

758

REPORT ON
SOIL SAMPLING AND GEOLOGICAL MAPPING
ON PROPERTY OF
NATIONAL EXPLORATIONS LIMITED

Claims surveyed:

Grade Nos. 1-12 incl., 14-17 incl., 28 FR, 29-38 incl.,
47-58 incl., 61 FR, 100-107 incl., 110-112
incl., 114-120 incl., 121 FR

ALG 1-12 incl., 14-27 incl.

ELM 1-12 incl., E, F, G, H

T 1-6 incl.

DA 1-12 incl., 14-37 incl., 38 FR, 100 FR

GR 1-12 incl., 14-25 incl.

DAKO 1-8 incl.

which are located six miles west of the town of Endako, B.C.,
at 54°08' north latitude and 125°10' west longitude.

The survey was conducted during the period September 30, 1965,
to February 25, 1966.

The field work was carried out by Messrs. C. T. Pasioka,
A. Gray, and R. Duthie.

The report is written by E. Amendolagine, P. Eng., Geologist.

SULMAC EXPLORATION SERVICES LIMITED

MARCH 7, 1966

**REPORT ON
SOIL SAMPLING AND GEOLOGICAL MAPPING
ON PROPERTY OF
NATIONAL EXPLORATIONS LIMITED**

**ENDAKO AREA
OMINECA MINING DIVISION
PROVINCE OF BRITISH COLUMBIA**

SULMAC EXPLORATION SERVICES LIMITED

MARCH 7, 1966

CONTENTS

	<u>Page</u>
Summary	1
Introduction	2
Property and Location	2
Surveys and Work Performed	3
Geochemical Survey	3
Discussion of Geochemical Results	5
Geological Report	6
Conclusions and Recommendations	13

Appendix

Certification

In Pocket: Maps (2) on
#1 & 2 Geological and Geochemical Survey
Scale 1" = 400'

REPORT ON
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ENDAKO AREA
OMINECA MINING DIVISION
PROVINCE OF BRITISH COLUMBIA

Summary

The geochemical and geological survey conducted on the National Explorations Limited property situated in the Endako area, Omineca Mining Division, Province of British Columbia, has indicated favourable molybdenum possibilities.

The geochemical survey has produced two low lying anomalies which cover an extensive area. Both anomalies, although of low intensity, are geologically favourably situated. The larger of the two anomalies extends over an area of 10,000 feet by 2,500 feet.

The favourable geochemical and geological indications warrant that the property be further investigated by diamond drilling and bulldozing to further determine the validity of the indications.

Introduction

This report summarizes the geochemical soil sampling and geological mapping carried out on the National Explorations Limited property in the Endako area, Omineca Mining Division, Province of British Columbia. The report includes a plan indicating the geochemical results and the geological mapping.

The survey was conducted by Sulmac Exploration Services Ltd. during the period of September 30, 1965 to February 25, 1966. The major portion of the geology and geological report was correlated and compiled by Mr. A. Gray. A list of the personnel associated with the operation is indicated in the appendix.

Property and Location

The property consists of 177 contiguous unpatented mining claims recorded as:

Grade Nos. 1-12 incl., 14-17 incl., 28 FR, 29-38 incl.,
47-58 incl., 61 FR, 100-107 incl., 110-112 incl.,
114-120 incl., 121 FR

ALG 1-12 incl., 14-27 incl.

ELM 1-12 incl., E, F, G, H

T 1-6 incl.

DA 1-12 incl., 14-37 incl., 38 FR, 100 FR

GR 1-12 incl., 14-25 incl.

DAKO 1-8 incl.

These claims are located in the Omineca Mining Division, Province of British Columbia, at 54°08' north latitude and 125°10' west longitude. The property extends northward from the highway approximately six miles west of the town of Endako and is accessible by the Buff-Addison road.

Surveys and Work Performed

Geological and geochemical surveys were carried out, with control for the surveys being two parallel base lines. These were cut and chained 8,000 feet apart with chain and compass traverse lines at 400 foot spacings normal to the base lines, and flagging markings at 400 foot intervals.

Geochemical Survey

Soil samples were taken by hand auger at 400 foot intervals on the compass traverse lines. The samples were taken below the humus layer at a depth of from two to three feet. A total of 1,335 samples were taken and tested.

All the samples were tested at the Jens Ancher Mogensen Laboratory of Toronto, Ontario, for the presence of Molybdenum and for total heavy metals. Molybdenum was tested for by the standard Toluene Dithiol method as quoted in Marshall's Report of Economical Geology, 1965. This method measures the soluble molybdenum in the samples. The total heavy metals were tested for by the standard methods.

