

3311

GEOCHEMICAL AND GEOPHYSICAL

SURVEY

SNO GROUP CLAIMS

55°15'N - 126°13'W

93 M/8E

W.I.NELSON Jr. P. ENG.

NORANDA EXPLORATION COMPANY, LIMITED

OMINECA MINING DIVISION

AUG. 17, 1971 - AUG. 29, 1971

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
No. 3311 MAP

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Walter I. Nelson Jr.

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 5. " " " " Mo.

REPORT ON THE
MAGNETOMETER AND GEOCHEMICAL
SURVEYS

on the

SNO CLAIMS NEAR NAKINILERAK LAKE

55°16'N, 126°13'W

OMINECA MINING DIVISION, BRITISH COLUMBIA

NORANDA EXPLORATION COMPANY, LIMITED

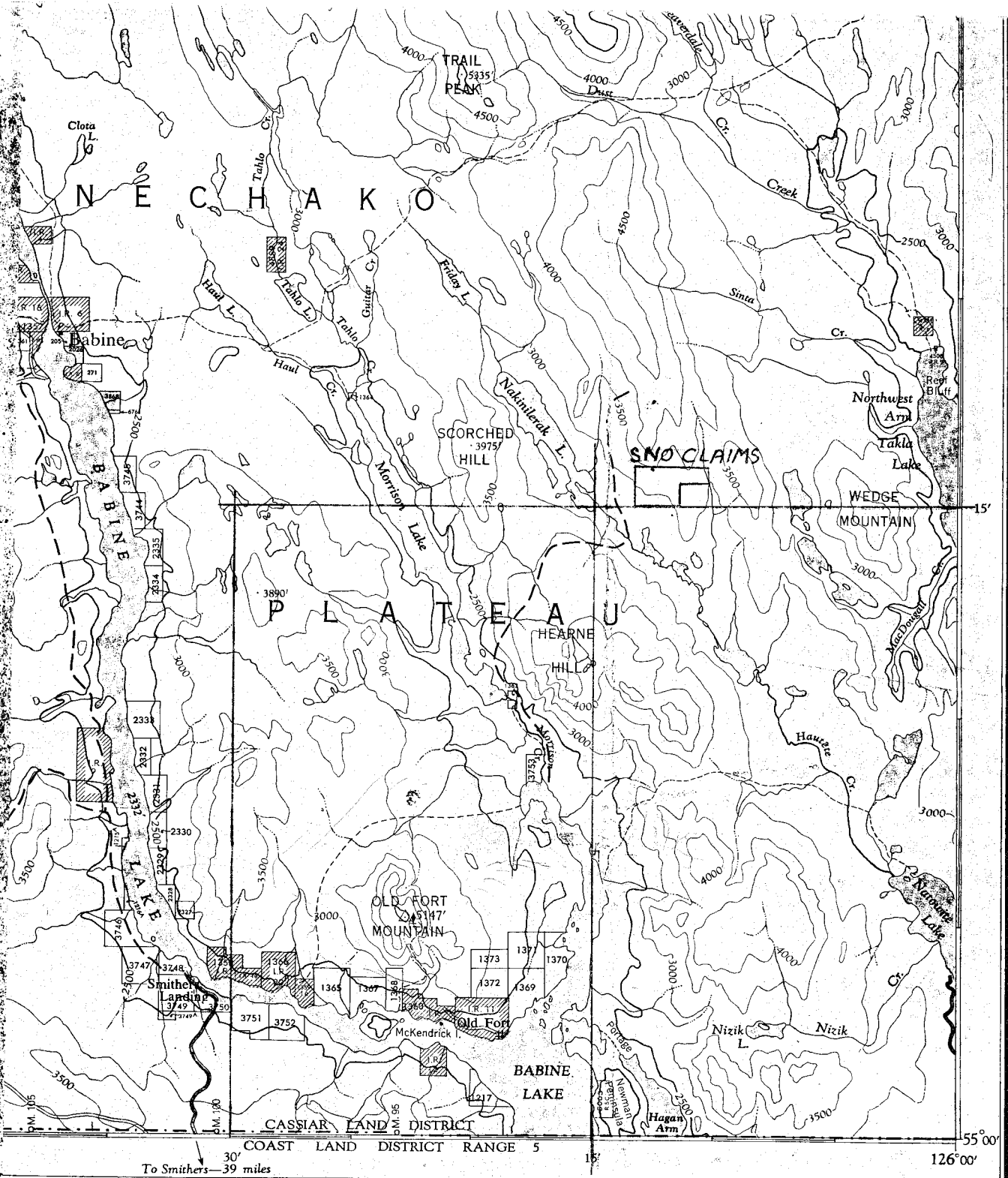
17 Aug. 1971 - 29 Aug. 1971

INTRODUCTION:

