244

NORANDA EXPLORATION COMPANY LIMITED

GEOPHYSICAL SURVEY

of the

HIGHLAND VALLEY PROPERTY

FIVE MILES SOUTHEAST

of

ASHCROFT, B.C.

50° 121° SOUTH

M. M. Mennies, P.Eng.

June - September, 1958.

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NORANDA EXPLORATION COMPANY LIMITED

COST OF GEOPHYSICAL SURVEY

of the

HIGHLAND VALLEY PROPERTY

of

ASHCROFT, B.C.

June-September 1958

PROFESSIONAL:

SUPERVISORY -	20 days @ $35.00/day	$ 700.00
SURVEY -	75 days @ $35.00/day	$2,625.00

TECHNICAL:

DRAUGHTING -	25 days @ $20.00/day	$ 500.00

LABOR:

LINE CUTTING -	95 days @ $15.00/day	$1,425.00
ASSISTANTS -	90 days @ $15.00/day	$1,350.00
	TOTAL	$6,600.00

COST DISTRIBUTION

CLAIM	NO. OF CLAIMS	DISTRIBUTION/CLAIM	TOTAL
B.X. No's 1 - 6 inclusive	6	$100.00	$ 600.00
B.X. No's 9-11 inclusive	3	$100.00	$ 300.00
B.X. No's 13-16 inclusive	4	$100.00	$ 400.00
Cow No's 1 - 12 inclusive	12	$100.00	$1,200.00
Star No's 1 - 7 inclusive	7	$100.00	$ 700.00
Star No's 21-30 inclusive	10	$100.00	$1,000.00
Bob No's 1-13 inclusive	13	$100.00	$1,300.00
Bob No. 15	1	$100.00	$ 100.00
Bob No's 17-24 inclusive	8	$100.00	$ 800.00
	64 claims		$6,400.00

NORANDA EXPLORATION COMPANY LIMITED

GEOPHYSICAL SURVEY

of the

HIGHLAND VALLEY PROPERTY

INTRODUCTION:

Noranda Exploration Company Limited optioned two adjoining Highland Valley properties in the spring of 1958. These properties are the B.X. and the Torvan groups with 28 and 54 mineral claims respectively. The large group of claims thus formed, called the Highland Valley Property, lies to the east and north of Bose Lake in the northeastern portion of the Highland Valley mining area. A camp was built on the southeast shore of Bose Lake and road construction, line cutting, geological mapping, and geophysical surveying were carried on from early June to late September.

DESCRIPTION:

Bose Lake is 20 miles southeast of Ashcroft and 29 miles northwest of Merritt. By road the distances are 28 and 42 miles respectively. Two rough but serviceable roads lead to Bose Lake from the main Highland Valley road. One route follows the Trojan Mine road as far as the North Lodge camp where a branch leads in an easterly direction to Bose Lake. The other route leaves the main road about 2 miles east of the Bethlehem camp and follows a winding course around gravel ridges and swampy areas.

Highland Valley property elevations range from 4600 to 5000 feet. On the B.X. and Cow claims rocky ridges and ravines are numerous with the remaining area covered by gravel benches and swamps. North of Bose Lake there are many gravel hills and gulleys. Large areas of outcrops occur farther north on the Bob and Star claims.

Trenching had previously been carried out on the B.X. No's 1, 2, 3 and 4 claims by the B.X. Mining Company. Additional bulldozer work on these claims and the B.X. No. 14 claim was done by Noranda Exploration Company Limited in June 1958.

Two roads were built during June and July 1958. The first, over two miles in length, was built to the northeast of the Outrider claims and passed through the Cow and B.X. groups. It joined the old B.X. road near the southeast corner of Cow No. 11 claim and the Outrider road on the Lodge No. 3 claim. The second road was built from a point on the Lodge No. 7 claim northwest of Bose Lake in a northeasterly direction for more than 2½ miles across both the Star and Bob groups of claims. Considerable repair and maintenance work was done on existing roads in the area.