The standard Toluene Dithiol test consists of half a gram of soil from each sample being placed in a test-tube together with 5 ml of 6N HCL and boiled on a water-bath for one hour. Every 15 minutes during the boiling process, the test-tubes are shaken. The tubes are then allowed to cool so that the fines settle to the bottom and the clear liquid can be decanted into shaking tubes. Any ferric iron content present in the solution is removed by adding 2 ml of reducing agent and Dithiol solution (1ml) is added. The test-tubes are then well shaken and allowed to stand for 10 minutes. Finally 5 ml of carbon tetrachloride is added and the solution is shaken for one minute. The variation in the green colour of the solution is an indication of the quantity of molybdenum present in the soil sample.

The concentration (ppm) in each sample is determined

by comparing the variations in colour of the solution with previously prepared standards.

Discussion of Geochemical Results

The geochemical survey produced two anomalous areas that require further attention. One of the anomalies is located along line 178+00N from 4+00W to 32+00W, a length of 2,800 feet. The results range up to 20 ppm of molybdenum. The second anomalous area covers an area of approximately 10,000 feet which strikes in a general northeast-southwest direction and is approximately 2,500 feet wide. This area lies between lines L-72+00N to L-120+00N from 40+00E to 60+00W. The background reading for the property is zero. The readings in the second area mentioned, range from 1 ppm to 6 ppm. The persistence of results which are confined to this area, although not a high intensity, warrant further investigation. The limited geological information indicated by a minor number of outcrops indicates a favourable geological environment. Some of the outcrops in the vicinity of L-100+00N, 4+00W consist of a feldspar porphyry, a favourable host rock. The favourable geological and geochemical indications warrant further investigation.

Geological Report

The claims lie on the Fort Fraser and Fort St. James geological map sheets. Physiographically they are part of the Nechako Plateau, one of the interior plateaus of British Columbia, and the geological history of the area is long and complex.

Proterozoic sediments are exposed in the Wolverine Range, a hundred miles northeast by north from the property. These are succeeded by a thick Palaeozoic sequence of limestones, cherts, argillites and volcanics known collectively as the Cache Creek Group followed by a series of Upper Triassic to Cretaceous formations predominantly volcanic, with conglomerates, sandstones and shales. These may collectively be called the Hazelton group. There are no marine rocks in the area of later age than Jurassic. The Hazelton group is followed in turn by lower Tertiary sediments and volcanics, and finally by mid-Tertiary volcanics known as the Endako Group. In addition there have been at least two major periods of emplacement of large intrusive bodies, accompanied by distortion and metamorphism.

However, the only rocks exposed on the property itself are igneous. The claims lie on a batholith of granitic rock, over thirty miles long and some ten miles in width,

representing the earlier intrusive period, the Topley intrusion, which are later than middle Permian and earlier than upper Jurassic. Tertiary volcanics are not far distant.

Overwhelmingly dominant is a medium grained pink biotite granite. The biotite is in most cases frayed or partly disintegrated, giving the rock a "dirty" appearance, with petrographic analysis indicating this as a quartz monzonite. Surface weathering is generally superficial, although a few outcrops show decay to a depth of a few inches. In these cases a deep red staining due to hematite may be present.

The limited number of scattered outcrops are coarsely crystalline and represent the rocks immediately north of Cheskwa Lake.

Some half dozen outcrops differ seriously from the standard type of granite. The more extreme assume a sugary appearance approaching that of sandstone. There is much quartz and very little dark mineral, so that they are very pale pink, sometimes with a brownish cast. A striking example forms a sizeable hill at 64N, 22E. Another outcrop near 60N, 68W, although small, is very isolated and could represent a large area. But most of the occurrences seem to suggest very small bodies. These rocks are referred to as "alkali granites", but they

probably do not represent a mappable unit, as some samples are transitional to the regional type.

Some of the coarser granites may be of pegmatitic nature. A small seam of pegmatite was noted and sampled to the south of 48N, 35E. It was composed of quartz and feldspar with a little biotite, and graded without a definite margin into the regional granite. However, no further seams could be found.

The remaining rock exposures of the area may be grouped as feldspar porphyry. Distribution of these is restricted mainly to a band running from the most northerly identified feldspar porphyry, about 100 feet north of 104N, 2E, to the southeast corner of the property. In only one case, at 48N, 13E, was a contact of granite and feldspar porphyry seen, and it apparently conforms to the direction of the regional cleavage.

All specimens of this rock type are more or less porphyritic; least so in tan coloured specimens from 200 feet north of 36N, 4E, and from 44N, 14E; many samples are densely crowded with included crystals of feldspar. Nearly always the intercrystalline matrix appears completely dense even under the hand lens. A gray feldspar porphyry at 16N, 22W, has a finely granular matrix - there is a typical gray feldspar porphyry

outcrop close by - and one or two of the tan rocks are finely to very finely granular under the lens.