The SNO claims adjoin the southern end of the Nakinilerak Property of Noranda Exploration Company, Limited. The claims are one to three miles east of Nakinilerak Lake and fifty-one miles northeasterly from Smithers, B.C. Access, in 1971, was by helicopter from either Smithers or Houston to a landing near the center of the claim group. An old bulldozer road leads from Hatchery Arm on Babine Lake to the SNO #7 claim.

Elevations range from 2,900 feet in the swampy area at the southwest corner of the claim group to 4,000 feet on the ridge at the northern boundary. Most of the property is covered by trees; lodge-pole pine is the most common type but much tag alder occurs in wetter areas. Line cutting is difficult through the tag alder.

On the Nakinilerak property an area of copper mineralization, approximately one mile northwesterly from SNO #3, has been explored by diamond drilling. The SNO claims were staked so that a possible southward extension



NORANDA EXPLORATION COMPANY LIMITED

LOCATION MAP
SNO GROUP CLAIMS

OMINECA M.D.

1" to 4 miles

93M8E.

W. J. Wilson

Glacier or Icefield
Spring
Dam
Customs Office

of this known mineralization could be investigated by geochemical and geophysical means.

These surveys were carried out by two employees of Noranda Exploration Company, Limited on lines established by a two man contract line cutting crew.

Work was done on the SNO claim group consisting of:

<u>Claim</u>	<u>Record or Tag Nos.</u>	<u>Date of Record</u>	<u>Owner</u>
Nak # 3	80712	Oct. 17, 1969	Noranda Exploration Co. Ltd.
Nak # 5	80714	"	"
Nak # 9	80718	"	"
Nak #10	80719	"	"
Nak #11	80720	"	"
Nak #12	80721	"	"
Nak #14	80723	"	"
SNO # 1	92985	Oct. 8th, 1970	"
SNO # 2	92986	"	"
SNO # 3	92987	"	"
SNO # 4	92988	"	"
SNO # 5	92989	"	"
SNO # 6	92990	"	"
SNO # 7	92991	"	"
SNO # 8	92992	"	"
SNO # 9	92993	"	"
SNO #10	92994	"	"
SNO #11	92995	"	"
SNO #12	92996	"	"
SNO #13	236301M	Aug. 27th, 1971	"
SNO #14	236302M	"	"
SNO # 1 Fr.	92997	Oct. 8th, 1971	"
SNO # 2 Fr.	92998	"	"
SNO # 3 Fr.	92999	"	"
SNO # 4 Fr.	93000	"	"
SNO # 5 Fr.	93001	"	"
SNO # 6 Fr.	93002	"	"
SNO # 7 Fr.	236303M	Aug. 27th, 1971	"
SNO # 8 Fr.	236304M	Aug. 30th, 1971	"

GENERAL GEOLOGY

The Nakinilerak Property was examined by N.C. Carter of the British Columbia Department of Mines and Petroleum Resources in 1966 and his geological map was published in the Annual Report for that year. The area

mapped by Carter is underlain by feldspar porphyries, monzonite, andesite, tuff, conglomerate and argillite. The conglomerate is possibly a member of the Upper Cretaceous Sustut Group while the andesite and tuff are possibly part of the older Hazelton Group.

The writer examined the area covered by this report except for SNO #11, SNO #12, SNO #5 Fr. and SNO #6 Fr. where line cutters and geochemical crews reported no outcrop. These claims are partly covered by swamps. Most outcrops were found on the series of ridges near the center of the SNO claims. Gray to greenish andesite is the most abundant rock with smaller apparently lenticular bodies of purple andesite included and minor siltstone. Feldspar porphyry and basalt dykes cut the gray andesite. See Drawing No. 1.

