

Network 1

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COPPER ROAD PROPERTY
NTS 92K-3W, NANAIMO M.D.
QUADRA ISLAND, BRITISH COLUMBIA

EVALUATION REPORT

FOR

BLACK MARLIN RESOURCES INC.
610, 525 SEYMOUR STREET
VANCOUVER, B.C.
V6B 3H7

Prepared By:

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MINFILE NUMBER: 092K 060

NATIONAL MINERAL INVENTORY: 092K3 Cu4

NAME(S): COPPER ROAD

STATUS: Past Producer
NTS MAP: 092K03W
LATITUDE: 50 12 26
LONGITUDE: 125 18 32
ELEVATION: 0457 Metres
LOCATION ACCURACY: Within 500M

Underground

MINING DIVISION: Nanaimo
UTM ZONE: 10
NORTHING: 5564000
EASTING: 335250

COMMODITIES: Copper Silver Gold

MINERALS:

SIGNIFICANT: Bornite Chalcopyrite Copper
ASSOCIATED: Quartz Calcite
ALTERATION: Malachite
ALTERATION TYPE: Oxidation
MINERALIZATION AGE: Unknown

DEPOSIT

CHARACTER: Vein Shear
CLASSIFICATION: Hydrothermal Epigenetic
TYPE: Volcanic redbed copper Cu-Ag quartz veins
DIMENSION: 1400 x 9 x 150 Metres STRIKE/DIP: 100/80N TREND/PLUNGE:
COMMENTS: Shear zone

HOST ROCK

DOMINANT HOST ROCK: Volcanic

STRATIGRAPHIC AGE	GROUP	FORMATION	IGNEOUS/METAMORPHIC/OTHER
Upper Triassic	Vancouver	Karmutsen	

LITHOLOGY: Andesite

GEOLOGICAL SETTING

TECTONIC BELT: Insular
TERRANE: Wrangell

PHYSIOGRAPHIC AREA: Georgia Depression

INVENTORY

ORE ZONE: EAST

CATEGORY: Indicated YEAR: 1971
QUANTITY: 68114 Tonnes
COMMODITY GRADE
Silver 13.7000 Grams per tonne
Copper 2.4400 Per cent

COMMENTS: Drill indicated reserves.
REFERENCE: SMF July 24, 1972-Univex Mining Corp.Ltd.,A.F. Roberts, May 11, 1971.

ORE ZONE: WEST

CATEGORY: Indicated YEAR: 1971
QUANTITY: 83217 Tonnes
COMMODITY GRADE
Silver 13.7000 Grams per tonne
Copper 4.1000 Per cent

COMMENTS: Drill indicated reserves.
REFERENCE: SMF July 24, 1972-Univex Mining Corp. Ltd., A.F. Roberts, May 11, 1971.

CAPSULE GEOLOGY

The Copper Road occurrence is underlain by dark green to green andesitic lavas of the Upper Triassic Karmutsen Formation, Vancouver Group. Amygdaloidal areas contain zeolite and epidote, and in one place hematite and chalcopyrite-filled amygdules.

A shear up to 9 metres wide and 1400 metres long contains quartz, calcite, bornite, chalcopyrite, native copper and malachite. The shear strikes 100 degrees and dips 80 degrees north.

Drill indicated reserves in West zone are 83,217 tonnes grading 13.7 grams per tonne silver and 4.1 per cent copper. Drill indicated reserves in the East zone are 68,114 tonnes grading 2.44 per cent copper and 13.7 grams per tonne silver (Statement of Material Facts July 24, 1972 - Univex Mining Corp. Ltd., A.F. Roberts, May 11, 1971).

