LIST OF PERSONNEL AND STATEMENT OF EXPENDITURES

The following is a list of expenses incurred for the purposes of mineral assessment on the Hoop 1 to 5 claims, March 5 to 7, 1988.

Field Costs:

Personnel:

J.S. Getsinger, PhD.		
3 days @ $350	$1,050.00	
E.W. Hayes, Field Coordinator		
2 days @ 350	700.00	
		$1,750.00

Equipment Rental:	
4WD Truck 3 days @ $90	270.00
Food and Accommodation: 5 persondays @ $55	275.00
Transportation: (mod/demob + gas)	144.75
Miscellaneous (field supplies, courier, telephone, etc.)	31.36

Analyses:

34 Rocks (Au, ICP)	@ $16.75	569.50	
3 Rocks (Whole Rock)	@ 25.00	75.00	
5 Rocks (Au, Pt, Pd)	@ 12.50	62.50	
5 Silts (Au, ICP)	@ 16.75	83.75	
Fax		3.50	
			794.25
Field Subtotal			$3,265.36

Consulting:	
T.G. Hawkins, PGeol.	
.25 day @ $500	125.00

Report Costs:

Personnel		
J.S. Getsinger, PhD		
4 days @ 350	1,400.00	
S. Blacquiere, Office Asst.		
0.56 day @ 150	84.00	
		1,484.00
Drafting		525.00
Typing, Copying, Binding		660.00
Maps and reproduction		109.16
Report Costs Subtotal		2,778.16
Combined Subtotals		6,168.52
Administration @ 15% (of $2,264.52)		339.68
		$6,508.20

Appendix II

Rock Sample Descriptions and Lithogeochemical Results

MPH

HOOP CLAIMS - V190

ROCK DESCRIPTIONS

Samples J1 to J12 were collected on March 5, 1988;
Samples J13 to J30 on March 6, 1988;
by J.S. Getsinger and T. Hayes.

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J1**	2	21 Li, 260 Ni, 58 Pb, 387 Cr, 11 ppb Pd, 2 ppb Pt
Rock Type:	Carbonate-altered phyllitic shear zone		
Location:	Hoop 4 claim, roadcut		

Description: Chip sample across 1 m of carbonate-altered, rusty shear zone (140/87NE). Includes rusty phyllitic rock as well as quartz veins (1-3 cm) with bright green micaceous selvages (fuchsite?). Possible minor sulphides.

Sample:	**V190-88-J2**	18	1.3 Ag
Rock Type:	Pyritic siltstone or felsic tuff		
Location:	Hoop 4 claim, same locality as 8864(?); roadcut		

Description: Grab sample from rusty layer in folded bedded sequence of volcaniclastic sandstone, siltstone, chert, and cherty tuff(?). Aphanitic, seafoam green rock has about 1-2% finely disseminated pyrite. (Whole rock analysis.)

Sample:	**V190-88-J3**	150 rerun 159	3 ppb Pd, 11 ppb Pt
Rock Type:	Red and purple chert in cherty tuff		
Location:	Hoop 4 claim, 50 m S of creek; from roadcut		

Description: Grab from outcrop of layered cherty tuff and volcaniclastic sandstone. Pod of reddish chert (<0.5 m) has crosscutting white quartz veinlets (<1 cm). Colour is patchy red, purple, and green. Chloritic shear surfaces also transect the rock.

Sample:	**V190-88-J4**	3	29 As, 46570 Mg, 246 Ni, 475 Cr, 1 ppb Pd, 1 ppb Pt
Rock Type:	Foliated pyroxene porphyry		
Location:	Hoop 4 claim, near boundary with Hoop 3, at switchback in road, from glacially striated outcrop exposed below washed-out fill		

Description: Grab from outcrop of foliated pyroxene porphyry (foliation 150/90). Euhedral phenocrysts of olive green augite(?) up to 1 cm stick out like augen in foliated chloritic schist.

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J5**	1	

Rock Type: Shear zone phyllite (fine-grained volcaniclastic)

Location: Hoop 4 claim, roadcut

Description: Chip across 40 m shear zone (156/90) or foliated zone in section of fine-grained volcaniclastic rocks. Rock resembles phyllite, with silvery sheen on cleavage surfaces, but cleavage is distorted and bent. Black material in fractures may be organic matter or hydrocarbons (oily when submerged in water). A second set of cleavage surfaces intersects the main set obliquely.

Sample:	**V190-88-J6**	3	1.2 Ag

Rock Type: Bedded volcaniclastic siltstone (± cherty tuff)

Location: Hoop 4 claim, roadcut

Description: Grab from outcrop of 2 m wide foliated zone in sequence of bedded, folded volcanic(?) sediments. The thin-bedded sequence consists of very pale green, aphanitic laminae interbedded with medium to dark green siltstone and sandstone. Graded bedding may be present. The hand specimen illustrates the macroscopic relationship of folded layered rocks with microfaulting and incipient transposition along planes parallel to the axial planes of the folds. The 2 m foliated zone (135/87N) separates two areas of similarly-dipping bedded sequences on either side (135/34N).

Sample:	**V190-88-J7**	2	1.3 Ag

Rock Type: Quartz-carbonate vein in foliated mafic volcaniclastic

Location: Hoop 4 claim, on roadcut

Description: Grab sample from intensely foliated green volcaniclastic rocks. In this case both bedding and foliation are essentially vertical. Sample includes quartz vein (1-2.5 cm thick) in rusty iron-carbonate altered, phyllitic schist. Minor pyrite was noted. Streaked out chlorite forms mineral lineation and may represent metamorphosed mafic phenocrysts.

Sample:	**V190-88-J8**	41	72 Co, 88150 Fe

Rock Type: Quartz vein with massive pyrite veins

Location: On road up from Heather property, probably on Tania S4 claim, about 100 to 200 m south of Hoop 4 claim

Description: Grab from quartz vein 1 to 1.5 m wide striking 120°, dipping 67°S. Pods and veins of massive pyrite up to 3 cm wide occur within the vein. Host rock is foliated greenschist (see sample 88-J10A). Quartz vein parallels cleavage.

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J9**	7	5840 P

Rock Type: Mixed pyritic quartz vein and chloritic schist

Location: Tania S4(?) claim, on road about 200 m S of Hoop 4 claim, same locality as 88-J8, 88-J10

Description: Grab sample from selvage of quartz vein (88-J8). Chloritic schist is mixed with quartz vein material; both contain pyrite. Quartz veinlets are vuggy, with brown coatings.

Sample: **V190-88-J10** 2

Rock Type: Quartz vein

Location: About 5 m S of sample 88-J8; on Tania S4 claim, 200 m S of Hoop 4 claim

Description: Grab sample includes entire width of 10 cm quartz vein in chloritic schist host rock. Only minor pyrite is visible. Drusy vugs have quartz crystals with well-formed terminations projecting in; quartz crystals are up to 2 cm long by 0.7 cm wide.

Sample: **V190-88-J10A** 4 1.3 Ag

Rock Type: Pyritic mafic schist

Location: Same as for 88-J10 (200 m S of Hoop 4 claim; Tania S4 claim)

Description: Grab sample from host rock of quartz vein (88-J8). Weakly foliated chloritic schist is medium to coarse-grained (0.5 to 1 mm), and may be metamorphosed volcanic sandstone, or possibly metadiorite or andesite. Rock is about 50% lighter grains (altered feldspar?) and about 50% mafic minerals (now chlorite). Disseminated pyrite makes up about 1-2%. Altered feldspar(?) is sub-rectangular, suggesting volcanic origin. (Whole rock analysis.)

Sample: **V190-88-J11** 1 1.2 Ag, 57840 Ca

Rock Type: Carbonate-altered chloritic, phyllitic schist

Location: In area between Hoop 5 and Hoop 1 claim, on road Br. 20 about 100 m NE of bridge (near old Raft claim), 250 m NW of Hoop 5 claim

Description: Grab from outcrop of sheared chloritic and sericitic(?) schist. Rocks are light green to light yellowish-green, carbonate-altered (strong reaction to HCl). Sericitic foliation is crosscut by quartz-carbonate veinlets (<1 cm). Quartz-carbonate veinlets in chloritic phyllitic rocks host minor disseminated pyrite.

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J12**	10	1.7 Ag, 47170 Al, 238 Cu, 101600 Fe, 45360 Mg, 427.5 V
Rock Type:	Pyritic chloritic schist		

Location: Hoop 1 claim, 200 m north on road "20J" from the Platinum claim LCP

Description: Grab from outcrop of sheared diorite with schistose chloritic shear zones. Heavy, medium-grained chloritic schist may be sheared metadiorite or interlayered mafic volcanic or volcaniclastic(?). Disseminated pyrite (up to 1 mm) makes up about 2-3%. Minor quartz-carbonate veinlets (<0.5 cm) occur parallel to foliation. Rare calcite grains react in HCl.

Sample: **V190-88-J12A** 2

Rock Type: Metadiorite

Location: Hoop 1 claim, 200 m north on road "20J" from the Platinum claim LCP

Description: Grab from same outcrop as 88-J12, host rock to the chloritic shear zones. Medium-grained diorite (grain size 1 mm) is foliated and crosscut by chloritic shear zones as well as quartz veins. Disseminated pyrite is <1%. Minerals are 50-60% felsics (feldspar $\pm$ quartz) and 40-50% mafics (now altered to chlorite).

Sample: **V190-88-J13** 3 1.4 Ag

Rock Type: Dioritic chloritic greenschist

Location: West Nitinat River road, 100 m west of Hoop 5 claim, from roadcut at curve of road, 300 m along road from Raft camp bridge

Description: Grab from outcrop of foliated greenschist with some quartz veins (<1 cm) parallel to structure. Spaced foliated fracture zones (162/83E) crosscut metamorphic(?) cleavage (142/53E). Rock is dark to light green, generally fine to medium-grained, locally with 1-2% pyrite. Minerals are chlorite, altered feldspar. Cut sample shows weakly foliated diorite to gabbro (grain size 1-2 mm, 40% feldspar, (altered to calcite) 40% hornblende, 20% light green platy material); in contact with light green altered volcanic(?) (fine-grained, wavy laminations).

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J14**	4	1.0 Ag, 69650 Ca, 20 Li, 54400 Mg, 443 Ni, 510 Cr, 1 ppb Pd, 1 ppb Pt
Rock Type:	Schistose carbonate-altered andesitic to dioritic rock		

Location: West Nitinat River road, halfway between Hoop 1 and Hoop 5 claims, 800 m along road from Raft camp bridge

Description: Grab from outcrop in road bed of rusty-weathering, schistose rock. Outcrop by side of road is foliated metadiorite and/or andesitic tuff, a green and white, splotchy, medium to coarse-grained greenschist. Foliation forms surface of roadcut, parallel to the road, at 163/84E, whereas orientation in rusty schist is 156/61E. Sample is phyllitic schist with stretched out grains of hornblende (20-25%), rounded buff-coloured grains Fe-bearing, calcitic carbonate(?) (20-25%) in matrix of light-greenish-yellow phyllosilicates. Grain size is about 1 mm. (Whole rock analysis.)

Sample:	**V190-88-J15**	1	2.0 Ag, 14 Bi, 361.5 V
Rock Type:	Pyritic mafic schist		

Location: West Nitinat River road, 1000 m along road from Raft camp bridge, 300 m S of Hoop 1 claim

Description: Grab from outcrop of sheared chloritic schist derived from metadiorite or tuff(?). Rock is splotchy light and dark green with medium grain size, 50% mafics (chlorite), 50% altered feldspar. No reaction to HCl. Non-magnetic. Pyrite 3-5% (disseminated euhedral to 1 mm). Minor quartz veins occur on outcrop. Foliation is 166/87E; rusty or fracture surface at 035/76S has near-horizontal slickensides at 035/02.

Sample:	**V190-88-J16**	7	3.2 Be, 108910 Fe
Rock Type:	Pyritic altered volcaniclastic		

Location: Hoop 1 claim, W Nitinat River road, 1450 m along road from Raft camp bridge; same locality as 88-J17, 88-J18

Description: Grab from outcrop of bedded volcanic siltstone and cherty tuff (green banded) with bedding at 166/67W, cleavage 162/73E. Quartz veins are parallel to cleavage and also crosscutting. Sample is from rusty area with patchy pyrite (2-3%), associated with quartz veinlets; disrupted, wavy layering and quartz veinlets (1 mm) occur in sample.

Sample:	**V190-88-J17**	2	209 Ba, 106 Zn
Rock Type:	Brecciated quartz vein		

Location: Hoop 1 claim, same as 88-J16, 88-J18

Description: Grab from outcrop of layer-parallel quartz vein (2.5 cm) with fuchsitic mica in bedded volcaniclastic. Quartz is broken up into subrounded fragments up to 1 cm in a black, fine-grained matrix with disseminated pyrite (<1-2%).

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J18**	1	

Rock Type: Iron-carbonate altered quartz vein

Location: Hoop 1 claim, same as 88-J16, 88-J17

Description: Grab from same outcrop as 88-J16, 88-J17. A very hard zone 2.5 to 20 cm wide is composed of iron-carbonate altered quartz vein material with crosscutting black veinlets or fracture-fill (10%). Pyrite is more common in black fracture material and disseminated throughout (1-2%).

Sample:	**V190-88-J19**	2	1.0 Ag, 492 B

Rock Type: Quartz vein

Location: Hoop 1 claim, outcrop in bush above road, 50 m S of Silt 2 creek

Description: Grab from outcrop of green sandstone(?). Quartz vein material in pods up to 10 cm. No reaction to HCl. Grain size of quartz in vein varies from less than 1 mm to greater than 5 mm; small vugs are common, but may represent weathered carbonate. Chalky white grains may be altered feldspar.

