

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 3054 MAP _____

A PRELIMINARY REPORT ON
THE GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL EXPLORATION
OF THE
FFC 1 - 94 CLAIMS
CHRISTINA LAKE, BRITISH COLUMBIA

N.T.S. 82-E-1
Lat. 49°05'; Long. 118°15'

3054

By
J. S. Scott, P. Eng. (B.C., Ont.)
R. Somerville, B.Sc., F.G.A.C., P.Eng. (Ont.)

June 1 - November 1, 1970

Imperial Oil Enterprises Ltd.
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Calgary 1, Alberta

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A PRELIMINARY REPORT ON
THE GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL EXPLORATION
OF THE
FFC 1 - 94 CLAIMS - CHRISTINA LAKE, B. C.

R. Somerville
May 6, 1970

INTRODUCTION

On May 1, 1970 an option agreement was signed between Imperial Oil Enterprises Ltd. and Boundary Exploration Ltd. N.P.L. by which Imperial Oil Enterprises Ltd. would commence the exploration of the "Fife Property". This property consists of 102 contiguous staked claims and two mineral leases centered about one mile from the east shore of Christina Lake in the Greenwood Mining Division.

From June 1 to July 19, 1970 approximately, a crew of three to seven men worked continuously on the property cutting line, taking ground magnetic readings, and geochemical soil samples. During this stage approximately twenty-two miles of line were cut and surveyed. In addition, a preliminary geological survey was completed as an initial rough guide to further work.

Early in August four miles of line were cut by "contractor" and during the month of October an additional twenty-five miles of line were cut to facilitate the continuing exploration during 1971.

This preliminary report will describe: (a) the extent of the geological, geophysical, and geochemical work during the 1970 field season and, (b) it will attempt to make a preliminary economic evaluation of the property.

THE PROPERTY

The property consists of the following one hundred and four claims and leases:

FFC #1 to #92	Record #'s 29522 to 29613
FFC #93 & #94	Record #'s 30936 & 30937
IOE #5 to #12	Record #'s 34646 to 34643
Lease #362	Lot 120S and 121S
Lease #361	Lot 1036

Map #1 (Fife Group Claim Index) shows the relative positioning of the claims and the relationship of the claim boundaries to the lines which have been cut.

PROPERTY LOCATION AND ACCESS

The claim block is located approximately eighteen miles northeast from Grand Forks on B.C. Highway No. 3 and centered about one mile east of the highway (See Figure 1). The C. P. R. tracks pass through the property close to its western edge.



PIPE GROUP

SHOWING LOCATION OF CLAIMS, MAY 6, 1971

SCALE 1 INCH = 2 MILES

FIGURE 1

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PHYSIOGRAPHY

The property varies in elevation from about 1,500' near Christina Lake to about 4,500' near the eastern boundary of the property. Although the relief is not extreme over most of the property, both Baker and Coryell creeks have sharply eroded beds.

Generally speaking, the bedrock is about 95% obscured by glacial drift and for the most part, the area is well wooded. It is doubtful that the overburden is greater than 50' in any place and it is probably considerably less on the average.

In the southern part of the claim group approximately a hundred acres of land has been cleared and is currently being used as pasture. This area is almost entirely underlain by limestone.

FACILITIES

Lying, as the property does, so close to Christina Lake, a large quantity of water is likely available for use in a mine or mill. Both Coryell and Baker creeks have moderate flows which potentially could be dammed and tapped for moderate quantities of process water.

Hydroelectric power is generated in large quantities at the Arrow Dam near Castlegar some 50 miles by road from the property.

Because Christina Lake is a vacation resort area, tailings disposal would likely be an awkward problem. However, there is sufficient topographic relief in the vicinity to provide several small valleys suitable for tailings stacking.

The close proximity of the towns of Grand Forks and Christina Lake combined with easy access by rail or road enhances the commercial possibility of this prospect.

GENERAL GEOLOGY

The regional geology is relatively well indicated on the Geological Survey of Canada, Map 6-1957, Kettle River (East Half).

The general geology is well described in a report by J. S. Kermeen dated March 28, 1970, filed for assessment with the B.C. Department of Mines. A geological interpretation map has been prepared (see Map 3 & Map 4) based on reconnaissance mapping correlated to the ground magnetic interpretation (see Map 10 & Map 11). This map covers the portion of the property covered by the lines cut during the early part of the season. Undoubtedly this map will be considerably revised as more specific detailed information becomes available from close mapping.

The Nelson intrusive (a complex assemblage of gabbro diorite and granite) has intruded, somewhat concordantly, the Mount Roberts Formation (limestone and greywacke). Most of the copper mineralization detected has been either in the Nelson gabbro or diorite or adjacent to the contact with the Mount Roberts and associated with a garnetiferous skarn. The two main copper showings are marked in Map 3 and Map 4.

Although there are no known copper occurrences within the area underlain by the Coryell intrusives, there is a small area near Line 40W and the 40N baseline which is quite anomalous in copper (see Copper Geochemical Map #5).

GEOCHEMISTRY

A reconnaissance geochemical survey was made on the initial 22 miles of cut line (see Maps #5, #6 and #7). Approximately 275 soil samples were taken nominally at 400 intervals on lines 400' apart. Wherever possible the samples were taken from the upper part of the 'B' horizon using a soil auger. The observed soil profile consisted of (in most cases) 1" to 18" of organic material overlying approximately 2" of grey leached sandy clay which lay above the rusty brown to yellow brown 'B' zone from which the samples were taken. In some areas the leached horizon was missing.

All soil samples were shipped to Loring Laboratories Ltd. in Calgary for copper determinations and check determinations were made at Imperial Oil Limited, Technical Services Laboratory in Calgary. Some 82 samples were also run for lead and zinc. These latter determinations were made at Imperial Oil Limited, Technical Services Laboratory in Calgary.

Samples were initially prepared by drying and sieving individual samples to minus 80 mesh in a carefully dust-controlled environment. All values were determined by the hot acid-atomic absorption technique.

1. Copper

A graphical summary of the results of the copper soil survey appears in Figures 2 and 3.

Using as a rule of thumb that (a) greater than twice the mode is possibly anomalous, and (b) greater than three times the mode is probably anomalous. Also, it would appear from Figure 2

and Figure 3 both, since the graphs generally have a uniform gradient after 100 ppm, that values in excess of this figure would be certainly considered anomalous. All the results have been plotted on Maps 5 and 6.

