RECONNAISSANCE GEOLOGICAL AND GEOCHEMICAL SURVEY,

AND TRENCHING

CARRIED OUT ON THE DEV MINERAL CLAIMS

WHITEHORSE MINING DISTRICT

N.T.S. 105K-3, 105K-4

YUKON TERRITORY

Latitude 62°10'N  Longitude 133°30'W

Work Done During Period Aug. 12 - September 27, 1977

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be accepted as representation work in the amount of $13,500.00.

Graham H. Scott
Resident Geologist

B. R. Baxter
Commissioner of Yukon Territory

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INTRODUCTION

Welcome North Mines Ltd. as Operator of a joint venture exploration programme with Getty Mining Pacific Ltd., staked the DEV group of claims in July, 1977 to cover siderite-associated lead-zinc occurrences discovered during a prospecting programme near the Magundy River in Yukon Territory. During the 1977 field season, reconnaissance geological and geochemical surveys were carried out over the claim group and were followed by trenching over one of the showings discovered. This report summarizes the work completed on the programme.

RECOMMENDATIONS

Based on the results obtained in 1977 the following work is recommended for the DEV claims in 1978:

i) Establishment of a cut grid over the geochemical anomalies and/or zones of favourable geology.

ii) Comprehensive geological mapping and geochemical sampling over the grid area.

iii) Geological mapping over the active claim block using air photos for control and emphasizing areas of more abundant outcrop along the Magundy River.

MINERAL CLAIMS

The DEV mineral claims comprise 83 claims as below:

<table>
<thead>
<tr>
<th>CLAIMS</th>
<th>GRANT NUMBER</th>
<th>RECORDING DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEV 1-83</td>
<td>YA19591-YA19673</td>
<td>Aug. 11, 1977</td>
</tr>
</tbody>
</table>

The claims are located in the Whitehorse Mining District and are shown on claim maps 105K-3 and 105K-4 (Fig. 1).
LOCATION AND ACCESS

The DEV claims extend in a northwest-southeast direction, straddling the Magundy River, approximately 6 miles to the southwest of the town of Faro, Yukon Territory (Fig. 2).

The Robert Campbell Highway traverses three claims at the northwestern extremity of the claim group, but access to the major part of the group is by helicopter from Faro or from the town of Ross River approximately 30 miles to the southeast.

PREVIOUS WORK

There is no record of any previous exploration activity on the DEV claims, but in 1966 Silver City Mines Ltd. staked the CASCA claims to the east of the DEV group. Extensive bulldozer trenching was carried out but no mineralization was found.
REGIONAL GEOLOGY

The DEV claims lie to the southwest of the Tintina Fault in the St. Cyr Range. The underlying geology comprises Cambrian-Ordovician-Silurian calcareous pelite, siltstone, orthquartzite, limestone, and tuff and breccia which outcrop for an approximate strike length of 70 miles on the front range of the St. Cyr Range.

The St. Cyr Range is comprised of two major northwest-trending fault panels. Plate 1 shows the location of the Tintina and the St. Cyr Faults which bound these panels. Within the fault panels, numerous as yet ill-defined thrust faults and strike-slip faults complicate stratigraphic correlations.

At least two ages of folding are present in rocks within the fault panel of the St. Cyr Range. Major foreshortening due to "ptygmatic" style folding about northwest-trending axes has occurred.

GEOLOGY

Stratigraphy

As the claim group is largely overburden covered, geologic mapping was concentrated in areas where air photos indicated outcrop. The majority of exposures which occur as cliff-forming outcrop along the Magundy River were not mapped because of their inaccessibility except by boat. Plate 2 details the results of preliminary mapping. Although a continuous stratigraphic section was not exposed on the property, rocks are correlated to stratigraphy mapped over the PMJ and ANGIE Trends (Fig. 3).

a) Cambro-Ordovician (60cs1?)

