

KENNCO EXPLORATIONS, (WESTERN) LIMITED

Geological, Geochemical and Geophysical Report

on the

Canada Girl Mineral Claims

Liard M.D., B.C.

Situated 3 miles south of Cassiar, B.C.

Latitude 59°15'N

Longitude 129°51'W

by

J. R. Woodcock

P.Eng.

September 24, 1959

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## KENNCO EXPLORATIONS, (WESTERN) LIMITED

### INTRODUCTION

The eight Canada Girl claims are owned by Mr. D. L. Huntsman of San Francisco, California. The claims were examined by Kennco Explorations, (Western) Limited in June 1959. Kennco Explorations, (Western) Limited made a commitment to fulfill the assessment requirements for one year on these claims. The work done during the examination plus a cash payment in lieu of work have been submitted to fulfill this obligation.

Geological mapping was done by J. R. Woodcock and R. Paterson, under the supervision of J. R. Woodcock. Geochemical sampling was done by R. Paterson and R. Gullison, under the supervision of J. R. Woodcock. Geophysical work was done by R. Paterson, R. Gullison and J. R. Woodcock, under the supervision of J. R. Woodcock. The chemical analysis was done by R. Jalbert.

### LOCATION AND ACCESS

The claims are located at latitude 59°15'N; longitude 129°51'W, three miles S.S.W. of the town of Cassiar, B.C. They are situated on a pass between the drainage of Troutline Creek and the drainage of Lang Creek. Most of the claims are above timberline, but Canada Girl claims 7 and 8 are covered by a thick growth of small alpine balsam.

Access can be gained most easily by starting from Cassiar. An abandoned mining road can be followed up Marble Creek to timberline. At timberline one must cross the creek and travel around the north end and along the west side of a limestone ridge. Pack-horses for the trip can sometimes be hired at Cassiar.

### FIELD METHODS:

Geology: The rock types on the claims and in the vicinity were mapped using aerial photographs (1" = 1/2 mile) as a base.

A map with scale 1" = 400 feet was made in the claim area. Individual outcrops are indicated except where total percentage of outcrops is very high. The geology was plotted on a contour map with 100 foot contour interval. Horizontal control consisted of a combination of tape-and-compass surveying around the showings, lines run for the geophysical work, and pace-and-compass traverses. Corrected barometer readings were used for vertical control.

A sampling plan on scale 1" = 50' was made around the mineral showings. The trenches were cleaned out and chip samples were taken for assays.

Geophysics: Self potential lines were run across the mineralized area in two directions. As the results were unsatisfactory, the work was discontinued.

Geochemistry: Soil samples were taken along the geophysical lines and also near seepages along the foot of the steep slope on the Canada Girl claims 7 and 8. The soil profile was very poorly developed and most of the samples consisted of rusty disintegrated rock.

These samples were assayed for molybdenum content in the company's field laboratory by R. Jalbert, and the results were plotted on the scale of 1" = 400'.

### GENERAL GEOLOGY

The Canada Girl claims lie along the eastern margin of the Cassiar Batholith, where the batholithic rocks intrude Cambrian sediments of the Atan Group.

Atan Group: In the area mapped, the Atan Group consists of about 3500 feet of limestone which is overlain by about 1800 feet of black slate, and another 1000 feet of limestone. These strata are part of the southwest limb of a major syncline. The lower limestone horizon has been intruded by batholithic rocks.

Batholithic Rocks: On the basis of field work, the acid igneous rocks have been divided into three types - granite, quartz-feldspar porphyry and quartz-monzonite.

The granite is porphyritic and contains pink orthoclase phenocrysts which are up to two inches long. The mafic minerals consist of biotite, hornblende and minor amounts of muscovite.

Quartz-feldspar porphyry (porphyritic quartz-latitude) is the rock with which the molybdenum is associated. The phenocrysts of quartz and feldspar are variable in size. They have a maximum dimension of 3/8 inch, but they grade downward in size until they merge with the matrix. The matrix is pinkish to light grey in color, and the grain size varies from aphanitic to fine-grained phaneritic. Flakes of biotite up to 1/4 inch in diameter are scattered throughout. This rock type grades, with increasing grain size, into quartz-monzonite.