Copper mineralization was discovered in the Highland Valley area in 1899 and spasmodic prospecting and development work has been carried on ever since. Large tonnages of low grade copper ore have recently been indicated on the Bethlehem Copper property which includes the Iona, Snowstorm, Jersey and East Jersey zones. Of these copper occurrences only the Snowstorm has produced. In 1915 and 1916, 136 tons of bornite ore averaging 28 percent copper was shipped. The O.K. or Chataway property 5 miles to the west produced 2000 tons of 12 percent ore during World War 1. Between 1907 and 1926, 1800 tons of 6½ percent copper ore was shipped from the Aberdeen property located 14 miles to the southeast in the Guichon Creek valley. Craigmont mine at the extreme southern end of the Guichon Creek batholith is a recent copper discovery of major importance. These properties lie within or adjoin the Guichon Creek batholith.

During the summer of 1958 many companies, syndicates, and individuals conducted exploration programmes within the Guichon Creek batholith or along its contacts with Nicola Group rocks.

BIBLIOGRAPHY:

Cockfield, W.E. (1948): Geology and Mineral Deposits of Nicola Map-Area, British Columbia; Geol. Surv., Canada. Memoir 249

Duffell, S. and McTaggart, K.C. (1951): Ashcroft Map-Area. British Columbia; Geol. Surv., Canada. Memoir 262

Rice, H.M.A. (1947): Geology and Mineral Deposits of the Princeton Map-Area, British Columbia; Geol. Surv., Canada Memoir 243

White, W.H., Thompson, R.M., McTaggart, K.C. (1958): The Geology and Mineral Deposits of Highland Valley, B.C.; C.I.M. Transactions Vol. LX, 1957, PP 273-289

GENERAL GEOLOGY:

The Highland Valley property is in the northeastern section of the Guichon Creek batholith. The batholith is bounded by Guichon Creek on the east and the Thompson and Nicola rivers on the west, and extends from the Craigmont mine in the south to the Thompson river in the north. The rocks of the batholith, a member of the Coast intrusions, are generally quartz diorites and granodiorites. The batholith is intrusive into the Upper Triassic Nicola Group rocks wherever they are in contact and is overlain by Upper Jurassic sediments near Ashcroft. This implies a Lower Jurassic age for the batholith and it is therefore older than the main Coast intrusions west of the Fraser river. Much of the northern part of the batholith is overlain by basalts and andesites of Miocene age. At the Krain property on Forge mountain thoroughly oxidized copper deposits are partly capped by fresh basalt.

Copper deposits have been found at a number of properties in and near Highland Valley. These deposits are associated with rocks of the Guichon Creek batholith, with granodiorite and quartz diorite intruding the Guichon batholith, and with breccias probably derived in part from rocks of the batholith. The largest deposits so far found in the Guichon batholith are on the property of Bethlehem Copper Corporation, Ltd., 2 miles southwest of Bose Lake.

Most of the rock found on the Highland Valley property is massive quartz diorite and some quartz monzonite of the Guichon Creek batholith. Some rocks believed to be part of the Younger Complex intruding the Guichon batholith were found. These are quartz diorites grading into fine grained granite and aplite. They can be distinguished from rocks of the Guichon batholith by their finer grain and content of pink orthoclase. Small aplite dykes are found throughout the area. Some small outcrops of a medium grained orthoclase porphyry were found and these are probably associated with the Younger Complex.

Joints and faults in the area generally have a north-south strike and near vertical dip. A weaker set of joints has an east-west strike. Faults and shear zones are marked by deep gulleys and canyons cutting across rock ridges. Epidote and chlorite alteration is found in and near shear and fault zones.

The only significant copper mineralization found is in an altered zone on the B.X. No's 1, 2, 3 and 4 claims. In the altered zone the rocks are sheared and are very rich in chlorite. Some sparse disseminated chalcopyrite is present but most of the copper occurs in fine veinlets of oxidized copper minerals with a northerly strike and 45 degree westerly dip. The main minerals are malachite, azurite and chrysocolla. Pyrite is found associated with chalcopyrite here and in very minor amounts elsewhere on the property. Limonite occurs in a number of swampy areas and is especially noticeable east of Bob No. 24 claim.