BIBLIOGRAPHY

EMPR MAP 65 (1989)
GCNL Dec.7, 1972; #4, 1980
EMPR AR 1953-165; 1956-A48; 1961-91; *1962-95; *1963-98; 1964-151;
1965-225; 1966-71; 1967-72; 1968-100

FILE NUMBER: 092K 060		NAME: COPPER ROAD		STATUS: Past Producer		
Production Year	Tonnes Mined	Tonnes Milled	Commodity	Grams Recovered	Kilograms Recovered	
1968	1,846	1,846	Silver Gold Copper	36,391 156	68,542	
1967	511	511	Silver Gold Copper	9,455 156	16,533	
1966	1,586	1,586	Silver Gold Copper	20,683 342	53,717	
1965	502	502	Silver Gold Copper	8,118 62	18,312	
1962	40	40	Silver Copper	1,151	2,128	
1961	79	79	Silver Copper	2,706	6,093	
1956	11	11	Silver Copper	995	2,182	
1953	161	161	Silver Copper	7,682	15,222	

SUMMARY TOTALS: 092K 060

NAME: COPPER ROAD

	<u>Metric</u>	<u>Imperial</u>
Mined:	4,736 tonnes	5,221 tons
Milled:	4,736 tonnes	5,221 tons
Recovery: Silver:	87,181 grams	2,803 ounces
Gold:	716 grams	23 ounces
Copper:	182,729 kilograms	402,848 pounds

AR 478 MAG SURV. 1963 B.R. SCHWARTZ

RUN DATE: 05/30/95
RUN TIME: 15:27:45

MINFILE / pc
MASTER REPORT
GEOLOGICAL SURVEY BRANCH - MINERAL RESOURCES DIVISION
MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

PAGE: 97
REPORT: RGEN0100

BIBLIOGRAPHY

EMPR GEM 1969-211; 1970-280; 1973-253; 1974-208; 1975-E112
EMPR ASS RPT 478
EMPR OF 1992-1
EMPR PF (Claim maps and diamond drill hole plan, 1962)
EMPR BULL 23; 40
GSC SUM RPT 1913, pp. 53-75
GC MEM 23
GSC MAP 120A; 1386A
GSC OF 463; 480
GSC P 70-1A, pp. 44-49; 71-1A, pp. 31-33; 72-1A, pp. 21-23;
73-1A, pp. 42,43
EMR MP CORPFILE (Univex Mining Corp. Ltd.; Black Marlin Energy
Corporation)
Wahl, H. (1982): Copper Road Property, Black Marlin Energy
Corporation Prospectus, October 1983)
EMR MIN BULL MR 223 B.C. 166