The quartz-monzonite is an even, medium-grained rock in the vicinity of the quartz-feldspar porphyry. However, in places, it contains phenocrysts of pink orthoclase (usually under 1/2 inch long) and conspicuous phenocrysts of quartz (up to 1/2 inch in diameter).

In addition to the acid igneous intrusions, dikes of biotite-lamprophyre occur. Although these intrude most of the rock types, none were seen on the Canada Girl claims.

Alteration and Mineralization: The Atan limestones have been altered to a hard fine-grained skarn along their contact with the batholith. This skarn zone contains copper-bearing pyrrhotite lenses.

Irregular dolomitization occurs throughout the limestone; and in places, the dolomite carries pods of magnetite-galena-silver mineralization.

#### MOLYBDENUM MINERALIZATION

The molybdenite of the Huntsman claims occurs as a dissemination in the middle of a small quartz-feldspar porphyry stock. Minor amounts of disseminated pyrite are associated with the molybdenite, and in Trench No. 1, sparse chalcopyrite mineralization occurs. The molybdenite is evenly distributed in the rock and does not occur along or close to fractures. In places, it occurs as scattered irregular rosettes which are up to 1/2 inch in diameter.

A few small vuggy pockets occur in the porphyry. These contain euhedral crystals of quartz, molybdenite and pyrite.

In addition to the disseminated quartz-free mineralization, molybdenite was found in a few small quartz stringers in the quartz-monzonite near the centre of Canada Girl No. 1 claim and in a quartz vein in the fault along the south side of Canada Girl No. 4 claim.

Control: The disseminated molybdenite is confined to the quartz-feldspar porphyry, but any control within the porphyry is not apparent. A characteristic set of closely spaced, irregular fractures with attitude 10°/85°W occurs in much of the porphyry. However in Trench No. 1 where the best mineralization occurs, this set is lacking.

Extent and Grade: The quartz-feldspar porphyry is bounded on the east and west sides by quartz-monzonite, and on the north by granite.\* Its southern boundary is hidden by the overburden of Lang Creek valley. It appears to be confined to an area about 1500 feet square.

The mineralized porphyry is practically surrounded by barren rock in outcrops and in float. It is confined to an area less than 400 feet square. The trenches and outcrops with the best mineralization were sampled. This work showed about 5000 tons per vertical foot grading 0.08% molybdenum.

Some molybdenite-bearing float was found in the bed of the dry creek in the south part of Canada Girl No. 8 claim. The source for this float was not determined.

\* The upper limit of porphyry float was taken as the contact.

## GEOPHYSICS

A few lines of self potential were run in two directions across the mineral showing to see if the deposit was amenable to this type of geophysical investigation.

No large anomalies were found, and the variations in readings were caused by unsettled weather conditions and by changes in type and thickness of overburden. While the work was in progress on the Canada Girl Mineral Claims, magnetic storms occurred daily. This caused fluxations in the readings and some of the lines were re-surveyed.

Most of the larger variations in readings are due to overburden differences. This was particularly noticeable when crossing the moraine at S 10+00 on line 0+00. A persistent drop of about 50 millivolts was noted at the upper contact of this coarse boulder moraine.

Self potential is not a satisfactory method of investigating the Huntsman molybdenum showing. The amount of pyrite in the rock is less than .05% and the total sulphide content is less than 1%. Consequently the amount of oxidation is too low to cause any significant self potential.

## GEOCHEMISTRY

Analytical Procedure: The soil is dried and sieved with an 80-mesh screen. A 1-gram sample is digested with nitric acid. Water is added to the residue and the resulting solution is tested for molybdenum. Hydrochloric acid and potassium thiocyanate are added to the solution. Amyl acetate is then added and this turns various shades of yellow depending on amount of molybdenum present.

