

DIAMOND DRILLING

ASSESSMENT REPORT

ON

WHITEHORSE COPPER MINES LIMITED

BONZO FR (72699)

BORNITE 1 (73783)

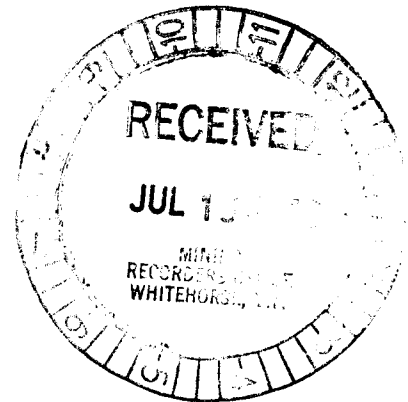
GEM 2 (75221)

CLAIMS

YUKON TERRITORY

JUNE 1987

R. STROSHEIN



WHITEHORSE MINING DISTRICT

105 D 11/14

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1. INTRODUCTION:

The Whitehorse Copperbelt is a 30 km long trend of over 30 copper bearing skarn occurrences located immediately west of Whitehorse, Yukon Territory. In the period 1967 to December 1982 Whitehorse Copper Mines milled 10,247,000 tonnes of ore from six open pits and an underground operation at the Little Chief deposit. The recovered metal grades were 1.20% copper, 0.69 gm/tonne gold and 8.7 gm/tonne silver.

Limited annual exploration programs have been on going since production ceased. These programs have attempted to test new targets in areas requiring assessment work. The drilling program (3 holes - 858 feet) completed between June 15 to June 26, 1987, was directed at testing the gold potential of two known occurrences at the Kodiak Cub and Grafter. The third hole tested an airborne-EM and EM-16 anomaly in the Rabbit's Foot area.

2. LOCATION AND ACCESS:

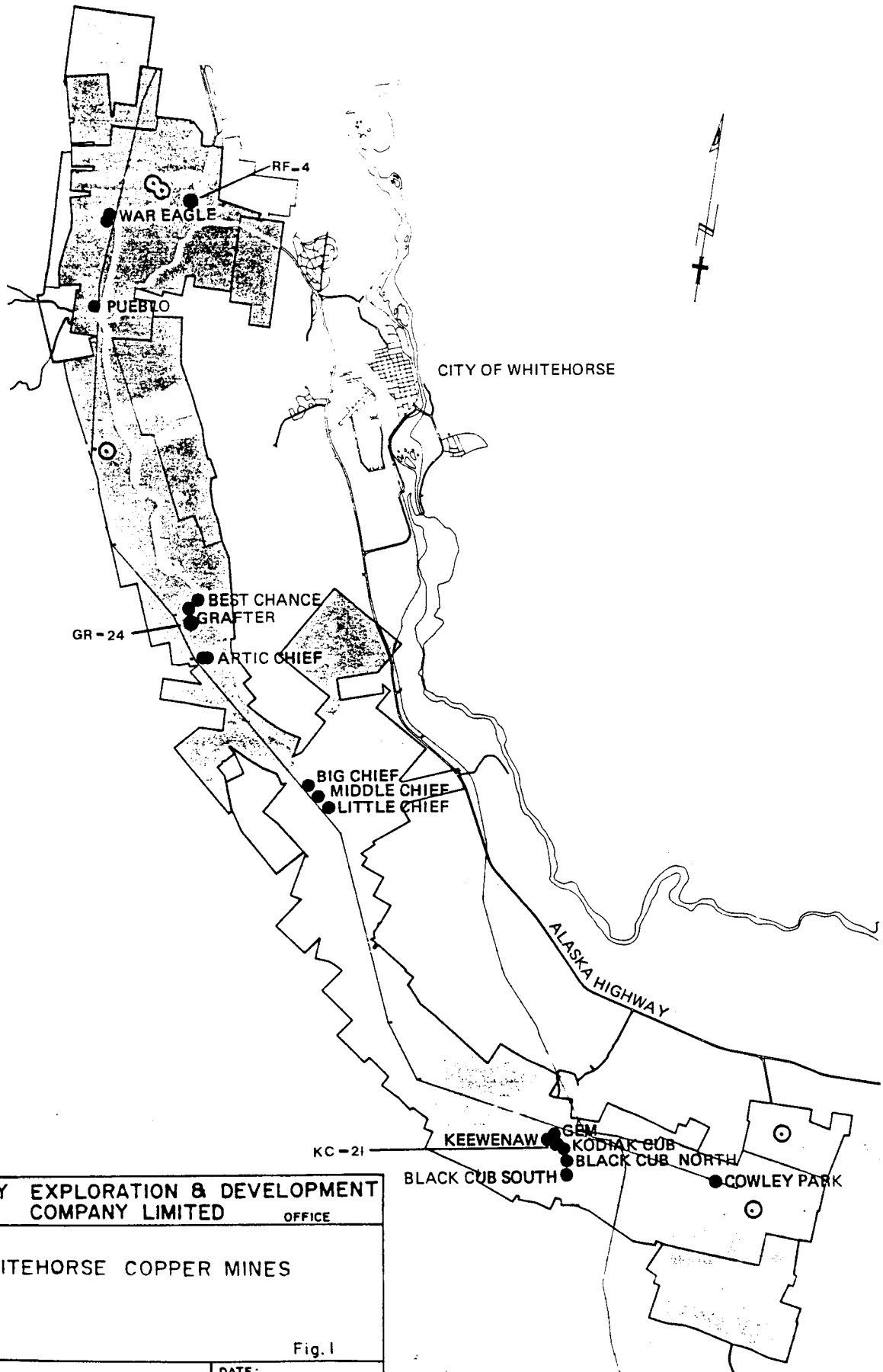
The Whitehorse Copperbelt is located in the Whitehorse Mining District (NTS sheets 105 D 10/11 predominantly within the Whitehorse City Limits. The trend of skarn occurrences is west of and roughly parallels the Alaska Highway from the Carcross cut off to the Rabbit's Foot Canyon area. Figure 1.