The sequence of rocks shown in Fig. 3 under 60cs1 has been established by combining isolated sections seen at the Mag showing and on the Magundy River to the southeast (Plate 2).
Massive rusty, buff-weathering, dark-grey, weakly calcareous, dirty siltstone.

Brown-weathering, massive, grey, sandy limestone.

Rusty brown-weathering, highly fractured, grey to black chert and cherty argillite, minor porphyry trachyte dykes.

Brown-weathering, fissile, thinly-laminated, dark-grey mudstone.

Sooty, black shale and limestones.

Dark-grey to black, non-calcareous shale; rusty-weathering, dark-grey to black chert and cherty argillite.

Massive, grey, sandy limestone.
b) **Ordovician and Silurian (OSSlq?)**

These brown weathering, fissile, thin laminated dark-grey mudstones are considered to be the unmetamorphosed equivalents of OSSlq argillites exposed to the southeast.

c) **Mississippian (Mt)**

Although the Silurian-Devonian section between these rocks and OSSlq are presumed to be covered by overburden on the property, the Mississippian rocks can be identified by interbedded limestones found to the southeast of the claim group (Tempelman-Kluit, pers. communication).

Where mapped, Mt rocks consist of rusty brown weathering, highly fractured, grey to black chert and cherty argillite. Minor trachyte volcanics were observed in talus fans in one area (Plate 2) southeast of the DEV, while isolated boulders of sandy limestone were observed elsewhere in the chert.

d) **Carboniferous (Csl)**

Although tops could not be determined in units Mt and Csl, the stratigraphic relations implied between these two units in Fig. 3 are based on relations seen elsewhere in the St. Cyr Range. Csl around the DEV claims consists of brown weathering, massive, grey, sandy limestone.

e) **Upper Triassic (uTrsc)**

This unit has been tentatively lithologically distinguished from Csl. Where exposed in the map area, these rocks are composed of massive rusty, buff weathering dark-grey, weakly calcareous, 'dirty' siltstone.
DEV Mineralization
MAG and WET Showings
f) Cretaceous (Ki)

One isolated outcrop of granodiorite was found along the Magundy River just east of the Mag showing.

STRUCTURE

Two generations of folding and complex structures are interpreted from preliminary geological mapping. Folding is known to cause repeated exposure of the section of 60cs1 hosting the lead-zinc mineralization at numerous locations along the Magundy River.

Many airphoto linears suggest that imbricate faulting may also occur on the property. These linears form two conjugate sets trending north-west and east and may be related to the two generations of folding mentioned above.

MINERALIZATION

Mineralization on the DEV claims occurs within rocks which are believed to be Cambro-Ordovician age (60cs1, Fig. 4. Mineralized outcrop, as observed to date, is restricted to two locations in the DEV claims, the Mag and Wet showings, although other minor mineralized outcrop and float occurrences within the claim block serve to confirm the possibility of along-strike continuity throughout the staked area (Fig. 1). Mineralization at both the Mag and the Wet showings is stratabound, occurring within a sideritic bed.

The mineralized horizon is predominantly composed of buff to brown coarsely crystalline siderite which forms a principal bed up to 25 feet thick enclosed within cherty ferrigenous argillite of suggested thickness greater than 200 feet. The mineralogy and texture of the rock is largely marked by a deep pervasive mangenese coating. Mineralogy includes siderite, calcite, quartz, accessory pyrite and chalcopyrite and galena and sphalerite.
Mag Showing

Mineralization at the Mag showing is "patchy" in nature. In hand specimens galena and sphalerite occur as irregular veinlets, disseminations and sub-massive concentrations several inches wide cutting across veinlets and stringers of quartz-calcite in massive siderite. The mineralization appears to be post diagenetic, forming fracture fillings and groundmass replacements (?) in disrupted massive siderite.

Individual outcrops of siderite are consistently veined with quartz-carbonate but do not contain consistent and continuous concentrations of galena and sphalerite mineralization.