Sample:	**V190-88-J19A**	1	2.0 Ag, 31 As, 14 Bi, 253 Sr

Rock Type: Volcaniclastic sandstone

Location: Hoop 1 claim, outcrop in bush above road, 50 m S of Silt 2 creek; same location as 88-J19

Description: Grab from outcrop of soft, dark brown weathering green volcaniclastic sandstone(?). Layered, with fine to medium grain size. Contains black-coated fractures. No reaction to HCl. Contains clasts of lighter-coloured, finer-grained rock. Matrix is pale-green, weakly foliated (micaceous minerals?). Could be an ash tuff.

Sample:	**V190-88-J20**	16	2.2 Ag

Rock Type: Pyritic volcaniclastic siltstone

Location: Hoop 1 claim, at roadcut on west side of Nitinat River, 50 m at 280° from the Hoop 1 1N location post

Description: Grab from outcrop of pyritic, fine-grained tuff, near contact with pyroxene-porphyritic agglomerate. Finer-bedded tuff or volcaniclastic sandstone has layering at 161/66E. Sample has orange to brown-rusty weathering, and sharp, irregular fractures. Rock is hard, fine-grained, greenish-grey, with finely disseminated pyrite. Weakly foliated, but apparently clastic texture, as in volcaniclastic siltstone. Pyrite is associated with fractures, as well as disseminated. Fractures have narrow, brown vugs where whitish fracture filling has weathered out. Rock absorbs HCl but does not react.

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J21**	2	1.3 Ag, 70410 Ca

Rock Type: Carbonate-chlorite breccia

Location: Hoop 2 claim, near Silt 4 location, E side of Nitinat Main road 100 m S of Hoop 2 location post 2N/1E

Description: Grab from outcrop 5 m up creek from where Silt 4 was taken. Pod of rusty carbonate-altered breccia 0.4 x 1 m was sampled. Host rock is sheared pyroxene-porphyritic basaltic greenstone with metamorphic foliation at 173/73W and crosscutting shear zones at 031/85W filled with 2 cm quartz veins. Sample has slickenside-like lineations in chlorite and calcite (reacts strongly in HCl). Brecciated calcitic carbonate is surrounded by foliated chloritic groundmass, with light-green platy minerals also, and quartz.

Sample:	**V190-88-J22**	15	1.8 Ag, 55780 Ca

Rock Type: Chloritic phyllite with pyrite

Location: Hoop 2 claim, near boundary with Hoop 1 claim, roadcut on Nitinat Main road where it turns from N to NE, about 300 m N of Hoop 1, 2, 3 LCP

Description: Grab from outcrop of laminated cherty tuff and volcaniclastic sediments, with bedding at 147/62E and metamorphic (axial plane) cleavage at 167/84W. Quartz-filled fractures parallel to axial planes of kink folds are at 090/57S, and host quartz veins up to 2 cm. Quartz-calcite veins also follow and crosscut layering. Pyrite is associated with some layer-parallel veins, and is disseminated, in higher concentrations near the vein, with a few euhedral cubes within the quartz vein. Pyrite is <1%.

Sample:	**V190-88-J23**	40	1.4 Ag, 32 Mo

Rock Type: Carbonatized, silicified rock with pyrite band

Location: Hoop 5 claim, N end, on Nitinat Main road, 100 m N of Silt 5 location, same location as 88-J24

Description: Grab from outcrop of sheared chloritic phyllite or schist. Sample is altered, semimassive quartz-carbonate, weathering orange-rusty, with massive pyrite band 1 cm wide crosscutting rock. Disseminated pyrite is less than 1-2%. Calcitic veinlets in HCl. (See J24 for description of host rock.)

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J24**	3	

Rock Type: Chloritic schist with quartz veins

Location: Hoop 5 claim, N end, on Nitinat Main road, 100 m N of Silt 5 location, same location as 88-J23

Description: Grab from outcrop of chloritic schist with quartz-carbonate veins grading south into sheared phyllite, the beginning of a major shear zone. Chlorite-sericite-carbonate foliation is at 142/73E; 5 cm quartz veins with <1% pyrite are oriented 154/58E. Sample is of chloritic schist with serpentine-like foliation; light and dark grains can be seen in rock, with fine, light micaceous alteration defining foliation. Anastomosing quartz (± carbonate?) veins occur throughout rock in this area. Rock does not react much to HCl.

Sample:	**V190-88-J25**	2	1.5 Ag, 69020 Ca

Rock Type: Sheared quartz-carbonate altered chlorite schist

Location: Hoop 5 claim, N part, up old side road to NE about 250 m

Description: Grab from outcrop of carbonate-altered schist in section of mainly chloritic schist. Protolith may have been mafic or intermediate lapilli tuff or crystal tuff, with light-coloured grains smeared into lenses (1 cm). Rock varies from brownish green to dark green (see J26). Sample has bright green mica, pyrite, appears folded, with about 30% dark green micaceous minerals, rest buff to rusty carbonate. Rock reacts vigorously in HCl. It is somewhat brecciated and folded implying some post-alteration deformation, or continued deformation during alteration. Disseminated pyrite (± chalcopyrite?) is less than 1%.

Sample:	**V190-88-J26**	1	1.0 Ag, 251 Ba, 1126 Cu

Rock Type: Altered, brecciated, silicified, and carbonatized chloritic schist

Location: Hoop 5 claim, on old side road about 300 m NE from Nitinat Main road, at about 200 m elevation

Description: Grab from outcrop. Altered chloritic greenschist with finer-grained portion of foliated chloritic schist, and coarser white areas which are quartz-carbonate altered. The carbonate reacts vigorously in HCl, indicating calcite. Pyrite and chalcopyrite(?) are disseminated throughout (<2%). Trace of malachite stain was observed in the field. Non-magnetic. Cutface shows several phases of alteration and brecciation. Light-green (epidote?) alteration precedes quartz veinlets; later quartz veinlets crosscut these; euhedral pyrite grains occur in the later quartz veinlets. Bright green flakes may be fuchsitic mica.

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	**V190-88-J27**	4	

Rock Type: Carbonate shear zone

Location: Hoop 5 claim, N part, at switchback in old road, about 350 m NE of Nitinat Main road

Description: Chip sample across 2 m of carbonate shear zone. The shear zone itself is at least 20-25 m wide. Very orange-rusty weathering, schistose rocks have steep dips varying about the vertical (156/80W, 156/90, 156/70E). Foliation measured on outcrop where sample was taken is 168/78W. Rock is similar to J26, with more phyllitic interlayers.

Sample:	**V190-88-J28**	16	1.1 Ag, 1814 Cu, 10 Mo
Rock Type:	Carbonate-altered chlorite schist with pyrite ± chalcopyrite		

Location: Hoop 5 claim, on old side road where it crosses the creek that had the debris slide; 25 m up the creek

Description: Grab from outcrop in creek. Green, foliated to massive chloritic schist with quartz and calcite veins and pods to 2 cm (25%). Pyrite and chalcopyrite occur in blebs up to 2 mm (<1%).

Sample:	**V190-88-J28A**	30 Rerun 27	1.5 Ag, 41 Co, 1101 Cu, 2239 Mn, 116 Ni, 3 ppb Pd, 1 ppb Pt
Rock Type:	Pyritic andesitic metatuff(?)		

Location: Hoop 5 claim, E side, up side road about 350 m past the switchback, similar location to J28, at creek with debris

Description: Grab from outcrop. Rusty-weathering, weakly foliated, medium-grained metadiorite or andesite or volcaniclastic sandstone. Light and dark grains are in matrix of chloritic foliation. Pyrite is finely disseminated, locally to 5%; grain size less than 1 mm. Irregularity of texture suggests tuffaceous protolith. Vigorous reaction to HCl indicates calcite.

Sample:	**V190-88-J29**	6	

Rock Type: Gabbro

Location: Hoop 5 claim, 50 m downstream from J28A, below where old side road crosses debris creek

Description: Grab from outcrop of gabbro in mafic igneous complex of diorite, gabbro, basalt, and/or basaltic tuff. Consists of 40% pyroxene (now partly altered to amphibole), about 20% chlorite, 40% feldspar. Grain size 1-4 mm, granoblastic texture.

	Description	Au, ppb (oz/ton)	Other, ppm
Sample:	V190-88-J30	7	1.1 Ag, 223 Cu

Rock Type: Hornblende gabbro

Location: Hoop 5 claim, on old side road about 150 m NE of Nitinat Main road

Description: Grab from outcrop of gabbro (at least 50 to 100 m long) with pegmatitic hornblende-quartz-plagioclase dykelets (<5 cm) with hornblende crystals to 2 cm. C.I. = 60. Feldspar has been altered to light greenish colour. No reaction to HCl. Non-magnetic.

Appendix III

Certificates of Analysis/Assay

COMPANY: MPH CONSULTANTS | MIN-EN LABS ICP REPORT | (ACT:F31) PAGE 1 OF 3

PROJECT NO: V190 | 705 WEST 15TH ST.. NORTH VANCOUVER, B.C. V7M 1T2 | FILE NO: 8-288/P1+2

ATTENTION: J.S.GETSINGER | (604)980-5814 OR (604)988-4524 | * TYPE ROCK GEOCHEM * | DATE:MAR 10, 1988

(VALUES IN PPM)	AG	AL	AS	B	BA	BE	BI	CA	CD	CO	CU	FE	K
88-J01	.5	25980	24	45	61	1.8	8	2910	1.4	24	43	56770	1330
88-J02	1.3	12420	6	21	19	.9	9	7290	.8	9	57	24980	70
88-J03	.4	5900	12	12	43	.9	5	810	.5	3	26	27100	110
88-J04	.9	19400	29	30	13	1.4	11	30340	1.3	21	26	40240	40
88-J05	.2	34000	2	54	155	1.8	5	9150	.7	15	119	52890	4730
88-J06	1.2	27120	7	38	104	1.4	12	8330	.6	15	86	42780	1490
88-J07	1.3	18050	1	30	88	1.4	4	37240	1.0	10	62	43960	1980
88-J08	.2	2410	13	12	33	2.5	4	1280	.3	72	17	88150	460
88-J09	.2	22320	4	34	155	1.6	7	5300	.6	23	7	51410	3130
88-J10	.6	2480	13	5	16	.2	2	860	.3	3	7	6270	330
88-J10A	1.3	33980	1	47	25	1.9	12	19380	.6	20	39	62770	160
88-J11	1.2	13750	3	24	91	1.1	4	57840	.4	12	51	34220	1060
88-J12	1.7	47170	18	72	38	3.1	12	16250	.3	36	238	101600	70
88-J12A	.9	28090	15	50	113	1.4	11	5290	.7	15	17	41570	2310
88-J13	1.4	33940	18	47	83	1.5	12	24690	1.0	17	45	42590	400
88-J14	1.0	28200	18	45	20	1.6	5	69650	1.2	25	56	45600	410
88-J15	2.0	45390	1	67	22	2.4	14	25800	1.0	27	147	76610	60
88-J16	.1	20760	9	36	106	3.2	3	1030	.4	3	51	108910	600
88-J17	.3	23200	14	38	209	1.9	4	3630	.3	11	56	61180	1760
88-J18	.5	12610	21	21	67	1.6	2	2870	.5	6	82	52320	280
88-J19	1.0	7520	17	492	20	.8	3	4970	.6	4	16	11810	110
88-J19A	2.0	26770	31	49	25	1.4	14	13050	.8	15	54	41380	70
88-J20	2.2	13040	17	28	28	1.4	10	10260	1.1	19	117	42880	470
88-J21	1.3	25490	18	40	43	1.5	5	70410	.8	13	7	46820	3550
88-J22	1.8	22580	1	35	46	1.5	6	55780	.5	14	98	42160	3410
88-J23	1.4	3670	26	12	42	1.6	1	20280	1.0	15	132	49350	470
88-J24	.9	21250	10	31	129	1.6	4	30560	.3	12	87	49220	480
88-J25	1.5	6720	10	14	47	1.1	3	69020	.8	8	78	32740	280
88-J26	1.0	28610	9	39	251	1.8	1	12180	.6	26	1126	54520	50
88-J27	.8	12020	12	27	174	1.7	1	2100	.8	15	136	59170	2000
88-J28	1.1	32030	1	48	73	1.7	3	31410	.6	19	1814	56940	430
88-J28A	1.5	25070	5	39	54	2.1	1	49410	.3	41	1101	71410	130
88-J29	.8	14340	21	22	29	.7	7	11880	1.0	9	84	17300	610
88-J30	1.1	20570	17	30	13	.7	5	15710	1.4	22	223	18610	210

