COMINCO LTD.

EXPLORATION

ASSESSMENT REPORT

GEOLOGICAL AND GEOCHEMICAL WORK

ON THE

ENT CLAIMS, PELLY MOUNTAINS

N.T.S. 105 F/10

Latitude: 61°43'N Longitude: 132°57'W

Watson Lake Mining District

Period of work
August 18 - 20, 1977

May 5, 1978

I.A. Paterson
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## ATTACHMENTS

(i) Exhibit "A": Statement of Expenditures  
(ii) Statement of qualifications

## List of Figures and Maps

- **Figure 1**: Location - Ent claims  
- **Figure 2**: Location and access - Ent claims  
- **Figure 3**: Ent claim map  
- **Map 1**: Geology and grid location  
- **Map 2**: Lead geochemistry  
- **Map 3**: Zinc geochemistry
ASSESSMENT REPORT
GEOLOGICAL AND GEOCHEMICAL WORK
ON THE
ENT CLAIMS
PELLEY MOUNTAINS, YUKON TERRITORY

SUMMARY

The Ent claims are located 40 km southwest of Ross River in the Pelly Mountains, Yukon Territory. The claims were staked in 1977 to cover sphalerite mineralization in Silurian-Devonian dolomites close to the poorly exposed contact with Cambro-Ordovician phyllites. Trenching of the main occurrence indicated that dolomitic rubble containing smithsonite, sphalerite bearing dolomite breccia, iron oxide cemented breccia and massive sphalerite covered an area of 800 m². A zinc geochemical anomaly (225 m long; >750 ppm Zn) lies close to and parallel to the carbonate/phyllite contact between the main occurrence of mineralization and a second occurrence 500 m to the east.

It is recommended that a low budget trenching programme should be carried out over the zinc geochemical anomaly.

INTRODUCTION

The Ent claims are located 40 km southwest of Ross River in the Pelly Mountains (Figs. 1 and 2), Yukon Territory. The topography is moderately rugged with peaks rising to 6000 feet from a valley elevation of 4000 feet. The claims lie astride a valley and a low spur between elevations of 4750 feet and 6000 feet. Surface access to the property could be provided by construction of 8 km of road to join the South Canol road.

The claims were staked in the course of a reconnaissance programme in 1977. There is no sign that previous work has been done in the area and the property appears to be a new find. The occurrence was discovered as a result of follow-up prospecting of a stream silt geochem anomaly (105 ppm Pb, 565 ppm Zn).

Work in 1977 consisted of mapping, grid soil sampling and some trenching. The work was carried out by D.W. Moore and M. Spurr of 409 Granville St., Vancouver, B.C. V6C 1T8, between 18 and 20th of August, 1977. I.A. Paterson, also of 409 Granville St., spent 1 day on the claims.

CLAIMS

The six Ent claims are 100% owned by Cominco. Tag numbers and tenure data are as follows:
2.

<table>
<thead>
<tr>
<th>Claim</th>
<th>Tag #</th>
<th>Date Recorded</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ent 1</td>
<td>YA 2641</td>
<td>August 5, 1977</td>
<td>August 5, 1978</td>
</tr>
<tr>
<td>Ent 2</td>
<td>YA 2642</td>
<td>August 5, 1977</td>
<td>August 5, 1978</td>
</tr>
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<td>Ent 3</td>
<td>YA 2643</td>
<td>August 5, 1977</td>
<td>August 5, 1978</td>
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<td>Ent 4</td>
<td>YA 2644</td>
<td>August 5, 1977</td>
<td>August 5, 1978</td>
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<tr>
<td>Ent 5</td>
<td>YA 2645</td>
<td>August 5, 1977</td>
<td>August 5, 1978</td>
</tr>
<tr>
<td>Ent 6</td>
<td>YA 2646</td>
<td>August 5, 1977</td>
<td>August 5, 1978</td>
</tr>
</tbody>
</table>

**GEOLOGY**

The claims are located astride the tectonic contact between Cambro-Ordovician grey argillaceous phyllites lying to the south and a Silurian to Devonian sequence of carbonates, siltstones to the north (Map 1). Tempelman-Klui t (1977) mapped a unit of Devono-Mississippian slate between the carbonates and grey phyllites but this unit is not exposed on the claim group. The contact between the slates and the carbonates is probably an unconformity and the phyllite contact appears to be an easterly trending, northerly directed thrust.

The carbonate unit is a grey to brown weathering massive recrystallized dolomite with abundant medium brown patches of sparry dolomite. Some phases are brecciated with fragments up to 1 cm. Close to the mineralized area similar breccias contain disseminated pyrite. The dolomite overlies a purplish or tan, laminated to well bedded platey siltstone, 50 m in exposed thickness and dipping to the southeast.

