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#### GEOLOGICAL REPORT

#### ON

# MINERAL CLAIMS BIK 87 - 116 INCLUSIVE

57° 131° S.E.

#### INTRODUCTION

A program of preliminary geologic mapping was carried out on the South Scud Group (BIK 87-116 M.C. incl.) as part of a "Scud Venture" arrangement with Silver Standard Mines Ltd. Object of the work was to appraise the mineral occurrence on the property and to determine its local geologic setting. This report describes the field work and the results of this program.

#### SUMMARY

The South Scud Group lies astride a major contact between Permo-Triassic rocks and granitic rocks of the Coast Range Batholith. Weak Zn-Pb mineralization with low, irregular silver values occurs in a strongly pyritic mass of conglomerate-breccia at the contact. In addition, a small mass of skarn is mineralized with chalcopyrite.

# LOCATION AND ACCESS

The property lies between elevations of 2500' and 6000' on the northeasterly facing slopes of an un-named mountain some 16 air miles east of the confluence of Anuk and Stikine Rivers in northwestern British Columbia. The junction of these rivers is 70 air miles up-river from Wrangell, Alaska, and Wrangell in turn is 180 air miles northwest along the West Coast from Prince Rupert, B.C. Both Wrangell and Prince Rupert are supply centers for the area. Telegraph Creek, B.C., the nearest community, lies 51 miles to the north. Map 1, (frontpiece) which is a portion of the 1" to 4 mi. Telegraph Creek sheet, gives a more detailed location picture.

Access to the mouth of the Anuk River, which is presently a supply depot of Midwest Diamond Drilling Co., is by chartered float aircraft from either of the supply centers mentioned above. The stikine River is accessible as far as Telegraph Creek by shallow draught boat and barge. Access in the mountainous parts

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of the district is limited to helicopter.

# PROPERTY AND HISTORY

The property consists of 30 mineral claims, BIK 87 to BIK 116 inclusive, which are called the South Scud Group. These claims were staked on Pebruary 26, 1964 by A.R.C. Potter, agent for Silver Standard Mines Ltd., from a single location line along the south side of the East Scud Glacier.\* All of the claims, except those six adjoining the location line, were staked by witness post. Only one of the claim posts was found, and consequently the outline of the claim group is largely inferred from the direction of the location line stipulated on the claim tags. Winter conditions in the area would provide fairly favourable staking conditions, and so it is believed that the claims are more or less contiguous. However, some discrepancy in the coverage is inevitable and unavoidable.

Several years ago, prospectors working for BIK Syndicate (Silver Standard, McIntyre Porcupine, and Kerr Addison) found the weak Zn-Pb mineralization herein called the Ptarmigan Showing. No follow up work was done at that time. The ground was staked as an exploration bet in 1964 following rumours of important mineral development 7 miles to the west on Galore Creek. In the course of our work, another showing, a copper showing called the Humminbird, and two smaller occurrences of copper were found.

# PERSONNEL AND PROGRAM

The field work was carried out by C.A.R. Lammle, geologist, and R.E. Hague, student-assistant, working out of Scud Venture's base camp on the East Fork of Galore Creek. Access to and from the property was provided by helicopter, the flying distance being about 11 miles one way. A total of 15 days were involved, 13 in late July (of which 3 were lost because of inclement weather) and 2 in early September. During July a program consisting of preliminary mapping-prospecting of the claim group and detailed mapping-sampling of the showings was completed. The two days in September were spent check sampling one of the showings and making closer examinations of pyritized areas.

\*Coined to facilitate description.

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Control for the preliminary mapping was 1" to 500' topographic maps with 50' contours, (c.f. Map 2) prepared by V. Zay Smith Associates from available government photography. Control for the detailed maps, (c.f. Map 3 & 4) was chain and brunton traverses supplemented by pocket aneroid altimeter. The topographic map was found deficient in detail and accuracy, and hence in places, it restricted precise fixing of details.

#### SAMPLING

Samples taken from the property can be classified into three general types according to the manner in which they were taken:

- (a) <u>Chip Samples</u> Samples of this category consisted of one-inch sized pieces taken at intervals of about 3" along outcrop or along shallow trenches grub-hoed into frost-riven outcrop. Roughly 5 lb. of rock taken in this way would consititue a 10 ft. sample.
- (b) <u>Grab Samples</u> Samples of this category consisted of one-inch sized pieces taken at roughly 2 ft. intervals along outcrop. Roughly 5 lb. of rock taken in this way would constitute a 50' sample. On the attached plans the tag numbers of these samples have been prefixed with the letter "B".
- (c) <u>Traverse Grab Samples</u> These samples consisted of about 15 lb. of one-inch sized specimens selectively taken from float and outcrop while prospecting pyritic zones. These samples, prefixed with the letter "C", are not representative for only the better mineralized pieces were taken.