COMPANY: MPH CONSULTANTS | MIN-EN LABS ICP REPORT | (ACT:F31) PAGE 2 OF 3

PROJECT NO: V190 | 705 WEST 15TH ST., NORTH VANCOUVER, B.C. V7M 1T2 | FILE NO: 8-288/P1+2

ATTENTION: J.S.BETSINGER | (604)980-5814 OR (604)988-4524 | * TYPE ROCK GEOCHEM * | DATE:MAR 10, 1988

(VALUES IN PPM)	LI	MG	MN	MO	NA	NI	P	PB	SB	SR	TH	U	V
88-J01	21	23190	1209	1	870	260	1690	58	1	7	1	1	101.0
88-J02	3	9360	483	1	840	13	710	27	1	40	1	1	58.0
88-J03	2	4890	178	1	60	1	250	16	1	9	1	1	25.9
88-J04	5	46570	502	2	80	246	1540	34	1	19	3	1	51.1
88-J05	16	26900	834	1	60	31	3190	31	6	18	1	1	80.4
88-J06	12	23930	801	1	1010	2	1030	25	4	76	1	1	101.6
88-J07	11	20080	1084	1	690	2	1220	30	1	106	1	1	57.4
88-J08	1	2300	45	1	50	2	470	11	1	6	1	1	10.4
88-J09	6	19410	382	1	100	4	5840	27	4	9	1	1	61.6
88-J10	1	1930	143	1	40	4	680	10	1	2	1	1	10.1
88-J10A	6	26920	771	1	110	4	8630	21	3	118	1	1	171.6
88-J11	5	26810	880	2	990	44	1820	27	1	78	1	1	43.1
88-J12	9	45360	1169	1	50	1	2450	44	7	109	2	1	427.3
88-J12A	8	25610	636	1	1010	71	2080	31	1	9	1	1	69.6
88-J13	10	36320	837	2	810	17	2270	36	5	125	1	1	121.2
88-J14	20	54400	938	3	410	443	1350	40	1	52	3	1	76.9
88-J15	9	35870	691	1	80	5	1190	32	5	199	1	1	361.5
88-J16	6	11120	500	2	40	8	1100	33	4	9	1	1	87.7
88-J17	18	17310	596	2	190	37	2150	34	4	14	1	1	94.0
88-J18	9	9070	657	1	60	4	3040	21	1	14	1	1	53.5
88-J19	2	5590	905	1	710	9	440	37	1	19	1	1	24.5
88-J19A	12	24350	655	1	1200	20	1910	27	1	253	1	1	125.2
88-J20	5	10870	349	4	1420	40	2940	29	1	44	1	1	107.7
88-J21	8	26950	993	2	120	17	2380	32	5	145	1	1	63.6
88-J22	11	18430	765	1	250	5	2150	34	1	71	1	1	68.3
88-J23	1	6340	456	32	1360	2	1310	22	1	69	1	1	19.8
88-J24	17	29530	908	2	950	5	1110	31	1	186	1	1	109.5
88-J25	3	31370	1183	3	370	37	690	31	2	143	1	1	39.0
88-J26	13	28770	810	2	70	39	760	39	6	66	1	1	76.2
88-J27	3	4280	1095	1	1250	1	1070	22	1	18	1	1	41.8
88-J28	17	31710	994	10	280	13	1120	33	1	24	1	1	172.0
88-J28A	12	31690	2239	1	90	116	2160	39	5	31	1	1	207.9
88-J29	2	16360	349	1	490	21	2940	24	1	39	1	1	42.9
88-J30	5	19630	301	1	670	20	840	22	1	71	1	1	59.8

MIN-EN LABS ICP REPORT
705 WEST 15TH ST.. NORTH VANCOUVER, B.C. V7M 1T2
(604)980-5814 OR (604)988-4524

(VALUES IN PPM)	ZN	GA	SN	W	CR	AU-PPB
88-J01	86	1	1	1	387	2
88-J02	37	1	1	1	116	18
88-J03	25	1	1	1	207	150
88-J04	41	1	1	1	475	3
88-J05	74	1	1	2	117	1
88-J06	82	1	1	1	76	3
88-J07	56	1	1	1	39	2
88-J08	22	1	1	1	122	41
88-J09	53	1	1	1	53	7
88-J10	11	1	1	1	153	2
88-J10A	77	1	2	1	13	4
88-J11	39	1	1	1	84	1
88-J12	93	1	4	2	10	10
88-J12A	65	1	1	1	250	2
88-J13	65	1	1	2	85	3
88-J14	59	1	1	2	510	4
88-J15	73	1	3	2	14	1
88-J16	77	1	1	1	44	7
88-J17	106	1	1	1	88	2
88-J18	86	1	1	1	89	1
88-J19	26	1	1	1	154	2
88-J19A	60	1	2	1	118	1
88-J20	93	1	1	1	93	16
88-J21	51	1	1	1	41	2
88-J22	59	1	1	1	56	15
88-J23	22	1	1	1	42	40
88-J24	67	1	1	1	59	3
88-J25	30	1	1	1	129	2
88-J26	60	1	1	1	115	1
88-J27	67	1	1	1	34	4
88-J28	72	1	2	1	41	16
88-J28A	62	1	1	1	94	30
88-J29	31	1	1	1	290	6
88-J30	26	1	2	1	52	7

MIN-EN Laboratories Ltd.
Specialists in Mineral Environments
705 WEST 15TH STREET NORTH VANCOUVER, B.C. CANADA V7M 1T2

PHONE: (604) 980-5814 OR (604) 988-4524

TELEX: VIA USA 7601067

CERTIFICATE OF ASSAY

COMPANY: MPH CONSULTING
PROJECT: V190
ATTENTION: J.S. GETSINGER

FILE: 8-288
DATE: MARCH 14, 1988
TYPE: WHOLE ROCK ANALYSIS

We hereby certify the following assay results for samples submitted.

SAMPLE NUMBER		88-J02	88-J10	88-J14
AL2O3	%	7.67	1.08	11.50
BA	%	.005	.006	.007
CAO	%	3.28	.06	13.81
FE2O3	%	6.16	1.92	9.57
K2O	%	.02	.11	.29
MGO	%	2.58	.29	13.34
MNO2	%	.17	.02	.25
NA2O	%	1.97	.03	.50
P2O5	%	.11	.09	.21
SIO2	%	74.23	92.43	35.30
SR	%	.02	.01	.02
TIO2	%	.29	.06	.53
LOI	%	.60	.40	3.70
S	%	.45	.17	.02

Certified by _____

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PHONE: (604) 980-5814 OR (604) 988-4524 TELEX: VIA USA 7601067

CERTIFICATE OF ASSAY

COMPANY: MPH CONSULTING
PROJECT: V190
ATTENTION: J.S. GETSINGER

FILE: 8-288
DATE: MARCH 14, 1988
TYPE: WHOLE ROCK ANALYSIS

We hereby certify the following assay results for samples submitted.

SAMPLE NUMBER		88-J10A
AL2O3	%	19.71
BA	%	.010
CAO	%	11.58
FE2O3	%	16.03
K2O	%	.14
MGO	%	6.03
MNO2	%	.31
NA2O	%	.36
P2O5	%	.08
SIO2	%	38.56
SR	%	.08
TIO2	%	1.29
LOI	%	2.20
S	%	.28

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MIN-EN LABORATORIES LTD.
Specialists in Mineral Environments
705 West 15th Street North Vancouver, B.C. Canada V7M 1T2

PHONE:(604)980-5814 OR (604)986-4524 TELEX:VIA USA 7601067 UC

Certificate of GEOCHEM

Company:MPH CONSULTANTS
Project:V190
Attention:J.S.GETSINGER

File:8-288/P1
Date:MAY 20/88
Type:PULP GEOCHEM

We hereby certify the following results for samples submitted.

Sample Number	AU-FIRE PPB	PD-FIRE PPB	PT-FIRE PPB
88-J01	3	11	2
88-J03	159	3	11
88-J04	3	1	1
88-J14	3	1	1
88-J28A	27	3	1

Certified by

MIN-EN LABORATORIES LTD.

RECEIVED MAY 2 5 1988

COMPANY: MPH CONSULTANTS
PROJECT NO: V190
ATTENTION: J.S.GETSINGER

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(604)980-5814 OR (604)988-4524

(ACT:F31) PAGE 1 OF 1
FILE NO: 8-288
* TYPE SOIL GEOCHEM * DATE:MAR 10, 1988

(PPM)	SILT 1	SILT 2	SILT 3	SILT 4	SILT 5
AG	1.1	.4	1.2	1.7	1.2
AL	19190	26810	36090	31410	28930
AS	1	13	14	14	2
B	33	40	47	44	40
BA	40	88	86	43	292
BE	1.1	1.6	1.4	1.4	1.6
BI	3	3	8	9	7
CA	7430	5890	10840	17410	11050
CD	2.0	.8	.1	1.3	1.4
CO	13	17	14	18	17
CU	60	86	63	71	78
FE	30610	48240	41950	39810	43540
K	240	370	550	740	840
LI	17	16	15	19	16
MG	21690	20790	16490	24240	25200
MN	540	1243	1066	823	803
MO	1	1	1	1	1
NA	60	210	110	120	150
NI	35	46	9	38	28
P	1360	1910	2940	1850	1620
PB	42	47	34	35	32
SB	1	1	1	1	1
SR	15	15	33	84	74
TH	2	1	1	1	2
U	1	1	1	1	1
V	63.4	104.9	105.2	122.5	101.9
ZN	56	64	63	63	66
GA	1	1	1	1	1
SN	1	1	1	1	1
W	1	1	1	1	1
CR	103	126	92	92	111
AU-PPB	92	62	19	4	18

RECEIVED MAR 17 1988

Appendix IV

Conversion Factors for Metric Units

CONVERSION FACTORS FOR METRIC UNITS

1 inch	=	25.4 millimetres	(mm)
		or 2.54 centimetres	(cm)
1 cm	=	0.394 inch	
1 foot	=	0.3048 metre	(m)
1 m	=	3.281 feet	
1 mile	=	1.609 kilometres	(km)
1 km	=	0.621 miles	
1 acre	=	0.4047 hectares	(ha)
1 ha	=	2.471 acres	
1 ha	=	100 m x 100 m = 10,000 m^2	
1 km^2	=	100 ha	
1 troy ounce (oz)	=	31.103 grams	(g)
1 g	=	0.032 troy oz	
1 pound (lb)	=	0.4536 kilogram	(kg)
1 kg	=	2.2046 lb	
1 ton (2000 lb) (T)	=	0.9072 tonne	(t)
1 tonne (t)	=	1.1023 ton = 2205 lb	
1 troy ounce/ton (oz/T)	=	34.286 grams/tonne	(g/t)
1 g/t	=	0.0292 oz/ton	
1 g/t	=	1 part per million	(ppm)
1 ppm	=	1000 parts per billion	(ppb)
10,000 g/t	=	1%	

ARIS SUMMARY SHEET

District Geologist, Victoria

Off Confidential: 89.03.11

ASSESSMENT REPORT 17640 MINING DIVISION: Victoria

PROPERTY: Hoop
LOCATION: LAT 49 01 00 LONG 124 31 30
UTM 10 5430209 388493
NTS 092F02E
CLAIM(S): Hoop 1-5
OPERATOR(S): Haglund Ind. Int.
AUTHOR(S): Getsinger, J.
REPORT YEAR: 1988, 64 Pages
COMMODITIES SEARCHED FOR: Gold,Copper
GEOLOGICAL SUMMARY: The Hoop claims are underlain by Paleozoic Sicker Group mafic volcanic and volcaniclastic rocks, and are transected by a major northwest-trending, carbonate-altered shear zone related to the Cowichan Lake Fault. A mafic igneous complex consisting of sheared diorite, gabbro, uralitized pyroxenite, and basaltic volcanics occurs on the west side. Lithogeochemical values are elevated in gold, copper, nickel and chromium. Layered cherty tuff with banded sulphides indicates potential for nearby volcanogenic massive sulphide deposits.
WORK DONE: Geological,Geochemical
GEOL 300.0 ha
Map(s) - 1; Scale(s) - 1:10 000
ROCK 37 sample(s)
SILT 5 sample(s) ;ME
RELATED REPORTS: 14461

MPH

REPORT ON
1988 ASSESSMENT WORK
OF THE
HOOP 1 to 5 CLAIMS

Victoria Mining Division, B.C.
NTS 92F/2 49°01'N Lat., 124°31.5'W Long.
for

HAGLUND INDUSTRIES INTERNATIONAL INC.

June 9, 1988
J.S. Getsinger, Ph.D.

SUMMARY

The Hoop property (Hoop 1 to 5 claims) is underlain by mafic volcanic, volcaniclastic, and intrusive rocks of the Paleozoic Sicker Group.

A major north-northwest trending shear zone related to the Cowichan Lake Fault Zone transects the western part of the Hoop claims, characterized by a schistose zone of carbonate-altered chloritic schist. This shear zone yielded results of up to 105.3 g/t Au over 1 m on the adjacent Heather property.

Rock sampling in 1988 (of 34 rocks collected and analyzed for gold and by 30-element ICP) yielded elevated gold values up to 150 ppb Au (sample J3).

Silt sampling in 1988 (of 5 silts collected and analyzed for gold and by 30-element ICP) yielded 4 with anomalous gold values up to 92 ppb Au (Silt 1), all associated with the area around the major shear zone and layered volcaniclastic rocks.

Sheared mafic rocks on the Hoop claims yielded anomalous nickel and chromium values up to 443 ppm Ni and 510 ppm Cr (sample J14).

Further exploration, consisting of Phase IA geological mapping and sampling over the entire property, and geochemical sampling over the area of the shear zone, is recommended at an estimated cost of $30,000. Contingent on encouraging results from the previous phase, further exploration, consisting of Phase II geological, geochemical, and geophysical surveys, and Phase III geophysical surveys and diamond drilling, may be recommended.

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HAGLUND INDUSTRIES INTERNATIONAL INC.

GENERAL LOCATION MAP
HOOP CLAIMS
VICTORIA MINING DIVISION

Project No:	V 190	By:	T N.
Scale:	1 : 8 000 000	Drawn:	J. S.
Drawing No	1	Date:	JUNE, 1988

MPH Consulting Limited

1.0 INTRODUCTION

This report represents the compilation of field work carried out on the Hoop claims by MPH Consulting Limited at the request of Haglund Industries International Inc. Field work carried out included geological mapping at 1:10,000 scale of as much of the property as was readily accessible, as well as concurrent rock sampling. The work was carried out by J.S. Getsinger, Ph.D., and E.W. Hayes, from March 5 to 7, 1988.

A blizzard (with thunder and lightning) on March 5, 1988 deposited over 15 cm of snow within a few hours, limiting useful work to elevations below 600 m.

