BIGHORN - ECHO 9

GEOLOGY

671841
104M/10E

Rock Units

Unit 1 - Quartz-Biotite Gneiss (Specimen HA82-9-10, 9-14)

The quartz-biotite gneiss is composed mainly of quartz in the eastern part of the area prospected, with minor biotite and local muscovite defining a foliation. Disseminated pyrite and magnetite are rare. Adjacent to ~~the~~ crowded feldspar porphyry dikes, the gneiss is typically pyritic, with goethite and jarosite on weathered surfaces. In the east, the foliation is gently folded, commonly striking 160° and with variable dip. Farther west, toward the contact with the main Coast Plutonic Complex (ie on Horn 2), biotite becomes more abundant (see Specimen HA82-9-10) and a few ~~thin~~ meter-thick marble bands (paralleling foliation) are present. In detail, the gneiss becomes more crumpled and contorted to the west, although on a scale of hundreds of meters it ~~is~~ appears flat-lying or only gently folded.

Quartz lenses, conformable to the gneiss foliation, are common throughout the area. They vary in thickness from one centimeter to 30 cm with rare lenses up to 1.5m thick. These lenses are stained a rusty-yellow and some contain pyrite.

Very rare quartz veins and stringers cut across the gneiss foliation. The only significant one is that vein mined from 1932 to 1935 by the Atlin Pacific Mining Co.

Unit 2 - Granodiorite (Specimen HA82-9-7)

The granodiorite is equigranular and of moderate grain size. One specimen contained approx 15% quartz, 15% hornblende, 5% biotite, with the remainder feldspar. No sulphides are present. Pink aplite dikes are common, as are epidote stringers. Quartz stringers are rare, without sulphides, ~~and often~~ but may have K-spar envelopes. The granodiorite weathers grey, ~~with~~ forming large rounded boulders.

The granodiorite / gneiss contact is obscured by many porphyritic dikes (and a few granodiorite dikes) of a wide variety of compositions and textures. Two of these,

of rhyolitic composition have been mapped as unit 3. The remainder have not been mapped, but are common throughout the gneiss adjacent to the contact (eg. throughout HORN 2).

UNIT 3 - RHYOLITE PORPHYRYS (Specimens 73704, 73709, HA82-9-13, 9-6)

Two distinct rhyolite porphyrys are prominent in HORN 2. The first is very fine-grained, very silicious and has sparse quartz-eyes. On fresh and weathered surfaces it is a distinct yellow green (Spec. 73704, 73709). It appears silicified; quartz threads and/or stringers are always present. Minor galena and chalcopyrite occur locally in quartz stringers (73704). The second rhyolite porphyry is found only (mainly?) on the northern side of the glacier. Abundant quartz eyes and few feldspar phenocrysts are surrounded by a hard, white matrix (Spec. HA82-9-13). Copper and lead mineralization are associated with carbonate alteration (Spec HA82-9-6 and 9-12).

UNIT 4 - CROWDED FELDSPAR PORPHYRY (HA82-9-1, 9-3, 9-4)

The crowded feldspar porphyry is not prominent near the granodiorite contact (eg. HORN 2) but is the only intrusive farther away (eg. HORN 1). It is very distinct, with abundant small feldspar phenocrysts. Hornblende phenocrysts are also typically present, but locally are replaced by quartz and biotite phenocrysts. The matrix is dark. In many places, dikes of fine-grained soft, dark rock are associated with the crowded feldspar porphyry (eg. Spec HA82-9-1); these are thought to be two related co-genetic ~~phases~~. Both contain minor pyrit and magnetit.

STRUCTURE

No major faults were seen. A small shear zone occurs on the granodiorite ridge west of the glacier. This is epidotic and has some sheared milky quartz and pyrit.

MINERALIZATION

HORN 1: The only significant mineralization seen was talus or waste material from the main vein. Vein quartz contains much pyrite, minor galena and traces of chalcopyrite (and possibly gold).