REASONS FOR INVESTIGATION:

1. Location within the Guichon Creek batholith.
2. Proximity to Trojan mine and other properties on Forge mountain.
3. Proximity to Bethlehem Copper property.
4. A zone of alteration and shearing containing veinlets of copper mineralization exposed by trenching on B.X. No's 1-4 claims.
5. Apparent zones of shearing and faulting observed on air photographs of the region.
6. The possibility of geophysical and geological surveys discovering commercial copper mineralization.

CONTROL:

A north-south, east-west grid of line, 3000 feet on the side, was cut and chained by transit crews. The two main parts of the Highland Valley property were connected by a common base line and a proper relationship established between them. In addition, picket lines were cut on the B.X. and Cow groups. Geological and geophysical surveys were carried out by pace and compass along east-west traverses tied into two known chainage points on the grid system. A chain and compass survey was made to establish the positions of all claim posts and the boundaries of the properties. Geological and geophysical work was plotted at a scale of 1 inch to 400 feet and a 1000 scale map was prepared showing claim locations, roads, and other physical features. B.X. trenches were mapped in detail at a scale of 1 inch to 50 feet.

ELECTROMAGNETIC EQUIPMENT:

The electromagnetic instrument used in this survey is called the Junior E.M. It was developed and tested over a period of years by Crone Geophysics, Toronto, Ontario, a division of Noranda Mines Limited. While the basic principles are the same as those for standard E.M. instruments a number of radical new developments, now being patented, have been incorporated which give the Junior E.M. many advantages over the familiar equipment commonly used in this type of survey. It is very light in weight and designed for rapid coverage of rough terrain.

METHOD OF SURVEY:

Three men comprised the Junior E.M. crew. The chief and helper, maintaining a distance of 200 feet between transmitter and receiver, traversed east-west lines taking readings at 100 foot intervals and noting dips in degrees. Where significant angles were obtained, readings were taken every 50 feet. The east-west lines were spaced at 400 foot intervals over most of the property with a few at 100 and 200 foot intervals. Readings were also

taken along all east-west base lines.

The third man of the crew started each line at a known point on a base line. From there he run a compass line east or west to the next base line or to the property boundary, blazing frequently and chaining at 100 foot intervals. If the east or west line ended on a base line it was tied in to a known point. This method was found to be both fast and accurate.

A special effort was made to see if the copper mineralization known to exist on the B.X. No's 1, 2, 3 and 4 claims could be detected by the Junior E.M.

OBSERVATIONS :

1. The Junior E.M. instrument has an effective range of penetration in excess of 100 feet. Much outcrop exists in the area covered and except for the central portion of the property overburden is believed light. A large proportion of the Highland Valley property has therefore been thoroughly tested for electrical conductors.

2. A few anomalous readings were obtained but these are completely isolated and are believed to be of no importance.

3. Readings obtained over the known copper mineralization on B.X. No's 1, 2, 3 and 4 claims show insufficient sulphide present to form an electrical conductor.

