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GEOLOGICAL REPORT

ON THE

MACKTUSH PROPERTY

Alberni Inlet
Alberni Mining Division
Vancouver Island
British Columbia

Latitude 49 08' North
Longitude 124 52' West
NTS 92F/2W

FOR

SYMC RESOURCES LTD.

BY

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July 16 ~~June~~ , 1990

INTRODUCTION

SYMC Resources Ltd. owns 10 Modified Grid mineral claims, which consists of the Macktush property and is situated south of Port Alberni on Vancouver Island.

This report, prepared at the request of SYMC Resources Ltd., is based on examinations of parts of the claims area by the writer April 26 and June 20, 1990, and on results of exploration work and other studies undertaken on the property since 1982. A compilation of previous surface sampling and diamond drilling was recently completed by John Wilson, FGAC, who also supervised a survey of part of the property. These data have been incorporated in this report.

LOCATION AND ACCESS

The Macktush property is situated 10-15 km south of Port Alberni on southern Vancouver Island (Figure 1). The mineral claims are located on the west side of Alberni Inlet immediately north of Macktush Creek (Figure 2) in NTS map-area 92F/2W. The geographic centre of the property is at latitude 49 08' North and longitude 124 52' West.

Access to the property is by highway and road from Port Alberni by way of MacMillan Bloedel Limited Sproat Lake Division Woodlands roads along Cous and Macktush Creeks or a shore road along Alberni Inlet (Figure 2).

The mineral claims are situated in an active logging area and access to most parts of the property is afforded by numerous logging roads.

MINERAL PROPERTY

The Macktush property consists of 10 Modified Grid mineral claims (159 units) located in the Alberni Mining Division.

No claim posts or lines have been examined by the writer but the claims are believed to have been located in accordance with procedures as specified in the Mineral Tenure Act Regulations of the Province of British Columbia. According to Mineral Titles maps, some overlapping of several of the claims is evident.

The configuration of the mineral claims is shown on Figure 3 and details are as follows:

Claim Name	Record Number	Units	Expiry Date
COPPER 100	1909	12	October 31,1992
COPPER 101	1910	9	October 31,1991
COPPER 102	1911	16	" "
COPPER 103	1912	12	" "
COPPER 104	1913	20	" "
COPPER 105	1914	20	" "
COPPER 300	2169	20	May 25,1991 "
COPPER 400	2170	20	" "
COPPER 500	2244	20	June 11,1991
COPPER 50	2474	10	February 13,1992

PHYSICAL FEATURES

Mineral claims comprising the Macktush property cover an area of moderate to steep relief west of Alberni Inlet (Figure 3). Elevations range from sea level to 960 metres in the western claims area.

Steeper slopes are found north of Macktush Creek, above Alberni Inlet and marginal to a number of drainages flowing east to Alberni Inlet. Active logging is underway in most parts of the claims area and bedrock is well exposed along logging roads, major drainages and some of the steeper slopes.

The climate is typical of the southwest coast of Vancouver Island with abundant rainfall in the fall and winter months. Mild winters allow for work on the property most months of the year.

HISTORY

The earliest record of prospecting and mining activity west of Alberni Inlet dates back to the turn of the century when copper-gold vein occurrences near the head of the Inlet were investigated and some 1900 tonnes of material containing copper-silver-gold were mined from the Three Jays skarn deposit south of Nahmint River. Sporadic exploration work, directed to several copper and/or precious metal prospects, has continued to the present time.

The current Macktush property includes a number of gold-

silver-copper bearing quartz veins. The majority of these have been located by work over the past several years but at least one was explored a number of years ago by several pits and two short adits. Remains of an old cabin attest to this earlier work and an old claim post with a claim tag characteristic of those in use up to the mid-1940's was observed adjacent to one of the known quartz veins. There are no records of this earlier work.

The old workings on one of the vein structures were re-discovered by principals of SYMC Resources Ltd. in April of 1981. Mineral claims were located and work through 1986 included prospecting, trenching and sampling. Ten diamond drill holes, totalling more than 900 metres, were completed in 1987 and 1988.

Preliminary metallurgical test work was carried out in 1988 (Broughton, 1988) as were initial investigations pertaining to a possible tailings impoundment area and potential mining methods (Paloniemi & Skevaar, 1988). This work was undertaken in response to recommendations of the British Columbia Mine Development Steering Committee which had received a preliminary prospectus from SYMC Resources earlier that year.

