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May 31, 1973

# SUPPLEMENT TO THE 1972 GEOLOGICAL REPORT ON THE LITTLE NITINAT PROPERTY

## INTRODUCTION

Work on the Little Nitinat property in 1972 yielded sufficient encouragement to warrant an additional program for 1973. This program included the staking of ten new claims east of and adjacent to the original property and extensions of the grid over parts of these claims. Soil samples were taken over the extended part of the grid, and I.P. and magnetometer surveys were run on selected lines of the entire grid. Finally, geology was mapped over parts of the new claims.

The scale (1" = 1000') of the base map for plotting geology was inadequate for the job, consequently much information could not be plotted. In addition, much of the field work was completed before establishment of the new grid, so the completed geological map is more a preliminary follow-up (recon.) map than a follow-up map as it should be.

## GENERAL GEOLOGY

The geology of the Little Mitinat area is relatively complex. It consists of older andesite-basalt volcanic rocks which in the area of interest have been intruded by a series of dikes and less well defined bodies of felsite and quartz porphyry. It is not known whether the felsite breccia is volcanic or associated in origin with the felsite. All of the above rocks in turn have been intruded by a complex of commonly irregular andesite, diorite and basalt dikes. In places, these dikes comprise a significant volume of the rock.

Because of the complexity of the geology and the scale of the map, certain shortcuts had to be taken. The two ages of basic rock were not differentiated. In many cases, they were very difficult to distinguish, especially in areas of little pyrite. In many places the more recent dikes were not mapped because of their small size and irregularity. Where the geology was very complex, only the dominant rock type was mapped. It was usually difficult to distinguish felsite from altered andesite.

ALTERATION

The alteration is covered in the 1972 report. It is most likely related to the felsite intrusives.

STRUCTURE

The entire area is extensively faulted. Faults range in thickness from a few inches to over 100 feet. Only a few faults were mapped. The largest fault strikes west to northwest. This fault probably dips steeply north and extends from the southeast corner of the mapped area. There is the possibility that it consists of two faults.

MINERALIZATION

Mineralization found in 1973 consists of galena, sphalerite with or without chalcopyrite in fractures and faults generally in felsite. In addition, 0.01 Cu was found across 100 feet in an irregular quartz porphyry breccia body. This was along the northern part of the Little Nitinat River where mapped. Scattered chalcopyrite was found elsewhere in isolated carbonate veins and small massive zones measured in inches.

The zone of greater than one percent pyrite was further defined. It coincides well with the area of felsite dikes and is probably associated in origin with these dikes. It also follows the major fault in the area.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of the 1973 geological examinations of the Little Nitinat property was two-fold: First, to assess the area's potential in regard to the possibility of the existence of a porphyry-type mineral deposit and; second, to attempt to further define the major fault of the area and to determine its importance as a site of lead-zinc-silver mineralization.

Although favorable rock types, alterations and pyrite were found as possible indicators of a porphyry-type copper deposit, little actual copper mineralization was located. A final test for such a deposit might be a deep (1000 foot) drill hole at the centre of the main I.P. anomaly.

An extension of the major fault or a similar fault was located and followed east of the Little Nitinat River. Because of leaching of sulfides and much overburden covering this fault, in places it was difficult to assess the value of mineralization along it. If it is one continuous fault, it is over 6000 feet long and 100 feet wide. Rock is intensely fractured and crushed along it with zones of massive pyrite and pyrrhotite. Some galena, sphalerite and silver have been found. A few 45° angle holes from the north are stronly recommended to test mineralization along this fault. The best site for the first hole would be north of the fault on the west road with the hole drilled to the southwest. Another possible hole could angle south from north of the fault zone on 192W. Holes testing this zone closer to Little Nitinat Rivers are risky because the exact geology and location of the fault are not well known there.