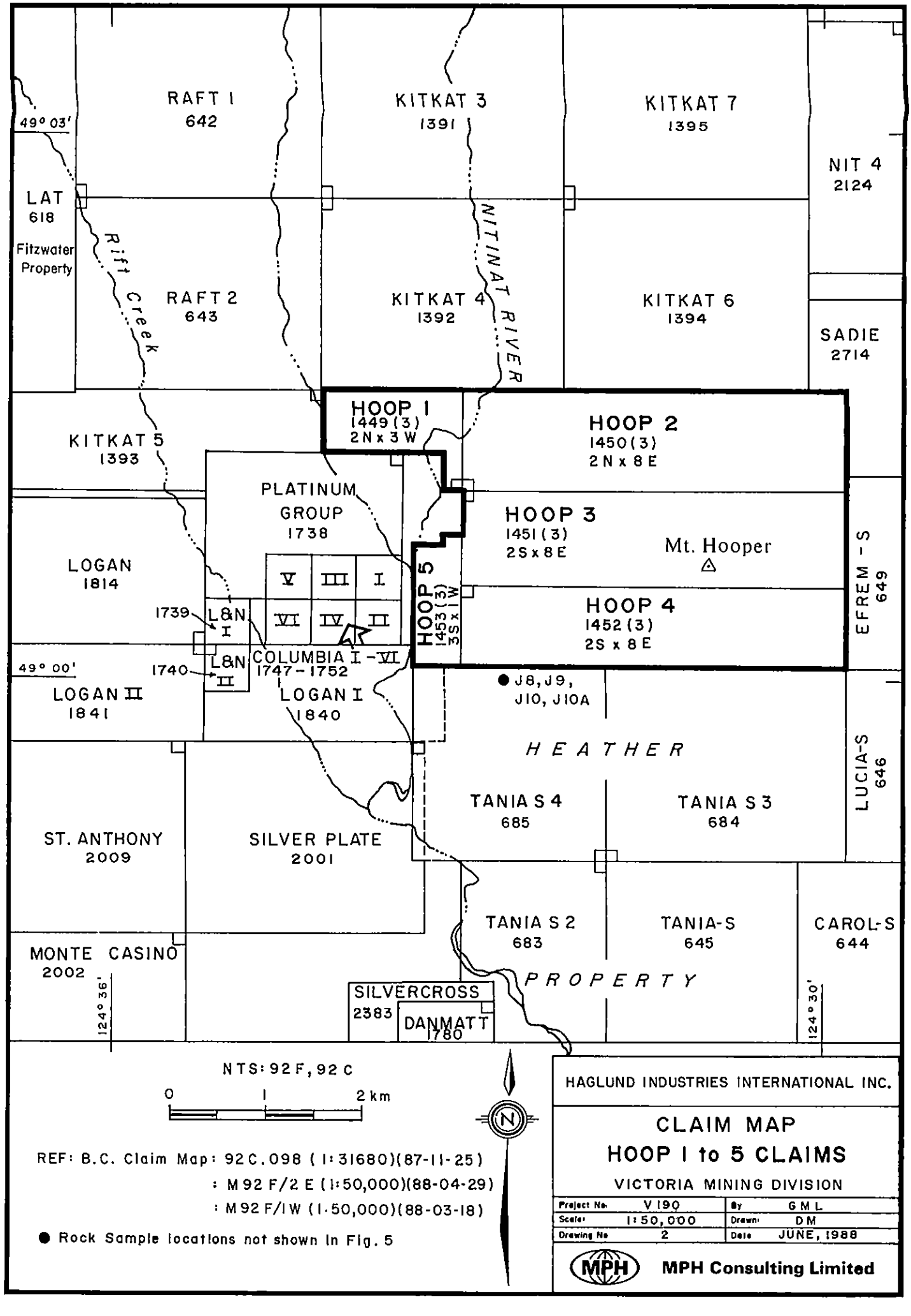
The report includes a description of regional geology and a discussion of the economic setting of the property. A proposed work program designed to explore the economic potential of the claims is also provided.

2.0 PROPERTY LOCATION, ACCESS, TITLE

The Haglund Industries International Inc. Hoop 1-5 claims are located 31 km southeast of Port Alberni on Mount Hooper in the Victoria Mining Division of British Columbia. The claims are centred at approximately 49°01'N latitude, 124°31.5'W longitude on NTS Mapsheet 92F/2 (Figures 1, 2 and 5). The eastern tip of the Hoop 2, 3, and 4 claims extends into NTS Mapsheet 92F/1.

Access to the claims is by Crown Forest Industries Ltd.'s paved Nitinat Main Road which may be reached from either Port Alberni, Nanaimo, or Youbou (Youbou is closest). The claims are located approximately 10 km north of the Crown Forest gate (which may be locked). A system of logging roads provides good access on the east side of the Nitinat valley up to about 850-1000 m, although at least one of the roads is unusable due to washouts. Access to the northeastern corner of the claim group may be possible via Sadie Creek from Nanaimo Lakes.

As of Spring 1988, access from Port Alberni via the Museum Creek road was limited due to variable road conditions. During winter of 1987 to 1988 a debris slide on the Hoop 5 claim blocked the Nitinat Main Road, but the claims were still accessible in March from other roads on both sides of the Nitinat River. Since March, 1988, Crown Forest is reported to have removed the Redbed Creek bridge entirely (lower on the Nitinat Main Road), thus limiting access to the Hoop claims, so that the only feasible access is from the Nanaimo Lakes road to the northeast. Whereas the Nitinat Main Road was easily drivable from Youbou even in icy and snowy winter conditions, the Nanaimo Lakes road is impassable under these conditions on the eastern slope of the Nitinat River valley, which means that there may be no winter road access to the Hoop claims.


RAFT 1
642
KITKAT 3
1391
KITKAT 7
1395
NIT 4
2124
49° 03'
LAT
618
Fitzwater
Property
Rift Creek
NITINAT RIVER
RAFT 2
643
KITKAT 4
1392
KITKAT 6
1394
SADIE
2714
HOOP 1
1449 (3)
2N x 3W
HOOP 2
1450 (3)
2N x 8E
KITKAT 5
1393
PLATINUM
GROUP
1738
HOOP 3
1451 (3)
2S x 8E
Mt. Hooper
LOGAN
1814
HOOP 5
1453 (3)
3S x 1W
HOOP 4
1452 (3)
2S x 8E
EFREM - S
649
1739
L&N
I
V
III
I
VI
IV
II
49° 00'
1740
L&N
II
COLUMBIA I - VI
1747 - 1752
LOGAN II
1841
LOGAN I
1840
J8, J9,
J10, J10A
HEATHER
LUCIA-S
646
TANIA S 4
685
TANIA S 3
684
ST. ANTHONY
2009
SILVER PLATE
2001
TANIA S 2
683
TANIA-S
645
CAROL-S
644
MONTE CASINO
2002
PROPERTY
124° 36'
SILVERCROSS
2383
DANMATT
1780
124° 30'
NTS: 92 F, 92 C
0
1
2 km
N
REF: B.C. Claim Map: 92 C.098 (1:31680)(87-11-25)
: M 92 F/2 E (1:50,000)(88-04-29)
: M 92 F/1W (1:50,000)(88-03-18)
● Rock Sample locations not shown in Fig. 5
HAGLUND INDUSTRIES INTERNATIONAL INC.
CLAIM MAP
HOOP 1 to 5 CLAIMS
VICTORIA MINING DIVISION
Project No. V 190
By G M L
Scale: 1:50,000
Drawn: D M
Drawing No. 2
Date JUNE, 1988
MPH
MPH Consulting Limited

Claim information from the Hoop property is summarized below:

CLAIM	RECORD NO.	UNITS	ANNIVERSARY DATE	REGISTERED
Hoop 1	1449(3)	6	March 12, 1989	1985
Hoop 2	1450(3)	16	March 12, 1989	1985
Hoop 3	1451(3)	16	March 12, 1989	1985
Hoop 4	1452(3)	16	March 12, 1989	1985
Hoop 5	1453(3)	3	March 12, 1989	1985
		57		

The claims are all owned by Haglund Industries International Inc. They were grouped as the Hoop Property Group by Notice to Group #612, recorded February 11, 1986. The expiry date has been updated based on work recorded in this report.

The Hoop claims cover an area of approximately 14 km^2. Elevation ranges from a low of 160 m in the Nitinat River valley, to a high of 1491 m on Mount Hooper (total relief = 1331 m). Forest of Douglas fir and western red cedar have been mainly logged. Local logs used to construct bridges on the Nitinat Main road are commonly up to 2 m in diameter.

3.0 PREVIOUS WORK

Government geological work in the area includes mapping by C.H. Clapp (1912), J.E. Muller and D.J.T. Carson (1969), and J.E. Muller (1977, 1980 and 1982).

A regional aeromagnetic survey flown by Hunting Survey Corp. Ltd. in 1962 included the Hoop Claims area (Geological Survey of Canada, 1987).

During the years 1963 to 1966, Gunnex Ltd. carried out a regional mapping program over a large portion of the E&N Land Grant, with limited prospecting and silt sampling. They compiled a list of all known mineral occurrences in the area and visited many of them.

A preliminary assessment of the property based on a limited amount of rock sampling and geological mapping carried out on the Hoop claims by MPH Consulting Limited in February 1985 and government mapping was prepared by MPH for Gator Resources Corporation (Neale and Hawkins, 1985a). Lithogeochemical analysis of the rock samples returned values of up to 0.8 ppm Ag, 206 ppm Cu and 94 ppm Zn. Whole rock analysis of five of the samples revealed indications of possible alteration typically associated with volcanogenic massive sulphide deposits. An area of the property shown by government mapping as being underlain by West Coast Complex intrusive and metamorphic rocks was found to actually be underlain by andesitic (to dacitic) volcanics cut by dioritic sills and/or dykes.

Geological exploration of the Hoop 1 to 5 claims in 1985 by MPH Consulting Limited for Gator Resources Corporation included geological mapping at a scale of 1:10,000, rock sampling, and silt sampling (Neale and Hawkins, 1985b). A major northwest-trending, carbonatized shear zone up to 200 m wide yielded anomalous gold values up to 120 ppb Au over 2 m, as well as

anomalous Cu, Ni, and Cr values. It was suggested that Myra Formation rocks extend onto the Hoop property from the Heather property, where these rocks are host to a "zone of pyrite-chalcopyrite stringer mineralization believed to represent the edge of a massive sulphide body" (Neale and Hawkins, 1985b, p. i). A further exploration program was recommended, consisting of Phase IA geological mapping and geochemical sampling ($31,000); Phase II detailed geological, geochemical, and geophysical follow-up of anomalies ($44,000); and Phase III IP surveying and diamond drilling ($106,000).

4.0 REGIONAL GEOLOGY

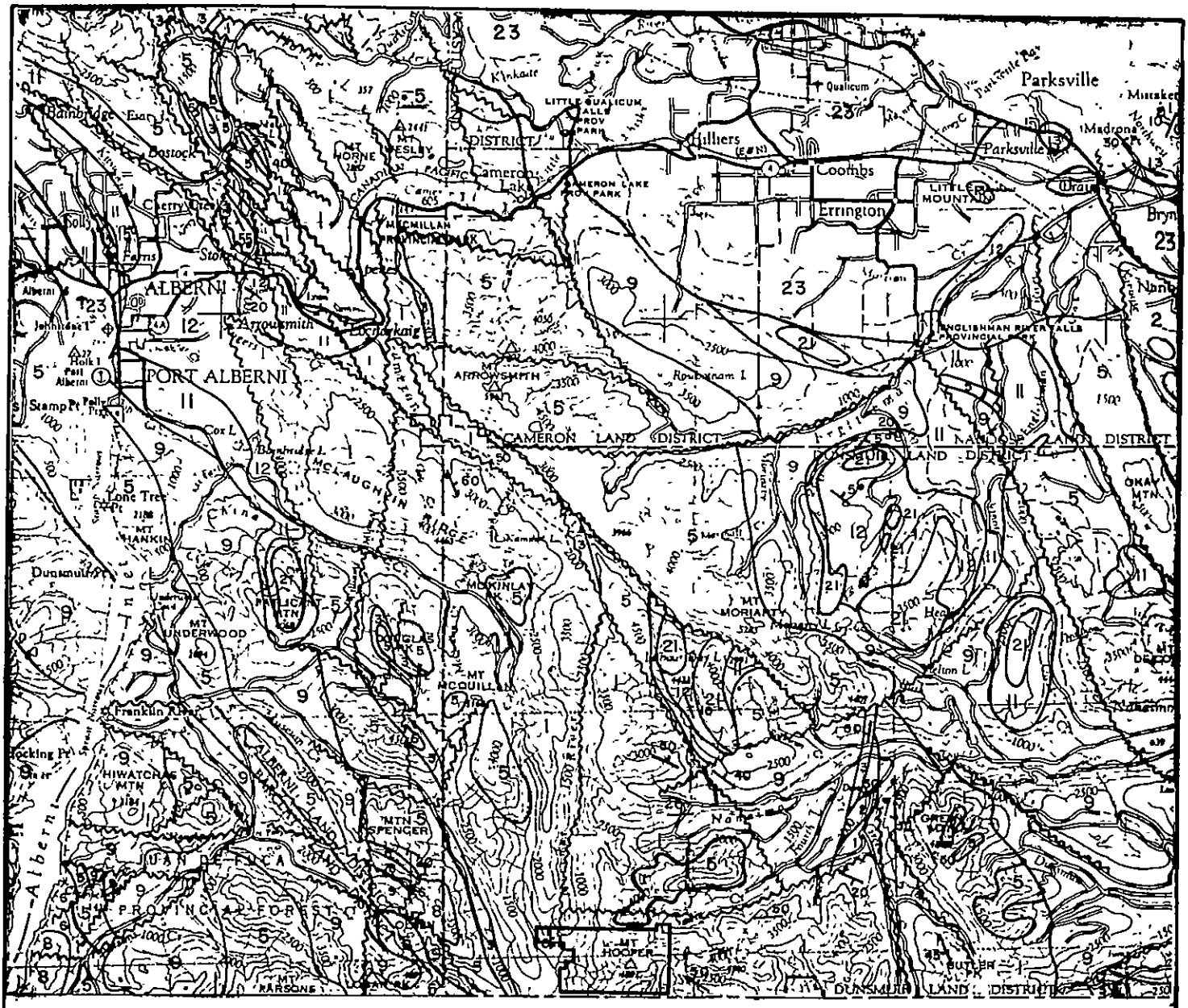
The predominant rock units in the Port Alberni-Nitinat River area are Upper Paleozoic Sicker Group rocks and Lower Mesozoic Vancouver Group rocks. Both are eugeosynclinal sequences of volcanic and sedimentary rocks. Jurassic Bonanza Group volcanics are present in moderate amounts in the southern part of the area. Jurassic Island Intrusions and other intrusive rocks are common. Lesser amounts of Upper Cretaceous Nanaimo Group sedimentary rocks also occur (Figure 3).