DATE CODED: 850724
DATE REVISED: 890511

CODED BY: GSB
REVISED BY: GJP

FIELD CHECK: N
FIELD CHECK: N

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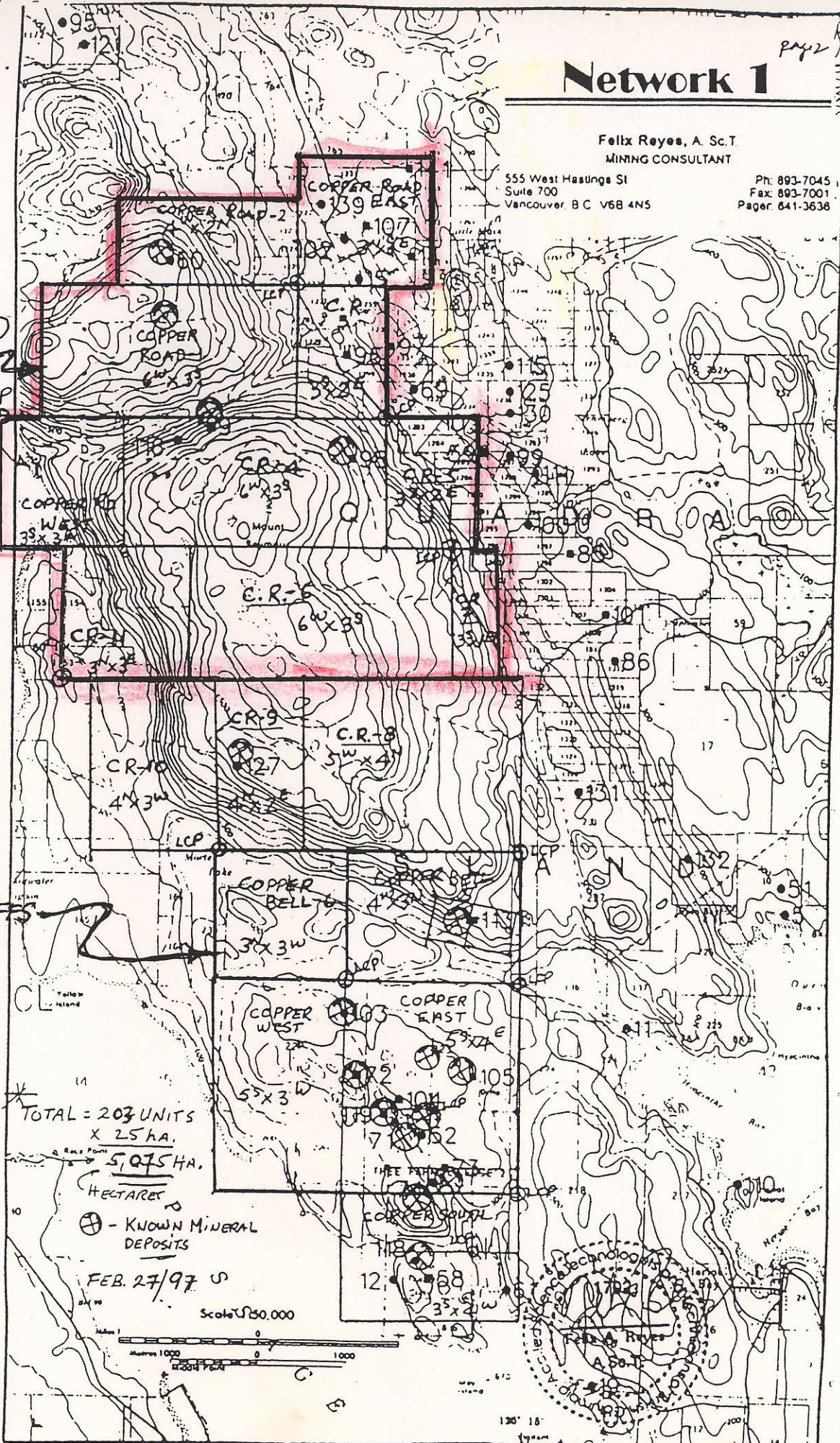
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COPPER ROAD GROUP

SHIPPING RAMP (BARGE)

COPPER CLIFFS GROUP

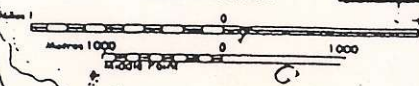


TOTAL = 203 UNITS
X 25 HA.
= 5,075 HA.

HECTARES
⊕ - KNOWN MINERAL DEPOSITS

FEB. 27/97

Scale 1:50,000



FEB 27/97

SUMMARY

This report, originally prepared in 1981, has been updated at the request of Black Marlin Resources Inc. It is based upon a one day field examination (May 7, 1981) and a review of available data. The Copper Road deposit consists of 10 located claims situated on the west side of Quadra Island. Previous production from the East Zone aggregated 5,064 DST grading 3.66% Cu, 0.51 oz/T Ag, and 0.018 oz/T Au. The property was formerly explored by Anaconda and Western Mines. Some 36 angle core holes have defined a 4,500 foot long by \pm 20 foot wide chloritized shear zone in Karmutsen volcanics, striking roughly east-west with a near vertical dip. Exploration to date has defined two bornite-chalcopyrite shoots totalling some 115,000 tons grading 2.77% Cu and 0.47 oz/T Ag. While the drilling has been performed by responsible operators, there is a degree of uncertainty attached to the reserve estimates, as no drill cores, drill logs, or cross-sections are available to confirm the true thicknesses of mineralized intercepts. Drill indicated mineral reserves calculated by the writer based upon the furnished data, a 5 foot minimum width, 1% Cu cut-off grade, and a 70 to 200 foot spacing between utilized intercepts total 122,195 tons grading 2.57% Cu with 10% dilution.

The East Shoot appears to be the most significant of the two zones by virtue of a possible high grade core of \pm 14,000 tons grading 6% Cu, which appears to represent a "feeder zone." This zone is open at depth and might ultimately contain some 60,000 tons of material in a grade range of 2% Cu or better.

There appears to be a good chance that the Copper Road deposit could develop into a small (Circa 100 tpd) copper mining operation with a possibility of quick payback from high grade mineral in the East Shoot core.