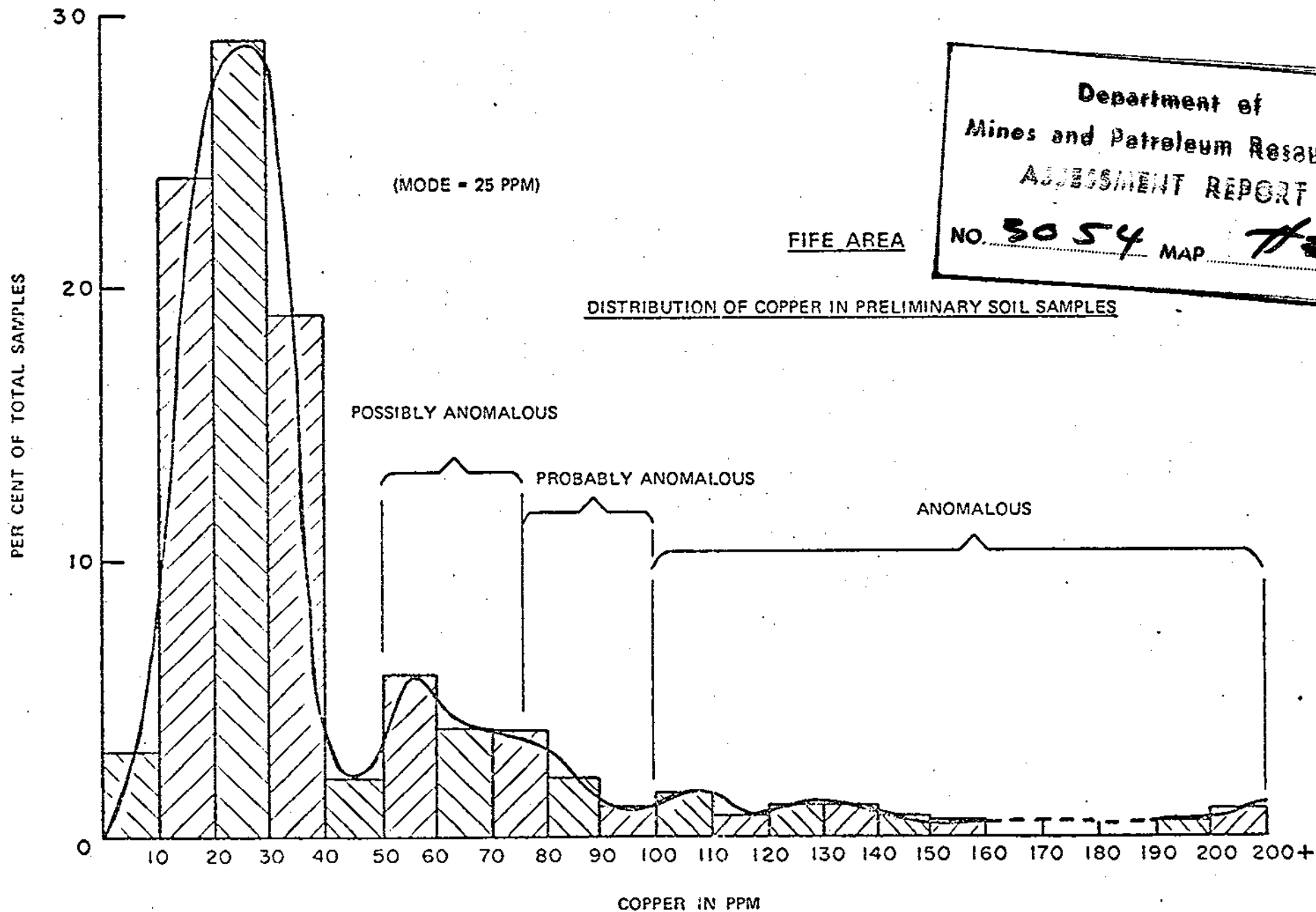
2. Lead and Zinc

The 82 samples which were run for lead and zinc were not sufficient in number or distribution to indicate any obvious pattern. Broadly speaking, the zinc values appear slightly "anomalous" in some areas of corresponding copper highs. At this preliminary stage not enough information is available to attach any significance to this relationship. All the results have been plotted on Map 7.

MAGNETOMETER SURVEY

Approximately 22 miles of cut line were surveyed using a McPhar M700 fluxgate magnetometer which is a vertical field instrument employing the fluxgate system. The M700 is self leveling and a self-cancelling circuit permits rapid and accurate measurement of the earth's magnetic field from a meter without adjustments or major calculations. The instrument can be adjusted electronically to measure vertical fields from plus 100,000 gammas to minus 100,000 gammas. Hence, there is no need for auxiliary magnets or complicated latitude adjustments.

Readings were taken at intervals of 100 feet on lines which were spaced 400 feet apart. Readings were also taken on baselines and tielines at 100 foot intervals. These lines, for the most part, are



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FIFE AREA

DISTRIBUTION OF COPPER IN PRELIMINARY SOIL SAMPLES

FIGURE 2

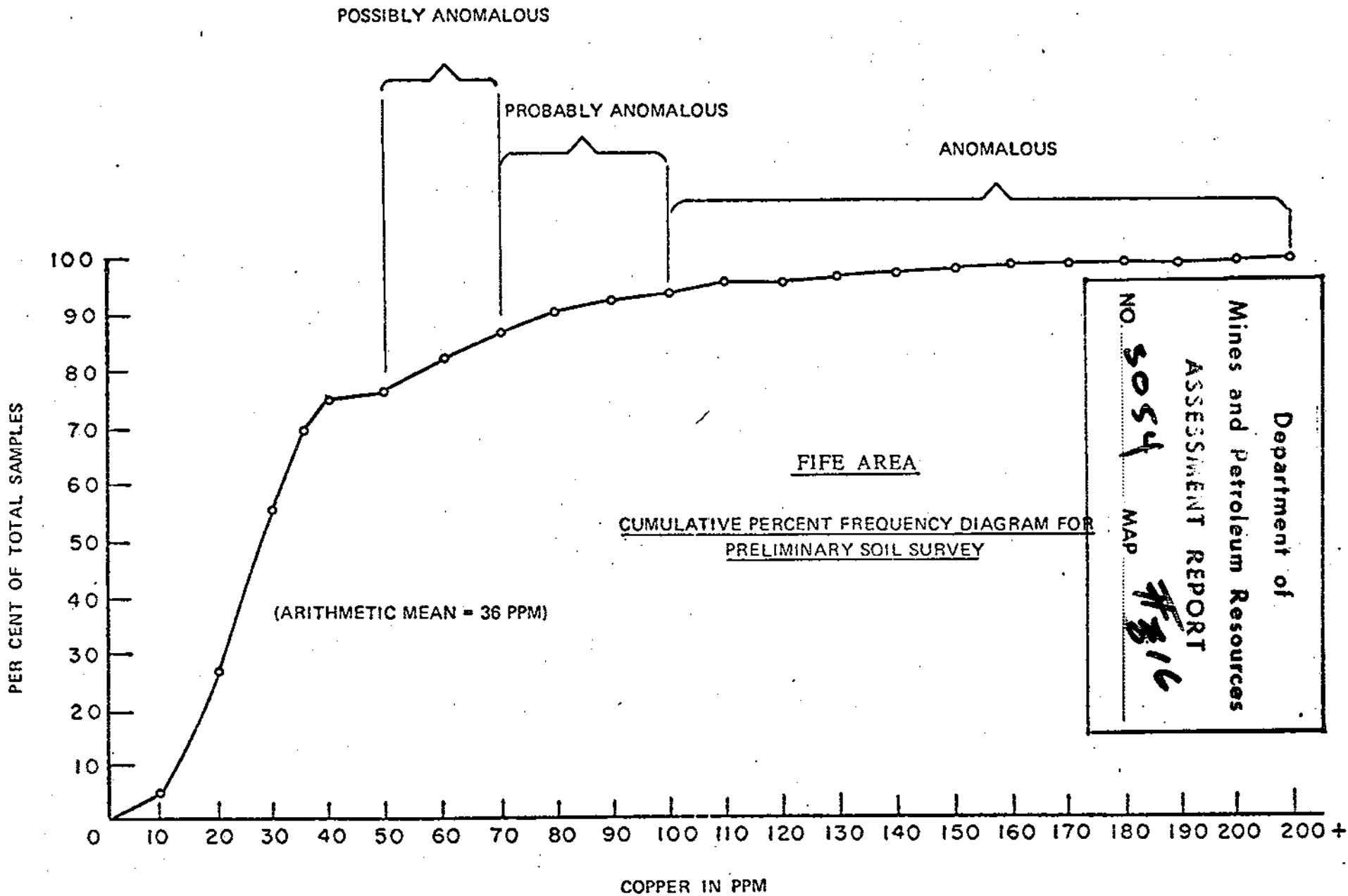


FIGURE 3

spaced 2,000 feet apart. All readings were corrected for diurnal effects to base station readings taken approximately every 45 minutes. A prime base station (0+00 on BL0+00) was read three times a day as a correlative cross-check.

The corrected readings have been plotted and contoured at 200 gamma intervals (see Maps 8 and 9).

Both the Nelson and Coryell intrusive bodies have a fairly sharp magnetic gradient near their respective contacts with the Mount Roberts formation. The magnetic relief in the area of Nelson is somewhat higher than that of the Coryell. A pattern of isolated small highs in some cases correlates with mapped bodies of gabbro and the linears and flat terminations which tend to define these highs indicate a rather interesting possible fault and joint pattern. Some field evidence tends to support this interpretation.

The ground magnetic work has been valuable in correlating the geological mapping. Strong magnetic highs such as the one at 700N on Line 16W and at 100N and 400N on Line 28 strongly suggest the presence of pyrrhotite and/or magnetite associated with the gabbroic intrusions. In these cases cited some field evidence supports this hypothesis.

CONCLUSIONS AND RECOMMENDATIONS

1. Geological

The reconnaissance mapping has indicated a complex geological pattern of intrusives, skarn areas and later faulting, the latter having increased the complexity. The skarn areas have, in varying degrees, been mineralized with iron and copper sulphides. It is recommended that the whole area now covered by cut lines be mapped in detail, particularly to attempt to discover the relationship between faulting, intrusives and the mineralization.

As well as considering the skarn areas, the potential of the Coryell intrusives should not be ignored. The mapping should follow up the geochemical indications (Line 4OE, Baseline 4ON) and attempt to determine a source for this anomaly.

2. Geochemical

The copper soil survey and to a lesser extent the zinc survey has indicated areas of interesting copper anomalies.

It is recommended that a major portion of the existing grid be detailed with soil samples at 100' intervals between the sample points which have already been tested at 400' intervals. This additional information will likely more clearly define the known anomalous zones, and lend more weight to a proper interpretation. Also, all the new lines which have been cut since the completion of the initial geochemical survey should be sampled at 100' intervals. All samples should be tested for copper and zinc.

3. Geophysical

All the new cut grid should be surveyed with a magnetometer on the same basis as the initial survey.