Colour of the feldspar porphyries is variable. In the southeast they are tan to cream coloured. The northernmost exposures are gray. A maroon coloured feldspar porphyry occurs at 88N, 32W, in isolation among granites, and exposures at 56N, 3W are gray-green. But there is some intergrading of tan and gray, and structurally they seem identical. At 44N, 7E, a tiny seam of gray feldspar porphyry was found in a matrix of pinkish-tan feldspar porphyry.

Some of the gray outcrops are rather deeply decayed, and have a strong smell of kaolin clay.

The scantiness of outcrop does not permit the feldspar porphyry to be outlined very closely. Nearly all exposures could be joined up in theory to form a huge dyke, but it seems more probable that there are several large and small lensitic bodies. Thus the gray feldspar porphyry exposures near the "pot-hole lake" on the base line would form a lens with a known length of over a thousand feet, and an orientation of about north 30° west. It is doubtful if the exposure at 104N, 9E, belongs to the same lens, as it is a very dark gray. The maroon feldspar porphyry at 88N, 32W, is quite isolated from the others.

Tan coloured feldspar porphyry appears at 84N, 13 E, and is found at intervals to near the southeast limit of the property. It is split by granite outcrops around 44N, 12E, and may not be a continuous mass.

To the eastward of the belt of tan outcrops there are exposures of gray or gray-green feldspar porphyry lenses which are derived, with slight modifications, from the same magmatic source.

Quartz veining is almost absent; a few stringers exist near 48N, 35E. A rock of peculiar appearance at 100' north of 64N, 20E, seems to be a tan aplite with irregular quartz veining, without margins and probably penecontemporaneous.

There is a regional pattern of cleavage, with an average value of about north 25 degrees west, which seems to coincide with the strike of the feldspar porphyries. The cleavage planes are wide-spaced and do not suggest any great intensity of pressure. In some areas it degenerates to a mere jointing or is obscured by secondary cleavages, as at 112N, 18E. In general the granites show cleavage more distinctly than the feldspar porphyries.

An interesting outcrop, exposed by bulldozing, lies on the east side of the Buff-Addison road at 164N, 2E.

The rock is a granite of the regional type, with strongly developed cleavage. It contains much of a black mineral, which is thickly spread along the cleavage planes and penetrates into the granite roughly at right angles to these planes, and is clearly of late introduction. Professor Moorhouse, of the University of Toronto, tentatively identified the mineral as psilomelane, a compound of manganese.

Magnetic disturbances were noticed at 112N, 13E, and at 96N, 38W. There are no outcrops at either place. Magnetite occurrences are common in the granite of the batholith.

The granitic batholith which is penetrated by feldspar porphyry bodies is not unique. There is a line of such occurrences, running north from the region of the Kootenays, in connection with molybdenum showings. They are of much later date than the intruded granites, hence they are not earlier than late Jurassic, of the age of the Omineca intrusions or later. The emplacement of the feldspar porphyry would seem to be contemporary with establishment of the cleavage, as both have roughly the same strike. Injection of psilomelane is also a late event.

The present surface of the Nechako Plateau is moderately rugged and suggests rejuvenation. South of the property area, Savory Ridge is a prominent feature. There

is a sizeable ridge in the northeast part of the property, forming the watershed to Tatin Lake.

Most of the area is mantled with glacial drift, to a thickness guessed at thirty or forty feet. It is rather uniform, a brownish sandy clay till of varying stoniness. True clays are being formed in the present swamps.

The valley of the Endako River probably has a long and complex history. The river has a mature appearance, with abundant stream meanders and oxbow lakes, which seems out of keeping with the character of the area. There are no outcrops near the river. I am told by road engineers that sections of over two hundred feet of varied silts, believed to be lake deposits, have been drilled in connection with the building of bridges. The river is thus reworking deposits of its own filled valley, accounting for the absence of rock outcrop, and allowing easy incision of meanders into unconsolidated material. The exposed alluvium is a fine silty sand without much coherence and of indistinct stratification.

The location of the property appears very favourable, although no molybdenite or sulphur yellow staining was found in the examined outcrops. There are molybdenite occurrences

immediately to the north, on the property of Buff-Addison. (K)
The presence of manganese mineralization, though far from commercial, and the occurrence of magnetic anomalies found while driving traverse lines open up new possibilities.

Surface work was curtailed due to the scarcity of outcrops, which are also badly distributed, being mostly in the northeast of the claims area.

The property seems suitable for possible later investigation by geophysics.


Conclusions and Recommendations

The geochemical and geological surveys have indicated a favourable geological environment and positive geochemical results requiring further investigation of property for the presence of molybdenum.

It is recommended that a programme be initiated to test the peaks of the anomalous areas by diamond drilling and surface stripping by bulldozer. The results of this programme will help in determining the cause of the anomalous area and will be instrumental in determining the nature of a programme to be followed in further developing the property.

The drill programme will consist of a minimum of 2,500 feet of drilling plus surface stripping by bulldozer to bedrock. The financial expenditures for the execution of a programme of this magnitude would require a minimum sum of \$35,000.