Geochemical Results: The results, which had a maximum value of 22,000 p.p.b., were plotted and contoured. The map outlines the mineralized porphyry with amazing accuracy and indicates that sampled trenches are in the area of richest molybdenum.

The overburden, consisting of talus and moraine, on the south part of Canada Girl claim No. 8 is thick enough to make surface soil samples unreliable. The water seepages from this area come to surface at the foot of the slope (line S 27+50). Soil samples were taken along this line, but no significant values were obtained.

CONCLUSIONS AND RECOMMENDATIONS

The soil sampling outlined the mineralized rock and illustrated that such work is very applicable to exploration on molybdenite showings if the overburden is shallow.

The self potential work indicated that this method of geophysical investigation is unsuitable.

The porphyry intrusive which contains the molybdenite appears to be very small, and the area of molybdenite mineralization is less than 400 feet square. Sampling in this area revealed approximately 5000 feet per vertical foot grading 0.08% molybdenum. Fms

No further work is warranted.

EXPENDITURES

| <u>Name</u>   | <u>Rate of Pay</u> | <u>Days</u> | <u>Total Cost</u> | <u>Distribution</u> |                 |                 |
|---------------|--------------------|-------------|-------------------|---------------------|-----------------|-----------------|
|               |                    |             |                   | <u>Geology</u>      | <u>Geophys.</u> | <u>Geochem.</u> |
| R. Jalbert    | 12.50              | 3           | 37.50             |                     |                 | \$ 37.50        |
| R. Paterson   | 12.00              | 8           | 96.00             |                     | \$ 60.00        | 36.00           |
| R. Gullison   | 11.00              | 8           | 88.00             |                     | 55.00           | 33.00           |
| J.R. Woodcock | 35.00              | 9           | 315.00            | <u>\$210.00</u>     | <u>75.00</u>    | <u>30.00</u>    |
|               |                    |             |                   | \$210.00            | \$190.00        | \$136.50        |

Claims on which assessment work is being applied.

| <u>Claim</u>   | <u>Tag No.</u> | <u>Distribution of Work</u> |                   |                | <u>Cash</u> | <u>Total</u> |
|----------------|----------------|-----------------------------|-------------------|----------------|-------------|--------------|
|                |                | <u>Geology</u>              | <u>Geophysics</u> | <u>Geochem</u> |             |              |
| Canada Girl #1 | 236328         | \$100.00                    |                   |                |             | \$100.00     |
| " "            | 2 236329       | 100.00                      |                   |                |             | 100.00       |
| " "            | 3 236330       |                             |                   | \$100.00       |             | 100.00       |
| " "            | 4 236331       |                             |                   |                | \$100.00    | 100.00       |
| " "            | 5 302102       |                             |                   |                | 100.00      | 100.00       |
| " "            | 6 302103       |                             |                   |                | 100.00      | 100.00       |
| " "            | 7 302104       |                             | \$100.00          |                |             | 100.00       |
| " "            | 8 302105       | 10.00                       | 90.00             |                |             | 100.00       |

Vancouver, B. C.

