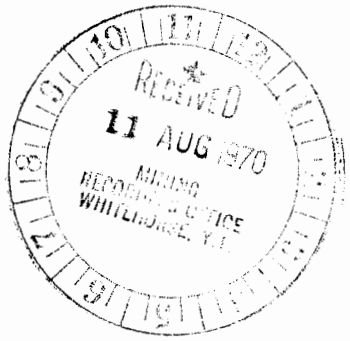
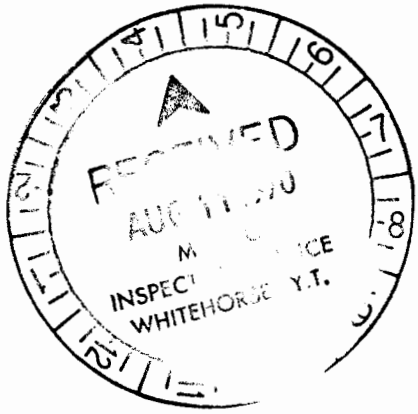
LEP CLAIMS 1-26



GEOCHEMICAL SOIL SURVEY

June 27 - July 2, 1970

(N. Lat. 61°50', W. Long. 140°33')
Claim Sheet 115-F-15
Whitehorse M.D.



By
Richard William Oddy, M.Sc., P. Geol.

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

$ 5520.72

Resident Geologist or
Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory

July, 1970

Imperial Oil Enterprises Ltd.
500 - 6th Avenue S.W.
Calgary 1, Alberta

TABLE OF CONTENTS

GEOCHEMICAL SOIL SURVEY

LEP MINERAL CLAIMS - WHITEHORSE MINING DIVISION

I. INTRODUCTION

Name of Claims: Lep Mineral Claims 1 to 26.

Record Nos.		
	Lep 1 - 9	Y 53002 - Y 53010
	Lep 10	Y 9651
	Lep 11 - 17	Y 53011 - Y 53017
	Lep 18	Y 9657
	Lep 19 - 21	Y 9666 - Y 9668
	Lep 22 - 24	Y 53018 - Y 53020
	Lep 25	Y 9662
	Lep 26	Y 53021

Dates Staked:		
	Lep 10, 18 - 21, 25	July 8, 1966
	Lep 1 - 9, 11 - 17, 22 - 24, 26	June 22 and 24, 1970

Dates Recorded:		
	Lep 10, 18 - 21, 25	July 18, 1966
	Lep 1 - 9, 11 - 17, 22 - 24, 26	June 26, 1970

Ownership:

Imperial Oil Enterprises Ltd.	(50%)
Bow Valley Land Co.	(25%)
Canadian Industrial Gas & Oil Ltd.	(25%)

Location: Moose Creek, 10 miles south of Koidern at Mile 1167, Alaska Highway, in NTS quadrant 115-F-15 at approximately 61°50' N. Lat. and 140°33' W. Long. (See Fig. 1 for detailed plan and location of claims.)

Access: Via helicopter from Alaska Highway, no roads or trails to property.

II. PREVIOUS WORK

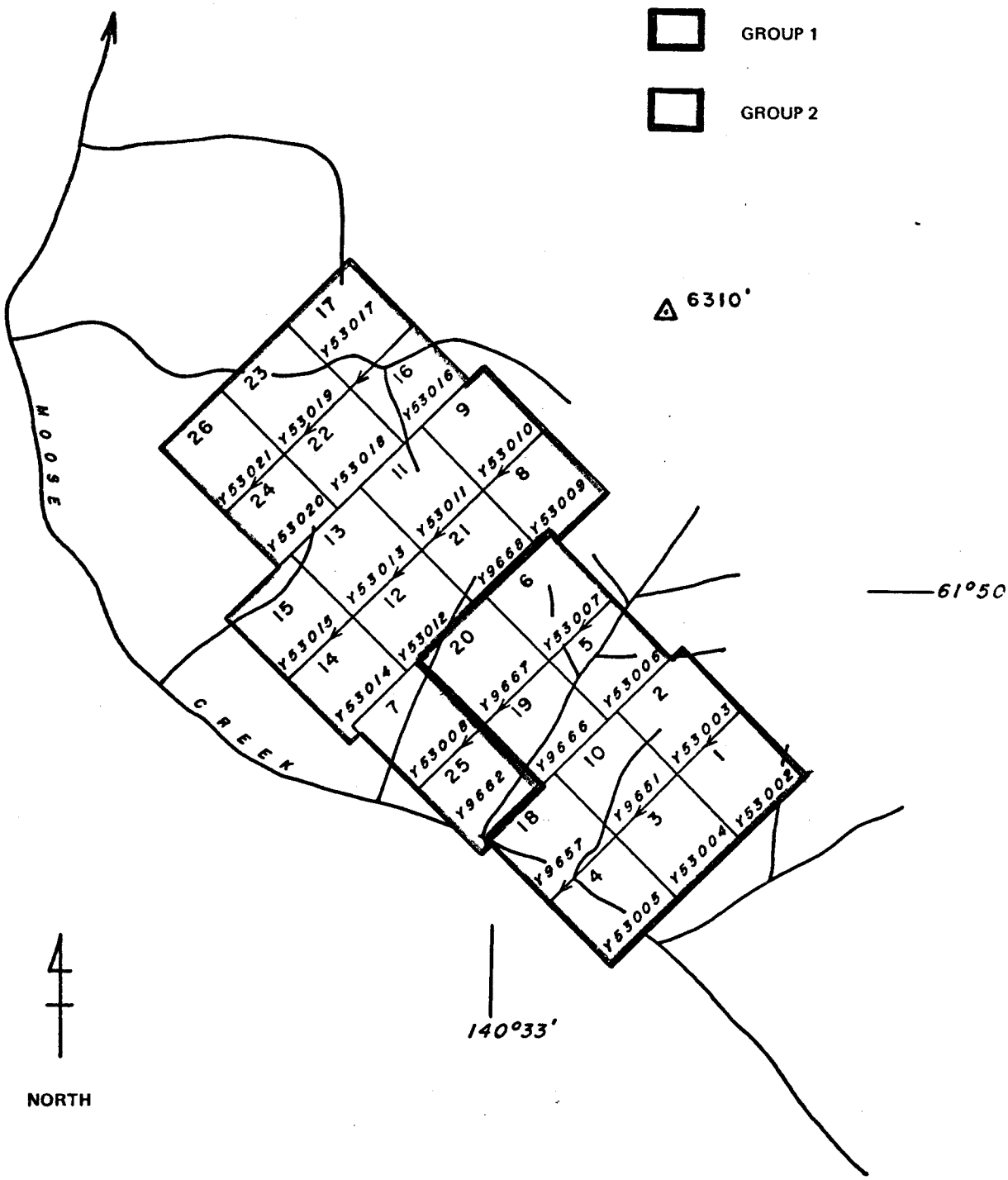
Zinc and copper mineralization was discovered in 1966 as a result of a regional stream sediment geochemical survey in the St. Elias and Kluane Ranges. In 1967 geological mapping at a scale of 1" to 400 feet and limited magnetic and electromagnetic surveying was carried out. This work was performed on behalf of the owners by Geophoto Services, Ltd., of Calgary, Alberta, and was submitted for assessment in 1967.