Willis W. Osborne
May 31, 1973

NORANDA EXPLORATION COMPANY, LIMITED

N.T.S. 92C/15E

PROPERTY LITTLE NITINAT

DATE May 17, 1973

# SAMPLE REPORT

| SAMPLE NO. | LOCATION & DESCRIPTION | TYPE | WIDTH | ASSAYS CREST Au | Ag | Cu | Pb | Zn | | | SAMPLED BY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M 891 | Felsite or altered andesite with 5.5 py. | Grab | | Tr | Tr | 0.1 | | | | | W. Osborn |
| | 204 + 50W - 236 + 50N | | | | | | | | | | |
| M 892 | Two inch wide qtz. vein with galena, sph and py. | Grab | | Tr | 0.80 | 0.24 | 4.24 | 19.35 | | | W. [illegible]orn |
| | 205 + 50W - 217 + 70N. | | | | | | | | | | |
| M 893 | Qtz. porphyry bx with 0.8 diss py. Minor mal. | | | Tr | Tr | Tr | | | | | |
| | 205 + 70W - 226 + 90N | | | | | | | | | | |

## GEOLOGICAL REPORT ON THE LITTLE NITINAT AREA

### Introduction:

In May, 1972 Noranda Exploration Company, Limited staked 20 claims and eight fractions over a lead-zinc anomaly just west of Little Nitinat River about 4½ miles north of the north end of Little Nitinat Lake. Silver also is somewhat anomalous here.

The property can be reached by good gravel roads. It is on the east and southeast side of a mountain slope which increases from moderately steep on the southeast to steep on the northwest. Part of the property is covered with mature trees; the rest has been logged and is blanketed with a thick second-growth of small trees and bushes. Little outcrop occurs to the southeast, but it increases progressively to the northwest.

The purpose of the examination was to map the geology of the property and to determine the cause of the anomaly. Rock examined was mainly along grid lines and logging roads. Rex Crider assisted on the job.

### General Geology:

Rock in the Little Nitinat area consists mainly of andesite-basalt with some breccia and limestone of the Upper Triassic Vancouver Group. Basalt dikes also were seen.

Andesite-basalt varies in colour from dark green grey (6-28-5) to shades of grey (6-30-4 and 7-1-7). The lighter shades are due largely to alteration although some of this may be dacitic. This rock is commonly porphyritic (7-1-2) with phenocrysts of partly to completely altered plagioclase and hornblende. Some of the rock approaches diorite, but a distinction was not made in mapping. The matrix of the porphyritic rock is mainly partly altered plagiclase. Accessory minerals include sphene, apatite and magnetite. A few amygdules of quartz and calcite also occur.

Breccia was seen in the northwest and southwest parts of the area and also in minor amounts in the northern part. Although the entire extent of the northwest breccia was not mapped, it seems to cover a fairly large area and is probably volcanic breccia. Fragments are generally less than one centimeter across and consist of aphanitic basic rock ranging in colour from light grey to black with, in places, a green tint (7-1-8). Although the southwest breccia is beyond the mapped area and was not mapped, it is probably also volcanic breccia. The remaining breccia (6-27-2) is likely flow breccia.

One outcrop of limestone was seen in the southwest part of the area. The extent is not known. It is black, weathering grey to buff (7-3-1). Dark grey to purple basalt dikes were seen in the southern part of the mapped area. Finally, a few fragments of highly altered granitic rock (6-29-5) were found in fault breccia.

Alteration:

Alteration is an important feature in the property. Intense sericitization, as well as chloritization, carbonization and silicification occur.

Thin sections were observed from five rocks of varying degrees of alteration. The least altered (7-1-2) consists of phenocrysts of altered hornblende and plagioclase in a matrix of altered plagioclase. Hornblende is partly altered to chlorite which, in turn, is partly altered to carbonate while plagioclase is partly altered to sericite. The more altered rock (6-28-6, 7-1-4 and 7-1-6) is blastoporphyritic with phenocrysts completely altered to sericite. (6-29-1)is the most intensely altered rock observed in thin section. Here the phenocrysts are entirely sericitized while the groundmass is moderately sericitized.

One curious aspect of the more altered rock concerns plagioclase in the groundmass. It is less altered than that in phenocrysts, xenoblastic and untwinned. It was originally thought that this plagioclase had been silicified; however, in the thin section from (7-1-2), plagioclase was noted with twinning in a state of disruption. In more altered rock the disruption has progressed to the point where twinning is completely obliterated. This discovery makes the possibility of silicification here much more remote.

Pyrite occurs with sericitized rock; therefore, the more highly altered rock is outlined on the map by the one percent contour.

