



ASSESSMENT REPORT

DIAMOND DRILLING PROGRAM

OCTOBER 1980

SAM - SWEDE CLAIMS

WHITEHORSE MINING DISTRICT

YUKON TERRITORY

NTS 115 J/9

by

G. B. DOUGLAS, P. ENG.

090777

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION AND SUMMARY	1
LOCATION AND ACCESS	1
PERSONNEL	2
CLAIM OWNERSHIP	2
DIAMOND DRILLING PROGRAM	2
GEOLOGY	4
CONCLUSIONS	5
APPENDICES	
Appendix A - Diamond Drill Logs	
Appendix B - Diamond Drill Assays	
Appendix C - Review of Expenditures	
Appendix D - Qualifications of Supervision	
PLATES	
Claim Map	
Diamond Drill Plan	

INTRODUCTION AND SUMMARY

A syndicate represented by Swede Martennson and Alan McDiarmid optioned the Swede Claims to Anglo American Corporation of Canada in November 1977. The Sam Claims were staked by Anglo American Corporation of Canada in 1976. All claims were transferred to Hudson Bay Exploration and Development Company Limited in February 1979.

Surface exploration (geochemical sampling, VLF surveys and trenching) was carried out in 1977 and 1978. In 1978 eleven holes were drilled on the ridge. A total of 1,606 feet of BQ drilling was carried out to evaluate the geochemical anomalies.

In 1979 a small geochemical program was carried out along the creek.

In 1980, additional geochemical work was carried out in the vicinity of the creek. A magnetometer (total field) and a VLF (EM-16) survey were carried out on E - W lines crossing the creek. Anomalous zones were located and were tested by 4 BQ diamond drill holes totalling 1,328 feet. The drilling was contracted out to E. Caron Diamond Drilling Limited of Whitehorse, Y. T.

LOCATION AND ACCESS

The Sam - Swede groups are located in the Dawson Range some 70 miles NW of Carmacks at 62° 39' N, 138° 05' W. The property is in the vicinity of Klines Gulch and Hayes Creek. Summer access to the property is by helicopter. During winter access by winter roads is



SONORA GULCH

LOCATION MAP - SONORA GULCH

Snag 115J B 115K (1/2)

possible from the Carmacks-Mt. Freegold Road (37 miles) or from Minto (38 miles).

PERSONNEL

The drilling was contracted by E. Caron Diamond Drilling of Whitehorse, Y. T. A crew of four experienced drillers was used. Project Manager was Mr. G. B. Douglas of Hudson Bay Mining and Smelting Co., Limited of Toronto, Ontario.

CLAIM OWNERSHIP

The property consists of the following claims:

<u>Claim</u>	<u>Grant Number</u>	<u>No. of Claims</u>
Sam 1-18	YA3869-3886	18
Sam 20-35	YA3888-3903	16
Sam 37-86	Y3905-3954	50
Sam 87-98	YA8275-8286	12
Swede 1-6	YA3779-3784	6

All of the above mineral claims are registered in the name of Hudson Bay Exploration and Development Company Limited.

DIAMOND DRILLING PROGRAM

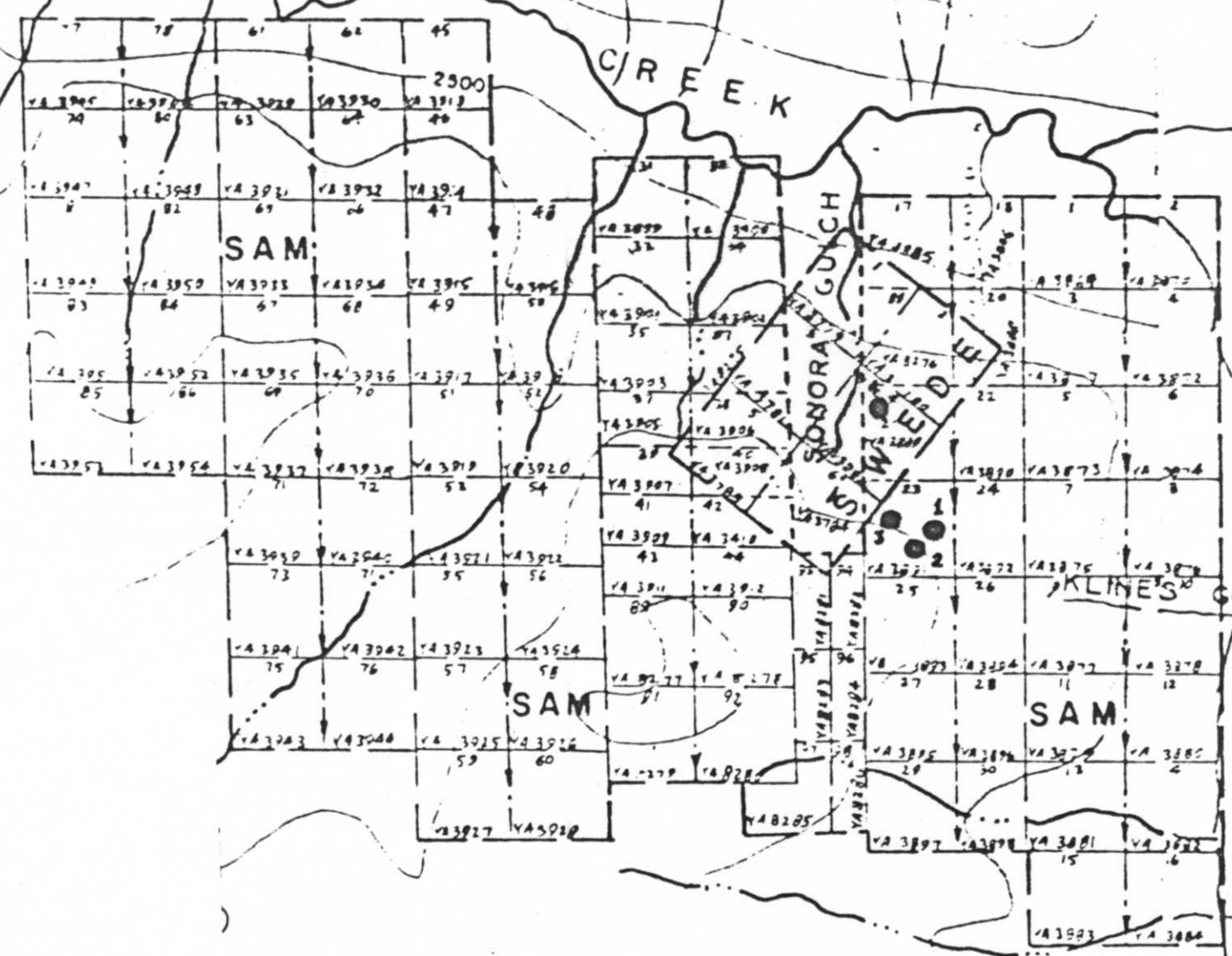
Equipment mobilization began in late September, 1980 with actual drilling commencing October 7, 1980.

The equipment was ferried from Whitehorse to the Rude Creek airstrip by DC-3 and from Rude Creek to Sonora Gulch by helicopter.

-2500

HAYES

CREEK



SAM - SWEDE CLAIMS
 NTS 115-D-9
 GROUP 1

1" = 1/2 mile

Drilling stopped on October 30, 1980 when freezing conditions stopped the flow of the creek. Three holes were completed and the fourth hole was abandoned at 183.0 feet. A total of 1,328 feet of BQ drilling was completed. The core was left on the property and it is stored in wooden trays stacked on a tent floor located near the old log cabin at the Placer Camp.