INDEX MAP

LEP CLAIM GROUP

WHITEHORSE M.D. SHEET 115–F–15

SCALE: 1 inch = 1/2 mile



IMPERIAL OIL ENTERPRISES LIMITED

To Accompany Report by R.W. Oddy, P. Geol. on 'Geochemical Soil Survey – Lep Claims, June 27–July 2, 1970, Whitehorse M.D.'

FIGURE 1

III. GENERAL GEOLOGY

The geology of the Kluane Lake area is described by J.E. Muller in G.S.C. Memoir 340. The area covered by the Lep claims is underlain by quartzite, limestone, and basic volcanics intruded by a diorite stock. Outcrop is restricted, for the most part, to valleys or streams draining the property and to ridges to the east of the claims.

Coarse to medium grained diorite containing disseminated pyrrhotite underlies the northern and eastern portions of the claim group. The central part of the property is underlain by a northwesterly trending belt of interbedded quartzite and limestone. The sedimentary sequence strikes northwesterly and dips steeply to the southwest. The quartzites are thin-bedded and exhibit tight isoclinal folding. The crystalline limestones are silicified in places and exhibit brecciation near contacts with the quartzite. The southwestern portion of the property is underlain by dark, fine-grained, basic volcanics which exhibit shearing and chloritization in places.

Massive sulphides, including pyrite, sphalerite, pyrrhotite, and chalcopyrite, occur in the limestones and minor copper showings are found associated with shear zones in the basic volcanics.

IV. GEOCHEMICAL SOIL SURVEY

A detailed geochemical soil survey was carried out on the property between June 27 and July 2, 1970, by a crew of seven men. The purpose of the survey was to attempt to trace the known zinc and copper showings under overburden covered areas.

Prior to the sampling, a base line of 6,000 feet in length striking N. 30° W., and cross lines at 400 foot intervals, were chained and picketed. In total, 60,800 feet of line was chained and picketed over a grid of approximately 6,000 feet by 3,800 feet. A total of 344 soil samples was collected at 200 foot intervals along the cross lines.

Soil samples were collected from the B-soil horizon wherever possible and sent to the Vancouver laboratory of Bondar-Clegg & Company Ltd. for analysis. The -80 mesh portion of each sample was analyzed for copper, zinc, lead, nickel and cobalt using a hot aqua-regia extraction procedure. Individual metal determinations in parts per million (ppm) were made by Atomic Absorption Spectroscopy using the various cathode lamps for the five metals that were analyzed.

Sample locations and geochemical values for the five metals are shown on Figures 2 to 5.

V. DISCUSSION OF RESULTS

In treating the geochemical results, the analyses were plotted in the form of a histogram and a calculation of the modal value was made for each metal. This value is taken to represent the "background" for each metal. The threshold value, the value above which a sample may be considered anomalous, is taken as approximately twice the background. This calculation resulted in the following background and threshold values for each of the five metals.

	Modal Value (Background)	Threshold Value
Copper	43 ppm	100 ppm
Zinc	80 ppm	150 ppm
Lead	12 ppm	25 ppm
Nickel	37 ppm	80 ppm
Cobalt	18 ppm	35 ppm

In Figures 2 to 5 all samples which fall within the colored areas are above the threshold values for copper, zinc, lead and nickel respectively.

1. Copper

Copper in the soils ranges from 18 ppm to 1,625 ppm. Sixteen samples contain over 150 ppm or four times background. A strong copper anomaly extends across Lep 25, 19, and 20 for a length of about 3,600 feet. (See Fig. 2.) The anomaly is about 600 feet wide. Additional smaller copper anomalies ranging from 400 to 1,000 feet long occur on Lep 10, 5, 21 and 19.