Numerous access roads from the Alaska Highway provide easy access to all known occurrences of the Copperbelt.

3. PERSONNEL:

Drilling crew personnel were provided by the contractor; E. Caron Diamond Drilling Limited of Whitehorse, Yukon Territory.

The Geological supervision and report preparation is by Robert Stroshein employed by Hudson Bay Exploration and Development Company, Limited.



HUDSON BAY EXPLORATION & DEVELOPMENT WHITEHORSE COMPANY LIMITED OFFICE	
WHITEHORSE COPPER MINES	
Fig. 1	
SCALE: 1 inch = 2 miles (approx.)	DATE: 1985
	DRAWN BY:

4. CLAIM OWNERSHIP:

The holdings of Whitehorse Copper Mines, a wholly owned subsidiary of Hudson Bay Mining and Smelting Company, Limited consist of 491 quartz claims, 27 crown grants, 9 mineral leases and 5 surface leases.

Exploration services are provided by Hudson Bay Exploration and Development Company, Limited also a wholly owned subsidiary of Hudson Bay Mining and Smelting Company, Limited.

The address for these companies in Whitehorse is:

Box 4280
Whitehorse, Yukon Territory
Y1A 3T3

5. 1987 DIAMOND DRILLING PROGRAM:

The diamond drilling program was carried out from June 15 to June 23, with core logging, sampling and report preparation complete by July 7. The total footage of the three drill holes was 858 feet.

The selected drill targets range the length of the Copperbelt. Figure 1. A brief summary of each drill hole from the southern portion of the belt follows:

- (1) Bore hole KC-21 - Black Cub grid @ line 12E from 29+60N drilling -50° south to 190 foot depth.

The bore hole was drilled to fill in between mineralized intersections on line 12+75E and 11+25E which were 22' @ 1.13% Cu and 48' @ 1.2% Cu respectively. The 12+75E intersection has been included in the ore reserves of the Kodiak Cub deposit. Figure 2.

KC-21 intersected massive magnetite skarn at 123.0-124.9 feet and 159.8-178.2 feet. The lower intersection included intervals of 2-5% bornite. 8 core samples were submitted for Cu, Au, Ag assays.