#### REGIONAL GEOLOGY

The regional geology of the Scud River District has been described elsewhere and no more than background remarks are required here. In gross aspects the geology of this district can be thought of as a very large pendant-like mass of deformed and faulted Paleozoic-Mesozoic rocks set in granitic rocks on the eastern flank of the Coast Range Batholith. The older rocks are

pre-Permian in age and consist of grey or buff coloured limestone, phyllite, slate, argillite, and related rocks. Overlying is the distinctive Permian assemblage of quite pure white limestone which contains minor amounts of chert, argillite and slate. Overlying the Permian in turn is the Triassic which consists of flow breccias, tuffs and basilts: with some related sediments. All of these rocks have been disrupted and intruded during several periods of tectonic activity. Cenozoic volcanic rocks overlie large areas to the east.

#### LOCAL GEOLOGY

The South Scud (c.f. Map 2) Group lies at the northern margin of the aforementioned pendant-like mass of rock, and it actually straddles a portion of the main contact between the batholith and pendant. Here the contact dips steeply, perhaps vertically, and runs northwesterly paralleling the local trend of the Permian-Triassic rocks. The Permian rock is the very thick' sequence of pure white limestone; the Triassic is a relatively thin band of light coloured, feldspathic flow breccias, and lying between the two is a narrow strip of thin bedded, dark coloured sedimentary rocks. The batholith consists of fresh diorites and granodiorites, but the marginal phases near the South Scud Group are monzonites and syenites. Lying along the contact with obscure relation to the other rocks is a body of conglomerate-breccia. Small dykes of variable composition cut all of the above rocks.

Mineralization of two distinct types occurs on the South Scud. These are (a) weak Zn-Pb sulphides with low and irregular silver values, the sulphides associated with guartzcalcite veinlets filling fractures in altered and pyritized conglomerate-breccia, and (b) disseminated chalcopyrite in garnet skarn near a warped portion of the limestone-volcanic contact.

The local geology is discussed in more detail under the appropriate heading below.

#### LITHOLOGY

<u>Limestone</u> - This is a great thickness of massive white limestone of Permian age as established by the G.S.C. In places near the top of the unit, the limestone contains a small proportion of fine, granular quartz which gives the weathered surface of the rock a fine etch. A few fractured fragments of cream coloured chert were also noted in the limestone, but, as a rule, the rock is quite pure. In general, the limestone lacks persistent jointing, but upon weathering it crumbles and leaves subdued outcrop. On the South Scud the trend of the rock is NNW and the dip is steep in both directions.

<u>Thin-bedded Sedimentary Rock</u> - This is a thinbedded sequence of black limestone, calcareous shale, argillite, and dark chert and cherty breccia, lying with unestablished but apparent conformity on the Permian limestone. This unit seems to correlate best with rocks immediately overlying the Permian as described by Kerr in Mem. 246 (p. 26). Possil pelecypods resembling Triassic types were found in the shales and limestone of the sequence. The more resistant cherts and argillites form prominent outcrop.

<u>Flow Breccias</u> - These rocks are dense to weakly porphyritic feldspathic flows and flow breccias varying in composition from trachyte to dacite. They have colours ranging from light grey through tan to brown. The fragments vary in amounts and are similar in general composition and colour to the matrix so that in places they can be distinguished only with difficulty. South of BIK 91 as much as 40% of the rock might be sharply angular fragments, but further to the northwest this percentage seems to decrease. Few attitude were found. These rocks have been grouped with the Triassic by the G.S.C.

Granitic Rocks - These are light grey to pink, medium to coarse grained, quartz-poor rocks ranging in composition from hornblende diorite to hornblende diorite to hornblende syenite. They are generally quite fresh (i.e. unaltered), although locally, particularly in the more sygnitic phases, there is some fracture controlled epidotization and potash metasomatism. Outcrop at low elevations along the glacier are monzonitic to dioritic. Some later dyke-like phases are coarsely porphyritic due to the feldspar. At higher elevations, particularly on and southeasterly from BIK 91, the rock is coarse-grained and quite red due to orthoclase. Northeast of the fault on BIK 88, the rock is fine-grained and pink to grey in colour. The rock is resistant and the outcrop are blocky because of fjoint control.