The main anomaly lies over an area presumed to be underlain by basic volcanics and quartzite. The smaller anomaly on Lep 19 is located in the vicinity of zinc and copper sulphides in limestone. The anomalies on Lep 10, 5 and 21 are along the contact between diorite and thin-bedded quartzite.

2. Zinc

Zinc values range from 26 to 6,300 ppm and 26 samples ran over 400 ppm or five times background. A strong zinc anomaly stretches for a length of about 5,000 feet across Lep 18, 10, 19, 20,21, and 12. (See Fig. 3.) The anomaly is from 600 to 1,000 feet in width. A second, somewhat less intense, zinc anomaly extends for a length of about 4,800 feet across Lep 25, 20, 6, 21, and 8. This anomaly intersects the main zinc anomaly on Lep 20.

The main zinc anomaly is coincident with high copper values on Lep 20, while the secondary zinc anomaly is coincident with anomalous copper values on Lep 25, 20, 21, and 8. In general the zinc anomalies are more widespread than the corresponding copper anomalies.

Quartzite, limestone, and basic volcanics underlie the areas of anomalous zinc in soils. Zinc and copper sulphide mineralization along the creek crossing Lep 19 is within the highest part of the main zinc anomaly.

3. Lead

Lead values ranging from 3 to 600 ppm are found in the soils. Twenty-six samples exceed 50 ppm or four times background. A strong lead anomaly extends across Lep 19 and 20 for a distance of about 3,000 feet. (See Fig. 4.) The lead anomaly is coincident with the main zinc anomaly although somewhat more restricted in area. The high lead values also reflect the sulphide occurrence on Lep 19 and overlie area presumed to be underlain by quartzite, limestone, and basic volcanics.

A second lead anomaly occurs on Lep 10 and 18. The anomaly has an extent of about 1,200 feet and is coincident with high zinc values.

4. Nickel

Nickel values range from 10 to 195 ppm. Only two samples are above 150 ppm or four times background. Small, isolated nickel highs occurring on Lep 10, 5 and 8 are coincident with three isolated copper anomalies along the diorite-quartzite contact. (See Fig. 5.)

None of the soil samples carry significantly high nickel and the presence of nickel mineralization is unlikely.

5. Cobalt

Cobalt values are restricted to a narrow range between 6 and 44 ppm. No anomalies or significant trends are evident.

VI. CONCLUSIONS

1. The main zinc anomaly, along with coincident but more restricted copper and lead anomalies, on Lep 18, 10, 19, 20, 21 and 12 appears to be of significance. The anomaly appears to trace both the northerly and southerly extension of the sulphide mineralization found on Lep 19 for a distance of about 5,000 feet under overburden.

2. Additional copper and zinc anomalies may reflect other zones of mineralization beneath the soil cover.

3. Small, isolated copper anomalies along the diorite-quartzite contact on Lep 10, 5 and 21 may reflect mineralization associated with the intrusive diorite stock.

4. No significant nickel or cobalt anomalies are present.

VII. RECOMMENDATIONS

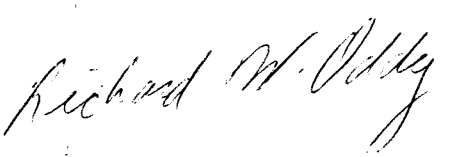
1. An electromagnetic survey should be conducted over the area of zinc, copper and lead anomalies.

2. If significant conductors are indicated by the E.M. survey, then diamond drilling should be carried out to test for massive sulphides.

IMPERIAL OIL ENTERPRISES LTD.

Richard W. Oddy, P. Geol.

Dated: 27th July, 1970



LIST OF REFERENCES

McGinn, G.J., 1967, Phase Two, Minerals Investigation of the St. Elias Mountains Area, Yukon Territory (Private Company Report).

Muller, J.E., 1967, Kluane Lake Map Area, Yukon Territory, Geological Survey of Canada Memoir 340.

ASSESSMENT DETAILS

Property:	Lep Claim Group 1 - 26.
Mining Division:	Whitehorse, Yukon.
Owners:	Imperial Oil Enterprises Ltd. (50%) Bow Valley Land Co. (25%) Canadian Industrial Gas & Oil Ltd. (25%)
Type of Survey:	Geochemical Soil Survey
Date Started:	June 27, 1970
Date Finished:	July 2, 1970
No. of Men Employed:	7
Total Man Days:	35
Geologist:	R.W. Oddy, Apt. 30, Klondora Apts., Whitehorse, Y.T.
Students:	W.A. Howell, 3456 W. 2nd Ave., Vancouver, B.C. K.O. Geisbrecht, Box 231, Morden, Manitoba R.T. McKnight, 7180 Alberni St., Powell River, B.C. R.J. McCulloch, 1052 Autumnwood Drive, St. Boniface, Manitoba G. Ongyerth, 50399 Camp River Road, Chilliwack, B.C. W.D. Melnyk, Box 161, Kaydor, Saskatchewan

IMPERIAL OIL ENTERPRISES LTD.

Richard W. Oddy, P. Geol.