  
J. R. Woodcock

September 22nd, 1959

*[Faint, mostly illegible text, possibly a stamp or official letter content]*



### LEGEND

#### QUATERNARY

5 Overburden: gravel, talus, moraine

#### MESOZOIC

4 Quartz-feldspar porphyry, quartz-monzonite

3 Granite, quartz-monzonite, aplite

#### CAMBRIAN (ATAN GROUP)

2 Limestone, dolomitized in places

1 Black slate, limy phyllite

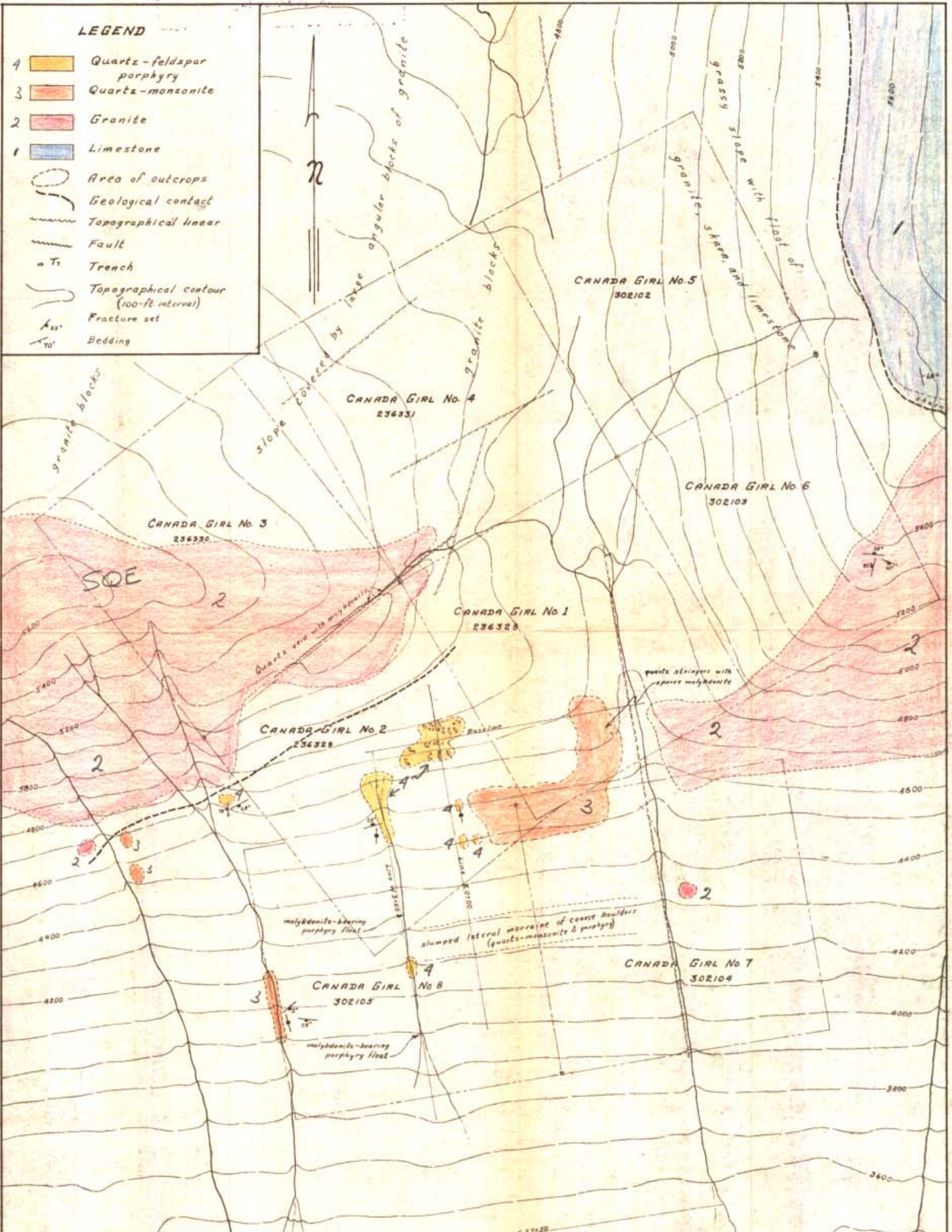


Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. **277** MAP **#1**

|                                                                |                  |               |
|----------------------------------------------------------------|------------------|---------------|
| NORTHWESTERN EXPLORATIONS LIMITED                              |                  |               |
| Geology in vicinity of<br>HUNTSMAN MOLYBDENUM<br>CASSIAR, B.C. |                  |               |
| DATE:                                                          | DRAWN BY: J.R.W. | PLATE NO.:    |
| REVISED BY:                                                    | DATE:            | SCALE:        |
|                                                                |                  | 1" = 1/2 mile |

