LORRAINE MINE
Gaboury and Blondeau Townships
Temiscamingue County Quebec
N.T.S. 31 M-7
Lat. 47° 21' Long. 78° 48'

Ministère de l'Énergie et des Ressources
Service de la Géoinformation
Date: 23 FÉV. 1987
No G.M. 13679

October 1985

Joe B. Hinzer
6455 Stamford Green Drive
Niagara Falls, Ontario
SUMMARY

The Lorraine Mine property consists of 19 mining claims located in Gaboury and Blondeau Townships approximately 50 miles (80 km) east of Ville-Marie, Quebec. The property contains the former Lorraine Mine which produced 600,000 tons of ore grading 1.37% Cu, 0.62% Ni, 0.2 oz. Ag/ton and 0.02 oz. Au per ton and the Blondeau Nickel showing which contains 250,000 tons grading 0.45% Cu and 0.45% Ni.

The claims are underlain primarily by Precambrian volcanic rocks. The strata strikes east-west with near vertical dips and tops to the south. The Cu-Ni mineralization occurs within sheared mafic volcanics usually at or near the contacts with dioritic or gabbroic intrusives. Significant Au-Ag mineralization occurs in quartz veins within highly sheared volcanics in the lower levels of the Lorraine Mine.

The Lorraine Mine has been developed to the 6th level (800 feet). Sub-ore grade Cu-Ni mineralization traced down plunge to at least (1,500 feet) remains open at depth. Disseminated Cu-Ni mineralization at the Blondeau Nickel showing remains virtually untested along strike and down dip. Numerous other Cu-Ni showings and geophysical anomalies require additional testing.

Au-Ag mineralization occurring as en-echelon quartz veins up to 1 foot wide have been traced for a strike length of at least 171 feet on the 6th level. A 92.0 foot length of this zone averaged 1.32 oz. Au/ton, 1.19 oz. Ag/ton and 3.19% Cu over a width of 0.92 feet. The adjacent shear zone wall rock was not assayed. The extent and orientation of this mineralization has not been established.

The location of additional zones of Cu-Ni mineralization on this property is almost certain. However, the current economics of Cu-Ni makes this aspect of the property unattractive at the present time. The Au-Ag mineralization encountered on the 6th level of the mine on the other hand does make an extremely attractive exploration target.

Compilation of all previous data, diamond drill evaluation of the Au-Ag zone on the 6th level of the Lorraine Mine and a comprehensive surface
exploration program to test for additional precious metal targets is recommended. An expenditure of $350,000 is required.
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- I - List of Claims
1.0 INTRODUCTION

This review and evaluation of the Lorraine Mine property was prepared for Halo Centrex Inc., in October 1985. The Lorraine Mine was a former Cu-Ni producer with significant Ag and Au by-product. Additional Cu-Ni reserves are reported from the former mine and several adjacent areas. Gold and silver mineralization reported from the lower mine levels was never fully evaluated. The report is based on a review of available assessment file reports, government reports and private company reports made available to the author. The property was not visited. Conclusions and recommendations are based on the authors interpretation of the available data and previous experience with similar types of mineralization.

2.0 LOCATION AND ACCESS

The property consists of three separate claim blocks located on either side of the common Gaboury and Blondeau Townships boundary in Temiskamingue County approximately 13 miles (21 km) southwest of Belleterre, Quebec (Figure 1).

The property is accessible via Route 382 an all weather road leading east for 36 miles (58 km) from Ville-Marie to Belleterre and then east via Route 62 and a 3 mile (5 km) gravel access road for 13 miles (21 km) to the Lorraine Mine. The two claim blocks in Blondeau Township are accessible by bush roads leading south from Route 62, 5 miles (8 km) north, or on foot from the Lorraine Mine a distance of 1.2 miles (2 km) or 2.5 miles (4 km) respectively.

3.0 PROPERTY DESCRIPTION

The property consists of 19 mining claims comprising 442 hectares. The claims form three internally contiguous but separate blocks of 10, 6 and 4 claims (Figure 1). The claims are owned 100% by Geoconseils Jack Stoch Limitee as recorded by the M.E.R. as of 85/04/30. The list of claim numbers and status are appended (see Appendix I).
4.0 GENERAL GEOLOGY

The area is underlain for the most part by Archean Keewatin volcanics, which are overlain in part by a lobe of Proterozoic sediments of the Lorraine and Gowganda Formations which in turn are overlain in the extreme west by Ordovician sediments of the Liskard Formation (Henderson 1936) see Figure 2.

