

MAP NO.: ASSESSMENT REPORT X
105 0 /1 PROSPECTUS
CONFIDENTIAL X
OPEN FILE

DOCUMENT NO: 093015
MINING DISTRICT: Mayo
TYPE OF WORK: Dimond Drilling

REPORT FILED UNDER: Cominco Ltd.

DATE PERFORMED: June 18 - August 9, 1991. DATE FILED: March 9, 1992.

LOCATION: LAT.: 63°11'N AREA: Macmillan Pass Area
LONG.: 130°21'W VALUE \$: N/A

CLAIM NAME & NO.: Nidd 1 - 158, YA7241 - YA7359, Nidd 240 - 283, YA7428 - YB7453
Nidd 300 - 311, YA7455 - YA7466, Nidd 316 - 346, YA15427 - YA15457
Nidd 476 - 818, YA62598 - YA62638, YA63234 - YA632347,
YA63564 - YA63716, YA64170 - YA64185.
* Due to Size of Claim Block Check Ownership for most Accurate
Record of Claim Numbers.

WORK DONE BY: D. Rhodes

WORK DONE FOR: Cominco Ltd.

DATE TO GOOD STANDING:

REMARKS: # 105 - 0 - Macmillan Pass Area
The 1991 exploration program consisted of six drill holes totalling 1768.2 metres of which three holes totalling 866.6 metres were filed for assessment credit. Hole NB 91-23 tested a strong zinc soil anomaly (maximum value 18,240 ppm). The hole failed to return any base metals sulfides and it is theorized that the anomaly is derived from relatively low concentrations of zinc precipitating from ground water. Two holes NB 91-21 and 24A tested the continuation of a high grade zinc intersection (15.3 % Zn, 1.2 % Pb) returned by drill hole NB90-19 the previous summer. Hole NB 91-21 returned low grade mineralization while Hole NB 91-24A returned significantly better values (29.5 metres 3.0 % Zn, trace Pb, 7.5 metres 6.9 % Zn and 23.5 metres 3.3% Zn and trace lead). These results support the theory that the hydrothermal system and the volcanism that seems associated with it, extends yet further west. Holes NB 91-25 and 26 drilled into a fault contact that marks a major transition in the footwall stratigraphy from strongly veined, silicified and sideritized calcareous mudstones of the Road River Group on the east to very cherty, very carbonaceous, finely planar laminated-"ribboned mudstones" thought to be a basal unit of the Portrait Lake Formation unit. This transition marks a major facies and/or structural break.

COMINCO LTD.

EXPLORATION

NTS 105-0-1

WESTERN DISTRICT

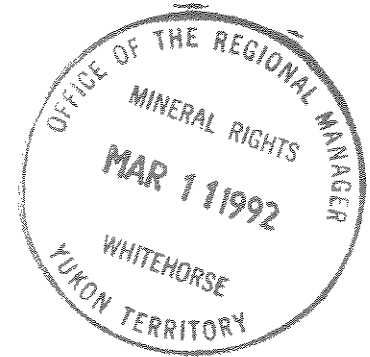


1991 ASSESSMENT REPORT

NIDD PROPERTY

MAYO MINING DISTRICT

YUKON TERRITORY



LATITUDE: 63°11'N

LONGITUDE: 130°21'W

CLAIMS 100% OWNED BY COMINCO LTD.

OPERATOR: COMINCO LTD.

093015

FEBRUARY, 1992

D. RHODES
SENIOR GEOLOGIST

This report approved
for content ~~only~~ only. Actual
amount of assessment
credit to be determined
by Mayo Mining Recorder

Robert Delek March 17/92.

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ASSESSMENT REPORT - 1991

NIDD PROPERTY

1. SUMMARY

The 1991 program consisted of drilling six holes totalling 1768.2 metres. Three of these holes are reported on herein for assessment credits. These holes include NB 91-21 (237.1m.), NB 91-23 (320.1m.) and NB 91-24A (309.4m.).

The first two of these holes (NB91-21 and 24A) tested soil lead anomalies to the west of the previously, westernmost, Boundary Creek area, hole- DDH NB90-19, that intersected 5.9 metres of 1.2% Pb and 15.3% Zn. NB 91-21 and 91-24A were drilled about 85 metres and 210 metres west along strike of NB90-19. NB 91-23 was drilled at Eleven Creek, about 6 kilometres west of Boundary Creek, to test a very strong, zinc, soil geochemical, anomaly (maximum value 18,240 ppm.) that lies just down slope from the favourable Tom horizon. The hole was drilled upslope from and in the opposite direction to NB90-18 which encountered a thick section of highly sheared rocks interpreted to be a major regional fault.

The drilling continues to show that the geological environment at Boundary Creek was very syndepositionally active. The environment is characterized by rapid lateral and vertical changes in lithologies. The following observations are drawn from the 1991 drilling:

- i) Holes NB 91-21,24A, show a continuation of the previously defined E.N.E. trend of mineralized Macmillan Pass Member rocks characterized by the presence of volcanic rocks and cobble to boulder diamictites along with the more typical chert pebble conglomerate and sand striped mudstone lithologies.
- ii) Everywhere along the trend, the lower (southern) contact of the Macmillan Pass Member rocks with the underlying strata is a complex fault zone with considerable structure and/or hydrothermal alteration and veining in the older rocks. It is hypothesized that this east-west contact probably marks an east-west paleo fault.
- iii) The 1991 drilling shows that west of NB 91-25 there is a major transition in the footwall stratigraphy beneath, and generally in fault contact with, the Macmillan Pass Member strata. The rocks change from strongly veined, silicified and sideritized calcareous mudstones of the Road River Group on the east to very cherty, very carbonaceous, finely planar laminated-"ribboned" mudstones thought to be a basal unit of the Portrait Lake Formation unit, eroded in much of the Central Block. This transition marks a major facies and/or structural break.
- v) The drilling immediately west along strike of the NB90-19 high grade mineralization did not encounter similar mineralization at the Macmillan Pass Member/Cherty "ribboned" mudstone contact. Significant thicknesses of low to medium grade zinc mineralization were encountered by NB91-24A in the Macmillan Pass Member strata leaving the Boundary Creek hydrothermal system still open to the west.
- vi) Hole NB91-23 drilled a thinned interval of Macmillan Pass Member strata. The interval

METRIC

Canada

MÉTRIQUE

EDITION 1

105-0/2505-0/1

EDITION 1

METRIC

Canada

MÉTRIQUE

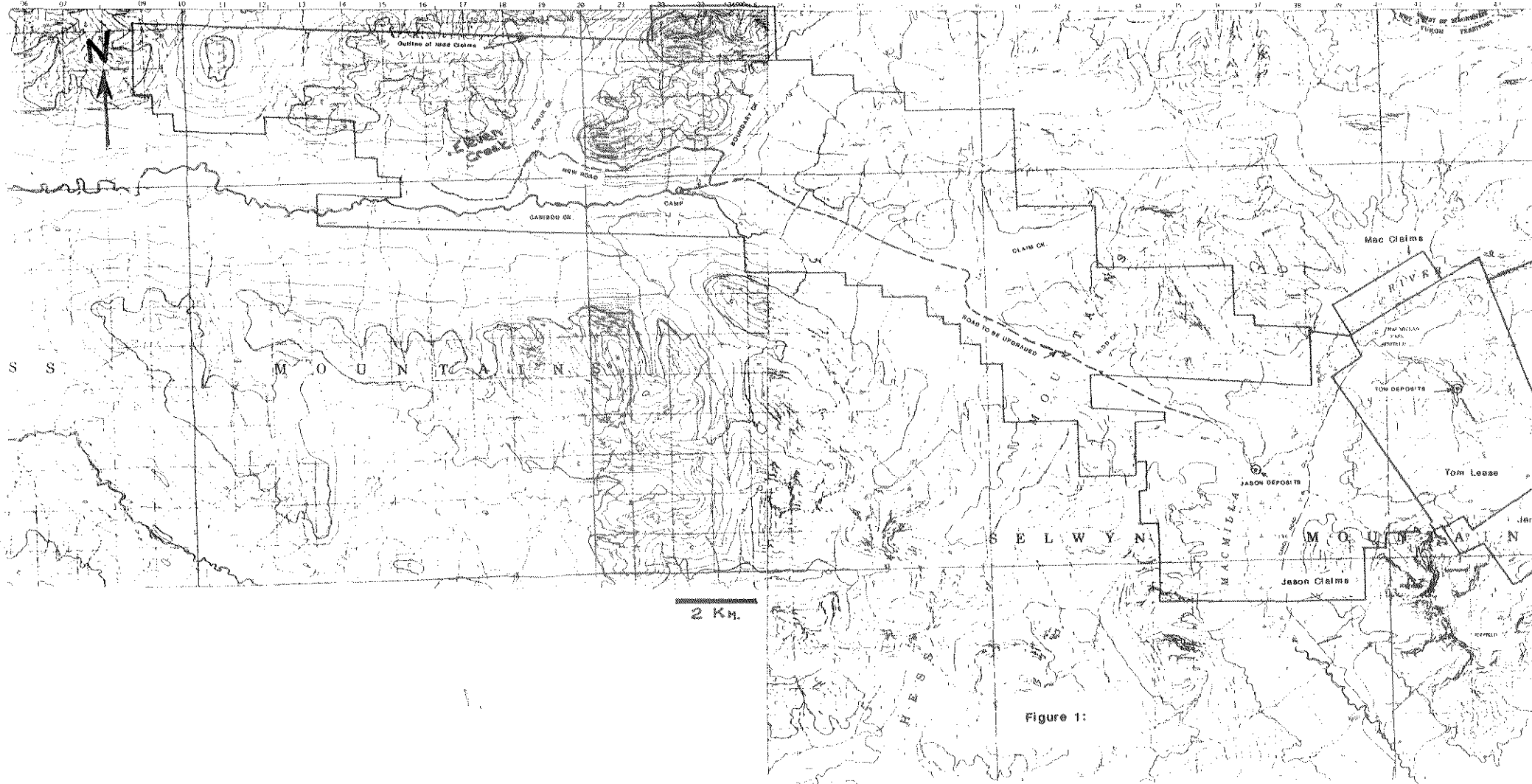


Figure 1:

contained few sand striped mudstones beds and was dominated by thick chert grit and sandstone beds showing very distinct grading. The Macmillan Pass Member rocks are sandwiched, apparently conformably, by very carbonaceous, cherty mudstones that are presumed to represent the basal Portrait Lake Formation at the bottom and the Tom Member at the top. The hole suggests substantial facies variations that are not at present understood. The absence of any significant base metal mineralization is discouraging.

It is concluded that:

- i) The Boundary Creek hydrothermal centre is an impressive accumulation of epigenetic mineralization covering an area 1.5 x 0.9 kilometres. None of the mineralization discovered to date is economic however the wide spaced drilling and near total cover leave targets untested. The system is still open to the west.
- ii) The Eleven Creek anomaly has been well drilled and not adequately explained. The occurrence of the zinc with a prominent caliche deposit might suggest that the anomaly derives from relatively low concentrations of zinc precipitating from ground waters.

It is recommended that drilling be continued at Boundary Creek.

2. LOCATION AND ACCESS

The Nidd property is located within the Mayo Mining District, Yukon Territory, approximately 390 km. northeast of Whitehorse. Access to the property is by the North Canal Road to Macmillan Pass and then on to a secondary road that crosses the Jason property and was extended by Cominco to the Boundary Creek camp, in the centre of the property. The Macmillan Pass airstrip, 24 km. west of the Boundary Creek base camp, is the closest fixed wing access. Access to the Eleven Creek area, six kilometres west of Boundary Creek, was by helicopter.

3. TENURE

The Nidd property comprises 593 contiguous claims, 100% owned by Cominco Ltd. The drilling in 1991 allowed the addition of four years' assessment credit to a large number of these claims. With the exception of 67 units on the western edge of the property, all of the claims are in good standing until at least the year 2000, with most in good standing until at least the year 2008. The 67 claims on the western edge of the property are in good standing until 1998.

4. HISTORY

The Nidd property was staked between 1976 and 1981 to cover the westerly strike extension of the stratigraphy which hosts the nearby Tom and Jason lead-zinc-silver deposits. Since 1976 numerous development programs have been carried out. These programs have included some or all of the following: geology, soil and rock geochemistry, geophysics, diamond drilling, road building and trenching. Since 1982 detailed work has focussed on a mineralized area at about the midpoint of the claim group at Boundary Creek.

5. 1991 WORK

A. Objectives

The objectives of the 1991 work were to:

- i) Drill test stratigraphy and lead soil anomalies at the western end of the Boundary Creek area that are in part along strike from drill hole NB90-19 that intersected 5.9 metres of 1.2% lead and 15.3% zinc.
- ii) Further drill test a zinc soil geochemical anomaly in the Eleven Creek area, 6 kilometres west of Boundary Creek. The anomaly is projected, from mapping, to lie close to the Tom horizon. NB 90-18 tested the anomaly from the down slope side in 1990 but did not reach the target stratigraphy due to drilling a major fault zone that forced abandonment of the hole.

B. Drilling

Six holes (NB 91-21 to NB 91-26) totalling 1768.2 metres were drilled in 1991. The drilling, contracted to Connors Drilling Ltd., commenced June 18 and was completed by August 9. The holes all commenced with HQ rods however many were subsequently reduced to NQ rods and terminated in NQ. All of the holes were drilled with a flyable Boyles 37A that was in all cases moved onto site with a helicopter. The initial holes were flown with a B206 helicopter and the final holes with a Hughes 500D, both contracted from TransNorth Air. Barring the dropping of the drill's mast on one move, both the drilling and moving progressed well. Recoveries were generally good.

6. DRILL HOLE GEOLOGY

The appended drill logs and sections describe the geology in some detail. The geology of each hole is briefly discussed below:

Hole NB91-21 was collared at 2+65W and 5+55N on Nidd cut grid coordinates. It was drilled at 210°, -55° dip. The hole was drilled about 85 metres west along strike from NB 90-19 that intersected 5.9 metres of 1.2 %Pb and 15.3% Zn at the contact between the coarse clastic rocks of the Macmillan Pass Member and distinctive very cherty, very carbonaceous mudstones of unknown affinity. NB91-21 encountered a sequence of chert pebble conglomerates, diamictites and sand striped mudstones before drilling into the same cherty ribboned carbonaceous mudstones that also form the footwall strata in NB90-19. The hole did not encounter any mineralization at the contact of the Macmillan Pass Member rocks with the cherty ribboned mudstones. Pervasive low grade mineralization was encountered in the Macmillan Pass Member strata including 57.0 metres of 0.7% Zn.

Hole NB91-24A was collared at 4+00W, 6+08N on Nidd cut grid coordinates. It was drilled at 210°, -60°. The hole lies about 125 metres west of NB91-21. It cored Macmillan Pass Member rocks down to 246.2 metres which were dominantly chert pebble conglomerates but included thinner intervals of diamictite and sand striped mudstones and two significant accumulations of volcanic rocks at 70.9 to 103.0 metres and 209.1 to 225.8 metres. The upper volcanic interval consisted of fine volcanic ash tuffs and volcanoclastic mudstones while the lower consisted of volcanic pebble to cobble diamictite. Mineralization in NB 91-24A was significantly improved over that of NB91-21. From 96.0 to 125.5 metres 29.5 metres of

3.0% zinc, trace lead was cored that included an interval of 7.5 metres of 6.9% zinc while from 202.5 to 226 metre 23.5 metres of 3.3% zinc, trace lead was cored that included an interval of 6.0 metres of 7.8% zinc. NB 91-24A intersected cherty, ribboned, carbonaceous mudstones identical to those in the base of holes NB 90-18 and NB91-21 from 246.8 metres to the bottom of the hole at 309.4 metres. The contact was a quartz veined and strongly deformed zone suggesting a possible fault. An interval of pyrite rock occurred at 241.3 to 244.2 metres that consisted of 80% pyrite in a fine silica gangue. This mineralization lies close to the Macmillan Pass Member/cherty, ribboned mudstone contact and hence may have some relationship to the high grade intersection in NB90-19 though showing no textural similarity nor base metal content

NB 91-23 was collared at 60 + 28W and 6 + 25N on Nidd cut grid coordinates. It was drilled at 210° azimuth and -55° dip. The hole drilled into calcareous, carbonaceous mudstones of the upper Road River Group before encountering a succession of very siliceous, very carbonaceous, mudstones that sandwiched a sequence of chert grits, sandstones, fine conglomerates and minor sand banded mudstones probably equivalent to the Macmillan Pass Member. The grits, sandstones and conglomerates were quite pyritic (5-10% average) but showed no base metal sulphides. The chert clastics appeared different from the typical chert pebble conglomerate sequence in being generally finer and exhibiting good bedding with thick (1-3 metre) classically graded beds.