Hematite is found as disseminations and fracture fillings in gray andesite near 30S-30E, and 24S-20E. Small grains of chalcopyrite and a little malachite in gray andesite was noted at 30S-30E. Epidote occurs as fracture fillings and partial replacement in andesite. Nearly all the andesite and feldspar porphyry specimens collected are magnetic but the purple andesite is less magnetic than the other rock types. Fine grain disseminated magnetite is visible in much of the rock. Only sparse pyrite was seen. On lines 40S and 48S the most easterly outcrop seen is siliceous and bleached andesite.

GENERAL GEOPHYSICS

The SNO claims are covered by Federal - British Columbia aeromagnetic survey map 5342G, Old Fort, B.C. This map shows magnetic contour lines trending mainly N-60°W in the area under study. Magnetic relief is near 100 gammas with the "high" trend near the center of the SNO claims and approximately coincident with the topographic ridge system.

GRID PREPARATION:

The old grid system from the Nakinilerak Property was expanded to cover the SNO claims. Line 40S of the old grid was extended eastward from 24E to 96E and base lines established at 30E and 68E. From these base lines, lines 24S, 32S, 40S, 48S, 56S, 64S, 72S, 80S, and 88S were marked as shown on the accompanying maps. Tie lines were established for control at 0E, 68E and 96E. The two base lines and line 40N from 24E to 68E were slashed out and marked by blazes with pickets at 100 foot intervals. All the other lines were marked by hanging colored ribbons on trees and a few blazes with stations at 100 foot intervals marked either on pickets or blazed trees. Total line developed was 15½ miles done by a two man crew on contract.

MAGNETOMETER SURVEY

Method:

The magnetometer survey on the SNO claims was carried out using a McPhar Geophysics Ltd. M-700 magnetometer. The M-700 is a vertical field magnetometer employing the fluxgate principle. The instrument is self levelling, direct reading and practically insensitive to orientation. It is capable of measuring from zero to 100,000 gammas in five ranges and is considered readable to ¼ scale division. The maximum sensitivity is 20 gammas per scale division on the 1,000 gamma range. The sensitivity on all ranges is given in the table below.

<u>Range - Switch Position</u>	<u>Full Scale in Gammas</u>	<u>Gammas per Scale</u>
1K	1,000	20
3K	3,000	50
10K	10,000	200
30K	30,000	500
100K	100,000	2,000

In order that the majority of readings would be on the more sensitive scale, the latitude adjustment was adjusted to cause the instrument to read on the 1K scale at 30E-64S.

Readings were taken in the prescribed manner at each 100 foot station along the base lines, grid lines and tie lines. The operator faced magnetic east to minimize the effect of body movement while taking a reading. The 30E base line was done first. Corrections were applied to readings on the grid lines to adjust them to the value obtained at the 30E base line. An arbitrary 1,000 gammas was added to each reading to eliminate negative values. Magnetometer surveying done was 81,460 feet between Aug. 26, 1971 and Aug. 29, 1971.

PRESENTATION OF RESULTS

The results of the magnetometer survey were plotted on a plan at a scale of one inch to 400 feet (Drawing No. 2). The magnetic values were contoured using a contour interval of 200 gammas with lines at 900, 1100, 1300, 1500, 1700, and 1900 gammas. Values above 2100 gammas were too few and distributed too erratically to be usefully contoured.

DISCUSSION OF RESULTS

Magnetic values obtained during the course of the survey range from 780 to 2630 gammas, giving a overall magnetic relief of 1850 gammas.

A northwesterly trending high (over 1700 gammas) extends from the southeast corner of the grid at 88S-68E to 35S-30E. Other high readings tend to be near this central high. Northeasterly from the high trend most readings were in the 1300-1500 gamma range. This general trend is near that shown by the aeromagnetic map; a high zone trending northwesterly with the lower values

on each side.

The magnetic high is probably caused by disseminated magnetite in andesite. The lower values and gentle magnetic relief away from the central high suggests that these areas may be underlain by a different rock type.

GENERAL GEOCHEMISTRY

The area now included in the SNO claims was covered by a silt sampling program in 1964. Trends of high copper values were found in a southerly flowing drainage near the west side of the claims, in a southwesterly flowing drainage off the central ridges and in a few other isolated spots.

