NORANDA MINING AND EXPLORATION INC.

GEOPHYSICAL REPORT
SAVANT LAKE PROJECT
NTS 52J7

WESTERN CANADA REGION

D. P. Dudek
Senior Project Geologist
Western Canada Region
Noranda Mining and Exploration Inc.
August 1995

L. Petrie
Geophysicist
Western Canada Region
Noranda Mining and Exploration Inc.
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1.0 INTRODUCTION

In 1993, compilation work identified several poorly tested to untested airborne electro-magnetic conductors in the Evans and Harold Lakes areas. It was believed that some of these conductors may indicate a second zone of base metal mineralization in the Savant Lake area, other than that which hosts the Marchington, South, GoldsU and Hadley zones. Several claims were subsequently staked. During February and March, 1994, magnetic and HLEM surveys were carried out over the Evans Lake and Harold Lake grids. This report describes the results of these surveys.

2.0 LOCATION AND ACCESS

The Savant property is centered 10 km north of the CNR rail junction of Savant Lake, approximately 120 km north of the Town of Ignace (Figure 1). Highway 599 lies within 1 km of the property, at its closest point and access within the property is easily accomplished via logging roads.

3.0 CLAIMS

Linecutting and geophysical surveys were completed over parts of 8 claims, owned 100% by Noranda Mining and Exploration Inc. (Fig. 2). A summary of these claims are included in Table 1.

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4.0 PREVIOUS WORK

Exploration in the Savant lake area probably commenced with the construction of the railway in the early 1900's. But, there are little to no records of this work.

The first recorded base metal discovery was made by Johnston in 1952 (Bond, 1980) near the present position of the GoldsU zone. This discovery would have been coincident with the first logging in the area (Rupert, 1984). Subsequent work over this zone included magnetic surveys, vertical loop surveys, trenching and X-ray drilling by Lun-Echo Gold mines in 1958. Follow-up work consisting of 8 diamond drill holes, was completed by GoldsU Mines in 1963.

Exploration was limited in this area until rumors of a big discovery at Sturgeon Lake started circulating. This started a staking rush in the Savant Lake area and resulted in significant amounts of work being carried out from 1968 to 1975. However, no significant mineral discoveries were noted during that time. A summary of this work is present in Trowell, 1981.

In 1974, Umex became involved in the western half of the Savant Lake area. In 1976 they completed an Aerodat airborne geophysical survey. This survey was followed by drilling of 40 drill holes in 1977 and
1980 which resulted in the discovery of the Marchington, South and S23 zones. In 1982, Umex optioned the property to Falconbridge who drilled four holes through the Marchington and South zones and subsequently dropped the property in 1983. Umex carried out some additional drilling (52 more holes) and mapping until 1985. After this point Major General acquired Umex’s interest in the Savant area. In 1991, Granges had optioned the property from Major General and completed mapping and lithogeochemical mapping over the entire property and an I.P. survey over the Goldsil area. Subsequently they dropped the property.

The Hadley zone was discovered in the mid 70’s by E.W. Hadley during construction of the road to Pickle Lake. This zone was subsequently tested by trenching, and several diamond drill holes (Umex, Hadley and Cumberland).

In 1984 to 1987, Cumberland Resources completed an airborne survey, just to the west of the Evans Grid and carried out magnetic, HLEM and PEM surveys. Twelve diamond drill holes tested the geological and geophysical targets. Minor amounts of zinc mineralization were intersected in altered felsic volcanics. In 1989, Noranda optioned Cumberland’s property and completed mapping, lithogeochemical sampling and pulse EM surveys over the property. The property was subsequently dropped.

During 1989 and 1990 the Ontario Ministry of Northern Development and Mines completed an airborne EM and magnetic survey over the area.

From 1991 to 1994 Asarco completed gridding, mapping, geophysical surveys and 17 diamond drill holes (totaling approximately 3000 m) over the Willow Lake area, just northwest of the Evans Lake grid. This work identified two small low grade base metal zones.

