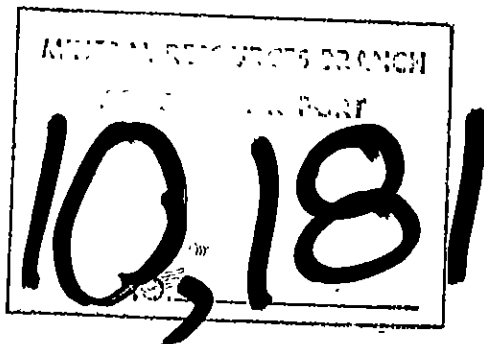


82-124-10181

DIAMOND DRILLING REPORT ON THE
SPROG MINERAL CLAIM
ATLIN MINING DIVISION
N.T.S. 104M/1E
LAT. 59°13' LONG. 134°12'

NORANDA EXPLORATION COMPANY, LIMITED
(NO PERSONAL LIABILITY)

M. Savell



Feb. 5 1982

TABLE OF CONTENTS

| | <u>PAGE</u> |
|-----------------------------|-------------|
| INTRODUCTION | 1 |
| DRILLING | 1 |
| Figure 1 Location Map | 1:250,000 |
| Figure 2 Location Map | 1: 50,000 |
| Table 1 History of Property | |

APPENDICES

| | |
|------------|------------------------------|
| Appendix 1 | Statement of Qualifications |
| Appendix 2 | Statement of Costs |
| Appendix 3 | Drill Logs and Assay Results |

MAPS

| | | |
|-------------------------|----------|-----------|
| Drillhole Location Plan | 1: 2,500 | In Pocket |
|-------------------------|----------|-----------|

INTRODUCTION

The Sprog Mineral Property (also referred to as the Hoboe Creek Property) is located approximately 45 kilometres south-south-west of Atlin, in northern B.C. Access is made by helicopter from Atlin.

The property lies on the western side of Hoboe Creek at the base of a steep bluff. The creek flows northward in a wide, flat, detritus filled, swampy valley. It is fed by Llewellyn Glacier to the south and drains into Willison Bay, an arm of Atlin Lake. The area is contained within the Coast Crystalline Belt, and relief varies from about 670 metres at Hoboe Creek to 2,140 metres on the adjacent glacier capped mountains.

The Sprog Claim was staked in 1979 by Noranda Exploration Company, Limited to cover a known Cu mineralized magnetite skarn on which the previous claims had lapsed. The property has been worked on intermittently since 1899 by several different companies. Table 1 gives a brief history. It is presently owned and operated by Noranda.

| <u>CLAIM</u> | <u># UNITS</u> | <u>RECORD #</u> | <u>RECORD DATE</u> |
|--------------|----------------|-----------------|--------------------|
| Sprog | 10 | 651 | April 23, 1979 |

The area is underlain by granitic rocks of the Coast Plutonic Complex which intrude westerly dipping limestones and siliclastics. These are exposed along the western edge of the Hoboe Creek valley for over 1,000 metres. Significant copper mineralization occurs in exposures of massive magnetite skarn and magnetite-serpentine skarn replacement bodies throughout the metamorphosed sediments. The purpose of this work is to test anomalously high magnetic responses for copper bearing magnetite-serpentine skarn on previously undrilled targets.

DRILLING

A total of 2 diamond drill holes of BQ size (approximately 3.2 cm. in diameter) totalling 268.2 metres were drilled. Both holes were drilled vertically. The locations and identifying numbers are shown on the enclosed map.

Hole NH-81-1 encountered biotite granite to a depth of 75.1 metres. From 75.1 to 135.6 metres alternating sections of magnetite skarn, magnetite-serpentine skarn, serpentine skarn, impure limestone skarn, marble and hornfels were intersected. Sufficient quantities of magnetite were present to explain the anomalous surface magnetics, however, only minor copper mineralization exists.

Hole NH-81-2 intersected 45.35 metres of granitic rocks before penetrating a chlorite-serpentine skarn. The remainder of the hole was in and out of altered granitic rocks and skarn. It was apparently following the irregular contact of the intrusion and the sediments. Minor amounts of disseminated magnetite were found in the skarn which may explain the lower magnetic response at the collar of this hole than at NH-81-1. Again, only minor quantities of copper mineralization are present.