GEOCHEMICAL SOIL SURVEY

All samples were analyzed for copper, zinc and molybdenum in the Noranda Exploration Company, Limited laboratory at 1050 Davie Street, Vancouver, B.C., analyst, Evert vanLeeuwen.

Sampling Method:

Samples were obtained by digging holes with a shovel to a depth at which the visible grey C Horizon or sub-outcrop was encountered. The C Horizon was sampled and the lower part of the B Horizon, where visible, was also sampled. The samples were placed in "Hi Wet Strength Kraft 3 1/2 X 6 1/8" Open End" envelopes and the grid station location was marked on the envelopes with indelible felt pens. Soil samples were taken at 200 foot intervals along base lines and tie lines.

Laboratory Determination Method:

The samples are first hung in a drying cabinet for a period of 24 to 48 hours. They are then mechanically screened and sifted to obtain a -80 mesh fraction.

The determination procedure for total copper and total molybdenum is as follows: 0.200 grams of -80 mesh material is digested in 2 ml of HClO_4 and 0.5 ml. of HNO_3 for approximately four hours. Following digestion each sample is diluted to 5 ml. with demineralized H_2O . A Varian Techtron Model AA-5 Atomic Absorption spectrophotometer was used to determine the parts per million Cu, Zn and Mo in each sample.

The theory of Atomic Absorption spectrophotometry is fully described in the literature and will not be described in this report.

PRESENTATION OF RESULTS

Results of the geochemical survey are presented in Drawings No. 3 and 4, these are both plans at a scale of one inch to 400 feet. Drawing No. 3 shows copper and zinc content of the sample in parts per million. When two samples were taken from one hole the B sample result is plotted above the C sample result as shown above the title block. At six holes only one sample was taken because the C horizon was unidentifiable or could not be found at reasonable depth.

The highest values for copper are B horizon 350 ppm and C horizon 430 ppm at 74S-30E. At 49 holes either a B or C horizon sample is over 99 ppm copper. The distribution curve of these values shows that values over 99 ppm can be considered anomalous. Samples containing over 99 ppm copper in either B or C soil horizon are outlined with a solid line on Drawing No. 3.

Appreciable area of anomalous values is in a south flowing drainage on Nak #3 and SNO #12 claims. In most cases zinc values are higher than those for copper but this relationship cannot be depended upon. The highest zinc value is B 1,000 ppm C 1,300 ppm at 24S-52E, copper at this point is 20 ppm in both horizons.

The assay values for molybdenum are plotted on Drawing No. 4. The highest value for molybdenum is B 7 ppm and C 10 ppm at 34S-30E, this is in or near a feldspar porphyry dyke. Copper at this point is B 60 ppm and C 13 ppm. Except for one 5 ppm and seven 2 ppm all other molybdenum sample assays were reported as being zero.

CONCLUSIONS

The results of these surveys are not encouraging.

The magnetic highs are probably caused by disseminated magnetite in the andesite.

The high copper values from soil geochemistry are scattered and many of these are only slightly above background. The geochemical survey results suggest that no significant amount of molybdenum occurs on the SNO claims.

Even though the geophysics and geochemistry results were not encouraging this property should be retained due to its proximity to known copper mineralization.

W. Nelson Jr.
12 Oct. 1971

CERTIFICATE

I, WALTER INNES NELSON Jr, of the Town of Smithers, Province of British Columbia, do certify that:

1. I am a Geological Engineer residing at Smithers, B.C.
2. I am a graduate of the University of British Columbia with a B.A.Sc Degree (1953) in Geological Engineering.
3. I am a Junior Member of the Canadian Institute of Mining and Metallurgy.
4. I am a registered Professional Engineer in the Province of British Columbia.
5. I have been employed as a geologist for Noranda Exploration Company, Limited and Brynnor Mines Limited since May 1958.

Dated at Smithers this 12th day of October, 1971.

Walter I. Nelson Jr. B.A.Sc., P.Eng.

Walter I. Nelson Jr.

SUPPLEMENT TO THE GEOCHEMICAL AND MAGNETOMETER SURVEY
ON THE SNO GROUP CLAIMS OF NORANDA EXPLORATION COMPANY,
LIMITED BY W. I. NELSON Jr. P.ENG.