5.0 GEOLOGY

The Savant Property is underlain by Archean-age metavolcanic, metasediments and intrusive rocks of the Handy Lake volcanic belt (Rittenhouse, 1936) comprising part of the Wabigoon Metavolcanic-Metasedimentary Belt in the Superior Province of the Canadian Shield. The Handy Lake belt has been further subdivided into nine lithostratigraphic units, A through I, by Trowell, 1981 (Figure 2). These formations are bound to the west by the Western Granitic Complex and to the east by the Eastern Granitic Complex.

Formation A consists of a northwest-facing, mafic to intermediate volcanic sequence with thin interflow intermediate tuffaceous and volcanogenic sedimentary units. This formation is capped by a cross-cutting polymictic conglomerate, Formation B, with abundant granite clasts. These two formations lie on the eastern edge of the Handy Lake volcanic belt.

Formations C to I comprise a predominantly east-facing sequence volcanics and associated sediments, on the west side of the property area. The basal part of this group, Formation C, is composed of a mixture of mafic to intermediate volcanics which are in turn overlain by locally strongly altered, felsic to intermediate volcanics of Formation D. Formation D appears to host most of the known mineralization in the Savant Lake area including the Marchington, South, Hadley and Goldsil zones. The upper contact of this formation is not clear but it appears to be at a sulphide iron formation. No significant alteration was recognized above this exhalite. The next cycle of volcanics commences with Formation E and consists of intermediate to mafic volcanics. Formation E is, in turn, overlain by a locally conductive, northward thickening, sequence of sediments and intercalated felsic volcanics of Formations F and G. This mixed package is then overlain by mafic flows and tuffs of Formation H and intermediate to locally felsic pyroclastic and volcanioclastic units of Formation I.

The Evans Lake grid appears to be underlain by parts of Formations D through I and the Harold Lake grid is underlain by units G to I. A more detailed description of the geology will follow at a later date.
6.0 GEOPHYSICS

6.1 Instrumentation

Magnetics:

A Scintrex IGS proton precession magnetometer system was used. Total magnetic field readings are taken with a precision of 0.2 nT or Gammas, although the accuracy is generally +/- 5 nT. Readings are corrected for diurnal variations using an identical recording unit set up as a base station in a non-anomalous area. Base station readings are taken every 30 seconds unless large or rapid variations are anticipated, in which case readings are taken more frequently.

For this survey base station readings were taken at a 30 second interval. Survey readings were recorded at 12.5 meter intervals along the line.

HLEM:

An Apex Parametrics MaxMin I horizontal loop electromagnetic unit was used. In-phase and quadrature readings are measured as a percentage of the primary transmitted field. The readings represent characteristics of the secondary induced field. They are recorded at a phase separation of 90 degrees to provide maximum information. The readings are normalised to the primary field using a cable which connects the transmitter to the receiver. Readings can be read to +/- 0.2 percent although they are usually only accurate to +/- 1 percent.

For this survey readings were taken at a 25 meter interval along the line. A coil separation of 100 meters was used and readings were recorded at frequencies of 1760 and 440 Hz.

6.2 Interpretation

Evans Lake grid

The grid at Evans Lake is comprised of four discrete sectors separated by 300-400 meter offsets. The entire grid was surveyed using HLEM and magnetic techniques during March 1994. The work was contracted to Northwest Geophysics with a total of 43,025 km of magnetic data and HLEM data collected.

The HLEM survey indicates a two main conductive bodies: one striking NNW along the southern grid sector, and a second striking NNE along the northern grid sector. The outline of the southern anomaly indicates a continuous, shallow (<20m), isolated strong conductor extending over 1200 meters and associated with a strong magnetic response. This conductor appears to correspond to a sulphide iron formation horizon that mark the top of the first cycle of volcanics (Formations C and D).