A two-stage program is recommended totalling \$495,000. Stage one consists of check drilling (2 NQ angle holes for \pm 1,500 feet) to verify zone thickness, grade, and test downward continuity. Success here (at least 5 feet true thickness of +2% Cu), would then warrant a \$415,000 underground exploration and development program to gain entry to the high grade East Shoot, test mining characteristics and costs, and provide bulk samples for mill tests. The deposit has many favourable geological and locational aspects suggestive of relatively low cost mining for this type of deposit.

INTRODUCTION AND BACKGROUND

At the request of Black Marlin Resources Inc., the writer was retained to report on the geology and mineralization of the company's Copper Road property. This investigation consists of a one day field visit (May 7, 1981) and a review of existing data.

LOCATION AND ACCESS

NTS 92K-3W, Nanaimo Mining Division, Quadra Island, latitude 50°12', longitude 125°18'.

The property is easily accessible from Campbell River, Vancouver Island via a 15 minute ferry trip to Quathiaski Cove. An 11 mile paved/gravel road extends to Granite Bay. From here the route turns west to Deepwater Bay for 0.75 miles, then north along a logging road (now partly washed out) to the claims.

HISTORY

1961: Golden Contact Mines drilled eight shallow holes totalling 948 feet around the shaft area.

1963: Optioned by Anaconda who drilled 11,740 feet indicating reserves of 115,000 tons grading 2.8% Cu and 0.5 ounces of silver.

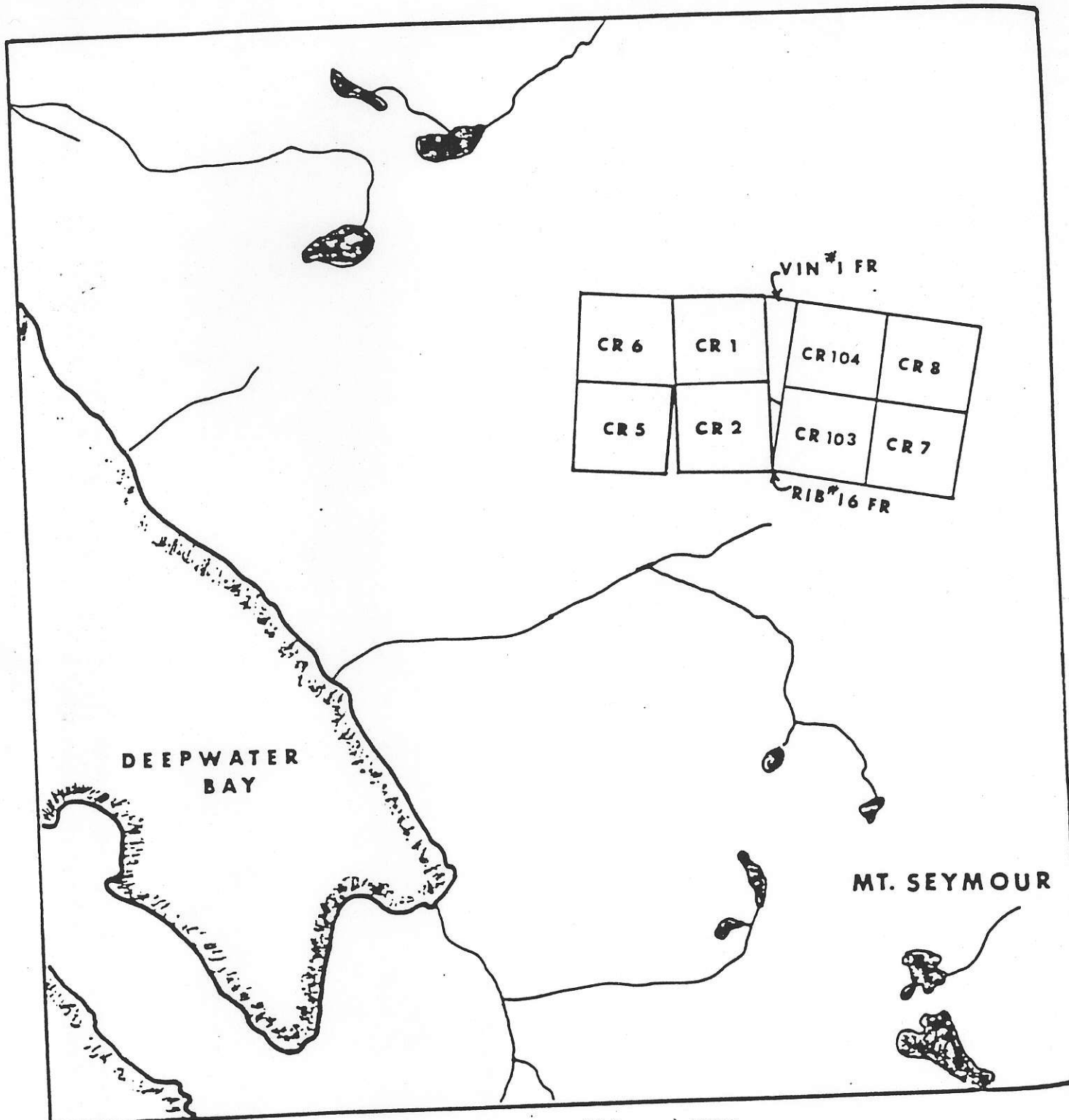
From 1962 to 1969 the property was lease-mined by Mr. Robert J. Bennett of Campbell River, who sank a 100 foot shaft and shipped a total of 5,064 DST to Britannia Beach, which graded 3.66% Cu, 0.51 oz/T Ag, and 0.018 oz/T Au.