At two localities between the dolomite and the phyllites are outcrops of grey-black, massive, quartzite which is fractured and veined by white quartz. This unit may represent a resistant member of the Devono-Mississippian shale unit mapped by Tempelman-Klui t which is not exposed on the claim group.

The Cambrian-Ordovician grey, argillaceous, phyllite contains irregular lenses of gabbro and pal greenstone, locally containing vesicles. Platey red-grey limestone occurs as intercalations. The unit contains abundant veins of quartz + buff carbonate which may contain minor galena and chalcopyrite.

**MINERALIZATION**

There are two occurrences of mineralization on the claim group. The main occurrence is located on the western bank of a stream between 5+50W and 6+00W. Over an area of 40 m x 40m, there is rubble consisting of boulders of smithsonite, calcareous tufa, dolomite and massive sphalerite. A selected sample of one of the sphalerite bearing boulders assayed 34% Zn and 0.8% Pb. At one area, within 5 m of a few massive sphalerite boulders there is a rubble of pyritic dolomite breccia with 1 cm fragments. This rubble is considered to be close to bedrock.

The second occurrence lies 15 m north of the baseline at 6+80W. Minor patches of sphalerite and smithsonite occur in a small outcrop (4 sq. m) of brecciated, silicified dolomite close to the southern contact of the carbonate. The distance between the two occurrences is 500 m.
Trenching was carried out on the main occurrence. In all, seven trenches were dug totalling 14.2 cu. m. in volume. None of the trenches reached bedrock. Details of the trenches are given in the following sketch map and table.

### Trench

<table>
<thead>
<tr>
<th>Trench</th>
<th>Dimensions</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2 x 1.6 x 1</td>
<td>3.32 cu. m.</td>
</tr>
<tr>
<td>B</td>
<td>1.6 x 1.3 x 1</td>
<td>2.2 cu. m.</td>
</tr>
<tr>
<td>C</td>
<td>2.6 x 2.3 x 0.6</td>
<td>3.6 cu. m.</td>
</tr>
<tr>
<td>D</td>
<td>1 x 1 x 1</td>
<td>1 cu. m.</td>
</tr>
<tr>
<td>E</td>
<td>1.6 x 1.3 x 1</td>
<td>2.1 cu. m.</td>
</tr>
<tr>
<td>F</td>
<td>1 x 1 x 1</td>
<td>1 cu. yd.</td>
</tr>
<tr>
<td>G</td>
<td>1 x 1 x 1</td>
<td>1 cu. m.</td>
</tr>
</tbody>
</table>

### GEOCHEMISTRY

A geochemical survey was initiated in order to assess the continuity of the mineralization along the carbonate/phyllite contact. An easterly trending base-line was constructed and 108 soil samples were taken at 20 m intervals on the cross lines and analysed by ACME Analytical of Ross River. All samples were sieved at 80 mesh, dried at 75°C and analysed using standard aqua regia digestion and atomic absorption techniques. Lead values were background corrected.

Threshold values in the geochemical data were selected after preparation of frequency-distribution histograms and partitioning of cumulative probability plots after the method of Sinclair (1974). They are as follows:
4.

<table>
<thead>
<tr>
<th>Zinc</th>
<th>Range: 5 - 2050 ppm</th>
<th>Background: &lt;270 ppm</th>
<th>Possibly anomalous: 270 - 750 ppm</th>
<th>Anomalous: &gt;750 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>Range: 3 - 290 ppm</td>
<td>Background: &lt;120 ppm</td>
<td>Possibly anomalous: 120 - 240 ppm</td>
<td>Anomalous: &gt;240 ppm</td>
</tr>
</tbody>
</table>

Zinc analyses delineated an easterly trending anomalous area, 225 m long and 50 m wide (Map 3). The southwestern lobe of the anomalous area and the highest value (2050 ppm) are situated over known mineralized float. The length of the anomaly is approximately parallel and 80 m to the north of the inferred position of the southern contact of the carbonate. The northern displacement of the anomaly may be attributed to glacial dispersion. The possibly anomalous area occurs as a halo to the above anomaly and extends the length of the grid towards the east.

Lead analyses (Map 2) indicate spot anomalies or broad diffuse possibly anomalous areas which are not coincident with the zinc anomaly. The possibly anomalous area in the eastern part of the grid may be related to the occurrence of galena in quartz + carbonate veins in the phyllite unit. Galena is not present in the samples of massive sphalerite in the main mineralized area.