~~One diamond drill hole was completed in 1989 and a~~ survey of surface workings and drill hole collars on the main quartz vein structure was undertaken in January of 1990. and a compilation of ~~existing data~~ ~~exploration~~ results of earlier work ~~between 1981~~ was completed by John Wilson in April.

REGIONAL GEOLOGY AND MINERALIZATION

Vancouver Island makes up the southern part of the Insular belt, the westernmost tectonic subdivision of the Canadian Cordillera. The southern Insular belt is dominated by Paleozoic and Mesozoic volcanic-plutonic complexes and lesser sedimentary rocks which are overlain on the east coast of Vancouver Island by clastic sedimentary rocks of late Cretaceous age. Tertiary basic volcanic rocks are prevalent in the south Island area and granitic intrusions of similar age are widespread along the west coast of the Island.

Vancouver Island hosts a variety of mineral deposit types which include volcanogenic massive sulphides at Buttle Lake and near Duncan which are hosted by late Paleozoic Sicker Group volcanic rocks. The Island Copper deposit near Port Hardy is a porphyry copper-molybdenum deposit with significant by-product gold and which is related to Mesozoic subvolcanic intrusions. Iron-copper skarns, hosted by late Triassic limestones marginal to granitic intrusions, are numerous in the central and northern Island areas.

The west coast and central parts of Vancouver Island are noted for gold-bearing vein deposits. Many of these are at least spatially related to Tertiary granitic intrusions, the most notable examples being the Zeballos camp, and Kennedy Lake, Alberni Inlet and Mount Washington areas.

The oldest rocks exposed near Alberni Inlet are late Paleozoic Sicker Group volcanic and sedimentary rocks which ~~are~~ underlie ~~contained in the~~ the northern part of the Cowichan structural uplift (Figure 4). Three volcanic formations comprise most of the Sicker Group in this area (Massey and Friday,1989). From oldest to youngest these include a basal pillow basalt with minor felsic units, and intermediate fragmental andesite and an upper volcaniclastic-epiclastic sequence. The youngest sequence of the Sicker Group is comprised of cherty sediments, limestones, siltstones and sandstones.

Mesozoic volcanic and sedimentary rocks overlie Sicker Group rocks and include late Triassic Karmutsen Formation andesite and basalt pillow lavas, pyroclastics and massive flows and early Jurassic Bonanza Group fragmental andesites and lesser sedimentary rocks. Where complete Mesozoic sections exist, Karmutsen Formation and Bonanza Group are separated by ~~a~~ calcareous and clastic sedimentary ~~sequence~~ rocks. (Quatsino Fm)

The Mesozoic sequences underlie much of the area west of Alberni Inlet (Figure 4) where they are intruded by granodiorites and quartz diorites of the Middle Jurassic Island Intrusions.

Youngest layered rocks include late Cretaceous Nanaimo Group clastic sedimentary rocks which ~~occupy~~ underlie the fault-bounded Alberni valley (Figure 4). These are intruded by hornblende-feldspar

porphyry dykes and sills of probable Tertiary (Eocene?) age (Massey and Friday,1989).

The dominant northwest structural trend of the Alberni Inlet area is reflected by the Cowichan structural uplift, the elongate nature of Island Intrusion plutons and the distribution of late Cretaceous sediments in the northwest trending Alberni valley. Regional northwest trending thrust faults mark the boundaries between Sicker Group and younger rocks east of Alberni Inlet (Massey and Friday,1989).

Various styles of mineralization are recognized in the Alberni Inlet area (Muller and Carson,1969; Massey and Friday,1989). These include volcanogenic massive sulphide occurrences in the lower volcanic unit of the Sicker Group, porphyry copper and/or molybdenum mineralization associated with Island Intrusions granitic rocks and iron-copper skarn deposits and occurrences in Mesozoic sedimentary and volcanic rocks, some of which have yielded limited production most notably the Three Jays prospect on the west side of Alberni Inlet.

The most common mineral deposit types are gold-bearing quartz-sulphide veins and fissure zones. These are widespread in the Franklin River-China Creek area east of Alberni Inlet where they are spatially and possibly geneticalyy related to a north trending belt of Tertiary(?) feldspar porphyry intrusions (Carson,1969).