1970: The property was optioned by Western Mines who conducted geological, geochemical and geophysical surveys, and drilled eight surface core holes totalling 4,737 feet. This option has since lapsed.

PROPERTY AND OWNERSHIP

The property consists of the 10 located mineral claims listed below.

<u>CLAIM</u>	<u>RECORD NUMBER</u>	<u>EXPIRY DATE</u>
Copper Road No. 1	12728	16 Oct 1983
Copper Road No. 2	12729	16 Oct 1983
Copper Road No. 5	239	17 May 1983
Copper Road No. 6	240	17 May 1983
Copper Road No. 7	241	17 May 1983
Copper Road No. 8	242	17 May 1983
Copper Road No. 103	15205	19 Oct 1983
Copper Road No. 104	15206	19 Oct 1983
Rib No. 16 Fr.	17038	8 Nov 1983
Vin No. 1 Fr.	17029	8 Nov 1983



BLACK MARLIN RESOURCES INC.

Claim Location Map

NTS 92K-3W QUADRA IS. B.C.

MARCH 1983

A conveyance registered as B/S #18/26 of December 22, 1980, shows all interests have been transferred to Blanche Adams and Antoinette Helen Adams. The ownership documents of Black Marlin Resources Inc. respecting this property have not been examined, thus no assurance of title is given or implied by this report.

AVAILABILITY OF INFORMATION

Anaconda: The local office of Anaconda was contacted with the result that records had been shipped to the USA, and in any event were not open for inspection.

Western Mines (Westmin): Western kindly gave permission to examine all their records on the property, however, they were unable to furnish drill logs or drilling cross-sections. The whereabouts of the drill logs is unknown.

Drill Cores: The visit to the claims revealed that the core shack had been destroyed by fire, with the result that the residual cores are not reliable to specific holes. The primary information on which this report is based is the drill plan and longitudinal section furnished by Western Mines Ltd. There is some doubt whether the mineralized intervals portrayed on this map are true thicknesses or core lengths. Because of this, the recommendations herein are designed to resolve this unknown.

General Geology: The Copper Road zone occurs within basalts and andesites of the Triassic Karmutsen Formation. These rocks are dominantly massive andesite-basalt flows with intermittent amygdaloidal units.

To the east, the volcanics are in fault contact with the younger Triassic Quatsino Formation, a well crystallized bluish limestone with occasional white recrystallized zones.

STRUCTURE AND MINERALIZATION

The Copper Road property is a shear zone in basic volcanics which has been traced for some 4,500 feet. The structure strikes 280° and dips vertically or nearly so. The zone of shearing is generally about 20 feet wide and characterized by intense chloritization of the sheared basalts. The north or hanging wall of the zone is a clean slip surface, while the footwall is more "hackly" with random quartz sulphide stringers.

