A GEOLOGICAL REPORT	
ON
MOD 15-18 (inclusive), 33-36 (inclusive), BON 16-19 (inclusive), 26, 27, 34, 35 MINERAL CLAIMS SHEET 116-J-5
16 MILES SOUTH-WEST OF BEAR CAVE MOUNTAIN
N 66°20', W 139°45'
DAWSON MINING DIVISION, Y.T.

by

H.R. BULLIS
May 15 - August 31, 1974
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### Appendix:

I. Work done on the claim group

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- **Fig. 1** Claims Location Map
- **Fig. 2** Claim Group (Dept. of Mines Sheet 116-J-5)
- **Fig. 3** Claim Survey
- **Fig. 4** Geology
Introduction and Summary

The Mod 15-18 (inclusive), 33-36 (inclusive), Bon 16-19 (inclusive), 26, 27, 34,35 mineral claims were staked in September, 1973 under the supervision of L. W. Saleken of Brascan Resources Limited. The decision to stake was made after the discovery by Mr. Saleken and others of strata-bound zinc mineralization in the area.

During the following winter plans were made to further explore the claims and the setting-up of a geological reconnaissance programme was begun. Brascan personnel carried out prospecting, geological mapping and a claim survey of the above claims during May, June, July and August of 1974.

Through prospecting and geological mapping it was discovered that the rock formations hosting zinc mineralization further to the south and east carry on through the above claim group. Therefore, it is recommended that Brascan retain title to the mineral claims and that application for assessment credits be made accordingly.

An application to group the above claim block will be filed in September with the Mining Recorder in Dawson City, Y.T.
Ownership

The Mod 15-18 (inclusive), 33-36 (inclusive), Bon 16-19 (inclusive), 26, 27, 34, 35 mineral claims were staked in September, 1973 as full-size mineral claims as described by the Yukon Quartz Mining Act and were recorded in Dawson City, Yukon Territory on September 18 and October 2, 1973 with the following record numbers:

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<td>October 2, 1973</td>
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</tbody>
</table>

Brascan Resources Limited has one hundred per cent ownership in the above mineral claims.

Application to group the above mineral claims will be filed in September with the Mining Recorder in Dawson City, Yukon Territory.
Location and Access

Mod 15-18 (inclusive), 33-36 (inclusive),
Bon 16-19 (inclusive), 26, 27, 34, 35 lie approximately
sixteen miles southwest of Bear Cave Mountain and are
located on the N.T.S. sheet 116-J-5.

Approximately 170 air-miles north of Dawson,
the claims are accessible during the summer months only
by helicopter. Winter roads provide access when rivers
are frozen and the ground becomes solid enough to support
wheeled or tracked vehicles. The Dempster Highway, an
all-weather gravel road, provides year-round access for
vehicles to within seventy miles of the claims. A number
of airstrips are located along the Dempster and provide
staging points for material being air-lifted into the
property.

An all-weather airstrip, the Mallard, lies about
50 miles to the south of the claims and provides access for
light aircraft. From there it is necessary to use a heli-
copter to reach the claim group.
Geography

Relief in the claims area is moderate. Valley floors are generally 1,500 feet A.S.L. and the mountain ridges seldom are higher than 4,000 feet A.S.L. The mountains have low, gentle profiles and are seldom peaked. Absence of glaciation and severe frost-heaving resulting from active perma-frost have combined to produce mountains resembling piles of rubble.

The claims lie within ten miles of the Arctic Circle and the vegetation varies from sub-Arctic to cold-temperate. The ridges above 3,000 feet have very little growth other than moss, lichen and alpine flowers. The valleys, on the other hand, are filled with spruce, tamarack, alder and a wide variety of small broad-leaf plants. The growing season is short - from the first of June through to mid-August - and the growth-rate is very slow.
Geology

Regional

A series of sedimentary rocks ranging in age from Silurian to Devonian are exposed in sections on three over-thrust plates the major and western-most of which is the North Dewdney Thrust. The thrust-faults strike approximately north-west. The strike of the bedding planes of the sediments corresponds to that of the thrusts and the dip of the beds is generally to the east.

The local thrust-faults appear to terminate in a broad anticline to the south of the claim block. Further to the east the sediments form a shallow syncline the eastern edge of which is terminated by the Fishing Branch River Valley. This valley seems to be controlled by older faulting and thrusting striking toward the south-east.

The rocks from the Silurian to Devonian are a series of limestones, cherty limestones, shaley limestones and dolomites. The boundary between the Silurian and Devonian is difficult to determine because dolomitization has taken place in most rocks and has destroyed minor distinguishing characteristics. However, it is felt that a series of dolomites containing masses of black, nodular chert belong in the Silurian age and, for the purposes of this report, shall be considered the boundary between Silurian and Devonian.