4.1 Sicker Group

The oldest rocks in the area are those of the Sicker Group. Muller (1980) proposed the following subdivisions of the Group from oldest to youngest: Nitinat Formation, Myra Formation, Sediment-Sill Unit, and Buttle Lake Formation.

The **Nitinat Formation** consists predominantly of mafic volcanic rocks, most commonly flow-breccia or agglomerate, including some massive flows, and pillow basalt. Locally, medium-grained, generally massive basaltic tuff is interbedded with the flows. The thickess of the Nitinat Formation is estimated at 2000 m (Muller 1980). The flow-breccia is composed of fragments of basalt up to 30 cm in length containing phenocrysts of uralitized pyroxene, as well as amygdules, both from 1 mm to more than 1 cm in size, in a matrix of finer grained, similar basalt(?). Thin sections indicate pale green amphibole (uralite) replaces clinopyroxene.

Uralitized gabbroic rocks underlie and intrude the volcanics and are believed to represent feeder dykes, sills, and magma chambers to the volcanics (Muller, 1980). The Nitinat Formation may be distinguished from the similar Karmutsen Formation by the



LEGEND

QUATERNARY

23 — Glacial and alluvial deposits

TERTIARY

21 — Hornblende quartz diorite, leucoquartz monzonite, porphyritic dacite, breccia

UPPER CRETACEOUS
NANAIMO GROUP

13 — EXTENSION-PROTECTION FM : sandstone, conglomerate, shale, coal.

12 — HASLAM FM · shale, siltstone, fine sandstone.

11 — COMOX FM · sandstone, conglomerate, shale, coal.

MIDDLE TO UPPER JURASSIC

9 — ISLAND INTRUSIONS: biotite-hornblende granodiorite, quartz diorite.

LOWER JURASSIC

8 — BONANZA GROUP: andesitic to latitic breccia, tuff, and lava; minor greywacke, argillite, and siltstone.

UPPER TRIASSIC
VANCOUVER GROUP

6 — QUATSINO FM.: massive to thick bedded limestone, minor thin bedded limestone.

5 — KARMUTSEN FM.: pillow-basalt and pillow breccia, massive basalt flows, minor tuff, volcanic breccia; Jasperoid tuff, breccia and conglomerate at base.

TRIASSIC OR PERMIAN

4 — Gabbro, peridotite, diabase

LOWER PERMIAN TO PENNSYLVANIAN
SICKER GROUP

3 — BUTTLE LAKE FM.: limestone, chert.

2 — MYRA FM.: lower unit; argillite, greywacke, conglomerate, tuff, minor limestone.
Upper unit; rhyodacite to rhyolite tuff, lapilli tuff, breccia lesser siliceous siltstone, argillite, quartz porphyry and mafic flows.

1 — NITINAT FM · basaltic uralite porphyry, agglomerate, pillow lava; greenschist.

0 5 10 km

NTS: 92 F

N

HAGLUND INDUSTRIES INTERNATIONAL INC.

REGIONAL GEOLOGY MAP
HOOP CLAIMS
VICTORIA MINING DIVISION

Project No.	V 190	By:	T N.
Scale:	1 : 250,000	Drawn:	J. S.
Drawing No	3	Date:	JUNE, 1988

MPH Consulting Limited

abundance of uralite phenocrysts, the usual lack of pillow basalt, lack of dallasite alteration between pillows (characteristic of the Karmutsen Formation), locally pervasive foliation, and lower greenschist or higher metamorphic grade. Whole rock analyses may be useful in distinguishing these volcanic formations in some areas.

The **Myra Formation** unconformably overlies the Nitinat Formation. In the Nitinat-Cameron River area, the Myra Formation is made up of a lower massive to widely banded basaltic tuff and breccia unit, a middle thinly banded pelitic albite-trachyte tuff and argillite unit, and an upper, thick-bedded, medium-grained albite-trachyte tuff and breccia unit.

The type locality of the Myra Formation is Myra Creek, at the south end of Buttle Lake, about 100 km northwest of the Kitkat property. There, volcaniclastic rocks consisting dominantly of rhyodacitic or rhyolitic tuff, lapilli tuff, breccia, and some quartz porphyry and mafic flows and argillite (Upper Myra Formation) are host to Westmin Resources' Myra, Lynx, Price, and H-W massive sulphide (Cu-Zn-Pb-Au-Ag-Cd) deposits. The Myra Formation is approximately 750 to 1000 m thick and both the Nitinat and Myra Formations are dated as Devonian and/or older (Muller, 1980).

The **Sediment-Sill Unit** contains thinly-bedded to massive argillite, siltstone, and chert with interlayered diabase sills. It is transitional between the Myra and Buttle Lake Formations. It has not been mapped within the area of this report.

The **Buttle Lake Formation** consists of a basal green and maroon tuff and/or breccia, overlain by coarse-grained crinoidal and calcarenitic limestone, fine-grained limestone with chert nodules, and some dolomitic limestone. Lesser amounts of argillite, siltstone, greywacke, or chert may also be present. The

Buttle Lake Formation is up to 470 m thick. Based on fossil evidence, the Buttle Lake Formation has been dated at Middle Pennsylvanian but is possibly as young as Early Permian (Muller, 1980; Brandon and others, 1986).

4.2 Vancouver Group

The **Karmutsen Formation** volcanic rocks unconformably overlie the Buttle Lake Formation limestone, forming the base of the Vancouver Group. This is the thickest and most widely distributed sequence of rocks on Vancouver Island. The Karmutsen Formation, which is well exposed southeast of Port Alberni, consists mainly of dark grey to dark greenish black pillow basalt, massive basalt and pillow breccia. Flows are commonly aphanitic and amygdaloidal. Pillow lavas occur locally, generally near the base of the section. Volcanic conglomerate containing clasts of Sicker Group rocks and jasperoid tuff forms basal sections in the Nininat-Horne Lake area. Karmutsen Formation rocks are generally relatively undeformed compared to Sicker Group rocks, and are Upper Triassic and older.

Upper Triassic **Quatsino Formation** limestone occurs south of Mount Spencer (Muller and Carson, 1969). Quatsino Formation limestone hosts the majority of known economic skarn deposits on Vancouver Island.

4.3 Bonanza Group

The **Bonanza Group** stratigraphy varies considerably, as it represents parts of several different eruptive centres of a volcanic arc. Basaltic, rhyolitic, and lesser andesitic and dacitic lava, tuff, and breccia with intercalated beds and

sequences of marine argillite, greywacke and limestone make up the Bonanza Group. The Bonanza volcanics are considered to be Early Jurassic extursive equivalents of the Island Intrusions. Bonanza Group rocks are exposed near the Nitinat Main Road in Redbed Creek.

4.4 Nanaimo Group

Upper Cretaceous **Nanaimo Group** sedimentary rocks are scattered throughout the area. Extensive exposures occur near Port Alberni, Patlicant Mountain and south and northwest of Mount Moriarty. The formations present comprise the basal portions of the Nanaimo Group, and are mainly of beach, nearshore, and deltaic depositional facies.

4.5 Intrusive Rocks

Exposures consisting mainly of quartz diorite and lesser biotite-hornblende granodiorite occur throughout the area and are assigned to the Island Intrusions, with an age of Middle to Upper Jurassic. Intrusive contacts with Sicker and Bonanza Group volcanic rocks may be characterized by transitional zones of gneissic and migmatitic rocks, whereas contacts with Karmutsen Formation volcanic rocks are sharp and well defined. Skarn zones are reported at the contacts of Island Intrusions with Quatsino Formation limestone, and less commonly with Buttle Lake Formation limestone.

The **Westcoast Complex** comprises a variety of plutonic and metamorphic mafic crystalline rocks, including amphibolite, diorite, and quartz diorite with homogeneous, agmatitic or gneissic textures. Dioritic or agmatitic bodies underlying or

intruding the Nitinat Formation are included. Metamorphosed Karmutsen Formation and/or Sicker Group rocks grade locally into the complex and are believed to be its protolith, having been migmatized in Early Jurassic time. The mobilized granitoid portion of the complex is believed to be the source of the Island Intrusions and, indirectly, the Bonanza Group volcanics (Muller 1982).

Isachsen (1987) has reinterpreted the Westcoast Complex as a mixture of Jurassic intrusives and metamorphosed Karmutsen Formation/Sicker Group rocks. The intrusive componenet of the Westcoast Complex (Westcoast Diorite) varies in composition from trondjhemite to gabbro and is believed to be derived from the mantle and not from Paleozoic/Mesozoic rocks. Consistent U-Pb isotopic dates of 176-189 Ma have been obtained (Isachsen, 1987). The Westcoast Diorite intruded the pre-existing Sicker Group and Karmutsen Formation rocks, which were contemporaneously metamorphosed into the Westcoast Amphibolite. The Westcoast Amphibolite is locally intimately mixed with Westcoast Diorite, producing Westcoast Migmatite. The Island Intrusions and Bonanza Group are considered to be higher level comagmatic differentiates of the Westcoast Diorite.

The Westcoast Complex is not mapped on the property; however, Muller (1982) has mapped a band of Westcoast Complex rocks on the mapsheet immediately south of the property area. These rocks have been mapped as a mafic igneous complex at the base of the Sicker Group.

Tertiary (Catface or Sooke) Intrusions. Sills and stocks of mainly hornblende-quartz diorite and dacitic hornblende-feldspar porphyry plus lesser leucocratic quartz monzonite intrude Nanaimo Group sedimentary rocks and Sicker Group rocks in the area.

4.6 Structure

The Buttle Lake Arch, Cowichan-Horne Lake Arch and Nanoose Uplift are north-northwesterly trending axial uplifts and are believed to be the oldest structural elements of south central Vancouver Island. Folding and uplift occurred before the Late Cretaceous, and possibly before the Mesozoic (Muller and Carson, 1969) and additional tilting, folding and uplift occurred after the Late Cretaceous. Sicker Group volcanic and sedimentary rocks occur at the core of these uplifts.

Asymmetric southwest-verging, northwest-trending, antiformal structures, characterized by subvertical southwest limbs and moderately dipping northeast limbs, are reported at Buttle Lake and in the Cameron-Nitinat River area. Intense shearing and metamorphism to chlorite-actinolite and chlorite-sericite schist occurs in steep and overturned limbs of folds. Folding, as evidenced by K-Ar dating, occurred during the Jurassic, although geological evidence points to pre-Triassic folding as well. The overlying Buttle Lake Formation limestone is relatively undeformed at Buttle Lake, but is known to be highly deformed in other areas (Brandon and others, 1986).

Vancouver Group units are not as intensely folded; gentle monoclinal and domal structures have been mapped. However, Karmutsen Formation volcanic rocks locally conform to the attitude of underlying Myra and Buttle Lake Formations (Muller, 1980), although in some areas an erosional and/or angular unconformity has been mapped between Sicker Group and Karmutsen Formation rocks.

Some early Mesozoic faulting occurred in the area prior to emplacement of Island Intrusions. Middle to Upper Jurassic intrusive activity (Island Intrusions) occurred along northwesterly trends.

Extensive west-northwest trending faulting occurred during the Tertiary and is best illustrated by large displacements of Nanaimo Group sediments. The north trending Alberni Valley fault is traced over 70 km and displaces a section of Karmutsen Formation appoximately 1500 m (Muller and Carson, 1969).

4.7 Economic Setting

Volcanogenic massive sulphide deposits have traditionally been the most economically significant exploration targets within Sicker Group volcanic rocks. Known deposits include Westmin Resources' Buttle Lake Mine deposits, 70 km northwest of Port Alberni, where ore minerals include sphalerite, chalcopyrite, galena, tetrahedrite-tenantite, minor bornite and covellite hosted by pyritic rhyolitic to rhyodacitic volcanic and pyroclastic rocks of the Myra Formation. Total reserves of the Lynx and Price deposits are 839,800 t grading 1.00% Cu, 0.91% Pb, 7.79% Zn, 2.22 g/t Au (0.065 oz/ton), 74.52 g/t Ag (2.18 oz/ton) (1983). Mineable ore reserves of the H-W deposit based on a 2700 t/day production rate and $33 Cdn. cut-off grade, are 13,302,000 tonnes grading 2.02 g/t Au (0.059 oz/ton), 30.38 g/t Ag (0.886 oz/ton), 1.91% Cu, 0.27% Pb, 4.48% Zn (McKnight, 1987).