Date: 27th July, 1970

DECLARATION OF COSTS

1. Salaries

	Monthly Rate	No. of Days	Total Expenditure
R.W. Oddy	$ 1,142.40	2	$ 76.16
W.A. Howell	830.00	6	166.00
K.O. Geisbrecht	700.00	6	140.00
R.T. McKnight	700.00	4	93.33
R.J. McCulloch	616.00	6	123.20
G. Ongyerth	616.00	6	123.20
W.D. Melnyk	616.00	5	102.66
			$ 824.55

2. Expenses

Food and Lodging	$ 552.00
Helicopter Transportation	3,043.37
Geochemical Analyses	1,100.80
Total Expenditure	$ 5,520.72

IMPERIAL OIL ENTERPRISES LTD.

Richard W. Oddy, P. Geol.

Date: 27th July, 1970

CERTIFICATE OF QUALIFICATIONS

I, Richard William Oddy, of the City of Whitehorse, Yukon Territory, do hereby certify that:

1. I am a geologist residing at Apt. 30, Klondora Apartments, Whitehorse, Y.T.

2. I am a graduate of the University of British Columbia with a B.Sc. in Geology (1962) and of the University of Manitoba with an M.Sc. in Geology (1969).

3. I am a Fellow of the Geological Association of Canada and a member of the Association of Professional Engineers of Alberta.

4. I have been practising my profession for seven years.

5. I am an employee of Imperial Oil Enterprises Ltd. and have worked for Imperial for four and one-half years.

6. The statements made in this report are based on field examinations at the property, study of the geochemical analyses, published geological literature and unpublished private reports.

7. Permission is granted to use in whole or in part for assessment and qualification requirements but not for advertising purposes.

Richard W. Oddy, M.Sc., P. Geol.

Richard W. Oddy

Date: 27th July, 1970

APPENDIX

BONDAR-CLEGG & COMPANY LTD.

geologists • geochemists • analysts

1500 PEMBERTON AVENUE, NORTH VANCOUVER, B.C.
PHONE 988-5315

GEOCHEMICAL LAB REPORT

No. 20 - 319

PROJECT NO.: LEP

Extraction Hot aqua regia **From** Imperial Oil Enterprises Ltd.

Method Atomic absorption **Date** July 21, 1970 **19**

Fraction Used -80 mesh **Analyst** K.B.

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
0+00N 2+00E	67	23	125	36	20			
0+00N 4+00E	71	11	79	44	21			
0+00N 6+00E	62	13	76	41	20			
0+00N 8+00E	71	12	136	48	20			
0+00N 10+00E	68	11	275	68	24			
0+00N 12+00E	38	12	99	36	20			
+00N 14+00E	47	12	72	38	18			
0+00N 16+00E	166	12	67	69	30			
0+00N 0+00W	140	158	4700	59	25			
0+00N 2+00W	116	21	228	64	37			
0+00N 4 +00W	144	14	106	55	37			
0+00N 6 +00W	72	12	73	29	17			
0+00N 8 +00W	86	14	79	62	27			
0+00N 10+00W	64	16	150	46	20			
0+00N 12+00W	120	22	140	60	28			
0+00N 14+00W	104	22	150	42	23			
0+00N 16+00W	130	21	380	46	26			
0+00N 18+00W	274	27	340	56	31			
0+00N 20+00W	162	19	214	43	25			
0+00N 22+00W	91	15	90	44	24			
0+00N 24+00W	24	6	46	13	12			
2+00N 24+00W	28	6	30	14	11			
4+00N 2 +00E	47	200	370	39	18			
4+00N 4 +00E	30	28	200	26	14			
4+00N 6 +00E	46	48	137	33	15			
4+00N 8 +00E	56	8	65	37	17			
4+00N 10+00E	102	12	83	65	30			
4+00N 12+00E	136	10	80	74	29			
4+00N 14+00E	152	14	122	87	42			
4+00N 16+00E	91	10	100	61	24			
4+00N 2 +00W	96	600	2100	53	20			

BONDAR-CLEGG & COMPANY LTD.

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
4+00N 4 +00W	196	45	1650	35	19			
4+00N 6 +00W	84	20	220	58	29			
4+00N 8 +00W	124	33	210	62	37			
4+00N 10+00W	74	20	310	29	17			
4+00N 12+00W	120	21	308	47	26			
4+00N 14+00W	178	25	197	59	27			
4+00N 16+00W	72	15	123	54	27			
4+00N 18+00W	97	16	94	50	26			
4+00N 20+00W	38	8	58	25	12			
4+00N 22+00W	47	6	30	13	7			
4+00N 24+00W	28	5	34	12	7			
0S 00W 00E	47	21	158	36	17			
4+00S 2 +00E	25	15	115	22	14			
4+00S 4 +00E	32	16	169	25	14			
4+00S 6 +00E	34	12	136	34	18			
4+00S 8 +00E	64	22	140	54	21			
4+00S 10+00E	28	7	76	26	19			
4+00S 12+00E	40	12	82	40	21			
4+00S 14+00E	36	8	59	24	12			
4+00S 16+00E	35	8	60	30	18			
4+00S 2 +00W	140	96	345	45	20			
4+00S 4 +00W	28	9	108	20	15			
4+00S 6 +00W	30	10	113	22	14			
4+00S 8 +00W	32	11	92	23	14			
4+00S 10+00W	70	8	72	46	21			
4+00S 12+00W	40	8	61	33	17			
4+00S 14+00W	45	11	90	26	13			
4+00S 16+00W	23	7	53	16	11			
4+00S 18+00W	37	3	137	20	11			
4+00S 20+00W	124	21	290	47	22			
4+00S 22+00W	32	7	63	20	11			
4+00S 24+00W	150	10	95	36	18			
6+00N 16+00E	47	8	56	26	18			
8+00N 2 +00E	55	35	375	70	22			
8+00N 4 +00E	45	31	163	36	16			
8+00N 6 +00E	65	10	94	56	22			

BONDAR-CLEGG & COMPANY LTD.