QUALIFICATIONS OF FIELD PERSONNEL:

Mr. M. Vetterli is employed by Noranda Exploration Company, Limited as a field assistant and is currently working for the third consecutive summer in this capacity.

Mr. K. Goosen was employed by Noranda Exploration Company, Limited as a field assistant during the summer of 1971.

Mr. Vetterli and Mr. Goosen were instructed in field procedures by the following Noranda Exploration Company, Limited personnel: Mr. G.E.Drom, P.Eng., District Geologist, Mr. W.I.Nelson, P.Eng., Geologist, and Mr. J.D.Knauer, Geochemist.

W.I.NELSON Jr. P.ENG.

W.I. Nelson Jr.



To accompany Geochemical & Geophysical report by W.I. Nelson, P.Eng. on the Sno Group Claims, Omineca Mining Division.

Dated Oct. 7, 1971.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3311 MAP #3

W.I. Nelson Jr.

REVISED	MAGNETOMETER SURVEY (McPhar)	
	-1000 ADDED TO INSTRUMENT READINGS-	
	PROJECT: NAKINILERAK (SNO CLAIMS)	
PROJ. NO. 1007	SURVEYED BY: M.V.	DATE: AUG 1971
N.T.S. 93M/B	DRAWN BY: A.P.	SCALE: 1" = 400'
DWG. NO. 2	NORANDA EXPLORATION CO. LTD.	
	OFFICE: SMITHERS	



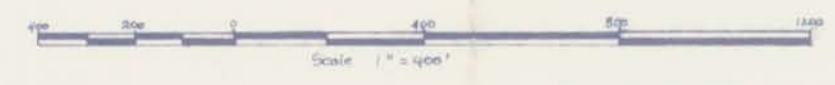
LEGEND	
A	Andesite
ep	epidote
(swamp symbol)	swamp
ppy	porphyry
chpy	chalcopryrite
(dyke symbol)	dyke

Department of
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 ASSESSMENT REPORT
 NO 3311 MAP #2

To accompany Geochemical & Geophysical report by W.I. Nelson, P.Eng. on the Sno Group Claims, Omineca Mining Division.

W.I. Nelson Jr.

Dated Oct. 7, 1971.