The Twin J Mine volcanogenic massive sulphide orebodies near Duncan on Mt. Sicker, which are approximately 46 m apart, contain pyrite, chalcopyrite, sphalerite and minor galena in a barite-quartz-calcite gangue and chalcopyrite in quartz and occur in schists derived from the Myra Formation. Total production from 1898 to 1964 was 277,400 t producing 1,383,803 g Au, 29,066,440 g Ag, 9,549,590 kg Cu, 20,803,750 kg Zn, 164,590 kg Pb and 4.5 kg Cd.

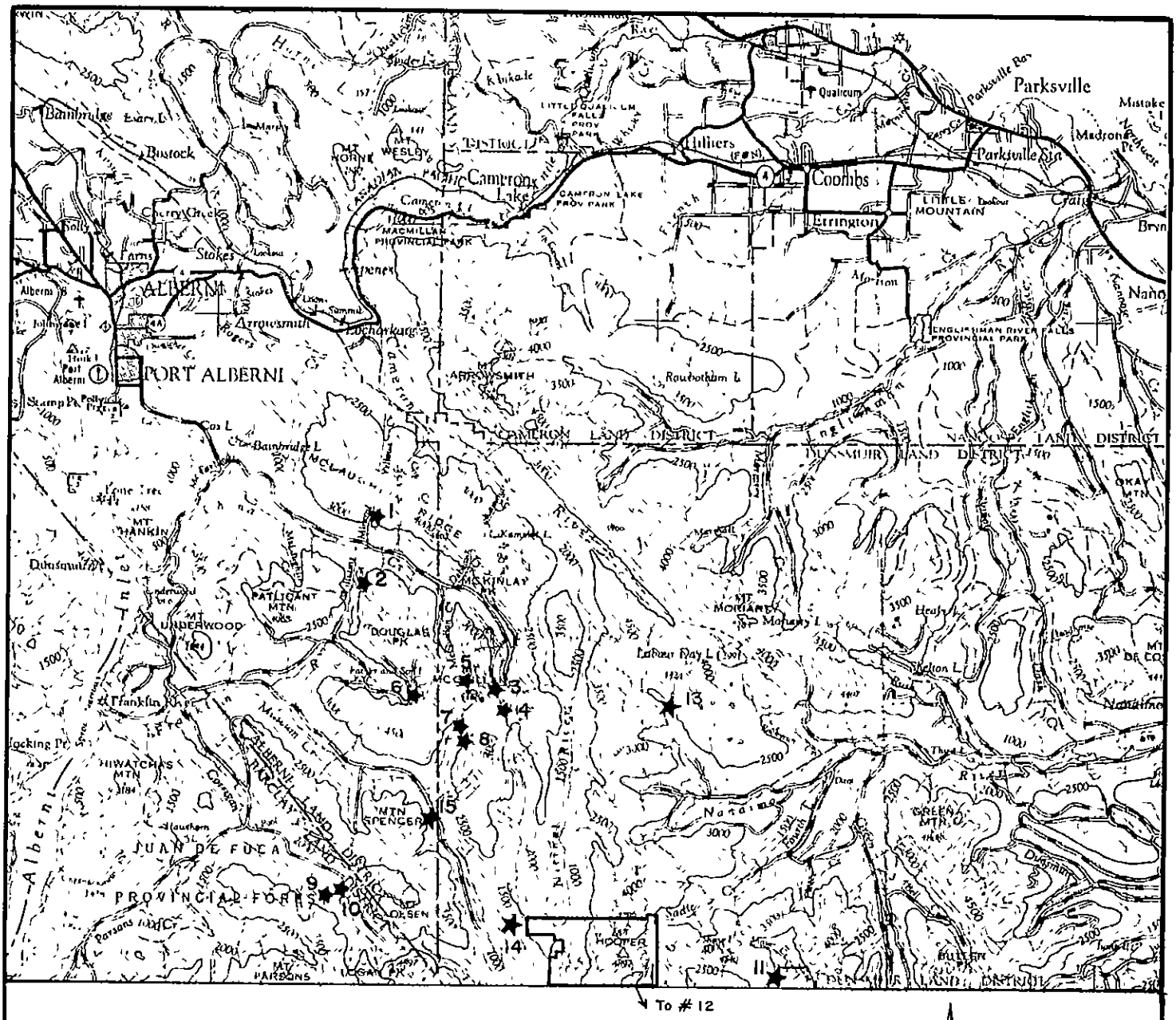
Recent exploration on Abermin Corp.'s Lara property has traced volcanogenic massive sulphides in the Coronation and Coronation Extension zones along a strike length of 1500 m, over a true width averaging 3.3 m. Published indicated and inferred reserves are 1,125,000 tonnes grading 2.88 g/t Au, (0.084 oz/ton), 67.9 g/t Ag (1.98 oz/ton), 3.59% Zn, 0.67% Cu, and 0.72% Pb (Vancouver Stockwatch, Feb. 9, 1988). Underground exploration totalling 823 m is scheduled to begin in early 1988 with a decline on the Coronation zone to provide access to the ore zone on three levels. Two kilometres to the north, four diamond drill holes intersected several polymetallic horizons over a strike length in excess of 2.4 km (Northern Miner, January 1987).

In the Port Alberni area, five past producing mines, as well as numerous showings, occur (Figure 4). The Thistle Mine contains disseminated and massive sulphide mineralization within pyritic, quartz-sericite schists and at their contact with chlorite altered mafic volcanics of the Sicker Group. Production from 1938 to 1942 totalled 6276 tonnes of ore yielding 85,844 g Au, 65,438 g Ag, and 309,739 kg Cu (13.7 g/t Au, [0.40 ozT]; 10.5 g/t Ag [0.31 oz/T], 4.92% Cu).

Exploration by Westmin Resources Ltd. has located 16 Cu and/or Au occurrences over a strike length of 4.6 km grading up to 16.8 g/t Au (0.049 oz/ton) over 2.1 m (Benvenuto, 1984).

The Black Panther Mine is a quartz vein deposit hosted by a shear zone in Sicker Group andesite and Island Intrusions diorite. Production of 1715 t yielded 15,830 g Au (509 oz), 29,640 g Ag (953 oz), 5587 kg Pb and at least 2030 kg Zn and 226 kg Cu.

The 3-W Mine consists of gold-bearing quartz veins in Island Intrusions diorite and granodiorite. Production amounts to 105 t of ore grading 137 g/t Au (4.0 oz/ton), 147.4 g/t Ag (4.3 oz/ton), 0.23% Cu, 1.1% Pb.



GOLD DEPOSITS AND OCCURRENCES

1 Vancouver Island Gold Mine (Debbie, Yellow)
2. Regina
3. Golden Eagle
4. B & K
5 Havilah
6. Thistle
7. Black Panther
8. Black Lion
9,10 3 W
13 Villalta
15. Fitzwater

OTHER OCCURRENCES

11 Shaw Creek
12 Heather (4·7 km SSE from Mt Hooper)
14. Kitkat Pt - Pd

N

NTS : 92 F

0 5 10 km

HAGLUND INDUSTRIES INTERNATIONAL INC.

MINERAL OCCURRENCE LOCATION MAP HOOP CLAIMS

Project No:	V 190	By:	T N.
Scale:	1 · 250,000	Drawn:	J S
Drawing No:	4	Date:	JUNE, 1988

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The Havilah Mine (950 t produced 8,056 g Au [259 oz], 43,670 g Ag [1,404 oz]) and the Vancouver Island Gold Mine (438 t produced 11,944 g Au [384 oz], 1617 g Ag [52 oz]) are quartz vein deposits hosted by andesite and andesite tuff of the Sicker Group.

Exploration on the Debbie and Yellow properties, surrounding the old Vancouver Island Gold Mine, has located three zones of gold mineralization. The 900 Zone has provided the best results to date, including 14.36 m (47.1') grading 139.82 g/t Au (4.078 oz/T) and 13.50 m (44.3') of 38.98 g/t Au (1.137 ozT). At the 900 Zone, the gold occurs in a silicified quartz stockwork zone hosted by a variety of Sicker volcanic rocks. The Mineral Creek Zone, which is fault-controlled, has been outlined for about 250 m on the Debbie property and 150 m on the adjacent Yellow property. Gold intersections are lower grade, but generally wider, than in the 900 Zone, and include 21.06 m (69.1') of 3.53 g/t Au (0.103 oz/T). The Linda Zone, which may be an extension of the Vancouver Island Gold Mine, consists of a series of auriferous quartz veins in barren wall rock. Intersections from this zone include 1.40 m (4.6') of 44.91 g/t Au (1.310 oz/T) and 2.00 m (6.6') of 47.35 g/t Au (1.381 oz/T).

Drilling in areas away from the known zones has also intersected gold mineralization (18.75 g/t Au [0.547 oz/T] over 1.0 m, 475 m north of the Mineral Creek Zone; and 8.40 g/t Au [0.245 oz/T] over 0.61 m, 300 m west of teh Mineral Creek Zone). A total of 30,580 m of diamond drilling in 163 holes was carried out in the 1987/88 season on the Debbie and Yellow properties. Over $5 million is to be spent in 1988 on the properties, including the driving of a 1.9 km adit to provide access to the Mineral Creek and Linda zones.

Mineral occurrences located near the Hoop claims are shown in Figure 4. Detailed descriptions of each showing are provided in Neale (1988).

Of particular interest to the area of the Hoop claims are the Heather property and the Kitkat property.

The Kitkat platinum group showing is located on the Kitkat 5 claim about 750 m west of the Hoop 1 claim (Neale and Hawkins, 1986; Getsinger, 1987) and a zone favorable to platinum group mineralization has been mapped on the Platinum Group claim (Neale, 1988b). Grab samples of chloritic shear zones in dioritic to gabbroic rocks intruding basaltic rocks yielded up to 1.65 g/t Pt and 5.31 g/t Pd, along with 100 ppb Au, 2012 ppm Ni, and 6702 ppm Cu. These results were confirmed by 2 laboratories, and resampling resulted in similar values. However, diamond drilling in the area yielded no PGM anomalies (Neale and Hawkins, 1986; Getsinger, 1987). Similar host rocks occur on the Hoop claims, particularly Hoop 1 and Hoop 5 claims.

The Heather property, consisting of a large group of claims immediately to the south of the Hoop claims, has been the focus for several exploration programs since 1982. Companies such as Chevron Canada Resources, Corporation Falconbridge Copper (Minnova), Canamin Resources Ltd., and International Cherokee Developments Inc. have conducted various geological, geochemical, geophysical, and drilling programs. The original showing yielded 20.30 g/t Au from a trench sample. Results from 1986 exploration included 105.3 g/t Au over a 1 m trench sample (Neale, 1988a). The rocks in the showing area are similar to and on strike with the carbonate-altered schistose shear zone and layered volcaniclastic rocks on the Hoop claims.

Other showings on the Heather property include quartz veins with massive pyrite, (similar to the vein on the Tania S-4 claim, 100 m S of Hoop 4), which yielded up to 4600 ppb Au and 24 g/t Au, from grab samples, and 10,000 ppb Au over 60 cm (Neale, 1988a).

5.0 1988 ASSESSMENT WORK

Assessment work for 1988 on the Hoop 1 to 5 claims carried out by MPH Consulting Limited consisted of geological mapping at 1:10,000 scale and rock sampling over as much of the property as was readily accessible. The main target of mapping was the major northwest-trending shear zone where associated lithogeochemical values of up to 230 ppb Au were obtained in 1985 (Neale and Hawkins, 1985b). A total of 34 rock samples and 5 silt samples was collected and subsequently analyzed for Au and by 31-element ICP by Min-En Laboratories Ltd. Five samples with anomalous Au, Ni, or Cu values were also analyzed for gold, platinum, and palladium by Min-En Laboratories Ltd.; and three rocks were selected for whole rock analysis. Rock descriptions, including claim locations and type of sample, are presented in Appendix II. Certificates of analysis are in Appendix III.

5.1 Property Geology

The Hoop 1 to 5 claims are underlain by volcanic, volcaniclastic, and intrusive rocks of the Paleozoic Sicker Group. Although local geology is apparently complex, the rocks may be divided into three northwest-trending composite mappable units.

The rocks exposed in the southwestern part of the property (Unit 1 in Figure 5) have previously been mapped as Myra Formation (Muller, 1977 (GSC O.F. 463)) and Westcoast Complex (Muller, 1982 (GSC O.F. 821)), with a map border fault at the 49th parallel. Mapping on the Hoop claims, as well as on the nearby Columbia property (Neale, 1988b), Raft property (Sketchley and others, 1987), and Kitkat property (Getsinger, 1987), indicates that this area is underlain by a sheared complex of mafic igneous rocks.

Andesitic to basaltic tuff(?) and volcanic rocks are intruded by dioritic to gabbroic (in places pyroxenitic) bodies and basaltic dykes. Chloritic and carbonatized shear zones are common. In

many places the dioritic rocks are foliated, whereas the gabbro and uralitized pyroxenite tend to occur as relatively undeformed blocks of coarse-grained mafic intrusive cut by spaced chloritic shear zones. Some of the intrusive bodies may be tectonic slices.

Common alteration in this unit includes development of uralitized pyroxene, chlorite, and epidote. Local alteration includes chloritized shear zones, some with concentrations of pyroxene $\pm$ chalcopyrite, as well as extensive quartz-carbonate-altered shear zones. Quartz-epidote-calcite veins occur in some areas, with varying amounts of pyrite $\pm$ pyrrhotite stringers and/or pods. Disseminated pyrite is common. A large quartz vein (1.5 m wide) with stringers and pods of massive pyrite occurs about 100 m south of the Hoop 4 claim (attitude of vein: 120/69S).