Cherty argillite which envelops the siderite horizon (Fig. 4) contains 1" to 3" beds of siderite which are mineralized with sphalerite.

Wet Showing

At the Wet showing friable buff weathering shaly phyllite contains boudins, lenses, and bands of siderite hosting sphalerite and galena mineralization.

Although obscured by local shearing, a massive siderite bed, such as that found at the Mag, also occurs at the Wet showing. This massive siderite occurs as specular buff brown siderite with black interstitial material of unknown composition. Elsewhere in the massive siderite bed, siderite locally forms matrix to partially digested, angular disrupted fragments of black, cherty argillite.

As at the Mag showing mineralization favours the siderite beds but also occurs in the cherty, and here sometimes calcareous phyllitic argillites surrounding the siderite.
TRENCHING AND SAMPLING

As emphasized elsewhere in this report, exposure in the DEV claim area is poor. Limited programs of trenching and sampling have been carried out on the Mag and Wet showings but results should be considered only preliminary.

Mag Showing

The Mag showing is located on a steep, wooded bank some 700 feet to the south of the Magundy River (Fig. 5). Exposure in the area is limited to step-like cliffs part way up and along the valley wall. The Mag occurrence forms a horse-shoe shaped series of steep outcrop exposed by a minor, north-flowing tributary to the main river.

The band, in general, parallels the river valley so that cliff faces expose a longitudinal cut through the horizon for some 400 feet on strike. Both walls of the mineralized band are not exposed in any one outcrop. The siderite band appears to form a discrete bed conformable to the enclosing sediments. The thickness of the bed is difficult to ascertain due to the locally tortuous nature of the occurrence.

Selected specimens from the mineralized rubble and float found in proximity to the Mag showing assayed as follows:

<table>
<thead>
<tr>
<th></th>
<th>Lead (PPM)</th>
<th>Lead % (Approx.)</th>
<th>Zinc (PPM)</th>
<th>Zinc % (Approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mag 1</td>
<td>1,100</td>
<td>0.10</td>
<td>2,900</td>
<td>0.29</td>
</tr>
<tr>
<td>Mag 2</td>
<td>1,040</td>
<td>0.10</td>
<td>380</td>
<td>0.04</td>
</tr>
<tr>
<td>Mag 3</td>
<td>530</td>
<td>0.05</td>
<td>90,000</td>
<td>9.00</td>
</tr>
<tr>
<td>Mag 4</td>
<td>22,500</td>
<td>2.25</td>
<td>2,200</td>
<td>0.22</td>
</tr>
<tr>
<td>Mag 5</td>
<td>1,300</td>
<td>0.13</td>
<td>35,000</td>
<td>3.50</td>
</tr>
<tr>
<td>Mag 6</td>
<td>720</td>
<td>0.07</td>
<td>41,000</td>
<td>4.10</td>
</tr>
<tr>
<td>Mag 7</td>
<td>8,000</td>
<td>0.80</td>
<td>136,000</td>
<td>13.60</td>
</tr>
</tbody>
</table>
MINERALIZED OUTCROPS

INTERBEDDED BLACK SOOTY SHALE AND LIMESTONE, ORANGE WEATHERING MASSIVE BLACK LIMESTONE AND DIRTY LIMESTONE.

PLATEY BUFF TO BROWN WEATHERING BLACK DIRTY LIMESTONE, CALCITE VEINED BLACK CRYSTALLINE LIMESTONE.

MASSIVE AND THIN BEDDED SIDERITE 1a, MUDSTONE WITH SIDERITE, CHERT AND ANKERITE BEDS. CONTAIN LEAD AND ZINC.

MINERALIZED FLOAT

NOTE: For location, see Plate 2
For detail of cross-sections a-a' and b-b', see Figures 6 and 7

WELCOME NORTH MINES LTD.

GETTY MINING PACIFIC LTD.