Respectfully submitted,
SULMAC EXPLORATION SERVICES LIMITED


E. Amendolagine
E. Amendolagine, B.A., M.A., P. Eng.

March 7, 1966

APPENDIX

The following personnel worked on the survey:

E. Amendolagine	Chief Geologist	Oct. 30 - Nov. 3, 1965 Dec. 14-15, 1965 Feb. 21-25, 1966
C. Pasieka	Field Geologist	Sept. 30 - Oct. 9, 1965 Nov. 1-6, 1965
A. Gray	" "	Oct. 1 - Dec. 22, 1965
R. Duthie	" "	Oct. 1 - Dec. 22, 1965
R. Clarkson	Field assistant	Oct. 1 - Dec. 22, 1965
A. Villeneuve	" "	" " "
J. Mundy	" "	" " "
M. Gagne	" "	" " "
E. Bauman	" "	" " "
D. Grant	Draftsman	Dec. 14-17, 1965 Jan. 4 - 7, 1966 Jan. 18-21, 1966

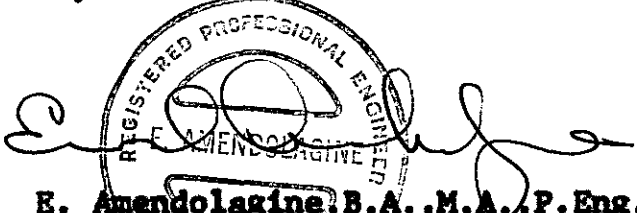
CERTIFICATION


TO WHOM IT MAY CONCERN:

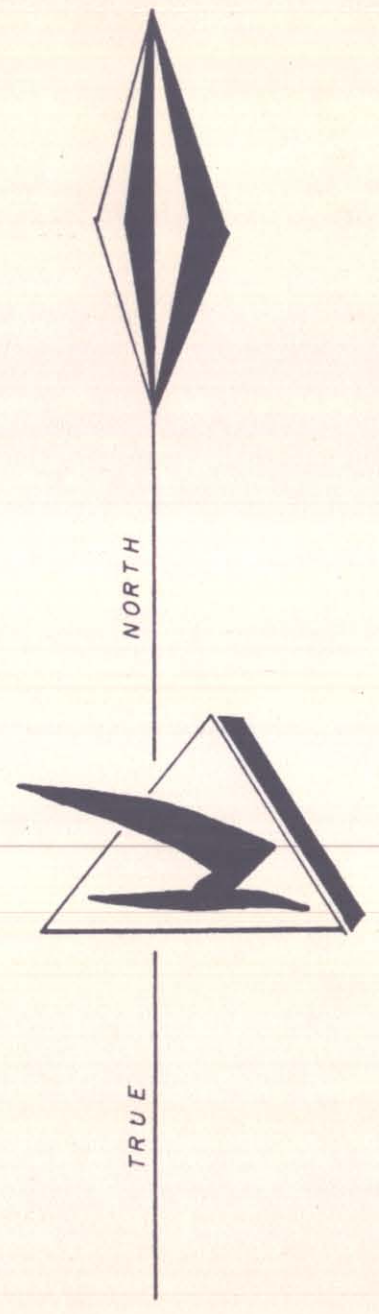
I, EMANUEL AMENDOLAGINE, of the City of Toronto, in the Province of Ontario, hereby certify:

- 1. That I am a geologist and reside in Toronto, Ontario.**
- 2. That I am a graduate of Hunter College of the City of New York, and Columbia University, with a B.A. and M.A. respectively, and that I have been practicing my profession as a geologist for twelve years.**
- 3. That this report was prepared from compilation of information obtained from geological and geochemical surveys conducted on the National Explorations Endako area property. The geological mapping was conducted by geologists Mr. C. Pasiaka, Mr. A. Gray and Mr. R. Duthie, with the Geological Report being written by Mr. Arthur Gray.**
- 4. That the writer does not have, nor does he expect to receive, either directly or indirectly, any interest in the above property or in the securities of National Explorations Limited.**
- 5. That I am a member of the Association of Professional Engineers of the Province of Ontario.**

Dated this 7th day of March, 1966.