**LEGEND**

- 4  Quartz-feldspar porphyry
- 3  Quartz-monzonite
- 2  Granite
- 1  Limestone
- Area of outcrops
- Geological contact
- Topographical linear
- Fault
- Trench
- Topographical contour (100-ft interval)
- Fracture set
- Bedding



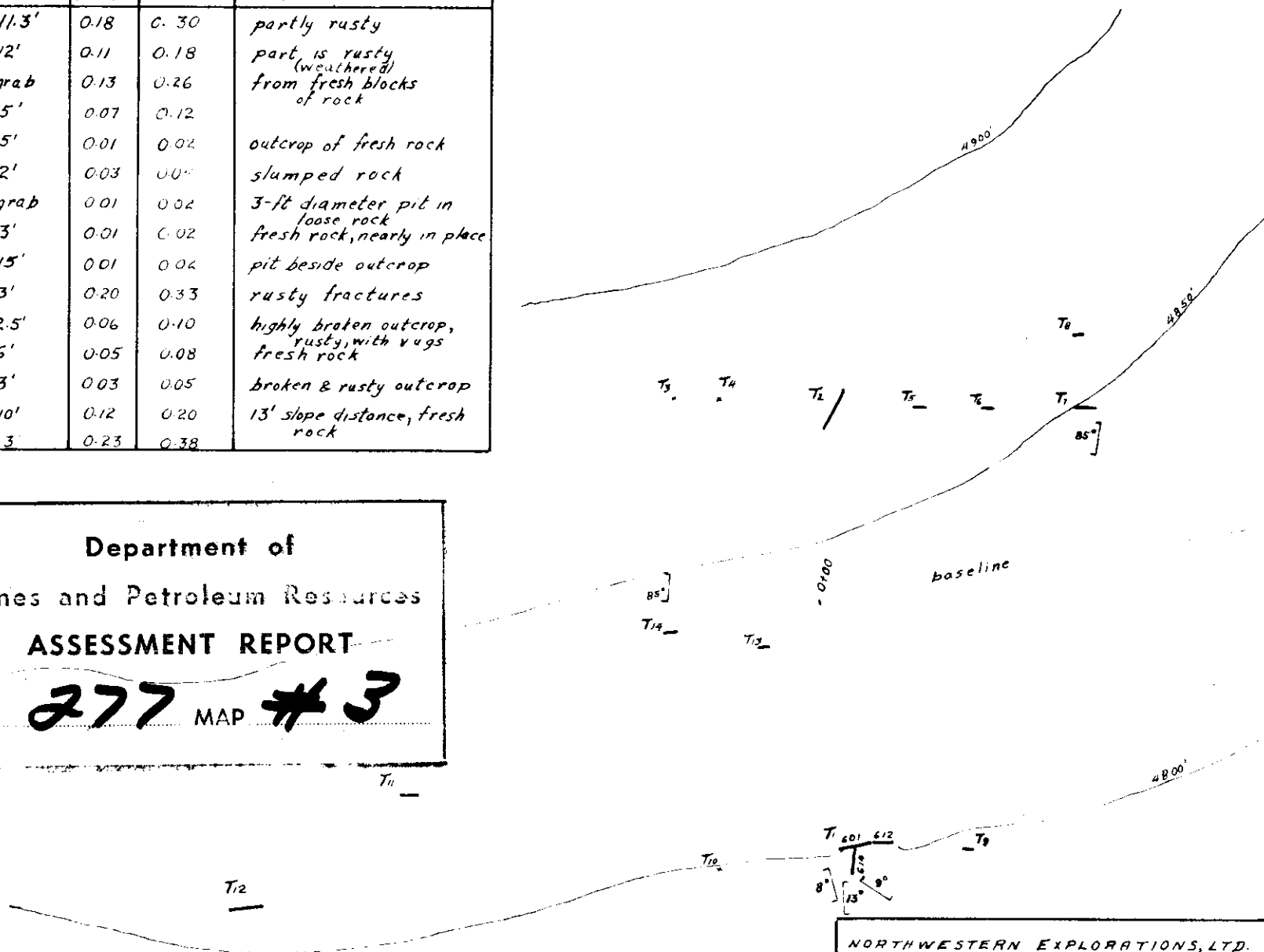
Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 277 MAP #2

