MAP NO.: 115 G 6	**ASSESSMENT REPORT** X **PROSPECTUS** **CONFIDENTIAL** **OPEN FILE** X	**DOCUMENT NO:** **MINING DISTRICT:** **TYPE OF WORK:**	092529 Whitehorse PERCUSSION DRILLING, TRENCHING, STRIPPING

REPORT FILED UNDER:	Nathan Minerals Inc.		
DATE PERFORMED:	May 1 - December 4, 1987	**DATE FILED:**	September 21, 1988
LOCATION: **LAT.:**	$61^{O}22'N$	**AREA:**	Burwash Creek
LONG.:	$139^{O}18'W$	**VALUE $:**	127,600.00

CLAIM NAME & NO.: SUE 1-4, 6, 9, 11; NAN 3, 5, 6, 8; JAN 4-6, 19, 20, 22, 25-27, 47, 48; And 1, 2, 8-12; Jy 37, 39, 40, 51; DEN 10; EL 39, 40, 42, 44, 46, 48, 49, 53, 54, 60-62, 70.

WORK DONE BY: L.B. Halferdahl

WORK DONE FOR: Nathan Minerals Inc.

DATE TO GOOD STANDING:

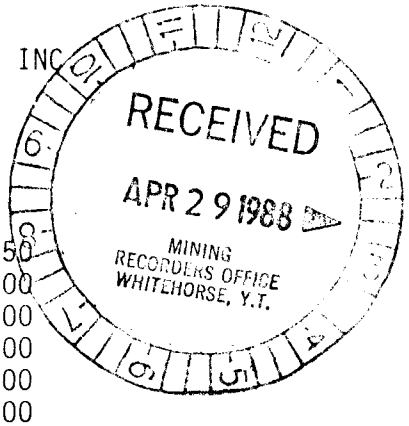
REMARKS: # 13 GLEN

Work in 1987 included stripping and bulldoxer trenching, road construction and 166 percussion drillholes totalling 1507.8 m. Bedrock was exposed in two bulldozer trenches. Several grab samples from the trenches contained amomalous concentrations of copper, gold and platinum that appear to be related to faults or intrusive contacts. Values up to 970 ppm Cu, 110 ppm Mo, 1500 ppm Pb, 650 ppm Zn and 413 ppb Au were obtained from samples taken along minor fault zones.

COST STATEMENT FOR 1987 WORK

ON THE QUARTZ MINERAL CLAIMS OF NATHAN MINERALS INC.

ALONG AND NEAR BURWASH CREEK



Personnel			
B. Bourdeau, driller	119 h @ $ 25.50	$3,034.50	
E. Hebert, laborer	10 h @ $ 18.00	180.00	
B. Carvell, driller	388 h @ $ 18.00	6,984.00	
L. Halferdahl, engineer	15 d @ $350.00	5,250.00	
D. Brabin, laborer	52 h @ $ 18.00	936.00	
G. Lyons, driller's helper	14 d @ $ 90.00	1,260.00	
E. Pomeroy, driller's helper	278 h @ $ 18.00	5,004.00	
B. Trytten, geologist	45 d @ $125.00	5,625.00	
			$28,273.50
Food and Accommodation (including cook, trailer, cabin)			
303 man-days @ $28.00			8,484.00
Transportation			
4X4 rentals, kilometrage, gas 303 man-days @ $20.25		6,135.75	
Freight and express on samples		265.80	
			6,401.55
Contract Equipment			
D7 bulldozer including operator, fuel, maintenance 912 h @ $105		95,760.00	
John Deere backhoe including oerator, fuel maintenance 98 h @ $105		10,290.00	
			106,050.00
Drilling Supplies, Maintenance, Repairs			
Atlas Copco Airtrac drill - parts, supplies, repairs		13,359.38	
Gardner-Denver 600 cfm compressor - parts, repairs		2,123.63	
- fuel		4,465.00	
			19,948.01
Analyses			
76 chip samples prepared and analyzed for Cu, Ni, V, Cr, Au, Pt, Pd, Rh and subsequently for V and Cr after fusions @ $22		1,672.00	
69 chip samples prepared and analyzed for Cu, Ni, V, Cr, Au, Pt, Pd, Rd @ $17.25		1,190.25	
207 chip samples prepared and analyzed for Cu, Ni, Co, Au, Pt, Pd, Rh @ $16.75		3,467.25	
74 chip sampels prepared and analyzed for Cu, Mo, Pb, Zn, Au @ $15.25		1,128.50	
39 till samples prepared and analyzed for Cu, Pb, Zn, Au, Pt, Pd, Rh @ $14.50		565.50	

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16 till samples prepared and analyzed for Mo, Cu, Pb, Zn, Au, Pt, Pd, Rh @ $15.00	240.00	
5 till samples prepared and analyzed for Cu, Mo, Pb, Zn, Au @ $14.00	70.00	
		8,333.50
Camp phone, long distance telephone		383.15
		$177,873.71

As the field costs total more than can be applied to the 312 quartc claims, we have not included the costs of preparing the report.