TABLE 1 HISTORY OF SPROG (HOBEO CREEK) PROPERTY

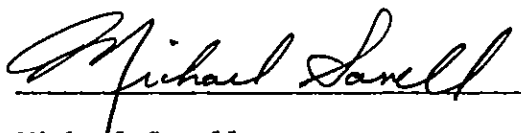
| <u>YEAR</u> | <u>COMPANY</u> | <u>WORK DONE</u> |
|-------------|---|--|
| 1899 - 1918 | Laverdicre Brothers Et al. | Prospecting, trenching, drifting - 3 adits totalling ~120 m. |
| 1948 - 1956 | Conwest | Geological mapping, sampling of adits |
| 1956 - 1964 | Bethlehem Copper | Not available |
| 1964 - 1969 | Cominco | Geological mapping, magnetometer survey diamond drilling - 5 holes totalling ~154 m. |
| 1969 - 1973 | Centex Mines | Geological mapping, diamond drilling 2 holes totalling ~ 48 m. |
| 1973 - 1976 | Rio Plata Silver Mines | Topographic mapping, airborne magnetometer survey, diamond drilling - 2 holes totalling ~ 610 m. |
| 1976 - 1979 | Whitehorse Copper | Relogging drill core |
| 1979 - | Noranda Exploration Company, Limited | Relogging, assaying drill core |

Assays were performed on 11 samples totalling 19.3 metres from DDH NH-81-1 for Mo, Cu, Co, Au and Ag. From DDH NH-81-2 8 samples totalling 20.8 m were assayed for Mo, Cu, Co, WO_3 , Au and Ag. The locations and assay results for these samples are listed on the sample reports following the drill logs in Appendix 3.

The drilling was contracted to Asmith Diamond Drilling Ltd. of 204 Lambert Street, Whitehorse, Yukon Territory. Actual drilling commenced on September 23, 1981 and was completed on October 3, 1981.

The core is stored in well labelled wooden boxes kept at the Sprog Property campsite (see Drill Hole Location Map).

Respectfully submitted

A handwritten signature in cursive script, reading "Michael Savell", written over a horizontal line.

Michael Savell
Geologist
Noranda Exploration Company, Limited
(No Personal Liability)

FIGURE 1, 2.

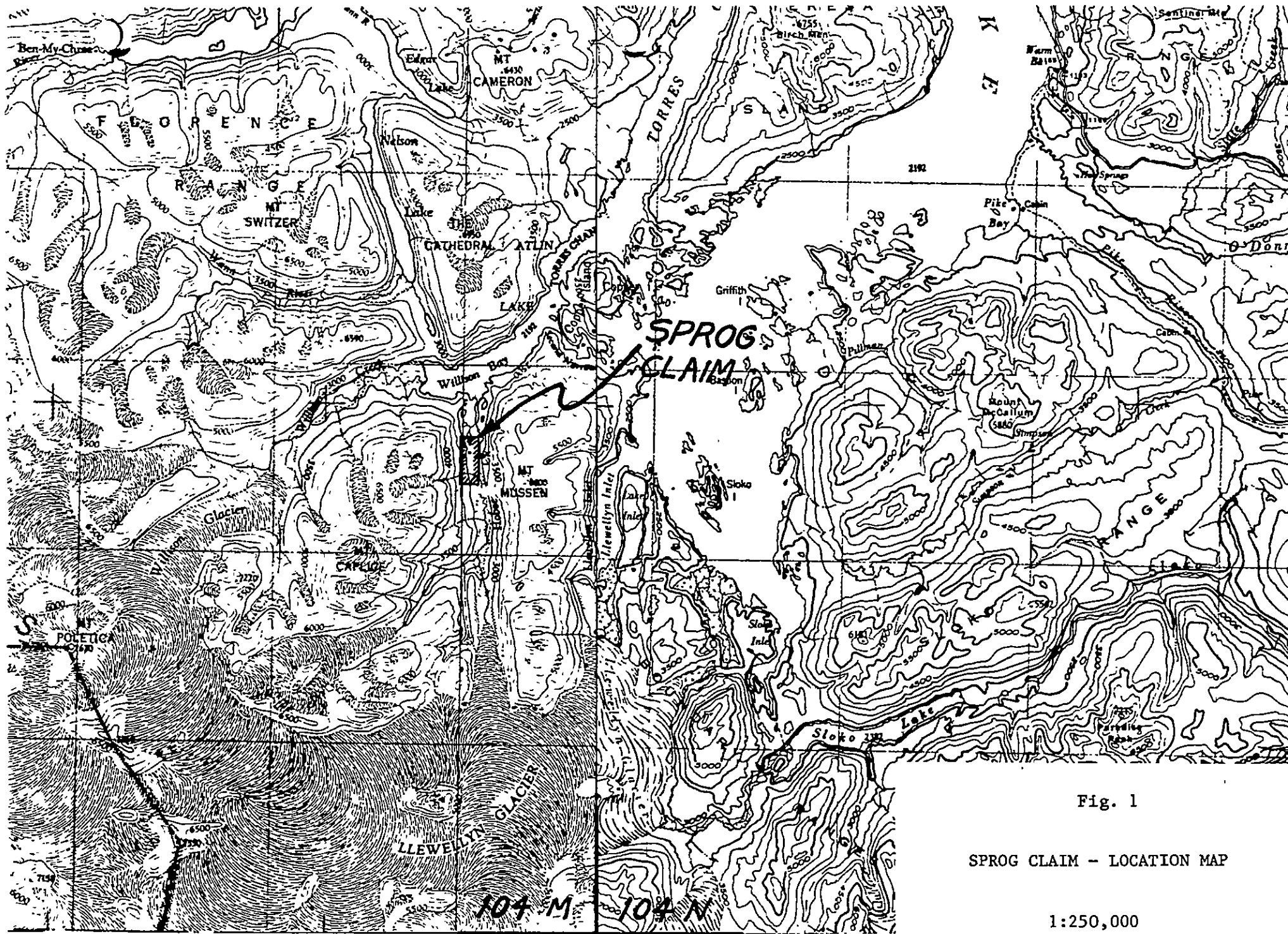
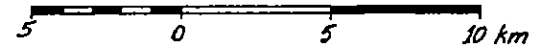