GEOLOGY

The claims are located on the contact area of a rhyolite porphyry intrusive with Yukon group gneisses and volcanics. Heavy overburden covers the claim groups and outcrop is limited to three outcrops, two of which are exposed in the creek bed. The placer contains gold bearing tetradymite along with pyrite, galena, magnetite, free gold as well as other unidentified heavy minerals.

Magnetite was identified in the basic volcanic (andesite) core and correlates well with a Northwesterly trending magnetic zone located by a magnetometer survey carried out in the summer of 1980. Yukon group gneisses were cut by the drilling and were found to be intruded by acid and basic volcanics.

The drill holes were laid out to test the magnetic anomaly as well as three VLF-EM anomalies parallel to the magnetic trend. Several shear zones were intersected by the drilling as well as alteration zones. Carbonatization, kaolinitization, limonitization and silicification zones are found in the core. Several interesting zones were intersected in Holes 80-2 and 80-3. In hole 80-2 the

following values were returned.

<u>Intersection</u>	<u>Length</u>	<u>Au (oz/ton)</u>	<u>(Ag (oz/ton)</u>	<u>Te ppm</u>
245' - 246'	1'	0.01	0.59	120
303' - 305'	2'	0.075	0.08	2.4
357' - 261.75'	4.75'	0.057	0.06	1.0

In hole 80-3 the following values were returned.

<u>Intersection</u>	<u>Length</u>	<u>Au (oz/t)</u>	<u>Ag (oz/t)</u>	<u>Cu %</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Te ppm</u>
165.5 - 169.0	3.5	0.002	12.6	0.60	12.7	8.35	1.0
354.3 - 357.0	2.7	0.070	0.55	0.23	0.06	-	1.2
367.0 - 369.5	2.5	0.04	2.41	1.68	0.01	-	11.0
369.5 - 372.0	2.5	0.02	0.66	0.47	0.01	-	20.0

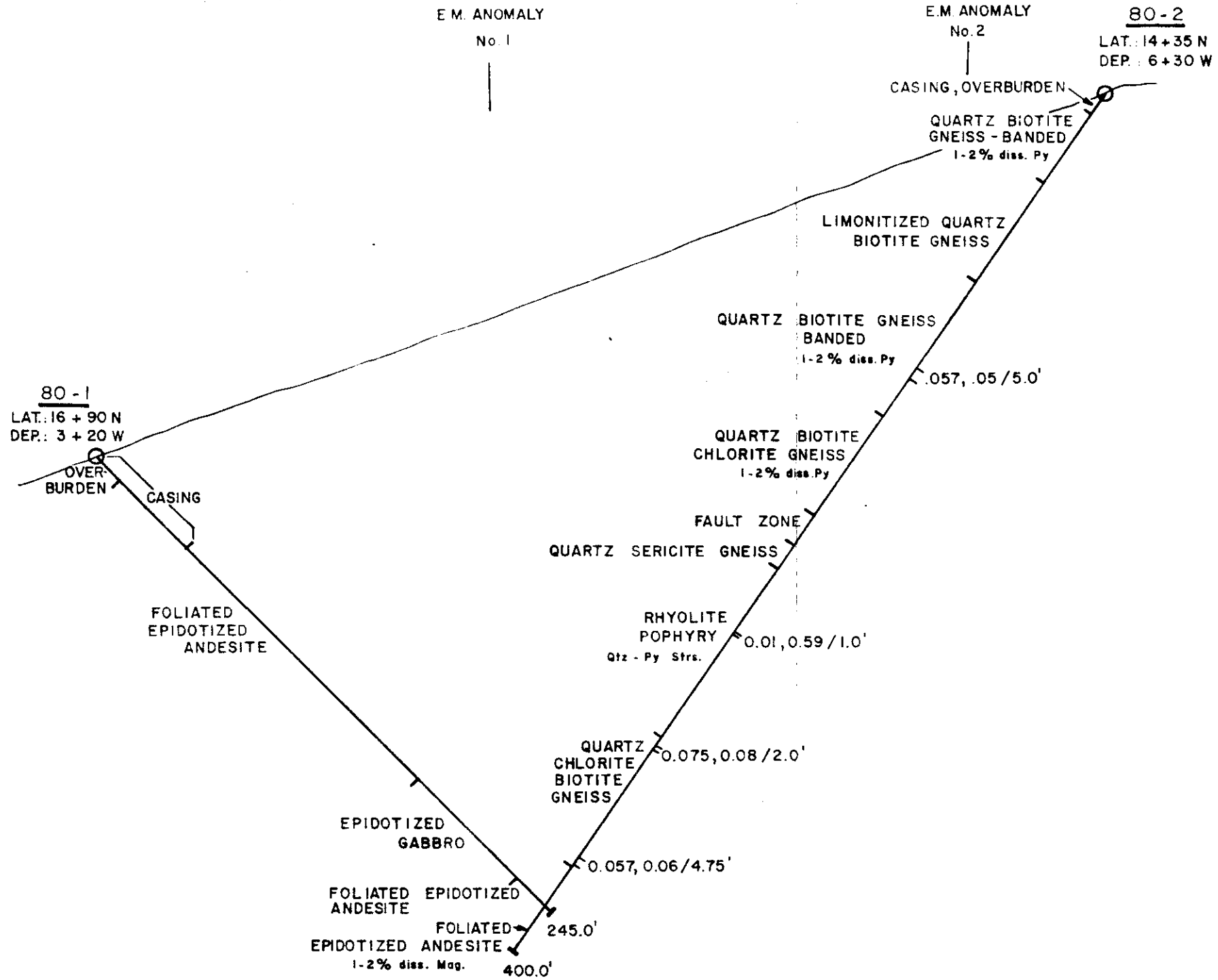
CONCLUSIONS

Several interesting intersections were made in the 1980 drilling program. VLF-EM anomalies suggest that these zones have a NW - SE strike. Gold values appear to be erratic and further trenching and drilling is required to evaluate the extent of the zones and to define the geology.



G. B. Douglas, P. Eng.

GBD:meb
March 20, 1981.