8. CONCLUSIONS

The drilling continues to show that the geological environment at Boundary Creek was very syndepositionally active. The environment is characterized by rapid lateral and vertical changes in lithologies.

i) Holes NB 91-21, 24A support the interpretation of a continuous trend of Macmillan Pass Member rocks characterized by the presence of volcanic rocks and cobble to boulder diamictites along with the more typical chert pebble conglomerate and sand striped mudstone lithologies.

ii) Everywhere along the trend the lower (southern) contact of the Macmillan Pass Member rocks with the underlying strata is a complex fault zone with considerable structure and/or hydrothermal alteration and veining in the older rocks. It is hypothesized that this east-west contact probably marks an east-west paleo fault that has been periodically reactivated. The fault may mark the trace or at least closely parallel the Hess Fault, defined by Abbott (1982), separating the South and Central Block of the Macmillan Fold Belt.

iii) The 1991 drilling shows that west of NB 91-25 there is a strong change in the stratigraphy. The rocks beneath, and generally in fault contact with, the Macmillan Pass Member strata east of NB91-25 are strongly veined, silicified and sideritized calcareous mudstones of the Road River Group. To the west the footwall rocks are very cherty, very carbonaceous, finely planar laminated-"ribboned" mudstones. These mudstones show a resemblance to Tom Member rocks and were interpreted as such from 1990 drilling. It is now thought that these rocks are a basal unit of the Portrait Lake Formation. A similar unit occurs in the North Block of the Macmillan Fold Belt (Abbott, 1982). This lithology has not been encountered previously on the property either in drilling to the east or in mapping. An unconformity at the base of the Macmillan Pass Member is presumed to have removed it in much of the Central Block. This lithology was encountered in the bottom of NB91-21 and 24A.

iv) The high grade intersection cored by NB90-19 at the contact of the footwall Cherty Ribbed mudstones with the Macmillan Pass Member rocks does not extend 85 metres west to NB 91-21 or 100 metres east to NB83-9.

v) The mineralization in NB91-24A indicates that the hydrothermal system, and the volcanism that seems associated with it, extends yet further west.

vii) Hole NB91-23 drilled an interval of Macmillan Pass Member strata that seems much thinned from the Central Block geology as known from Boundary Creek and extending east to the Jason and Tom. In particular, there appears to be very little sand striped mudstones and the chert pebble conglomerate interval is dominantly grits to sandstones showing very distinct grading. The Macmillan Pass Member rocks are sandwiched apparently conformably on either side by very carbonaceous, cherty mudstones that are presumed to represent the basal Portrait Lake Formation on the bottom and the Tom Member on the top. The hole suggests substantial facies variations that are not at present understood. The absence of any significant base metal mineralization is discouraging.

9. RECOMMENDATIONS

It is recommended that drilling be continued at Boundary Creek.

Reported by: *Derek Rhodes*
D. Rhodes
Senior Geologist

Endorsed by: *W. J. Wolfe*
W.J. Wolfe
Manager, Exploration
- Western Canada

DR/dr

APPENDIX A
STATEMENT OF EXPENDITURES
TOTALS FOR SPENDING AT NIDD PROJECT

Communications	\$1,352.88
Staff Costs	\$30,680.00
Indirect Drill Costs (racks/boxes)	\$5,354.80
Transportation:	
Fixed Wing	\$3,383.52
Helicopter	\$49,300.70
Vehicle	\$823.24
Fuel	\$5,572.94
Freight	\$2,908.62
	<u>\$ 61,989.02</u>
Camp Costs:	
Staff Costs	\$14,611.00
Expense Acc.	\$3,990.00
Supplies	\$5,360.00
Groceries	\$10,411.24
	<u>\$34,372.24</u>
Expediting	\$512.50
Drafting Supplies	\$363.03
TOTAL EXCLUDING DIRECT DRILL CHARGES	\$134,624.47

COSTS PER DRILL HOLE

Expenditures listed below are direct drill contract charges ascribed to each hole (actually substantially less than final year end charges) and a prorated amount of the above non-drill contract charges based on the ratio of an individual holes drilled meterage over the total drilled on the project.

NB 91-21

Direct Drill Contract Costs	\$34,960.00
% of Total Drilling = 15.6%	
Amt of Non Direct Drill Costs	\$21,001.00
	<u>TOTAL</u> <u>\$55,961.00</u>

NB 91-23

Direct Drill Contract Costs	\$44,539.00
% of Total Drilling = 19.9%	
Non Direct Drill Costs	\$26,790.00
	<u>TOTAL</u> <u>\$71,329.00</u>

NB 91-24A

Direct Drill Contract Costs	\$38,240.00
% of Total Drilling = 17.1%	
Non Direct Drill Costs	\$23,020.00
	<u>TOTAL</u> <u>\$61,269.00</u>

APPENDIX B
AFFIDAVIT

I, Dereck Rhodes, of the District of North Vancouver, in the Province of British Columbia, make oath and say:

1. THAT I am employed as a Senior Geologist by Cominco Ltd., and such have a personal knowledge of the facts to which I hereinafter depose;
2. THAT annexed hereto and marked as Appendix "A" to this my affidavit is a true copy of expenditures incurred in connection with a drilling program carried out on the Nidd mineral claims;
3. THAT said expenditures were incurred between June 18 and August 9, 1991 for the purpose of mineral exploration on the noted claims.



Dereck Rhodes
Senior Geologist


DR/dr

February, 1992

APPENDIX C
STATEMENT OF QUALIFICATIONS

I, Dereck Rhodes, of the District of North Vancouver, in the Province of British Columbia, make oath and say:

1. THAT I am a geologist residing at 2514 Bronte Road, North Vancouver, British Columbia with a business address at 700-409 Granville Street, Vancouver, British Columbia.
2. THAT I graduated with a B.Sc. in geology from McMaster University, Hamilton, Ontario in 1969.
3. THAT I have practiced geology with Cominco Ltd. from June, 1969 to the present.



Dereck Rhodes
Senior Geologist

DR/dr

February, 1992

Property: Nidd
Commenced: June 18

District: Yukon
Location: Boundary Ck.

Hole No. NB91-21
Tests at: Faulty
compass-no tests
Cor. dip:-55°
True Brg.: 210°

Completed: June 24
Coordinates: 5+55 N 2+65 W
Recov.: 93.6%

Core size: HQ/NQ
Date: June 25-28

Logged by: Dereck Rhodes

Objective: To test lead soil anomaly on strike of NB90-19

METRES FROM	TO	DESCRIPTION
0	8.5	CASING/OVERBURDEN
8.5	225.4	MACMILLAN PASS MEMBER
8.5	23.6	<p>MCg - MEDIUM CLAST SIZE, CHERT PEBBLE CONGLOMERATE - FRACTURED WITH RUSTY ORANGE COATINGS ON FRACTURES AND 2-3% FINE RUSTY MOLDIC POROSITY AFTER PYRITE</p> <p>Typical medium clast size (avg. 1cm. range 0.1 to 3.0cm) chert pebbles, generally light grey in core, occasionally black. Clasts are well rounded and in clast contact with silica cement. A few pebbles show leached, disseminated porosity that could be after siderite. Oxidation and leaching goes down to the bottom of the interval.</p>
23.6	23.8	<p>MCg - CHERT PEBBLE CONGLOMERATE - HIGHLY FRACTURED WITH ZONES OF GOUGE AND CLAY - SMALL FAULT OR SHEAR</p> <p>Small 1-4 cm. angular pieces of chert pebble conglomerate, speckled rusty orange in fine clay/rock gouge matrix.</p>
23.8	24.9	<p>MMa1 SILT STRIPED MUDSTONE - STRONGLY FRACTURED</p> <p>Typical faintly striped mudstone with short intervals of fault gouge and clay and strong fracturing. bedding to core axis angle = 60° at 24.3m. - strongly fragmented.</p>
24.9	26.9	<p>MCg FINE TO MEDIUM CHERT PEBBLE CONGLOMERATE - PYRITIC</p> <p>Typical clast supported, round chert pebble conglomerate in silica cement. Conglomerate is partially pyritized with 5 -7% pyrite partially replacing clasts as rims or more commonly internal nucleus replacement.</p>
26.9	28.1	<p>MG - FINE CHERT GRIT</p> <p>Light grey rock composed of 0.5 to 4.0 mm. avg. 1mm. chert grains in clast contact in silica cement. 2-3% disseminated pyrite crystals, bedding to core axis angle = 60°.</p>

METRES FROM	TO	DESCRIPTION
28.1	30.5	<p>MCg - COARSE PYRITIZED CHERT PEBBLE CONGLOMERATE - QUARTZ VEINED - MINOR SPHALERITE BLEBS</p> <p>Good clast supported conglomerate in silica cement - at least 10% of clasts exceed 3.0 cm. in size and range up to 8.0 or 9.0 cm. Some are black, relatively subangular, silicified mudstone clasts 1-4.0 cm.. White bull quartz veins cut rock at 60 to 70° to core axis forming 10 to 15% of interval except at 30.1 -31.5 where quartz veins both subvertical and at high angle form 60% of rock. Pyrite is present forming 5-7% of rock as pebble replacement and interstitial to clasts. Minor red brown sphalerite occurs as interstitial grains and grain aggregates from 29.1 down.</p>
30.5	31.5	<p>MMx - MUDSTONE WITH STRONG FAULT ZONE AT BASE, ONLY FAINT LAMINAE</p> <p>Dark grey, soft mudstone with few silt laminae and 3-4 % irregular fragmented pyrite veinlets, gives way to strong clay zone and fault gouge from 31.1 -31.5. Bedding at top 45° to the core axis.</p>
31.5	32.7	<p>MD - COARSE CHERT PEBBLE DIAMICTITE</p> <p>0.5 to 8.0 cm. chert pebbles form 60 to 80 % of rock but are only partially clast supported and sit in a black, silicified mudstone matrix. White quartz appears to form some of the clasts, 5-7% pyrite partially replaces some clasts</p>
32.7	39.1	<p>MMx - MUDSTONE/FINE SILTSTONE - DARK GREY WITH UNDULATORY, WISPY, SUBCONFORMABLE PYRITE BANDS - DECOMPOSED TO CLAY IN MUCH OF UPPER INTERVAL WITH SOME DISTINCT FAULT GOUGE ZONES</p> <p>Unusual textured, dark grey, soft, mudstone to fine siltstone that hosts 5-10% pyrite, partly as fine disseminations but more commonly as 0.2 to 1.0 cm. bands or veinlets that are sometimes discordant but often subparallel to bedding. The pyrite bands are accompanied by a fine white quartz. Strong fault gouge is evident at 34.5 -34.7, 32.7-32.8, 35.6-35.7, 36.4-36.5, 36.8-36.9. Much of mudstone from 32.7-36.9 is partly decomposed to soft clay presumably because of faults. From 36.9-39.1 mudstone is well preserved, bedding to core axis angle = 70°.</p>
39.1	39.8	<p>COARSE CHERT PEBBLE DIAMICTITE</p> <p>50 -60% 0.5 to 8.0 cm. chert pebbles float in dark grey mudstone matrix.</p>

METRES

FROM TO

DESCRIPTION

39.8 41.3

MMx MUDSTONE - AS 32.7 -39.1

Fault gouge at 40.05 -41.15, Bedding to core axis is 70° above fault, 45° to core axis below fault.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
41.0	42.5	62	250	350	0.8	1.5
42.5	43.5	202	3240	0.9%	11.8	12.1
43.5	45.0	73	396	90	1.1	2.4

41.3 43.4

MD - CHERT PEBBLE DIAMICTITE - MEDIUM TO COARSE

Chert pebbles form 70 - 80% of rock and vary from 0.1 to 8.0 cm with some silicified mudstone clasts. Clasts are often in contact, but commonly have some fine black mudstone matrix - silicified. Pebbles are more angular with fine "embayed" edges. Stylolitic contact zones between pebbles are common. Pyrite occurs as interstitial grains and aggregates and replacing a few clasts. Trace amounts of red, brown sphalerite blebs are evident in rock, at 42.7- 42.9 vein composed of pyrite aggregates and 30% red-brown, sphalerite aggregates cuts core at 30° to the core axis. From 42.9 - 43.6 30-50% pyrite forms irregular vein and replacement system but with negligible sphalerite

43.4 47.0

MMA3,4 MEDIUM TO COARSE SAND BANDED MUDSTONE

Interval is dominantly typical MMA mudstones with 0.5 to 10 cm. thick bands of fine to medium grained sandstone. Slight pyrite impregnation of sand bands is evident. At 43.55-43.6 grit band is present and at 43.8-43.9 fine chert pebble diamictite with pyrite vein. Bedding varies slightly in interval but is not very deformed. From 43.4-45.9 bedding is generally at 60° to core axis, bedding to core axis angle =45° from 45.9-46.6 and from 46.6 -46.9 bedding to core axis angle = 70°.

47.0 47.3

FAULT ZONE

Zone of intense fault gouge and clay with some ground up quartz- could be significant fault

47.3 50.0

MDC MEDIUM TO COARSE CHERT PEBBLE DIAMICTITE

as 41.3-43.4, 3-4% pyrite replacing chert clasts. Occasional trace of fine red brown sphalerite. Apart from subangular and embayed edges, many of pebbles show internal fractures sometimes with pyrite

METRES
FROM

TO

DESCRIPTION

developed along them

END OF HQ CORE AT 50.0 METRES - REDUCE TO NQ

50.0 57.5

MDC minor MMA FINE TO COARSE CHERT PEBBLE DIAMICTITE WITH MINOR MUDSTONE INTERBEDS

Similar to above unit - generally composed of 60-90% light grey, less commonly dark grey, subrounded to quite commonly angular to subangular chert clasts and 2-5% silicified mudstone clasts in a dark grey to black, silicified mudstone matrix. Rock is mostly densely packed with clasts giving a superficial chert pebble conglomerate look however, mud matrix and clast angularity are distinctive. Clast size varies greatly throughout interval seeming to define beds. Minor mudstone intervals also occur that seem to be interbeds (rather than large clasts)

50.0-52.0 Coarse chert pebble diamictite 0.5 to 8.0 cm clasts, average 1.5-2.0cm.

52.0-52.2 Fine chert pebble diamictite 1-10mm. clasts, average 4mm.

52.2-52.4 Fine sand striped mudstone - pyrite impregnations, bedding to core axis angle =45°

52.4-54.2 More open diamictite with fewer clasts (50-60%) and 2-5% areas of clast free black siliceous mudstone. Bedding in mudstone at 54.1 is 20° to core axis (fragment?)

Most of interval shows 2-3% pyrite interstitial to and partly replacing clasts, but from 54.2 down pyrite forms about 5% of rock as interstitial grains and grain aggregates and replacing clasts.

57.5 65.6

MDC/Lesser MMA1 COARSE TO MEDIUM CHERT PEBBLE DIAMICTITE WITH LESSER FINE SILT STRIPED MUDSTONE BEDS

Rocks quite similar to previous interval but with slightly higher proportion of mudstone interbeds. Diamictites are weakly to moderately pyritized and some pyrite veins, and impregnates, silt banded mudstones.

57.5-57.9 Silt and fine sand striped mudstones, soft, laminae at 1-5 mm. intervals, bedding to core axis angle = 45°

57.9-59.2 Medium chert pebble conglomerate with areas of increased mud matrix over 1-2 cm. about 4% pyrite replacing pebbles and interstitial to pebbles

59.2-60.2 Sand/silt striped mudstones form 50% of interval, interbedded with medium clast size chert pebble rich diamictite. 5-7% pyrite partially replacing pebbles in diamictite, 1-2% pyrite as veins in mudstones, bedding to core axis angle = 25° at

METRES FROM	TO	DESCRIPTION														
		59.3 and 59.8														
		60.2-64.0 Medium chert pebble diamictite approaching chert pebble conglomerate with more rounded clasts, close packed with less obvious siliceous mudstone matrix. Rock averages about 10% pyrite but locally over 30-40 cm. rock is 30-40% pyrite replacing clasts and in interstices														
		64.0-64.5 Fine silt and sand striped mudstone, bedding to core axis angle =45°, undulatory veins of pyrite and lesser silica, 1-5mm. thick, cut core at slightly conchordant attitudes to bedding														
		64.5-64.8 Fine chert grit with 3-5% flat mudstone fragments - partly imbricated with about 8% pyrite replacing clasts and interstitial														
		64.8-65.6 Fine silt and sand striped mudstone with one grit band and several coarser sand bands. Bedding at 45° to core axis steepens to 15° to the core axis at base near fault zone.														
65.6	66.0	FAULT ZONE														
		60% quartz veined and sheared, sand striped mudstone precedes 4-6 cm. of clay and fault gouge.														
66.4	72.1	MCg to MG transitional from MD PYRITIZED FINE CHERT PEBBLE CONGLOMERATE TO COARSE GRIT WITH PATCHES AND SWIRLS OF BLACK MUDSTONE - HIGH PROPORTION OF BLACK MUDSTONE CHIPS - TRANSITIONAL FROM DIAMICTITE														
		Rock that approaches fine conglomerate or coarse grit in character but has high proportion of subangular clasts. Average clast size is about 1-3 mm. Occasional bands of black mudstone are present but generally black mudstone is preserved as crescentic to irregular shaped, 1-4 cm., patches within fine diamictite/coarse grit. About 8% pyrite occurs replacing clasts and interstitial to clasts. No distinct bedding but subtle imbrication of clasts suggests bedding at 40° to core axis. From 70.0 down gradual coarsening of clasts to 1.0 cm. average with last 2.5 metres showing shear fabric with quartz veining														
		<table border="1"> <thead> <tr> <th>From</th> <th>To</th> <th>Cu(ppm)</th> <th>Pb(ppm)</th> <th>Zn(ppm)</th> <th>Ag g/T</th> <th>Fe(%)</th> </tr> </thead> <tbody> <tr> <td>71.0</td> <td>72.5</td> <td>43</td> <td>112</td> <td>108</td> <td>0.6</td> <td>2.7</td> </tr> </tbody> </table>	From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)	71.0	72.5	43	112	108	0.6	2.7
From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)										
71.0	72.5	43	112	108	0.6	2.7										
72.1	72.7	FAULT ZONE														
		72.1-72.3 Strong fault gouge and clay														
		72.3-72.7 Strongly fractured white bull quartz														
72.7	93.7	MCg MEDIUM TO OCCASIONALLY FINE CHERT PEBBLE														