It is recommended that the whole area now covered with the cut line grid should be surveyed with a "JEM" electromagnetic unit. This unit is particularly suitable for this type of rough terrain as the "shoot-back" method will at least partially correct for slope effects.

The magnetometer will continue to give information which when correlated with the mappable geology will give a more accurate geological picture.

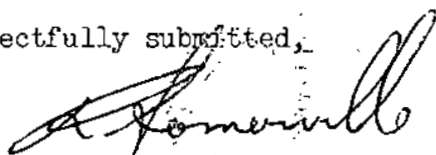
The JEM will, of course, verify any areas where heavy to massive concentrations of sulphides are suspected.

After the above surveys are completed (and of course depending on the results) it would seem likely that at least a portion of the area covered by the grid should be run with an I.P. unit before any consideration is given to drilling.

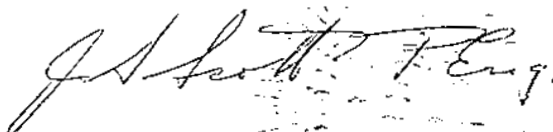
In conclusion, the property continues to show promise of containing a skarn type orebody. In addition, however, there now appears to be indications of mineralization within the intrusives which suggests the potential of a larger scale deposit.

The maps and field procedures were examined and approved by J. S. Scott, P. Eng. The report and maps were prepared by and under the direction of R. Somerville. All field procedures were directly supervised by R. Somerville whose qualifications are attested to by Mr. J. S. Scott, P. Eng.

Respectfully submitted,



R. Somerville
B.A., B.Sc.(Hon.), P.Eng.(Ont.)



STATEMENT OF QUALIFICATIONS

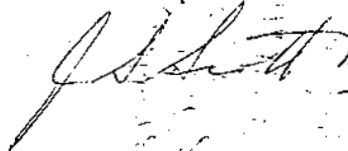
The work referred to in this report which is to be submitted for filing as assessment work was done by Mr. R. Somerville, with the assistance of others in the field.

He was graduated from Queen's University at Kingston, Ontario in 1959 with a degree of Bachelor of Arts, after majoring in geology, physics and mathematics. In 1962, following two years of further study in the geological sciences, he was graduated with a degree of Bachelor of Science with Honours.

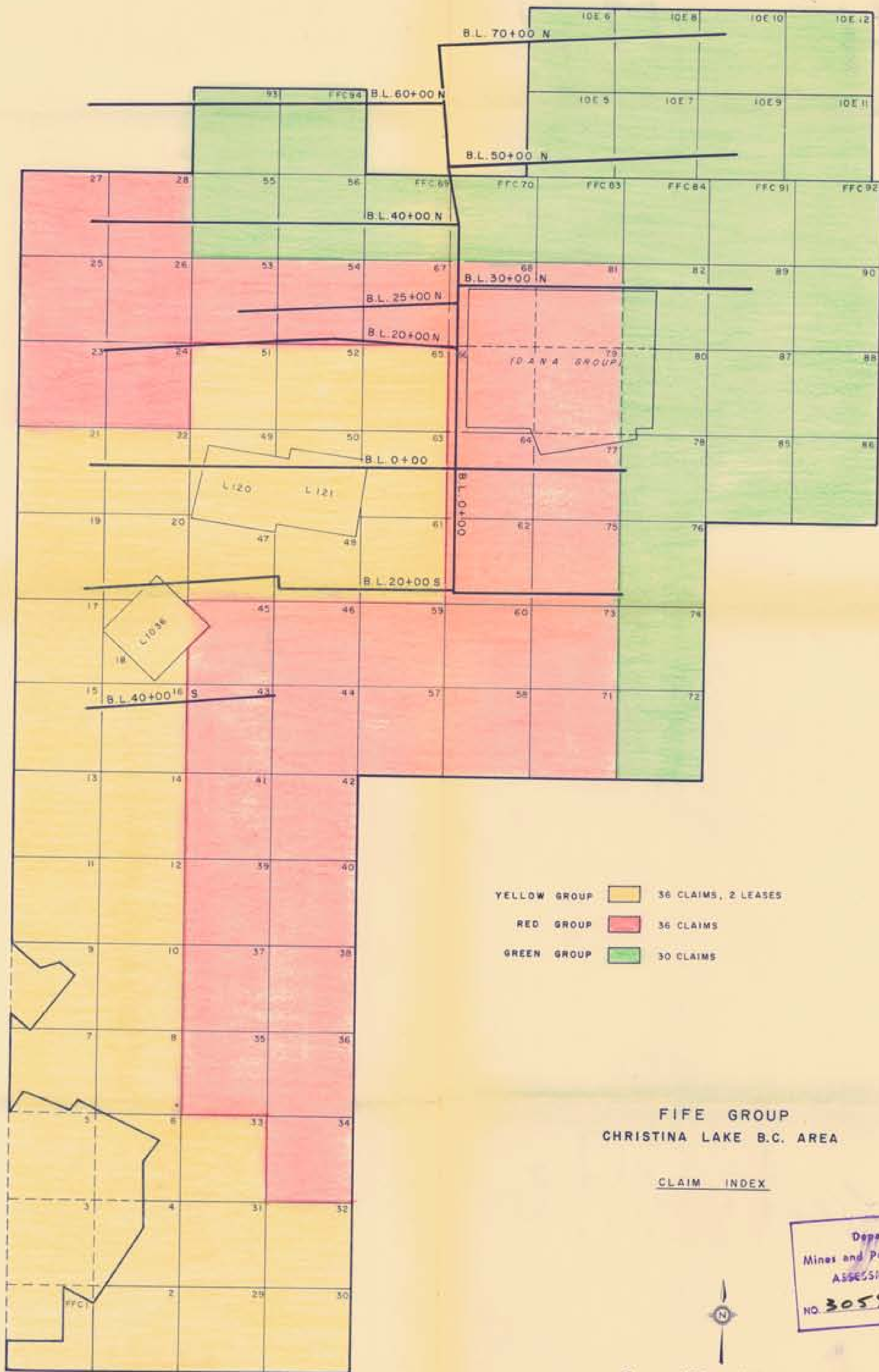
Since that time Mr. Somerville has worked in the mining industry. He held various positions at an operating mine, and finally that of chief geologist. Latterly Mr. Somerville was employed as Senior Exploration Geologist by the Mining Division of Scurry Rainbow Oil Ltd. Currently, he is employed as Party Manager by Imperial Oil Enterprises (Minerals Section).

For six years now Mr. Somerville has been a Fellow of the Geological Association of Canada and recently he was accepted as a member of the Association of Professional Engineers of Ontario.

While doing the work covered by this report Mr. Somerville was directly supervised by Mr. J. S. Scott over whose seal the work is submitted.