Fig. 1

SPROG CLAIM - LOCATION MAP

1:250,000



Michael Savell Feb 5 1982

104°M 104°N
59°00'
134°00'

Michael Savell Feb 5 1982

5915

M 104M/1E

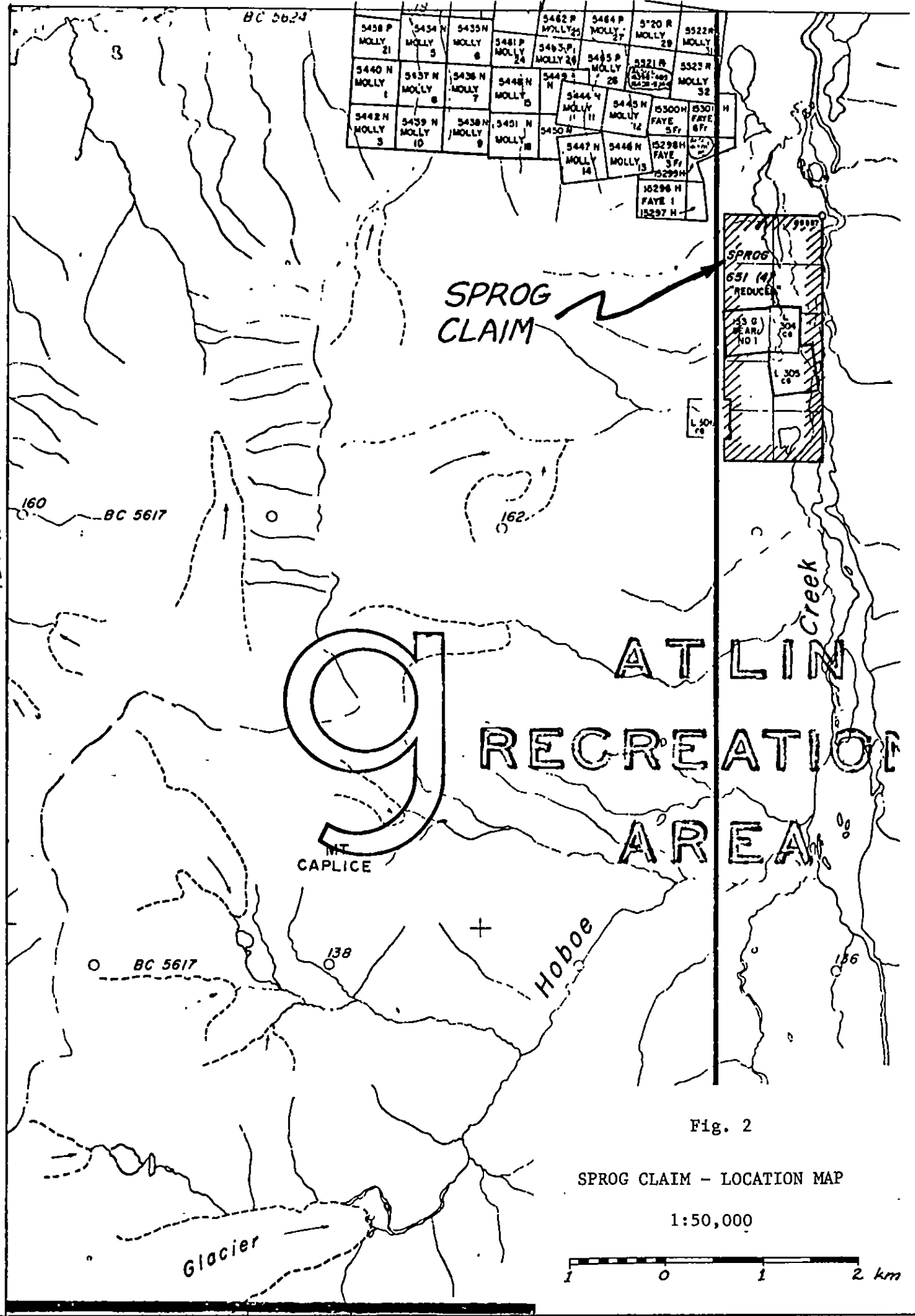


Fig. 2

SPROG CLAIM - LOCATION MAP

1:50,000



M-1-W

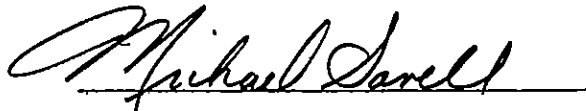
APPENDIX 1

STATEMENT OF QUALIFICATION

STATEMENT OF QUALIFICATIONS

I, Michael Savell of the City of Vancouver, Province of
British Columbia, do certify that:

1. I have been an employee of Noranda Exploration Company,
Limited since May 1980.
2. I am a graduate of Dalhousie University with a Bachelor
of Science degree in geology.

A handwritten signature in cursive script that reads "Michael Savell". The signature is written in black ink and is positioned above a horizontal line.

Michael Savell

Geologist

Noranda Exploration Company, Limited
(No Personal Liability)

APPENDIX 11
STATEMENT OF COSTS

NORANDA EXPLORATION COMPANY, LIMITED

STATEMENT OF COST

PROJECT HOBOC CREEK DATE FEBRUARY 1, 1982
TYPE OF REPORT DIAMOND DRILLING

a) Wages:

No. of Days 52
Rate per Day \$ 86.2898
Dates From: Aug/81 - Dec/81
Total Wages 52 x \$ 86.2898 4,487.07

b) Food and Accomodation:

No of days 52
Rate per day \$ 34.5002
Dates From: Aug/81 - Dec/81
Total Cost 52 x \$ 34.5002 1,797.65

c) Transportation:

No of days 52
Rate per day \$ 302.1204
Dates From: Aug/81 - Dec/81
Total Cost 52 X \$ 302.1204 15,710.26

d) Instrument Rental:

Type of Instrument
No of days
Rate per day \$
Dates From:
Total Cost X \$

Type of Instrument
No of days
Rate per day \$
Dates From:
Total Cost X \$

| | | |
|--|-----------------------|------------------|
| f) Analysis (See attached schedule) | | 1,332.25 |
| g) Cost of preparation of Report | | |
| Author | | 431.45 |
| Drafting | | |