METRES
FROM

TO

DESCRIPTION

CONGLOMERATE - HIGH PROPORTION OF SILICIFIED MUDSTONE CLASTS - MORE ELONGATE CLASTS WITH GOOD IMBRICATION - CUT THROUGHOUT BY 5% 1- 20 CM. THICK PYRITE VEINS WITH MUCH LESSER RED-BROWN SPHALERITE - ALSO INTERSTITIAL SPHALERITE AND PYRITE

Atypical chert pebble conglomerate with subrounded clasts forming 95% of rock in silica cement but with high proportion of silicified and more angular mudstone clasts. Clasts range from 0.1mm to 10.0 cm. throughout most of interval with an average of 1.0 to 1.5 cm.. Locally finer conglomerates with only 0.5 cm. average clast size are present. 2-30 cm. pyrite veins seemingly composed of 1-20mm. internal ovoid aggregates cut interval at 30 to 100 cm. intervals. 5-15% red-brown sphalerite stringers and aggregates with colloform habit accompany pyrite. Sphalerite is more abundant with pyrite from 83.2 down. Pyrite also occurs as interstitial grains and grain aggregates 0.1-3.0mm. with only slight pyrite replacement of clasts. Trace interstitial sphalerite occurs rarely down to 83.2m. and then blebs of sphalerite are relatively common constituent of fine conglomerate interval from 83.2-86.3 and only trace constituent thereafter. Imbrication attitudes (bedding?) are 30° to core axis at 86.1, 35° at 89.0, 45° at 82.8, 40° at 85.8, 60° at 86.3, 60-70° at 87.5-93.7. Pyrite veins occur at 72.7-73.1, 76.7-76.85, 77.4-77.5, 78.2-78.6, 80.9-81.2, with more sphalerite at 83.3-83.45, 89.7-89.8, 90.9-91.2, 91.9-92.0. A few thinner veinlets occur elsewhere.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
72.5	74.0	573	224	0.9%	8.4	12.3
74.0	75.5	50	44	405	<0.4	0.9
75.5	77.0	240	96	1140	2.2	8.6
77.0	78.5	140	177	314	2.6	12.9
78.5	80.0	79	71	341	0.7	3.4
80.0	81.5	191	106	990	1.7	4.6
81.5	83.0	49	49	233	<0.4	3.0
83.0	84.5	140	94	2.2%	1.6	5.8
84.5	86.0	100	53	0.7%	0.4	3.4
86.0	87.5	62	33	1190	<0.4	2.0
87.5	89.0	23	27	132	<0.4	1.2
89.0	90.5	276	100	2170	0.5	4.7
90.5	92.0	1480	104	0.7%	1.0	3.7
92.0	94.0	116	83	188	0.9	4.6

93.7 98.8

MMA1,2 - SILT AND SAND STRIPED MUDSTONE TO LOCALLY ONLY FAINTLY LAMINATED MUDSTONE - CUT BY 3-5% SLIGHTLY DISCORDANT PYRITE/SILICA VEINLETS-QUARTZ VEINED WITH SEVERAL FAULT ZONES WITH CLAY AND GOUGE

METRES
FROM

TO

DESCRIPTION

		Medium grey, soft mudstone that varies from indistinct texture to being more typical sand striped mudstone. Strong cleavage fabric cuts rock at low angle to bedding (30° to 45° to core axis). Bedding generally 70° to the core axis. Numerous zones of fault gouge with mudstone decomposed to clay occur in interval at 93.7-93.8, 95.7-96.0, 97.0-97.1, 97.6-97.8 and 98.4-98.8														
98.8	99.1	<p>MDC - FINE CHERT PEBBLE DIAMICTITE - PYRITIC WITH MINOR SPHALERITE AND GALENA</p> <p>Densely packed chert pebble diamictite, 85-90% clasts in mud matrix - fine grit size clasts sometimes form matrix for 2-15mm. clasts. Few clasts are subrounded but most show peculiar angularity of diamictite clasts. 15-20% pyrite occurs in first 10 cm. interstitial to and replacing clasts. Fine red brown sphalerite blebs and aggregates with finely crystalline galena occur in middle part of interval (only 0.5% and 0.1% of rock respectively)</p>														
99.1	100.6	<p>MA - FINE CHERT SANDSTONE</p> <p>Light to medium grey, even grained 0.1-1.0 mm. grain size rock composed of silica (chert?) grains - several 1-3cm. pyrite bands cut rock.</p> <table border="1"> <thead> <tr> <th>From</th> <th>To</th> <th>Cu(ppm)</th> <th>Pb(ppm)</th> <th>Zn(ppm)</th> <th>Ag g/T</th> <th>Fe(%)</th> </tr> </thead> <tbody> <tr> <td>99.4</td> <td>99.8</td> <td>76</td> <td>96</td> <td>908</td> <td>1.6</td> <td>4.5</td> </tr> </tbody> </table>	From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)	99.4	99.8	76	96	908	1.6	4.5
From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)										
99.4	99.8	76	96	908	1.6	4.5										
100.6	103.2	<p>MDC - PACKED CHERT PEBBLE DIAMICTITE - MEDIUM CLAST SIZE - PYRITIC</p> <p>0.1 - 5.0 cm. average 0.5 cm. commonly subangular chert clasts, less commonly rounded, sit in poorly sorted rock that has 10% silicified mudstone matrix. Rock is partially clast supported by fine grit size fraction, partially by mudstone fraction. Many of clasts appear fractured near in-situ. 10% pyrite occurs in rock as 0.1-1.0 mm. crystals and crystal aggregates interstitial to the clasts. 2-4% irregular quartz veins and patches occur in lower half. Lowest 0.5m. shows increased shearing.</p>														
103.2	103.6	<p>PYRITIC FAULT GOUGE WITH VOLCANIC MATERIAL</p> <p>Highly sheared rock with first 15 cm. clay and rock flour with rock chunks that are partly pyritic and partly composed of grey and green clay derived from volcanics. The lower 0.25 M. is sheared rock with</p>														

METRES
FROM

TO

DESCRIPTION

103.6 110.0

blue green, very soft, lapilli composed of a clay mixture that may be altered pumice. 20-40% pyrite wisps and nodules are present at the base next to 4.0 cm. of strong clay gouge with quartz fragments.

MDCv -FLOATING CHERT PEBBLE DIAMICTITE IN TUFFACEOUS MUDSTONE MATRIX - MODERATELY TO STRONGLY PYRITIC

Interval varies considerably in proportion of clasts to matrix, but generally consists of 20-50% clasts - dominantly chert pebbles that are angular to subrounded with 5-10% of clasts being silicified black mudstones. Clasts float in and are supported by black, siliceous mudstone that is coloured variably grey by a fine ash tuff component (now sideritic) forming swirls and irregular bands. Distinctive blue green, 1-10 mm. soft lenticular forms of mixed clay are believed to be altered, pumaceous lapilli. Pyrite forms 5-8% of rock as pyritic aggregates, pyrite "clasts" and irregular pyrite mottles (0.1-3.0 cm) in size. Rare traces of sphalerite are evident with 0.1 to 2.0 vol.% disseminated sphalerite in a chert pebble at 106.9, 4.0 cm. pyrite vein with 5% orange, brown sphalerite occurs at 107.7 - 107.75. Bedding at 104.5 -105.3 is at 30° to the core axis, 110.0 - at 60° to the core axis.

110.0 119.7

Mvt - TUFFACEOUS, MODERATELY TO VERY PYRITIC MUDSTONES WITH OCCASSIONAL FLOATING PEBBLES AND CLASTS

Interval is composed of varied textured mudstones ranging from black mudstones with 5- 50% pyrite occurring as 0.1-20mm. pyrite aggregates and irregularly swirled, contorted laminations to variably grey mudstones, speckled with fine (<0.1 mm.) to coarse (1-3mm) ash that forms discontinuous laminations, swirls and mottles accompanied by 5-20% pyrite clasts, aggregates and disseminations. Much of coarser ash is coloured yellow, due to 100% siderite replacement. Occassionally pale green to bright blue-green, mixed clay, irregularly shaped forms (1-10mm) are present that are thought to be altered pumice lapilli. Despite extensive pyrite, no sphalerite or galena is evident. Bedding to core axis angle =85° at 111.2, 50° but contorted at 111.5, highly folded at 112.2-114.0 with 50 to 60% pyrite, 60° at 114.3, 20-30° at 116.5, very folded (isoclinal?) at 117.7.

From 117.7-119.7 Variably tuffaceous pyritic mudstones host 5-30 cm. horizons of diamictite with 5-10% chert pebbles - still 15-20% pyrite as disseminations and fine aggregates accompanied by

METRES
FROM

TO

DESCRIPTION

some white silica. Bedding in interval is at 45° to core axis. At 119.0 interesting spherical siderite/sphalerite concretion - yellow-brown siderite with red brown sphalerite occupying radiating syneresis-like cracks.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
118.0	119.5	110	66	2280	1.8	9.6

119.7 156.7

MCg - CHERT PEBBLE CONGLOMERATE (OCCASSIONALLY CHERT GRIT) - VARIABLY PYRITIZED FROM MINOR TO MODERATE - CUT AT VARIABLE INTERVALS WITH PYRITE+-SIDERITE+- RED BROWN SPHALERITE VEINS

Typical, light grey, fine to medium clast size (avg 0.5-1.0cm.) chert pebbles in light grey silica matrix - generally clast supported but with a tendency for 50% fine grit fraction acting as supporting matrix for larger pebbles. In general whole interval is conglomerate, but finer subdivisions are made below on basis of texture.

119.7-122.7 Medium Chert Pebble Conglomerate - 3-5% fine interstitial pyrite, angularity and matrix component bordering on diamictite in basal 0.5m. 2-3cm. irregular pyrite and red brown sphalerite vein at 120.0 and finer pyrite veins at 120.05 -120.3. Trace interstitial blebs of red brown sphalerite, minor siderite in interval.

122.7-122.85 Diamictite -10-15% fine 0.1 -1.0 cm. chert pebbles float in black mudstone matrix. "Bedding" at 70° to core axis - might be cleavage. 2-3% 0.5 to 2.0 cm quartz veins and patches in rock.

122.85-122.9 Fault Gouge 5.0 cm. of strong clay - incorporating milled rock and quartz fragments

122.9-123.7 Medium chert pebble conglomerate, 4% pyrite as interstitial veins, disseminations and rarely replacing pebbles. Trace interstitial blebs and grains of yellow siderite, red brown sphalerite

123.7-126.2 Sheared and leached, medium clast size, chert pebble conglomerate. Shearing is strongest from 123.8-124.3 about fault gouge at 124.1. Rock shows clast moldic porosity seemingly after leached pyrite or siderite clasts. Only minor pyrite - possibly leached out

126.2-133.4 Medium Chert Pebble Conglomerate - weakly pyritic except at 131.2 -131.5 where 30 -40% pyrite forms irregular vein and replacement network

METRES
FROM

TO

DESCRIPTION

with about 1% red brown sphalerite, elsewhere 2-3% interstitial and clast replacement pyrite and lesser siderite is evident. Some moldic porosity is locally evident after pyrite and siderite (in part in clasts)

133.4-134.6 Fine to medium chert grit with fine interstitial pinpoint porosity, 0.1-2.0 mm. chert grains comprise rock. Interval is porous due to pinpoint porosity and soaks up water - this is believed due to leaching out of fine yellow, interstitial crystals of siderite that are preserved in local patches in grit. Upper bedding contact is at 45° to the core axis.

134.6-148.6 Medium Chert Pebble Conglomerate with moderate 3-4% interstitial yellow siderite crystals and crystal aggregates that are partly leached out. Prominent pyrite veins with red brown sphalerite and some coarse siderite cut rock at 20° to core axis at 137.5 -137.9 and 146.4-146.9. Lesser 0.5 to 2.0cm. stringers and veinlets cut core elsewhere. Occasional pebble is partly replaced by pyrite.

148.6-151.0 Fine chert pebble conglomerate with relatively high(5-10%) proportion of thin angular black mudstone clasts giving crude imbrication to rock at about 30° to core axis. 5% pyrite occurs as interstitial crystals, crystal aggregates and thin subvertical cross-cutting veinlets. Traces of red-brown 0.1-1.0mm. sphalerite occur interstitially.

151.0-152.2 Coarse chert pebble conglomerate - average clast 1.5cm.- many 2-4 cm. clasts - relatively poorly sorted with 3-5% siderite partially leached out. At 151.8-152.7 poor core recovery with only 0.2m including some white quartz- fault?

152.2-154.9 Fine to medium chert pebble conglomerate, 5-10% fine pyrite-mostly interstitial but partly replacing clasts. Minor to locally 1 volume percent sphalerite occurs as interstitial blebs.

154.9-156.7 Only 4.6 m. of crumbly, friable, partly sheared conglomerate. 1.2 metres of core lost - possible fault zone.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
119.5	121.0	115	89	1.6%	1.8	4.5
121.0	122.5	120	126	1100	1.5	1.7
122.5	123.6	58	92	1.0%	2.8	2.8

METRES

FROM TO

DESCRIPTION

From	To	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag g/T	Fe (%)
129.0	130.5	88	131	1.3%	1.9	3.5
130.5	132.0	464	456	2.5%	3.2	2.5
132.0	133.5	76	95	1720	0.9	2.4
133.5	135.0	155	218	0.6%	3.1	1.5
135.0	136.5	21	80	0.6%	1.2	2.5
136.5	137.3	140	117	0.6%	1.3	3.7
137.3	138.0	175	283	13.0%	9.2	24.8
138.0	139.5	18	64	455	1.1	5.5
139.5	141.0	214	392	4860	1.0	1.6
141.0	142.5	376	877	4410	3.4	4.0
142.5	144.0	70	226	55	0.7	1.8
144.0	145.5	39	122	154	1.5	2.4
145.5	147.0	256	387	4.6%	9.2	12.2
147.0	148.5	25	146	2780	2.3	6.2
148.5	150.0	481	240	0.8%	1.5	4.8
150.0	151.5	60	257	2020	1.0	1.0
151.5	153.0	127	301	2100	0.7	1.3
153.0	154.5	542	343	4360	1.1	3.9
154.5	156.0	372	351	1350	0.6	3.5
156.0	157.5	242	470	587	0.6	1.9

156.7 176.1

MCg - MEDIUM CHERT PEBBLE CONGLOMERATE - QUARTZ FLOODED - QUARTZ/SIDERITE/PYRITE/SPHALERITE VEINED

Unusual textured rock consisting of chert pebble conglomerate that shows a high proportion of stylolite-like annealed and sutured boundaries between pebbles and intervals of conglomerate. 10-20% coarse white quartz forms irregular mottles and patches that seem to replace parts of conglomerate. A further 5-10% white quartz occurs as at least two generations of 1-10 mm. quartz veins at 10-30° to core axis and 60-90° to core axis. 2-5% relatively coarse 1-5mm. iron carbonate (siderite/ankerite) occurs as irregular disseminations different in colour and texture from usual siderite and seeming to be at least two phases (possibly remobilized from more typical siderite). Red brown sphalerite occurs in minor aggregates and blebs associated with iron carbonate. Very irregular, wispy, horsetailing pyrite veins that are often fragmented or disrupted, occur sporadically throughout the interval, generally oriented at 10-20° to the core axis. Much of pyrite is apparently barren but occasionally trace to 5% red, brown sphalerite occurs within pyrite.

From	To	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag g/T	Fe (%)
157.5	159.0	227	441	694	1.2	4.8
159.0	160.5	23	49	232	1.6	8.3
160.5	162.0	15	83	1490	1.4	9.9
162.0	163.5	70	96	2.3%	2.5	17.0

METRES

FROM TO

DESCRIPTION

163.5	165.0	16	37	262	0.8	12.9
165.0	166.5	15	27	3540	0.5	11.8
166.5	168.0	20	118	498	2.6	11.8
168.0	169.5	70	108	1.0%	2.4	10.5
169.5	171.0	29	101	970	3.0	12.2
171.0	172.5	29	19	1.5%	0.8	1.6
172.5	174.0	37	40	281	0.8	0.7
174.0	175.5	115	171	2080	0.9	1.2

176.1 176.6

MMa1 - FINE SAND STRIPED MUDSTONE - SIDERITIC/PYRITIC - STRONG CLEAVAGE

Fine 1-10mm. fine sand laminae in dark, grey-black mudstone, bedding at 45° to core axis, strong cleavage at 030° to core axis and nearly perpendicular to bedding.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
175.5	177.0	33	158	866	1.1	5.2

176.6 177.3

MCg/Mg - COARSE CHERT GRIT TO FINE CHERT PEBBLE CONGLOMERATE

Fine silica cemented conglomerate/coarse grit, 0.1 to 8.0 mm. average 2mm. clast size in silica cement with 5-6% pyrite, 3-4% siderite where not quartz veined. Coarse white quartz veins and replaces 60% of interval.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
177.0	178.5	71	58	292	2.0	5.2

177.3 177.8

MMa1 - FINE SAND STRIPED MUDSTONE

As 176.1 - 176.6, Bedding only 0-15° to the core axis.

177.8 178.5

MCg - PYRITIC, FINE CHERT PEBBLE CONGLOMERATE

Rock composed of 0.1 to 1.5 cm. pebbles in silica matrix, more angular, black mudstone clasts and more mudstone matrix than usual - rock approaches diamictite in character. 7% fine pyrite interstitial to clasts and partially replacing conglomerate.