J. A. Scott, P. Eng.



- YELLOW GROUP 36 CLAIMS, 2 LEASES
- RED GROUP 36 CLAIMS
- GREEN GROUP 30 CLAIMS

FIFE GROUP
CHRISTINA LAKE B.C. AREA

CLAIM INDEX

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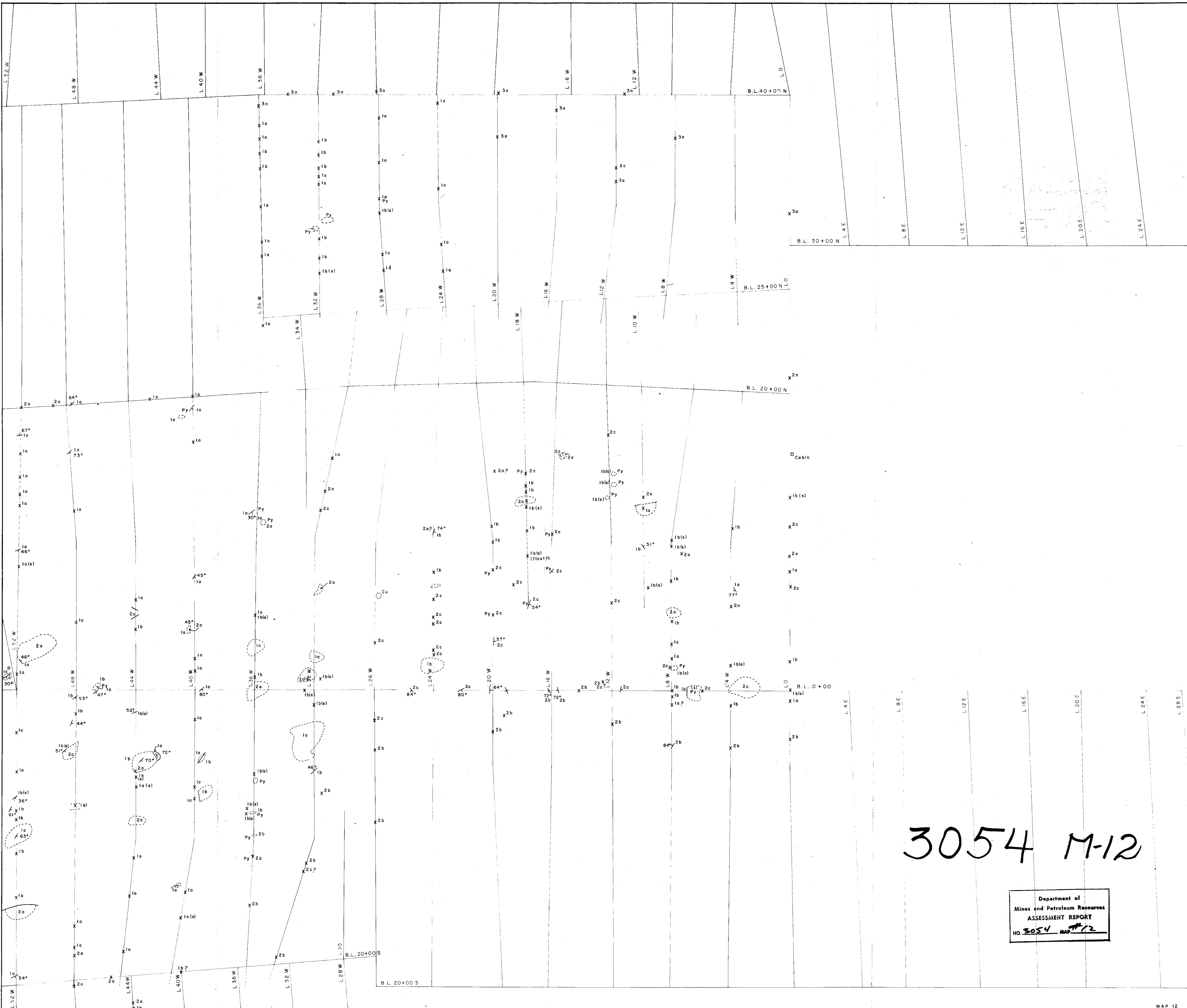


IMPERIAL OIL ENTERPRISES LTD.

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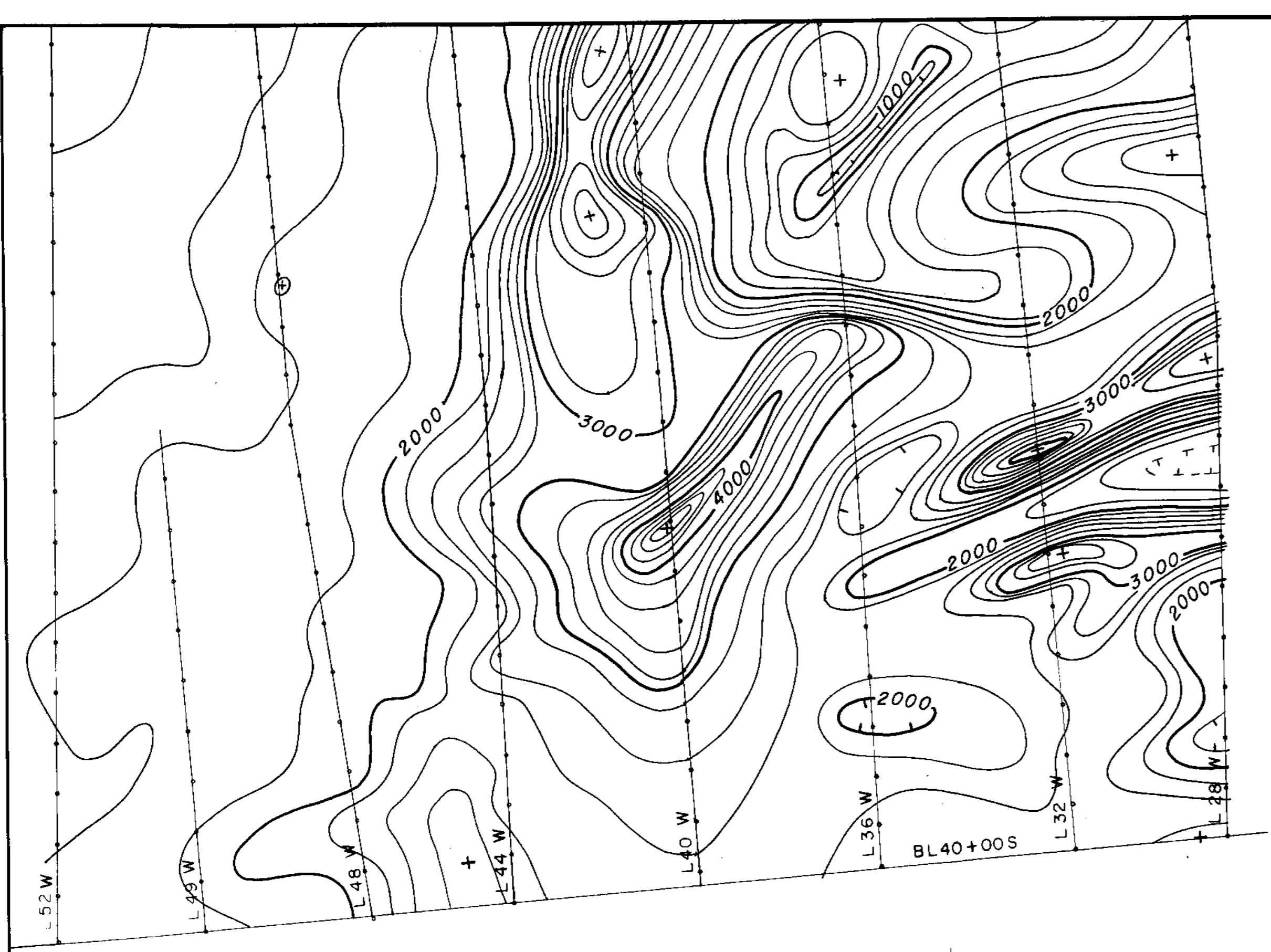