CONCLUSIONS

The sphalerite mineralization on the Ent occurs in a brecciated dolomite close to the carbonate-phyllite contact. The contact zone is poorly exposed and only two mineral occurrences, 500 m apart have been noted. The main occurrence contains rubble of smithsonite, dolomite, calcareous tufa, sphalerite bearing dolomite breccia, iron-oxide cemented breccia and massive sphalerite over an area of 800 sq. m. A zinc geochemical anomaly, 225 m long, lies close to and parallel to the carbonate/phyllite contact between the two occurrences.

The preferred origin of the mineralization is by epigenetic void filling of spaces created by tectonism or karst development. The metal rich Devono-Mississippian black shales may have provided the metal source.

RECOMMENDATIONS

Immediate follow-up work on the Ent is unwarranted because of the limited potential for tonnage, the fracture controlled patchy nature of similar (?) well exposed occurrences elsewhere and the "zinc-only" nature of the mineralization.

Report by: I.A. Paterson Project Geologist

IAP/pcd cc Watson Lake Mining Recorder (2)
Western District Files

Endorsed by: D.W. Heddle Assistant Manager

Approved for Release by: G. Harden, Manager Exploration, Western District
References

Sinclair, A.J.:
Selection of threshold values in geochemical data using probability graphs. J. Geochem Explor., 3, p. 129-149.

Tempelman-Kluit, D.J.: 1977, Quiet Lake (105 F) and Finlayson Lake (105 G) map areas, Geological Survey of Canada Open File 486.
IN THE MATTER OF THE YUKON QUARTZ MINING ACT AND IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL SURVEY CARRIED OUT ON THE ENT GROUP OF MINERAL CLAIMS

Located in the Watson Lake Mining District of the Yukon Territory

N.T.S. 105 F/10

AFFIDAVIT

I, I.A. Paterson of the City of Vancouver in the Province of British Columbia, geologist, make oath and say:

1. that I am employed as a geologist by Cominco Ltd. and, as such, have a personal knowledge of the facts to which I hereinafter depose:

2. that annexed hereto and marked as "Exhibit A" to this my Affidavit is a true copy of expenditures on a geological and geochemical survey carried out on the ENT mineral claims;

3. that the said expenditures were incurred between the 18th and 20th day of August, 1977.

Sworn Before Me at the City of Vancouver in the Province of British Columbia this 5th day of May, 1978

A Notary Public In and For the Province of British Columbia

I.A. Paterson
EXHIBIT "A"
STATEMENT OF EXPENDITURES
ENT CLAIMS

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>I.A. Paterson (1 day)</td>
<td>$124.00</td>
</tr>
<tr>
<td></td>
<td>D.W. Moore (3 days)</td>
<td>$330.00</td>
</tr>
<tr>
<td></td>
<td>M. Spurr (3 days)</td>
<td>$195.00</td>
</tr>
<tr>
<td>Transportation</td>
<td>G382 Helicopter 3.5 hours at $175.</td>
<td>$612.00</td>
</tr>
<tr>
<td></td>
<td>7 man days (food and equipment)</td>
<td>$154.00</td>
</tr>
<tr>
<td>Geochemistry</td>
<td>108 soil samples analysed for Pb and Zn</td>
<td>$142.00</td>
</tr>
<tr>
<td>Trenching</td>
<td>14.2 cu. m. at $6.00</td>
<td>$85.20</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>$1,642.20</strong></td>
</tr>
</tbody>
</table>

This is Exhibit "A" to the Affidavit of Ian Arthur Paterson declared before me this 25th day of May, 1978.

Signed: I.A. Paterson

NOTARY PUBLIC IN AND FOR THE PROVINCE OF BRITISH COLUMBIA
I, I.A. Paterson with business address at 409 Granville Street, Vancouver, B.C., do hereby certify that I have supervised the field work and have assessed and interpreted the data resulting from the geological and geochemical surveys on the ENT claim group.

I also certify that:

1. I graduated from the University of Aberdeen with a B.Sc. (Hons.) in Geology in 1967.
2. I graduated from the University of British Columbia with a Ph.D. in Geology in 1973,
3. I am a Fellow of the Geological Association of Canada.
4. I have worked with Cominco Ltd. since 1974.

Respectively submitted:

Dr. I.A. Paterson

Vancouver, British Columbia

I.A. Paterson was responsible for supervising the geological and geochemical surveys described herein. Dr. Paterson received his B.Sc. degree in geology from the University of Aberdeen in 1967 and his Ph.D. degree in geology from the University of British Columbia in 1973. I consider him a competent geologist.