| Typing | | 431.45 |
| h) Other: | | |
| | Camp & Field Supplies | 1,370.26 |
| | Contractors | <u>30,193.10</u> |

Total Cost \$55,753.49

| | | |
|----------------------------|--------------------|---------------------|
| e) Unit costs for Drilling | | |
| No of days | 52 | |
| No of units | 268.2 Meters | |
| Unit costs | 207.8803 / Meter | |
| Total Cost | 268.2 *\$ 207.8803 | <u>\$ 55,753.49</u> |

APPENDIX 111
DRILL LOGS AND ASSAY RESULTS

NORANDA EXPLORATION CO. LTD.

Property HOBOE CREEK

Sheet No. 1 of 8 Hole No. NH-81-1

Project No. 1019 N.T.S. 104M/1

Core Size: BQ

Lat. 104 + 01N

Elev. ~770 m

Dip -90°

Collared 9/23/81

Logged by: M. Savell

Dep. 100 + 61.5W

Depth 135.6 m.

Bearing

Completed 9/27/81

ASSAYS

| Meters | Rec'y % | Rock Type/Alteration | Graphic Log. | Mineralization/Structure | % Sulfides | Sample No. | Lt. | | | | |
|-----------|---------|--|--------------|--|------------|------------|-----|--|--|--|--|
| 0.3 m | | Casing | | | | | | | | | |
| 1.0 - 3.0 | | Overburden | | | | | | | | | |
| 3.0 - 4.0 | 95 | <u>BIOTITE GRANITE</u> - medium grained, equigranular, dark orange colour (potassic alteration) | | Thin, irregular calcite veins throughout, hairline fractures lined with chlorite | | | | | | | |
| | | Biotites altered to chlorite. | | | | | | | | | |
| 4.0 - 4.4 | 99 | <u>ALTERED BASIC DYKE</u> - orange stained quartz, feldspar phenocrysts in a dark green chlorite groundmass. | | Trace MoS ₂ | | | | | | | |
| 4.4 - 6.2 | 99 | <u>BIOTITE GRANITE</u> - as from 3.0 - 4.0 | | Lower contact brecciated. | | | | | | | |
| 6.2 - 6.8 | 99 | <u>SHEAR ZONE</u> - chlorite, clay, calcite, quartz filled at 60° to core axis | | | | | | | | | |
| 6.8 - 7.3 | 99 | <u>BIOTITE GRANITE</u> - as from 3 - 4 m. | | | | | | | | | |