Au(oz), Ag(oz) / length

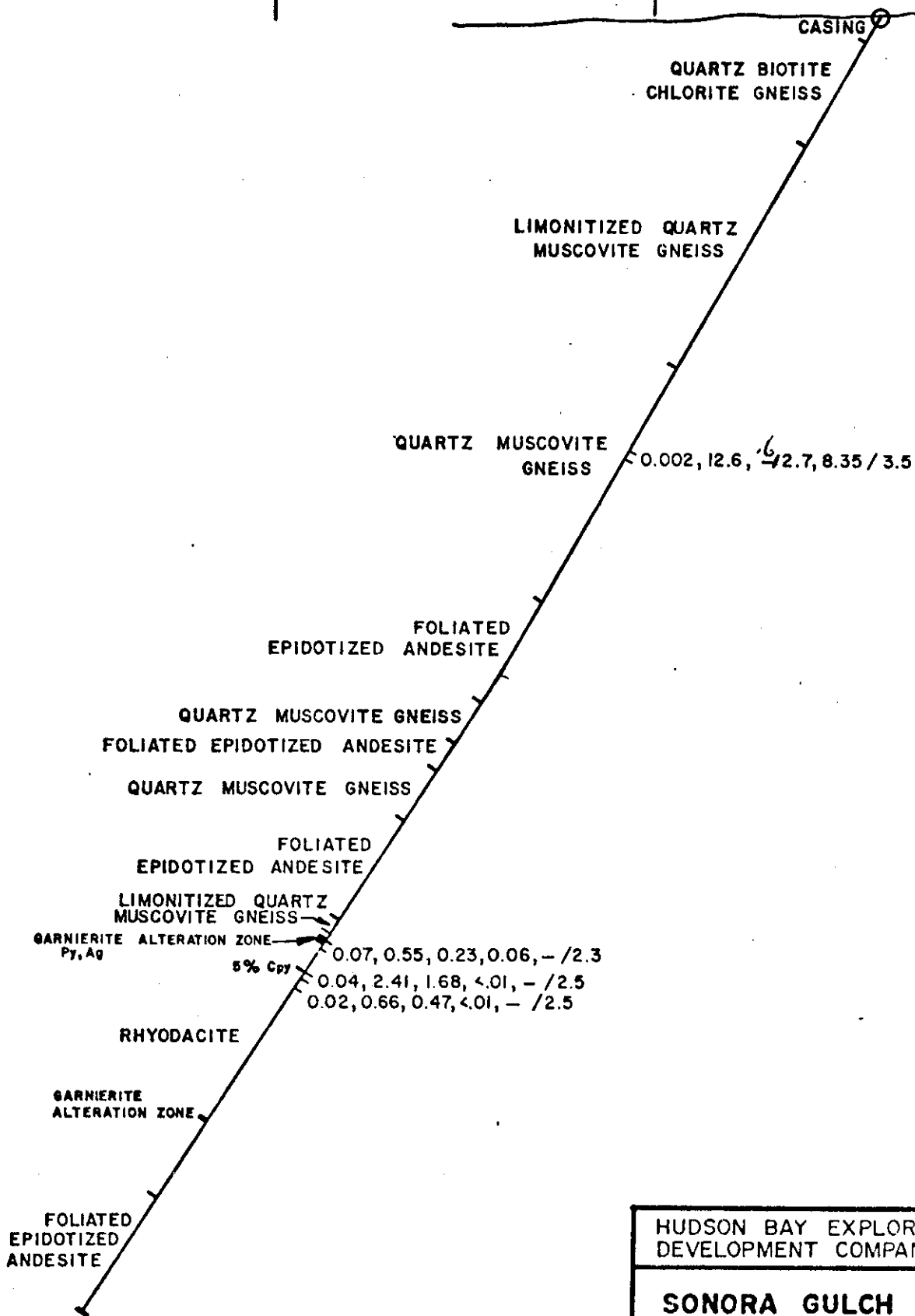
HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED	
SONORA GULCH PROJECT	
YUKON - NTS 115 J/9	
D.D. HOLES <u>80-1</u> & <u>80-2</u>	
Facing Southeast	
SCALE: 1" = 50'	LOGGED BY: G. DOUGLAS

E.M. ANOMALY
No. 2

E.M. ANOMALY
No. 3

80-3

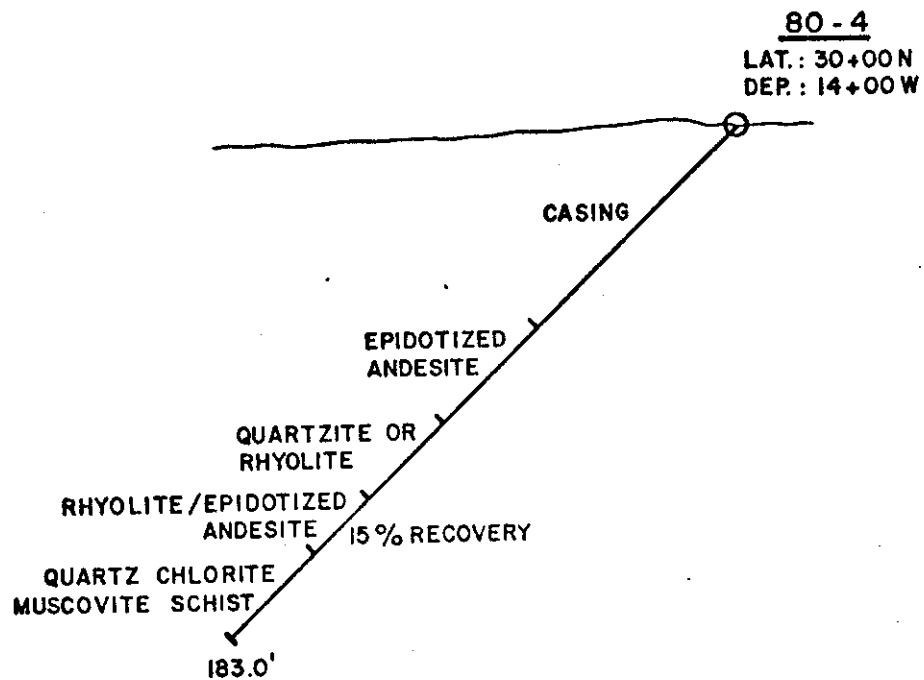
LAT.: 17 + 45 N
DEP.: 10 + 50 W



Au(oz), Ag(oz), Cu(%), Pb(%), Zn(%) / length

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED	
SONORA GULCH PROJECT	
YUKON - NTS 115J/9	
D.D. HOLE <u>80-3</u>	
Facing Southeast	
SCALE: 1" = 50'	LOGGED BY: G. DOUGLAS
DATE:	DRAWN BY: I. SCHMITT

Fig 24



HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

SONORA GULCH PROJECT

YUKON - NTS 115 J/9

D.D. HOLE 80-4

Facing South

SCALE: 1" = 50'

LOGGED BY: G. DOUGLAS

DATE:

DRAWN BY: I. SCHMITT

Fig 25

APPENDIX 5

DRILLING RESULTS

- A) LOGS
- B) ASSAYS

AMENDMENT TO DRILL LOGS

80 - 2

80 - 3

80 - 4

Intersections identified as containing garnierite should read chrysocolla. Minor amounts of garnierite may be present since some nickel values were reported.

Gray Douglas - Same



BONDAR-CLEGG & COMPANY LTD.

136B INDUSTRIAL RD, WHITEHORSE, YUKON Y1A 4X1

PHONE: (403) 667-6523

TELEX: 036-8-460

Geochemical Lab Report

FROM: Hudson Bay Exploration

REPORT NUMBER: 41-101

PROJECT: _____

DATE: Jan., 14, 1981

SAMPLE NUMBERS	ppm Cu	ppm Ni							
67763	2650	148							
67765	400	52							
67789	52	530							
67805	6	360							
67811	25	350							

FOR METHOD, EXTRACTION AND FRACTION USED - SEE ATTACHED

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

DIAMOND DRILL LOG

HOLE NO. 80-1 PROJECT NAME SONORA GULCH MAP NO. 115 J/9

ANGLE -45° DIRECTION 225° DEPTH 245'

HORIZ. LENGTH: 165' CO-ORDINATES (16 + 90 N)
(3 + 20 W)

LOCATION WHITEHORSE MINING DISTRICT, YUKON TERRITORY

STARTED Oct. 7, 1980 FINISHED Oct. 11, 1980 CORE SIZE BQ

ACID TEST @ 245': -46° (corrected)

DRILLED BY Caron Diamond Drilling LOGGED BY G. Douglas

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	50	CASING
0	13	OVERBURDEN - Permafrost - humus, sand, gravel
13	173.5	FOLIATED EPIDOTIZED GREENSTONE (probably andesite) Epidote occurs in bands and as sheared lenses; typically epidote is light to medium apple green. In some sections the epidote makes up about 50% of the rock. Rock is medium greenish black in colour. Rock very fine grained. Some hard siliceous sections. Quartz and carbonate veins and stringers. Hairline fractures coated with talc are common. No visible sulphides. 1 - 2% disseminated magnetite.
	13 - 64	core very broken
	13 - 15.5	heavily weathered, limonitized and hematitized, carbonatized
	16 - 19	50% core rcvy
	19 - 22	80% core rcvy
	22 - 24	50% core rcvy
	24 - 28	80% core rcvy
	28 - 30	25% rcvy
	30 - 43	8% rcvy