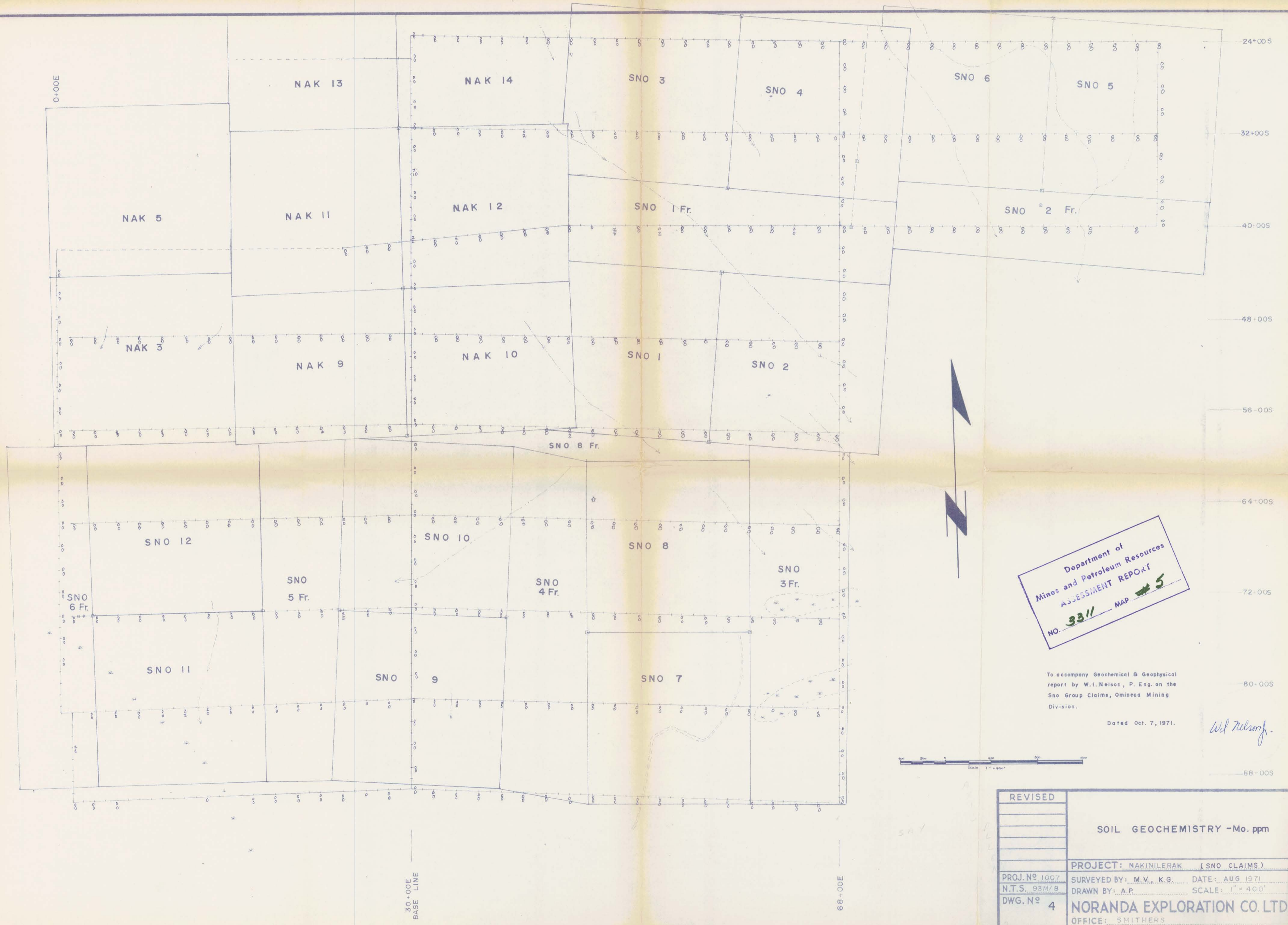


3311 M-2

REVISED	G E O L O G Y	
PROJECT: NAKINILERAK (SNO CLAIMS)		
PROJ. NO. 1007	SURVEYED BY: W.N.	DATE: AUG 1971
N.T.S. 93M/8	DRAWN BY: A.P.	SCALE: 1" = 400'
DWG. NO. 1	NORANDA EXPLORATION CO. LTD.	
	OFFICE: SMITHERS	