Michael Savell

| Lat. | | Elev. | | Dip | | Collared | | Logged by. | | | | |
|----------------|-------|--|--|-------------|---|------------|------------|------------|--|--|--|--|
| Dep. | | Depth | | Bearing | | Completed | | ASSAYS | | | | |
| Merers | Reg'y | Rock Type/Alteration | | Graphic Log | Mineralization/Structure | % Sulfides | Sample No. | Lt. | | | | |
| 7.3 - 7.5 | 99 | ALTERED BASIC DYKE - almost entirely chlorite, minor epidote. | | | | | | | | | | |
| 7.5 - 9.2 | 99 | BIOTITE GRANITE - as from 3-4 m. | | | Chalcopyrite filling interstitial spaces from 7.6 - 7.9 m | 2% | | | | | | |
| 9.2 - 33.9 | 99 | BIOTITE GRANITE - medium grained, equigranular, overall grey to pale pink-orange in colour. | | | Band of hard, micro-crystalline apple green material (calc-silicates?), 5 cm thick, at 14.2 m | | | | | | | |
| | | Mostly fresh, unaltered, except for pinkish (potassic?) alteration of feldspars, minor kaolinization, silicification, | | | 60° to core axis with fine reddish garnets. | | | | | | | |
| | | and chloritization of biotite around chlorite and epidote lined fractures. Alteration haloes up to ~1 m. wide, decrease in abundance with depth. | | | | | | | | | | |
| 33.9 - 62.5 | 99 | BIOTITE GRANITE - as above, but almost entirely fresh, unaltered. Alteration as above rare. | | | Minor chalcopyrite on fracture at 58.8 m. | Tr. | | | | | | |
| 62.5 - 63.4 | 99 | BIOTITE GRANITE - as from 9.2 - 33.9 m, but fracturing and alteration more intense. Also minor epidote, calcite veining | | | Chalcopyrite lining fractures | 1% | | | | | | |

NORANDA EXPLORATION CO. LTD.

HOBOE CREEK

Sheet No. 5 of 8 Hole No. NH-81-1

Property

Project No.

N.T.S.

Core Size:

Lat.

Elev.

Dip

Collared

Logged by:

Dep.

Depth

Bearing

Completed

ASSAYS

| Meters | Rec'y % | Rock Type/Alteration | Graphic Log | Mineralization/Structure | % Sulfides | Sample No. | Lt. | | | | |
|---------------|---------|---|-------------|--|------------|------------|-----|--|--|--|--|
| 97.9 - 100.2 | | SERPENTINE SKARN - mostly massive serpentine, with minor magnetite, talc, siderite, calcite veinlets. | | | | | | | | | |
| 100.2 - 100.5 | | IMPURE LIMESTONE SKARN - consists of coarse-grained, pale reddish-brown to dirty green calc-silicates, with magnetite filling fractures. | | | | | | | | | |
| 100.5 - 102.1 | | SERPENTINE SKARN - as from 97.9 - 100.2 m. | | | | | | | | | |
| 102.1 - 103.0 | 99 | IMPURE LIMESTONE SKARN Coarse grained, mottled, irregular texture, very colourful brown, blue-green, yellow-green, purple, grey. Consists of epidote, serpentine, tremolite, talc, calcite minor diopside, garnet. | | Faintly foliated at ~55° to core axis. | | | | | | | |
| 103.0 - 103.8 | 99 | DOLOMITIC MARBLE - pale grey-green. speckled texture, consists of dolomite, diopside, minor calcite, quartz, serpentine, pyrite, molybdenite. | | Very minor disseminated MoS ₂ | | | | | | | |

NORANDA EXPLORATION CO. LTD.