Gold-bearing quartz-sulphide veins also occur in shear zones in Karmutsen Formation basalts west of Alberni Inlet. Examples include the Raven and Dauntless prospects due west of Port Alberni and the Ferguson prospect south of Two Rivers Arm on Sproat Lake.

Other known deposit types west of Alberni Inlet include a number of copper occurrences in fracture zones in Karmutsen Formation volcanics, ~~and copper-iron mineralization in skarn zones at the head of east flowing tributaries of Cous Creek.~~

PROPERTY GEOLOGY AND MINERALIZATION

The Macktush property is underlain by late Triassic Karmutsen Formation basaltic pillow lavas and andesites which are in contact with granodiorites and quartz diorites of the Middle Jurassic Island Intrusions in the central property area.

As indicated on Figure 4 these granitic rocks, which underlie much of the eastern half of the property, are part of an elongate pluton which extends southeasterly from Sproat Lake through the property area and across Alberni Inlet.

According to recent mapping by Sutherland Brown ~~et al~~ (1986), the contact between the Karmutsen volcanics and Island Intrusions extends in southeasterly direction through the claims just below the height of land (Figure 5). Tholeiitic pillow lavas are the dominant rock type west of the contact while

andesitic varieties underlie the southwestern claims area along Macktush Creek.

Granitic rocks of the Island Intrusions, where observed by the writer in the central property area, include medium to coarse grained grey quartz diorite and granodiorite. Some K-feldspar stringers were noted locally as were northwest trending 15 cm wide aplite dykes.

The contact between the granitic and volcanic rocks in the central property area is irregular with numerous inclusions of Karmutsen pyroxene porphyry flows and bleached andesites.

Known mineralization on the property includes a small iron-copper skarn zone in Karmutsen volcanics in the central property area, ~~and~~ molybdenite in quartz veinlets and fractures in Island Intrusion granodiorite in road cuts along Alberni Inlet in the eastern claims. and Pyrrhotite ~~Co~~ cpy in K-spar alt'd lavas in the northern property area (Fig. 5).

A number of gold-bearing quartz-sulphide veins in various parts of the claims area constitute the most significant mineralization found to date. A number of these veins occur within a 0.5 square km area in the western part of the COPPER 102 mineral claim (Figure 5) marginal to the contact between Karmutsen volcanics and Island Intrusion granitic rocks.

As indicated on Figure 6, most of the explored veins strike northeasterly and dip moderately to steeply southeast. The strike direction is normal to the overall trend of the Island

Intrusions contact, which parallels the regional trend, and the distribution of veins in this area is about equally divided between volcanic and granitic host rocks.

Vein widths range from 0.30 to several metres with an overall average of about 1.3 metre. Vein contacts are commonly sheared with 7-30 cm wide gouge zones developed in both foot- and hangingwall host rocks. Quartz stringers in wallrocks were observed marginal to several of the vein exposures. This feature is particularly evident at the northeast end of the 130 metre long trench (Figure 6) where 0.30 metre wide quartz veins within a 3-7 metre wide zone of shearing are separated by wedges of altered volcanic and granitic rocks. Elsewhere, inclusions of volcanic rocks are present near quartz veins hosted by granitic rocks and the southwest trench on the main quartz vein structure exposes a 1.4 metre wide quartz vein with quartz diorite on the footwall and an andesitic hangingwall.

Most vein structures display multiple stages of quartz veining. Colloform banding is common as are drusy cavities. Sulphide mineralization within the veins includes fine to medium grained pyrite and chalcopyrite.

A number of the known quartz vein exposures are along apparently persistent northeast structures. These include the Fred vein (Figure 6) which has an apparent strike length of at least 130 metres, the quartz veining in the long trench may

represent a southwest extension of this structure. The Red vein (Figure 6) is reportedly extends several hundred metres down a ~~road exposed on road cut~~ northeast trending draw. Other exposures of quartz veins in this general area also may be parts of more continuous, parallel zones.