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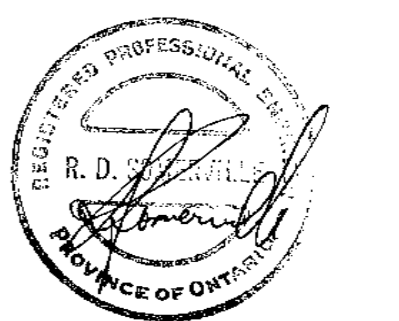
Department of
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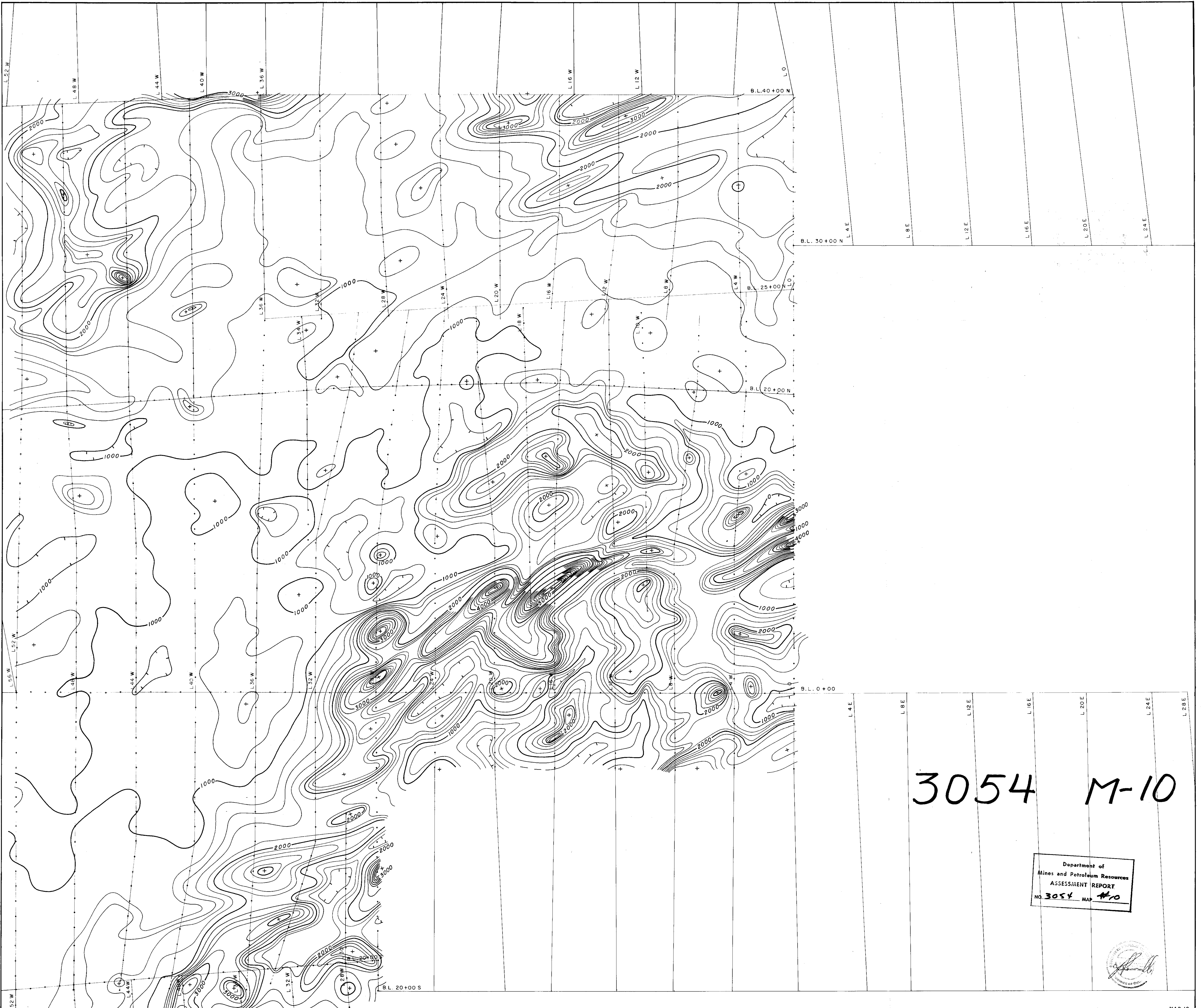
TABLE OF FORMATIONS Paleocene: Gabbro or Felsic Syenite, Syenite Mesozoic: Gabbro, Diorite, Granite Pennsylvanian and/or Permian: Limestone (Shale), Greywacke	MAP CATEGORY TO ACCOMPANY A REPORT BY RICHARD SOMERVILLE MAY 6, 1971	LEGEND Geologist Boundary (---) Fault Location (Intersect) (---) Trench Or Outcrop Area (---) Observation Point (x) Great Scar (s)	CHRISTINA LAKE AREA GREENWOOD MINING DIVISION BRITISH COLUMBIA	DRAWN: [] TRACED: [] APPROVED: []	SCALE: 1" = 200' DATE: NOV 1970 IMPERIAL OIL ENTERPRISES LIMITED FFC CLAIMS FIFE GROUP FIFE - CHRISTINA PROJECT	AREA: 49° 05' LONGITUDE: 116° 15' 82-E-1	MAP 12
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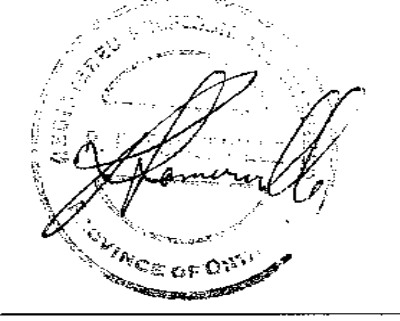
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MAP CATEGORY
MAGNETOMETER
INTERPRETATION
TO ACCOMPANY A REPORT
BY RICHARD SOMERVILLE
MAY 6, 1971