30+00E
BASE LINE

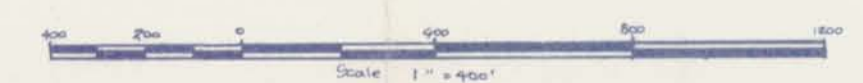
68+00E



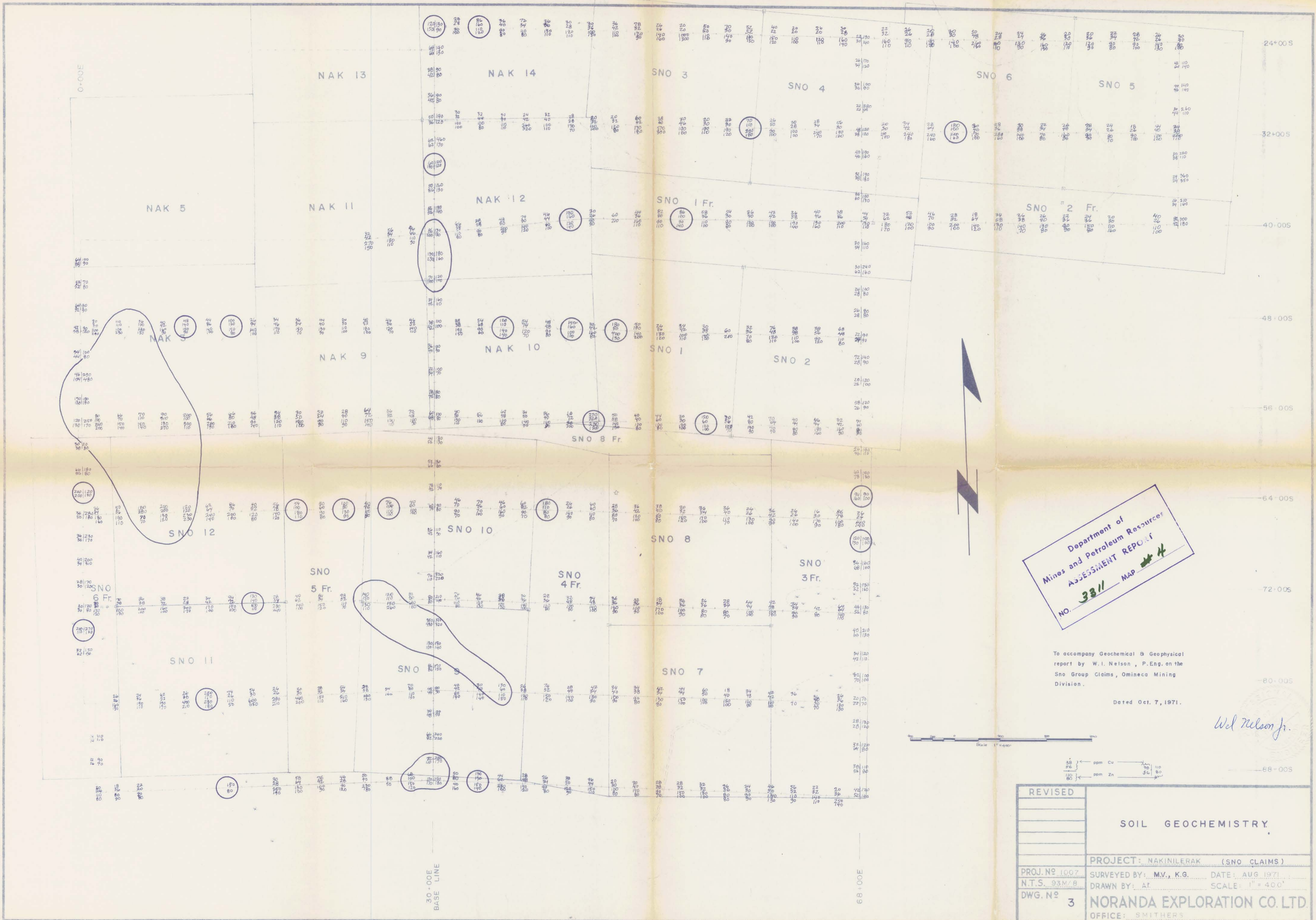
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. **3311** MAP **#5**

To accompany Geochemical & Geophysical
 report by W.I. Nelson, P. Eng. on the
 Sno Group Claims, Omineca Mining
 Division.

Dated Oct. 7, 1971. *W.I. Nelson*



REVISED	SOIL GEOCHEMISTRY - Mo. ppm	
	PROJECT: NAKINILERAK (SNO CLAIMS)	
	PROJ. NO. 1007	SURVEYED BY: M.V. K.G. DATE: AUG 1971
	N.T.S. 93M/B	DRAWN BY: A.P. SCALE: 1" = 400'
	DWG. NO. 4	NORANDA EXPLORATION CO. LTD.
		OFFICE: SMITHERS

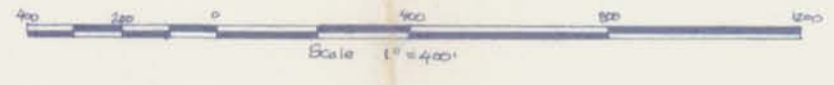


Department of
 Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. 3311 MAP 4

To accompany Geochemical & Geophysical report by W.I. Nelson, P.Eng. on the Sno Group Claims, Omineca Mining Division.

Dated Oct. 7, 1971.

W.I. Nelson Jr.



ppm Cu $\frac{1}{10}$
 ppm Zn $\frac{1}{50}$

REVISED		
	SOIL GEOCHEMISTRY.	
	PROJECT: NAKINILERAK (SNO CLAIMS)	
PROJ. NO. 1007	SURVEYED BY: M.V., K.G.	DATE: AUG 1971
N.T.S. 93M/B	DRAWN BY: AF.	SCALE: 1" = 400'
DWG. NO. 3	NORANDA EXPLORATION CO. LTD.	
	OFFICE: SMITHERS	