FROM

TO

DESCRIPTION

45 - 52 MASSIVE ANDESITE - epidotized along fractures

46.5 - 47.5 siliceous

47 C.A. Joint 45°

47.5 hairline fractures @ C.A. 10°-20°

48.0 hairline fractures @ C.A. 40°

50.25 3mm calcite vein @ C.A. 65°

50.50 5mm calcite vein @ C.A. 55°

51.0 2mm calcite vein @ C.A. 80°

51.5 (3mm calcite vein @ C.A. 30°

(2mm calcite vein @ C.A. 65°

51.5 C.A. foliation @ C.A. 40°

52 - 53 Chloritic, soft, pale green in colour, epidotized

52.25 7mm calcite vein @ C.A. 60°

53.75 3mm calcite vein @ C.A. 30°

57.25 - 64 badly broken core - blocky

57.4 3 mm calcite vein @ C.A. 30°

58.0 8 mm calcite vein @ C.A. 30°

58.4 8 mm calcite vein @ C.A. 45°

64 - 67 Oxidized (limonite) numerous calcite (2 - 4 mm) Stringers @ C.A. 30° - 45°, specks, lenses and fracture, fillings of magnetite

65.75 1 cm calcite vein @ C.A. 15°

71.0 C.A. joints @ 50°, 55°; C.A. foliation @ 55°

75.0 C.A. poorly developed joint @ 50°

77.0-77.5 Siliceous and hard

83.0 1.5 cm quartz carbonate vein @ C.A. 30°

84.5 C.A. joint @ 60°

86.5 5 mm quartz carbonate vein @ C.A. 15°, OCC f.g. specks pyrrhotite

87 - 88 Blocky core

94.4-94.55 2" section with 10 - 15% magnetite occurring as specks and thin (< 1 mm) stringers

94.5 - 96 Amygdaloidal andesite: 2mm - 10mm vesicles filled yellow brown mica; reaction rims in andesite

FROM

TO

DESCRIPTION

		95 - 100	Silicified
		96.5	C.A. joints @ 45°
		96.75	C.A. joints @ 65°
		97 - 98.5	Broken core
		106 - 108	Silicified
		108.25-117.0	Heavily epidotized
		112.5	C.A. foliation @ 40°
		110 - 112	Tuffaceous andesite - yellow-white fragments (1-2 mm) partially epidotized broken ~ 75% recovery of core
		121.0	C.A. joint @ 45°
		121.25	C.A. joint @ 65°
		123.0	7 mm sugary quartz vein @ C.A. 10° - 15° hematized shears parallel to vein. ~10 - 12 cm of core.
		125 - 126	Silicified
		130.0	C.A. joint @ 65°
		130.5-133.5	Silicified
		138.0	C.A. joint @ 45°
		139 - 143	Epidotization increases
		143-146.25	Limonitized, very broken & sandy, soft, OCC calcite stringers, carbonatized chloritized. Brownish green in colour
		146.25-173.5	Numerous soft chloritic sections <6" thick, carbonatized, little magnetite generally epidotization only on hairline fractures. Weak foliation parallels axis of hole (alignment of chlorite Xls)
		161.25	Calcite (2 mm) vein @ C.A. 35°
		162.0	Joint @ C.A. 55°
		162.5	Joint @ C.A. 60°
173.5	227.0		EPIDOTIZED GABBRO: Generally more competent than epidotized andesite, less sheared, massive. Dark greenish black in colour. Magnetite not visible in gabbro. Short sections of foliated epidotized andesite with magnetite. Massive gabbroic texture from 200 - 227. Generally fewer hairline fractures and veins in gabbro.
		173.5-196	Transitional change from andesite to gabbro as colour darkens, shearing becomes less pronounced, and grain size increases.
		201 - 206	Very hard - silicified

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
		210 - 212 Very hard - silicified
		212.5 2 mm sugary quartz stringer @ C.A. 45°
		216.5 8 mm sugary quartz stringer @ C.A. 45°
227	245	FOLIATED EPIDOTIZED ANDESITE: % magnetite increases, colour lightens
		231.6-233.5 Heavy shearing, blocky, talc on fractures
		232 Quartz-carbonate vein, 5 mm @ C.A. 15°
		236 - 245 Very soft, abundant talc on fractures highly sheared.
		241 - 245 75% core recovery
245		END HOLE

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

DIAMOND DRILL LOG

HOLE NO. 80-2 PROJECT NAME SONORA GULCH MAP NO. 115 J/9
 ANGLE -55° DIRECTION 045° DEPTH 400'
 HORIZ. LENGTH: 234' CO-ORDINATES (14 + 35N)
 (6 + 30W)
 LOCATION WHITEHORSE MINING DISTRICT, YUKON TERRITORY
 STARTED OCT. 12/80 FINISHED OCT. 18/80 CORE SIZE BQ
 ACID TEST: 400' - 55° (corrected)
 DRILLED BY Caron Diamond Drilling LOGGED BY G. Douglas

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	14'	CASING - OVERBURDEN - organic material, gravel
14	18.25	NO CORE - probably frozen gravel and sand
18.25	42.0	Light medium grey to medium grey BANDED QUARTZ BIOTITE GNEISS. 1-2% disseminated pyrite, narrow quartz stringers; siliceous and hard, core recovery variable.
	19 - 24	35% core recovery
	26.5	C.A. Banding @ 45°
	24 - 27	100% core recovery
	27 - 32	40% core recovery
	~ 28	2 mm pyrite stringer
	29.5	2 cm quartz vein, coarse grained @ C.A. 55° pyrite along crystal boundaries
	32 - 35	80% core recovery
	35 - 38	30% core recovery
	38 - 42	100% core recovery
42	88.5	HIGHLY ALTERED QUARTZ BIOTITE GNEISS - limonitized carbonatized, kaolinitized, yellow brown in colour - some solid sections of core but generally very broken and soft. Core recovery generally poor. Some sections are poorly conductive (due to Quik-Gel?)
	42 - 47	50% core recovery

FROMTODESCRIPTION

	47 - 52	Quartz biotite gneiss (very broken), 55% recovery .
	48	Fragments of quartz vein, disseminated pyrite
	52 - 57	20% recovery
	57 - 62	10% recovery sand seam
	62 - 64	65% recovery
	64 - 68	70% recovery
	68 - 72	33% recovery
	72 - 77	40% recovery
	77 - 79	55% recovery
	79 - 84	40% recovery
	84 - 88	50% recovery
	88 - 89	80% recovery
	89 - 91	25% recovery
	91 - 92	80% recovery
88.5	152	BANDED QUARTZ BIOTITE GNEISS as above 18.25 - 42. Slightly limonitized giving a yellowish grey colour. Sericitized along foliation planes.
	97.5	C.A. Foliation 65°
	97.9-98.1	8 cm quartz vein parallel foliation, trace disseminated pyrite
	98.2-98.4	Augen gneiss
	100.75-101.3	Hematized fractures
	102.5-104	Heavy limonite alteration
	106 - 107	Silicified, hard, sheared. Pyrite - galena stringer.
	107-110.75	7 quartz veins 2 cm thick, parallel fol'n coarse grained; disseminated pyrite along fractures
	113	C.A. foliation @ 70°
	113.5-114.5	4 quartz veins parallel foliation 1 cm each
	116.5	Pyrite stringer (3 mm) @ 0° - 5°
	117 - 120	66% core recovery
	117.5 - 120	Completely limonitized, earthy material, carbonatized, slight conductivity
	120 - 120.3	Silicified, thin 5 mm quartz stringers pyrite