The eastern part of the Hoop claims is underlain by mafic volcanic and volcaniclastic rocks (Unit 2 in Figure 5), well described in Neale and Hawkins (1985b). The area on the eastern side of the Nitinat River valley, where these rocks are well exposed, is the type locality of Muller's Nitinat Formation (Muller, 1980).

The unit is identified by common pyroxene phenocrysts up to 1 cm in agglomeratic clasts as well as groundmass in tuff, and pyroxene-porphyritic, vesicular flow rocks and pillow lavas. Thin section examination shows that the pyroxene crystals are relatively "pristine" augite, unlike the commonly uralitized pyroxene in the pyroxenitic and gabbroic rocks of Unit 1.

Between the mafic igneous complex and the pyroxene-porphyritic volcanic and volcaniclastic rocks lies a well-defined unit 300 to 600 m wide of layered tuffaceous and sedimentary rocks (Unit 3 in

Figure 5). This unit has been mapped as Myra Formation based on Muller's criterion of "first appearance of bedded tuffs" (Muller, 1980); it is also mapped as Myra Formation along strike to the southeast on the Heather property.

Unit 3 consists of light to dark green and greenish grey, finely laminated thin-bedded to massive cherty tuff and volcaniclastic siltstone to sandstone. Previous reports suggest intermediate volcanic compositions: dacite for the lighter green layers, andesite for the darker green layers (Neale and Hawkins, 1985b). The unit continues across the Nitinat River into the Kitkat property, and a similar unit occurs on the nearby Raft and Fitzwater properties.

Sedimentary structures observed in this unit include primary bedding, graded bedding, slump folds, load casts, and intraformational faults. Tight to open folding about a northwesterly-plunging axis is evident in many outcrops, with incipient transposition of bedding locally along a steeply northeasterly dipping axial plane.

Although Unit 3 is composed of folded layers, its contacts are relatively straight and can be traced across the Nitinat River valley. The contact between Units 2 and 3 is defined by a contrast between pyroxene-porphyritic agglomeratic rocks and laminated tuff and volcaniclastic sedimentary rocks. Near the contact, bedding in the layered rocks is subparallel to the contact as well as to metamorphic foliation, with a NW strike and steep easterly dip.

The western contact of Unit 3 is a tectonic contact defined by schistose, carbonate-altered shear zones separating the layered rocks from foliated to non-foliated, chloritic andesitic to basaltic volcanics or tuff, with slices of metadiorite and gabbro (Unit 1).

Structure

The general trend of lithologic units exposed on the Hoop claims is northwest to north-northwest. Regional folding and metamorphic foliation also trend in this direction, with near-vertical but generally northeasterly dip. Metamorphic foliation is not penetrative throughout the rock units, due to relative competence of volcanic and intrusive rock types, as well as lower greenschist metamorphic facies. Chlorite is the most common metamorphic mineral, and is the primary component of discrete shear zones in the mafic rocks.

Some foliated zones trending in a more northerly direction crosscut the regional foliation, causing it to drag in a N-S direction locally.

The northwest-trending shear zone dividing Unit 1 from Unit 3 across the southwestern part of the Hoop claims is part of a major regional structure related to the Cowichan Lake Fault. Carbonate alteration and schistosity is most intense at the western contact of Unit 3, but schistose, carbonate-altered shear zones are common within 500 m of this contact on the west side.

The best exposure of the major shear zone on the Hoop property is on the northern Hoop 1 claim, about 300 m up a side road from Nitinat Main Road. There, rusty-weathering, schistose, carbonate-altered rocks make up a zone at least 30 m wide in which original rock types are obscure. Below the shear zone in the road bed are gabbroic and dioritic rocks as well as basaltic rocks including chloritic schist. Above the shear zone are slices of layered tuff characteristic of Unit 3.

This shear zone is part of the Cowichan Lake Fault Zone, which continues all the way along the northern edge of Cowichan Lake, norhtwest through the Heather property, Hoop property, Kitkat property, Raft property and on to the old Black Panther Mine and beyond. Another splay goes up Rift Creek.

5.2 Mineralization, Lithogeochemistry, and Silt Geochemistry

Thirty-four rock samples and five silt samples were collected from the western part of the Hoop property. All were analyzed for gold and also by 31-element ICP. Three rock samples were selected for whole rock analysis, and five for a gold-platinum-palladium package analysis. All analytical tests were performed at Min-En Laboratories of North Vancouver, B.C. Rock descriptions are in Appendix II; certificates in Appendix III. All rock samples were grab samples except for sample J1, a chip sample across 1 m.

Gold values in rock samples ranged from background (1 ppb Au) to 150 ppb Au. The highest value was obtained from a pod of red chert within layered volcaniclastic rocks of Unit 3 (sample J3, 150 ppb Au). When re-analyzed, sample J3 yielded 159 ppb Au, 3 ppb Pd, and 11 ppb Pt.

Other elevated gold values were yielded by pyritic rocks of four types. Three samples of laminated pyritic siltstone or felsic tuff (Unit 3) yielded 18 ppb Au, 16 ppb Au, and 15 ppb Au (sample J2, J20, and J23, respectively). Two samples of pyritic carbonate-altered schist closely associated with the major shear zone yielded 40 ppb Au and 16 ppb Au (samples J23 and J28, respectively). Two samples of pyritic chloritic schist (sheared metadiorite) yielded 10 ppb Au and 30 ppb Au (J12 and J28A, respectively). Finally, a 1 m quartz vein with pods and veins of massive pyrite yielded 41 ppb Au (J8). This occurrence is located about 100 m south of the Hoop 4 claim on the Tania S-4 claim (Heather property). Although these values are not particularly high, they are higher than background and thus interesting.

Silver values in rock samples ranged from 0.1 to 2.2 ppm Ag. Three values $\geq$2 ppm were obtained: 2.0 ppm Ag (sample J15), 2.0 ppm Ag (sample J19A), and 2.2 ppm Ag (sample J20).

Arsenic values ranged up to 31 ppm (sample J19A).

Barium values are generally below 100 ppm, with highs of 209 ppm Ba (sample J17) and 251 ppm Ba (sample J26).

A single anomalous boron value of 492 ppm B was yielded by sample J19, a quartz vein; perhaps a grain of tourmaline in the vein would account for the boron.

Although ICP values for calcium are non-quantitative due to incomplete digestion, some information may be gained from the results. Highest calcium values correlate with carbonate-altered shear zones, as expected.

The highest copper values, $\geq$1000 ppb Cu, are 1101 ppm Cu (sample J28A), 1126 ppm Cu (sample J26), and 1814 pm Cu (sample J28). All are from the mafic complex of Unit 1, near the large shear zone area. Chalcopyrite was visible in two of these three samples, with pyrite in all. Copper tends to be higher in mafic rocks, although the average crusted abundance of copper in gabbroic rocks is 72 ppm. Therefore these values are considered significant.

High-iron values correlate with either amount of pyrite, or mafic rock type. Highest magnesium values correlate with mafic rock type, and may be associated with higher nickel values.

Highest molybdenum values (10 and 32 ppm, samples J28 and J23) came from carbonate-altered chlorite schist with pyrite.

Rocks with over 100 ppm Ni were selected for Pt-Pd analysis (as well as the sample with the highest gold value). The highest nickel value yielded is 443 ppm (sample J14), from a carbonate-altered, chloritic shear zone. Platinum and palladium values were not anomalous in any of these samples, with the highest

values at 11 ppb for each. High platinum and palladium values from the adjacent Kitkat property were found to correlate well with high nickel and chromium (Getsinger, 1987). Highest chromium values from the Hoop claims correlate with highest nickel, with 510 ppm Cr for sample J14.

Highest Pb and Zn values from the Hoop claims are 58 ppm Pb (sample J1) and 106 ppm Zn (sample J17), which are not particularly significant.

Silt Sampling

Of 5 silt samples collected from the Hoop claim, 4 yielded elevated or anomalous gold values. Those streams nearest to the mapped carbonate-altered shear zones yielded the highest values.

Silt 1, collected from the Hoop 5 claim where a recent debris slide covered the Nitinat Main Road, yielded 92 ppb Au. Silt 5, collected about 400 m north along the road, yielded 18 ppb Au. Both creeks drain an area on the east side of the Nitinat River underlain by the major shear zone at the contact between layered volcaniclastic rocks (Unit 3), and mafic rocks (Unit 1).

Silts 2 and 3, yielding 62 ppb Au and 19 ppb Au, were collected from the Hoop 1 claim on the west side of the Nitinat River, from an area draining Unit 3 layered volcaniclastic rocks and the major shear zone.

Silt 4, collected from the creek draining the big east-west trending glacial hanging valley north of Mt. Hooper, on the Hoop 2 claim, did not yield any anomalous geochemical values.

In conclusion, lithogeochemical values from the Hoop claims are generally low, with a few elevated and anomalous values.

Gold in rocks, and particularly in silts, appears to be related to the areas near the major regional shear zone and layered volcaniclastic rocks of Unit 3. In all cases, gold values are associated with pyrite visible in hand specimen.

The most interesting visible mineralization is the large massive pyrite-bearing quartz vein located on the adjacent Heather property 100 m south of the Hoop 4 claim. Although the gold values from sampling were not outstanding, the hydrothermal system responsible for the quartz vein could be a possible target of exploration. The quartz vein is over 1 m wide and has an apparent strike length of several hundred metres, as indicated by float; where measured, the vein strikes 120°.

5.3 Whole Rock Analyses

Three rocks from the Hoop claims were selected for whole rock analysis: J2, J10A, and J14. Results are presented in Appendix III.

Sample J2 was taken from a folded bedded sequence of volcaniclastic siltstone to sandstone, chert, and cherty tuff. It is a hard, aphanitic, seafoam-green rock with 1-2% finely disseminated pyrite. Similar rocks had been described in previous reports as "dacitic tuff" (Neale and Hawkins, 1985b); the whole rock analysis was intended to check this identification.

The whole rock analysis yielded 74.23% SiO_2, consistent with a rhyolitic composition. However, with only 7.67% Al_2O_3, this would not be a typical igneous rock. The 6.16% Fe_2O_3 is high for a rhyolite or dacite, but could be accounted for as pyrite. The rock also has more MgO (2.58%) than expected for rhyolite or dacite. CaO at 3.28% is reasonable for a dacite, but Na_2O (1.97%) and K_2O (0.02%) are low for any felsic to intermediate igneous rock. TiO_2 at 0.29% is consistent with a rhyolitic composition.

These data suggest an origin for sample J2 as a sedimentary or reworked tuffaceous rock with a combined mafic to ultramafic and quartz-rich source, or as a silicified mafic to ultramafic tuff.

Sample J10A was selected for whole rock analysis as the host rock to a 1 m wide quartz vein with massive pyrite stringers. A sample of the quartz vein itself, sample J10, was inadvertently also submitted for whole rock analysis. Sample J10, not surprisingly, yielded 92.43% SiO_2 and 1.92% Fe_2O_3 (quartz, pyrite). A small amount of Al_2O_3 (1.08%) and MgO (0.29%) suggests minor flakes of chlorite.

Sample J10A, identified in the field as a medium to coarse-grained chloritic schist, originally an intermediate to mafic volcanic or dioritic intrusive, yielded a whole-rock analysis consistent with this identification, except for the silica.

Sample J10A yielded only 38.56% SiO_2, low even for an ultramafic rock. The other major oxides were consistent with an andesitic to basaltic composition (19.71% Al_2O_3, 11.58% CaO, 16.03% Fe_2O_3, 6.03% MgO, 1.29% TiO_2), although they suggest perhaps some carbonatization and iron mineralization (pyrite). It is suggested that sample J10A represents an andesitic to basaltic volcanic that has been somewhat leached of silica, and perhaps also of alkalis (with 0.14% K_2O, 0.36% Na_2O).

Finally, **sample J14** was selected for whole rock analysis in order to determine the composition of a carbonate-altered schistose shear zone rock. The whole rock analysis is consistent with a carbonate-altered mafic or ultramafic rock. As given by Min-En Laboratories, this analysis adds up to only 89.047%; their explanation is that the difference is in volatiles such as CO_2 which were not measured as Loss On Ignition (which was only 3.70%), as their standard procedure is to heat the rocks to only 560°F (293°C) for this measurement.

Silica has apparently been leached from this rock, although may be present as nearby quartz veins; SiO_2 was measured at 35.50%, low even for an ultramafic rock. Alumina is a little low for a basalt at 11.50%, whereas iron is about right at 9.57%. CaO is

high, at 13.81%, reflecting carbonatization. Alkalis are extremely low, with 0.29% K_2O and 0.50% Na_2O. Lack of potassium means that the micaceous mineral in these shear zones cannot be interpreted as sericite in any sense. High MgO, at 13.34%, suggests instead chlorite, or even some talc. Chlorite is more likely, given the aluminum component. The carbonate is probably mainly calcitic, with some dolomitic to ankeritic component.

Minerals observed in hand specimen appear to be iron-bearing carbonate and greenish phyllosilicates. The whole-rock analysis is consistent with a mineral assemblage of dominantly ankeritic carbonate and chlorite, confirming field identification.

6.0 PROPOSED WORK PROGRAM

Further exploration of the Hoop property is warranted due to its location in a part of the Sicker Group that is favourable to gold and sulphide mineralization. The major northwest-trending shear zone that continues through the southwest part of the Hoop property has yielded gold values up to 105.3 g/t over 1 m on the adjacent Heather property. The focus of exploration would be a combination of potentially massive sulphide-bearing stratigraphy and structurally-controlled gold mineralization along the tectonic contact of the layered volcaniclastic rocks, concentrating on the shear zones.

