803199

1981 EXPLORATION REPORT ON THE SULPHURETS PROPERTY SKEENA MINING DIVISION, B.C.

104B/8E, 8W, 9E, 9W

OWNED BY:

GRANDUC MINES, LIMITED (NPL)

ESSO RESOURCES CANADA LIMITED

SIDNEY F. ROSS

BY

DANE BRIDGE AND WALTER MELNYK

ESSO MINERALS CANADA

#600 - 1281 WEST GEORGIA STREET

VANCOUVER, B.C.

February 15, 1982

Claim	Record No.	Units	Date of Record	Expiry Date
Tedray 20	3113	4	June 30/81	1985/06/30
Tedray 21	3114	2	June 30/81	1985/06/30
Xray 1	1861	1	Oct 12/79	1991/10/12
Xray 2	1862	2	Oct 12/79	1991/10/12
Xray 3	1863	2	Oct 12/79	1990/10/12
Xray 4	1864	6	Oct 12/79	1990/10/12
Xray 5	1865	2	Oct 12/79	1991/10/12
Xray 6	1866	2	Oct 12/79	1990/10/12
Xray 7	1867	2	Oct 12/79	1992/10/12
Xray 8	1868	2	Oct 12/79	1992/10/12
Xray 9	1869	2	Oct 12/79	1992/10/12

EXPENDITURES

The total expenditures on the Sulphurets property for the period 1960 to 1977 were 336,600. Expenditures are summarized in the Granduc Summary Reports, Sulphurets Creek Project, 1960-1974 and 1976.

Esso's expenditures on the property were $553,000 in 1980 and $814,000 in 1981.

WORK DONE

Diamond Drilling

A total 12,000 feet (3,657.6m) of diamond drilling was done in 22 holes, DDH 18 to 39 inclusive. The following is a list of the holes by area:

Breccia Zone	DDH 19	558 feet	170.1m
	" 20	506 "	154.2m
	" 37	696 "	212.1m
	" 38	667 "	203.3m
	" 39	637 "	194.2m
Canyon Zone	DDH 18	548 "	167.0m
	" 23	324 "	98.8m
	" 24	552 "	168.2m
	" 25	457.5"	139.4m
	" 26	740 "	225.6m
	" 27	562 "	171.3m
Sulphurets Lake Gold Zone	DDH 21	237.5 feet	72.4m
	" 22	438 "	133.5m
Brucejack Peninsula - Discovery Area	DDH 30	706 feet	215.2m
	" 31	517 feet	157.6m
Brucejack Peninsula - 28 Area	DDH 28	446 feet	135.9m
	" 29	606 "	184.7m
	" 32	586 "	178.6m
South BruceJack Area	DDH 33	547 feet	166.7m
	" 34	586 "	178.6m
	" 35	516 "	157.3m
	" 36	567 "	172.8m

Geology

Mapping was mainly concentrated in the Sulphurets Gold Zone, Sulphurets Lake Gold Zone, Brucejack Lake and 367 Areas. Work was also done in areas adjacent to and west to south west of the property and on the South Cirque located south of the lake at the nose of the Sulphurets Glacier.

Summary of Significant Assays for Holes in the Disseminated Gold zones

The cut-off for the reported intervals is 0.025 oz/ton or 0.86 g/tonne. Intervals of 0.025 over 3.0m are included if the adjacent value provides an average of 0.025 over 6.0m. Long assay intervals which include some sections with 0.025 over 6.0m are indicated by an asterisk.

Rock with 0.025 oz/t Au has a gross value of $12.50/t with Au at $500/oz Canadian. Using Au at $500/oz Canadian and Cu at $1.00/lb Canadian, .025 oz/t Au is equivalent to 0.625% Cu.

The Au values in brackets on the right are the highest assays in the interval on the left.