E. Amendolagine, B.A., M.A., P. Eng.





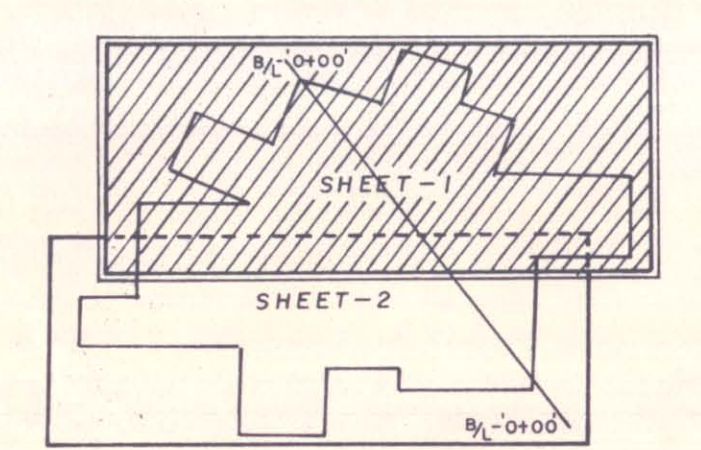
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 758 MAP #1



NATIONAL EXPLORATIONS LTD.
ENDAKO AREA - BRITISH COLUMBIA