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
8+00N 8 +00E	48	8	92	51	20			
8+00N 12+00E	122	8	61	78	31			
8+00N 14+00E	90	6	54	49	29			
8+00N 16+00E	73	10	80	46	22			
8+00N 0 +00W	83	545	1350	42	19			
8+00N 2 +00W	40	34	830	32	20			
8+00N 4 +00W	63	120	3150	37	18			
8+00N 6 +00W	50	34	225	30	19			
8+00N 8 +00W	444	26	510	55	41			
8+00N 10+00W	130	20	220	54	34			
8+00N 12+00W	72	20	121	84	27			
8+00N 14+00W	65	11	77	32	18			
8+00N 16+00W	73	15	90	44	20			
8+00N 18+00W	64	6	60	24	17			
8+00N 20+00W	27	3	37	17	12			
8+00N 22+00W	52	3	63	25	14			
8+00N 24+00W	36	6	53	26	17			
8+00S 0 +00W0+00E	32	18	172	34	18			
8+00S 2 +00E	31	21	280	26	14			
8+00S 4 +00E	27	14	150	30	17			
8+00S 6 +00E	37	11	190	28	17			
8+00S 8 +00E	59	10	120	62	26			
8+00S 10+00E	39	10	39	74	31			
8+00S 12+00E	106	7	57	81	32			
8+00S 14+00E	70	6	56	56	25			
8+00S 16+00E	58	9	123	54	24			
8+00S 2 +00W	33	9	44	20	12			
8+00S 4 +00W	32	4	162	18	14			
8+00S 6 +00W	56	80	620	44	18			
8+00S 8 +00W	24	7	55	22	10			
8+00S 10+00W	87	10	80	40	14			
8+00S 12+00W	22	5	30	11	6			
8+00S 14+00W	124	12	80	64	30			
8+00S 16+00W	82	12	100	52	27			
8+00S 18+00W	72	10	87	39	18			
8+00S 20+00W	40	7	67	20	10			

Report No. 20 - 319 BONDAR-CLEGG & COMPANY LTD. Page No. 4

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
8+00S 22+00W	74	14	205	36	19			
8+00S 24+00W	148	14	156	40	21			
8+00SX 0+00E 0+00W	55	24	190	50	21			
12+00N 2 +00E	46	110	170	39	19			
12+00N 4 +00E	40	9	88	30	18			
12+00N 6 +00E	59	11	124	195	35			
12+00N 8 +00E	67	7	99	54	24			
12+00N 10+00E	59	9	92	57	25			
12+00N 12+00E	38	6	75	37	18			
12+00N 14+00E	42	7	75	33	20			
12+00N 16+00E	56	10	74	47	21			
12+00N 0 +00W	45	66	355	42	20			
12+00N 2 +00W	36	115	350	28	22			
12+00N 4 +00W	138	120	5100	48	25			
12+00N 6 +00W	192	35	350	32	17			
12+00N 8 +00W	52	20	163	31	19			
12+00N 10+00W	220	39	470	53	24			
12+00N 12+00W	100	25	270	61	26			
12+00N 14+00W	86	23	165	43	30			
12+00N 16+00W	49	8	62	20	11			
12+00N 18+00W	96	8	62	62	24			
12+00N 20+00W	53	12	66	36	19			
12+00N 22+00W	104	7	60	36	18			
12+00N 24+00W	57	8	81	50	19			
12+00S 2 +00W	40	12	70	47	22			
12+00S 4 +00W	49	33	277	46	18			
12+00S 6 +00W	28	14	100	23	12			
12+00S 8 +00W	55	20	120	42	23			
12+00S 10+00W	20	4	40	13	8			
12+00S 12+00W	29	4	38	22	12			
12+00S 14+00W	47	12	68	32	16			
12+00S 16+00W	104	42	730	62	25			
12+00S 18+00W	61	4	52	18	13			
12+00S 20+00W	56	6	50	27	15			
12+00S 22+00W	102	14	92	55	27			
12+00SX 00E 00W	50	66	510	49	20			

BONDAR-CLEGG & COMPANY LTD.

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
12+00 0+00E0+00W	46	110	710	32	14			
12+00S 2 +00E	48	230	1400	32	17			
12+00S 4 +00E	36	10	290	31	17			
12+00S 6 +00E	51	10	200	58	26			
12+00S 8 +00E	120	15	71	86	38			
12+00S 10+00E	180	12	66	125	42			
12+00S 12+00E	131	6	57	79	32			
12+00S 14+00E	32	4	77	23	14			
12+00S 16+00E	34	6	57	33	18			
14+00N 16+00E	36	7	70	30	18			
14+00N 24+00W	102	3	49	25	15			
16+00N 2 +00E	38	10	80	32	21			
16+00N 4 +00E	32	8	79	27	22			
16+00N 6 +00E	44	8	240	46	27			
16+00N 8 +00E	76	7	150	64	26			
16+00N 10+00E	44	9	82	28	19			
16+00N 12+00E	36	6	56	29	17			
16+00N 16+00E	31	8	67	36	18			
16+00N 2 +00W	64	16	99	45	20			
16+00N 4 +00W	67	110	219	33	17			
16+00N 6 +00W	48	65	290	36	23			
16+00N 8 +00W	27	10	99	20	14			
16+00N 10+00W	116	31	365	55	29			
16+00N 12+00W	59	10	74	55	25			
16+00N 14+00W	88	10	97	45	22			
16+00N 16+00W	101	11	64	57	32			
16+00N 18+00W	54	10	61	40	20			
16+00N 20+00W	37	8	55	42	18			
16+00N 22+00W	95	11	70	76	26			
16+00N 24+00W	58	8	52	35	20			
16+00S 2 +00E	56	11	197	54	22			
16+00S 4 +00E	46	4	39	29	15			
16+00S 6 +00E	52	5	51	30	15			
16+00S 8+00E	72	6	52	36	17			
16+00S 10+00E	36	6	56	32	21			
16+00S 12+00E	36	7	56	32	18			