HOLE		BEARING	DIP	
Interval			oz/t Au	
DDH 12		180°	-75%	
5.00 -	14.00 =	9.00m	0.072	(.083/3m)
41.00 -	50.00 =	9.00m	0.030	(.040/3m)
50.00 -	98.00 =	48.00m	0.023*	
98.00 -	146.00 =	48.00m	0.060	(.143/3m)
146.00 -	166.24 =	20.24m	0.027	(.033/3m)
98.00 -	166.24 =	68.24m	0.050	
41.00 -	166.24 =	125.24m	0.039*	
Cu section:				
147.10 -	166.24 =	19.14m	0.56%Cu, 0.026 oz/t Au	
DDH 18	nil	-90°		
3.00 -	27.00 =	24.00m	0.043	(0.089/3m)
35.65 -	51.00 =	15.35m	0.045	(0.098/3m)
3.00 -	51.00 =	48.00m	0.039*	
85.10 -	90.63 =	5.53m	0.041	(0.060/.85m)
96.00 -	98.19 =	2.19m	0.078	(0.280/.43m)
115.30 -	125.55 =	10.25m	0.041	(0.056/3.82m)
Cu section:				
125.55 -	162.00 =	36.45m	0.19% Cu, 0.004% Mo 0.007 oz/t Au	
DDH 19	nil	-90°		
17.58 -	75.15 =	57.57m	0.063	(0.290/3m)
114.00 -	127.50 =	13.50m	0.031	(0.039/3m)
Cu section:				
108.0 -	127.5 =	19.5m	0.68% Cu, 0.024% Mo, 0.027 oz/t Au	

HOLE			BEARING	DIP	
	Interval			Oz/t Au	
DDH 20			070°	-43°	
18.90 -	30.00 =	11.10m		0.051	(0.068/3m)
54.00 -	81.00 =	27.00m		0.037	(0.049/3m)
18.90 -	81.00	62.10m		0.033*	
Cu section:					
109.50 -	118.75 =	9.25m		0.22% Cu, 0.008 oz/t Au	
DDH 21			090°	-45°	
6.00 -	12.00 =	6.00m		0.245	(0.460/3m)
DDH 22					
108.00 -	114.00 =	6.00m		0.038	(0.049/3m)
DDH 23			090°	-45°	
6.00 -	21.00 =	15.00m		0.049	(0.079/1.95m)
27.00 -	39.00 =	12.00m		0.033	(0.047/3m)
51.00 -	62.08 =	11.08m		0.071	(0.110/3m)
75.00 -	87.00 =	12.00m		0.035	(0.044/3m)
6.00 -	96.93 =	90.93m		0.034*	
DDH 24			nil	-90°	
5.24 -	36.00 =	30.76m		0.040	(0.096/3m)
93.00 -	99.00 =	6.00m		0.042	(0.046/3m)
153.00 -	159.00 =	6.00m		0.026	(0.026/3m)

HOLE		BEARING	DIP	
	Interval		oz/t Au	
DDH 25		090°	-63°	
4.42 - 36.00 =		31.58m	0.027	(0.036/3m)
48.00 - 57.00 =		9.00m	0.035	(0.157/.46m)
87.00 - 132.00 =		45.00m	0.041	(0.061/3m)
4.42 - 132.00 =		127.58m	0.029*	
DDH 26		045°	-45°	
3.66 - 10.70 =		7.04m	0.111	(0.265/1.7m)
36.00 - 54.00 =		18.00m	0.040	(0.075/3m)
153.00 - 159.00 =		6.00m	0.036	(0.042/3m)
3.66 - 54.00 =		50.34m	0.033*	
DDH 27				
27.00 - 33.00 =		6.00m	0.068	(0.104/3m)
81.00 - 96.00 =		15.00m	0.032	(0.040/3m)
DDH 37		nil	-90°	
130.5 - 156.1 =		25.6m	0.028*	(0.073/2.7m)
163.0 - 181.0 =		18.0m	0.033*	(0.042/1.3m
196.0 - 199.1 =		3.1m	0.043	
Cu sections:				
126.55 - 163.00 =		36.45m	0.49% Cu, 0.016% Mo, 0.023 oz/t Au	
163.00 - 178.50 =		15.5m	1.02% Cu, 0.030% Mo, 0.033 oz/t Au	
126.55 - 178.50 =		51.95m	0.62% Cu, 0.020% Mo, 0.026 oz/t Au	
DDH 38		230°	-70°	
3.66 - 15.00 =		11.34m	0.087	(0.129/3.0m)
36.00 - 40.80 =		4.80m	0.041	(0.060/1.8m)
66.00 - 81.00 =		15.00m	0.041	(0.075/3.0m)
90.00 - 123.00 =		33.00m	0.028	(0.036/3.0m
138.00 - 168.00 =		30.00m	0.068	(0.280/3.0m)