The Keewatin rocks are generally east-west striking with vertical to steep southerly dips and tops to the south. The Huronian sediments and overlying Paleozoic sediments are relatively flat lying and in most cases unconformably overlie their respective predecessor units.

5.0 PREVIOUS WORK

The earliest recorded work in the area dates back to 1939, but significant results were not reported until 1953 when Kelly Lake Nickel Mines Ltd. first encountered Cu-Ni mineralization. The Blondeau Nickel Mines Ltd. showing was discovered in 1957 and the Lorraine Mine showing was discovered in 1962. The following table summarizes the previous exploration work in this area.

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<td>Geology Report</td>
<td>Nealon Mines Ltd.</td>
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<td>1962-64</td>
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<td>1963</td>
<td>Diamond drilling 1 hole (483 feet)</td>
<td>Consolidated Golden Arrow Mining Ltd.</td>
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LEGEND

PALEOZOIC
7 ORDOVICIAN
6 GRENVILLE SERIES
PROTEROZOIC
5 LORRAIN FORMATION
4 GOWGANDA FORMATION

ARCHEAN
3 GRANITE
2 SEDIMENTS
1 VOLCANICS

Drift-covered area

Reference:
Map 703A, Department of Mines and Resources, 1943.

GENERAL GEOLOGY
TEMISCAMINGUE AREA

SCALE
12 6 0 12 miles

FIGURE 2.
6.0 PROPERTY GEOLOGY

All three claim groups are underlain by altered metavolcanic rocks primarily of mafic to intermediate composition with minor lenses of felsic volcanics. Diorite and gabbroic intrusives are common, especially in the Lorraine Mine and Blondeau groups. These volcanic rocks terminate against a major granitic belt approximately one mile north of the Lorraine Mine. The rocks are east-west trending with near vertical dips and tops are considered south (Kish 1971). An eastward plunging anticlinal fold axis and northeast trending faults are noted on all the claim blocks.

The Lorraine Mine claim group is underlain by mafic volcanic flows with minor intermediate and felsic bands. A combination of massive diorite and gabbro intrudes the volcanic sequence forming a tongue between the volcanics to the south and the granite batholith to the north. The Cu-Ni sulphide ore body is confined to a northeast striking shear zone within the mafic volcanics at the contact of a diorite mass. The productive zone was 40 feet wide 250-300 feet long and extended to 800 feet below the surface. Both the diorite body and the ore rake to the southeast. The mineralization is best developed at or near tight folds along the diorite contact. The main sulphide minerals are pyrite, pyrrhotite violarite, marcasite, magnetite, chalcopyrite, pentlandite, and bravolite. Minor gold silver and platinoids were also recovered.

According to a report by J. MacIntosh (1967) quartz becomes more abundant in the lower part of the ore zone where the sulphide appear to pinch out. Several isolated lenses of significant gold mineralization are reported from the quartz rich shear zone on the sixth level.

The Blondeau Nickel claim group is underlain primarily by basic volcanics and gabbroic intrusives. An extensive zone of disseminated
Cu-Ni mineralization is encountered in the contact zone of a gabbroic intrusive and amphibolitized mafic lavas. This zone of sub ore grade mineralization remains open down, dip and along strike. Previous operators tested only for Cu-Ni mineralization.

The Gold showing claim group is underlain primarily by mafic andesitic flows. The only feature of note is a northeast trending fault passing through the centre of the property (Kish 1971).

7.0 **ECONOMIC GEOLOGY**

The Lorraine Mine property is situated within an area containing several Cu-Ni deposits and many showings (see Map 1). The Lorraine Mine, produced 600,000 tons of ore grading 1.57% Cu, 0.62% Ni, 0.2 oz. Ag/ton, 0.02 oz. Au/ton and minor platinoids from 1964-68. Additional reserves of 14,000 tons grading 1.03% Cu and 1.25% Ni have been outlined below the sixth level, and the mineralized zone is known to continue down plunge to at least 1,500 feet. The indicated width and grade however appear to be sub-economic.