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
16+00S 14+00E	104	10	58	75	30			
16+00S 16+00E	64	8	48	52	25			
16+00S 2 +00W	40	23	160	38	15			
16+00S 4 +00W	48	33	163	58	26			
16+00S 6 +00W	55	92	510	50	23			
16+00S 8 +00W	35	6	70	33	18			
16+00S 10+00W	24	3	58	12	9			
16+00S 12+00W	24	4	52	19	12			
16+00S 14+00W	84	14	91	48	27			
16+00S 16+00W	73	8	60	29	14			
16+00S 18+00W	27	4	58	22	15			
16+00S 19+60W	22	5	49	21	14			
16+00S 00E 00W	51	12	134	47	22			
19+00N 0 +00W	46	12	75	33	26			
20+00N 0 +00E	49	12	90	37	21			
20+00N 2 +00E	38	14	151	46	24			
20+00N 4 +00E	56	8	194	80	25			
20+00N 6 +00E	52	11	135	62	30			
20+00N 8 +00E	62	6	101	57	25			
20+00N 10+00E	34	4	66	32	18			
20+00N 12+00E	29	6	72	76	20			
20+00N 14+00E	45	10	78	41	25			
20+00N 16+00E	31	6	69	28	19			
20+00S 2 +00E	52	10	154	43	17			
20+00S 4 +00E	72	8	78	60	21			
20+00S 6 +00E	31	8	56	28	15			
20+00S 8 +00E	25	8	225	25	14			
20+00S 10+00E	46	7	55	32	13			
20+00S 12+00E	83	6	65	53	24			
20+00S 14+00E	88	7	61	56	25			
20+00S 16+00E	48	6	70	38	18			
20+00S 2 +00W	64	12	61	87	32			
20+00S 4 +00W	32	5	48	31	15			
20+00S 6+00W	24	4	30	18	11			
20+00S 8+00W	25	6	100	24	16			
20+00S 10+00W	21	5	58	22	12			

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
20+00S12+00W	28	6	41	22	12			
20+00S14+00W	35	25	124	20	12			
20+00S16+00W	18	2	26	10	10			
20+00SX00E00W	96	8	64	56	22			
21+00N0+00W	78	11	210	77	36			
21+00N2+00W	54	8	103	46	26			
21+00N4+00W	63	85	168	46	20			
21+00N6+00W	80	66	200	46	20			
21+00N8+00W	198	158	410	42	20			
21+00N10+00W	61	43	420	50	20			
21+00N12+00W	72	14	133	71	33			
21+00N14+00W	59	5	82	68	26			
21+00N16+00W	95	10	79	61	25			
21+00N18+00W	46	8	80	44	22			
21+00N20+00W	48	7	59	54	25			
21+00N22+00W	79	11	89	49	22			
21+00N24+00W	55	6	57	33	17			
22+00N16+00E	51	25	176	52	19			
22+00N24+00W	39	8	62	29	17			
24+00N2+00E	48	10	141	41	21			
24+00N4+00E	38	8	111	34	19			
24+00N6+00E	43	8	181	49	20			
24+00N8+00E	44	8	79	47	20			
24+00N10+00E	53	10	138	72	26			
24+00N12+00E	30	10	72	32	22			
24+00N14+00E	32	8	70	35	20			
24+00N16+00E	41	24	121	48	20			
24+00N2+00W	52	7	173	51	20			
24+00N4+00W	32	12	133	29	23			
24+00N6+00W	80	15	840	34	18			
24+00N8+00W	134	92	850	51	23			
24+00N10+00W	65	44	440	42	20			
24+00N12+00W	124	15	142	70	37			
24+00N14+00W	104	10	232	67	35			
24+00N16+00W	67	6	70	83	32			
24+00N18+00W	70	7	82	33	20			