HOLE Interval		BEARING	DIP oz/t Au	
DDH 39		180°	-70%	
5.10 - 15.30 =	10.20m		0.047	(0.062/4.45m)
54.00 - 60.00 =	6.00m		0.094	(0.120/3.0m)
66.00 - 71.55 =	5.55m		0.039	(0.053/3.0m)
87.00 - 111.00 =	24.00m		0.027	(0.038/3.0m)
120.00 - 126.00 =	6.00m		0.036	(0.044/3.0m)
141.00 - 171.00 =	30.00m		0.077	(0.175/3.0m).
Cu section:				
185.57 - 194.16 =	8.59m		0.27% Cu, 0.005% Mo, 0.014 oz/t Au	

Sections with 0.01 oz/t Au over 3.0m

HOLE	Interval		oz/t Au
DDH 12	107 - 113 =	6m	.126
	119 - 122 =	3m	.113
	128 - 131 =	3m	.117
DDH 19	54 - 60 =	6m	.201
	72 - 75.15=	3.15m	.105
DDH 21	6 - 12 =	3m	.460
DDH 23	51 - 54 =	3m	.110
	57 - 60 =	3m	.102
DDH 26	7.7 - 10.7 =	3m	.173
DDH 27	30 - 33 =	3m	.104
DDH 38	12 - 15 =	3m	.129
	159 - 162 =	3m	.280
DDH 39	57 - 60 =	3m	.120
	144 - 147 =	3m	.107
	153 - 159 =	6m	.160

Summary of Significant Assays for Holes in the Epithermal Veins

Values are reported for $\geq$.1 oz/t Au and/or $\geq$ 5.0 oz/t Ag. In a few instances lower values are reported if Au + Ag/50 is $\geq$ .1. (Ag is factored by 50 because Au is currently worth about 50 times as much as Ag.) Intervals which average a number of Au values with some values $<$ .1 but $>$ .025 are indicated by an asterisk. Weighted averages which include $<$ .025 oz/t Au are indicated by a double asterisk.

HOLE		BEARING	DIP	
Interval			oz/t Au	oz/t Ag
DDH 28		015°	-45°	
70.13 - 70.60 =		0.47m	8.90	8.60
69.00 - 72.00 =		3.00m	1.49*	1.89
63.00 - 72.00 =		9.00m	0.52**	1.50
120.00 - 126.00 =		6.00m	0.58	3.53
120.00 - 129.00 =		9.00m	0.40*	2.46
DDH 29		015°	-70°	
160.81 - 162.59 =		1.78m	0.27	2.54
168.00 - 169.90 =		1.90m	0.26	0.85
174.00 - 177.00 =		3.00m	0.11	0.63
160.81 - 177.00		16.19m	0.10**	0.74
DDH 30		170°	-45°	
73.90 - 74.98		1.08m	0.04**	9.39
99.84 - 100.20		0.36m	0.27	0.58
107.37 - 107.90		0.53m	0.15	1.67
DDH 31				
No significant assays				
DDH 32		015°	-45°	
78.00 - 81.00		3.00m	0.28	5.90
93.00 - 93.55		0.55m	0.22	23.60
110.60 - 111.00		0.40m	0.05**	12.90