Property HOBBOE CREEK

Sheet No. 1 of 9 Hole No. NH-81-2

Project No. 1019 N.T.S. 104M/1

Core Size. BQ

Lat 103+01 N

Elev 765 m

Dip -90°

Collared 10/1/81

Logged by: M. Savell

Dep. 100+75 W

Depth 132.6 m

Bearing -

Completed 10/3/81

ASSAYS

| Meterage | Regy % | Rock Type/Alteration | Graphic Log | Mineralization/Structure | % Sulfides | Sample No. | Lt. | | | | |
|------------|--------|---|-------------|--|------------|------------|-----|--|--|--|--|
| 0-4.0 | | Casing | | | | | | | | | |
| 1-4.0 | | Overburden | | | | | | | | | |
| 4.0-5.2 | ~95 | <u>INTENSELY ALTERED GRANITIC ROCK</u> - hard, med grained, overall colour is dirty grey-green-brown. Biotite altered to chlorite, feldspars tinted and silicified. Minor quartz, calcite veining. | | Disseminated chalcopyrite throughout. Minor chlorite lineal fractures at ~60° to core axis | ~1/2 | | | | | | |
| 5.2-6.8 | ~95 | <u>EXTENSIVELY SILICIFIED GRANITIC ROCK</u> - hard, blotchy green-brown colour from 5.2-6.0 m, uniform grey-purple from 6.0-6.8 m. Thin quartz and calcite veins throughout. | | Minor disseminated chalcopyrite. Abundant chlorite lined fractures at ~60° to core axis. | | | | | | | |
| 6.8 - 8.4 | ~95 | <u>INTENSELY ALTERED GRANITIC ROCK</u> - medium grained slightly friable, overall colour is mottled pale green and orange. Minor silicification, biotite to chlorite, feldspar to clays. Quartz veining at 7.7 m, 60° to core axis. | | | | | | | | | |
| 8.4 - 11.6 | | <u>MILDLY ALTERED GRANITIC ROCK</u> medium grained, hard, colour is grey-orange. Alteration as above, less extensive. | | Chalcopyrite at 8.6 | | | | | | | |

Michael Savell

Property

Project No.

N.T.S.

Core Size.

Logged by:

Lat

Elev.

Dip

Collared

Dep.

Depth

Bearing

Completed

ASSAYS

| Meterage | Rec'y % | Rock Type/Alteration | Graphic Log | Mineralization/Structure | % Sulfides | Sample No. | Lt. | | | | |
|-------------|---------|---|-------------|--------------------------------------|------------|------------|-----|--|--|--|--|
| 11.6 - 12.3 | <99 | <u>ALTERED GRANITIC ROCK</u> - pale green colour. Feldspars silicified, biotite chloritized. Probably contains some calc-silicate material. | | Minor disseminated chalcopyrite. | | | | | | | |
| 12.3 - 13.4 | <99 | <u>MILDLY ALTERED GRANITIC ROCK</u> - pale orange colour. Biotite to chlorite, K-spars slightly silicified. | | | | | | | | | |
| 13.4 - 13.7 | <99 | <u>ALTERED GRANITIC ROCK</u> as from 11.6 to 12.3 | | | | | | | | | |
| 13.7 - 14.4 | | <u>CHLORITIZED BASIC DYKE</u> - pale to dark green, some quartz phenocrysts. Uneven fractures lined with clay, chlorite at 85° core axis | | Contacts at 50° to core axis | | | | | | | |
| 14.4 - 16.8 | | <u>MILDLY ALTERED GRANITIC ROCK</u> as from 12.3 to 13.4 | | Minor disseminated pyrite. | | | | | | | |
| 16.8 - 18.1 | | <u>BIOTITE GRANITE</u> - medium grained, grey colour, minor chlorite lined fractures with narrow bleached haloes. | | Very minor disseminated chalcopyrite | | | | | | | |

| Lat. | | Elev. | | Dip | | Collared | | Logged by: | | | | | |
|-------------|---------|--|--|-------------|--------------------------------------|-----------|------------|------------|-----|--|--|--|--|
| Dep. | | Depth | | Bearing | | Completed | | ASSAYS | | | | | |
| meters | Rec'y % | Rock Type/Alteration | | Graphic Log | Mineralization/Structure | | % Sulfides | Sample No. | Lt. | | | | |
| 51.9 - 55.9 | | con't. minor clay alteration of feldspars and silicification around fractures. | | | Minor chalcopyrite lining fractures. | | | | | | | | |
| 55.9 - 61.4 | 99 | <u>INTENSELY ALTERED GRANITIC ROCKS</u> - as from 49.4 - 51.9 with greenish (calc-silicate) alteration abundant. Chlorite lined fractures common. Minor unaltered patches. | | | | | | | | | | | |
| 61.4 - 71.0 | 99 | <u>BIOTITE-QUARTZ MONZONITE</u> coarse to porphyritic with minor alteration haloes around chlorite lined fractures. Minor calcite veinlets. | | | | | | | | | | | |
| 71.0 - 72.8 | 99 | <u>ALTERED MONZONITE</u> - biotite to chlorite, pink/orange silicification, minor clay alteration. | | | | | | | | | | | |
| 72.8 - 75.0 | 99 | <u>INTENSELY ALTERED MONZONITIC ROCKS</u> - mostly to pale green chlorite and clays. Calcite clay lined fractures throughout. Hematite streaks at 30° to core axis in upper 30 cm. | | | | | | | | | | | |