**NORTHWESTERN EXPLORATIONS LIMITED**  
 Geology of  
 HUNTSMAN MOLYBDENUM  
 CASSIAR, B.C.  
 DATE Aug, 1959 DRAWN BY J.R.D. PLATE NO.  
 REVISION BY DATE SCALE  
 1" = 400'

| SAMPLE | TRENCH          | LENGTH | Mo%  | MoS <sub>2</sub> % | COMMENT                                     |
|--------|-----------------|--------|------|--------------------|---------------------------------------------|
| 601    | T <sub>1</sub>  | 11.3'  | 0.18 | 0.30               | partly rusty                                |
| 602    | T <sub>12</sub> | 12'    | 0.11 | 0.18               | part, is rusty                              |
| 603    | T <sub>12</sub> | grab   | 0.13 | 0.26               | (weathered)<br>from fresh blocks<br>of rock |
| 604    | T <sub>11</sub> | 5'     | 0.07 | 0.12               |                                             |
| 605    | T <sub>7</sub>  | 5'     | 0.01 | 0.02               | outcrop of fresh rock                       |
| 606    | T <sub>8</sub>  | 2'     | 0.03 | 0.02               | slumped rock                                |
| 607    | T <sub>6</sub>  | grab   | 0.01 | 0.02               | 3-ft diameter pit in<br>loose rock          |
| 608    | T <sub>5</sub>  | 3'     | 0.01 | 0.02               | fresh rock, nearly in place                 |
| 609    | T <sub>2</sub>  | 15'    | 0.01 | 0.02               | pit beside outcrop                          |
| 610    | T <sub>14</sub> | 3'     | 0.20 | 0.33               | rusty fractures                             |
| 611    | T <sub>13</sub> | 2.5'   | 0.06 | 0.10               | highly broken outcrop,<br>rusty, with vugs  |
| 612    | T <sub>1</sub>  | 6'     | 0.05 | 0.08               | fresh rock                                  |
| 613    | T <sub>9</sub>  | 3'     | 0.03 | 0.05               | broken & rusty outcrop                      |
| 614    | T <sub>1</sub>  | 10'    | 0.12 | 0.20               | 13' slope distance, fresh<br>rock           |
| 615    | T <sub>4</sub>  | 3'     | 0.23 | 0.38               |                                             |