In addition, exploration for massive pyrite-bearing quartz veins and sulphide pods in sheared mafic rocks should be continued in the search for gold and platinum group mineralization.

A program similar to that outlined in the previous report (Neale and Hawkins, 1985b) is proposed. Phase IA exploration consisting of geological mapping and sampling over the entire property, and geochemical sampling over the area of the shear zone (Hoop 1, 4, and 5 claims) is proposed.

Contingent on favourable Phase IA results, Phase II is to consist of detailed geological, geochemical, and geophysical follow-up to any anomalies located over the shear zone or in new target areas.

Geophysical surveys, such as magnetometer and VLF-EM, may be carried out, as well as trenching where necessary.

If warranted by Phase II results, Phase III will consist of IP surveys over anomalous areas, followed by diamond drilling of the highest priority targets.

Phase IA is estimated to cost approximately $30,000, and Phase II approximately $45,000.

Phase IA fieldwork is estimated to take approximately 2 weeks; Phase II fieldwork approximately 3 weeks.

Further exploration on the Hoop claims should be carried out in the summer or early fall.

7.0 CONCLUSIONS

1. The Hoop property (Hoop 1 to 5 claims) is underlain by mafic volcanic, volcaniclastic, and intrusive rocks of the Paleozoic Sicker Group.

2. A major north-northwest trending shear zone related to the Cowichan Lake Fault Zone transects the western part of the Hoop claims, characterized by a schistose zone of carbonate-altered chloritic schist. This shear zone yielded results of up to 105.3 g/t Au over 1 m on the adjacent Heather property.

3. Rock sampling in 1988 (of 34 rocks collected and analyzed for gold and by 30-element ICP) yielded elevated gold values up to 150 ppb Au (sample J3).

4. Silt sampling in 1988 (of 5 silts collected and analyzed for gold and by 30-element ICP) yielded 4 with anomalous gold values up to 92 ppb Au (Silt 1), all associated with the area around the major shear zone and layered volcaniclastic rocks.

5. Sheared mafic rocks on the Hoop claims yielded anomalous nickel and chromium values up to 443 ppm Ni and 510 ppm Cr (sample J14).

6. Further exploration, consisting of Phase IA geological mapping and sampling over the entire property, and geochemical sampling over the area of the shear zone, is recommended at an estimated cost of $30,000. Contingent on encouraging results from the previous phase, further exploration, consisting of Phase II geological, geochemical, and geophysical surveys, and Phase III geophysical surveys and diamond drilling, may be recommended.

8.0 RECOMMENDATIONS

1. Further exploration on the Hoop property (Hoop 1 to 5 claims) is warranted due to its favourable location in Sicker Group stratigraphy and structural setting.

2. Exploration should concentrate on a target of structurally-controlled gold mineralization along the major northwest-trending shear zone, with some emphasis on favourable stratigraphy.

3. A Phase IA exploration program, to consist of geological mapping and sampling over the entire property; and geochemical sampling over the area of the shear zone (Hoop 1, 4, and 5 claims), is recommended at an estimated cost of $30,000.

4. Contingent on favourable Phase IA results, Phase II exploration, to consist of detailed geological, geochemical, and geophysical surveys over anomalies defined over the shear zone or other target areas, may be recommended at an estimated cost of approximately $45,000.

5. If warranted by outstanding results from Phases IA and II exploration, Phase III IP surveys and diamond drilling may be recommended.

Respectfully submitted,
MPH CONSULTING LIMITED

J.S. Getsinger

J.S. Getsinger, Ph.D.

Vancouver, B.C.
June 9, 1988

CERTIFICATE

I, J.S. Getsinger, do hereby certify:

1. That I have studied geology at Harvard University (A.B., 1974), and have graduate degrees in geology from the University of Washington, Seattle (M.S. 1978), and from the University of British Columbia, Vancouver (Ph.D. 1985).

2. That I have practised within the geological profession since 1974.

3. That the opinions, conclusions, and recommendations contained herein are based on geological research and fieldwork carried out by myself and other MPH Consulting Limited staff.

4. That I own no direct, indirect, or contingent interest in the subject property or shares or securities of Haglund Industries International Inc. or associated companies.

J. S. Getsinger

J.S. Getsinger, Ph.D.

Vancouver, B.C.
June 9, 1988

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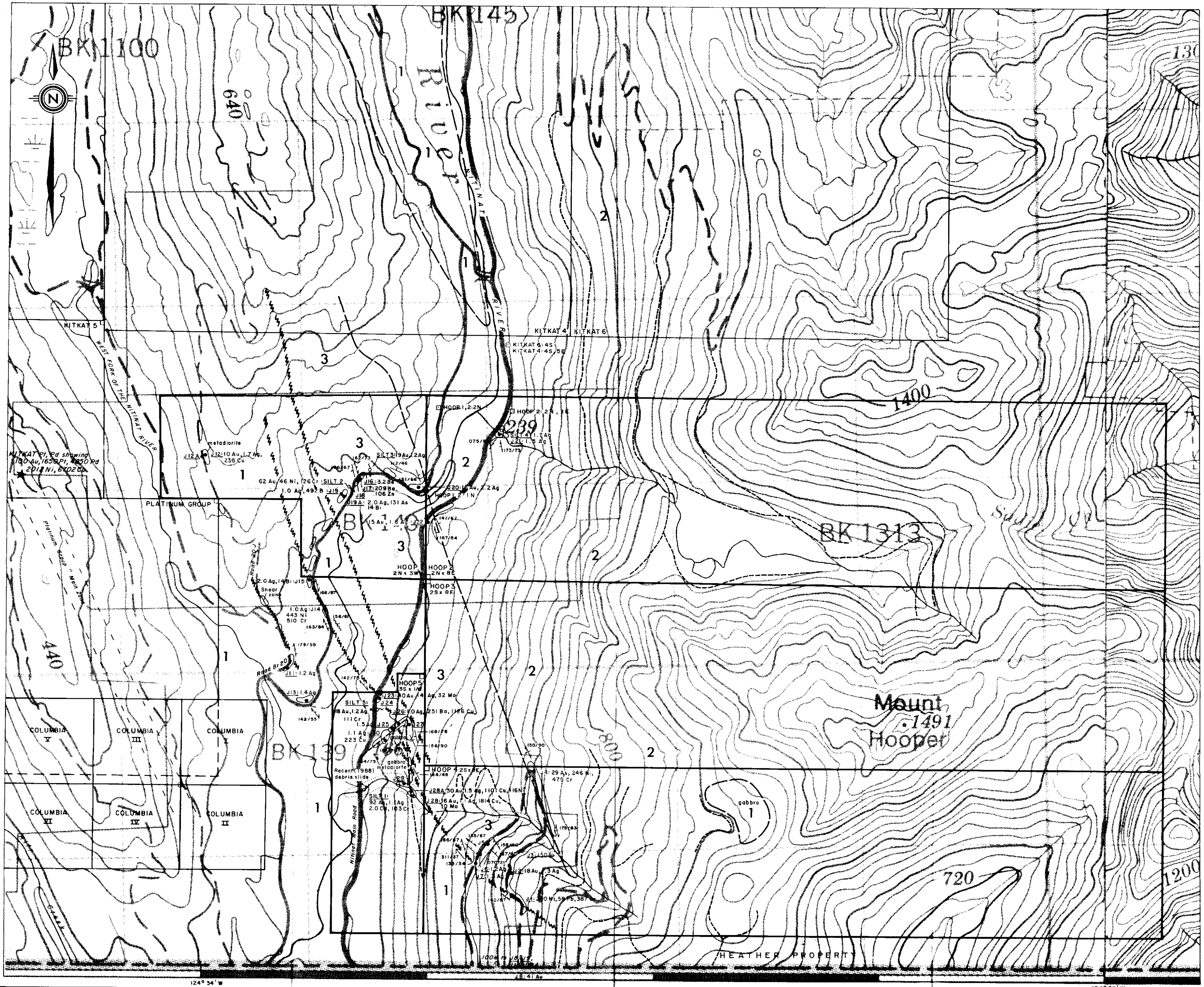
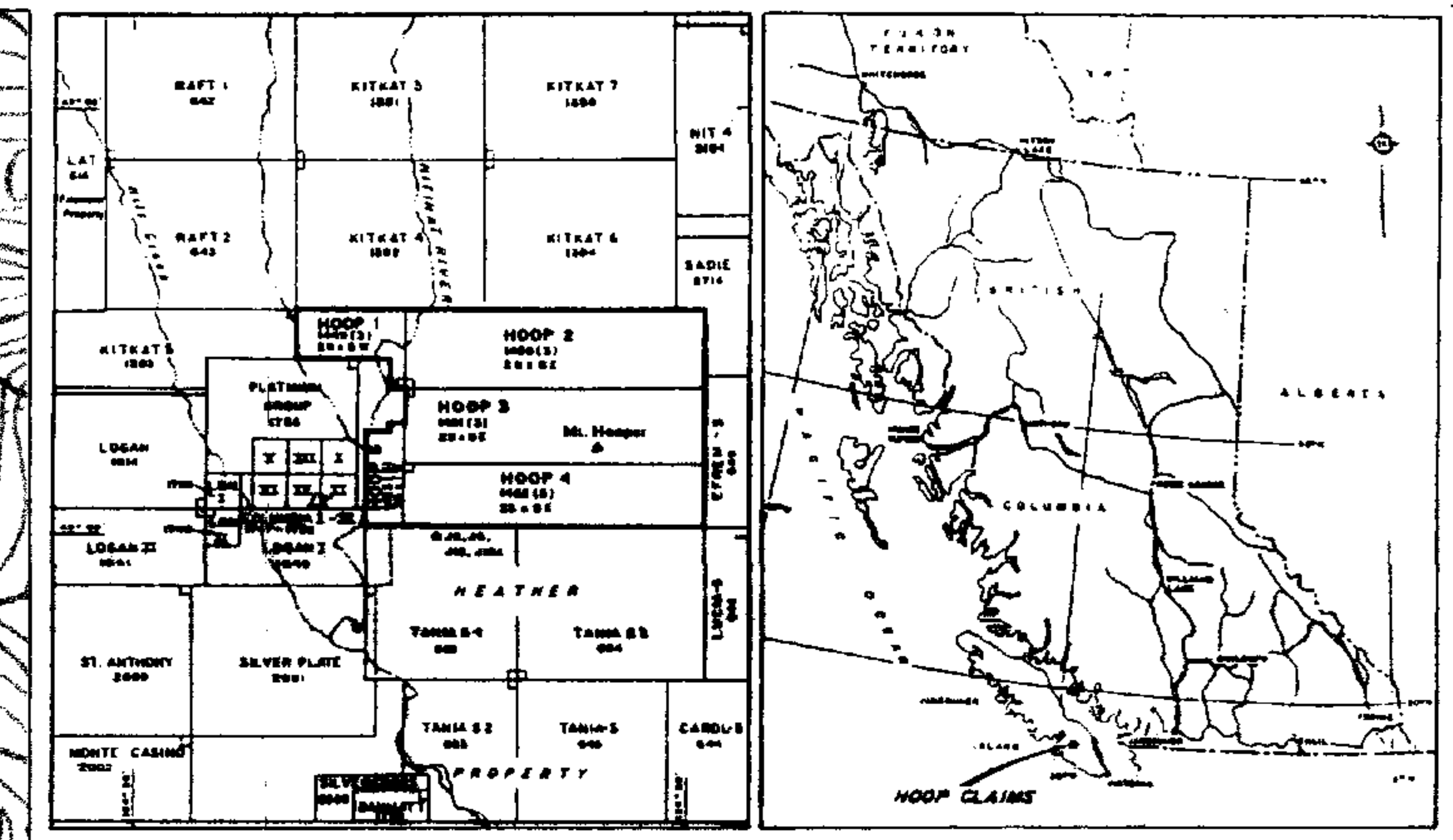
Appendix I

List of Personnel and Statement of Expenditures





LEGEND

PALEOZOIC

SICKER GROUP

3 Layered Volcano-sedimentary Rocks:
Light and dark green, finely laminated and thin-bedded to massive cherty tuff and volcaniclastic siltstone to sandstone, with sedimentary structures such as bedding, graded bedded, slump folds, load casts, and intraformational faults. May contain red chert, or pyritic layers. Commonly folded, with tight to open folds plunging N.W.
(May be correlative with Myra Fm. [Muller 1980a].)

2 Mafic Volcanic and Volcaniclastic Rocks:
Pyroxene-porphyritic agglomerate and tuff; basaltic pillows, flows, and dykes.
(May be correlative with Nitinat Fm. [Muller 1980a].)

1 Mafic Igneous Complex:
Andesitic to basaltic volcanics and/or tuffs (chloritic schist); uralitized pyroxenite, pyroxene (hornblende) gabbro; hornblende diorite; in part foliated, with chloritic and carbonatized shear zones.

GEOLOGICAL BRANCH ASSESSMENT REPORT

17,640

SYMBOLS

Geologic Contact

Fault, shear zone

Bedding

Foliation, lineation

Shear zone, fault surface

Dyke

J3 Rock Sample

SILT I Silt Sample

Selected results: Au, Pt, Pd in ppb others in ppm

Claim Line (based on LCP's located in the field)

Legal Corner Post, location identification post

Gravel Road

NTS: 92 F/2

0 100 200 400 600 800 1000 Metres

HAGLUND INDUSTRIES INTERNATIONAL INC.

PROPERTY PLAN, GEOLOGY AND SAMPLE LOCATIONS

HOOP 1 to 5 CLAIMS

VICTORIA MINING DIVISION

Project No:	V 190	By:	JSG
Scale:	1:10,000	Drawn:	DM
Drawing No:	5	Date:	JUNE, 1988

MPH Consulting Limited