OMINECA MINING DIVISION

SHEET NO. 1
GEOLOGICAL AND GEOCHEMICAL SURVEY

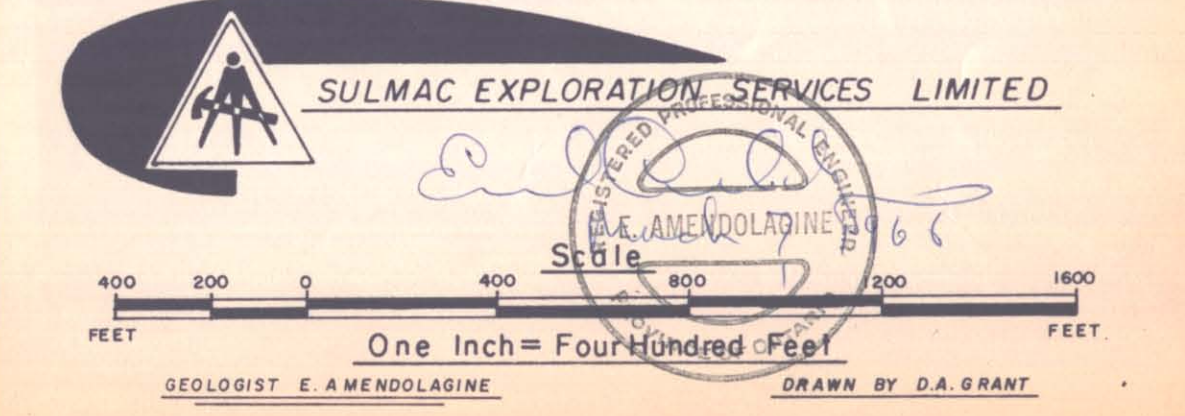
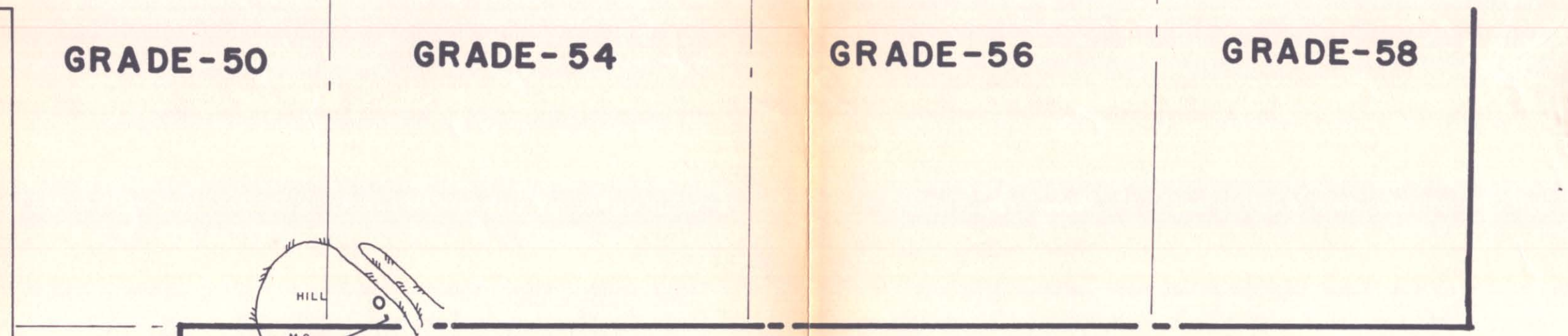
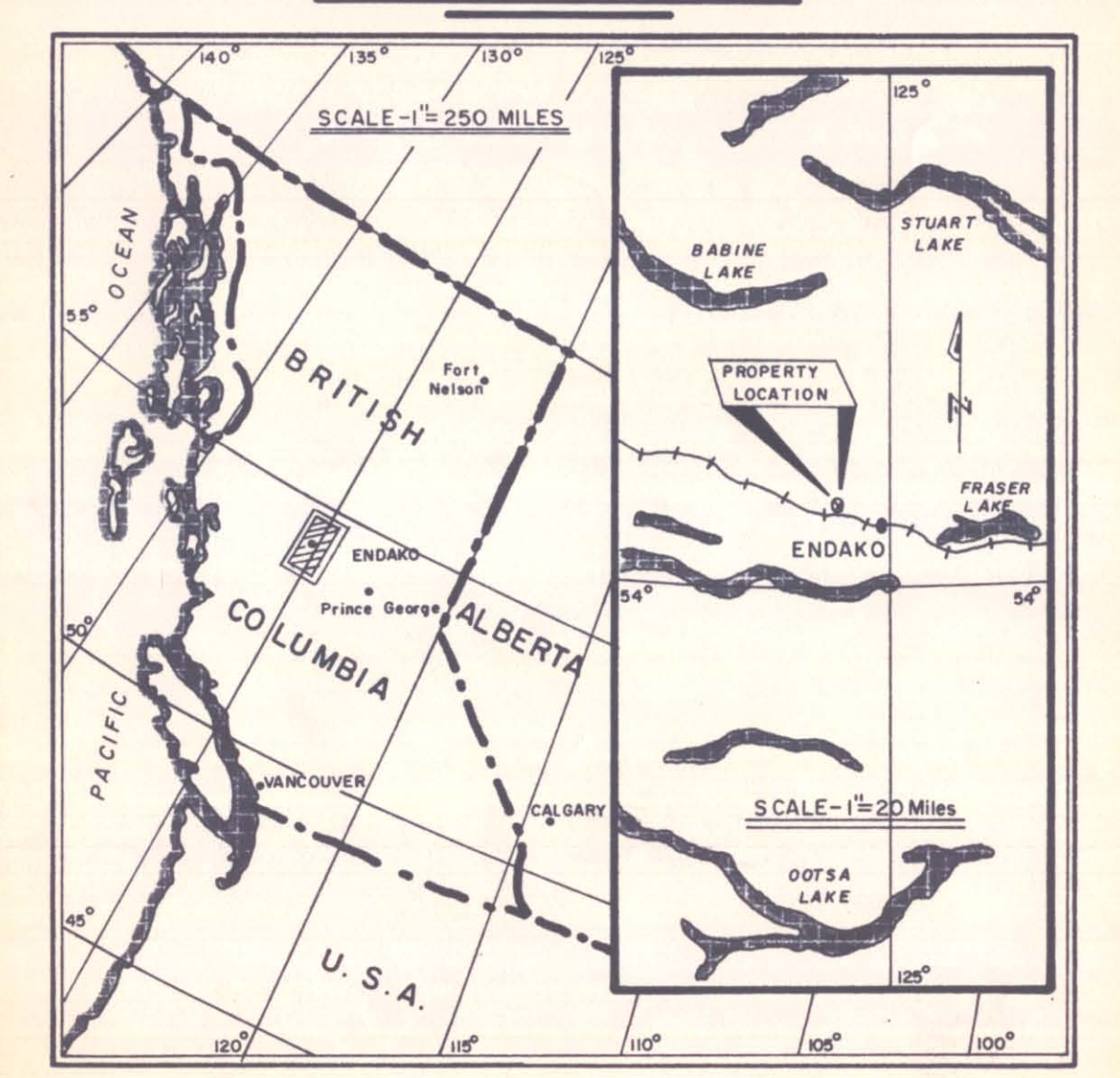
INDEX