HOLE			BEARING	DIP	
Interval				oz/t Au	oz/t Ag
DDH 33			180°	-45°	
24.00	-	27.00 =	3.00m	.14	0.17
33.00	-	33.50 =	0.50m	.10	1.34
40.50	-	42.30 =	1.80m	.11	1.52
58.00	-	60.60	2.60m	.33	0.54
58.00	-	66.00	8.00m	.13*	0.40
69.00	-	72.00	3.00m	.25	0.43
58.00	-	72.00	14.00m	.13**	0.33
DDH 34			180°	-70°	
52.30	-	54.45	2.15	.48	1.60
52.30	-	61.60	9.30	.16*	0.89
52.30	-	64.60	12.30	.13*	0.76
52.30	-	70.60	18.30	.11**	0.95
DDH 35			180°	-45°	
58.70	-	59.60 =	0.9m	.17	.62
70.00	-	70.50 =	0.5m	.39	4.50
68.00	-	70.50 =	2.5m	.11*	1.24
DDH 36			180°	-70°	
9.00	-	15.60	6.6m	.08*	1.96
50.80	-	51.80	1.0m	.27	1.77
60.00	-	66.00	6.0m	.14*	1.35

PART IV

EPITHERMAL DISSEMINATED GOLD ZONES

General

Four areas of significant low-grade Au mineralization occur at Sulphurets. These areas occur mainly in andesites but are probably related to underlying or adjacent syenite bodies. Mineralization has spread along structures such as faults or quartz veins or been concentrated in andesite breccias. The mineralization occurs with a high pyrite content in feldspar-stable, potassium silicate alteration zones. The gold mineralization commonly overlies zones of Cu + Mo.

General Conclusions

It appears that the disseminated Au zones will not be economic on their own. The best grades over 30 to 58m intervals are .060 to .077 oz/t Au. Considerable exploration potential exists but there is no indication that better grades will exist. The disseminated Au zones should be considered as second priority exploration targets at Sulphurets.

However, drilling should continue on the Snowfield and Breccia areas if first priority targets at Sulphurets are being explored. The Snowfield area in particular should be drill tested because it may have an extremely low stripping ratio.

General Grades

The following is a summary of the best grades or thickest sections obtained in the disseminated gold zones. Au values are in oz/t:

Sulphurets Gold Zone Breccia Zone

DDH 19:	57.6m	of	0.063 Au	
DDH 39:	30.0m	of	0.077 Au	
DDH 39:	165.9m	of	0.033 Au	
DDH 19:	6.0m	of	0.201 Au	
DDH 39:	15.0m	of	0.115 Au	
DDH 37:	51.9m	of	0.62% Cu	0.026 Au
DDH 37:	15.5m	of	1.02% Cu	0.033 Au

Canyon Zone

DDH 25:	45.0m	of	0.041 Au
DDH 25:	127.6m	of	0.029 Au
DDH 26:	7.m	of	0.111 Au

Sulphurets Lake Gold Zone

DDH 21:	6.0m	of	0.245 Au

Snowfield Zone

0.030 to 0.116 Au from chip samples in trenches.

Exploration Model

The Sulphurets epithermal disseminated gold zones are intrusive related (porphyry-type) or epithermal volcanic deposits. The general geology of the Sulphurets area supports a porphyry-type environment but locally a subvolcanic environment is inferred as in the Iron Cap area.

Grades

GRPCD which are economic or in production have ore zones with .4 - .8% Cu and .5 - .7 g/t Au and some up to .9 g/t Au. The Au and Cu contents are approximately proportional. SEDGZ generally have low Cu values in the Au zones and about 1 g/t Au with the Cu zones. Generally the Au zones overlie the Cu zones. DDH 19 has 57.6 m of .04% Cu and 2.16 g/t Au. Lower in the hole a Cu section has .68% Cu and .93 g/t Au. The thickest Cu section intersected is 51.9 m of .62% Cu and .89 g/t Au in DDH 37.

Petrographic Suite

GRPCD are commonly in shoshonitic intrusives, calc-alkaline quartz diorites and less commonly are in adamellite and latite porphyries. The ore zones are within or mainly within the stocks. SEDGZ are associated with alkaline albite syenite, syenite, quartz syenite, granite and alaskite. The mineralized zones are in andesites underlain by or a significant distance from syenites. No significant Au values have been located in intrusive rocks.