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Several small pendants of a black to dark green metamorphosed basalt (greenstone) occur in the granitic rocks. The largest of these greenstone masses is partially in fault contact with the granites. All of the greenstone outcrop are of a general crushed and subdued character.

Although the actual granitic rock-volcanic rock boundary is a distinctive lithologic contact of regional extent, it does not have any profound structural, metamorphic or weathered features. Indeed, there is little convincing evidence that the contact is intrusive. On and southeast from BIR 91, the contact is obscured in a slight depression about 100' across. Here there is little metamorphism in the flow breccias and no chilling in the medium to coarse grained sygnites. There is no suggestion of strong faulting, nor is there any suggestion of oxidation or weathering. Conceivably, the flows could nonconformably overlie the granitic rocks. The actual contact, however, is exposed at the Ptarmigan Showing and here the contact is gradational and clearly intrusive, but into rocks of obscure relation to the flow breccias. The intruded rock is conglomerate-breccia composed of gravel-to cobble-sized boulders and fragments of andesitic volcanic rock (unlike the flow breccias), dioritic rock (unlike the local marginal phases of the batholith), and minor limestone (similar to the Permian limestone). The matrix of the conglomerate breccia is limy and in all of the observed outcmp the matrix and boulders contained shiny disseminated crystals of pyrite aggregating perhaps 5% of the rock.

There are two aspects of the geology that lend support to the possibility of the flows being intruded by the granitic rocks. These are (1) a general hornfelsic alteration with attendant pyritization of the volcanics near the Ptarmigan Showing and (2) a vague dyke-like body on the ridge south of BIK 96 consisting of porphyritic monzonite comparable to the rocks found in the main granitic mass.

Dykes - Three different types of dykes occur

on the claims. These are felsite, andesite and lamprophyre. The dykes are fine-grained rocks with chilled margins. The lamprophyres are narrowest, seldom exceeding 2' in width, the felsites achieve widths of 15' and the andesites reach more substantial widths. All appear to be joint controlled.

The felsites are cream coloured rocks composed largely of fine granular feldspar with a little quartz and negligible mafics. The oxidation of about 1% disseminated cubes of pyrite gives the rock a mottled appearance.

The andesite in places is porphyritic due to feldspar and hornblende. Biotite can be distinguished in the wider lamprophyre dykes.

# STRUCTURE

The dominant structural feature near the South Scud Group is the northwesterly contact between the granitic rocks and the volcanics. The dip of the contact is assumed to be very steep for its surface trace deflects only slightly as it crosses topographic features. Lesser structural features of the mapped area are probably influenced in some way by this major contact.

On BIK 114 the bedded rocks strike NNW and dip  $70^{\circ} - 75^{\circ}$  SW; southeast of this area they strike more northerly and dip more steeply, so that there would appear to be a zone of local warping or flexuring in this general area. Many of the dykes, the stronger joint systems, and some of the faults are found within this zone.

There are two fault systems on the property, a NE trending system and a WNW trending system. The NE system cuts diagonally through the zone of flexuring' fine grained granitic rocks on BIK 88. A similar trending and possibly related fault disrupts the bedded rocks on BIK 114.

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The stronger joints strike northerly with steep dips. In the granites the trend is a little west of north, and in the volcanics a little east of north. In the volcanics there are two weaker joint sets, one striking northeasterly and the other easterly, both with flatter dips. On BIK 91, jointing in the granitic rock roughly parallels the contact.

#### MINERALIZATION

Two principal types of mineralization occurs on the property: (1) quartz-carbonate - sulphide veinlets in altered and pyritized conglomerate-breccia, and (2) disseminated chalcopyrite in a brown garnet skarn derived from the Permian limestone. Each type occurs separately as individual showings which are described below. It is interesting and perhaps significant that both showings occur in the previously described zone of flexuring.

<u>Ptarmigan Showing</u> (c.f. Map 3) - The Ptarmigan showing lies around an elevation of 5000' near the toe of a shallow ice-filled cirque. It lies astride the intrusive contact between monzonite and conglomerate-breccia. All of the rocks contain abundant pyrite; the conglomerate-breccia containing perhaps 5% pyrite, and the neighbouring hornfelsic flow breccias and granitic rock containing smaller amounts of very fine pyrite. Heavy iron staining accompanies the pyrite.