178.5 179.1

MMa1/MD - MUDSTONE WITH BANDS OF CHERT PEBBLE DIAMICTITE

METRES
FROM

TO

DESCRIPTION

179.1 225.4

Black mudstone with a few sandstone bands and three 1-5cm. intervals of 10-20% chert pebbles floating in a mudstone matrix. Bedding variable with fold axis in middle, 0-20° to core axis.

MMA1,2 - FINE TO MEDIUM SAND BANDED MUDSTONES -
SIDERITIC - WITH STRONG CLEAVAGE

Macmillan Pass Member mudstones from 179.1 - 205.5 shows abundant (every 2-10cm.) 0.5 - 5.0 cm. thick sand bands, generally planar laminated and coloured yellow-grey due to abundant interstitial siderite. Very sideritic "chemical/diagenetic" bands are common in this interval with typical diffuse contacts. Bedding is highly variable suggesting strong folding and moderate cleavage is evident in the rock at 5-10° to the core axis - both suggest proximity to a fold axis. Bedding to core axis angle = 15° at 179.1 -180.3, 80° at 180.3 -182.4, variable 15-30° at 182.4-184.6, 70° at 184.6-186.4, 15 to 20° at 186.4 -194, 60° at 194 -194.4, 5-10° at 194.4-198.3, 80° at 198.3-198.6, 70-80° at 198.6 -199.3, 45° at 199.3 -200.6, 30° at 200.6-204.8, 50° at 204.8-205.5.

At 195.8- 196.0 pyrite vein with lesser siderite cuts core at 10° to the core axis, at 196.3 - 196.8 and 197.5 - 198.0 vein composed of mixed pyrite, siderite and red-brown sphalerite cuts core at 0-5° to the core axis (all three may be same vein given low core angle)

205.5 - 224.9 Sand striped mudstones as above with 1 -80 mm. generally sideritic sand bands but less abundant with larger 2-30 cm. intervals of mudstone between sand bands. Moderate cleavage still evident at 5° to the core axis. More sporadic sideritic chemical/diagenetic bands. Bedding to core axis is generally at low angle but quite variable, bedding to core axis angle = 40° at 205.5-206.9, Fault gouge and clay at 206.9-207.2, 50-70° at 207.1-209.4, 10° at 209.4 - 211.9, 5-10° at 211.9-217.3.

217.3 -219.2 60 -70% quartz veins with convoluted bedding generally at 0-10° to the core axis. Some (5%) coarse, yellow iron carbonate crystals accompany the veining - minor red-brown sphalerite at 218.7m.

219.2 - 219.4 Small band of chert pebble diamictite

219.4 - 221.6 Highly variable bedding with obvious folding in core - bedding to core axis generally ranges from 0 - 30° to locally 60°. High angle cleavage is prominent at 5-10° to the core axis. 3-5% quartz veins are present sometimes following

METRES
FROM

TO

DESCRIPTION

cleavage

221.6 - 221.9 Dominantly coarse white quartz vien.
5% red-brown sphalerite aggregates in 1 cm. band at
the top

221.9 - 225.0 5-20° to core axis bedding - contorted
quartz veins form 3-5% of rock increasing to 20% at
base.

225.0 - 225.4 Coarse white quartz vein with minor
pyrite - forms boundary between sand striped
mudstones and ribboned cherty mudstones

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
196.5	198.0	428	164	1.3%	5.0	12.7
198.0	199.5	53	18	603	0.6	9.2

225.4 237.1

RIBBONED, VERY CARBONACEOUS, VERY CHERTY MUDSTONES -
AFFINITY UNCERTAIN - PROBABLY BASAL PORTRAIT LAKE
FORMATION - (ROAD RIVER GROUP ?)

Same unit intersected at base of DDH NB 83-9, 90-19.
Black, very carbonaceous, very cherty mudstones with
graphitic lustre on almost all slip and bedding
planes. Rock is extremely siliceous with numerous
stylolite-like sutures, both normal to bedding and
along subvertical fractures. Bedding appears very
irregular with strong folding and numerous stylolite
healed fractures. 3 - 5% fine 1 - 10 mm.
discontinuous quartz veinlets are common in the core.
2 - 3% pyrite occurs as fine, discontinuous wisps and
laminations.

225.4 - 226.5 strongly folded, contorted - 15 to
20% 1 - 30 mm. quartz veins - 2 generations at least

226.5 - 227.2 Ribboned bedding evident at 50° to
the core axis.

227.2 - 227.5 Flattened bedding 5 - 15° to core
axis.

227.5 - 230.6 Good bedding at 50° to the core axis

230.6 - 237.1 Strongly folded, convolute bedding
at low angle 0-15° to the core axis

END OF HOLE AT 237.1 METRES

Runs and Recoveries for NB91-21

From	To	Int.	Recov'd	%	From	To	Int.	Recov'd	%
8.5	10.5	2.0	1.0	50.0	118.3	121.3	3.0	3.0	100.0
10.5	11.6	1.1	1.1	100.0	121.3	124.4	3.1	3.1	100.0
11.6	12.8	1.2	0.4	33.3	124.4	127.4	3.0	3.0	100.0
12.8	14.3	1.5	0.5	33.3	127.4	128.9	1.5	1.5	100.0
14.3	15.2	0.9	0.6	66.7	128.9	130.5	1.6	1.6	100.0
15.2	16.8	1.6	0.5	31.2	130.5	130.8	0.3	0.3	100.0
16.8	18.0	1.2	0.4	33.3	130.8	133.5	2.7	2.7	100.0
18.0	18.6	0.6	0.2	33.3	133.5	136.6	3.1	3.1	100.0
18.6	19.2	0.6	0.4	66.7	136.6	139.6	3.0	3.0	100.0
19.2	20.7	1.5	1.5	100.0	139.6	141.1	1.5	1.4	93.3
20.7	22.3	1.6	1.5	93.7	141.1	142.6	1.5	1.2	80.0
22.3	23.8	1.5	1.5	100.0	142.6	143.9	1.3	1.1	84.6
23.8	25.3	1.5	1.0	66.7	143.9	145.7	1.8	1.8	100.0
25.3	26.8	1.5	1.5	100.0	145.7	148.7	3.0	3.0	100.0
26.8	28.3	1.5	1.5	100.0	148.7	151.8	3.1	3.1	100.0
28.3	29.9	1.6	1.6	100.0	151.8	152.7	0.9	0.1	11.1
29.9	31.4	1.5	1.4	93.3	152.7	154.9	2.2	1.5	68.2
31.4	32.9	1.5	1.5	100.0	154.9	156.7	1.8	0.5	27.8
32.9	34.4	1.5	1.5	100.0	156.7	157.9	1.2	1.2	100.0
34.4	36.0	1.6	1.5	93.7	157.9	160.9	3.0	3.0	100.0
36.0	37.5	1.5	1.5	100.0	160.9	163.4	2.5	2.5	100.0
37.5	39.0	1.5	1.5	100.0	163.4	166.4	3.0	3.0	100.0
39.0	39.5	0.5	0.4	80.0	166.4	167.0	0.6	0.5	83.3
39.5	40.1	0.6	0.5	83.3	167.0	167.6	0.6	0.6	100.0
40.1	40.5	0.4	0.3	75.0	167.6	170.1	2.5	2.5	100.0
40.5	42.1	1.6	1.6	100.0	170.1	173.1	3.0	3.0	100.0
42.1	43.6	1.5	1.5	100.0	173.1	176.2	3.1	3.1	100.0
43.6	45.1	1.5	1.5	100.0	176.2	179.2	3.0	3.0	100.0
45.1	46.6	1.5	1.5	100.0	179.2	182.3	3.1	3.1	100.0
46.6	48.2	1.6	1.6	100.0	182.3	185.3	3.0	3.0	100.0
48.2	49.7	1.5	0.9	60.0	185.3	188.4	3.1	3.1	100.0
49.7	50.0	0.3	0.3	100.0	188.4	190.2	1.8	1.8	100.0
50.0	51.2	1.2	1.2	100.0	190.2	191.4	1.2	1.2	100.0
51.2	54.3	3.1	3.1	100.0	191.4	194.2	2.8	2.8	100.0
54.3	57.3	3.0	3.0	100.0	194.2	196.3	2.1	2.1	100.0
57.3	60.4	3.1	3.1	100.0	196.3	197.5	1.2	1.2	100.0
60.4	63.4	3.0	3.0	100.0	197.5	200.6	3.1	3.1	100.0
63.4	66.4	3.0	3.0	100.0	200.6	203.6	3.0	3.0	100.0
66.4	69.5	3.1	3.0	96.8	203.6	206.7	3.1	3.1	100.0
69.5	72.5	3.0	3.0	100.0	206.7	208.2	1.5	1.5	100.0
72.5	74.7	2.2	2.2	100.0	208.2	209.7	1.5	1.5	100.0
74.7	75.6	0.9	0.9	100.0	209.7	212.8	3.1	3.1	100.0
75.6	78.6	3.0	3.0	100.0	212.8	215.5	2.7	2.7	100.0
78.6	81.7	3.1	3.1	100.0	215.5	217.9	2.4	2.4	100.0
81.7	84.7	3.0	3.0	100.0	217.9	218.9	1.0	1.0	100.0
84.7	87.8	3.1	3.1	100.0	218.9	221.3	2.4	2.4	100.0
87.8	90.8	3.0	3.0	100.0	221.3	222.5	1.2	1.2	100.0
90.8	93.9	3.1	3.1	100.0	222.5	224.0	1.5	1.5	100.0
93.9	96.0	2.1	1.4	66.7	224.0	224.9	0.9	0.5	55.6
96.0	96.9	0.9	0.3	33.3	224.9	226.2	1.3	1.3	100.0
96.9	98.5	1.6	1.0	62.5	226.2	228.0	1.8	1.8	100.0
98.5	100.0	1.5	0.7	46.7	228.0	229.2	1.2	1.2	100.0
100.0	103.0	3.0	2.7	90.0	229.2	230.6	1.4	1.1	78.6
103.0	104.5	1.5	1.5	100.0	230.6	231.0	0.4	0.4	100.0
104.5	106.1	1.6	1.6	100.0	231.0	232.4	1.4	1.4	100.0
106.1	109.1	3.0	3.0	100.0	232.4	233.5	1.1	1.1	100.0
109.1	110.6	1.5	1.5	100.0	233.5	235.5	2.0	2.0	100.0
110.6	112.2	1.6	1.6	100.0	235.5	236.4	0.9	0.9	100.0
112.2	114.3	2.1	2.1	100.0	236.4	237.1	0.7	0.7	100.0
114.3	117.7	3.4	3.4	100.0					
117.7	118.3	0.6	0.6	100.0	entire int =	228.6	214	93.6	

Property: NIDD District: Yukon Hole No.: NB91-23
 Commenced: July 3, 1991 Location: Mac Pass Tests at: See back
 Completed: July 10, 1991 Core size: HQ, NQ Cor. dip: -55
 Coordinates: 6+25N, 60+28W True Brg.: 210°
 Objective: To test zinc soil anomaly - Eleven Ck. % Recov.: 78.9%
 Date: July 10-15
 Logged by: Dereck Rhodes

METRES FROM	TO	DESCRIPTION
0	18.3	Casing/Overburden
18.3	82.7	<p>-PROBABLY ROAD RIVER GROUP-UNIT R5M ATYPICAL</p> <p>Very carbonaceous, black sooty weakly to moderately calcareous mudstone Very black, crumbly, fissile, broken up, weakly to moderately calcareous, mudstones that are relatively soft but became more siliceous from 67.1 down. Rock is fractured and faulted, breaks into fissile chips and pieces and judging by poor recovery is probably in part dissolved. 18.3-50.9 very broken fissile incompetent rock with very poor core recovery in much of section. Bedding generally indistinguishable Fault gouge is evident at 27.4-27.8, 29.0-29.2, 50.6-50.9 50.9-60.5 More competent rock still strongly fractured but with 5 to 30 cm average 10 cm pieces of cylindrical core breaking both along low angle bedding plane and subvertical fractures, few white calcareous sand bands and laminae are present giving slight appearance of more typical unit R5M., Bedding appears consistent at 15° to core axis throughout the interval. 60.5-69.6 very broken fissile, locally clayey gouge zones marking frequent faults. Bedding not very distinguishable but relatively low angle. 68.6-73.8 Slightly more competent core becoming more siliceous, weakly calcareous. Bedding @ 5-10° to core axis. 73.8-82.3 very broken fissile to blocky 1-5 cm mudstone fragments with 30% of interval being clay and fault gouge. 87.3-82.7 more solid-slightly grey striped mudstones. Bedding @ 5° to core axis. Bottom of interval shows fine sandy, gravelly pieces that may mark fault, but in general transition seems more or less normal contact.</p>
82.7	140.5	<p>BLACK VERY CARBONACEOUS - VERY SILICEOUS MUDSTONES LOWER PORTRAIT LAKE FM.?</p> <p>Black, very carbonaceous, very siliceous, mudstone thought originally to be Tom Member but now thought to be Abbott's lower cherty mudstones of the Portrait Lake Fm. occurring between the Road River Gp. calcareous mudstones and the Macmillan Pass Member.</p>

Rocks are very hard and siliceous displaying locally conchoidal fracture and stylolitic bedding planes and fractures. Rocks are also very carbonaceous with graphitic lustre on bedding plane and fracture surfaces. Slight variations in unit are noted.

82.7-91.1 Black carbonaceous very siliceous mudstone banded with lighter grey 0.5-3 cm siliceous bands speckled with white "radiolaria"

Very similar to rocks in NB91-22. Rocks are strongly contorted and folded - highly fractured but generally healed due to high silica content 2-3% very fine irregular and discontinuous white quartz stringers occur throughout interval.

2-3% pyrite occurs as 0.5-3 cm nodules and occasional stringers and aggregates forming partial matrix in brecciated areas.

Bedding varies between 0 and 30° to core axis but average about 15°.

91.1-103.7 Black carbonaceous siliceous mudstone - slightly softer and lacking light grey bands - occasional 1-10cm near massive pyrite bands. 3-5% pyrite average. Rock has slightly sooty look. Rock is still strongly fractured but relatively competent from 91.1-95.5 with bedding at about 45° to the core axis.

From 95.5-100.7 50-60% of rock is fault gouge and clay with remainder being very fractured and sometimes fragmented. Bedding is not generally identifiable.

From 100.7-103.7 blocky fissile rock breaking often on bedding planes at 05° to core axis. Fault gouge in bottom 0.3 metres.

103.7-116.8 light grey banded mudstones very siliceous and carbonaceous with 0.3-3.0 cm radiolarian speckled, light grey, siliceous bands. Bedding varies from 0-5° to core axis from 103.7-109.1, From 109.1-109.8 no core is recovered from 109.8-113.0 Rock is intensely fractured with 10% irregular coarse quartz veins with bedding locally 0-10° to core axis - Fault gouge at base

113.0-116.8 more competent rock - bedding still at very low angle to core axis 0-15° average 5°. Breaking into fissile plates along bedding and partly on cross cutting fractures.

116.8-134.0 Black non-banded, very carbonaceous, siliceous, "sooty" looking, rock as 91.1-103.7. Relatively untextured rock barring occasional 1 gy laminae and pyrite band. Bedding varies from 0-30° to core axis, average is approx. 10° to core axis. Rock is commonly highly fragmented with very poor core recovery ie. nil from 117.4-118.9 and 119.5-122.0 and 128.0-131.1 (these must mark fault zones)

133.5-134.0 strongly sheared but competent rock with 35% white 1-15 mm quartz veins

134.0-140.5 black, very carbonaceous, very siliceous mudstones with ribboned texture resulting from even

1-10 mm laminae and bands. Coarse white quartz veins occur subparalleling bedding in rock. Bedding is very variable but ranges from 0-30° to core axis, average 10° with some folding in and out of core axis.

140.5 149.4

COARSE LIGHT GREY CHERT SANDSTONE WITH 5-10% SANDSIZED MUDSTONE CLASTS - MODERATELY PYRITIC. Very even homogeneous textured light grey sandstone compared of coarse sand size 0.5-1.0 mm chert grains in silica cement, 5-10% fine black mudstone clasts are evenly distributed throughout with occasionally large fragments and incorporated mud seams. Larger lenticular mud fragments. (1-10 mm) are leached out giving slight fragment moldic porosity. About 5% very fine 0.1 mm pyrite crystals are disseminated interstitially sandstone. Rock is very massive and lacking in internal laminations such that bedding is not readily discernible, though slight wispy fabric suggest it is mostly at low 5-15° angle to core axis 145.8-146.1 good fault gouge is succeeded by 30-40% quartz veins from 146.1-146.8

149.4

BLACK VERY CARBONACEOUS VERY SILICEOUS MUDSTONES WITH RIBBONED TEXTURE - OCCASIONAL GREY RADIOLARIAN RICH BAND. - LOWER PORTRAIT LAKE FM.

Dominantly as 134.0-140.5 m. Very siliceous black carbonaceous mudstone with 1 to 10 cm bedding laminae throughout giving ribboned appearance - very occasionally 1-3 cm light grey "radiolarian" speckled band is evident

149.4-152.4 fragmented but reasonably competent pieces, undulatory bedding generally at 05° to the core axis.

152.4-154.6 strongly fragmented fractured rock with good fault gouge @ 153.5-153.8, 154.6-154.9 m.

@154.9-159.1 fairly competent 5-30 cm core, with low angle 0-15° bedding folded, undulatory, 2-3% fine quartz stringers, often occur along bedding planes.