The Breccia zone of the Sulphurets Gold Zone

General

In the Breccia Zone, the best Au values occur in an andesite breccia with silicification, pyrite, K-feldspar and minor sericite and chlorite. The pyrite content varies from about 15 to 40%. Intense silicification probably correlates best with higher Au values. The lower portion of the gently north west dipping breccia unit contains the areas of higher (.1 oz/t) Au values.

The breccia unit is underlain by a weakly silicified, K-feldspar and chlorite altered, low pyrite zone with Cu, Mo and low Au. This zone is at least 54 m thick.

The breccia unit is overlain by an erratically altered zone at least 60 m thick. Au values are low but local sections contain .1 oz/t Au.

Work Done

Six holes have been drilled in the Breccia Zone from 3 locations. Granduc drilled 3 holes in the easterly portion of the zone in 1968. The area has been mapped and chip sampled. One timber covered area was soil sampled.

Dimensions

The Breccia Zone is drill indicated for 230 m and up to 650m in an east-west direction and open if it is continuous with DDH 6 (Granduc's hole with .04 oz/t Au over 27.4 m). The Breccia Zone is part of an area of alteration, mineralization and anomalous Au contents which extend for 1.0 to 1.2 km in an east - west direction.

The zone has only been extended into the mountain in a north-south direction on one section by DDH 12, 38 and 39. It continues at least 200 m to the north and the best grades (.077 oz/t Au over 30 m in DDH 39) were obtained 200 m in from the cliffs. A second hole to the north, DDH 37, on section with DDH 19 and 20, failed to intersect the breccia or significant Au values. Apparently the breccia unit had not been deposited, did not form (if it is steam brecciated andesite) or was displaced by faulting. However, where the breccia was expected the hole intersected silicification, weak? K-feldspar, 1-5% pyrite and 51.95 m of 0.62% Cu, 0.02% Mo and 0.026 oz/t Au.

The breccia unit appears to thicken to the west and northwest. It has a maximum vertical drill thickness of 95 m and up to 165.9 m of 0.033 oz/t Au has been drilled, including waste sections and lower grade sections, in the upper parts of the holes.

Grade and Tonnage

About 20,000,000 tonnes of about 0.05 oz/t Au can be inferred from 5 drill holes assuming dimensions of 650 m long by 200 m wide by 50 m thick at S.G. = 3.2. This does not include Cu-Mo-Au mineralization below the main Au section.