This zone of shearing has been impregnated with chalcopyrite and bornite bearing quartz veins, wherein locally rich shoots of massive chalcopyrite and bornite are developed. Copper sulphides are apparently dominant as there is little recorded data on the presence of accompanying pyrite or pyrrhotite.

The overall potential of the shear to a vertical depth of 500 feet has been fairly well defined by the 36 holes drilled to date. This work has

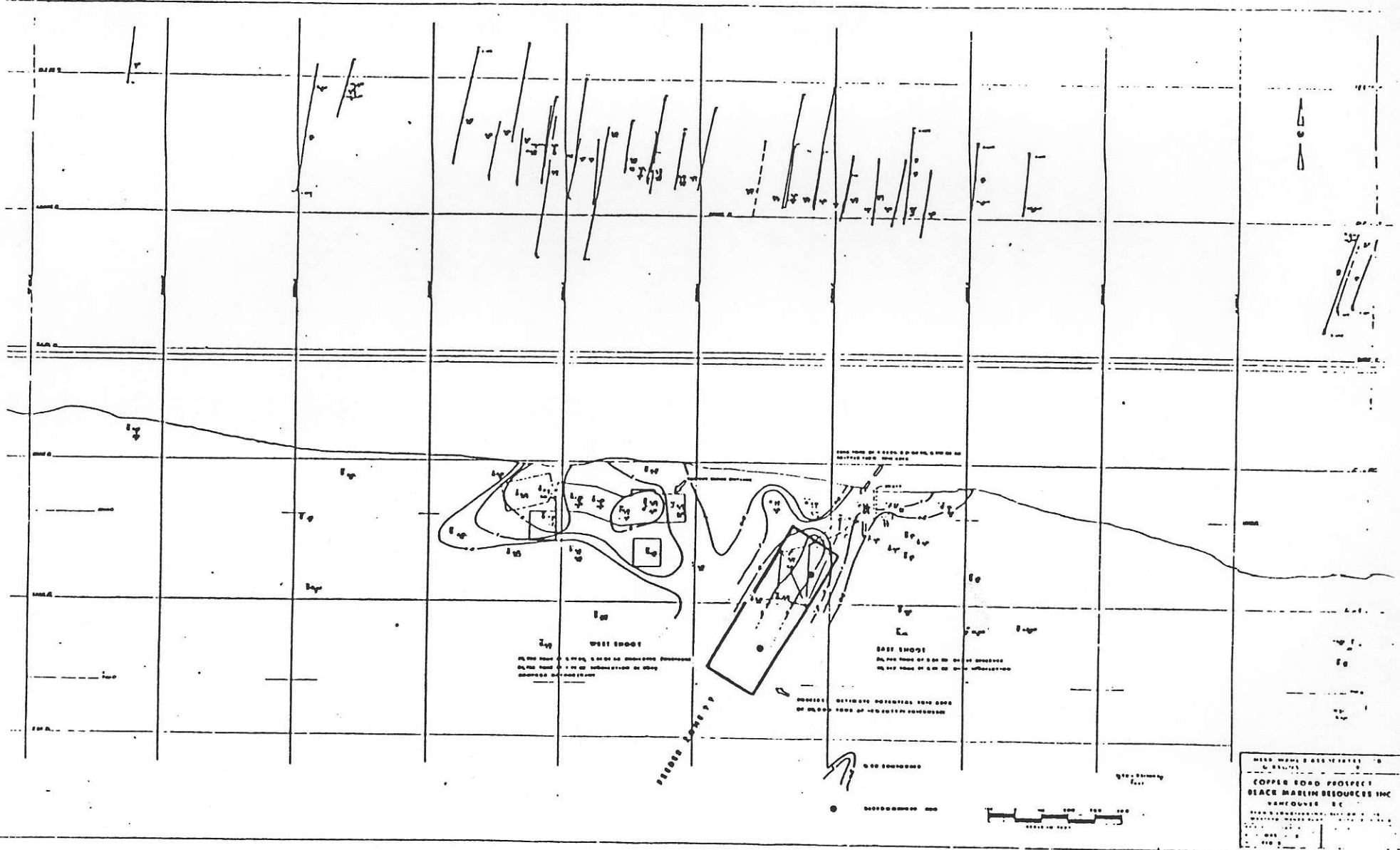
indicated two "ore" shoots referred to as East and West, but has not defined the downdip potential of what may be the "Feeder Zone." This could represent a former flat-lying channel in flow tops, which controlled the initial mineralization, and is now tipped on end. Alternatively, it may mark the zone of ingress for hydrothermal quartz-sulphide solutions entering or traversing the already existent vertical shear.