Surface Sampling

A number of surface samples have been collected from a number of exposures by principals of SYMC Resources Ltd., Provincial Government geologists and the writer. Locations are shown on Figure 6 ~~and~~ and analytical data all contained in App. I. results are as follows:

Sample Number (Red Vein)	Width(m)	Gold(oz/ton)	Silver(oz/ton)	Copper(%)
	1.2	0.318	0.31	0.42
1003	1.7	0.218	1.43	1.34
50	1.5	0.303	0.01	0.01

The Fred vein (Figure 6), apparently the original zone discovered years ago, is exposed in two short adits (now caved) and three pits as shown on Figure 7. Width of the vein, which strikes east-northeast ~~with steep~~ and dips steeply ~~to the~~ south, ranges from 0.75 to nearly 5 metres. Sample results for those sites indicated on Figure 7 are as follows:

Site	Number	Width(m)	Gold(oz/ton)	Silver(oz/ton)	Copper(%)
1	101	0.91	0.303	0.12	0.01
	102	0.46	0.173	0.71	0.05
2	50	2.13	0.303	0.01	0.01
3	104	3.66	0.416	2.21	0.78
4	1003	0.76	0.218	1.43	1.34
5	-	4.88	0.952	0.34	0.60
	BCMM8412	3.35	0.430	2.30	1.12
	BCMM87002	1.0	0.140	0.09	0.16
	BCMM87003	grab	0.210	0.99	0.62

Diamond Drilling

INSERT. → Four inclined drill holes, totalling 321 metres, and drilled at -45 along 330 azimuths, tested the Fred vein along its exposed strike length to vertical depths of between 20 and 40 metres. Drill hole locations are shown on Figure 7 and sections, after those originally prepared by John Wilson, FGAC, are ~~illustrated~~ shown on Figure 8. Surveyed locations of holes are as follows:

Hole Number	North	East	Elevation(m)
87 DDH 1	2679.5	1165.5	683.0
87 DDH 3	2787.4	1253.4	597.8
88 DDH 5	2770.8	1238.5	607.8
87 DDH 8	2725.0	1188.5	644.0

INSERT. ←

The quartz vein structure was intersected in the 4 holes drilled and results confirmed a southerly dip of between 60 and 80 degrees. True widths ranged from 1.8 metres in the most westerly hole (DDH 1) to 7 metres in DDH 3 near the known eastern limits of the structure.

INSERT.

Sampling of drill cores yielded the following results:

Hole No.	Interval(m)	Length(m)	Au(oz/ton)	Ag(oz/ton)	Cu(%)
DDH 1	109.73-112.70	2.97	0.172	0.07	0.73
DDH 3	33.53-35.36	1.83	0.114	0.46	0.80
	35.36-40.64	5.28	1.190	5.06	0.94
DDH 5	47.22-48.80	1.58	0.006 (219 ppb)	0.09 (3.0 ppm)	0.02 (190 ppm)
DDH 8	71.32-72.50	1.18	0.116	0.06	0.01
	72.50-74.29	1.79	0.290	0.05	0.08

Bulk Sampling

Four 6-8 kg samples were collected from the Fred vein in 1988 and submitted to Coastech Research Inc. for preliminary Metallurgical testing. Average lead grades of the composite sample were 0.126 oz/ton gold and 0.29 oz/ton silver. Testwork on the composite sample included standard flotation, gravity concentration and cyanidation procedures.

Results indicated that direct cyanidation followed by flotation of the residue to produce a copper concentrate resulted in overall recoveries of 95% for gold, 74% for silver and 94% for copper. It was recommended that a gravity stage (jig) be added to the grinding circuit for coarse free gold recovery.

No deleterious elements of consequence were detected during the metallurgical testing.

Results indicate that good ~~Au, Ag + Cu~~ recoveries could be obtained by gravity concentration ~~followed by flotation~~ to recover free milling coarse gold followed by flotation to produce a sulphide concentrate.

CONCLUSIONS

The Macktush property includes a number of gold-bearing quartz-sulphide veins. Work to date in the central property area, which includes trenching and diamond drilling, has partially defined several vein structures with apparent good gold grades over reasonable widths. Some of these may extend over significant strike lengths and to depth ~~and consequently have reasonable prospects for the definition of tonnages of economic grade.~~

As noted previously, most of the known quartz vein structures strike northeasterly, normal to the regional structural trend as reflected by the northwest trending contact between Island Intrusions and older, ~~late Triassic~~ volcanic rocks. This contact ~~is apparently~~ is one of the major controls for the distribution of the known veins and it is felt that the entire contact zone within the Macktush property area may be prospective for the discovery of additional gold-bearing quartz veins.