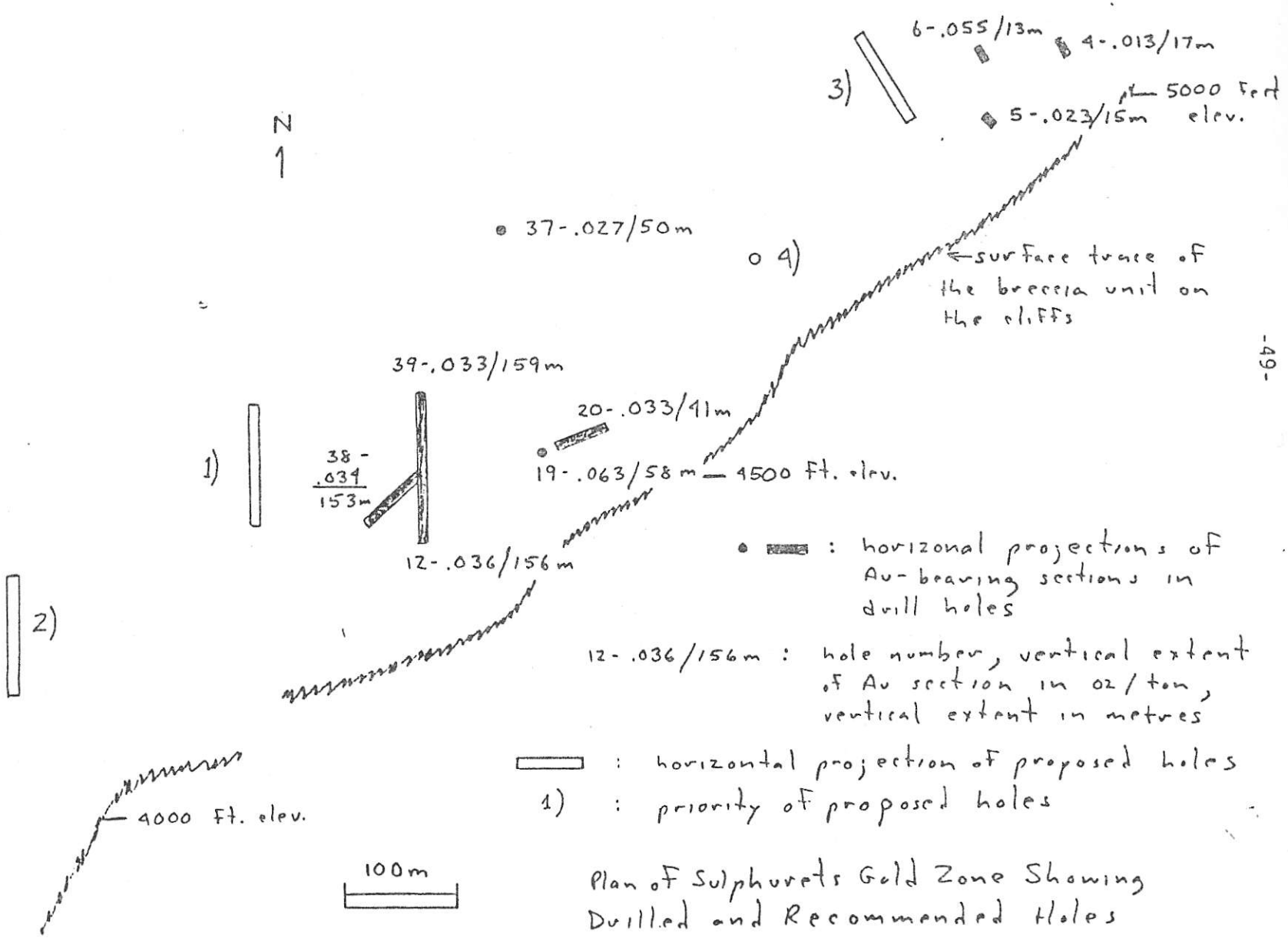
Recommendations

If drilling continues on the Breccia Zone, the following drilling, shown on Figure 2, is recommended:

1. A 600 foot hole at -90° and a 700 foot hole due north at -70° drilled on a section 150 m west of DDH 12, 38, 39 to follow the breccia unit.

2. Contingent on proposal (1.), a 700 foot hole at -90° and a 700 foot hole due north at -70° drilled 200 m west of (1.) to test an area with anomalously high Au assays.

3. A 500 foot hole at -60° drilled south to southeast to check whether the intersections in Granduc's holes are in the same breccia unit as the Breccia Zone.



• ▬ : horizonal projections of Au-bearing sections in drill holes

12-.036/156m : hole number, vertical extent of Au section in oz/ton, vertical extent in metres

▭ : horizontal projection of proposed holes

1) : priority of proposed holes

Plan of Sulphurets Gold Zone Showing Drilled and Recommended Holes

Figure 2 - 1981 Report

Figure 1

4. A 700 foot hole at -90° to test an area where there is a thin exposure of the breccia unit and sections with excellent disseminated chalcopyrite on the cliffs below the breccia exposure. This hole would help to determine the relation between the Au content of the breccia unit and underlying chalcopyrite plus minor molybdenite mineralization.

The Canyon Zone of the Sulphurets Gold Zone

General

The Canyon Zone is the westerly extension of the Breccia Zone. Gold occurs in altered andesite with silicification, quartz veining, pyrite and sericite. Gold values correlate roughly with silicification and to a lesser extent with a higher pyrite content. A high proportion of the Au may be free, occurring as fine flakes mainly adjacent to thin quartz-pyrite veins.

The mineralized zones appear to be controlled by high-angle fracture and fault zones and by low-angle feeder structures which are now massive, multi-veined quartz masses. Some Cu is associated with the areas of Au but generally the higher Cu and Mo values occur below the Au zones.