The upper-most rocks that are seen in the Devonian are massive limestones composed of up to sixty per cent crinoidal debris. These rocks are resistant, dark-gray cliff-formers. Below the crinoidal limestones
are a recessive series of bedded shaley to sandy limestones with the occasional bed containing reefal debris and ostracode fossils. Next in the sequence come massive light-to dark-gray aphanitic limestones containing gastropod and coral fossils. These limestones are also cliff-formers. Below these cliffs are a series of undifferentiated light-to dark-gray, fine-to coarsely-crystalline dolomites that carry on down-section to the Silurian cherty dolomites.
Local Geology

The geology underlying the claim group consists of a series of limestone and dolomite units having a strike of N10°W (approximately) and a dip of about 20°E. Uppermost in the sequence is the crinoidal limestone unit which is underlain by a shaley limestone unit, in turn underlain by a light-gray aphanitic limestone unit. At the bottom of the sequence are a series of undifferentiated dolomites which are the host rocks for sphalerite mineralization in the area. Outcrop on the claims is minimal but geological contacts can be traced in talus with little difficulty.

Directly to the west of the claim group is a thrust fault striking about N10°W. The rocks to the east of the fault have been thrust over those to the west so that there is a repeat of section from the east to the west. The thrusting is probably related to the Dewdney Thrust Fault, a regional feature found about three miles to the west.
Mineralization

The sphalerite-smithsonite-pyrite showings occur along the strike length of the limestone-dolomite contact for over two miles but appear to be "poddy" and discontinuous.

Four distinct modes of mineralization are found in the area: breccia, fracture-filling, vug-filling and replacement. The description of each mode is as follows:

1. Breccia - sulphide mineralization is found along shear planes and within the matrix of fault (?) breccias containing angular fragments of various sizes. In most cases these breccias have within them coarse crystals of remobilized calcite.

Generally the mineralization associated with breccias is very low grade (0.5%) and has about a 1:1 ratio of sphalerite:pyrite.

2. Fracture-filling - in dolomites that are not intensely sheared (as in faults) but rather are "crackled" the sulphides occur along the fracture planes. As in the breccia-type fracture-filling produces mineralization of a low grade.

3. Vug-filling - sulphides have filled interstitial cavities in the dolomites. Mineralization is intimately associated with the development of sparry white dolomite.

Cont'd.
4. Replacement - sulphides, as well as filling interstitial cavities, have replaced the host dolomite. Where this type of mineralization has taken place the host rock may be replaced by up to 50% sulphides.

It should be noted that although iron pyrite is present in the rock no gossans form. Iron oxides are not mobile in basic environments and, as a result, limonite and goethite form from the pyrite in situ. As an example, specimens were found of goethite in crystals pseudomorphous after pyrite cubes and pyritohedrons.
Recommendations and Conclusions

Although the mineralization on this claim group appears to be uneconomic, the showings constitute an extension along strike of more promising mineralization to the south. Until the commercial viability of the mineralization on Brascan's claims to the south has been proven or disproven the group should be retained by Brascan Resources.

It is therefore recommended that assessment work on Mod 1-6, 8, 19-24 mineral claims be filed with the Mining Recorder in Dawson City.

Respectfully submitted,

H.R. BULLIS
CERTIFICATION OF REPORT

I hereby certify that the work described in this report was carried out under my supervision.

F.B. WHITING
Member: Assoc. of Prof. Engineers (Yukon)
Member: Assoc. of Prof. Engineers (B.C.)
APPENDIX I

Work done on the claim group

A survey of the claims using the chain and compass method was carried out and the map produced from this survey was used as a base map for the geological mapping.

During the time work was being done on the claim group a camp established on a seismic road near Fishing Branch Creek served as a work base. From this camp, a Bell 47GB2 helicopter was used to place personnel on traverse.

Personnel involved in work on the claim group are as follows:

R. Bullis

G. McArthur C/O Brascan Resources Limited

M. McArthur 502 - 1155 West Pender Street

A. Cook Vancouver, B.C. V6E 2P4

T. Hubl

The helicopter was chartered from Trans North Turbo Air out of Whitehorse, Y.T.

The expenses on assessment of the claim group are as follows:

Consulting fees $ 368.00
Charter flying 4,722.00
Salaries 1,824.00
Fuel 592.00
Truck rental and gasoline 160.00
Incidental expenses 320.00
Report and drafting 400.00

Total expended $8,436.00