LEGEND
• Control Point
- Contour Interval 200 Gammas

CHRISTINA LAKE AREA
GREENWOOD MINING DIVISION
BRITISH COLUMBIA

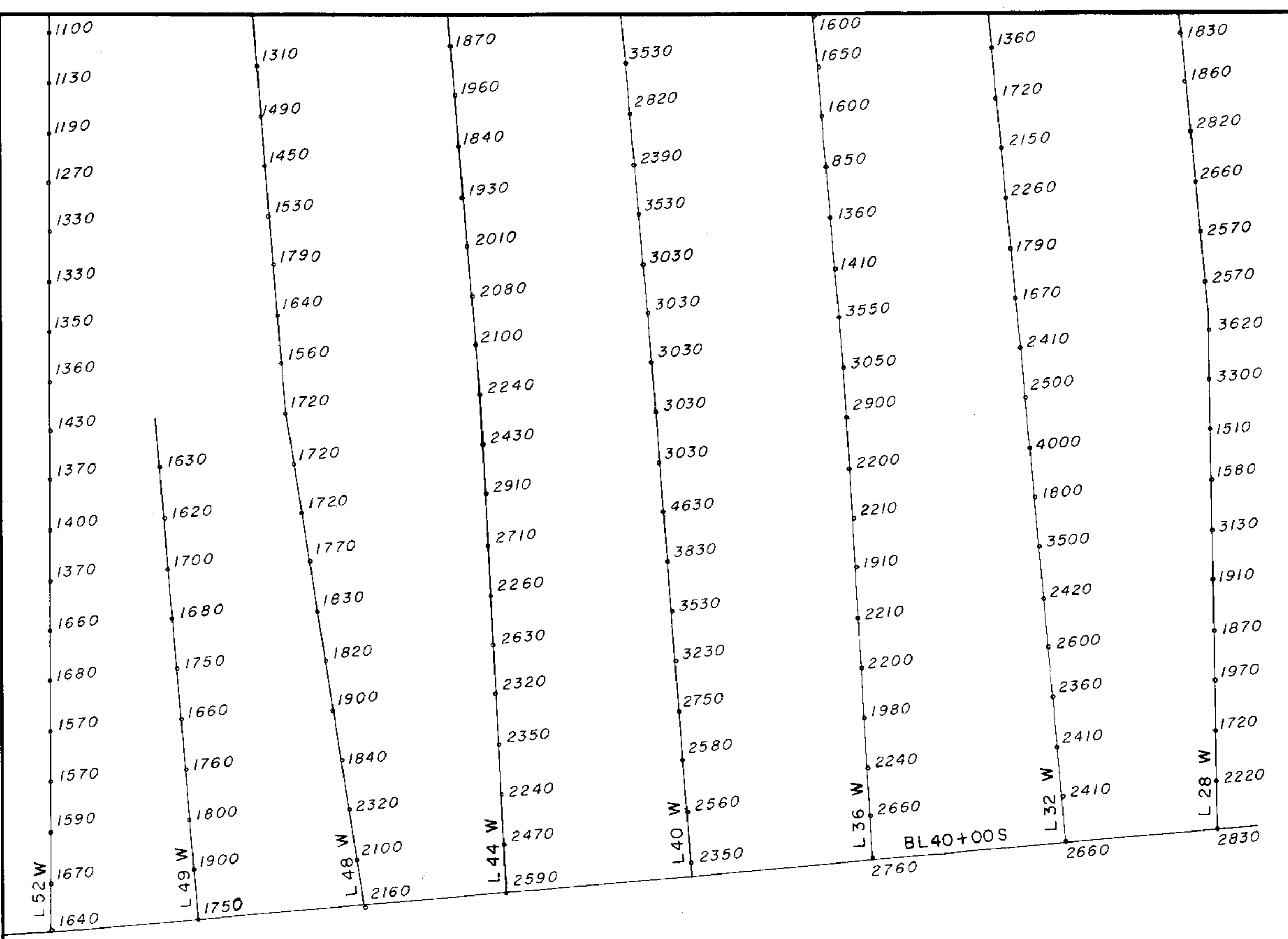
DRAWN
TRACED
APPROVED

SCALE 1"=200'
DATE NOV 1970

IMPERIAL OIL ENTERPRISES LIMITED
FIFE CLAIMS FIFE GROUP
FIFE - CHRISTINA PROJECT

LATITUDE 49° 05'
LONGITUDE 118° 15'
FILE NUMBER NTN 82-E-1

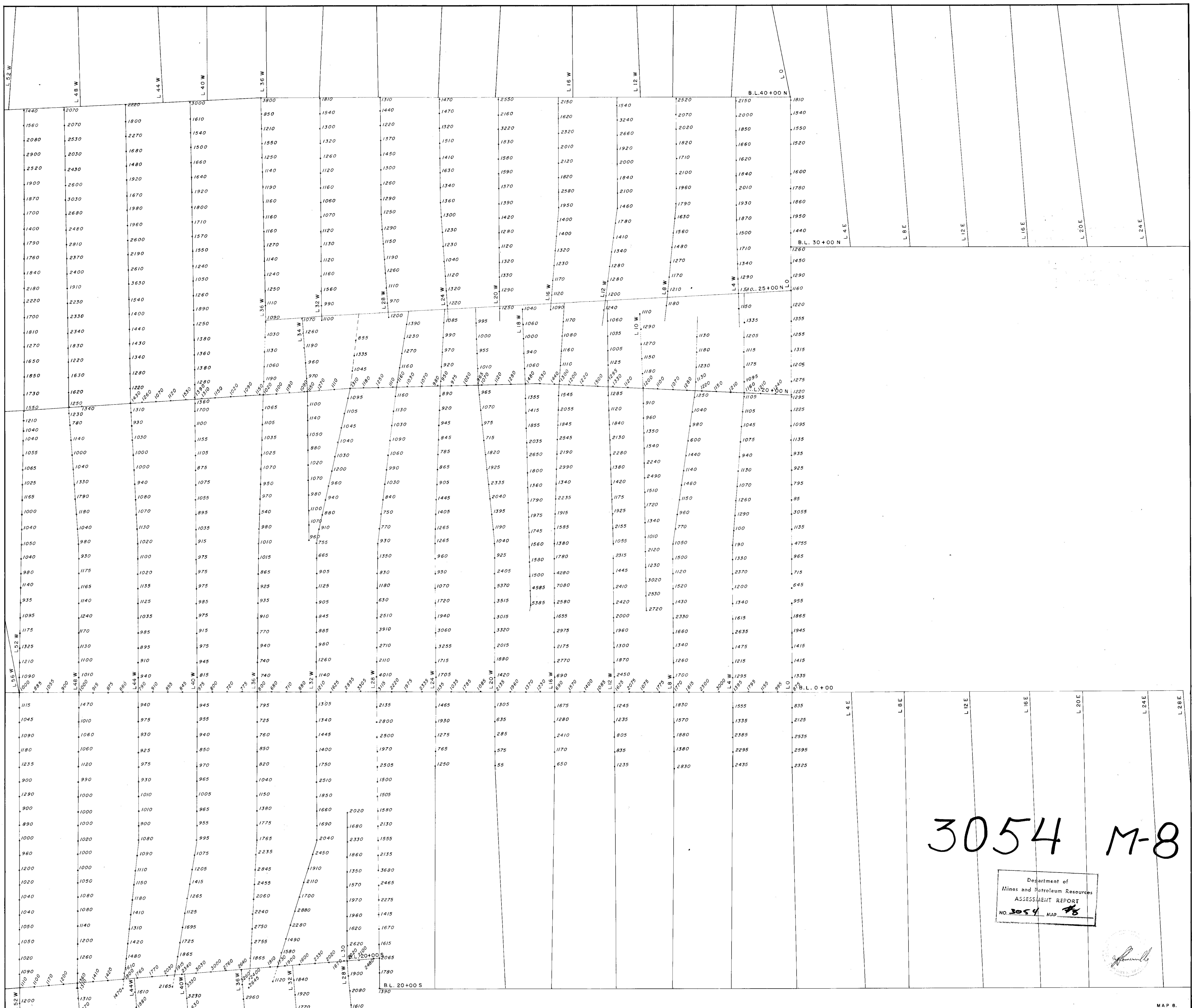
MAP 10



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Amundson

MAP CATEGORY
MAGNETOMETER
(VALUES)

TO ACCOMPANY A REPORT
BY RICHARD SOMERVILLE
MAY 6, 1971

LEGEND
• 2760, Control Point And Value
(Gauss)

CHRISTINA LAKE AREA
GREENWOOD MINING DIVISION
BRITISH COLUMBIA

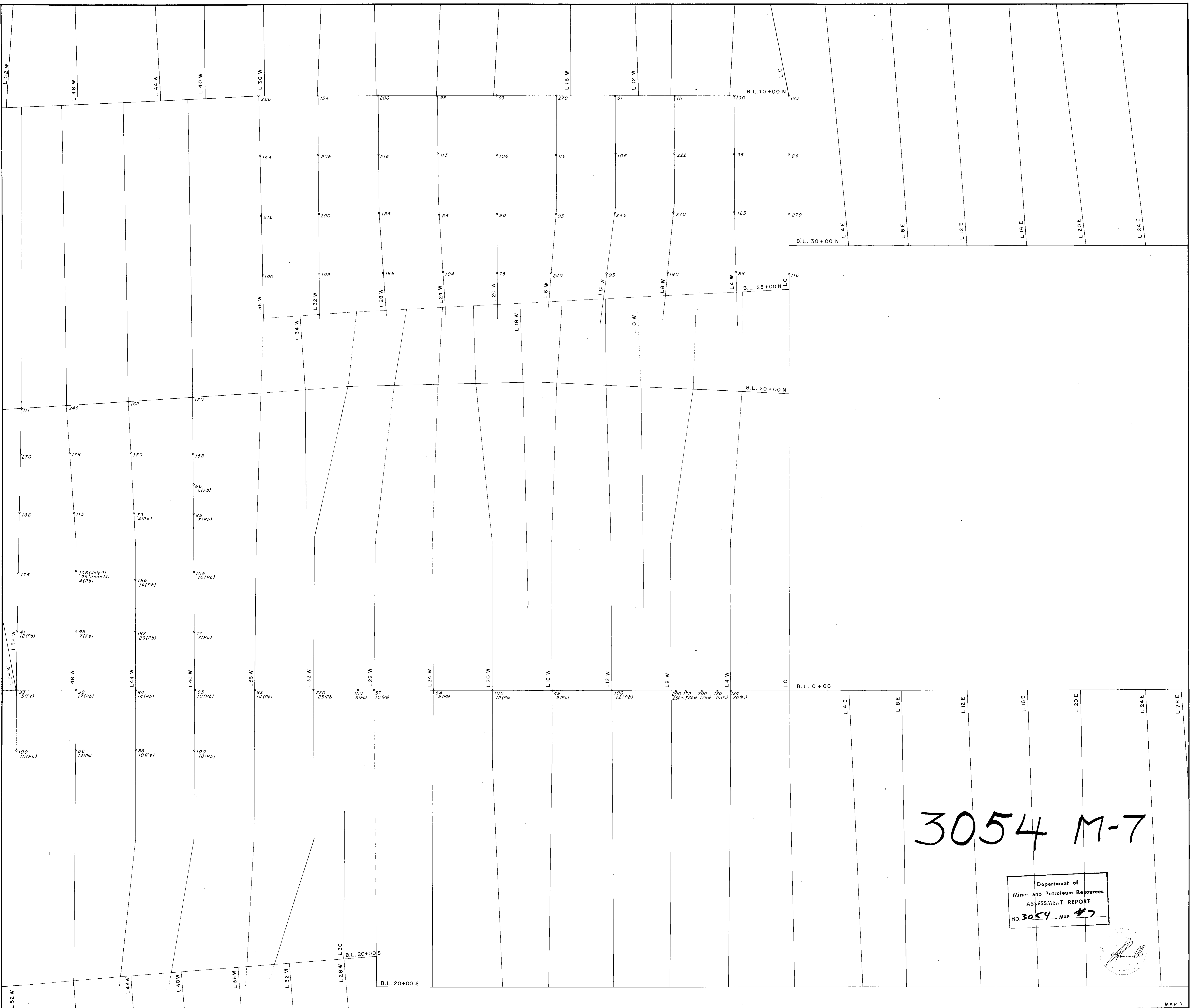
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APPROVED