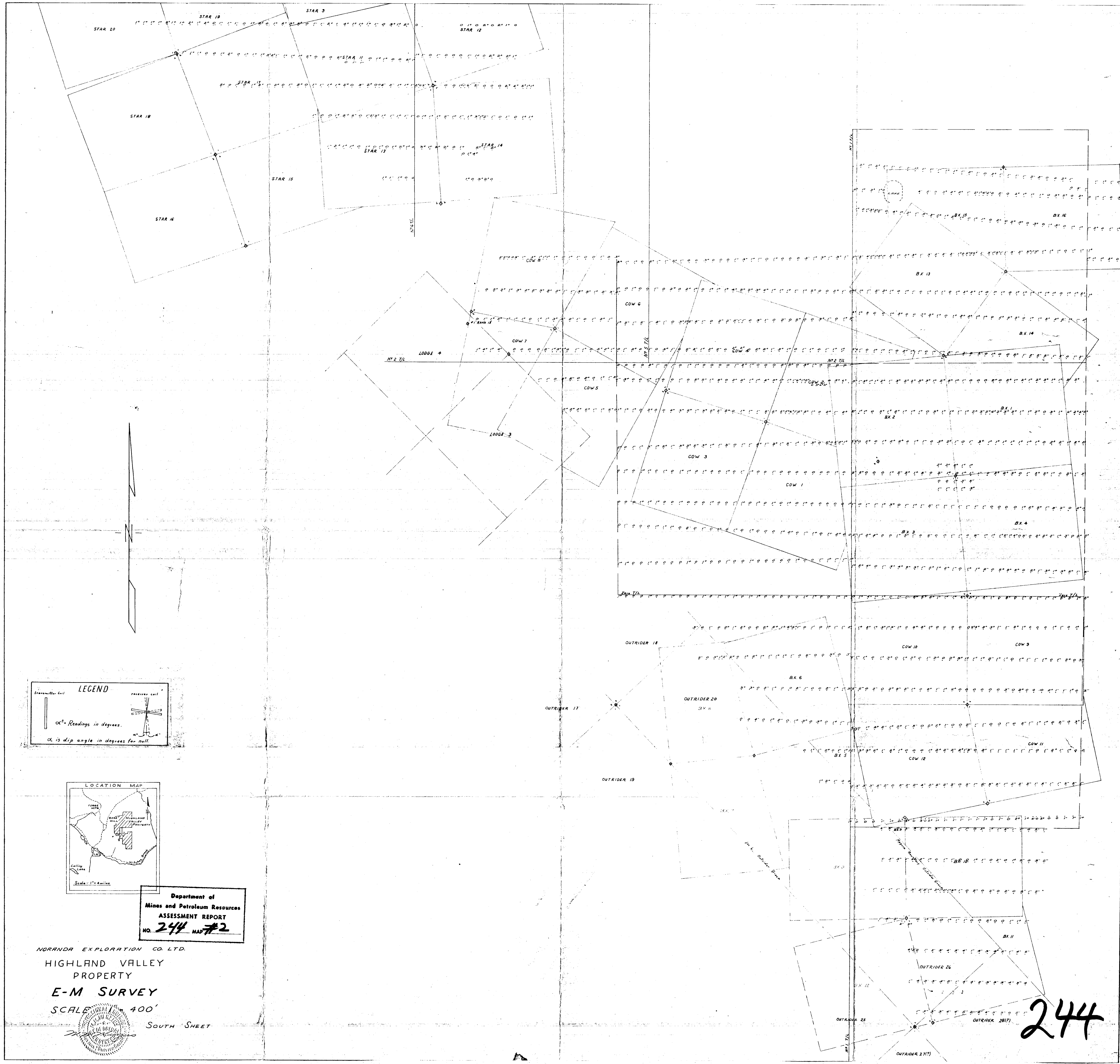
CONCLUSIONS:

It is readily acknowledged that the Junior E.M. instrument would probably fail to detect large areas of very low grade disseminated sulphide, short lenses or pods of relatively high grade material, and deep-seated ore deposits. However, it can be stated with reasonable certainity that in areas of moderate overburden no sulphide zones approaching ore grade were encountered.

Respectfully submitted,

M. M. Menzies P.Eng.


Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 244 MAP #1
LEGEND
transmitter Coil
receiver coil
$\alpha^{\pm}$ = Readings in degrees.
α is dip angle in degrees for null.
LOCATION MAP
FORGE MTN.
BOSE HILL
HIGHLAND VALLEY PROPERTY
Witches Brook
Calling Lake
I.R.
Scale: 1" = 4 miles
NORANDA EXPLORATION CO. LTD.
HIGHLAND VALLEY
PROPERTY
244
E-M SURVEY
SCALE 1" = 400'
NORTH SHEET
N
STAR 1
STAR 3
STAR 4
STAR 5
STAR 6
STAR 7
STAR 8
STAR 9
STAR 10
STAR 12
STAR 19
STAR 20
STAR 21
STAR 22
STAR 23
STAR 24
STAR 25
STAR 26
STAR 27
STAR 28
STAR 29
STAR 30
BOB 1
BOB 2
BOB 3
BOB 4
BOB 5
BOB 6
BOB 7
BOB 8
BOB 9
BOB 10
BOB 11
BOB 12
BOB 13
BOB 14
BOB 15
BOB 16
BOB 17
BOB 18
BOB 19
BOB 20
BOB 21
BOB 22
BOB 23
BOB 24
Nº 3 T/L
Nº 4 T/L
Nº 5 T/L
Nº 6 T/L



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 244 MAP #2

NORANDA EXPLORATION CO. LTD.