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
		122.8 - 123.2 3 mm pyrite vein - greenish black cryptocrystalline marcasite (conductive) and well developed pyrite xls to 4 mm. Galena xls to 1 mm. Very small copper coloured xls - possibly proustite. Vein @ C.A. 10-15°
		123.8 2.5 cm quartz vein, coarse grained @ C.A. 60°
		129 C.A. foliation @ 65°
		129.25-129.75 2 conductive bands, 2 mm thick - very soft black material graphite?
		134 - 135.5 Silicified zone, disseminated pyrite xls. Thin veins and blobs of cryptocrystalline marcasite
		134.2 2 cm quartz vein
		136.2 1 cm quartz vein @ C.A. 65°
		137.2 2.5 cm quartz vein @ C.A. 60°
		141.75 Pyrite stringer @ C.A. 45°
		143 - 145 Silicified, disseminated cryptocrystalline marcasite blobs
		148.25 1 cm quartz vein @ C.A. 65°
152	197	QUARTZ BIOTITE CHLORITE GNEISS. Well Banded. Greenish grey in colour. 1-2% disseminated pyrite some sections kaolinitized and carbonatized.
		153.75 4 cm quartz vein, specks pyrite @ C.A. 50°
		157 - 161 80% recovery
		158 C.A. joints 45°, 135°
		161 - 164 66% recovery
		162 C.A. foliation @ 50°
		163.9 2 cm quartz vein, coarse grained, pyrite along UC
		165.75-170 Soft, sheared, carbonatized kaolinitized
		170.5 - 177 Silicified. Short sections to 10% pyrite over 5 cm.
		174 - 175 10% disseminated pyrite
		178 C.A. foliation @ 65°
		184 - 197 Shear zone
		187-192 75% recovery

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
	188 - 188.5	Brecciated coarse grained pink calcite abundant calcite + chlorite
	187	C:A. foliation @ 35°
	190	C.A. foliation @ 0°
	191	C.A. foliation @ 30°
	192 - 197	40% recovery
197	212	FAULT ZONE - abundant calcite and chloritic sections, angular pebbles of kaolinite. When wet conductive. Medium grey to greenish grey in colour, faint foliation. Crumbles easily but cores well.
212	222	QUARTZ SERICITE GNEISS.
	210 - 212	Sheared, 50% core recovery
	213 - 217	25% recovery
	217 - 222	35% recovery
222	227	RHYOLITE PORPHYRY - limonitized yellow grey in colour, massive, quartz and feldspar phenocrysts
227	245	RHYOLITE PORPHYRY - as above but not altered, medium grey in colour
	227 - 232	< 20% recovery
	232 - 237	80% recovery
	233	C.A. joint @ 70°
	244	C.A. joint @ 60°
	245 - 246	Sheared, fault gouge
	245.5-245.75	Breccia 10% pyrite in quartz carbonate, slight conductivity
245	300	LIMONITIZED RHYOLITE PORPHYRY
	252 - 253.5	Heavily limonitized and carbonatized
	259.25	1 mm pyrite quartz stringer @ C.A. 80°
	261	2 mm pyrite stringer @ C.A. 30°
	263	C.A. fracture @ 30°
	264.9 - 265	50% pyrite, no conductivity
	266.2-266.4	2 - 3 mm marcasite vein @ C.A. 30°, copper coloured specks - proustite?
	272 - 295	Generally only joints limonitized
	273	C.A. joints @ 65°
	273.5	C.A. joints @ 45°

FROMTODESCRIPTION

	277 - 277.5	broken up, heavily limonitized
	279 - 281	broken up, heavily limonitized
	281.25	1 cm pyrite vein @ C.A. 50°, conductive 1 XL arsenopyrite noted - faces slightly corroded.
	283 - 286	Silicified
	286 - 291	Broken core, 40% recovery
	286	C.A. joint @ 70°
	286.5	C.A. joint @ 45°
	291 - 296	Very broken
	294.3	5 mm pyrite vein @ C.A. 70°, conductive
	295 - 296	bx kaolin, chlorite limonitized
	296 - 298	Sheared epidotized andesite C.A. foliation @ 60°
	298 - 300	brecciated, limonitized, chloritized, kaolinitized
300	361.75	QUARTZ-CHLORITE-BIOTITE GNEISS, medium grey - medium greyish-green in colour - banded 1% disseminated pyrite
	303 - 304.5	5% pyrite in silicified zone
	307	C.A. foliation @ 40° C.A. joint @ 40° C.A. joint @ 50°
	307.8-309.5	Cryptocrystalline marcasite, conductive and isolated fine xls boulangerite. Vein @ C.A. 20° - chloritized, kaolinitized
	318	C.A. joint @ 40°, foliation @ 40°
	318 - 327	heavily chloritized
	327 - 338	Silicified
	328.5-328.75	Zone of disseminated cryptocrystalline marcasite
	330.2-330.4	Zone of disseminated cryptocrystalline marcasite
	332.75-333	Zone of disseminated cryptocrystalline marcasite
	337 - 337.5	5 mm zone of conductive cryptocrystalline marcasite @ C.A. 40°, malachite on joint foliation @ 40°, joints @ 40°
	339.6-341.4	soft, broken carbonatized shear zone
	344	2 mm pyrite, cryptocrystalline marcasite stringer @ 55°, joints @ 60°

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
		344.75 . 2 cm quartz vein @ C.A. 50°
		347 C.A. foliation @ 55°, joints @ 55°, 40°
		348.5-349.5 Limonitized and carbonatized - heavy weathering
		354.75-356.75 Sheared - chloritized, some limonite greenish black through grey and yellow colour, pyrite to 50% in sections, conductive bluish green coloured mineral - probably garnierite
		356.25-356.75 Brecciated
		355.25 1 cm solid pyrite stringer @ 50°
		356.75-361.75 Sheared, slightly limonitized, chloritized
361.75	400	SHEARED AND FOLIATED EPIDOTIZED ANDESITE, greenish black in colour, fine grained, disseminated magnetite, talc on fractures and joints
		361.75 - 362 Brecciated
		362 - 364 Hairline fractures with calcite and talc highly fractured.
		368 C.A. joint @ 40°, foliation @ 45°
		371 - 378.5 Carbonatized, soft and crumbly
		386 - 400 Broken and blocky core
400		END OF HOLE

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

DIAMOND DRILL LOG

HOLE NO. 80-3 PROJECT NAME SONORA GULCH MAP NO. 115 J/9
 ANGLE -60° DIRECTION 045° DEPTH 500'
 HORIZONTAL LENGTH: 260' CO-ORDINATES (17 + 45 N)
 (10 + 50 W)
 LOCATION WHITEHORSE MINING DISTRICT, YUKON TERRITORY
 STARTED Oct. 19, 1980 FINISHED Oct. 27, 1980 CORE SIZE BQ
 ACID TEST @ 500': Corrected -57°
 DRILLED BY Caron Diamond Drilling LOGGED BY G. Douglas