The quartz-carbonate-sulphide veinlets are very thin, commonly less than 1/4" and rarely exceeding 1/2". Most occur at wide intervals in steep northerly joints in the conglomerate-breccia; a few occur in the gradational, migmatitic contact zone. Pyrite, sphalerite and trace amounts of galena and chalcopyrite occur along the edges of these little seams.

Several narrow bands of strong hydrothermal alteration in the conglomerate-breccia contain stronger pyrite - sphalerite mineralization. These areas contain some low and irregular values in silver, but it is not known in what form the silver occurs.

The quantity of pyrite and the size of the Ptarmigan showing are its most impressive features. The guartz veinlets and narrow zones of hydrothermal alteration are visually very low grade. Preliminary sampling was carried out as a precaution to check for possible gold and silver values in the conglomerate-breccia. Two of the preliminary samples taken over a combined width of 108', but representing a true width of about 80', (taking the northerly joints as control) gave an average of 4.2 oz, silver/ton. Zinc and lead values were not significantly higher than in the other preliminary samples. Check samples taken to verify these results yielded three 10' samples having a true width of 20' that averaged 4.4 oz. silver/ton. Slightly increased but still unimportant values in lead accompanies the silver. The general grade of the overall pyritized zone of the Ptarmigan Showing is very poor, the average of all samples being Au - 0.03 oz./ton, Ag - 0.91 oz/ton, Zn - 0.40%, Pb = 0.08%, Cu = 0.04%.

<u>Rumminbird Showing (c.f. Map 4)</u> - The Rumminbird Showing lies around an elevation of 5300' near the summit of the ridge about 1500' due west of the Ptarmigan Showing. Here a shallow trough-like depression in the flow breccias near the Permian limestone contains a brown garnet skarn and some white limestone. The skarn covers an area 300' long by 100' wide. It is mineralized with chalcopyrite. The surrounding flow breccias are weakly pyritized but contain no copper. A remnant of limestone and a felsite dyke within the skarn are not mineralized.

The weighted average of assays from four chip samples taken over the best exposed mineralization was Au - 0.02 oz/ton, Ag - 0.3 oz/ton, and Cu - 0.60%.

Attitudes in the flow breccias surrounding the skarn indicate a minor synclinal fold plunging to the northwest. It is possible that, during this deformation, the limestone failed by flowing and filled the slight fold in the volcanics. Subsequent alteration affected only a thin rim of the limestone at the contact. Hence, the actual volume of mineralized skarn appears to be quite small.

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It is interesting to note that the weathered surface of the skarn does not show copper stains. The rock must be broken or disrupted to disclose malachite.

Other Showings - Two other small showings of mineralogical interest occur. One of these occurs in the flow breccias on the 5500' contour about 1500' southwest of the Ptarmigan. Here very weak disseminated chalcopyrite can be found over 10'  $\times$  30' in the unaltered flows. Traverse grab sample C1995 spans this showing and it shows the overall copper content to be unimportant. The average of all the seven traverse grab samples yielded traces in Au and Ag and 0.04% in Cu.

The other showing occurs on an overhanging cliff at the 5750' contour on BIK 91. Float spalling off the cliff shows a small amount of chalcopyrite conspicuously stained by malachite. The chalcopyrite is associated with epidote and introduced orthoclase in fractured symmite. No copper could be found in the symmetiately above and below the showing. The actual copper stained showing is small and inaccessible.

# ALTERATION

The strongest alteration occurs at the two showings, the hydrothermal alteration at the Ptarmigan, and garnet skarn alteration at the Humminbird. Near the Ptarmigan the flow breccias have suffered general hornfelsic and pyritic alteration, and the rocks here are brittle and flinty, and are difficult to chip with the hammer. The pyritic zones weather conspicuously. The granitic rocks are fresh as a rule but they contain some epidote and orthoclase, and in places the hornblende is chloritized.

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# STREAM SEDIMENT GEOCHEMISTRY

One reconnaissance stream sediment sample was taken from the stream draining the basin containing the Ptarmigan Showing. The results are as follows:

SAMPLE NO. 85	THRESHOLD			
Heavy Metals	13	ml	2	ml
Copper	200	ppm	90	ppm
Zinc	200	ppm	35	ppm
Lead	75	ppm	12	ppm
Molybdenum	0	ppm	2	ppm
Nickel	0	ppm	-	

This sample consisted of several portions taken from several places along the stream and hence it is believed to be reliable. The results represent a moderate anomaly in zinc, copper and lead and all of these can be accounted for by the known showing.