159.1-159.5 strongly sheared - not to gouge stage
159.5-162.3 very variable bedding but with 45-60° angles to core axis occurring between 0-30° to core axis attitudes, strong folding indicated.

162.3-162.4 very strong fault gouge

162.4-171.9 locally fractured, sheared and blocky rock but with 30-40% competent cylindrical pieces of core - Bedding is relatively consistent at 15-20° to core axis. Zones of stronger shear and fault gouge occur at 165.0-165.2 , 170.9-171.9

171.4-174.7 competent beds 0-5° to core axis

174.7-175.3 strongly fractured with fault gouge in bottom 0.5m.

175.3-183.2 reasonably competent rock with only small zones of slight shearing. Bedding fairly consistent at 20° to the core axis.

183.2-187.0 black carbonaceous cherty finely

laminated mudstone with 10-15% pyrite as 1-5 cm bands composed of irregular aggregates accompanied by minor white silica-often strongly contorted. Bedding shows some undulation and folding but generally is at 25° to the core axis.

187.0-191.0 black carbonaceous very cherty mudstone with evenly laminated - ribboned texture. Undulatory bedding, moderately fragmented core but bedding relatively consistent at 30° to core axis.

191.0 303.8

MACMILLAN PASS MEMBER

191.0 191.9

MA - GREY PYRITIC CHERT SANDSTONE INCORPORATING LARGE MUDSTONE CLASTS.

Rock is light grey on cored surface, medium grey on fresh surface. It is composed dominantly of medium to coarse sand size grains 0.1-1.5 mm (average approx. 0.5 mm) of "chert" grains-subrounded to sometimes subangular, in silica cement that makes for hard very quartzose zone rock-3-8% fine 0.1 to 2 mm subangular - flake like mudstone clasts. Rock also incorporates 10-15% large mudstone areas 50% of which are somewhat rounded and definitely clasts and 50% seem to be more like contorted mudstone which if following bedding suggests shallow bedding to core axis of 5 to 15°. Disseminated pyrite forms about 8% of rock with uppermost 5 cm hosting 30-40 % pyrite.

191.9 193.6

VERY CARBONACEOUS VERY CHERTY RIBBONED MUDSTONE
As 187.0-191.0 Bedding at 20-30° to core axis
includes a chert sandstone band @ 193.1-193.2

193.6 303.8

MA/MCg CHERT SANDSTONES AND GRITS WITH OCCASIONAL FINE CONGLOMERATE BEDS. SOME MUDSTONE INTERBEDS TOWARDS TOP AND BOTTOM - PYRITIC
Thick sequence (partly because of low angle of hole to bedding) of dominantly coarse sandstones to grits with same fine conglomerates. Barring changes in grain size character of rock is consistent, consisting of 80-90% subrounded to quite commonly subangular light grey and white silica "chert" grains in a silica matrix that partly anneals and masks grain boundaries. Fine black mudstone flakes of about the same size as sand grains but occasionally with 2 to 3 times longer grain axis are common in all units, averaging 5-8%. Rocks are quite massive and very competent. Individual beds seem to be more or less of same grain size with not too much readily discernible grading (few exceptions mentioned). Bed contacts between different grain sizes and slight wispy argillaceous content locally give indications of bedding. 3-5% pyrite occurs throughout much of interval as 0.1 mm interstitial disseminations. Locally pyrite becomes much more abundant replacing clasts and grains and forming irregular replacement

mottles and patches - more prominent pyrite enrichments are mentioned below-they often seem to be at base of beds (ie upper most in core)

193.6-198.4 coarse chert sandstone - bedding subtly suggested @ 0.5° to core axis.

198.4-199.6 black, very carbonaceous, moderately soft, mudstone-fine 1-15 mm lenticular pyrite patches parallel to bedding.

Bedding at 10° to core axis. Pyrite 30-40% in top 10 cm

199.6-200.1 fine grit-fractured-10% pyrite

200.1-200.5 grit/black mudstone contact running down core at 05°

200.5-200.8 carbonaceous black mudstone as 198.4-199.6

200.8-201.8 black mudstone/fine to medium grit running down core axis. 03°.

201.8-203.4 mostly fine grit but still with black mudstone running down core at 03°

204.4-204.3 medium to coarse grit occasional 0.5-1 cm black mudstone clast evident, approx. 8% pyrite as fine disseminations replacing some clasts (mudstone and chert) and as patches in rock, locally throughout 3-5% 1-2 mm moldic porosity after leached out pyrite is evident.

209.3-224.1 medium to coarse chert sandstone, approx. 5% very fine disseminated pyrite, massive competent bedding-not well marked but few fine argillaceous wisps suggest bedding at low angle - perhaps 20° to core axis.

224.1-225.2 medium to coarse grit, 3-5% black mudstone flakes, occasionally 5-10 mm very white quite angular silica/chert fragments form 20% of grains and give white speckled appearance to rock.

225.2-225.4 fault gouge with milled white quartz and grey clay has not affected surrounding rocks - probably minor

225.4-226.8 medium sandstone. Contact with lower coarse grit at 20° to core axis.

226.8-230.2 coarse grit in lower metre with apparent fining down hole to medium to fine grit and then coarse sandstone - seems to be example of grading, 5-8% evenly disseminated pyrite.

230.2-233 very interesting fine chert pebble conglomerate - diamictite, 0.1 to 2 cm (avg. 0.5 cm) chert pebbles are more often subangular then subrounded and form 70-80% of rock floating in dark grey silicified matrix-10% black mudstone clasts are evident. Pyrite is common in unit particularly last 1.5 m where approx. 15% of chert clasts are nearly totally replaced by fine pyrite in Boundary Creek fashion. At contact clay seam with gouge is evident - may not be contact but grading down of unit.

233.1-234.0 coarse grit grading imperceptibly down into medium grit with few pyrite replaced clasts -

suggestion of bedding at 10-20° to core axis
234.0-236.5 medium grit -5% pyrite some clasts of
black mudstone.
236.5-237.3 medium to coarse sandstone - top 5 cm. is
grit with abundant pyrite replaced clasts.
237.3-238.6 fractured, broken, medium sandstone with
5% coarse 0.5 to 3 cm quartz veining - clay and fault
gouge seams between 238.3 and 238.6
238.6-241.4 medium to coarse sandstone beds with
discernible gritty horizons at top and fining down
hole. Bedding at 20° to core axis with basal
contacts sometimes sharp sometimes scoured.
241.4-244.0 More massive medium grit bed - white
grains, disseminated pyrite and irregular 0.3-2 cm
pyrite clasts whose angular elongate habit suggests
preferential replacement of mudstone flakes
244.0-244.5 finely interbedded sandstone and fine
grits. Bedding at 030° to core axis.
244.5-246 fine to medium grit - seemingly fining down
hole.
246-249.9 very coarse grit to fine conglomerate,
average clasts size approx. 3-4 mm range 0.5 to 10
mm. Mudstone flakes common, approx. 8% pyrite
replacing and partly replacing chert clasts and
mudstone flakes - 1cm mudstone seam with quartz at
base. Abundant angular white chert clasts.
249.9-250.8 coarse sandstone - lower contact at 20°
to core axis.
250.8-254.5 coarsely graded cycle with fine
conglomerate @ 250.8-251.3 coarse grit 251.3-251.7
medium to fine grit 251.7-282.5 and sandstone from
252.4-254.3 continuous gradation in grain size is
evident. Pyrite is abundant in top 1 m forming one
large completed ovoid replacement areas about 70 cm
round and replacing many clasts, further down 3-5%
disseminated pyrite is evident.
254.5 contact at 20° another graded bed begins
254.5-255.2 another graded bed from fine conglomerate
at top to medium sandstone at base with clay seam.
255.2-255.8 pyritic fine conglomerate approx. 10% py.
255.8-256.4 argillaceous fine sandstone-argillaceous
seams at 5-10° to core axis.
256.4-257.0 graded bed, fine conglomerate to medium
grit to fine sandstone.
257.0-257.2 black carbonaceous mudstone-possibly fine
top of last graded bed
257.2-260.8 large graded sequence fine conglomerate
from 257.2-257.7 grit from 257.7 to 258.4, 258.4-
260.8 sandstones
260.8-262.1 graded cycle coarse grit to fine
sandstone
262.1-266.3 dominantly black carbonaceous mudstone
with 2 to 20 cm sandstone bands, few fine silt
laminae. Slight contorting but bedding relatively
consistent at 020° to core axis.
266.3-269.2 fine to coarse sandstone beds, bedding at

20° at 269-269.7 very pyritic - partially leached out- 20% pyrite.
269.2-272.2 brecciated sandstone, fault gouge at 010° to core axis, 30-40% quartz veins.
272.3-277.3 several coarse to fine sandstone beds Bedding at 020° to core axis.
277.3-279.0 fine silt and sand striped mudstones 1 to 20 mm bands, one intervening 40 cm thick sandstone band
279-279.7 coarse grit with fine sandstone bands at bottom at 020° to core axis.
279.7-283.5 graded cycle - coarse grit 279.7-281.0
281.0-282.1 medium grit 30% disseminated pyrite
282.1-283.5 sandstone to mudstone 50% disseminated pyrite in bottom 1.0 meters.
283.5-285.7 interbedded grit, sandstone beds and sandstriped mudstones bedding 020°
285.7-303.7 finer 0.3 to 1.5 beds of grit to coarse sandstone with sand striped mudstone interbeds. Local 0.5-1.0 cm areas show irregular 30-50% pyrite replacement. Bedding is consistent throughout at 020° to core axis.
302.7-303.8 coarse quartz veining and some gouge is evident but contact with black shales seems conformable though bedding angle changes.

303.8 314.3 BLACK VERY CARBONACEOUS MODERATELY SOFT FINELY LAMINATED MUDSTONES - TOM MEMBER?
Black moderately soft and competent mudstones with 3-4% pyrite ag laminae and fine lenses parallel to bedding. Chert pebble diamictite band with abundant pyrite at 305.7-305.8
Bedding down to 312.4 is consistently 060° to core axis.
From 308.3-312.4 quartz veining forms 4-6% of rock as partly disrupted gash viens.
From 312.4-314.3 bedding is strongly folded with 15% quartz gash veins.

314.3 319.1 TOM MEMBER ? BLACK VERY CARBONACEOUS VERY CHERTY MUDSTONES WITH RIBBONED TEXTURE.
Strongly folded, siliceous mudstones with laminae at even 1-5 mm intervals accentuated by black stylotized seams. Bedding is highly variable from 0 to 70° to core axis but 70° attitude seems most representative.

319.1 319.2 Black Fault Gouge

319.2 320.0 DARK GREY SILTSTONE
Rock is competent dark grey siltstone with bottom section cut by 15% coarse quartz veins.
Bedding seems to be 60° to core axis but not strongly marked. Blacker mudstone seams at 319.3 hosts 1 cm light grey siltstone band containing 0-5% disseminated 0.1-0.5 mm brown sphalerite only about

0.5%. (This was not noted when hole stopped).

End of Hole @ 320.0

DOWN HOLE SPERRY SUN SURVEY

Depth (m)	Bearing	Dip
0	210°	-55°
31	213.5°	-57°
76.2	205.5°	-58.4°
152.4	210.0°	-60.0°
228.6	216.5°	-59.5°
304.8	208.5°	-58.0°

Runs and Recoveries for RRNB9123

From	To	Int.	Recov'd	%	From	To	Int.	Recov'd	%
18.3	19.2	0.9	0.9	100.0	89.9	91.4	1.5	1.5	100.0
19.2	21.3	2.1	0.1	4.8	88.4	89.9	1.5	1.5	100.0
21.3	22.9	1.6	0.0	0.0	89.9	91.4	1.5	1.5	100.0
22.9	24.4	1.5	0.0	0.0	91.4	93.0	1.6	1.3	81.3
24.4	25.9	1.5	1.3	86.7	93.0	94.2	1.2	1.2	100.0
25.9	27.4	1.5	0.8	53.3	94.2	96.0	1.8	1.3	72.2
27.4	29.0	1.6	1.0	62.5	96.0	97.6	1.6	1.2	75.0
29.0	30.5	1.5	0.1	6.7	97.6	99.1	1.5	1.5	100.0
30.5	32.0	1.5	0.2	13.3	99.1	100.6	1.5	1.5	100.0
32.0	33.5	1.5	0.3	20.0	100.6	102.1	1.5	1.5	100.0
33.5	34.3	0.8	0.5	62.5	102.1	103.7	1.6	1.2	75.0
34.3	35.4	1.1	0.4	36.4	103.7	104.2	0.5	0.3	60.0
35.4	36.6	1.2	0.6	50.0	104.2	105.8	1.6	0.7	43.8
36.6	38.1	1.5	1.3	86.7	105.8	106.7	0.9	0.8	88.9
38.1	39.6	1.5	0.0	0.0	106.7	108.2	1.5	1.0	66.7
39.6	41.1	1.5	0.1	6.7	107.6	109.1	0.9	0.7	77.8
41.1	42.7	1.6	0.0	0.0	109.1	109.8	0.7	0.0	0.0
42.7	44.2	1.5	0.0	0.0	109.8	111.3	1.5	0.4	26.7
44.2	45.7	1.5	0.6	40.0	111.3	112.8	1.5	1.2	80.0
45.7	46.6	0.9	0.7	77.8	112.8	113.7	0.9	0.6	66.7
46.6	46.9	0.3	0.1	33.3	113.7	114.6	0.9	0.5	55.6
46.9	47.5	0.6	0.0	0.0	114.6	115.9	1.3	1.2	92.3
47.5	48.8	1.3	0.5	38.5	115.9	117.4	1.5	1.2	80.0
48.8	50.3	1.5	0.5	33.3	117.4	118.9	1.5	0.0	0.0
50.3	50.9	0.6	0.1	16.7	118.9	119.5	0.6	0.3	50.0
50.9	51.8	0.9	0.3	33.3	119.5	121.0	1.5	0.0	0.0
51.8	53.3	1.5	0.2	13.3	121.0	122.0	1.0	0.0	0.0
53.3	54.9	1.6	1.3	81.2	122.0	123.5	1.5	0.5	33.3
54.9	55.2	0.3	0.3	100.0	123.5	125.0	1.5	0.5	33.3
55.2	56.7	1.5	1.3	86.7	125.0	126.5	1.5	1.5	100.0
56.7	57.3	0.6	0.1	16.7	126.5	128.0	1.5	1.2	80.0
57.3	57.9	0.6	0.2	33.3	128.0	129.6	1.6	0.0	0.0
57.9	59.5	1.6	0.6	37.5	129.6	131.1	1.5	0.0	0.0
59.5	61.0	1.5	1.0	66.7	131.1	132.0	0.9	0.5	55.6
61.0	62.5	1.5	0.6	40.0	132.0	134.1	2.1	1.0	47.6
62.5	64.0	1.5	0.7	46.7	134.1	135.7	1.6	1.5	93.8
64.0	65.5	1.5	0.3	20.0	135.7	137.2	1.5	1.5	100.0
65.5	67.1	1.6	1.0	62.5	137.2	138.7	1.5	0.5	33.3
67.1	68.6	1.5	0.7	46.7	138.7	140.2	1.5	0.8	53.3
68.6	70.1	1.5	1.3	86.7	140.2	141.6	1.4	0.7	50.0
70.1	71.2	1.1	0.7	63.6	141.6	143.3	1.7	1.7	100.0
71.2	72.6	1.4	0.4	28.6	143.3	144.8	1.5	1.5	100.0
72.6	73.2	0.6	0.2	33.3	144.8	146.2	1.4	1.3	92.9
73.2	73.9	0.7	0.2	28.6	146.2	147.8	1.6	1.6	100.0
73.9	74.8	0.9	0.8	88.9	147.8	149.4	1.6	1.6	100.0
74.8	76.2	1.4	0.9	64.3	149.4	150.3	0.9	0.9	100.0
76.2	77.7	1.5	0.1	6.7	150.3	151.8	1.5	1.5	100.0
77.7	79.3	1.6	0.0	0.0	151.8	152.4	0.6	0.6	100.0
79.3	79.9	0.6	0.3	50.0	152.4	154.0	1.6	1.6	100.0
79.9	80.9	1.0	0.2	20.0	154.0	155.5	1.5	1.5	100.0
80.9	82.3	1.4	0.5	35.7	155.5	157.0	1.5	1.5	100.0
82.3	82.9	0.6	0.6	100.0	157.0	158.5	1.5	1.5	100.0
82.9	84.5	1.6	1.0	62.5	158.5	160.1	1.6	1.6	100.0
84.5	84.8	0.3	0.2	66.7	160.1	161.6	1.5	1.5	100.0
84.8	85.4	0.6	0.3	50.0	161.6	163.1	1.5	1.5	100.0
85.4	86.9	1.5	0.6	40.0	163.1	164.6	1.5	1.5	100.0
86.9	88.4	1.5	1.5	100.0	164.6	165.8	1.2	1.2	100.0
88.4	89.9	1.5	1.5	100.0	165.8	167.3	1.5	1.4	93.3