HIGHLAND VALLEY
PROPERTY

E-M SURVEY

SCALE 1" = 400'

SOUTH SHEET

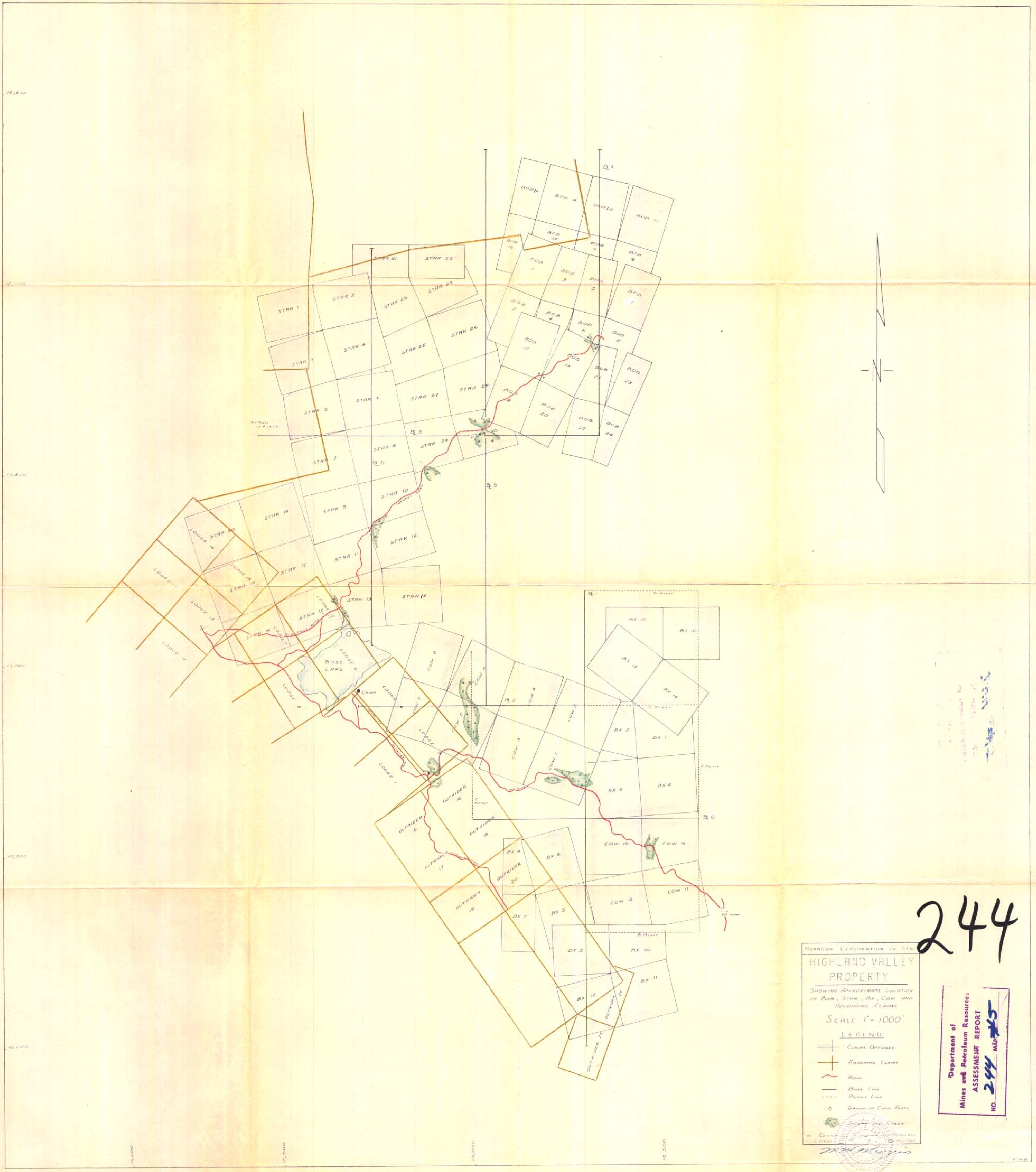
244


STAR 20
STAR 19
STAR 3
STAR 12
STAR 11
STAR 17
STAR 18
STAR 13
STAR 14
STAR 15
STAR 16
No 6 T/L
COW 8
COW 6
COW 7
LODGE 4
No 2 T/L
COW 5
LODGE 3
No 5 T/L
COW 4
COW 2
COW 3
COW 1
No 1 T/L
BX 15
BX 16
BX 13
BX 14
BX 2
BX 1
BX 3
BX 4
Zero T/L
COW 10
COW 9
COW 12
COW 11
OUTRIDER 18
OUTRIDER 17
OUTRIDER 20
BX 6
BX 5
OUTRIDER 19
BX 10
BX 11
OUTRIDER 26
OUTRIDER 25
OUTRIDER 28(?)
OUTRIDER 27(?)
LOCATION MAP
FORGE MTN.
BOSE HILL
HIGHLAND VALLEY PROPERTY
Witches Brook
Calling Lake
Scale: 1" = 4 miles
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 244 MAP #3
NORANDA EXPLORATION CO. LTD.
HIGHLAND VALLEY
PROPERTY
CLAIM MAP
SCALE 1" = 400'
SOUTH SHEET
244

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 244 MAP #4

NORANDA EXPLORATION CO. LTD.

HIGHLAND VALLEY
PROPERTY
244 CLAIM MAP
SCALE: 1" = 400'
[illegible] NORTH SHEET


244
NORANDA EXPLORATION CO. LTD.
HIGHLAND VALLEY PROPERTY
SHOWING APPROXIMATE LOCATION OF BOB, STAR, BX, COW AND ADJOINING CLAIMS