MINERAL RESERVES

It should again be mentioned that mineralized intervals plotted on the available information may not be the true zone thickness. However, it may be significant that grade and tonnage calculations reported by Western Mines are comparable to the results calculated by the writer. Nonetheless, the above proviso should be remembered, until clarified.

Mineral reserves were calculated by two standard methods: the triangular block method and the contour method. In both methods, a cut-off grade of 1% Cu and a minimum width of 5 feet were employed. Since the spacing between drill holes used to calculate tonnages and grade varies 70 to 200 feet, the material estimated should be classed as drill indicated.

Differing values for precious metal content (Ag) were observed so these were not included in the present estimate. Silver values observed in the Western data ranged from trace to 5.21 oz/T. The average for the East Shoot amounted to 1 oz/T Ag, while 0.53 oz/T was the average for the West



Shoot. The only data for gold was the analysis for the 5,000 tons shipped which graded 0.018 oz/T Au. Future sampling should be directed to closer checks on the precious metals content.

CALCULATED TONNAGES (Drill indicated)

East Shoot

<u>Tons</u>	<u>% Cu</u>	<u>oz/T Ag</u>	
39,800	2.94	1.00	Western, no dilution
40,417	3.49	?	HJW, 10% dilution @ 0% Cu
46,700	3.69	?	HJW contour method, 10% dilution @ 0% Cu

West Shoot

<u>Tons</u>	<u>% Cu</u>	<u>oz/T Ag</u>	
75,700	2.77	0.53	Western, no dilution
61,778	2.11		HJW, 10% dilution @ 0% Cu
84,750	1.77	?	HJW contour method, 10% dilution @ 0% Cu

Total Zone

<u>Tons</u>	<u>% Cu</u>	<u>oz/T Ag</u>	
115,500	2.83	0.47	Western, no dilution
122,195	2.57	-	HJW, 10% dilution @ 0% Cu
131,450	2.45	-	HJW contour method, 10% dilution @ 0% Cu

The East Shoot area is considered the most significant in terms of a potential small scale, higher grade mining venture. Using the contour method, there appears to be a high grade core zone of some $\pm 14,000$ tons grading 6% Cu, which could be important in terms of a quick pay-back of investment.

Additionally, the grade contours are very suggestive that a "feeder" zone may extend beyond the present limits of the East Shoot at depth. This is shown by the outlined block on Figure 3.

Using dimensions of 600 feet x 200 feet x 5 foot true thickness, there could exist some 60,000 tons of +2% Cu material, subject to confirmatory drilling and underground exploration. This area may also include an extension of the higher grade core area mentioned above.

VALUATION OF IN PLACE MINERAL RESERVES

At currently prevailing metal prices in Canadian dollars (\$1.00/lb Cu) (\$12/oz Ag), and \$500/oz Au, the estimated gross value of mineral reserves may be viewed as noted: (Assumptions - 35% Cu concentrate grade, 95% recovery, silver content of 0.50 oz/t and Au content of 0.018 oz/t based upon past production).

\$2.7 M East Shoot Cu-Ag-Au values of \$66.43/ton net smelter based upon Tacoma schedule.

\$3.3 M West Shoot Cu-Ag-Au value of \$40.17/ton net smelter based upon Tacoma schedule.

Whether this material can be recovered at a profit is unknown at this time. There does appear to be sufficient value in place to warrant underground development with a view to confirming potential mining, milling, and operating costs related to a small scale operation.

DISCUSSION OF ONWARD EXPLORATION AND DEVELOPMENT

The Copper Road deposit presents an attractive opportunity to develop into a small (100 Tpd) high grade copper mining operation, which could well double the presently known reserves of the East Shoot high grade zone. There are a number of favourable features which are considered significant.