| Lat. | | Elev. | | Dip | | Collared | | Logged by: | | | | | |
|------------------|-------|---|--|-------------|--|-----------|------------|------------|-----|--|--|--|--|
| Dep. | | Depth | | Bearing | | Completed | | ASSAYS | | | | | |
| <i>meters</i> | Rec'y | Rock Type/Alteration | | Graphic Log | Mineralization/Structure | | % Sulfides | Sample No. | Lt. | | | | |
| 75.0 - 76.3 | 99 | <u>ALTERED MONZONITE</u> - as from 71.0 - 72.8 m. | | | | | | | | | | | |
| 76.3 - 77.7 | 99 | <u>BIOTITE-QUARTZ MONZONITE</u> - as from 61.4 - 71.0 | | | | | | | | | | | |
| 77.7 - 89.2 | 99 | <u>ALTERED MONZONITE</u> - as from 71.0 - 72.8 m. Silicification becomes more prominent with depth. Dark green, fine dyke at 77.75 - 77.85 m. Alteration intense in bottom meter. | | | $\frac{1}{2}$ cm thick chlorite, calcite filled fracture at 90° to core axis from 85.1 - 87.1 m. | | | | | | | | |
| 89.2 - 92.5 | 99 | <u>SKARN</u> - pale grey-green, hard siliceous. Diopside (?), chlorite main components. Minor calcite, talc, hematite. | | | Trace disseminated CaWO_3 | | | | | | | | |
| 92.5 - 101.3 | 99 | <u>INTENSELY ALTERED MONZONITIC ROCK</u> - biotite to green epidote, quartz, feldspar to milky white quartz - "skarnified". | | | | | | | | | | | |
| 101.3 - 103.5 | 95 | <u>CHLORITE SKARN</u> - dark green, minor diopside, serpentine, talc, calcite. Serpentine skarn from 102.8 - 103.1 m, minor disseminated magnetite. | | | | | | | | | | | |

Rossbacher Laboratory Ltd.

GEOCHEMICAL ANALYSTS & ASSAYERS

2225 S. SPRINGER AVE.,
 BURNABY, B. C.
 CANADA
 TELEPHONE: 299-6910
 AREA CODE: 604

CERTIFICATE OF ANALYSIS

TO: NORANDA EXPLORATION CO LTD.
 1050 Davie St.
 Vancouver, B.C.

CERTIFICATE NO. 81457

INVOICE NO. 2013

DATE RECEIVED

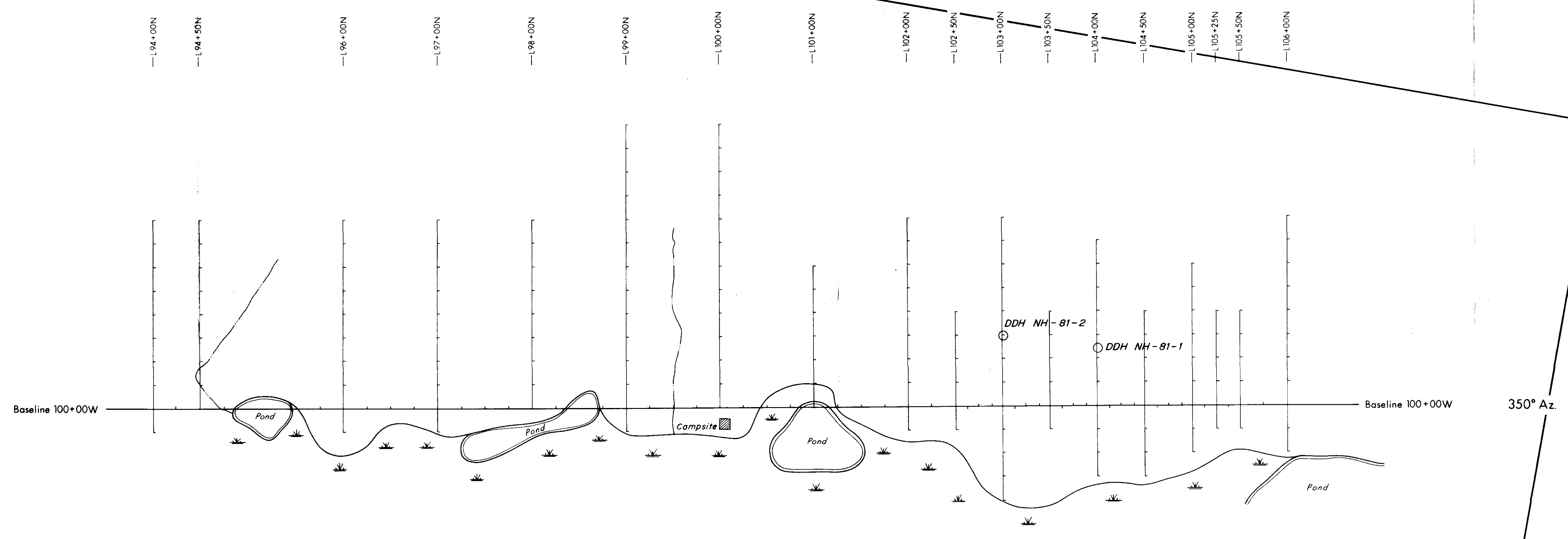
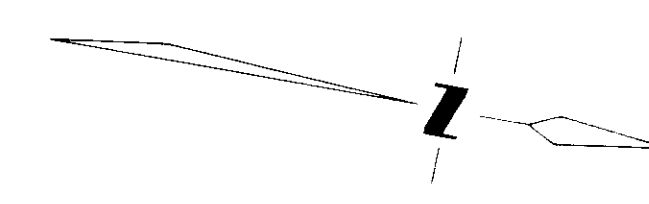
ATTN: 19J # 11-4 *HOBSE CR. M. Savell*