SCALE 1" = 200'
DATE NOV. 1970

IMPERIAL OIL ENTERPRISES LIMITED
FFC CLAIMS FIFE GROUP
FIFE - CHRISTINA PROJECT

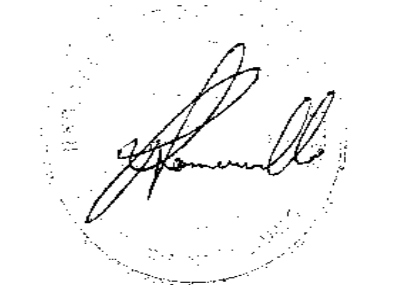
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LONGITUDE 118° 15'
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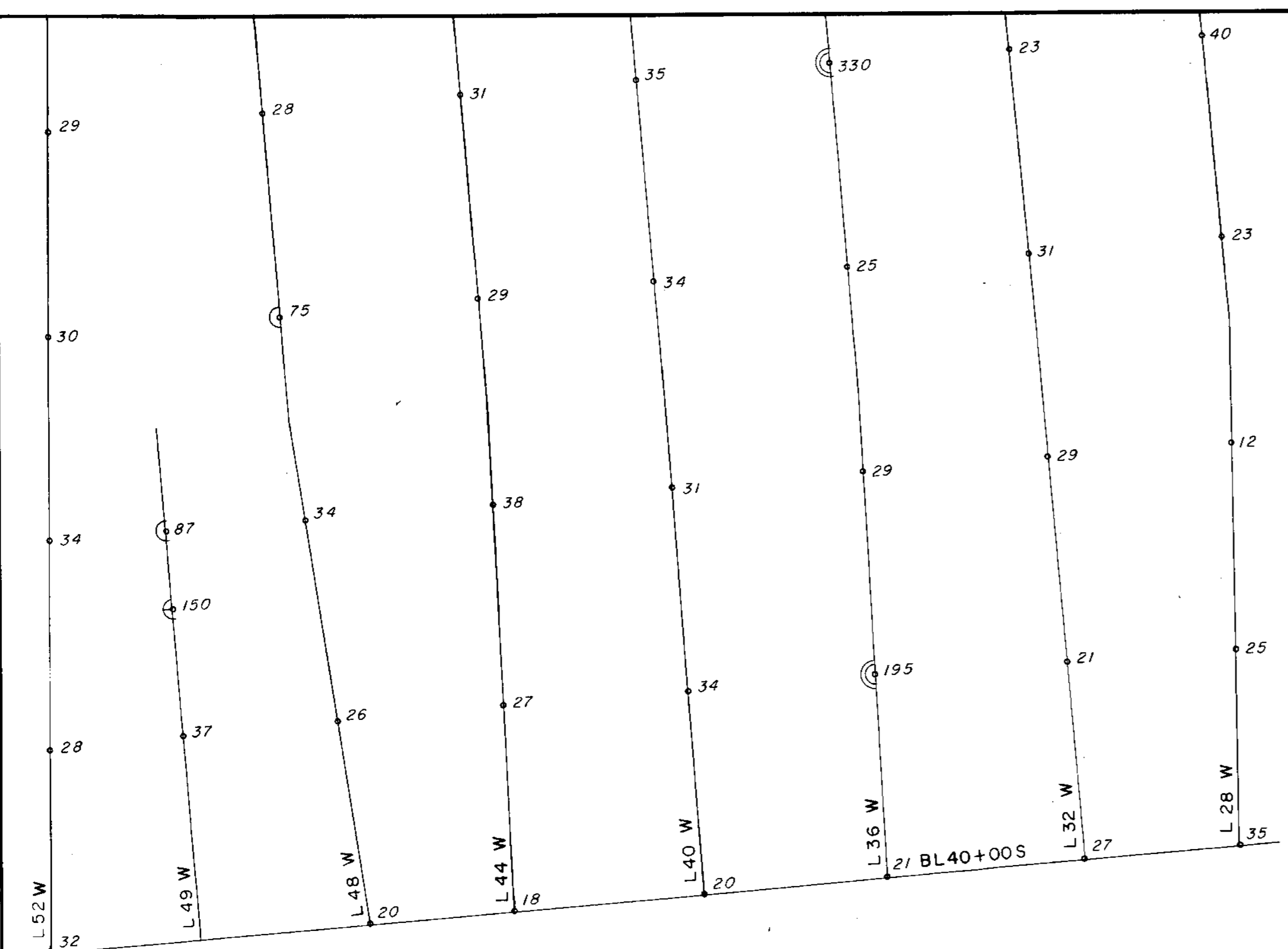
MAP B.
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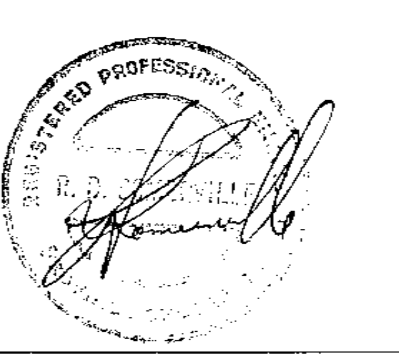
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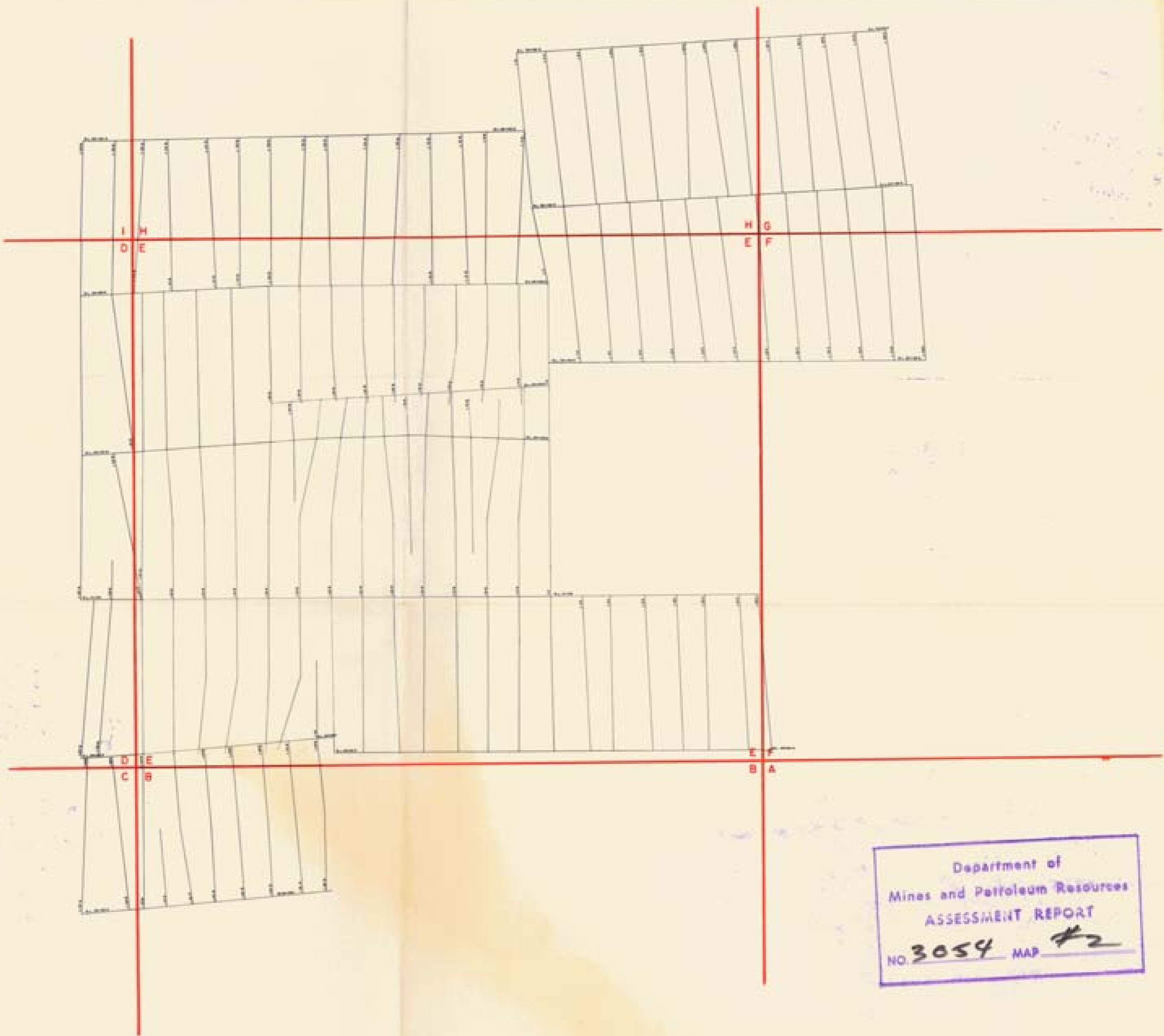
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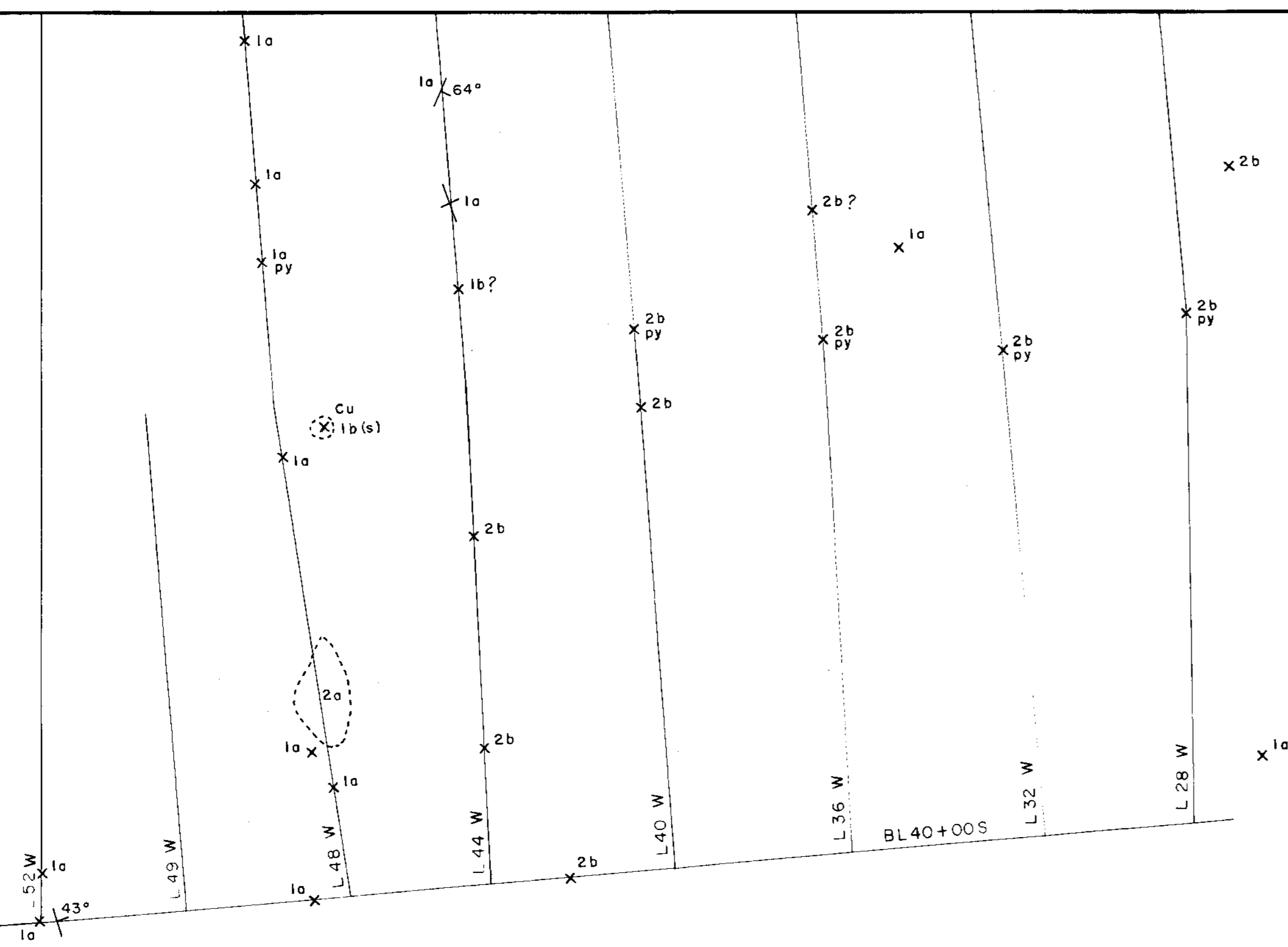
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Location of Maps To Lines Cut