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	14	CASING - humus, gravel overburden
14	48.5	QUARTZ BIOTITE CHLORITE GNEISS - Altered → slight limonitization along gneissosity planes gives a yellow brown colour. If limonite not abundant rock is greenish grey. Banding not as well developed as in Hole 80-2. Occasional quartz stringers usually 5 mm thick parallel to foliation. Trace disseminated fine grained pyrite rock very fine grained.
	14 - 19	60% core recovery
	22 - 27	50% core recovery
	27 - 32	60% core recovery
	32 - 37	80% core recovery
	37 - 40	90% core recovery
	40 - 43	70% core recovery
	43	C.A. foliation @ 65°; joints parallel
	43.75	5 mm quartz vein @ 65°
	45.5	5 mm quartz vein @ 65°
48.5	132	LIMONITIZED QUARTZ MUSCOVITE GNEISS - medium grey in colour when fresh. Limonite causes yellow brown coloration depending on degree of alteration. Limonite probably derived from F.G. pyrite.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
	48.5 - 52.5	Silicified, small black metallic specks in section - graphite (?) or molybdenite(?)
	53	C.A. foliation @ 60°
	70	C.A. foliation @ 55°
	77	C.A. foliation @ 45°
	82 - 97	Heavily limonitized and carbonatized, very soft
	83.2 - 83.6	Crumbly
	87.25 - 87.6	Crumbly
	88.25 - 88.9	Crumbly
	90	C.A. foliation @ 55°
	92.0 - 92.1	Hematized
	95	C.A. foliation @ 45°
	97 - 103	Almost no limonite
	108.7 - 109.7	Thin chloritized bands parallel foliation @ 45°
	112 - 120.5	Slightly sheared and brecciated Poorly foliated @ 35° - 55°
132	222	QUARTZ MUSCOVITE GNEISS/SCHIST Banding not well developed. Pale brown grey in colour. Pyrite specks limonitized somewhat but generally no staining of host. Very fine grained. Locally quartz augen may develop over short sections.
	135	C.A. foliation @ 45°
	146	C.A. foliation @ 60°
	153 - 157.5	Limonitized slightly
	165.5 - 169	Limonitized slightly, pyrite quartz stringers
	167.8-167.9	Brecciated quartz - carbonate vein @ 55° (2.5 cm thick)
	168.25	5 mm quartz-pyrite stringer @ 60°
	168.5	2 mm quartz-pyrite stringer @ 60°
	178.75-179.1	Sheared quartz vein
	184	C.A. foliation @ 55°
	190.5 - 193	Silicified
	191.9	2 mm conductive, soft, f.g. stringer @ 60° probably sulphosalt
	192.4	1.5 mm conductive f.g. stringer @ 70°
	192.5	3 mm pyrite stringer @ 50°

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
	193	C.A. foliation @ 50°
	193.9-194.25	Coarse quartz vein, disseminated pyrite U.C. @ 50° L.C. @ 30°
	207 - 222	Epidotized and brecciated
	208.75 - 209	Coarse quartz vein - L.C. @ 50°
	209.75-209.95	Sulphosalt Xls disseminated
	211 - 248	Core badly broken up and blocky
	219.5	C.A. foliation @ 60°
222	260	FOLIATED ANDESITE - SOME EPIDOTIZATION - greenish black, some chloritic sections. Fine grained. Broken up rock. Traces disseminated pyrite
	251 - 251.75	10% disseminated pyrite
	252	C.A. foliation @ 60°
260	277.9	QUARTZ MUSCOVITE GNEISS/SCHIST
	266.5-271.75	Limonitized, kaolinitized, carbonatized soft and muddy
	267.1	2 mm pyrite vein, conductive
	273.75-275.4	Coarse pink calcite - chlorite vein, brecciated
277.9	287.75	FOLIATED EPIDOTIZED ANDESITE, 1 - 2% disseminated magnetite, quartz carbonate stringers
	285	C.A. foliation @ 60°
287.75	306	QUARTZ MUSCOVITE GNEISS/SCHIST - foliation not generally well developed. OCC Xls pyrite
	302 - 306	Kaolin on joints and limonitized
	304	C.A. foliation @ 60°
306	345.5	FOLIATED EPIDOTIZED ANDESITE - degree of epidotization varies. Disseminated magnetite ~2%; up to 10% in short sections. Silicified sections.
	321.5-322.5	4 mm pyrite stringer @ C.A. 10°
	332	C.A. foliation @ 50°
	331 - 338	Silicified and hard
	335.7-336.5	Sheared, malachite on joints and shear planes
	343 - 345.5	Biotitic

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
345.5	354.3	LIMONITIZED QUARTZ MUSCOVITE GNEISS/SCHIST - well banded 347 C.A. foliation @ 50° 349.5 - 351 Epidotized and chloritized 352 C.A. joint @ 35°
354.3	357	GARNIERITE(?) ALTERATION ZONE. Turquoise green in colour. Some limonite on joints. Pyrite, galena (f.g.) occur in conductive veins.
356	456	RHYODACITE OR RHYOLITE - generally siliceous. Some sections chloritized, boititic zones. Generally massive to faintly foliated unless chlorite, biotite or epidote present. Disseminated pyrite, chalcopyrite occasional quartz stringers. Sugary texture common in silicified sections. Medium grey. 357 - 359.5 Limonitized conductive black f.g. mineral clots 357.75 5 mm quartz stringer @ 55° 359.5 - 362 Limonitized 360.4-360.75 Brecciated, malachite staining. 362 - 371.5 Very siliceous 367 - 369.5 20% pyrite, diss. v. f. g. cubes silver 367.5-368.75 5% chalcopyrite disseminated. Indistinct foliation @ 45° 369.5 - 371 20% conductive black mineral, 5% pyrite 371.5-376.25 Kaolinitized, carbonatized 377.25-377.75 60% black mineral, graphite(?), intimately associated with pyrite, conductive 382 - 402 Very siliceous 387 - 389 10% disseminated pyrite 391.5-394.5 Massive, heavily epidotized 401 C.A. joint @ 45° 403.5 - 415 Limonitized 405 - 406 Rock completely decomposed 407 - 407.5 Rock completely decomposed 413 - 416.5 Amphibolitized - 2 mm basal sections of amphibole, generally amphibole is somewhat limonitized. Rock is soft. 416.5 - 418 Brecciated rhyodacite 418 - 420 Biotite schist, soft, well foliated, amber to black in colour

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
		419 C.A. foliation @ 35°
		420 - 425.75 Biotite chlorite schist, foliated
		425.75 - 427 Broken core - kaolinitized and chloritized
		427 - 428.5 Emerald green alteration zone, carbonatized - garnierite(?)
		433.9 - 435 Silicified, 30% disseminated pyrite
		435.5 - 437 Andesite - chlorite and biotite C.A. foliation @ 5°
		437 - 456 Silicified, 5% disseminated pyrite
		447 C.A. joints @ 45°
456	500	FOLIATED EPIDOTIZED ANDESITE - soft, chloritic, broken. Greenish black in colour, fine grained trace f. g. pyrite. Biotitic sections
		460 C.A. foliation @ 60° C.A. joints @ 45°
		478 - 482 Very soft and clayey
		482 - 486 Quartz muscovite gneiss. C.A. foliation @ 45°
		490.25-491.5 Coarse quartz vein; f.g. pyrite along Xl boundaries
		493.5 C.A. foliation @ 55°
500		END HOLE

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

DIAMOND DRILL LOG

HOLE NO. 80-4 PROJECT NAME SONORA GULCH MAP NO. 115 J/9
 ANGLE -45° DIRECTION 090° DEPTH 183'
 HORIZONTAL LENGTH: 128' CO-ORDINATES (30 N)
 (14 W)
 LOCATION WHITEHORSE MINING DISTRICT, YUKON TERRITORY
 STARTED Oct. 28, 1980 FINISHED Oct. 30/80 CORE SIZE BQ
 DRILLED BY Caron Diamond Drilling LOGGED BY G. DOUGLAS