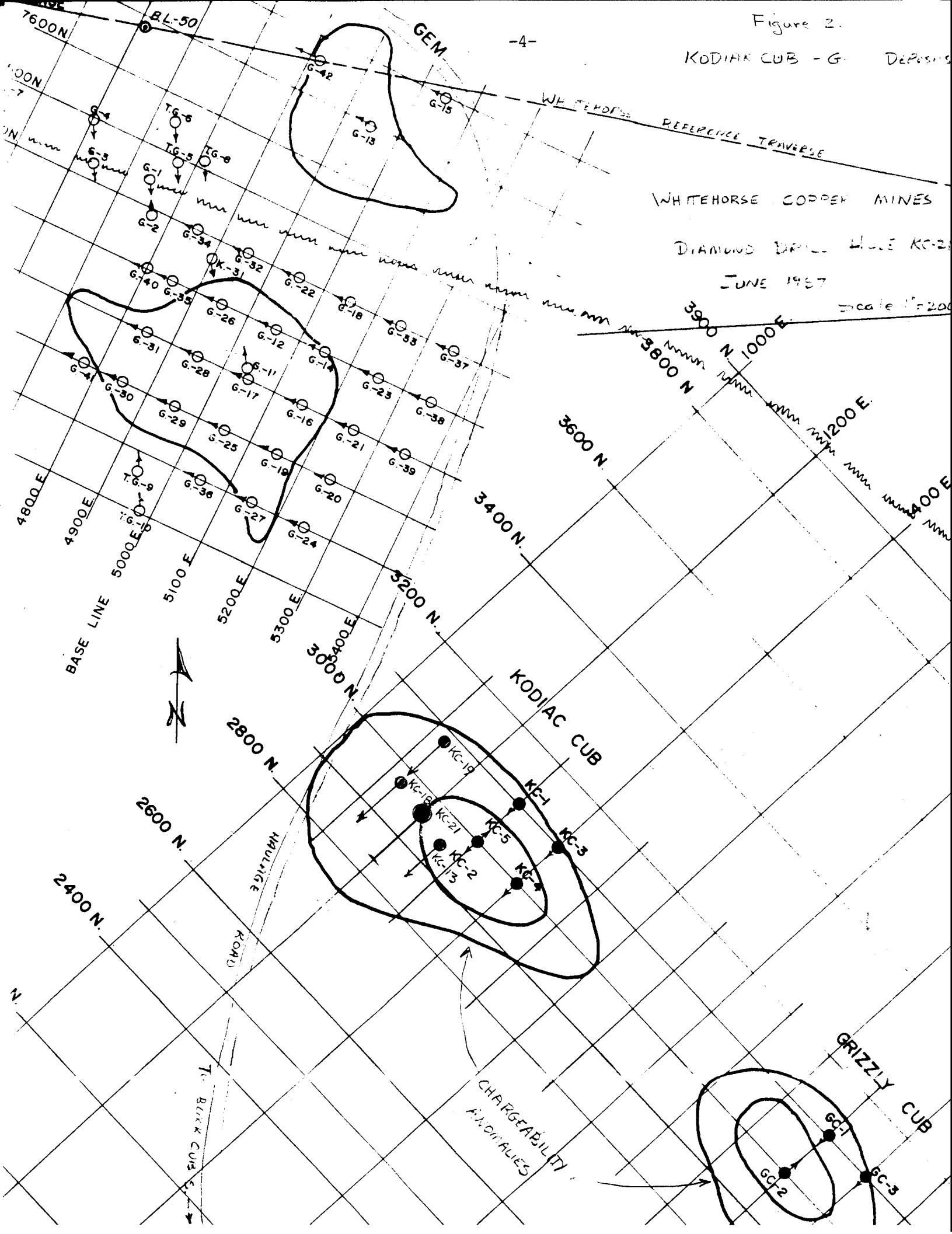
- (2) Bore hole GR-24 - Best Chance grid @ Line 2+00S from 9+00E drilling -50° east to 380 foot depth.

The bore hole was drilled to test the possible southern extension of a mineralized zone previously drilled in 1973 and 1974.

A northerly strike and steep westerly dip was interpreted from a compilation of the earlier results. Figure 3.

Figure 2.