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ASSESSMENT REPORT

NO. **277** MAP **#3**

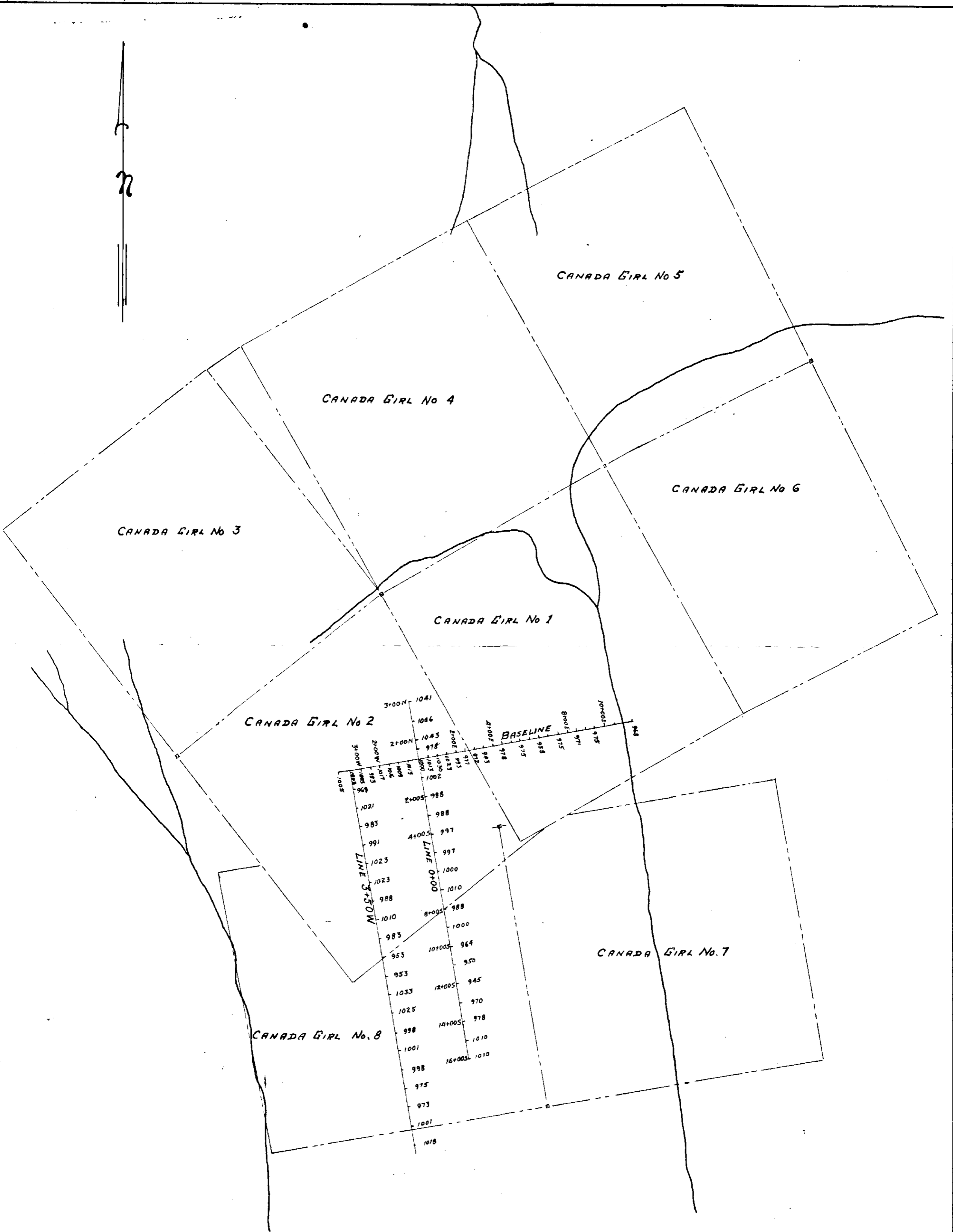


NORTHWESTERN EXPLORATIONS, LTD.

HUNTSMAN MOLYBDENUM

ASSAY PLAN

SCALE: 1" = 50'