The Blondeau Nickel showing contains an estimated 250,000 tons of 0.45% Cu and 0.45% Ni mineralization in a disseminated zone along a gabbro intrusive. This mineralized zone remains open both along strike and down dip.

Other occurrences of Cu-Ni mineralization are present elsewhere on the property. Assays of 3.83% Cu over 3.1 feet were reported from a trench east of the Lorraine Mine shaft. A self-potential anomaly nearby these trenches revealed Cu rich float assaying 6.11% Cu. Limited diamond drilling in these areas has been inconclusive. Given the extensive Cu-Ni mineralization in this area the occurrence of additional mineralized lenses of economic tonnage and grade is very likely.

Perhaps of greater significance is the presence of precious metals Au-Ag and platinoids in both the mine area and the surrounding rocks. Descarreaux (1967) located fine gold bearing quartz veins on the sixth level of the Lorraine Mine. The veins average one foot in width and may be up to 25 feet long occurring within highly sheared volcanics. An
average of several grab samples returned values of 0.94 oz. Au/ton, 0.72 oz. Ag/ton and 2.75% Cu. During underground development these quartz veins were encountered on the 601E Drift, 601W Drift, 601S cross-cut and the 602S cross-cut, see Figure 3. A combined average assay of 1.32 oz. Au/ton, 1.19 oz. Ag/ton and 3.19% Cu over a width of 0.92 feet and a length of 92.0 feet was obtained from the 601E and W drifts. Two additional en-echelon veins starting 48 feet west of the vein in the 601W drift assayed 0.412 oz. Au/ton, 0.65 oz. Ag/ton and 3.16% Cu over a width of 1.68 feet and a strike length of 31.0 feet. One hole drilled from the 601S cross-cut below the sixth level encountered 1.56 oz. Au/ton and 3.63 oz. Ag/ton for 3.2 feet. Gold bearing quartz veins were also reported in the 601S cross-cut and the 602S cross-cut by mine personnel. Additional drifting along this main shear failed to locate any additional Cu-Au veins. The control or orientation of this vein system was never determined.

Similar Cu-Au mineralization is also expected at the Blondeau Nickel showing. Previous operators assayed only for Cu and Ni.

J. Stoch (1981) also reports a surface gold showing near Mud Creek (see Map 1). A northeast trending fault structure similar to that at the Lorraine Mine is shown to pass through this area.

8.0 DISCUSSION

Cu-Ni mineralization is common throughout this entire area, and the possibility of finding additional lenses is quite good. The current market however, for Cu-Ni products is depressed and even the richest deposit may not be economic. Consequently, exploration expenditures for these commodities are limited at least at the present time.

The associated Au-Ag mineralization however is significant. Au-Ag-Cu bearing quartz veins present within the lower part of the main shear zone at the Lorraine Mine appear to be of economic grade. Although they are confined to the shear zone their extent and orientation has not yet been defined. Experience from other areas, especially the Val d'Or region suggests that gold mineralization may often migrate along
Gold Intersections:

Aug. 1965 - 601 W BR - 5.4 oz Au/90' - Length 34 ft.
March 1966 - 602 S XC - Gold bearing insufficient vein.
June 1967 - 601 T K - 1.3 oz Au/30' - DDH.

Note: Only vein material was assayed.
0.6 Veins occur in a shear zone 5-10 ft wide (not assayed)

Legend:
E = East
W = West
S = South
XC = Cross-cut
DR = Drift

Figure B
northeast trending shear zones and become deposited along numerous structural traps.

A thorough evaluation of the known gold mineralization on the 6th level, particularly structural controls such as the anticlinal axis and the northeast faults may lead to the discovery of additional gold zones and may also aid in evaluating other potential target areas elsewhere on the property.

9.0 CONCLUSIONS

1. The Lorraine Mine property has a proven potential of hosting additional deposits of Cu-Ni mineralization and may also host economic concentrations of precious metals.

2. Sub-ore grade Cu-Ni mineralization is known to continue down plunge to a depth of at least 1,500 feet at the Lorraine Mine.