The outline of the northern anomaly indicates an equally strong NNE trending conductor that stretches over 1200 meters between L12+00N and L24+00N. Depths to the conductor axis vary from 10 up to 30 meters with an overall shallowing to the north. The width of the conductor is generally less than 20 meters but may extend over 50 meters where multiple conductors are interpreted. The undulating pattern and discontinuous nature along strike suggest that the horizon may be offset by small faults. The southern projection of the conductor axis suggests the continuation of the same feature occurs between the two northern grid sectors. Further coverage between the two sectors is required to confirm the continuity. Several short strike length anomalous features between 6+00E and 14+00E west of the main conductor.
axis support the fragmentation within this area. Most of these short length features are associated with a corresponding magnetic signature.

Two north striking smaller anomalous features located on the mid-sector grid (L7+00S to L12+00S and L1+00S to L3+00S) occur as moderate-strong conductors. The extent and geological relationship of these conductive trends is unknown at this time.

The magnetic signature throughout the entire grid is anomalously low except for regions of increased conductivity.

Harold Lake grid

The single rectangular grid at Harold Lake was surveyed using HLEM and magnetic techniques during March, 1994. The work was contracted to Northwest Geophysics with a total of 15.3 km of magnetic data and HLEM data collected.

The magnetic signature across the property indicates a significant contrast between the western and eastern lithological units along a north/northeast trending strike. The low amplitude response of the western unit is interrupted by moderate amplitude response along the eastern contact and the undulating pattern within this unit suggest a broad fold between L4+00W and L8+00W. The magnetic signature within the mafic volcanics along the eastern half of the property is associated with discrete isolated highs that mimic the regional trend.

The HLEM survey indicates two strong, sub-parallel, continuous conductive bodies located across the entire length of the survey area. The northern conductor is a shallow, broad, highly conductive body with conductivity values ranging between 80 to 220 seimens. The anomaly extends from the eastern edge of the survey area over 1100m to the west where it is abruptly terminated at L5+00W. An equally strong and broad conductor between 0+00 and 1+50S extends from L5+00W to the western edge of the survey area. The similarities between the two conductors suggests the offset at L5+00W has separated an original primary feature. A shorter flanking conductor located at 3+50 N and extending between L3+00W and L5+00W shows a equally strong but slightly less conductive anomaly along the contact between the felsic and mafic volcanic units.

South of the main conductor a apparently cross-cutting conductive unit extends 800 meters from L7+00E to L1+00W. The strong magnetic signature associated with the HLEM response suggests the abundance of pyrrotite and that the body may extend eastward. Widths are moderate (<15m) with indications of a steep easterly dip.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The property area is underlain by Archean-age volcanics and sediments of the Handy Lake volcanic belt. Previous work in the area has identified several volcanogenic base metal occurrences in the lowest cycle volcanics in the western part of the property area, particularly Formation D.

Geophysical surveys were carried out over the Evans and Harold Lakes area to define some poorly tested AEM conductors and to determine if a second base metal rich horizon or unit exists in formations E through I. These surveys succeeded in identifying several strong conductors which require ground truthing. Most of the conductors appear to be hosted by Formations E to I. Only one of the conductors appears to be related to the most altered stratigraphy (Formation D). This conductor occurs in the southwest corner of the Evans Lake grid and appears to be associated with a sulphide iron formation unit that marks the top of the first cycle of volcanics. It is not clear at this time if this iron formation is barren or not.
Mapping and lithogeochemical sampling should be carried out to ground truth the conductive zones identified on the Evans and Harold Lake grids.

D. P. Dudek
August 10, 1995

L. Petrie
August 10, 1995
8.0 SELECTED REFERENCES


Ontario Assessment Reports 52J7SE-001 to 52J7SE-100; Ministry of Northern Development and Mines in Sioux Lookout.


STATEMENT OF QUALIFICATIONS

I, Don P. Dudek, do certify that:

1. I am a geologist and reside at 368 Parkway Blvd., Flin Flon, Manitoba.
2. I am a graduate of the University of Saskatchewan, having obtained a B.Sc. Hon. Degree in Geology in 1982.
3. I have practised my profession continuously since 1982.
4. I am presently a Senior Project Geologist with Noranda Mining and Exploration Inc. and have been since February 1989.
5. I have supervised all work on this project since July, 1995.
6. I am a fellow of the Geological Association of Canada, membership number F5568.