KODIAC CUB - G. DEPOSITS



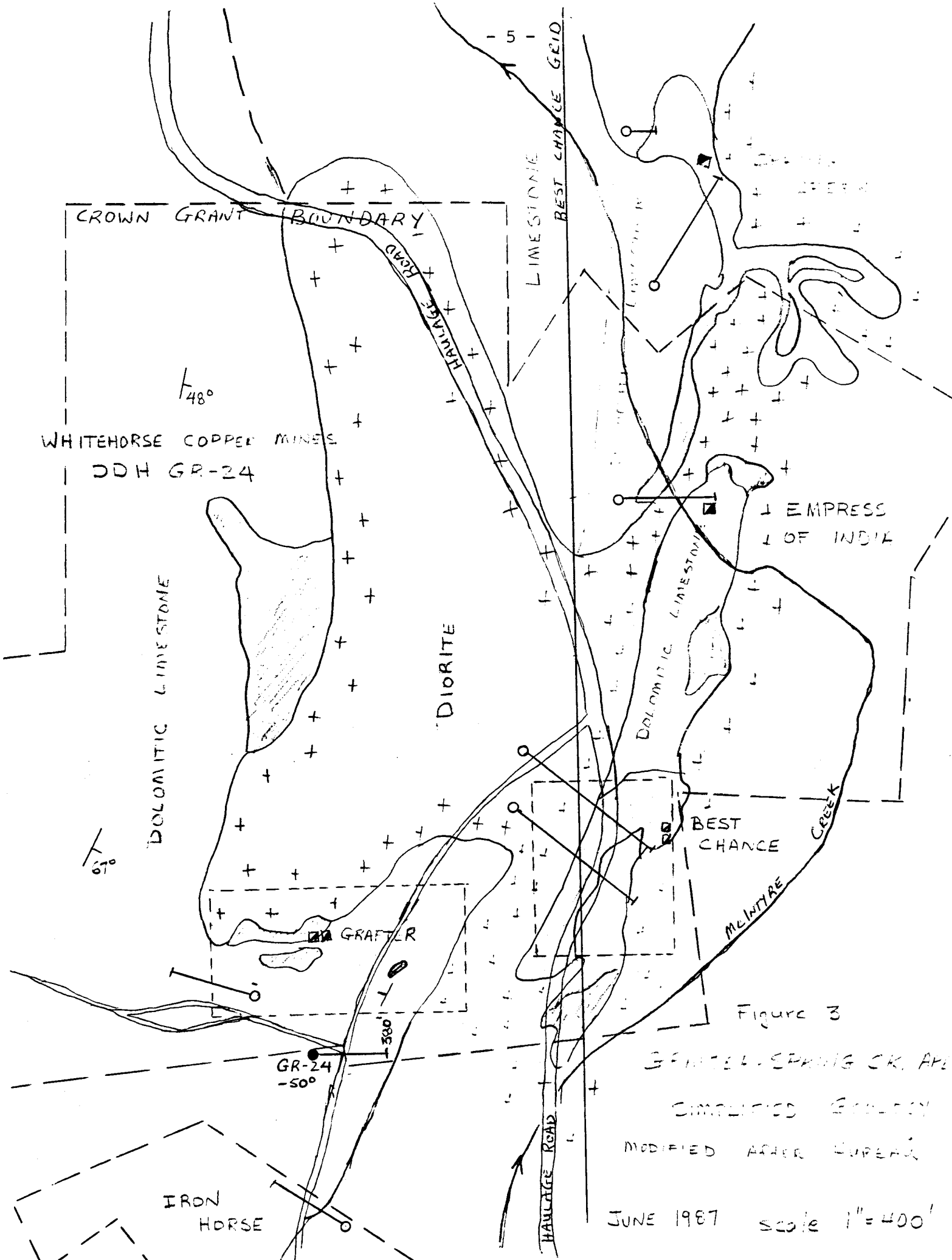


Figure 3

SPRING CREEK AREA

SIMPLIFIED GEOLOGY
MODIFIED AFTER BUREAU

JUNE 1987 scale 1" = 400'

The bore hole intersected massive magnetite diopside garnet skarn at 168-181'. This coincided with the projection of the surface skarn zone. The magnetite skarn contained only trace amounts of chalcopyrite and pyrite and no bornite was observed. 10 core samples were submitted for Cu, Au, Ag geochemical analysis.

- (3) Bore hole RF-4 - War Eagle Grid @ 97+90N from 36+00E drilling -60° azimuth 224° to 288 foot depth.

The bore hole was drilled to test a EM-16 anomaly that had been located near the granodiorite intrusive contact with limestone and quartzite sedimentary units. The EM anomalies paralleled the trend of the batholith contact which was transverse to the sedimentary trend which was east-west with shallow north dip to flat lying. Figure 4.

RF-4 intersected a 9 foot wide carbonaceous and calcareous clay seam at 257 feet which coincided with the limestone granodiorite contact zone. 3 samples of marblized limestone core (pyritic) were submitted for Cu, Au, Ag geochemical analysis.

6. RESULTS AND CONCLUSIONS:

By areas:

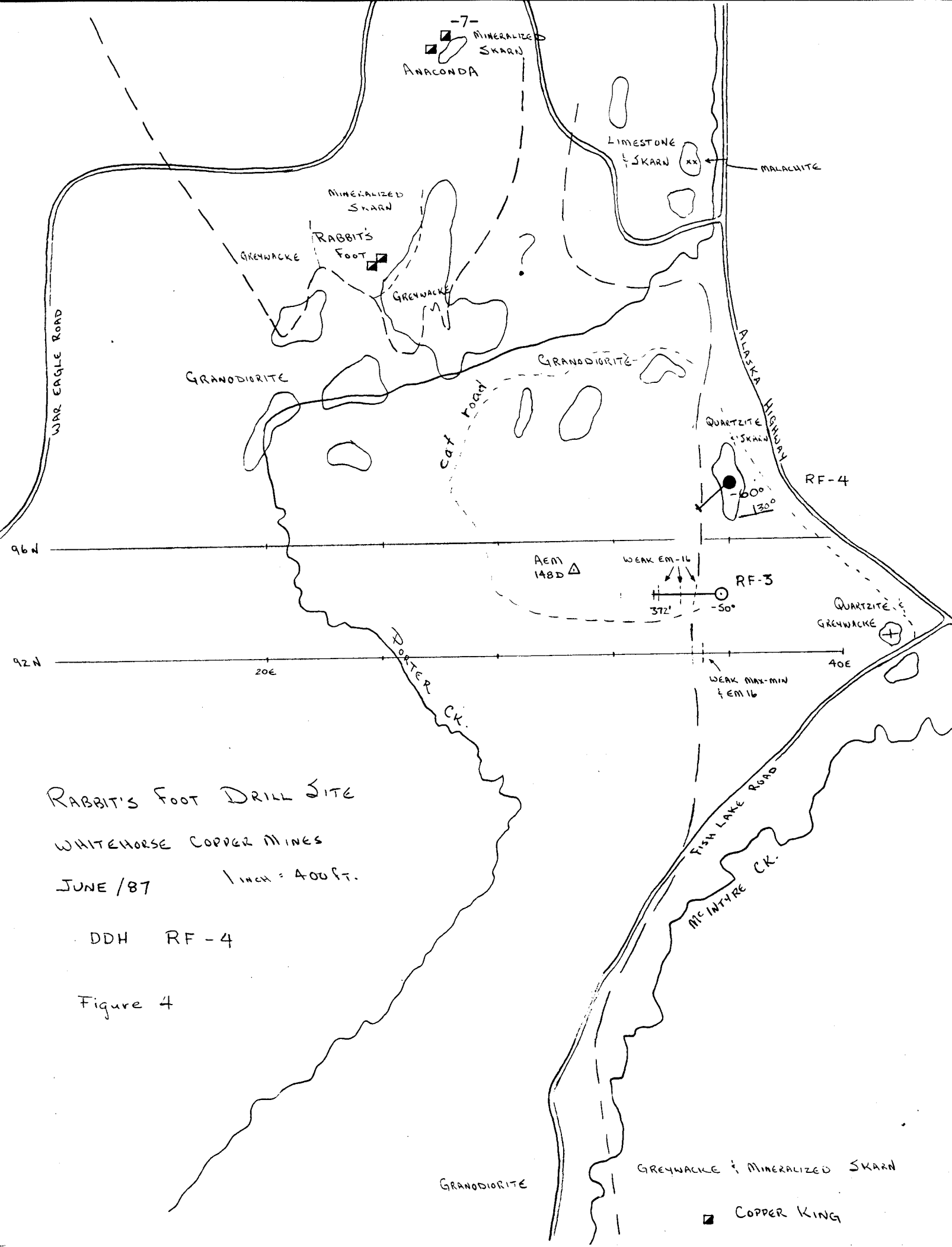
Kodiak Cub Deposit; KC-21

The bore hole intersected massive magnetite serpentine bornite skarn with average grades of 2.90% copper, 0.13 opt gold and .62opt silver from 159.8-175.0 feet (15.2 feet). These results indicate the extension of the Kodiak Cub reserves and provide an indication of the gold silver values in the deposit.

A thorough evaluation of the deposits in the area is recommended with the accent on determining gold silver content.

Grafter Deposit: GR-24

The bore hole intersected massive magnetite diopside garnet skarn at 168.0-181.0 feet.



RABBIT'S FOOT DRILL SITE
 WHITEHORSE COPPER MINES
 JUNE /87 1 inch = 400 ft.

DDH RF-4

Figure 4

■ COPPER KING

The massive magnetite skarn is unmineralized with only trace values of copper. Although unmineralized the intersection indicates a northerly trend to the mineralization intersected in the earlier drilling (1973-74).

Additional drilling on the zone is recommended to test along the northerly strike as well as at a deeper intervals in the southern extension.

Rabbit's Foot Canyon:

The bore hole intersected a calcareous and carbonaceous clay zone from 257 to 266 at the contact of sediments with the Whitehorse batholith. This is the probably source of the electro-magnetic anomalies in the area.

No further work is recommended on this zone.

Robert Shoske

APPENDIX I

REVIEW OF EXPENDITURES

DRILL HOLE

KC-21

Drilling Charges Invoice #2100	\$ 5,630.00
Supervision, logging, sampling and report R. Stroshein 3 days @ 175\$/day	525.00
Assaying Invoice # 8 samples @ 21\$/sample	<u>168.00</u>
Total -	\$ 6,323.00

GR-24

Drilling Charges Invoice #2100	\$ 9,500.00
Supervision, logging, sampling and report R. Stroshein 5 days @ 175\$/day	875.00
Assaying Invoice # 10 samples @ 13\$/sample	<u>130.00</u>
Total -	\$ 10,505.00

RF-4

Drilling Charges Invoice #2100	\$ 8,240.00
Supervision, logging, sampling and report R. Stroshein 4 days @ 175\$/day	700.00
Assaying Invoice # 3 samples @ 13\$/sample	<u>39.00</u>
Total -	\$ 8,979.00



June 30, 1987
Invoice #-2100
Drill: #12

IN ACCOUNT WITH:

Hudson Bay Exploration Ltd.,
205A Main Street,
Box 4280,
Whitehorse, Yukon
Y1A 3T3

Drilling Charges June 15 to 26, 1987: (Whitehorse Copper)