HORN 2: Galena and chalcopyrite are widespread, generally in very small amounts, and occur in a great variety of rock and alteration types. These include:

a) Silicified rhyolite porphyry (green) (Spec. 73704)
b) Silicified quartz-gneiss (Spec 73705)
c) Carbonate-altered (and brecciated) quartz-gneiss (Spec HAB2-9-8)
d) " " " rhyolite porphyry (white) (Spec HAB2-9-12)

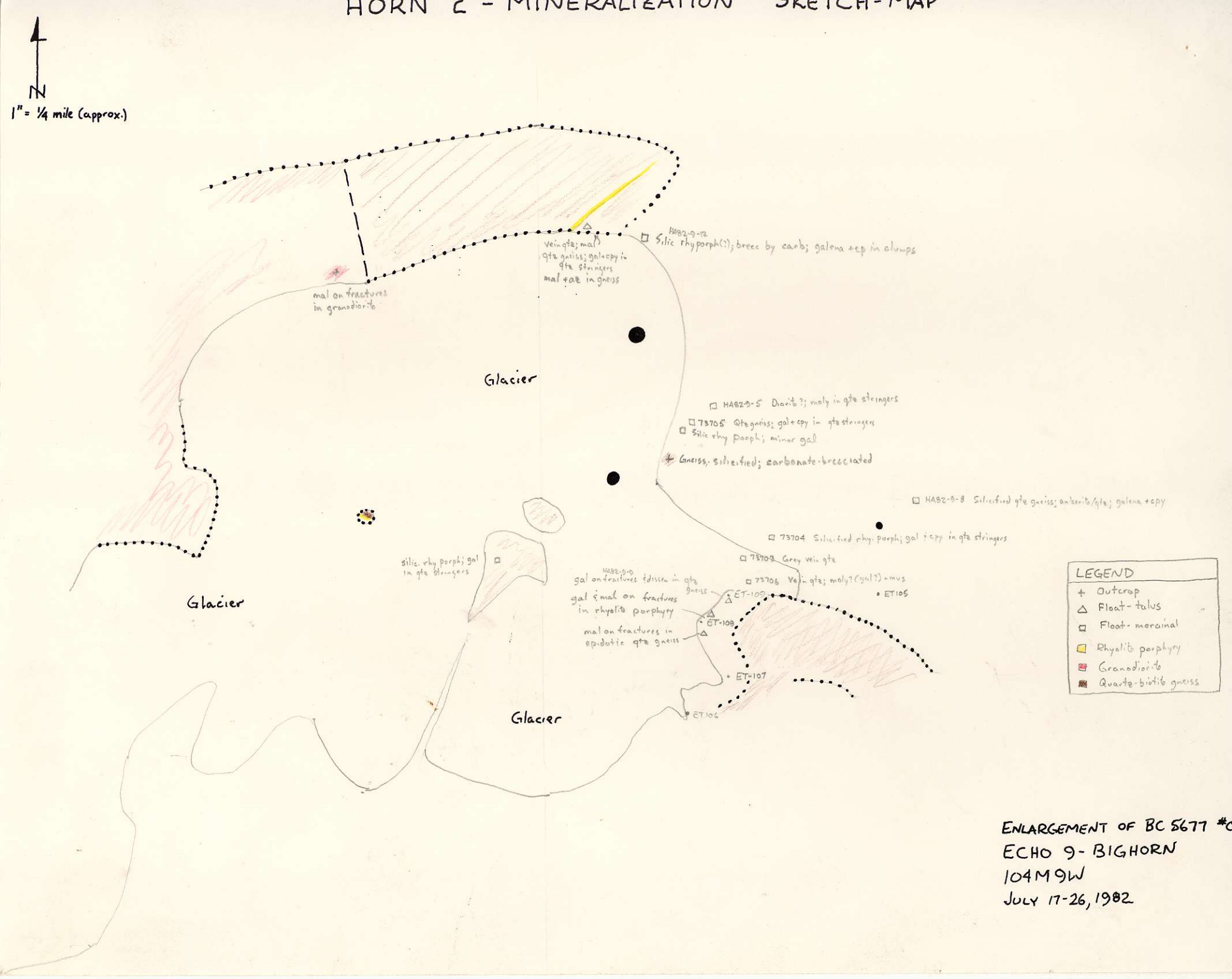
(c) and (d) may be same

e) Carbonate altered rhyolite porphyry (white) (Spec HAB2-9-6)
f) Vein quartz
g) Fractures in granodiorite
h) Fractures in qtz gneiss and rhyolite porphyry.