Don P. Dudek
August 10, 1995

I, Larry Petrie do certify that:

1. I am a practising geophysicist and reside at 356 Ambrose St., Thunder Bay, Ontario.
2. I am a graduate of the University of Toronto having obtained a M.Sc. in the Department of Geology, 1995, and a B.Sc., from the University of Waterloo, Department of Earth Sciences, Geophysics Option in 1985.
3. I have practised my profession continuously since 1985.
4. I am presently employed as a Geophysicist with Noranda Mining and Exploration Inc. and have been since June 1, 1995.
6. I am a member of the American Geophysical Union.

L. M. Petrie
August 10, 1995
Report of Work Conducted After Recording Claim

Ministry of Northern Development and Mines
Ontario

Mining Act

Personal information collected on this form is obtained under the authority of the Mining Act and Regulations for requirements of filing assessment work with the Mining Recorder. A separate copy of this form must be completed for each Work Group. Technical reports and maps must accompany this form in duplicate. A sketch, showing the claims the work is assigned to, must accompany this form.

Recorded Holder(s)
Noranda Mining and Exploration Inc.

Client No.
176208

Address
c/o 960 Alloy Drive, Thunder Bay, Ontario P7B 6A4

Telephone No.
(807) 623-4339

Mining Division
Patricia

Township/Area
Boucher/Conant

Mineral Plan No.
G-3374/G-2031

M or G Plan No.

Date Work Performed
From: March 1, 1994
To: March 31, 1994

Work Performed (Check One Work Group Only)

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Total Assessment Work Claimed on the Attached Statement of Costs: $40,108

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

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<th>Address</th>
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<td>Northwest Geophysics</td>
<td>P.O. Box 3263, Thunder Bay, Ontario P7B 5E8</td>
</tr>
<tr>
<td>Don Dudek (Author)</td>
<td>c/o 960 Alloy Drive, Thunder Bay, Ontario P7B 6A4</td>
</tr>
<tr>
<td>Al Smith, Larry Petrie</td>
<td>c/o 960 Alloy Drive, Thunder Bay, Ontario P7B 6A4</td>
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Certification of Personal Interest

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.

Date: Aug. 10/95

Recorded Holder or Agent (Signature)

Certification of Work Report

I certify that I have personal knowledge of the facts set forth in this work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying

Cecilia M. Barrett, 960 Alloy Drive, Thunder Bay, Ontario P7B 6A4

Telephone No.
(807) 623-4339

Date: Aug. 10/95

Certified By (Signature)

For Office Use Only

Total Value C. Recorded
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Date Recorded
95Aug11

Deemed Approval Date
95Nov11

Date Notice for Amendments Sent

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**Notes:**
- Credits are to be entered correctly on all claims contained in this report of work.
- Work is claimed to be completed as initially arranged.
- Claims are to be sent to the credit holder.

*Signature:* [Signature] Date: [Date]
Statement of Costs for Assessment Credit

1. Direct Costs/Coûts directs

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Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject all or part of the assessment work submitted.

2. Indirect Costs/Coûts indirects

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Note: When claiming Rehabilitation work Indirect costs are not allowable as assessment work. For the remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

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Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as
Lands Administrator
I am authorized
(Recorded Holder, Agent, Position in Company)

© make this certification

Aug. 10/95

*Note: Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.*
THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.
HAROLD LAKE
MAGNETIC SURVEY
TOTAL
PROJECT: SAWANT LAKE  NUMBER: 317
BASELINE AZIMUTH: 60 deg
DATE: MARCH/1994 NTS: 52/J/7
SURVEY BY: NW GEOPH
FILE: M317HAR

Instrument: EDA-OMNI
Profile Scale 1000nT/cm
Reduced Profile Scale 1000nT/cm
Profile Base Value 500
Datum: 56000

Scale 1:5000
(meters)

2.16154