Quartz occurs in the matrix of some fault breccia (6-29-5). Calcite, dolomite, quartz and epidote were seen in veins in the area.

Structure:

The main structural feature on the Little Nitinat property consists of a northwesterly fault zone in the southeast. The fault seems to die out or to be cut off northwest of 223 W. The fault is about 100 feet wide and consists of highly fractured rock laced with gouge zones and a few zones of brecciation (6-29-5). Rock in the fault is intensely sericitized and, in some places, silicified. Curiously, rock southwest of and adjacent to the fault is relatively unaltered although the widest gouge and breccia zone in the fault is on its southwest margin. This zone is up to five feet wide. More gouge and breccia occur outside of the main zone, but not too far from it.

A second large fault occurs in the southwestern part of the mapped area. This strikes westerly and consists of highly fractured rock with kaolinite along fractures (7-3-3).

Mineralization:

Galena, sphalerite, greenockite, bornite, chalcopyrite and malachite were found on the Little Nitinat property as well as a large pyrite zone. With the exception of pyrite, galena and sphalerite were the most common sulphides seen. These minerals occur in the matrix of fault breccia (7-4-5) and in dolomite-calcite-quartz veins (7-4-1 and 7-3-5). Some silver is associated with galena, and greenockite, with sphalerite.

Lead-zinc mineralization seems concentrated primarily in or along the main fault zone. Weathering and leaching of rock make accurate determination of mineral content difficult to impossible in some places. (6-29-6) is an example of a partly weathered rock. Road cuts provide the best exposures. It is possible that some of the gouge zones are also mineralized, but the material is ground up so finely that it is impossible to tell.

A large pyrite zone occurs on the property. The pyrite is mainly disseminated but also in fractures. A contour of estimated one per cent pyrite was drawn on the map. The zone of one per cent or greater pyrite follows the fault zone to the southeast, then broadens significantly to the south. Judging from eight rock samples collected by Rex Crider, along the Little Nitinat River, this zone continues at least to the river.

Chalcopyrite, bornite and malachite were seen in andesite-diorite (6-28-4) along a few epidote veins in the southwest corner of the mapped area. Possible minor chalcocite was seen near the main fault zone.

## Conclusions and Recommendations:

A number of features make this an interesting property. Included are the large pyrite-sericite zone and the lead-zinc-silver mineralization along the main fault. Speculation as to the cause of the pyrite-sericite zone is advisable. Possible clues could be granitic fragments in the fault zone and the quartzose matrix in some of the fault breccia. This, of course, points to a granitic intrusive as the possible cause of the pyrite-sericite zone.

Pb-Zn-Ag soil geochem anomalies roughly coincide with the pyrite-sericite zone. It is interesting to note that there is a significant build-up of copper in soils on 215 N between 199 and 211 N. 215 N is the last line to the southeast and the line along which the pyrite-sericite zone broadens to the southeast. This indicates that whatever is causing the pyrite-sericite zone could also be a source of copper mineralization.

5000 cps J.E.M. was run across some of the property but, surprisingly, did not pick up the fault zone or the pyrite-sericite zone. An explanation for this could involve the fact that much of the pyrite is disseminated.

In view of the foregoing, a further program is recommended for this area. It should first include acquiring ground to the east. The present grid should be extended to the east, and geological mapping plus soil sampling should be completed on the new grid. I.P. should be run over the new grid plus part of the old grid. A magnetometer survey could be warranted.

If results of this year's work are confirmed and extended by the new program, the property should be drilled. The object of drilling should be two-fold: First, to test mineral content of the fault zone; second, to search for copper in a porphyry copper environment.

Willis W. Osborne,
Exploration Geologist

October 6, 1972

NORANDA EXPLORATION CO. LTD.

Little Nitinat
92C/15E
Grab Samples

## SAMPLE REPORT

DATE May 25, 1972

| SAMPLE NO. | PLACE | | Au | Ag | Cu | Pb | Zn | SAMPLED BY |
|---|---|---|---|---|---|---|---|---|
| K4446 | | Above average | 0.01 | 4.1 | 0.04 | 1.68 | 9.01 | Soregaroli |
| K4447 | | average (?) | Tr | 0.2 | | 0.17 | 1.28 | " |

MP