From	To	Int.	Recov'd	%	From	To	Int.	Recov'd	%
167.3	168.2	0.9	0.9	100.0	243.9	245.4	1.5	1.5	100.0
168.2	169.5	1.3	1.3	100.0	245.4	246.9	1.5	1.5	100.0
169.5	170.1	0.6	0.6	100.0	246.9	248.4	1.5	1.5	100.0
170.1	171.9	1.8	1.8	100.0	248.4	249.9	1.5	1.5	100.0
171.9	172.8	0.9	0.9	100.0	249.9	251.5	1.6	1.6	100.0
172.8	173.8	1.0	1.0	100.0	251.5	253.0	1.5	1.5	100.0
173.8	175.3	1.5	1.5	100.0	253.0	254.5	1.5	1.5	100.0
175.3	176.1	0.8	0.5	62.5	254.5	256.1	1.6	1.6	100.0
176.1	176.8	0.7	0.7	100.0	256.1	257.6	1.5	1.5	100.0
176.8	178.2	1.4	1.0	71.4	257.6	259.1	1.5	1.5	100.0
178.2	179.4	1.2	1.2	100.0	259.1	260.6	1.5	1.5	100.0
179.4	180.9	1.5	1.5	100.0	260.6	262.1	1.5	1.5	100.0
180.9	182.0	1.1	1.1	100.0	262.1	263.7	1.6	1.6	100.0
182.0	183.2	1.2	1.1	91.7	263.7	265.1	1.4	1.4	100.0
183.2	184.9	1.7	1.7	100.0	265.1	266.7	1.6	1.6	100.0
184.9	186.0	1.1	1.1	100.0	266.7	268.2	1.5	1.5	100.0
186.0	187.0	1.0	1.0	100.0	268.2	269.7	1.5	1.5	100.0
187.0	188.3	1.3	1.1	84.6	269.7	271.3	1.6	1.6	100.0
188.3	189.0	0.7	0.7	100.0	271.3	272.8	1.5	1.5	100.0
189.0	189.6	0.6	0.6	100.0	272.8	274.3	1.5	1.5	100.0
189.6	190.7	1.1	0.9	81.8	274.3	275.8	1.5	1.5	100.0
190.7	192.1	1.4	1.4	100.0	275.8	277.4	1.6	1.6	100.0
192.1	192.7	0.6	0.4	66.7	277.4	278.9	1.5	1.5	100.0
192.7	194.0	1.3	1.3	100.0	278.9	280.4	1.5	1.5	100.0
194.0	195.1	1.1	1.1	100.0	280.4	281.9	1.5	1.5	100.0
195.1	196.6	1.5	1.5	100.0	281.9	283.5	1.6	1.6	100.0
196.6	198.1	1.5	1.5	100.0	283.5	285.0	1.5	1.5	100.0
198.1	199.6	1.5	1.5	100.0	285.0	286.5	1.5	1.5	100.0
199.6	200.6	1.0	1.0	100.0	286.5	288.0	1.5	1.5	100.0
200.6	201.2	0.6	0.6	100.0	288.0	289.6	1.6	1.6	100.0
201.2	202.7	1.5	1.5	100.0	289.6	291.1	1.5	1.5	100.0
202.7	204.2	1.5	1.5	100.0	291.1	292.6	1.5	1.5	100.0
204.2	205.7	1.5	1.5	100.0	292.6	294.1	1.5	1.5	100.0
205.7	207.3	1.6	1.5	93.7	294.1	295.7	1.6	1.6	100.0
207.3	208.8	1.5	1.5	100.0	295.7	297.2	1.5	1.5	100.0
208.8	210.3	1.5	1.5	100.0	297.2	298.7	1.5	1.5	100.0
210.3	211.8	1.5	1.5	100.0	298.7	300.2	1.5	1.5	100.0
211.8	213.4	1.6	1.6	100.0	300.2	301.8	1.6	1.6	100.0
213.4	214.9	1.5	1.5	100.0	301.8	303.3	1.5	1.5	100.0
214.9	216.4	1.5	1.5	100.0	303.3	304.8	1.5	1.5	100.0
216.4	217.9	1.5	1.5	100.0	304.8	306.3	1.5	1.5	100.0
217.9	219.5	1.6	1.6	100.0	306.3	307.8	1.5	1.5	100.0
219.5	221.0	1.5	1.5	100.0	307.8	309.4	1.6	1.6	100.0
221.0	222.5	1.5	1.5	100.0	309.4	310.9	1.5	1.5	100.0
222.5	224.0	1.5	1.5	100.0	310.9	312.4	1.5	1.5	100.0
224.0	224.9	0.9	0.9	100.0	312.4	313.9	1.5	1.5	100.0
224.9	225.5	0.6	0.6	100.0	313.9	315.5	1.6	1.6	100.0
225.5	227.1	1.6	1.6	100.0	315.5	317.0	1.5	1.5	100.0
227.1	228.6	1.5	1.5	100.0	317.0	318.5	1.5	1.5	100.0
228.6	230.1	1.5	1.5	100.0	318.5	320.0	1.5	1.5	100.0
230.1	231.6	1.5	1.5	100.0					
231.6	233.2	1.6	1.6	100.0					
233.2	234.8	1.6	1.6	100.0					
234.8	236.3	1.5	1.5	100.0					
236.3	237.8	1.5	1.5	100.0					
237.8	239.3	1.5	1.5	100.0					
239.3	240.8	1.5	1.5	100.0					
240.8	242.4	1.6	1.6	100.0					
242.4	243.9	1.5	1.5	100.0					

					entire int. =	301.7	238	78.9	

Property: NIDD District: Yukon Hole No.: NB91-24A
 Commenced: July 17, 1991 Location: Mac Pass Tests at: see back
 Completed: July 23, 1991 Core size: HQ, NQ Cor. dip: -60°
 Coordinates: 6+08N, 4+00W True Brg.: 210°
 Objective: Test lead soil anomaly on strike NB90-19
 % Recov.: 93.4%
 Date: July 23- 25 Logged by: Dereck Rhodes/Teresa MacRobbie

METRES FROM	TO	DESCRIPTION
09	4.6	CASING/OVERBURDEN
4.6	30.6	MCg CHERT PEBBLE CONGLOMERATE Core is very poor and where rubbly is accompanied by abundant rusty coloured sandy material, possibly a type of fault gouge. These zones occur @ 25.3-25.6 and @ 26.8-27.4. Intact pieces of core contain open spaces, and appear to be leached along fracture planes, matrix and clasts. Clasts are subrounded and are cherty, few are mudstone. Bimodal, the clast range from 0.6-1.2 cm, and the matrix is 0.1-0.2 cm. ????????
30.6	37.0	MA-MG CHERT SANDSTONE TO GRIT Rock is beginning to core more solidly, though fracture planes are still displaying rusty stain. Rock is composed of coarse sand with grit clasts (sometimes up to 3 mm). It is light grey in colour on core surfaces, but a cherty black colour on fresh surface. Some of the core surface is pitted as though leached, this occurring especially where it is veined with white quartz. Some of the same rusty sandy material (prob. fault gouge) occurs @ 34.5-34.7 and 35.2-35.3. A black silty sand (finer) occurs over 34.8-35.2, though it too appears to be a fault gouge. The base of this interval is marked by a 20 cm thick zone of white quartz, fairly pyritic and fractured. (fault?) at the top, where it is in contact with the MA. This MA is quite pyritic as well.
37.0	38.4	MDC VERY PYRITIC CHERT PEBBLE DIAMICTITE Rock cores fairly well and fractured surfaces lose the rusty stain. Rock is made up of fairly well packed clasts/fragments very poorly sorted, mostly cherty, angular to subrounded and held together by a muddy black matrix where not pyritic. Pyrite content is up to 20%. In places, clasts are being replaced. Some quartz veining does exist. (5-10%).
38.4	46.5	MMa2,3 (MINOR MDC) BLACK MUDSTONE WITH ABUNDANT SAND BEDS AND OCCASIONAL CHERT PEBBLE DIAMICTITE SEAMS HIGHLY PYRITIZED AND DEFORMED CONTAINING SOME SPHALERITE VEINS

METRES
FROM

TO

DESCRIPTION

METRES FROM	TO	DESCRIPTION
		<p>Rock cores excellently, with few broken zones. Deformation is evident, though it appears syn-sedimentary, as sand beds are discontinuous, and tectonic, with abundant quartz veining some internal folding is in evidence.</p> <p>@42.7-43.5 mudstone beds are replaced (?) by v.f.g. pyrite. Some zones of a cherty clast-rich diamictite occur as @ 42.5 @45-45.5, and more mud-matrix diamictites occur @ 44.5-44.8</p> <p>Sphalerite is in evidence @ 42.5 as infilling of tension-gash type veinlets. It is rusty brown colour, and fine grained. Total pyrite of the interval could be 20%.</p>
46.5	50.3	<p>MCg-CHERT PEBBLE CONGLOMERATE - COARSE/POORLY SORTED</p> <p>Core is excellent, and is made up of MCg-like rock only it is not particularly well-sorted. Clasts are subrounded, and held together by chert grit material. Few clasts are pyritized, though some pyrite exists in matrix/fractures.</p>
50.3	62.1	<p>MMA SAND BANDED MUDSTONES w MINOR DIAMICTITE</p> <p>Black carbonaceous mudstone with sand and silt bands and occasional clastic ie. diamictite input. Quartz veining contains pyrite.</p> <p>Rock cores fairly well in places, but much of it is in poor condition. It is black mudstone with up to 0.7 cm thick sand beds, often with a ribboned look - ie. they are folded or discontinuous. There are clastic zones, where the fragments are more chert pebble like. Some pyrite veins are present and are generally thin (0.5 cm) and contain white quartz and pyrite (50-50).</p> <p>Bedding angles are: 45° @ 59.1</p> <p>Interval shows internal folding and deformation with strong cleavage at low 10° angle to bedding.</p>
62.1	65.1	<p>MG-CHERT GRIT - VERY PYRITIC</p> <p>Coarse chert grit, with occasional larger pebbles (up to 1 cm) is very pyritized. In places up to 20% pyrite. Good coring. Upper contact conformable to bedding in mudstone above. Some quartz veining contains sphalerite. Sphalerite also visible in pyrite (minor) or as fine grained cement. Over the 3 m unit, one sees a fair bit 1%.</p>
65.1	70.9	<p>MA - BLACK, CARBONACEOUS MUDDY SANDSTONE WITH SOME MUDSTONE BANDS</p> <p>Chert grit gives way to pyritic muddy sandstone. Core surface is rough, as though sand grains have</p>

METRES
FROM

TO

DESCRIPTION

been plucked out during drilling. Abundant coarse to fine quartz veining/ pyrite veining also contains rusty brown sphalerite. Pyrite is also seen within muddy layers. Bedding at 54° @ 65.5 m. There is a massive quartz vein @ 66.5, (over 15 cm) and the last piece of core is mudstone with squiggly pyrite laminae (1 mm). Very strange texture. Granularity of rock may be due to cleavage pattern in mudstone. Locally rock shows decomposed fine pyrite and/or possibly tuffaceous material. Minor shears/faults are evidenced by gouge @ 68.9-67.1 - 68.4-68.5 70.7-70.9

70.9

103.0

MVT-TUFFACEOUS/VOLCANICLASTIC MUDSTONES

Thick succession of variably textured rocks that consist of about 40% mudstone and 60% volcanic ash tuff intermixed with mudstone in alternating beds and bands that vary considerably in texture, grain size, thickness, and ratios of volcanic bands and laminae to mudstones. Very strong compositional layering gives strongly bedded appearance. Bedding varies from nice parallel layering to more commonly lenticular, flaser bedding. More detailed break down below.

70.9-76.9 Zone of abundant fault gouge and clay separating rusty, grey green to black, variably tuffaceous mudstone. More tuffaceous bands have coarser grain size and appear as sandy laminae and bands 0.5 to 3 cm thick alternating with 0.5-3.0 cm mudstone bands. Rock presumably was partially pyrite - providing rust. Bedding is slightly convolute but generally at 20° core axis. Strong black clay and fault gouge occurs at 71.1-71.2, 72.3-72.5, 74.6-78.0 76.9-87.1 coarse yellow green ash tuffs and occasional, fine lapilli tuffs occur interlaminated with grey black probably slightly tuffaceous mudstone. Interbedding ranges from 1 to 20 mm scale to beds of dominantly volcanic material that are 2 to 30 cm thick. All of volcanics are iron carbonate (probably siderite) replaced. Bedding contacts are relatively parallel and planar but soft sediment loading and some cross beds (possibly channel fill) are evident. Textures resemble some of those seen in NB 82-1. Beds showing more fine lapilli fragments particularly 79.9-80.4 show good grading with tops consistently up hole. Other beds in this interval also show tops up hole.

Bedding from 76.9-83.0 consistent at 20° to core axis, 83.0-83.8 30-40° to core axis.

@ 83.8-84.0 fault strong clay fault gouge

84.0-87.1 Bedding at 60° to core axis.

Very fine pyrite is evident with some of tuffaceous mudstone, traces of sphalerite occur with quartz vein

METRES
FROM

TO

DESCRIPTION

at 84.8m and few traces in bottom 2 m accompanying fine veinlets siderite/pyrite
87.1-94.5 more finely interbedded yellow lenticular "flaser" bedded sideritic fine ash tuff bands 0.5 to 3.0 cm thick alternating with dark grey black finely pyritic mudstones and more commonly medium grey very finely tuffaceous mudstone often with fine wispy habit. Very complexly textured rock with many textures due to soft sediment loading and compaction of what were almost certainly very plastic rocks of varying competency. Sulphides are relatively common - some wisps, aggregates of pyrite 1% are present and darker mudstones may have very fine pyrite content. Minor red brown sphalerite blebs and disseminations occur at base of interval 94.0-94.5. Bedding is consistent throughout interval at 050° to core axis. 94.5-103.0 mixed black mudstone and very finely tuffaceous grey mudstones/muddy tuffs with fine wispy laminated textures in lighter, grey beds toward top of interval - occasionally yellow coarser sideritic tuff material in lenticular pattern is present - again a very completely textured rock.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
96.0	97.5	103	83	1.2%	2.5	10.0
97.5	99.0	50	129	111	1.7	17.9
99.0	100.5	252	162	3.7%	4.2	11.3
100.5	101.5	222	73	1260	1.2	6.2
100.5	103.0	1970	296	6.6%	54.0	10.8

Pyrite becomes very significant component from 96.0m down averaging probably 20% of interval overall and locally 60-70%. Pyrite occurs as very fine wispy like laminae and discontinuous aggregates within tuffaceous layers but also as 0.3 to 15 mm clast like forms that seem to be fractured in situ - some has peculiar framboidal/botryoidal look. Accompanying pyrite is minor to significant (ie. 5-10% over 30 cm to 1 m locally) orange red sphalerite that often seems intergrown with pyrite also in fine botryoidal like forms 0.1 to 10 mm across. First significant accumulation of sphalerite is at 97.2-97.3 approx. 4-5%. @ 99.1-99.5 Rock is 80% pyrite accompanied by approx. 10 vol. % sphalerite. Bottom of unit from 101.5-103.0 is 50% sphalerite with approx. 8% red brown sphalerite with bottom 0.5 m showing complex collection intergrowths pyrite/sphalerite/quartz. Bedding in interval appears extremely convolute and irregular with some complex near isoclinal folds being evident - uncertain whether depositional or due to late folding- cleavage is evident in some at 10° to core axis. From 94.5-98.8 very strongly folded interval. From 98.8-100.2 laminations seem

METRES
FROM

TO

DESCRIPTION

		<p>consistent @ 45° to core axis. 100.2-103.0 seems strongly folded on fine scale but bedding consistent @ 45° to core axis.</p>																										
103.0	105.2	<p>MDC CHERT PEBBLE DIAMICTITE - WITH QUARTZ VEINS AND BOTH INTERSTITIAL AND VEIN PYRITE AND LESSER SPHALERITE</p> <p>Rock is composed of 60-80% chert pebbles subangular and partly fragmented that sit in grey silt to fine grit matrix. Rock is cut by 15% irregular quartz veins that partly replace rock. Upper half has 10% pyrite as interstitial aggregates to conglomerate and finer vein network with minor red brown zinc. Lower half hosts 15% pyrite accompanied by about 4% red brown sphalerite forming vein network.</p> <table border="1"> <thead> <tr> <th>From</th> <th>To</th> <th>Cu(ppm)</th> <th>Pb(ppm)</th> <th>Zn(ppm)</th> <th>Ag g/T</th> <th>Fe(%)</th> </tr> </thead> <tbody> <tr> <td>103.0</td> <td>104.5</td> <td>107</td> <td>115</td> <td>2250</td> <td>1.6</td> <td>5.4</td> </tr> <tr> <td>104.5</td> <td>106.0</td> <td>348</td> <td>248</td> <td>5.1%</td> <td>3.4</td> <td>8.1</td> </tr> </tbody> </table>						From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)	103.0	104.5	107	115	2250	1.6	5.4	104.5	106.0	348	248	5.1%	3.4	8.1
From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)																						
103.0	104.5	107	115	2250	1.6	5.4																						
104.5	106.0	348	248	5.1%	3.4	8.1																						
105.2	107.0	<p>MMA1,2 FINE SAND STRIPED MUDSTONE CUT BY STRONG PYRITE AND LESSER SPHALERITE VEIN NETWORK</p> <p>Typical fine silt and sand striped mudstone. Bedding slightly convolute but 15° to core axis. 30-40% pyrite cuts mudstone in vein network within which pyrite forms peculiar aggregates and clasts within silica matrix 2-3% red brown sphalerite occurs with fine botryoidal character with pyrite.</p> <table border="1"> <thead> <tr> <th>From</th> <th>To</th> <th>Cu(ppm)</th> <th>Pb(ppm)</th> <th>Zn(ppm)</th> <th>Ag g/T</th> <th>Fe(%)</th> </tr> </thead> <tbody> <tr> <td>106.0</td> <td>107.5</td> <td>172</td> <td>278</td> <td>2.4%</td> <td>2.6</td> <td>10.6</td> </tr> </tbody> </table>						From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)	106.0	107.5	172	278	2.4%	2.6	10.6							
From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)																						
106.0	107.5	172	278	2.4%	2.6	10.6																						
107.0	203.7	<p>MCg CHERT PEBBLE CONGLOMERATE - LESSER CHERT GRITS - VARIABLY MINERALIZED WITH VARIABLE TEXTURES</p> <p>Thick sequence is composed dominantly of chert pebble conglomerates with typical rounded chert grains and pebbles generally in clast contact and cemented with silica. Textures in interval vary in clast size, distribution and character. Whole interval is mineralized to a variable extent with pyrite, siderite and sphalerite both interstitially and as more prominent cross cutting veins. Lithologies and mineralization textures are subdivided below.</p> <p>107.0-107.4 fine dark grey carbonaceous chert grit cut by 50% pyrite veins in first .2 m hosts 5% fine interstitial pyrite in bottom. 107.4-107.6 Medium chert pebble conglomerate average clast 0.7 cm. 15% interstitial pyrite.</p>																										

METRES
FROM

TO

DESCRIPTION

107.6-107.8 as 107.0-107.4 chert grit 10%
interstitial pyrite.