Molybdenite occurs in only one specimen (HAB2-9-5) where coarse rosettes in a quartz stringer cut an unaltered diorite. Specimen 73706 may contain molybdenite in vein quartz-muscovite (but it may be galena).

All the glacial float (except possibly HAB2-9-5) is locally derived; similar rock can be found in talus or outcrop surrounding the glacier.

HORN 2 - MINERALIZATION SKETCH-MAP



ENLARGEMENT OF BC 5677 #080
ECHO 9 - BIGHORN
104M 9W
JULY 17-26, 1982

ECONOMIC POTENTIAL

I do not believe that prospecting alone can uncover further veins in the area of the mined vein on HORN 1. Fifty years of prospecting and much blasting of rusty zones would have uncovered anything significant and obvious. Soil sampling may indicate veins hidden under the alder bush (but I would hate to do the soil sampling). The main vein itself may be economically interesting (but even 1 oz/ton Au over five feet – about the best that could be hoped for – ~~ckkk~~ seems marginal).

Some of the glacial float on HORN 2 looks very promising. Unfortunately, nothing that we have found as talus float is as rich in galena or chalcopyrite. More prospecting, especially south of the glacier, is probably warranted. Obviously, it would be very difficult to explore any deposit under the glacier.

There are two possible models to explain the mineralization: 1) The periphery of a Mo or Mo-Cu porphyry is exposed, giving base metal mineralizat over a large area, and; 2) The mineralization is related to the Coast Plutonic Complex / gneiss contact, and more particularly to the rhyolite porphyry dikes. The distribution of mineralized float favors the second.

MISCELLANEOUS

1. The campsite location is adequate, with good water, easy helicopter accessibility, and firewood. It is close to the top adit. ~~The~~ Two of the cabins at the bottom of the hill are in good shape.
2. It is difficult to locate yourself on the hillside of HORN 1; there are no landmarks, just rock and bush (thick bush).
3. Most of HORN 2 is readily accessible. The south-facing slope of the ridge south of the glacier is very rough, with innumerable steep, deep gullies. The rocks there look interesting but they would be difficult to prospect.
4. The glacier is safe to walk on, with few crevasses.
5. I believe that specimen 73705 is nearly in place. Similar, but unmineralized, rocks outcrop nearby. The glacial debris at the glacier toe is not thick; outcrop pokes through here and there. Geophysics (VLF-EM?) across the toe and the lower part of the glacier might show something.

6. The positions of the LCP for HORN 1 and HORN 2 are shown on BC 5677 #082 and #080 respectively. HORN 1 extends 5 unit lengths W and 4 unit lengths S and HORN 2 extends 4 unit lengths W and 5 unit lengths S.

7. We spent: 1 day staking HORN 1 and setting up camp
1 day staking HORN 2
3 days prospecting HORN 1
4 days prospecting HORN 2

8. There are enough old claimposts on HORN 1 to open a lumberyard.

9. My apologies for my (expensive) lack of foresight in not bringing BC5677 #080.

10. Our new camp gear is just great, with the exception of the kitchen tarp, which leaks.

J.C. STEPHEN EXPLORATIONS LTD.

GEOCHEMICAL DATA SHEET – STREAM SILTS

B.C. GOLD SYNDICATE

SAMPLER ECHO 9 - BIGHORN

DATE JULY 17-26, 1982

PROJECT NEWEX

NTS 104M9W

CREEK

AIR PHOTO NO. BC 5677 #082

SAMPLE NO.	VOLUME		VELOCITY	Ph	TYPE OF SAMPLE	COLOUR	TEXTURE	% ORGANIC MATERIAL	PETROLOGY OF BEDROCK AND/OR FLOAT	ADDITIONAL OBSERVATIONS OR REMARKS	ASSAYS			
	Width	Depth									Au	As Pb	Ag	
82NXV-91	30cm	5cm	Mod		channel	Lt Br.	sand/silt	5	quarte-mica gneiss		<10	2	0.2	

J.C. STEPHEN EXPLORATIONS LTD.