277

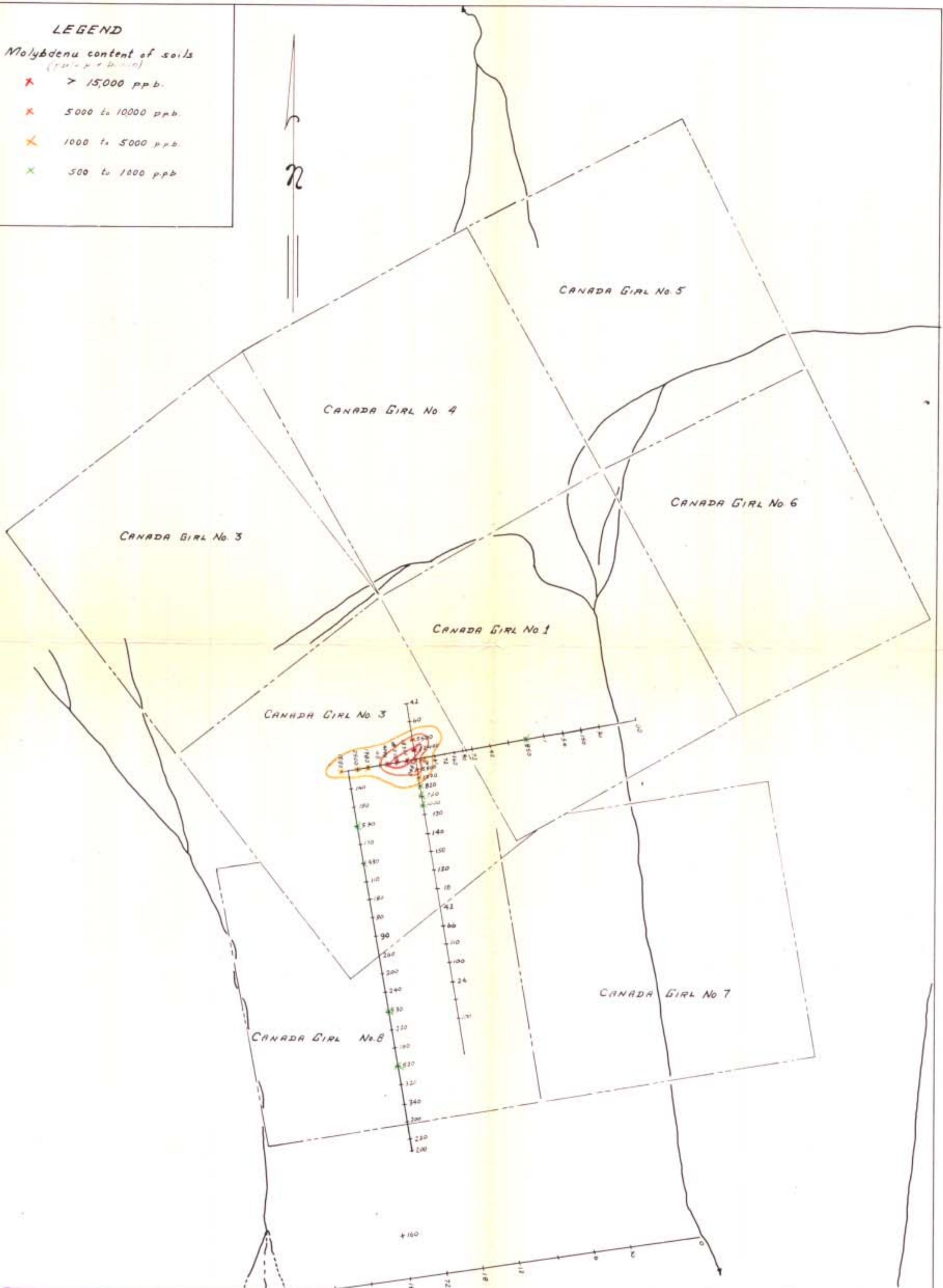
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ASSESSMENT REPORT  
NO. 277 #4

NORTHWESTERN EXPLORATIONS LIMITED  
Self Potential  
(in millivolts)  
HUNTSMAN MOLYBDENUM  
CASSIAR, B.C.  
DATE: Aug, 1959 DRAWN BY: J.R.W. PLATE NO.  
REVISED BY: DATE: SCALE:  
1" = 400'

**LEGEND**

Molybdenum content of soils  
(ppm - parts per million)

- ★ > 15,000 ppb.
- ✖ 5000 to 10000 ppb.
- ✧ 1000 to 5000 ppb.
- ✱ 500 to 1000 ppb.



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G.E.T. REPORT  
NO. **277** MAP #5

**277**

|                                                         |                  |           |
|---------------------------------------------------------|------------------|-----------|
| NORTHWESTERN EXPLORATIONS LIMITED                       |                  |           |
| Geochemistry on<br>HUNTSMAN MOLYBDENUM<br>CASSIAR, B.C. |                  |           |
| DATE: Aug, 1959                                         | DRAWN BY: J.R.W. | PLATE NO. |
| REVISED BY:                                             | DATE:            | SCALE:    |
|                                                         |                  | 1" = 400' |