107.8-109.2 fine chert pebble conglomerate with some
larger 1-4 cm pebbles average clast size 0.5 cm 10%
silicified black mudstone clasts 80% chert clasts in
silica matrix 0.5% fine interstitial blebs of red
brown sphalerite - sphalerite/pyrite veins 5 mm @
109.03 @ 20° to core axis.

109.2-109.4 Medium chert pebble conglomerate average
clast size 1.0 cm range 1-3 cm finer grit fraction
109.4-115.6 Dominantly fine to coarse chert grits
interbedding with lesser fine conglomerates. 10%
rounded silicified black mudstone clasts occur in
rock.

Bedding not well exposed but suggestion at 30° to
contact. Minor 0.2-1.0 vol % red brown sphalerite
occurs interstitially in grit.

One 3 cm thick red brown sphalerite vein with lesser
pyrite cuts fine conglomerate at 113.3 m @ 20° to
core axis.

113.6-133.6 medium to coarse chert pebble
conglomerate to packed diamictite. Rock with
transitional character composed of 80-90% clasts
generally subrounded to subangular varying from 0.1-8
cm. approx. 10% are silicified black mudstone clasts
. A finer grey black silicified silt to mudstone
matrix encloses clasts which do not seem as close
packed as in other conglomerates. 10 to 40% sulphides
often form matrix in top 2/3 partially obscuring
matrix/clast relationship.

113.6-119.2 5 to 40 cm areas of near massive pyrite
with 10-20% intergrown red brown colloform sphalerite
form vein like mass cutting rock at 20° to core axis
but in part also replacing enclosed chert pebbles
within sulphide matrix.

119.2-128 8-12% pyrite forms interstitial vein-like
network about much of chert pebbles but accompanied
by only 0.2 to 1.0 volume % red brown sphalerite.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
107.5	109.0	69	46	1040	0.8	1.8
109.0	110.5	195	73	2.7%	2.7	1.3
110.5	112.0	42	25	4700	0.6	0.5
112.0	113.5	34	57	2890	1.2	2.0
113.5	115.0	119	335	3.0%	7.5	10.5
115.0	116.5	421	574	10.2%	10.2	7.9
116.5	118.0	971	325	3.1	4.1	10.7
118.0	119.5	705	941	13.5%	15.5	8.3
119.5	121.0	511	175	4.6%	2.8	6.0
121.0	122.5	54	139	4950	2.3	6.8
122.5	124.0	573	146	4360	1.8	7.1
124.0	125.5	933	721	2.7%	13.8	6.3

METRES
FROM

TO

DESCRIPTION

125.5	127.0	74	151	1700	2.0	9.0
127.0	128.5	84	102	1280	1.5	5.0
128.5	129.5	28	67	190	1.0	2.9

128-133.6 pyrite and red brown sphalerite become lesser constituent - only 3-4% pyrite 0.1-0.5% sphalerite occurring as interstitial sulphides.

133.6-135.9 coarse chert grit hosting 10-20% large silicified black mudstone clasts and lesser chert pebbles - relatively coarse silica and 5-10% siderite cement for chert grit with large rounded to subrounded clasts floating in grit matrix 1-8 cm. average 3 cm - trace ZnS 10% pyrite in bottom 0.3 m.

135.9-138.0 fine chert pebble conglomerate - pock marked porosity after leached pyrite (siderite?)

138.6-139.1 fine to coarse chert grit negligible siderite/pyrite.

@139.1-169.0 medium clast size chert pebble conglomerate 0.1 to 3 cm average 1.5 cm chert pebbles sit in silica cement to partially finer sand and silt matrix.

From 139.0-157.3 moldic interstitial porosity is after pyrite and/or siderite with 3-4% pyrite as interstitial grains/aggregates and fine veinlets.

From 137.3-163.0 5-10% interstitial pyrite is evident with areas from 160-161.2 and 162.5-162.8 of 50% pyrite, but with only traces of sphalerite.

Interstitial siderite is also evident in bottom 1.5m.

163.0-169.0 4-5% pyrite interstitial and replacing clasts - partly interstitial moldic porosity after pyrite (or siderite/)

169.0-170.3 chert grit with interstitial siderite leached out of top 2/3 to create pinpoint porosity

170.3-172.2 medium chert pebble conglomerate 5-10% interstitial siderite partially grit matrix.

172.2-173.5 fine chert grit 5-10% pyrite interstitial to grit.

137.3-174.9 coarse chert grit with few floating 0.5-1.0 cm pebble some 3-5% moldic interstitial porosity after leached pyrite/siderite

174.9-176.6 fine chert pebble conglomerate leached as above but average clast size approx. 0.5 cm

176.6-187.6 bimodal chert pebble conglomerate with grit matrix hosting large pebble to cobble size mudstone clasts.

Rock consists of 30-40% >3 mm chert clasts and 10-15% 1-15 cm mudstone clasts subrounded to angular sitting in finer chert grit matrix with silica cement 3-5% pyrite occurs as interstitial grains and often replacing chert pebbles. Traces of interstitial red brown sphalerite are evident.

187.6-188.0 coarse chert grit with 10-20% chert pebbles and mudstone pebbles. 5-10% interstitial and

METRES
FROM

TO

DESCRIPTION

clast replacement pyrite.
188.0-189.9 fine chert pebble conglomerate average
clast 0.5cm 5-10% pyrite.
189.9-203.7 medium chert pebble conglomerate
average clast size approx. 1.0 cm, often finer matrix
for larger pebbles - generally chert clast supported
with silica cement. 3-5% interstitial and less
commonly clast replacing pyrite with traces of
sphalerite - 5% black mudstone clasts.
Bottom 0.5 m from 203.2-203.7 shows strong 30% pyrite
veining with 5 cm vein of near massive yellow and red
sphalerite.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
201.0	202.5	18	34	1640	0.8	2.2
202.5	203.5	297	84	5.3%	2.4	5.9
203.5	205.0	188	100	65	1.7	10.0

203.7 205.2

MMA3,4 MEDIUM TO COARSE SAND STRIPED MUDSTONE 20-30%
PYRITE IMPREGNATING SANDS/FEW CROSS CUTTING PYRITE
VEINS

Bedding @ 20° to core axis flattening to 45° at base.

205.2 207.4

MDC CHERT PEBBLE DIAMICTITE - PACKED

50-60% chert pebbles 5% silicified mudstone clasts
often subangular 0.1-4.0 cm in size average 2-8 mm
float in black mudstone matrix.

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
205.0	206.5	16	23	130	0.6	2.1
206.5	208.0	32	29	753	0.9	2.6

207.4 209.1

MDC FINE CHERT PEBBLE DIAMICTITE - FLOATING

15-20% fine 0.1 to 15 mm(average 4 mm) chert grains
and clasts and few larger mudstones clasts float in
grey black mudstone matrix.

From	To	Cu(ppm)	PB(ppm)	Zn(ppm)	Ag g/T	Fe(%)
208.0	209.5	731	45	1.6%	1.0	4.6

209.1 225.8

MDmv SIDERITIC VOLCANIC/MUDSTONE PEBBLE TO COBBLE
DIAMICTITE - LOCALLY ABUNDANT PYRITE - MODERATE
SPHALERITE

Complexly textured rock composed of yellow
sideritized fine ash tuff fragments - commonly
subangular and 1-10 cm along with grey to black

METRES
FROM

TO

DESCRIPTION

angular mudstone clasts- some fractured and little rotated within dark grey-black mudstone to yellow-grey, tuffaceous mudstone matrix. Fragmental texture is very complex and in core it becomes difficult to tell what are clasts and what are matrix. A few intervals of seemingly veined and fractured mudstone could be boulders.

Over printing diamictite texture are pyrite veins, and more irregular replacement aggregates that internally seem to be composed of clast like pyrite aggregates and pyrite crystals. Fine orange-brown to red brown, colloform texture, aggregates of sphalerite occur intermixed with pyrite.

Pyrite/sphalerite veins and replacement patches are abundant to common down to 217.0 and section averages 4-5% Zn with local 10-30 cm areas of 10-20% Zn.

From 217.0-225.0 pyrite and sphalerite are scarce. @225.0-225.8 coarse high grade band of pyrite with 20% red brown sphalerite

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
209.5	211.0	146	103	8.7%	4.0	16.2
211.0	212.5	70	113	6.0%	3.8	19.6
212.5	214.0	82	181	5.6%	4.6	13.5
214.0	215.5	209	223	10.8%	8.2	11.8
215.5	217.0	128	110	3.8%	3.7	23.4
217.0	218.5	33	36	0.8%	1.0	21.6
218.5	220.0	15	15	211	0.6	21.2
220.0	221.5	18	10	80	0.4	14.4
221.5	223.0	43	27	184	0.8	17.5
223.0	224.5	57	62	276	1.2	18.1
224.5	226.0	331	222	13.0%	9.9	18.6

225.8 228.

Mvt LAMINATED, BANDED SIDERITIC TUFFSWITH MINOR MUDSTONE INTERVEDS

Less disturbed and fragmental volcanics with 1 mm to 3 cm bands and laminae of yellow now sideritized ash tuffs show planar compositional banding (bedding) at top to more strongly folded, contorted textures in bottom 2.0 m. Bedding at top is 45° to core axis. Few veinlets and patches of pyrite some fine sphalerite veins @ 227.4 10% dark grey mudstone laminae and bands accentuate bedded character of tuffs

From	To	Cu(ppm)	Pb(ppm)	Zn(ppm)	Ag g/T	Fe(%)
226.0	227.5	149	209	1690	1.4	18.1
227.5	228.5	54	27	305	0.6	29.8

228.9 232.0

MMA3,4,5 STRONGLY CONTORTED (SLUMPED) COARSE SAND BANDED MUDSTONES

METRES		DESCRIPTION
FROM	TO	
		Typical Macmillan Pass member mudstones with 2-4 cm coarse sand banded mudstones that show strong folding and lenses of disrupted sand bands. Bedding is common at low 1-20° to core axis angles but shows every attitude. Quite coarse thick sand band is evident in middle of section.
232.0	234.2	MA COARSE SIDERITIC SANDSTONE BED Coarse Sandstone bed with 10-20% fine interstitial yellow siderite - cut by 15% white quartz veins and stringers - bed could be large boulder
234.2	236.8	MDmc - FINE CHERT PEBBLE, MUDSTONE AND GRIT DIAMICTITE - FLOATING Interval 70% black mudstone hosting, 5-15% fine 1 to 20 mm chert pebbles and occasional mudstone and grit clasts. Occasional 5-20cm. intervals of sand striped mudstone show bedding but it is not clear whether these are interbeds or clasts (favour latter).
236.8	239.1	MMx BLACK CARBONACEOUS MUDSTONES WITH 20% UNDULATORY AND CONTORTED PYRITE BANDS Strongly slumped, folded and contorted black, carbonaceous mudstones that host 20% pyrite in 1-20 mm. bands and laminae - generally finely crystalline but few bands of coarse pyrite cubes. Interval is strongly deformed and folded and might represent slumped block in diamictite.
239.1	241.3	MDmc FINE CHERT PEBBLE/MUDSTONE DIAMICTITE - FLOATING As 234.2-236.8
241.3	244.2	PYRITE ROCK Rock composed of 80% fine pyrite forming fine irregularly rounded 0.1 to 5 cm. clastlike forms. Remainder of rock is white to light grey silica in irregular 0.1 to 2 cm scalloped and embayed forms with pyrite. Genesis of rock uncertain may be replacement of Macmillan Pass Member or volcanic rocks. Foliation in rock is at 10-15° to core axis.
244.2	246.2	MMA _{3,4} CONTORTED/DEFORMED SAND BANDED MUDSTONES - PYRITIC Black mudstone showing boudined, lensoid, and highly deformed sandstone layers in part strongly replaced by pyrite which forms 10-15% of rock. Whole interval seems very strongly deformed and difficult to get good bedding angles.
246.2	246.8	COARSE QUARTZ VEINED INTERVAL

METRES
FROM

TO

DESCRIPTION

246.8 309.4

80% quartz veins form interval with top 30 cm including fragments of sand banded mudstone and remainder fragments of black carbonaceous cherty mudstone in white quartz matrix. Zone forms boundary between Macmillan Pass Member rocks and ribboned cherty carbonaceous mudstone rocks.

RIBBONED - FINELY LAMINATED, BLACK, CARBONACEOUS, CHERTY MUDSTONES - BASAL PORTRAIT LAKE FM.?

Very uniform textured black very carbonaceous very siliceous mudstones. Very finely laminated at 0.1-3 mm even intervals. Graphitic lustre on most bedding and fracture planes. Strongly stylolitic enhancement of bedding with occasional cleavage/fracture controlled stylolites. Rock is very similar throughout section with negligible textural changes. Considerable variations in bedding suggest section is complexly folded.

Pyrite is not abundant but occurs occasionally as 1 to 30 m laminations and bands or as lenticular nodules.

246.8-250.4 very strongly fractured rock with 10% coarse quartz veins - good fault gouge @ 249.4-250.0m
250.-257.0 wedgy poker chip core breaking along bedding planes 250-251.5 15° to core axis - some quartz veining

251.3-252.7 60° to core axis 252.7-254.5 45° to core axis.

254.5-257.0 low < 10° to core axis

257.0 Relatively competent little fractured disturbed core - some variations in bedding

257.0-260.0 43° to core axis.

260.0-265.0 20° to core axis

265-266.7 probably fold axis 1-10° to core axis, multiple healed cross cutting fractures

266.7-268.2 5-15° to core axis relatively strongly fractured

268.2-275.0 evenly bedded @ 20° to core axis.

Darker black and light grey more siliceous interbeds 10-30 cm are evident -5% pyrite in blacker beds.

275.0-278.0 bedding 45° to core axis

278.0-279.5 30° to core axis

279.5-282.1 50-60° to core axis

282.1-287.6 strongly broken fractured rock with complex tight folding evident.

287.6-309.4 competent very well coring but with complex fold patterns evident in core with cross cutting fractures. For most part bedding folds in and out or core axis at low 0-30° to core axis attitudes. 2-3% white quartz veins are evident cutting interval.