GEOCHEMICAL DATA SHEET — ROCK GEOCHEM SAMPLING

B.C. GOLD SYNDICATE

NTS 104M9W

SAMPLER ECHO 9

PROJECT NEWEX - BIGHORN

LINE

DATE JULY 17-26, 1982

AIR PHOTO No. BC 5677 #82 ? #080

	SAMPLE NUMBER	LOCATION	ROCK TYPE	ALTERATION	MINERALIZATION	STRIKE / DIP	ADDITIONAL REMARKS	APPARENT WIDTH	TRUE WIDTH	ASSAYS Au	As	Ag	Pb	Cu	Mo
(1)	73703	Toe of glacier	Vein quartz	Grey in bands	Minor f.g. py	Moraine Float	Grey may be due to vtg sulphides and precious metals. Several pieces. S side of toe			<10		0.1	-	-	
(2)	73704	about 2 mi SW of camp - all float	Olive-green, fg, siliceous rock (porphyry??)	Silicified. Many irreg. qtz stringers	1% f.g. galena minor chalcopyrite	Moraine Float	Similar float (no sulphides) 300m W. In glacial creek.			580		3.0	2100	235	
(3)	73705		Quartz gneiss?	Many irreg. qtz stringers. V. siliceous	Galena, chalcopy, py in qtz stringers	Moraine Float	One boulder only. Weathers red-brown. 500m W of 73703, 4, 6			<10		11.2	1400	710	
(4)	73706		Vein quartz with large unoriented muscovite	(Phyllic?)	Minor molybdenite? (galena?)	Moraine Float	S side of toe.			<10		3.5	750	-	3
(5)	73707	1000 m NE of camp	Milky to glassy quartz lens	Slightly vuggy	Aspy? (Marcasite?) in vugs. Pyrite	170/60W	Conformable with foliation Adjacent to feldspar-hornblende porph.	4m long x 1.5m wide		10	2	0.2	-		
(6)	73708	650 m W of 55 post (HORN 2)	Grey quartz in silicified mica gneiss	← HAB2-9-11		010/90(?)	Discontinuous 10cm grey qtz veins in silicified, pyritic gneiss. Continues uphill for 100 m.	5m		<10		0.1	6		
(7)	73709	Ridge separating two glacial lobes	Green rhyolite porphyry	Silicified - abundant quartz threads			Quartz threads weather dark brown, but no apparent mineralization. Typical rhyolite porph on this hill.			<10		0.1	25		
(8)															
(9)															
(10)															
(11)															
(12)															
(13)															
(14)															
(15)															
(16)															
(17)															
(18)															
(19)															
(20)															

J.C. STEPHEN EXPLORATIONS LTD.

GEOCHEMICAL DATA SHEET – SOIL SAMPLING

SAMPLER ECHO 9- BIGHORN

DATE JULY 17-

PROJECT NEWEX

NTS 104M9W

LINE

AIR PHOTO NO. BC5677 #082 #080

SAMPLE NO.	LOCATION	Depth Cm	Horiz	DESCRIPTION				SLOPE	VEG.	ADDITIONAL OBSERVATIONS OR REMARKS	ASSAYS				
				Colour	Part Size	% ORG.	Ph				Cu	Mo	Pb	Ag	Au
82NXE-204	2100 m NE of camp	15	A_2 & B	Yel Br	sand	5		Mod	Fir	Samples 204-208 taken to check whether Pb geochemistry could find veins.	13	2	4	0.2	40
205	camp	50	B	Rd Br	sand	5		Mod	Fir		28	2	2	0.1	20
206	#082	30	B	Yel Br	sand	5		Mod	Juniper	10m above top adit on strike with vein	24	9	3	0.4	400
207	#082	20	A+C	Br	sand	5		Mod	Fir/Juniper		19	1	3	0.1	<10
208	#082	20	B	Yel Br	sand	5		Gentle	scrub		21	1	3	0.1	<10
209	#080	20	A+C	Br	s.l/sand	5		Mod	Bare	Talus: gneiss + rhy. porph	47	1	16	0.1	<10
210	↑	20	A+C	Br	sand/gr/s.l	<1		Mod	Bare	gneiss + porph	46	2	23	0.1	10
211		20	A+C	Br	s.l	10		Mod	Grass	gneiss	49	2	12	0.1	<10
212	↓	25	A+C	Br	s.l/gr/sand	5		Mod	Grass	gneiss	77	1	8	0.3	10
213	#080	25	B	Br	s.l	5		Mod	Grass	gneiss (on claim line ~700m S of LCP)	55	1	7	0.2	10.