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	76	CASING - humus, sand, gravel and boulders
	27 - 77	~ 10' of chips recovered quartz - muscovite gneiss/schist, foliated epidotized andesite
	42	2" section turquoise coloured silicified rx
	58 - 69	One fragment of rock with malachite on fractures - fragment about 1" long
76	110	BROKEN ROCK, SAND SEAMS
	76 - 106	Mostly epidotized andesite
	97	1" section turquoise streaked silicified rx
106	132	RHYOLITE OR QUARTZITE - siliceous, limonitized. Very fine grained, orange brown in colour, massive. Trace disseminated pyrite.
	116.75-117.5	Breccia - angular hard black fragments (to 2 cm) in quartz matrix. Small
	120.5 -122.5	fractures in black fragments contain calcite
	121 - 127	40% recovery
	127 - 132	10% recovery
132	152	FRESH FRAGMENTS OF QUARTZITE; buff in colour as well as epidotized andesite 15% recovery

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
152	183	QUARTZ CHLORITE MUSCOVITE SCHIST, fine grained fairly soft, some limonitization. Color ranges from yellow brown to greenish black.
	158 - 162	Purplish red in colour due to hematite.
	160	C.A. foliation @ 20°
	175	C.A. foliation @ 0 - 5°
183		END HOLE

SONORA GULCH 1980

HOLE 80-1

FROM	TO	SAMPLE NUMBER	Au ppb	Ag ppm
13	19	67958	5	0.5
19	24	59	40	0.3
24	30	67960	<5	0.1
30	43	61	<5	0.3
43	48	62	<5	0.1
48	50	63	<5	0.1
50	55	64	<5	0.1
55	59	65	5	0.2
59	64	66	<5	0.1
64	67	67	<5	0.5
67	72	68	<5	0.2
72	77	69	<5	0.2
77	82	67970	<5	0.3
82	86.66	71	<5	0.5
86.66	88	72	<5	0.1
88	93	73	<5	0.3
93	95	74	<5	0.1
95	100	75	<5	0.3
100	105	76	<5	0.4
105	110	77	<5	0.5
110	112	78	<5	0.4
112	117	79	<5	0.3
117	122	67980	<5	0.3
122	124	81	<5	0.4
124	127	82	<5	0.3
127	132	83	<5	0.5
132	137	84	<5	0.2
137	142	85	<5	0.5
142	146	86	<5	0.3
146	151	87	<5	0.6
151	156	88	<5	0.7
156	161	89	<5	0.6
161	166	67990	6	0.6
166	171	91	<5	0.4
161	176	92	<5	0.8
176	181	93	<5	0.5
181	186	94	<5	0.7
186	191	95	<5	0.5
191	196	96	20	0.5
196	201	97	<5	0.7
201	206	98	<5	0.8
206	211	99	5	1.0
211	126	67701	<5	0.7
216	221	02	<5	1.0
221	226	03	<5	0.6
226	231	04	<5	0.5
231	236	05	<5	0.7
236	241	06	<5	0.5
241	245	67707	<5	0.4

FROM	TO	LENGTH	SAMPLE NUMBER	Au ppb	Ag ppm	Te ppm
14	24	10	67708	15	0.3	
24	27	3	09	5	0.3	
27	32	5	67710	15	0.5	
32	38	6	11	5	0.3	
38	41	3	12	110	0.9	
41	47	6	13	35	0.7	
47	52	5	14	15	0.3	
52	64	12	15	70	0.6	
64	72	8	16	15	0.4	
72	79	7	17	135	0.4	
79	88	9	18	125	0.7	
88	93	5	19	15	0.4	
97	99	2	67720	10	1.2	
99	104	5	21	15	0.6	
104	106	2	22	25	1.5	
106	111	5	23	50	2.0	
111	114.5	3.5	24	10	0.5	
114.5	117.5	3	25	105	1.2	
117.5	120	2.5	26	60	1.2	
120	122.75	2.75	27	15	0.6	
122.75	124	1.25	28	15	1.5	<0.2
124	129	5	29	245	0.8	<0.2
129	134	5	67730	1945	1.6	<0.2
134	137.25	3.25	31	30	0.8	<0.2
137.25	142	4.75	32	345	0.8	<0.2
142	145	3	33	150	1.9	<0.2
153	155	2	34	15	1.3	
171	176	5	35	35	0.7	
197	202	5	36	60	0.7	
202	207	5	37	350	8.0	
207	212	5	38	15	0.5	
243	245	2	39	75	0.3	0.2
245	246	1	67740	355	20.0	120
246	250	4	41	25	1.8	10
259	261.5	2.5	42	10	0.8	
261.5	264	2.5	43	10	0.6	
264	267	3	44	65	1.7	
272	274	2	45	10	1.1	
276	281	5	46	10	1.5	
281	283	2	47	225	5.3	7.6
283	286	3	48	30	1.0	
286	291	5	49	30	1.1	
291	294	3	67750	35	1.2	
294	295	1	51	270	2.4	0.9
295	300	5	52	40	0.9	0.8
300	303	3	53	10	0.3	<0.2
303	305	2	54	2545	2.8	2.4
305	308	3	55	50	0.6	0.2
308	309.5	1.5	56	310	11.0	9.4

FROM	TO	LENGTH	SAMPLE NUMBER	Au ppb	Ag ppm	Te ppm
309.5	314.5	5	67757	30	0.6	0.3
328.5	333.5	5	58	25	0.6	<0.2
352	354.5	2.5	59	35	1.0	<0.2
354.5	357	2.5	67760	140	3.4	0.8
357	361.75	4.75	61	1945	2.0	1.0

SONORA GULCH

HOLE NO. 80-3

SAMPLES

FROM	TO	WIDTH	NO.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Mo	Te ppm
48.5	52.5	4	67773	320	46	940	5700	11	<0.2
165.5	169	3.5	74	65	>100	6000	>7500	12	1
190.5	193	2.5	75	140	5.3	135	830	26	<0.2
207	209	2	76	470	7.5	153	1480	5	0.2
209	210	1	77	2155	3.3	270	78	3	1.4
210	213	3	78	90	2.3	175	89	22	0.2
248	251	3	79	10	2.1	290	35	8	
251	252	1	67780	35	4.9	285	188	3	
252	256	4	81	<5	2.0	200	100	3	
266.5	271.75	5.25	82	60	1.5	90	38	9	
287.75	292	4.25	83	40	2.5	152	32	10	
292	297	5	84	50	1.7	100	8	8	
297	302	5	85	590	12.0	540	1230	17	
302	306	4	86	75	2.7	130	29	36	
319.75	323	3.25	87	145	6.3	760	157	16	
331	335.7	4.7	88	30	2.0	210	7	6	
335.7	336.5	0.8	89	50	1.9	75	44	10	
336.5	339	2.5	67790	25	4.2	1120	64	2	
339	343	4	91	40	1.5	155	7	6	
343	345.5	2.5	92	10	1.1	85	<2	1	
345.5	349.5	4	93	135	2.5	460	4	2	
349.5	351	1.5	94	150	5.8	1210	3	5	
351	352	1	95	25	1.2	100	<2	1	
378	382	4	96	130	3.5	570	<2	3	
382	386	4	97	320	6.7	1500	14	3	0.6
386	391	5	98	210	4.6	970	3	4	
391	397	6	99	210	5.2	1120	3	3	
397	402	5	67800	40	1.9	330	<2	3	
402	407	5	01	25	2.1	150	38	3	
407	412	5	02	10	1.3	40	4	2	
412	417	5	03	10	1.0	27	<2	1	
425	427	2	04	<5	1.4	55	16	3	
427	428.5	1.5	05	<5	1.6	7	32	3	
428.5	433.5	5	06	175	1.1	67	7	2	
433.5	435.5	2	07	70	1.5	310	7	3	
435.5	438	2.5	08	20	1.1	47	3	2	
438	440.5	2.5	09	<5	3.1	275	32	8	
490	492	2	67810	<5	0.8	45	<2	2	