M-2

RAISE PLAN-LINES CUT CHRISTINA LANE AREA
 BRIDGEMOUNT MINING DIVISION BRITISH COLUMBIA
 100 CLAIMS - 100 GROUP
 (LAT. 49°00' LONG. 121°15' NS - E-1:1)
 0 1000 2000
 METERS
 MAP OF BRITISH COLUMBIA

MAP 2.



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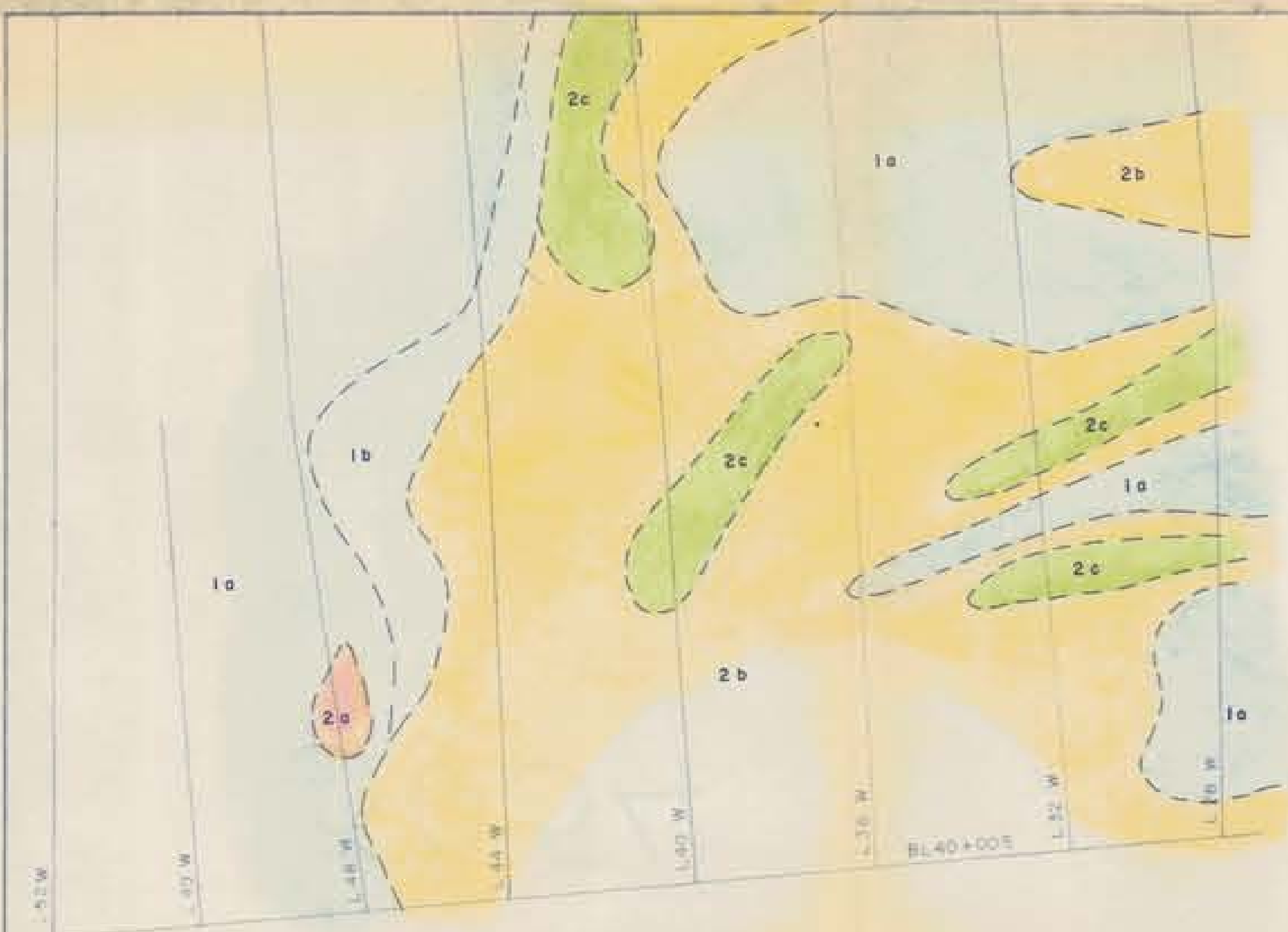


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3054 M-3



TABLE OF FORMATIONS CRYSTAL INTRUSIVES Paleocene: Granite or Ferric Granite, Diorite, Gneiss Mesozoic: Granite		PENNSYLVANIAN AND/OR PERMIAN Mount Robson Formation Cambria Group Grouse		GEOL. BOUNDARY Fault Location (Dotted) Fault (Wavy) Spring Copper Mineralization Pyrite Mineralization Trench		CHRISTINA LAKE AREA GREENWOOD MINING DIVISION BRITISH COLUMBIA MAY 6, 1971		DRAWN: [Signature] TRACED: [Signature] APPROVED: [Signature]		SCALE: 1" = 200' DATE: NOV 1970		IMPERIAL OIL ENTERPRISES LIMITED PFC CLAIMS PIPE GROUP PIPE-CHRISTINA PROJECT		LATITUDE: 49° 00' LONGITUDE: 118° 15' FILE NUMBER: INTD 88-E-1		LITHO DIVISION MAP #3	
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TABLE OF FORMATIONS

PALEOCENE
Cragg Subzone
Galeton or Fentic Basalts
Sandy

MESOZOIC
Sandy
Shale
Gneiss

NEOLITHIC
Sandy
Shale
Gneiss

PENNSYLVANIAN
AND/OR PERMIAN
Mason-Kobler Formation
Limestone (Overs)
Gneiss

PRECAMBRIAN
TRESHNOR
GEOLOGICAL
INTERPRETATION

MAY 6, 1971

Geological Boundary
Basic Location (Color)
Bedding
Copper Mineralization
Zinc Mineralization
Trench

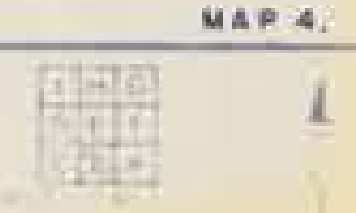
CHRISTINA LAKE AREA
GREENWOOD MINING DIVISION
BRITISH COLUMBIA

DRAWN
SCALE
APPROX.

SCALE 1:200
DATE NOV 1970

IMPERIAL OIL ENTERPRISES LIMITED
SIC CLAIMS - FIRE GROUP
CHRISTINA PROJECT

NOV 1970



MAP 4.