3. A second zone of sub-ore grade Cu-Ni mineralization, the Blondeau Nickel showing, has not been tested down dip or along strike.

4. Several other Cu-Ni showings and anomalies along strike from the Lorraine Mine have not been thoroughly tested.

5. The orientation and extent of significant Au-Ag mineralization encountered in a quartz rich shear zone on the sixth level of the Lorraine Mine has not been determined.

10.0 RECOMMENDATIONS

There is little doubt as to the possibility of outlining additional Cu-Ni mineralization on this property. The depressed state of the Cu-Ni industries at the present time however does not make this aspect of the property an attractive exploration prospect at this time. A complete and comprehensive compilation study of the large volumes of data generated by the previous operators however is recommended to prepare, in advance, for future Cu-Ni rallies.
The significant Au-Ag mineralization encountered in the lower levels of the Lorraine Mine on the other hand are an ideal exploration target at the present time. Even a small tonnage of ore would be economic because of the presence of the existing mine workings. A diamond drilling program to evaluate this Au-Ag-Cu vein system and surface exploration to locate other, nearby, potential Au-Ag zones is highly recommended.

The above programs would require an expenditure of $350,000.

11.0 COSTS

1) Compilation Study (2 months) $ 10,000

2) Diamond Drilling
   Lorraine Mine Zone 10,000 feet @ $25 $250,000
   Surface Exploration/Linecutting 20 miles @ $250 5,000
   Geology 5,000
   Geochemistry 1,000 @ $20 20,000
   Supervision, Report Prep. 25,000
   Administration 25,000
   Contingencies 20,000
   \[ \text{Total: } \$350,000 \]

Respectfully Submitted.

Joe B. Hinzer
REFERENCES


GM 12548 McIntyre Porcupine Mining Co. Ltd., Gaboury and Blondeau Townships, Quebec. DDH No. M-1 to M-12 by J. A. Plaxton, 1962.
GM 13153 Consolidated Golden Arrow Mining Ltd., Blondeau and Gaboury Townships, Quebec. DDH Nos 1, 2 by J. Dugas, 1963.


GM 13964 Lorraine Mining Co. Ltd., Gaboury and Blondeau Townships, Quebec. Rivard Showing Area by M. Lambert, 1962.


GM 14306 Lorraine Mining Co. Ltd., Gaboury and Blondeau Townships, Quebec. Informational Report by ?, 1964?


GM 19229 Lorraine Mining Co. Ltd., Gaboury and Blondeau Townships, Quebec. Detailed Magnetometer Survey by V. Popov, 1966.


GM 21150A Lorraine Mining Co. Ltd., Gaboury and Blondeau Townships, Quebec. DDH Logs by V. Popov, 1967.


GM 21871 Fleury, Yvan, Blondeau Township, Quebec. Sketch of Surface Work in 1968 by Y. Fleury, 1968.
GM 22132  Lorraine Mining Co. Ltd., Gaboury and Blondeau Townships, Quebec. Reports and Maps by V. Popov, 1967.


GM 23156  Lorraine Mining Co. Ltd., Gaboury and Blondeau Townships, Quebec. Diamond Drill Logs by V. Popov, 1968.


GM 23845  Fleury, Yvan, Blondeau Township, Quebec. Sketch of Surface Work in 1969 by Y. Fleury, 1969.


CERTIFICATE

I, Joe B. Hinzer, am a consulting geologist and reside at 6455 Stamford Green Drive in the city of Niagara Falls, Ontario.

I have been practicing my profession for fifteen years and am a graduate of the University of Waterloo, 1971 B.Sc. and the University of Western Ontario, 1977 M.Sc. and am a Fellow of the Geological Association of Canada.

The author has not personally visited the property. The information for this report is based on private company reports and government and assessment file reports.

The author warrants that he has not directly or indirectly received or expects to receive any interest direct or indirect in the property of the company or of any affiliate or beneficially owns directly or indirectly any securities of the company or any affiliate.

Joe B. Hinzer
APPENDIX I

List of Claims
## APPENDIX I

List of Claims

Geoconseils Jack Stoch Limitee 85/04/30

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