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
24+00N20+00W	18	4	33	16	12			
24+00N22+00W	52	8	62	52	26			
24+00N24+00W	39	8	93	34	20			
2400S200E	68	8	79	58	20			
2400S400E	70	6	58	54	20			
2400S600E	32	6	40	26	15			
2400S800E	40	10	58	36	19			
2400S1000E	46	6	56	35	19			
2400S1200E	88	11	69	73	28			
2400S1400E	38	7	47	34	15			
2400S1600E	38	9	54	40	16			
00S00E00W	101	14	100	51	20			
2400S200W	39	12	73	40	17			
2400S400W	74	14	82	99	34			
2400S600W	51	12	107	78	26			
2400S800W	58	14	97	81	27			
2400S1000W	50	12	70	78	25			
2400S1135W Creek	55	17	110	86	30			
25+00N0+00W	35	12	172	35	25			
26+50N0+00W	122	14	460	155	44			
28+00N3+00E	47	12	200	42	26			
28+00N4+00E	31	11	132	34	24			
28+00N6+00E	31	9	96	34	24			
28+00N8+00E	38	11	101	38	18			
2[illegible]+00N10+00E	66	12	82	56	23			
28+00N12+00E	99	15	105	82	30			
28+00N14+00E	59	61	265	65	25			
28+00N16+00E	93	14	98	46	19			
28+00N0+00W	34	8	146	36	18			
28+00N2+00W	46	12	130	50	18			
28+00N4+00W	44	22	280	32	16			
28+00N6+00W	60	49	580	39	16			
28+00N8+00W	36	12	177	35	20			
28+00N10+00W	56	18	282	54	22			
28+00N12+00W	55	14	138	62	30			
28+00N14+00W	39	8	81	40	23			

Report No. 20-319 BONDAR-CLEGG & COMPANY LTD. Page No. 9

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
28+00N16+00W	59	14	108	56	38			
28+00N18+00W	48	11	64	52	23			
28+00N20+00W	35	12	123	38	28			
28+00N22+00W	51	10	88	43	20			
28+00N24+00W	35	6	70	31	22			
30+00N16+00E	63	13	72	100	29			
30+00N24+00W	40	10	70	39	20			
32+00N2+00E	72	12	148	44	21			
32+00N4+00E	87	8	220	70	18			
32+00N6+00E	178	24	260	102	31			
32+00N8+00E	101	19	360	100	35			
32+00N10+00E	48	12	80	55	20			
32+00N12+00E	84	11	63	69	28			
32+00N14+00E	60	15	70	77	30			
32+00N16+00E	64	12	71	52	29			
32+00N1+00W	39	10	112	36	21			
32+00N4+00W	32	21	136	28	15			
32+00N6+00W	44	40	305	52	22			
32+00N8+00E	57	48	285	52	21			
32+00N10+00W	47	20	130	64	23			
32+00N12+00W	45	20	141	44	23			
32+00N14+00W	40	12	128	31	17			
32+00N16+00W	49	13	127	40	20			
32+00N18+00W	34	9	84	24	18			
32+00N20+00W	44	6	56	30	16			
32+00N22+00W	55	8	80	51	27			
32+00N24+00W	37	7	72	36	18			
34+00N24+00W	64	7	53	34	17			
36+00N2+00E	41	11	91	38	20			
36+00N4+00E	75	15	115	77	26			
36+00N6+00E	85	20	167	110	30			
36+00N8+00E	36	10	89	38	22			
36+00N10+00E	45	82	180	50	21			
36+00N12+00E	74	12	65	56	25			
36+00N14+00E	36	8	58	33	19			
36+00N16+00E	32	8	63	33	18			

GEOCHEMICAL LAB REPORT

SAMPLE NO.	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm			REMARKS
36+00N0+00W	42	10	93	47	21			
36+00N2+00W	52	16	235	115	27			
36+00N4+00W	44	14	101	49	23			
36+00N6+00W	44	12	78	38	20			
36+00N8+00W	60	12	92	47	21			
36+00N10+00W	44	19	100	33	16			
36+00N12+00W	58	38	202	36	16			
36+00N14+00W	61	24	152	40	21			
36+00N16+00W	31	8	71	34	18			
36+00N18+00W	37	6	48	24	15			
36+00N20+00W	28	6	71	28	18			
[illegible]00N22+00W	85	8	71	56	26			
36+00N24+00W	62	10	69	52	25			
R4+00N0+00W	54	53	6300	116	30			
R4+00N2+00W	71	64	2600	63	23			
R4+00N4+00W	60	27	310	42	25			
R4+00N6+00W	79	14	125	41	30			
R4+00N8+00W	104	28	190	41	26			
R4+00N10+00W	182	24	390	50	26			
R16+00N0+00W	51	46	180	37	17			
R16+00N2+00W	32	16	110	48	23			
R16+00N4+00W	28	42	150	32	20			
R16+00N6+00W	31	46	175	29	20			
R16+00N8+00W	250	193	1500	42	22			
R[illegible]+00N10+00W	1625	131	1300	68	35			

LEP CLAIMS 1-26

WHITEHORSE M.D.

GEOCHEMICAL SOIL SURVEY

JUNE 27 – JULY 2, 1970

COPPER

LEGEND

- o — SOIL SAMPLE LOCATION
- 62 o — COPPER IN PPM
- > 200 PPM
- 150 – 200 PPM
- 100 – 149 PPM
- o — < 100 PPM

BACKGROUND – 43 PPM COPPER

x Cu — COPPER MINERALIZATION

x Zn — ZINC MINERALIZATION

LEP 17 LEP 23 LEP 16 LEP 26 LEP 22 LEP 9 LEP 24 LEP 11 LEP 8 LEP 13 LEP 21 LEP 6 LEP 15 LEP 12 LEP 20 LEP 14 LEP 7 LEP 19 LEP 5 LEP 2 LEP 25 LEP 10 LEP 18 LEP 3 LEP 1 LEP 4

LINE 36N LINE 32N LINE 28N LINE 24N LINE 20N LINE 16N LINE 12N LINE 8N LINE 4N LINE 0 LINE 4S LINE 8S LINE 12S LINE 16S LINE 20S LINE 24S BASE LINE N.30°W.