1. Extraction and Dilution: Mineralized material should break cleanly from the hanging wall. Dilution has been calculated @ 0% Cu, but stringer mineralization is present in the footwall, which should contribute some values. The zone has a vertical geometry which should allow open stoping, and very competent wall rocks which should eliminate timbering.
2. Drilling Versus U/G Development: The previous drilling has pretty well delineated the best mineralized areas, and these are at depth.

The depth at which the zone requires testing (600 to 800 feet below surface) is very near or close to the cost effective point, where underground exploration makes better financial and technical sense than drilling.

3. Access to Reserves: The East Shoot has an excellent topographic situation vis a vis gaining entry by an adit drive. The terrain, after a gradual slope northward, drops steeply, so that an adit could be collared about 1,000 feet north of the 700 foot level to enter the zone at that elevation. This would provide 500 to 600 feet of backs and tap directly into the high grade core.

The East Shoot offers the best chance to provide high grade material and determine profitability. If this is successful, a more accurate determination regarding West Shoot mining could be considered.

4. Infrastructure and Access: The property has an excellent location respecting transportation and communications. The concentrate loading facility for Western Mines Ltd. is situated about 1 mile north of the ferry terminal at Campbell River. There is good opportunity to move product either by road, barge, or ship.

The surface disposition surrounding the property is Crown-Zellerbach T.F.L. #2, so that a mining operation should be compatible with current land usage.

CONCLUSIONS

The Copper Road deposit is a high grade shear zone controlled feature occurring in Triassic Karmutsen basalts. The zone strikes roughly E-W, is some 4,500 feet long by present definition, and contains two drill-indicated mineralized lenses, which constitute the mineral reserves. The gross value of material-in-place amounts to an estimated \$6 M dollars based upon current metal prices. The East Shoot appears the most attractive of the two zones by virtue of a potential high-grade core, which could be significant in terms of a rapid investment pay-back. The deposit has many favourable features related to gaining underground access to the indicated higher grade zone, and extraction of material.

The East Shoot is open at depth and the chance may exist to more than double reserves.

This report is based upon incomplete technical data as drill cores and/or logs are not available. With this in mind, the following proposals are recommended.

RECOMMENDATIONS

A two-stage program is recommended.

1. Reserve Confirmation: Confirm and extend the presently indicated reserves by drilling two NQ core holes, which must be bore hole surveyed. Success at this stage (at least 5 feet of +2% Cu True thickness) would then justify proceeding with the underground exploration and development program.
2. Underground Development: Drive an estimated 1,000 feet of 6' x 8' adit from the north side of the East Shoot along the 700 foot level to the shear zone. Cross-cut 100 feet east and west of the adit/shear zone intersection. Raise 200 feet up-zone x-cut \pm 200 feet east across high grade zone. The exact location of the adit collar would be governed by the results of the preceding drilling.

The objective of this work is to gain entry to reserves and establish a transportation corridor, to test-mine several thousand tons, check the mined grade, and provide bulk samples for mill testing. Upon completion of this phase, a detailed inquiry should be prepared investigating the feasibility of a small-scale copper mining operation.

BUDGET/COST ESTIMATE

Check Drilling: To test for extension of East Shoot high grade zone at 600 feet below surface, and confirm grade at 350 feet below surface.

\$ 3,000	Preparation of detailed topo map at scale 1:2500 with 10 m contour interval
45,000	Core drilling - 1,500 feet NQ @ \$30/foot inclusive contract charges
4,000	Bore hole deflection survey
1,000	Assays
15,000	Road and site preparation
<u>5,000</u>	Engineering and supervision
\$73,000	
<u>7,000</u>	Contingency
<u>\$80,000</u>	TOTAL

Underground Development: 1,000 feet adit drive, 600 feet raise and x-cuts.

\$320,000	1,600 feet underground work at \$200/ft inclusive
15,000	Road and site preparation
15,000	Sampling, assaying, and metallurgical testing
5,000	Permits, fees, and licenses
<u>30,000</u>	Engineering, supervision, and overhead
\$385,000	
<u>30,000</u>	Contingency
<u>\$415,000</u>	TOTAL Underground Work