END OF HOLE @ 309.4m

METRES
FROM

TO

DESCRIPTION

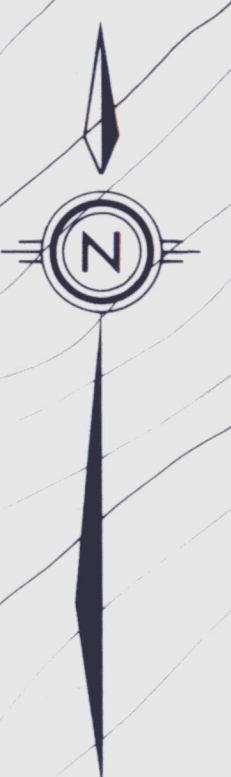
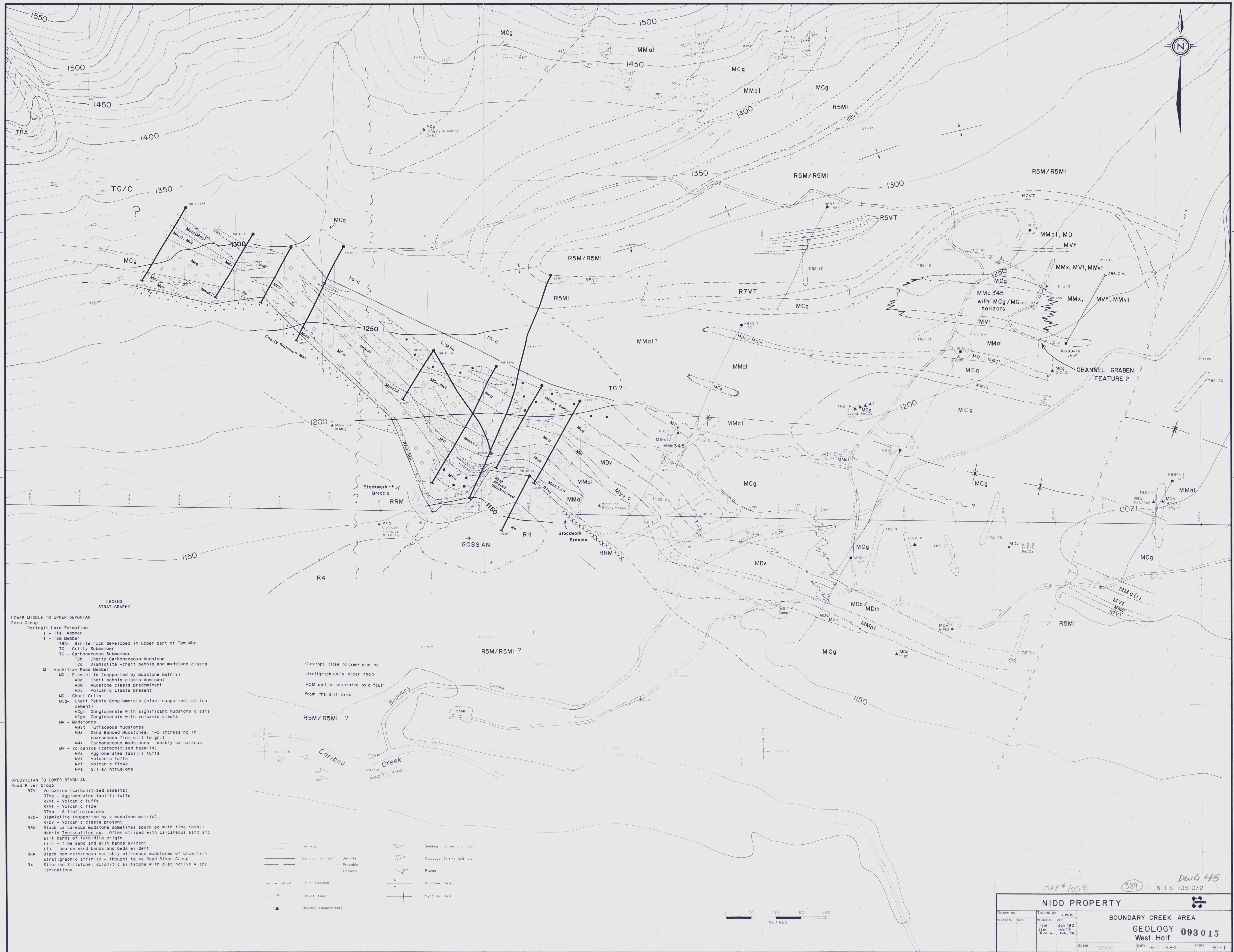
SPERRY SUN SURVEY TESTS OF HOLE

Depth	Azimuth	Dip
Collar att. (not surveyed)	210°	-60°
76.2	(unreliable - in H rods)	-60°
152.4	" "	-56°
228.6	" "	-54.5
304.8	222.0°	-52.5

Runs and Recoveries for NB91-24A

From	To	Int.	Recov'd	%	From	To	Int.	Recov'd	%
22.9	24.4	1.5	0.4	26.7	108.5	111.3	2.8	2.8	100.0
24.4	25.9	1.5	1.5	100.0	111.3	114.3	3.0	3.0	100.0
25.9	27.4	1.5	1.0	66.7	114.3	117.3	3.0	3.0	100.0
27.4	29.0	1.6	1.6	100.0	117.3	120.4	3.1	3.1	100.0
29.0	30.5	1.5	0.1	6.7	120.4	122.5	2.1	2.1	100.0
30.5	32.0	1.5	0.2	13.3	122.5	123.4	0.9	0.9	100.0
32.0	33.5	1.5	1.5	100.0	123.4	123.7	0.3	0.3	100.0
33.5	35.0	1.5	1.3	86.7	123.7	126.5	2.8	2.8	100.0
35.0	36.6	1.6	1.6	100.0	126.5	129.5	3.0	3.0	100.0
36.6	38.1	1.5	1.5	100.0	129.5	132.6	3.1	3.1	100.0
38.1	39.6	1.5	1.5	100.0	132.6	135.6	3.0	3.0	100.0
39.6	41.1	1.5	1.5	100.0	135.6	138.7	3.1	3.1	100.0
41.1	42.7	1.6	1.6	100.0	138.7	141.7	3.0	3.0	100.0
42.7	44.2	1.5	1.5	100.0	141.7	143.1	1.4	0.4	28.6
44.2	45.7	1.5	1.5	100.0	143.1	143.7	0.6	0.2	33.3
45.7	47.2	1.5	1.5	100.0	143.7	144.9	1.2	0.6	50.0
47.2	48.8	1.6	1.6	100.0	144.9	146.3	1.4	1.4	100.0
48.8	50.3	1.5	1.5	100.0	146.3	147.8	1.5	1.5	100.0
50.3	51.8	1.5	1.5	100.0	147.8	149.0	1.2	1.2	100.0
51.8	53.3	1.5	1.5	100.0	149.0	150.9	1.9	1.1	57.9
53.3	54.6	1.3	1.3	100.0	150.9	153.3	2.4	2.4	100.0
54.6	56.1	1.5	1.5	100.0	153.3	153.9	0.6	0.6	100.0
56.1	57.9	1.8	1.8	100.0	153.9	155.6	1.7	1.6	94.1
57.9	59.4	1.5	1.5	100.0	155.6	156.7	1.1	0.9	81.8
59.4	60.7	1.3	1.3	100.0	156.7	157.4	0.7	0.7	100.0
60.7	62.5	1.8	1.8	100.0	157.4	158.8	1.4	1.4	100.0
62.5	64.0	1.5	1.5	100.0	158.8	160.0	1.2	1.2	100.0
64.0	65.5	1.5	1.5	100.0	160.0	163.1	3.1	3.1	100.0
65.5	67.1	1.6	1.3	81.3	163.1	166.1	3.0	3.0	100.0
67.1	68.6	1.5	0.5	33.3	166.1	169.2	3.1	3.1	100.0
68.6	70.1	1.5	1.5	100.0	169.2	172.2	3.0	3.0	100.0
70.1	71.6	1.5	1.5	100.0	172.2	175.3	3.1	3.1	100.0
71.6	73.2	1.6	1.6	100.0	175.3	178.3	3.0	3.0	100.0
73.2	74.7	1.5	0.8	53.3	178.3	181.4	3.1	3.1	100.0
74.7	76.2	1.5	0.4	26.7	181.4	184.4	3.0	3.0	100.0
76.2	77.7	1.5	1.5	100.0	184.4	187.1	2.7	2.7	100.0
77.7	79.2	1.5	1.5	100.0	187.1	188.7	1.6	1.6	100.0
79.2	80.8	1.6	1.6	100.0	188.7	189.7	1.0	0.8	80.0
80.8	82.3	1.5	1.5	100.0	189.7	190.5	0.8	0.8	100.0
82.3	83.8	1.5	1.5	100.0	190.5	191.3	0.8	0.7	87.5
83.8	85.3	1.5	1.5	100.0	191.3	193.5	2.2	2.2	100.0
85.3	86.9	1.6	1.6	100.0	193.5	196.1	2.6	2.6	100.0
86.9	88.4	1.5	1.5	100.0	196.1	199.3	3.2	3.2	100.0
88.4	89.9	1.5	1.5	100.0	199.3	202.5	3.2	3.2	100.0
89.9	91.4	1.5	1.5	100.0	202.5	205.7	3.2	3.2	100.0
91.4	93.0	1.6	1.5	93.8	205.7	208.8	3.1	3.1	100.0
93.0	94.5	1.5	1.5	100.0	208.8	211.8	3.0	3.0	100.0
94.5	96.0	1.5	1.5	100.0	211.8	214.9	3.1	3.1	100.0
96.0	97.5	1.5	1.5	100.0	214.9	217.9	3.0	3.0	100.0
97.5	99.1	1.6	1.6	100.0	217.9	221.0	3.1	3.1	100.0
99.1	100.6	1.5	1.5	100.0	221.0	224.0	3.0	3.0	100.0
100.6	101.0	0.4	0.4	100.0	224.0	227.1	3.1	3.1	100.0
101.0	102.1	1.1	1.1	100.0	227.1	230.1	3.0	3.0	100.0
102.1	103.6	1.5	1.5	100.0	230.1	233.2	3.1	3.1	100.0
103.6	105.2	1.6	1.6	100.0	233.2	236.2	3.0	3.0	100.0
105.2	106.7	1.5	1.5	100.0	236.2	239.3	3.1	3.0	96.8
106.7	107.4	0.7	0.7	100.0	239.3	242.4	3.1	3.1	100.0
107.4	107.6	0.2	0.2	100.0	242.4	245.4	3.0	3.0	100.0
107.6	108.5	0.9	0.9	100.0	245.4	248.4	3.0	3.0	100.0

From	To	Int.	Recov'd	%
248.4	249.2	0.8	0.8	100.0
249.2	250.1	0.9	0.5	55.6
250.1	250.6	0.5	0.3	60.0
250.6	251.5	0.9	0.6	66.7
251.5	252.4	0.9	0.5	55.6
252.4	252.7	0.3	0.3	100.0
252.7	253.4	0.7	0.5	71.4
253.4	254.5	1.1	0.2	18.2
254.5	255.1	0.6	0.1	16.7
255.1	256.0	0.9	0.7	77.8
256.0	256.8	0.8	0.3	37.5
256.8	257.6	0.8	0.8	100.0
257.6	258.5	0.9	0.3	33.3
258.5	260.0	1.5	1.5	100.0
260.0	261.4	1.4	1.3	92.9
261.4	262.7	1.3	1.3	100.0
262.7	263.5	0.8	0.6	75.0
263.5	266.7	3.2	3.2	100.0
266.7	269.7	3.0	3.0	100.0
269.7	272.8	3.1	3.1	100.0
272.8	275.8	3.0	3.0	100.0
275.8	278.0	2.2	2.2	100.0
278.0	278.9	0.9	0.9	100.0
278.9	280.1	1.2	1.2	100.0
280.1	281.9	1.8	1.8	100.0
281.9	282.9	1.0	0.3	30.0
282.9	284.9	2.0	0.8	40.0
284.9	286.8	1.9	1.0	52.6
286.8	288.0	1.2	0.8	66.7
288.0	291.1	3.1	3.1	100.0
291.1	294.1	3.0	3.0	100.0
294.1	297.2	3.1	3.1	100.0
297.2	300.2	3.0	3.0	100.0
300.2	303.3	3.1	3.1	100.0
303.3	306.3	3.0	3.0	100.0
306.3	309.4	3.1	3.1	100.0
<hr/>				
TOTALS		286.5	267.6	93.4



- LEGEND**
- STRATIGRAPHY**
- LOWER MIDDLE TO UPPER DEVONIAN**
 Earn Group
 Portrail Lake Formation
 I - Itsi Member
 T - Tom Member
 TBA - Barite rock developed in upper part of Tom Mbr.
 TG - Gritty Submember
 TC - Carbonaceous Submember
 Tch - Cherty Carbonaceous Mudstone
 Tcd - Diamictite - chert pebble and mudstone clasts
 M - MacMillan Pass Member
 MD - Diamictite (supported by mudstone matrix)
 MDC - Chert pebble clasts dominant
 MDm - Mudstone clasts predominant
 MDv - Volcanic clasts present
 MG - Chert Grits
 MCg - Chert Pebble Conglomerate (clast supported, silica cement)
 MCgm - Conglomerate with significant mudstone clasts
 MCgv - Conglomerate with volcanic clasts
 MM - Mudstones
 MMvt - Tuffaceous mudstones
 MMa - Sand Banded Mudstones, 1-5 increasing in coarseness from silt to grit
 MMx - Carbonaceous mudstones - weakly calcareous
 MV - Volcanics (carbonitized basalts)
 MVA - Agglomerates lapilli tuffs
 MVt - Volcanic tuffs
 MVF - Volcanic flows
 MVS - Sills/Intrusions
- OROVICIAN TO LOWER DEVONIAN**
 Road River Group
 R7V - Volcanics (carbonitized basalts)
 R7Va - Agglomerates lapilli tuffs
 R7Vt - Volcanic tuffs
 R7Vf - Volcanic flow
 R7Vs - Sills/Intrusions
 R7D - Diamictite (supported by a mudstone matrix)
 R7Dv - Volcanic clasts present
 R5M - Black calcareous mudstone sometimes speckled with fine fossil debris *Tentaculites* sp. Often striped with calcareous sand and silt bands of turbidite origin.
 (ii) - fine sand and silt bands evident
 (i) - coarse sand bands and beds evident
 RRM - Black non-calcareous variably siliceous mudstones of uncertain stratigraphic affinity - thought to be Road River Group
 R4 - Silurian Siltstone, dolomitic siltstone with distinctive wavy laminations
- Outcrop
 Geologic Contact - Definite
 - Probable
 - Possible
 Fault (normal)
 Thrust Fault
 Boulder (mineralized)
- 55° Bedding (strike and dip)
 75° Cleavage (strike and dip)
 40° Plunge
 Anticline Axis
 Syncline Axis

Outcrops close to creek may be stratigraphically older than R5M unit or separated by a fault from the drill area.



MAP# 1054
 389
 NTS 105 0/2
 DWG 445

NIDD PROPERTY

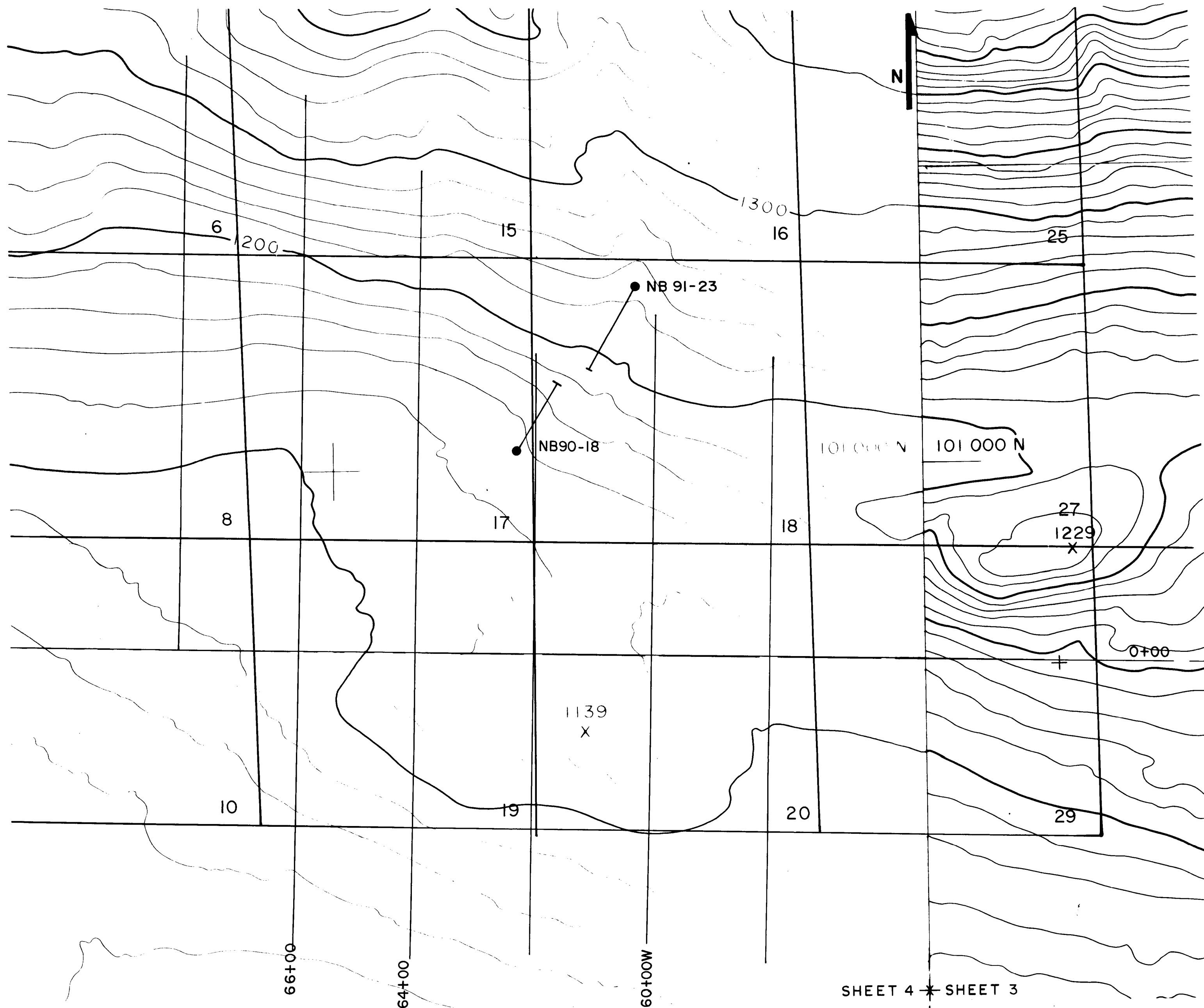
BOUNDARY CREEK AREA

GEOLOGY 093015

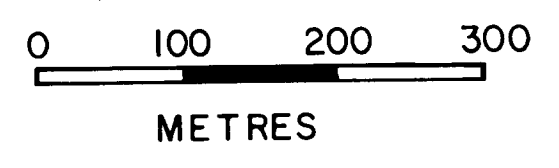
West Half


Scale 1:2500 Date 16-1-1984 Plate 91-1

Drawn by	Traced by
Revised by	Revised by
Date	Date
11m Jan '90	11m Feb '91
11m Feb '91	11m Feb '92



SHEET 4 * SHEET 3



NIDD PROPERTY MAP#105% (391)  1050-1/2	
Drawn by: TJM	Traced by: tjm
Eleven Creek area with claims	
DWG 47 093015	
Scale: 1:5000	Date: Jan '91
	Plate: 91-2