Hole: 87-GR-24/50/NQ

<u>Casing</u>				
0 - 33 = 33 ft.	@ \$25.00 per hr.	=	\$ 825.00	
<u>Coring</u>				
33 - 380 = 347 ft.	@ \$25.00 per hr.	=	<u>\$8,675.00</u>	\$ 9,500.00

Hole: 87-RF-4/60/NQ

<u>Moving</u>				
12 man hrs.	@ \$30.00 per hr.	=	\$ 360.00	
<u>Loader Time</u>				
8 machine hrs.	@ \$85.00 per hr.	=	\$ 680.00	
<u>Casing</u>				
0 - 2 = 2 ft.	@ \$25.00 per ft.	=	\$ 50.00	
<u>Coring</u>				
2 - 288 = 286 ft.	@ \$25.00 per ft.	=	<u>\$7,150.00</u>	\$ 8,240.00

Hole: 87-KC-21/50/NQ

<u>Moving</u>				
18 man hrs.	@ \$30.00 per hr.	=	\$ 540.00	
<u>Loader Time</u>				
4 machine hrs.	@ \$85.00 per hr.	=	\$ 340.00	
<u>Casing</u>				
0 - 10 = 10 ft.	@ \$25.00 per hr.	=	\$ 250.00	
<u>Coring</u>				
10 - 190 = 180 ft.	@ \$25.00 per ft.	=	<u>\$4,500.00</u>	<u>\$ 5,630.00</u>

Total Invoice \$23,370.00



APPENDIX II

DIAMOND DRILL LOGS

KC - 21

GR - 24

RF - 4

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

DIAMOND DRILL LOG

Claim: GEM - 2 (75221)

Location: KODIAK CUB

Mining Division WHITEHORSE

Hole Nº. KC - 21 Angle: -50° Direction: south

Depth: 190' Grid Nº. BLACK CUB Co-Ordinates: 12+00E
29+60N

Date Started: June 23/87 Finished: June 26/87 Logged By: R. Stroshein

Drilled By: E. Caron Diamond Drilling

DEPTH		DESCRIPTION OF CORE
From	To	
0.0	16.5	Overburden - gravel boulders clay and sand.
16.5	17.5	Pink coarse grained granodiorite
17.5	62.0	White to grey crystalline limestone. Weakly skarnified near granodiorite contact. 30.2 - 33.0 - fine grained grey green granodiorite dyke. 17.5 - 29.5 - light yellow green diopside skarn/limestone minor serpentine @ 25' Malachite @ 29.5' and 33' adjacent dyke. Core angle 35° @ 44' Lower contact irregular @ approx. 50°. 52.0 - 62.0' serpentine diopside garnet skarn patchy. Core angle 40° @ 58'
62.0	68.3	Light greenish white medium coarse grained granodiorite.
68.3	70.9	Dark green sheared serpentine broken zone. Cuprite and malachite staining at 69' Upper and lower contacts of .5 feet broken and poor recovery.
70.9	117.4	Light pinkish grey medium grained granodiorite. Core very broken. Recoveries average 70%. Very blocky. Extremely poor recoveries 104-111' with clay seams recovered and slickenside. 116.5 - 117' - chloritic clay seam, dark green
117.4	121.0	Light brown and green garnet skarn.
121.0	123.0	Dark grey green andesite porphyry.
123.0	124.9	Massive black magnetite skarn. Serpentine and bornite along irregular stringers. Core angle 75° @ 124'
124.9	147.0	Light grey to white crystalline limestone. Weak yellow diopside skarn 124.9 - 127.5 Core angles - 48° @ 128' 50° @ 146' 64° @ 141' Increasing yellow diopside 142 - 147.0'

DEPTH		DESCRIPTION OF CORE	Page 2
From	To		
147.0	153.0	Light yellow green diopside skarn. Magnetite serpentine bands .2' @ 151.9'	
153.0	159.8	Serpentine garnet skarn. Dark green to pale green. Magnetite @ 155.0 - 155.3'	
159.8	178.2	Dark massive magnetite serpentine skarn. Very broken and blocky ground Recoveries +75%. Bornite 2-5% 165.5 - 175.0' Bornite on shears. Core angles - 60° @ 167' 55° @ 169' 50° @ 175'	
178.2	190.0	Light grey dioritized siltstone. Very broken core poor recoveries. Lost core 184 - 188.5' 178.2 - 178.3 - white calcite vein 60° core angle on contact @ .3 green chlorite clay seam	
	190.0	Arkosic sandstone END OF HOLE	

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

DIAMOND DRILL LOG

Claim: BONZO FRACTION (72699)

Location: GRAFTER

Mining Division WHITEHORSE

Hole Nº. GR - 24

Angle: -50°

Direction: EAST

Depth: 380'

Grid Nº. B. C.