LEGEND

- GEOCHEMICAL SURVEY**
SOIL SAMPLE VALUES EXPRESSED IN PARTS PER MILLION MOLYBDENUM
- GEOLOGICAL SURVEY**
- SYMBOLS**
- Boulders on rubble
 - Ridge or cliff
 - Property boundary
 - Claim boundary
 - Bulldozed line
 - Lake boundary
 - Outcrop
 - Fracture-dip angle
 - Shearing-dip angle
 - Old cut lines
 - Claim post
 - Swampy
 - River
 - Road
- ABBREVIATIONS**
- FELD - FELDSPAR
 - BR - BROWN
 - DK - DARK
 - FMC - FINE, MEDIUM, COARSE GRAIN
 - GRAN - GRANITE
 - GY - GREY
 - POPH - PORPHYRY
- GEOLOGY**
- GRANITE
 - FELDSPAR PORPHYRY

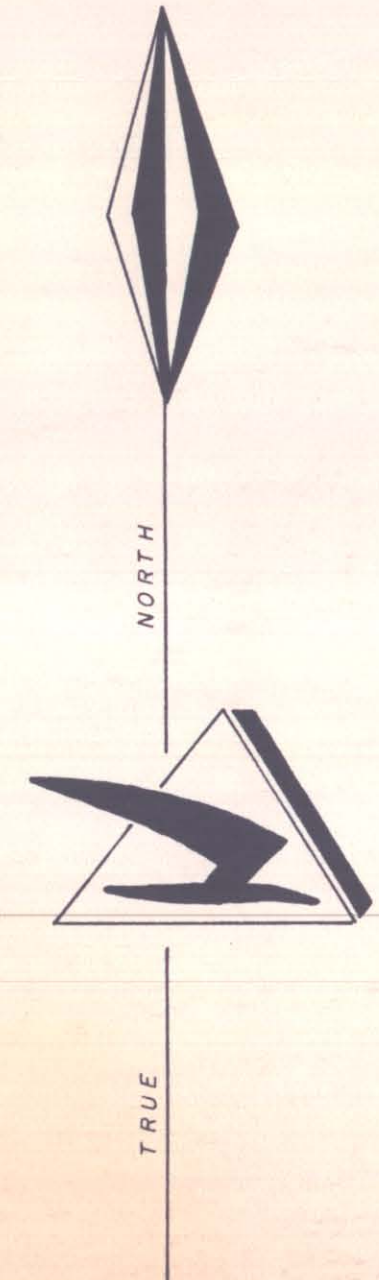
LOCATION MAP



MAPPED BY A GRAY - GEOLOGIST
AND S. DUTHIE - GEOLOGIST

TO ACCOMPANY REPORT BY E. AMENOLAGNE
DATED JAN 21, 1966

758

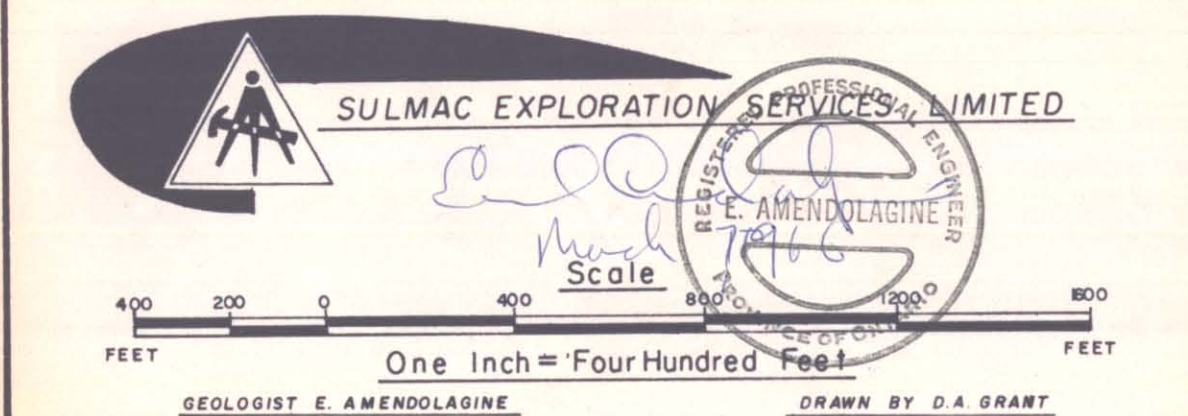


Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 758 MAR #12

NATIONAL EXPLORATIONS LTD.