				Ag oz.	Cu %	Pb %	Mo %	oz/t Au	Te ppm
352	354.3	2.3	67762	.05	.02	.03	<.005	<.005	0.4
354.3	357	2.7	63	0.55	.23	.06	<.005	.07	1.2
357	359.5	2.5	64	.39	.23	.05	<.005	.01	0.8
359.5	362	2.5	65	.07	.04	<.01	<.005	tr	0.8
362	365	3	66	.07	.02	<.01	<.005	tr	0.4
365	367	2	67	.09	.08	<.01	<.005	.02	1.4
367	369.5	2.5	68	2.41	1.68	<.01	<.005	.04	11
369.5	372	2.5	69	0.66	.47	<.01	<.005	.02	20
372	373.5	1.5	67770	.37	.32	<.01	<.005	.02	2.6
373.5	376.25	2.75	71	.15	.10	<.01	<.005	tr	1.4
376.25	378	1.75	72	.28	.01	<.01	<.005	.005	2.2
165.5	169.0	3.5	67774	12.6	6000 ppm	12.7			

Zn 8.35%

SONORA GULCH

HOLE No. 4

SAMPLES

FROM	TO	WIDTH	NO.	Au ppb	Ag ppm	Cu ppm	Pb ppm	Mo ppm
45	45	3	67811	<5	1.5	33	18	2
58	69	11	12	10	1.3	26	93	2
97	102	5	13	10	1.3	22	2	2
106	111	5	14	15	2.1	57	39	3
111	116	5	15	10	2.4	34	38	3
116	120.5	4.5	16	25	2.3	22	52	3
120.5	122.5	2	17	25	2.4	18	51	5
132	152	20	18	5	1.4	9	11	4

STATEMENT OF QUALIFICATIONS

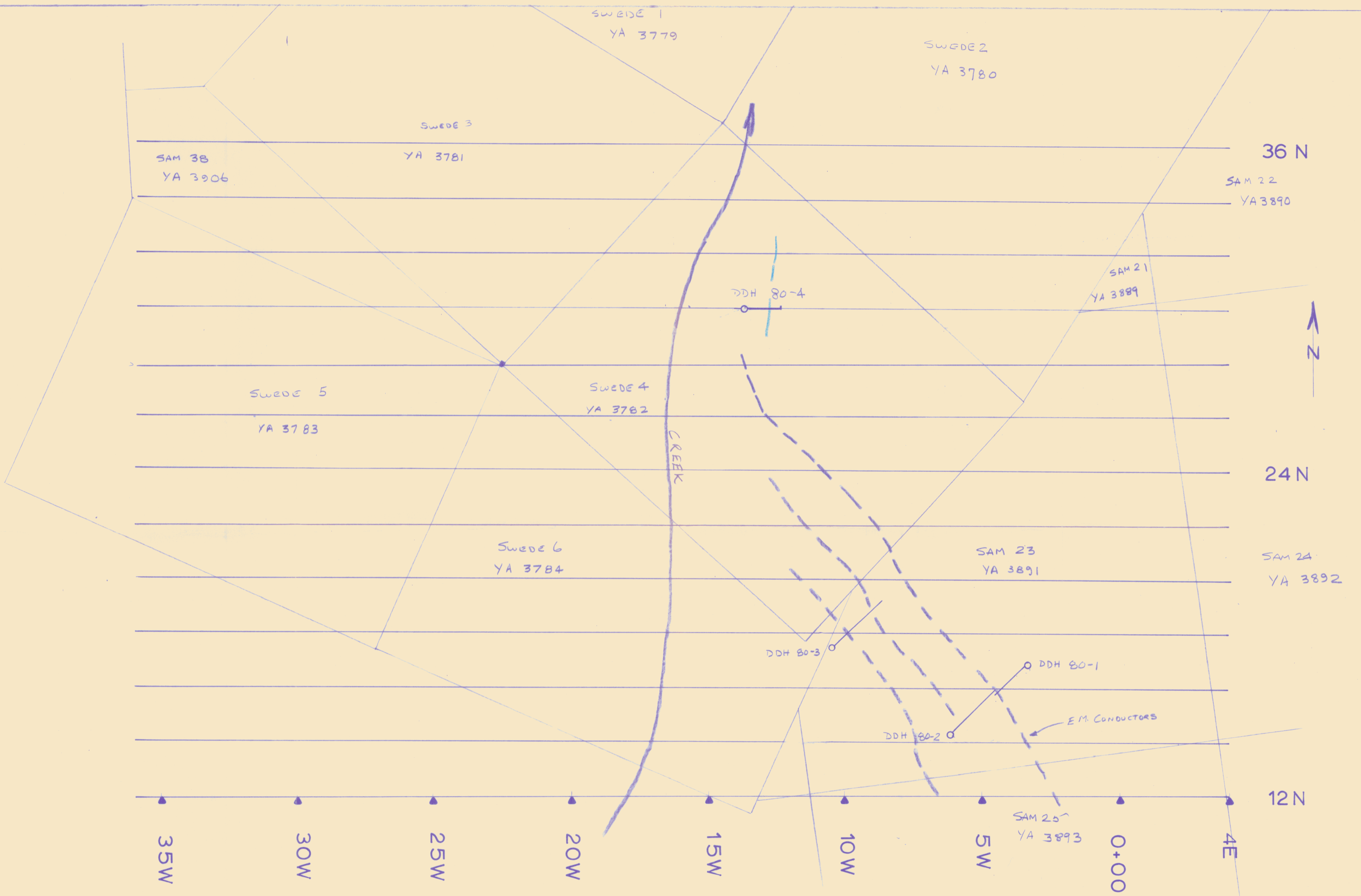
G. B. DOUGLAS

- 1965 - 1970 B.Sc. (Honours) (Eng.), Queen's University, Kingston,
Ontario.
- 1970 - 1971 Hudson Bay Exploration and Development Company Limited,
Eastern Division, Toronto, Ontario
- Geology, Geophysics, Geochemistry and Drill Supervision
N.W. Quebec, N.W. Ontario
- 1971 - 1974 M. Sc. Geology, McMaster University, Hamilton, Ontario
Summer 1973
Ontario Division of Mines
Senior Geological Assistant
Wakomata Lake Area - Ontario
Winter 1974
Tombill Mines Limited
P. O. Box 28, Toronto-Dominion Centre
Toronto, Ontario
Diamond Drill Supervision - Gold Prospect,
Beardmore Area, Ontario
- 1974 - 1977 Anglo American Corporation of Canada
P. O. Box 28, Toronto-Dominion Centre
Toronto, Ontario
Geology, Geophysics, Geochemistry and Drilling
1974 - Gold in Geraldton Area, Ontario
1975 - Uranium in Beaverlodge Area, Saskatchewan
Gold in Prince Rupert Area, B.C.
Field Geologist
1976 - Gold in Dominican Republic
Placer Evaluations
Property Submissions and Evaluations
Project Geologist
- 1977 - 1978 Hudson Bay Exploration and Development Company Limited
Eastern Division, Toronto
1977 - Uranium in S.E. Ontario
1978 - Base Metals in S.W. Ontario
Sonora Gulch Project, Yukon
Alabama Coal Project

STATEMENT OF QUALIFICATIONS - continued

1979 to Present Evaluation of Coal Prospects in U.S.A.
Evaluation of Phosphate Prospects
- Project Geologist
Sonora Gulch, Yukon
- Project Manager

Registered Professional Engineer, Province of Ontario, May 1975



HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED
 WHITEHORSE OFFICE YUKON TERRITORY
 PLAN SHOWING DIAMOND DRILL HOLES AT SONORA GULCH
 N.T.S. 115 J/9,
 SCALE 1" = 200' Dwg by: G B Douglas, MAR 17, 1981