Co-Ordinates: 2+00S
9+00W

Date Started: June 17/87

Finished: June 20/87

Logged By: R. Stroshein

Drilled By: E. Caron Diamond Drilling

DEPTH		DESCRIPTION OF CORE
From	To	
0.0	20.0	Overburden; sand gravel and boulders.
20.0	42.0	Dark grey very fine grained skarnified quartzite (greywacke) Core angles - 60° @ 20.5' light green diopside skarn bands (narrow < 1" 60° @ 39' Badly broken core, poor recoveries 28'-42' @ 30%
42.0	65.5	Dark with light texture fine to medium grained quartz hornblende. (diorite) occasional coarse grained bands. fine to narrow skarnified bands $\approx 65^{\circ}$ @ 48' Trace very fine disseminated pyrite Good core recoveries Greywacke 63-64'
65.5	82.0	Coarse grained quartz hornblende diorite. 69.0 - 73.5' dark grey matrix feldspar hornblende porphyry. 75.0 - 79.5 medium grained diorite core angles: 60° @ 73' on fine diopside band 45° @ 76' on coarse diorite band 65° @ 79.5' on coarse-fine contact
82.0	93.0	Light grey green (hornfels) greywacke Broken core with stringers of quartz and diorite, irregular quartz stringers. Core angles: 60° @ 92' 30° @ 93'
93.0	111.5	Fine to medium grained dark green to dark grey hornblende diorite. Very fine disseminated pyrite occasional irregular quartz diorite (coarse grained) bands.
111.5	168.0	Light to medium grey quartzite to dolostone skarnified. Sequence becomes lighter and dolomitic with depth. Fine grained. Abundant pyrite disseminated and has fine grained bands along partings. Irregular quartz stringer Core angles: 30° @ 118' 35° @ 130' narrow diopside skarn bands

DEPTH

DESCRIPTION OF CORE

Page 2

From	To	
		<p>20° @ 140' on quartz stringer 50° @ 142' on skarn band 40° @ 146 on quartz stringer 50° @ 150' on skarn diopside pyrite band 20° @ 150.5' on skarn diopside pyrite band 25° @ 156.0' on narrow diopside skarn band</p>
168.0	181.0	<p>Diopside garnet skarn. Light apple green Skarn contact irregular but roughly @ 20° Dark green coarse grained epidote replacing fine diopside 175.0 - 175.8' - massive black magnetite band. Minor pyrite core angle 55° lower contact upper contact irregular roughly perpendicular 180.5 - 181.0' - massive magnetite garnet skarn minor pyrite very irregular contact</p>
181.0	194.0	Light grey to white finely crystalline limestone.
194.0	203.5	<p>Skarn. Patchy skarn mineralization in weakly skarnified limestone. 194.0 - 194.5 - Massive calcite garnet magnetite epidote skarn Core angle 60° @ 195' on calcite contact 200.0 - 200.5 - Patchy magnetite surrounded by garnet both in calcite 203.3 - 203.5 - Massive magnetite band irregular contact approx. 65° with calcite and epidote</p>
203.5	254.5	<p>Light grey crystalline limestone Garnet diopside skarn 225'-230' traces epidote, chalcopryrite Partings and transition trend sub parallel to core Core angles: 60° @ 206' on fracture parting 50° @ 210' on fracture parting 50° @ 223' on fracture parting 45° @ 239' on skarn banding 45° @ 245' on skarn banding Weakly skarnified 230 - 254.5 Irregular patches of pyrrohtite @ 252' Light reddish bronw quartzite bands @ 245.5-246'</p>
254.5	268.0	<p>Light reddish grey brown fine grained quartzite (siltstone) very competent. Pyritic. Core angles: 50° @ 265' on faint compositional layering 35° @ 263' on hornblende diorite stringers (2") 45° @ 264' on horblende diorite stringer (1")</p>
268.0	283.0	<p>Light grey crystalline limestone very competent irregular contact approx @ 55° Core angle: 70° @ 274' on composition banding weak serpentine skarn bands near 276' Core angle: 45° @ 275' on serpentine parting mild diopside garnet skarn @ 279' 2" strong garnet serpentine skarn at contact irregular near 80°</p>
283.0	284.5	Medium coarse grained hornblende diorite.
284.5	288.5	Light coloured calcite garnet diopside skarn.
288.5	303.0	<p>Medium coarse grained hornblende diorite. Competent Fracture parting along 10° core angle @ 293' 302.0 - 302.5 - massive dark green hornblende dyke</p>