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OMINECA MINING DIVISION

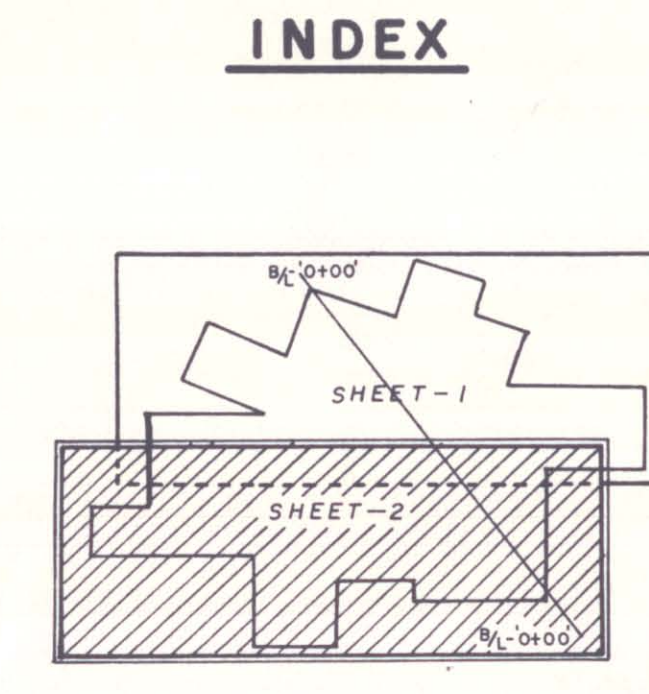
SHEET NO. - 2

GEOLOGICAL AND GEOCHEMICAL SURVEY



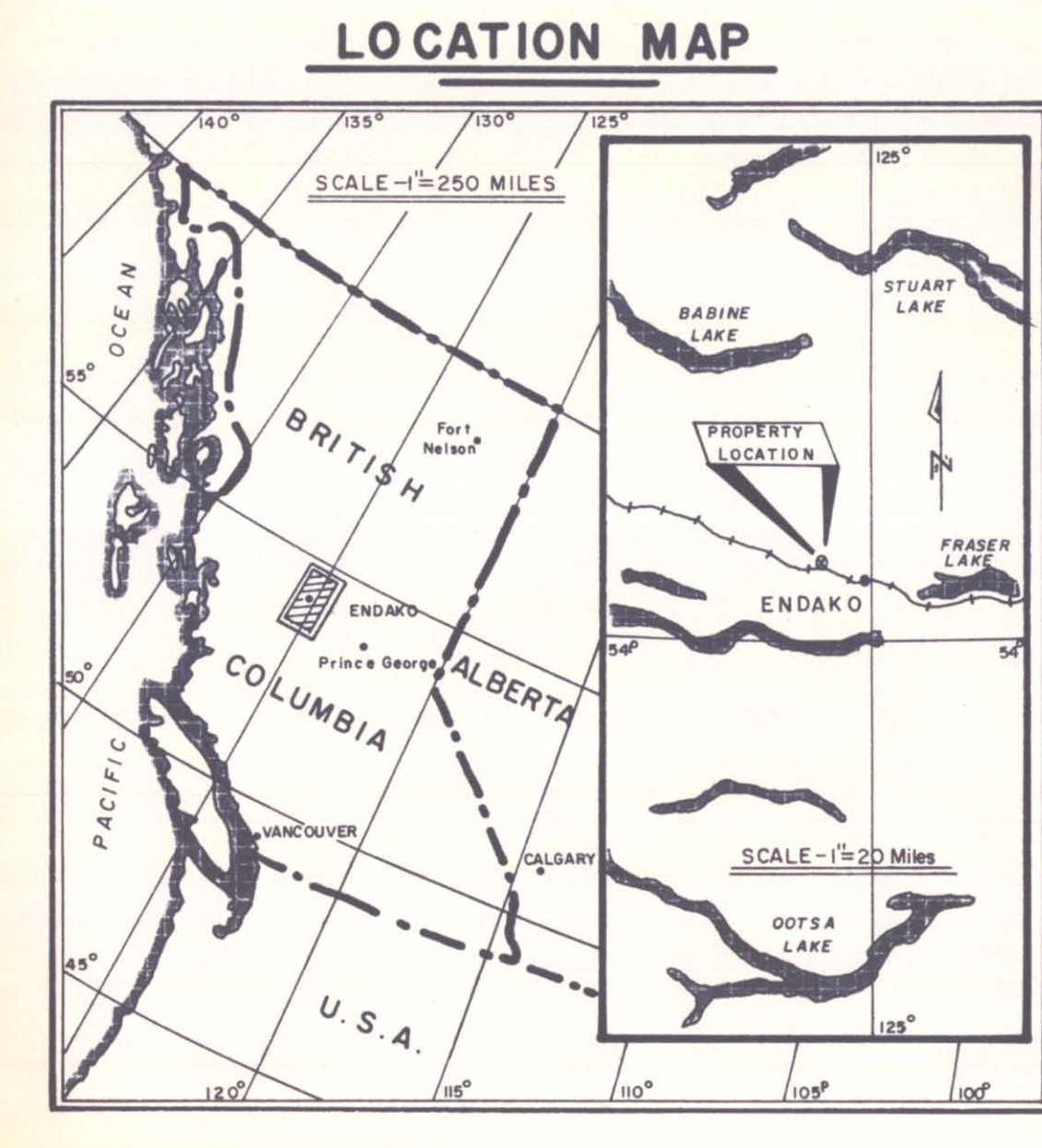
TO ACCOMPANY REPORT BY E. AMENOLAGINE
DATED JAN. 21, 1966

MAPPED BY A. GRAY-GEOLOGIST
AND R. DUTHIE-GEOLOGIST



LEGEND

- GEOCHEMICAL SURVEY: SOIL SAMPLE VALUES EXPRESSED IN PARTS PER MILLION (PPM) MOLYBDENUM. CONTOUR INTERVAL 0.5 PPM MOLY. BLAZED LINE WITH STATIONS.
- GEOLOGICAL SURVEY: SYMBOLS for Boulders or Rubble, Ridge or Cliff, Property Boundary, Claim Boundary, Bulldozed Line, Lake Boundary, Outcrop, Fracture-Dip Angle, Shearing-Dip Angle, Old Cut Lines, Claim Post, Swampy, River, Road, Creek.
- ABBREVIATIONS: FELD - FELDSPAR, BA - BROWN, DK - DARK, FMC - FINE, MEDIUM, COARSE GRAN, GRAN - GRANITE, GY - GREY, PORSP - PORPHYRY, W - WITH, QTZ - QUARTZ.
- GEOLOGY: GRANITE, FELDSPAR PORPHYRY.



758