Pb Ag Au As.

Pb Cu Mo Ag Au

J.C. STEPHEN EXPLORATIONS LTD.

GEOCHEMICAL DATA SHEET – ~~SOIL~~ TALUS SAMPLING

SAMPLER ECHO 9- BIGHORN

DATE JULY 17-26, 1982

PROJECT NEWEX

NTS 104M9W

LINE

AIR PHOTO NO. BC 5677 #080

SAMPLE NO.	LOCATION	Depth	Horiz	DESCRIPTION				SLOPE	VEG.	ADDITIONAL OBSERVATIONS OR REMARKS	ASSAYS				
				Colour	Part Size	% ORG.	Ph			TALUS ROCKTYPE	Cu	Mo	Pb	Ag	Au
82NXET-105	Ridge South of glacier			Br						Quartz-biotite gneiss	84	1	13	0.1	10
106				Br						"	126	1	9	0.4	10
107				Br						"	135	1	46	0.3	10
108				Br						" + porph (Gal + malachite float near)	107	1	27	0.2	40
109				Br						" " + vein quartz (Gal float near)	72	1	26	0.2	20
110	North side of glacier.	5cm		Br	sand	2		mod	–	COAST INTRUSIVE - GRANODIORITE /1	158	2	34	0.5	20
111		5cm		Br	gravel→ sand	5		Mod	–	GRANODIORITE - MAL. ALONG FRACTURE. /2	630	1	19	0.2	<10
112		5cm		Br	gravel→ sand	<1		Mod	–	Porphyritic Dykes - vicinity of intr/gneiss contact /2	136	1	29	0.3	50
113		5cm		Br	gravel→ sand	<1		Mod	–	Gneiss - rusty intervals. /2	129	2	31	0.3	20
114		5cm		Br	gravel→ sand	<1		Mod	–	Gneiss /2	92	1	32	0.2	10
115		5cm		Br	gravel	<1		Mod	–	Gneiss /2	79	1	37	0.3	10
116		5cm		Br	gravel→ sand	<1		Mod	–	Gneiss /2	89	1	15	0.7	10
117		5cm		Br	gravel→ sand	<1		Mod	–	Gneiss /2	86	1	34	0.3	<10
118		5cm		Br	gravel	<1		Mod	–	Gneiss, Rusty Float ω med. gr. granitic dykes /2	89	1	21	0.4	10
119		5cm		Br	gravel→ sand	<1		Mod	–	Gneiss /2	95	1	68	0.3	80
120		5cm		GrBr	gravel	<1		Mod	–	Gneiss & rhyolite dyke /2	141	1	45	0.7	20
121		5cm		Br	gravel	<1		Mod	–	Gneiss + rhyolite dyke float /2	88	1	11	0.3	<10
122	↓	5cm		Br	gravel→ silt	<1		mod	–	Gneiss + rhyolite dyke float /2	108	1	16	0.1	<10
123	2100m S of HORN2 LCP			Br		<1				Quartz-biotite gneiss (Gully)	82	1	9	0.3	30
124	370m W of HORN2 SS Post			Br		<1				Quartz-bi gneiss + porph + vein qtz (Gully	77	3	25	0.1	<10

J.C. STEPHEN EXPLORATIONS LTD.

GEOCHEMICAL DATA SHEET – TALUS SOIL SAMPLING

SAMPLER Echo 9 - Bighorn

DATE July 17-26, 1982

PROJECT NEWEX

NTS 104 M9W

LINE

AIR PHOTO NO. BC 5677 #080

SAMPLE NO.	LOCATION	Depth	Horiz	DESCRIPTION				SLOPE	VEG.	ADDITIONAL OBSERVATIONS OR REMARKS	ASSAYS				
				Colour	Part Size	% ORG.	Ph				Cu	Mo	Pb	Ag	Au
B2NXET-125	650 m W of Horn 2 SS			Br		<1				5m silicified zone w. grey qtz veins (Rock 73708)	93	2	31	0.2	30
126	800 m W of SS Post			Br		<1				Gneiss (rusty) (carb stringers?) + porph (Mining Gully)	103	4	19	0.7	120
121	Ridge north of glacier			Br		2				Br gneiss + rhy porph (almost soil)	61	1	3	0.2	10