Respectfully submitted,

Chas. h. R. Lammle

Chas. A.R. Lammle.

CARL: SM

24 February 1965

TO ACCOMPANY Geological Report on Mineral Claims BIK 87 to BIK 116 inclusive, herein called the South Scud Group, Liard Mining Division, British Columbia.

By: Charles A.R. Lammle

Dated: 10 December 1964

# QUALIFICATIONS OF AUTHOR

Charles A.R. Lammle is a graduate of the University of British Columbia (B.A.Sc. in Geological Engineering, 1962) and has been employed by the Vancouver Exploration Office of American Smelting and Refining Company for the past thirty-three months.

Keith White

Keith Whiting, P./Eng., (B.C. Reg. No. 4284) Supervisor.

# EVIDENCE OF EXPENDITURES INCURRED

SALARIES			
C.A.R. Lammle	15 <b>days @ \$525.00/mo</b>	\$ 262.50	
R.E. Hague	15 days @ \$425.00/mo	212.50	
P.I. Conley	4 days @ \$35.00/day	140.00	
W. Dunn	2 days @ \$35.00/day	70.00	
	TOTAL SALARIES		\$ 685.00
ASSAYING SAMPLES			336.87
LIVING EXPENSES			408.13
HELICOPTER	19 hrs. @ \$130.00/hr		2,570.00
	TOTAL EXPENDITURES		\$ 4,000.00

B - MINING RECORDER
RECEIVED
MAR 5 1965
VANCOUVER, B.C.

Declared before me at the

ity of Vancenner in the

province of British Columbia,

this \_ Jak day of March, A.D. lance a Sec. ining Record

W. St.C. Dunn





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SAMPLE ASSAYS							
Nº	WIDTH	1 4	Au oz	Agoz	Zn%	Pb %	Cu %
B1951	54		0.01	Tr	- 31		
B1952	54		0.01	Tr			
B1953	54		Tr	0.2			
B1954	54		Tr	Tr		1.0	
B1955	54		Tr	Tr	12.14		
1956	16		0.02	0.9	0.18	0.21	0.10
1957	12		0.02	0.4	0.18	Tr	0.05
1958	20		0.01	Tr	0.15	Tr	0.06
B 1959	54		0.02	1.70	0.15	Tr	0.03
B 1960	54		0.16	6.70	0.46	0.49	0.05
B 1961	50		Tr	Tr			
B 1962	50		0.01	Tr			
B 1963	50		Tr	Tr			
B 1964	50		Tr	Tr			
	1923			2.7			10.1
			1.1				1.1.1
1973	10		0.04	3,3	0.32	0.31	0.01
1974	10		0.02	6.2	0.22	0.16	0.01
1975	10		0.04	3.6	Tr	0.10	0.03
1976	10		0.02	0.1	0.40	Tr	0.03
1977	10		0.06	0.5	0.42	Tr	0.03
1978	10.	1	0.01	0.1	0.35	Tr	0.03
1979	10		0.02	0.1	0.52	0.10	0.04
1980	10		0.01	0.1	0.35	Tr	0.04
1981	10		0.01	0.1	0.65	Tr	0.04
1982	10		0.01	0.1	0.72	Tr	0.03
1983	10		0.01	0.1	0.67	Tr	0.03
1984	10		0.10	0.7	0.47	Tr	0.04
1985	10		0.01	0.2	0.32	Tr	0.05
1986	10		0.06	0.7	0.67	Tr	0.04
1987	10		0.06	2.9	0.90	0.44	0.04
1988	10		0.02	0.3	0.55	Tr	0.05
A 10A0	50		0.01	T	012	Tr	0.07
01707	50		0.04	Ir	0.72	T	0.05
DE VYII	70						

<u>Note re samples</u>: All of the above samples which cover intervals fless than 50' are chip samples; those which cover intervals of 50' or more are grab samples. Each grab sample consisted of one inch sized pieces which were taken at roughly two foot intervals over the designated width of outcrop.





se se multiples 1963 291/2 -291/2	
inbird Showing	
Legend	
e location and number 1967 ck types see map Nº 2	
NCOUVER B.C. D VENTURE	
REA 3 - SOUTH SCUD GP.	
EOLOGY & ASSAY PLAN	
RAWN APPROVED FILE Nº R.L. MAP Nº 4	
Contraction of the second	