6205'

61°50'

140°33'

MOOSE CREEK

N

1000'
SCALE 1"= 400'

IMPERIAL OIL ENTERPRISES LIMITED

TO ACCOMPANY REPORT BY R.W.ODDY, P.GEOL. ON "GEOCHEMICAL SOIL SURVEY – LEP CLAIMS, JUNE 27 – JULY 2, 1970 WHITEHORSE M.D."

FIGURE 2.

LEP CLAIMS 1-26

WHITEHORSE M.D.

GEOCHEMICAL SOIL SURVEY

JUNE 27 – JULY 2, 1970

ZINC

LEGEND

- o — SOIL SAMPLE LOCATION
- 120 o — ZINC IN PPM
- > 400 PPM
- 250-400 PPM
- 150-249 PPM
- o — <150 PPM

BACKGROUND – 80 PPM ZINC

x Cu — COPPER MINERALIZATION

x Zn — ZINC MINERALIZATION

LEP 17 LEP 23 LEP 16 LEP 9 LEP 26 LEP 22 LEP 11 LEP 24 LEP 13 LEP 21 LEP 8 LEP 15 LEP 6 LEP 12 LEP 20 LEP 14 LEP 1 LEP 5 LEP 19 LEP 2 LEP 25 LEP 10 LEP 18 LEP 3 LEP 4

LINE 36N LINE 32N LINE 28N LINE 24N LINE 20N LINE 16N LINE 12N LINE 8N LINE 4N LINE 0 LINE 4S LINE 8S LINE 12S LINE 16S LINE 20S LINE 24S

BASE LINE N 30°W

6205'

61°50'

140°33'

MOOSE CREEK

N

1000'

SCALE 1"= 400'

IMPERIAL OIL ENTERPRISES LIMITED

TO ACCOMPANY REPORT BY R.W. ODDY, P.GEOL. ON "GEOCHEMICAL SOIL SURVEY – LEP CLAIMS, JUNE 27 – JULY 2, 1970 WHITEHORSE M.D."

FIGURE 3.

LEP CLAIMS 1-26

WHITEHORSE M.D.

GEOCHEMICAL SOIL SURVEY

JUNE 27 – JULY 2, 1970

LEAD

LEGEND

- o — SOIL SAMPLE LOCATION
- 30 o — LEAD IN PPM
- > 100 PPM
- 50 - 100 PPM
- 25 - 49 PPM
- o — < 25 PPM

BACKGROUND - 12 PPM LEAD

- x Cu — COPPER MINERALIZATION
- x Zn — ZINC MINERALIZATION

LEP 17 LEP 23 LEP 16 LEP 9 LEP 26 LEP 22 LEP 11 LEP 24 LEP 13 LEP 21 LEP 8 LEP 15 LEP 12 LEP 6 LEP 14 LEP 7 LEP 5 LEP 19 LEP 2 LEP 25 LEP 10 LEP 1 LEP 18 LEP 3 LEP 4

LINE 36N LINE 32N LINE 28N LINE 24N LINE 20N LINE 16N LINE 12N LINE 8N LINE 4N LINE 0 LINE 4S LINE 8S LINE 12S LINE 16S LINE 20S LINE 24S

6205'

61°50'

BASE LINE N.30°W

140933'

MOOSE CREEK

N

1000'
SCALE 1" = 400'

IMPERIAL OIL ENTERPRISES LIMITED

TO ACCOMPANY REPORT BY R.W.ODDY, P.GEOL. ON "GEOCHEMICAL SOIL SURVEY – LEP CLAIMS, JUNE 27 – JULY 2, 1970 WHITEHORSE M.D."

FIGURE 4.

LEP CLAIMS 1-26

WHITEHORSE M.D.

GEOCHEMICAL SOIL SURVEY

JUNE 27 – JULY 2, 1970

NICKEL - COBALT

LEGEND

- o — SOIL SAMPLE LOCATION
- 46 / o / 25 — NICKEL IN PPM / COBALT IN PPM
- >150 PPM NICKEL
- 80-149 PPM NICKEL
- o — < 80 PPM NICKEL

BACKGROUND - 37 PPM NICKEL
BACKGROUND - 17 PPM COBALT

- x Cu — COPPER MINERALIZATION
- x Zn — ZINC MINERALIZATION

LEP 17 LEP 23 LEP 16 LEP 26 LEP 22 LEP 9 LEP 24 LEP 11 LEP 8 LEP 13 LEP 21 LEP 6 LEP 15 LEP 12 LEP 20 LEP 5 LEP 14 LEP 7 LEP 19 LEP 2 LEP 25 LEP 10 LEP 1 LEP 18 LEP 3 LEP 4

LINE 36N LINE 32N LINE 28N LINE 24N LINE 20N LINE 16N LINE 12N LINE 8N LINE 4N LINE 0 LINE 4S LINE 8S LINE 12S LINE 16S LINE 20S LINE 24S

6205'

61°50'

140°33'

MOOSE CREEK

ON BASE LINE N 30°W

N

1000'
SCALE 1" = 400'

IMPERIAL OIL ENTERPRISES LIMITED

TO ACCOMPANY REPORT BY R.W. ODDY, P.GEOL. ON "GEOCHEMICAL SOIL SURVEY – LEP CLAIMS, JUNE 27 – JULY 2, 1970 WHITEHORSE M.D."

FIGURE 5.