Additional work is definitely warranted for the Macktush property as detailed in the succeeding section.

RECOMMENDATIONS

A phased work program is recommended for the Macktush property with the principal emphasis of the Phase I program directed to additional diamond drilling of the Fred vein

structure. This work should include -60 holes drilled from the four original drill sites, followed by infill drilling at 20 metre spacings between drill sites with two holes at -45 and --60 drilled from each site. Step-out holes, northeast and southwest of the strike length defined to date, are also recommended as are four or five deeper holes to test the vein at vertical depths in the range of 75 metres. This program of more than 20 holes totalling 2000 metres is designed to thoroughly test the continuity of grade and structure within and adjacent to the known limits of the Fred vein.

As previously noted, a number of additional gold-bearing quartz veins are known in the vicinity of the Fred vein. In order to ~~facilitate~~ determine precise locations of these and other structures, a topographic map on a scale of 1:5000 should be prepared utilising available colour air photography and the existing survey control in the area of the Fred vein.. It is intended that such a map would cover the entire property area with more detailed (1:1000) coverage prepared for the area of the Fred vein. These topographic maps would provide a base for geological mapping and sampling of vein structures.

It is also recommended that a picket line grid be established with a baseline parallel to the trend of the Fred vein and cross lines at 100 metre spacings ~~and~~ with 25 metre stations. It is intended that this grid, totalling 20 km, would cover the area

of the Island Intrusions - Karmutsen contact over much of the COPPER 102 claim. The grid would be used for tying in drill holes prior to a proper survey and for conducting an orientation geophysical survey (VLF-EM and magnetometer), ~~to determine the response of the vein structures~~.

The other known vein structures, including the Red vein, should be further investigated by excavator trenching followed by detailed mapping and sampling ~~so as to prepare several of these for drilling~~.

Phase II work would consist principally of additional diamond drilling where warranted, based on results of Fred vein drilling and on results of detailed sampling of other vein structures. Additional trenching may also be ~~warranted during~~ required as part of the Phase II program.

Phase III work is envisioned as including preliminary feasibility work ~~if warranted by~~ based on results of the initial two phases. This would consist of definition drilling and metallurgical test work of bulk samples.

COST ESTIMATE

Phase I		
Topographic mapping	$5,000.00	
Picket line grid - 20 km @ $300/km	$6,000.00	
Geological mapping, sampling	$10,000.00	
Geophysics - 20 km @ $250/km	$5,000.00	
Excavator trenching - 50 hours @ ~~$225~~ $100/hour	~~$11,250.00~~	5000.00
Diamond drilling - 2000 metres @ $100/metre	$200,000.00	
Analytical Work	$10,000.00	
Engineering, supervision, reporting	$15,000.00	
Contingencies	$40,000.00	38,400.00
Total Phase I	~~$302,250.00~~	294,400.00
Phase II		
Diamond drilling - 4000 metres @ $100/metre	$400,000.00	
Excavator trenching - 50 hours @ ~~$225~~ $100/hour	~~$11,250.00~~	5,000.00
Analytical Work	$20,000.00	
Engineering, supervision, reporting	$50,000.00	
Contingencies	$70,000.00	71,250.00
Total Phase II	~~$551,250.00~~ ~~$545,000.00~~	546,250.00
Total Phases I and II	~~$853,500.00~~ ~~$839,400.00~~	$840,650.00

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COST ESTIMATE

Phase I	
Topographic mapping	$5,000.00
Picket line grid - 20 km @ $300/km	$6,000.00
Geological mapping, sampling	$10,000.00
Geophysics - 20 km @ $250/km	$5,000.00
Excavator trenching - 50 hours @ $225/hour	$11,250.00
Diamond drilling - 2000 metres @ $30/metre	$60,000.00
Analytical Work	$10,000.00
Engineering, supervision, reporting	$15,000.00
Contingencies	$20,000.00
Total Phase I	$142,250.00
Phase II	
Diamond drilling - 6000 metres @ $30/metre	$180,000.00
Excavator trenching - 100 hours @ $225/hour	$22,500.00
Analytical Work	$20,000.00
Engineering, supervision, reporting	$50,000.00
Contingencies	$40,000.00
Total Phase II	$312,500.00
Phase III	
Definition diamond drilling, feasibility studies	$345,000.00