WOODSIDE PROJECT
DEV CLAIMS
MAG Showing - Plan View

SCALE 1" = 200'
DATE AUG. 1977
NOS K/4

BY F. FOSTER
REVISED
FIG. 5
The location and results of chip sampling on the MAG showing are illustrated on accompanying Fig. 6, 7 and 8. Assay results from this sampling which represents partial cuts across the siderite horizon are compiled below:

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Width</th>
<th>Lead %</th>
<th>Zinc %</th>
<th>Silver Oz./ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>East side</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7763</td>
<td>7'</td>
<td>0.13</td>
<td>0.12</td>
<td>0.18</td>
</tr>
<tr>
<td>7764</td>
<td>12'</td>
<td>0.02</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>7765</td>
<td>15'</td>
<td>0.39</td>
<td>0.02</td>
<td>0.07</td>
</tr>
<tr>
<td>West side</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7766</td>
<td>5'</td>
<td>0.03</td>
<td>0.25</td>
<td>0.23</td>
</tr>
<tr>
<td>7767</td>
<td>3'</td>
<td>1.25</td>
<td>0.16</td>
<td>0.25</td>
</tr>
<tr>
<td>917</td>
<td>5'</td>
<td>0.16</td>
<td>0.12</td>
<td>0.05</td>
</tr>
<tr>
<td>918</td>
<td>5'</td>
<td>0.01</td>
<td>0.02</td>
<td>ND</td>
</tr>
<tr>
<td>919</td>
<td>6'</td>
<td>0.02</td>
<td>0.14</td>
<td>ND</td>
</tr>
<tr>
<td>7768</td>
<td>6'</td>
<td>0.55</td>
<td>0.09</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Wet Showing

The Wet showing located some 5 miles to the northwest of the Mag is exposed for 100 feet in a rock cut on the south bank of the Magundy River. The bank cuts at a low angle to the strike of the mineralized horizon which dips to the west away from the river (Fig. 9).

Sphalerite and galena are found sporadically through a sequence of locally cherty clacareous phyllitic argillites containing thick boudins and bands of fine-grained siderite. The thickness of the sequence is at least 30 feet.

Bedrock blasting and trenching were carried out on the showing in an attempt to expose fresh rock to sampling. Due to deep surface weathering this program was largely unsuccessful.
VERTICAL SECTION OF CLIFF FACE

Looking Southwest
Fig. 8 Sample Locations at the Mag Showing, Dev Mineral Claims
Friable buff weathering shaly phyllite containing boudins and lenses of siderite occasionally mineralized with sphalerite.

Massive siderite bed

LIMIT OF CLEARED AREA

Creek

Cut bank of friable Black Shelly Shale

Float of blocky black quartz–veined and calcite–veined limestone.

Mineralized

TRENCH NO. 1

NOTE: For location, see Plate 1

WELCOME NORTH MINES LTD.
GETTY MINING PACIFIC LTD.
WOODSIDE PROJECT
DEV CLAIMS
WET SHOWING

SCALE 1" = 50 FEET
DATE AUG. 1977
NTS 120 K/4
BY F. FOSTER
REVISIRED FIG. 10
Grey calcareous phyllites containing thick boudins and bands of brown siderite hosting sphalerite and galena mineralization.

ASSAYS

<table>
<thead>
<tr>
<th>Footage</th>
<th>% Pb</th>
<th>% Zn</th>
<th>oz. Ag</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>.02</td>
<td>.07</td>
<td>—</td>
</tr>
<tr>
<td>5-10</td>
<td>.01</td>
<td>.12</td>
<td>—</td>
</tr>
<tr>
<td>10-15</td>
<td>.06</td>
<td>.47</td>
<td>.06</td>
</tr>
</tbody>
</table>

Sampled by B. Holland

NOTE: For location, see Fig. 10
A 20-foot trench was cut across the upper bench through the most sideritic section of the WET showing (Fig. 10). The trench penetrated soil and rotten bedrock for depths to 8 feet but failed to expose anything but broken rock plates and chips.