DEPTH		DESCRIPTION OF CORE	Page 3
From	To		
303.0	319.0	<p>Light grey to white crystalline limestone. Very competent 2" contact with diorite irregular at approx 80° with strong serpentine garnet skarn. Weakly skarnified to 307' - light green diopside occasional parting of serpentine Core angle: 70° @ 304' dark and light banding 90° @ 313' dark band (1")</p>	
319.0	341.4	<p>Light coloured diopside garnet skarn. Contact with limestone gradational (arbitrarily set) 1' hornblende diorite 327.8 - 328.8 2" hornblende diorite 333' 2" hornblende diorite 334' Contact with hornblende diorite @ 45° (broken up core) Skarnification more intense at approaches hornblende diorite contact Skarn generally patchy and irregular mineral groupings Cubic translucent crystals in vug at 338'</p>	
341.4	366.5	<p>Dark green medium coarse grained hornblende diorite 358 - 359 - garnet diopside skarn (endoskarn) 50° core angle at 359' on contact upper contact broken core Variable hornblende distribution of diorite creating darker green sections.</p>	
366.5	371.0	<p>Garnet skarn. Brown spotted with some pinkish and green colour. Lower contact diffuse approximate core angle @ 57°</p>	
371.0	377.0	<p>Medium grained hornblende diorite. Core broken up with numerous part- ings acute to sub-parallel to core.</p>	
377.0	380.0	<p>Light green skarnified limestone. Weakly calcareous. Local patchy pink grains in vugs. 377.0 - 377.5' strong garnet diopside skarn. Irregular contact approximatey @ 60° core angle.</p>	
	380.0	<p>END OF HOLE</p>	

HUDSON BAY EXPLORATION AND DEVELOPMENT COMPANY LIMITED

DIAMOND DRILL LOG

Claim: BORNITE 1 (73783)

Location: RABBIT'S FOOT

Mining Division WHITEHORSE

Hole No. RF-4

Angle: -60° Direction: 224° Azimuth

Depth: 288'

Grid No. WAR EAGLE

Co-Ordinates: 97+90N
36+00E

Date Started: June 20/87

Finished: June 23/87

Logged By: R. Stroshein

Drilled By: E, Caron Diamond Drilling

DEPTH		DESCRIPTION OF CORE
From	To	
0.0	8.0	Overburden sand, gravel clay and boulders
8.0	27.0	White to light grey coarsely crystalline limestone. Rusty weathered broken sections within competent limestone to 41 feet.
27.0	41.0	Extremely broken core. Recoveries 30% Core fragments light grey quartzite. Rusty weathered. 34.5 - 35.0 - small granodiorite dyke. 38.0 - 39.0 - skarnified limestone 39.0 - 40.0 - competent light grey quartzite trace pyrite.
41.0	169.0	Light grey crystalline limestone. Generally massive. Darker grey bands with greater carbonaceous content commonly show banding. Core angles 35° @ 63' 75° @ 68' 45° @ 77' 50° @ 83' 70° @ 90' 58° @ 95' 30° @ 103' 105 - 109' - pyrite along detritic patterned fractures - trace chalcopyrite - dolomitic sections The core is marblized (weakly metamorphosed) from 118-138' (dolomitic). Garnet porphyroblasts at 137' with mobilized graphite into porphyritic texture. Detritic pyrite @ 120', 127', 129'-130', with traces of pyrrohtite 138 - 138.2' - rusty weatered siltstone band. Core angles 50° @ 121' 50° @ 150' 85° @ 126' 50° @ 158' 75° @ 128' 80° @ 169'

DEPTH		DESCRIPTION OF CORE	Page 2
From	To		
169.0	257.0	<p>Fine grained grey green massive to fine banded limestone. Core generally broken to 221'. Recovery 50-70%. Commonly pyritic. Irregular calcite stringers throughout at varying core angles commonly acute angle to core.</p> <p>Core angles - 50° @ 171' 55° @ 232' 65° @ 185' 60° @ 236' 55° @ 190' 65° @ 242' 60° @ 223'</p> <p>244 - 249 - broken core with clay seam recoveries 20%. Generally disrupted and irregular.</p>	
257.0	266.0	Black and grey calcareous clay. With white limestone clasts.	
266.0	288.0	Medium grained grey green diorite. Extremely weathered much interstitial clay. Recovery 50%	
	288.0	END OF HOLE	

APPENDIX III

DIAMOND DRILL ASSAY SHEETS

APPENDIX IV

ROBERT W. STROSHEIN

EDUCATION: B. Sc. (Geological Engineering) from
University of Saskatchewan
Graduated in 1973

EMPLOYMENT: 1973 - 1984 Hudson Bay Exploration & Development Co. Ltd.

Flin Flon Office 1973 - 1975
Drill Geologist - field supervisor of diamond
drill projects Northern Manitoba and Saskatchewan.

Whitehorse Office
Project Geologist 1975-1980 - field supervisor of
geological mapping, geophysical, geochemical and
prospecting programs in the Yukon Territory.
Included report preparation and assessment.

Senior Exploration Geologist - 1981 - planning,
monitoring and assessing exploration projects
conducted in the Yukon Territory.