SCALE 1" = 1000'
LEGEND
CLAIMS OPTIONED
ADJOINING CLAIMS
ROAD
BASE LINE
PICKET LINE
GROUP OF CLAIM POSTS
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 244 MAP
BOB 16
BOB 14
BOB 12
BOB 10
BOB 15
BOB 13
BOB 11
BOB 9
BOB 1
BOB 3
BOB 5
BOB 7
BOB 2
BOB 4
BOB 6
BOB 8
BOB 17
BOB 19
BOB 21
BOB 23
BOB 18
BOB 20
BOB 22
BOB 24
STAR 1
STAR 2
STAR 3
STAR 4
STAR 5
STAR 6
STAR 7
STAR 8
STAR 9
STAR 10
STAR 11
STAR 12
STAR 13
STAR 14
STAR 15
STAR 16
STAR 17
STAR 18
STAR 19
STAR 20
STAR 21
STAR 22
STAR 23
STAR 24
STAR 25
STAR 26
STAR 27
STAR 28
STAR 29
STAR 30
LODGE 1
LODGE 5
LODGE 6
LODGE 7
LODGE 8
LODGE 11
LODGE 13
LODGE 14
LODGE 15
LODGE 16
BOSE LAKE
CAMP
COW 1
COW 2
COW 3
COW 4
COW 5
COW 6
COW 7
COW 8
COW 9
COW 10
COW 11
COW 12
BX 1
BX 2
BX 3
BX 4
BX 5
BX 6
BX 7
BX 8
BX 9
BX 10
BX 11
BX 12
BX 13
BX 14
BX 15
BX 16
OUTRIDER 15
OUTRIDER 16
OUTRIDER 17
OUTRIDER 18
OUTRIDER 19
OUTRIDER 20
OUTRIDER 25
OUTRIDER 26
BL 0
BL 1
BL 2
BL 3
BL 4
BL 5
BL 6
A PICKET
B PICKET
C PICKET
D PICKET
E PICKET
N
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