The location and assay results of chip samples taken from the broken rubble on the floor of this trench are indicated on Fig. 10 and 11 and tabulated below:

<table>
<thead>
<tr>
<th>Width</th>
<th>Lead %</th>
<th>Zinc %</th>
<th>Silver Oz./ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5'</td>
<td>5'</td>
<td>0.02</td>
<td>0.07</td>
</tr>
<tr>
<td>5-10'</td>
<td>5'</td>
<td>0.01</td>
<td>0.12</td>
</tr>
<tr>
<td>10-15'</td>
<td>5'</td>
<td>0.06</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Selected high grade character specimens from the WET showing assayed:

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Lead (PPM)</th>
<th>Lead %</th>
<th>Zinc (PPM)</th>
<th>Zinc %</th>
<th>Silver Oz./ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>6846</td>
<td>-</td>
<td>0.01</td>
<td>-</td>
<td>12.00</td>
<td>0.41</td>
</tr>
<tr>
<td>6847</td>
<td>-</td>
<td>Tr</td>
<td>-</td>
<td>0.68</td>
<td>Tr</td>
</tr>
<tr>
<td>6848</td>
<td>-</td>
<td>0.22</td>
<td>-</td>
<td>0.66</td>
<td>Tr</td>
</tr>
<tr>
<td>WET 1</td>
<td>54</td>
<td>-</td>
<td>25,000</td>
<td>2.50</td>
<td>-</td>
</tr>
<tr>
<td>WET 2</td>
<td>56</td>
<td>-</td>
<td>91,000</td>
<td>9.10</td>
<td>-</td>
</tr>
<tr>
<td>WET 3</td>
<td>470</td>
<td>0.05</td>
<td>110,000</td>
<td>11.00</td>
<td>-</td>
</tr>
<tr>
<td>WET 4</td>
<td>850</td>
<td>0.08</td>
<td>1,100</td>
<td>0.11</td>
<td>-</td>
</tr>
<tr>
<td>WET 5</td>
<td>46</td>
<td>-</td>
<td>4,000</td>
<td>0.40</td>
<td>-</td>
</tr>
</tbody>
</table>

**GEOCHEMISTRY**

*Method of Survey, Analysis, and Treatment of Data*

Reconnaissance soil geochemistry surveys were completed over the DEV claims in an attempt to extend known lead and zinc occurrences into areas of overburden. Samples were taken, with the aid of a prospectors grub hoe, at 200-foot intervals along flag lines spaced approximately 1500 feet apart. All samples were collected in Kraft brown paper bags and dried prior to shipment for analysis.
All samples were analyzed by Acme Analytical Labs in Ross River, Yukon. When the samples were received, each was dried while in its Kraft bag, then screened to 80 mesh, weighed out to 0.5 grams and digested in hot aqua regia. Samples were then diluted, clarified for 20 hours and then tested for lead and zinc content on an atomic absorption spectrophotometer. Accuracy of the instrument ideally is 1 percent of the amount of metal present. Individual cathode lamps were used for each element determination, a direct readout being given in parts per million of the element being tested.

All results of geochemical tests were returned to the field where results were plotted on field maps kept by the party chief for aid in carrying out preliminary follow up of anomalous areas while still in the field. Plate 3 shows the results obtained over the DEV claims. Threshold values of 50 ppm for lead and 200 ppm for zinc were arbitrarily chosen.

**Interpretation of Results - DEV Claims**

Two zinc anomalies in soils were outlined on the DEV claims. Each anomaly is sinuous in configuration, with widths of up to 400 feet and lengths of up to 9000 feet. The anomalous zones appear to reflect the sub-outcrop trace of the stratigraphically controlled siderite host found at the Mag and Wet showings.

Anomalous responses are generally coincident to zinc but are of lower magnitude, which may be explained by the overall carbonate environment inhibiting the dispersion of lead ions.

As the property is largely overburden-covered, more detailed geochemical soil sampling surveys are recommended to aid in mapping the siderite-zinc host horizon.