DATE ANALYSED Nov 12, 1981

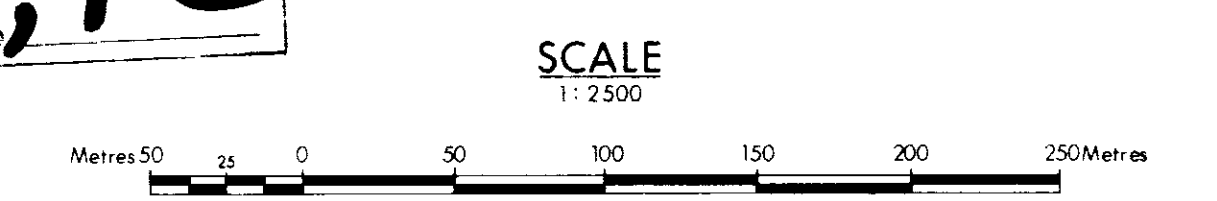
| SAMPLE NO.: | % | % | % | % | oz/T | oz/T |
|-------------|-------|------|------|------|-------|------|
| | T.Mo | Cu | Co | MO3 | Au | Ag |
| P 6660 | 0.001 | 0.01 | 0.01 | 0.01 | 0.001 | 0.04 |
| P 6661 | 0.001 | 0.02 | 0.01 | 0.02 | 0.001 | 0.02 |
| P 6662 | 0.001 | 0.12 | 0.01 | 0.01 | 0.001 | 0.06 |
| P 6663 | 0.001 | 0.04 | 0.01 | 0.02 | 0.001 | 0.02 |
| P 6664 | 0.001 | 0.01 | 0.01 | 0.01 | 0.001 | 0.04 |
| P 6665 | 0.001 | 0.01 | 0.01 | 0.01 | 0.001 | 0.04 |
| P 6666 | 0.001 | 0.01 | 0.01 | 0.01 | 0.001 | 0.04 |
| P 6667 | 0.001 | 0.01 | 0.01 | 0.01 | 0.003 | 0.02 |
| P 1911 | 0.004 | 0.01 | 0.01 | | 0.002 | 0.04 |
| P 1912 | 0.008 | 0.40 | 0.01 | | 0.001 | 0.26 |
| P 1917 | 0.011 | 0.06 | 0.01 | | 0.001 | 0.04 |
| P 1919 | 0.010 | 0.36 | 0.01 | | 0.001 | 0.10 |
| X 12635 | 0.008 | 0.04 | 0.01 | | 0.001 | 0.04 |
| X 12636 | 0.010 | 0.02 | 0.01 | | 0.001 | 0.06 |
| X 12637 | 0.002 | 0.01 | 0.01 | | 0.001 | 0.04 |
| X 12638 | 0.009 | 0.04 | 0.01 | | 0.001 | 0.04 |
| X 12644 | 0.001 | 0.01 | 0.01 | | 0.001 | 0.10 |
| X 12648 | 0.001 | 0.01 | 0.01 | | 0.001 | 0.04 |
| X 12650 | 0.024 | 0.01 | 0.01 | | 0.001 | 0.02 |

Certified by

Rossbacher



10,181



SPROG L.C.P. 09997

| | | |
|----------------|----------------------------|---------------|
| REVISED | HOBEO CREEK PROPERTY | |
| | D.D.H. LOCATION PLAN | |
| PROJ. No. 1019 | SURVEY BY: K. Little | DATE: Oct '81 |
| N.T.S. | DRAWN BY: B. Little | SCALE: 1:2500 |
| DWG. No. | NORANDA EXPLORATION | |
| | OFFICE: Vancouver | |

Michael Small
Feb 5 1982

To accompany Diamond Drilling Report on the
Spray Mineral Claim by Michael Small
Feb 5 1982