092529

NATHAN MINERALS INC.

1987 EXPLORATION OF QUARTZ CLAIMS NEAR BURWASH CREEK, YUKON (TRENCHING AND STRIPPING, PERCUSSION DRILLING, ACCESS TRAILS)

Work on Claims
SUE 1-4, 6,9,11; NAN 3,5,6,8; JAN 4-6, 19,20,22, 25-27,
47,48; AND 1,2, 8-12; JY 37,39,40,51; DEN 10; EL 39,40,42
44,46,48,49,53,54, 60-62, 70

Whitehorse Mining District

Geographic Coordinates
61° 22'N
139° 18'W

NTS Sheet 115 G/6

by

L.B. Halferdahl, Ph.D., P.Eng.

1988 07 29

Work on Property Conducted 1987 05 01 to 1987 12 04

Halferdahl & Associates Ltd.
18, 10509 - 81 Avenue
Edmonton, Alberta
T6E 1X7

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 127,690.00 .

for Regional Manager, Exploration and Geological Services re. Commissioner of Yukon Territory.

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LIST OF APPENDICES

1.0 INTRODUCTION

Exploration of the quartz claims extending from Tatamagouche and Burwash Creeks to beyond Duke River in southwestern Yukon continued during the period May 1, to December 4, 1987. In addition to other work not reported here, it consisted of trenching and stripping, 1507.8 m of percussion drilling, the construction of access trails, and maintenance of the road up Burwash Creek after a flood. This report describes these explorations.

Access to the valleys of Burwash Creek and Duke River was by four-wheel-vehicles. Access to the Burwash Uplands and other localities between Burwash Creek and Duke River was initially by tracked vehicles, and later by four-wheel-drive vehicles when graded sections of trail and winter roads were accessible to them. Accommodation for the crew was in a trailer camp and cabin in the valley of Burwash Creek.

Many of the tributaries of Burwash and Tatamagouche Creeks and Duke River have not been formally named. For convenience some of these tributaries or pups have been given informal names, which accord with local use as much as possible. A few other topographic features have also been named informally.

An officer of the Geological Survey of Canada has recently advised that the ultrabasic and basic intrusions into formations of the Permian Skolai Group have been assigned a Triassic age. This change has not been made in this report; throughout it, the designations Pp and Pg should read T_{kp} and T_{kg}, respectively.

2.0 SUMMARY

Two trenches excavated to bedrock, one along Burwash Creek and the other along Johnson Creek, clearly show anomalous concentrations of one or more of gold, copper, platinum, lead, and molybdenum related to faults or intrusive contacts. Gravel adjacent to a third trench on the Burwash Uplands was stripped.

Some 166 percussion holes totalling 1507.8 m were drilled, some to depths of 60 or 65 feet. They served to aid in mapping the bedrock in areas covered by glacial till. Permafrost in most tills drilled extends from 8 to 20 feet or so. Some reaches to bedrock; but in places unfrozen till lies between frozen till and bedrock. Channel or stream deposits are present below the till in some places. At least some of the peridotite, which underlies a large part of the Burwash Uplands, is underlain by gabbro on its north side in or adjacent to the valley of Burwash Creek.

On its southern contact the peridotite is intruded by granodiorite at one place where drilled, but tuffs probably intervene between, a short distance to the west.

A zone perhaps half way between the north and south contacts of the peridotite on the Burwash Uplands contains up to 104 ppb platinum and more than 400 ppm copper. Descriptions of cuttings suggest faulting, but also note the presence of "white gabbro". Bedrock was not reached in drillholes south of this zone because of thick till and stream deposits. A few scattered anomalous concentrations of gold were found along or near peridotite contacts.

The results from drillholes on claim EL 48 and near the confluence of Phil and Frying Pan Creeks showed little above background concentrations of metals of interest.

An access trail consisting of about 7 km of graded or partly graded road and about 7 km of winter road was constructed across the Burwash Uplands from the mouth of Bea Creek at Duke River to the mouth of 105 Pup at Burwash Creek to provide access to drillsites. Another winter road was constructed along Frying Pan Creek to provide access to drillsites.

3.0 RECOMMENDATIONS

1. Conduct airborne VLF, magnetometer, and gradiometer surveys over as much of the property as feasible.
2. Follow up anomalous responses with appropriate ground geophysical surveys.
3. Prospect the peridotite and underlying gabbro for massive and disseminated sulfides. Attempt to locate the nickel-copper showing along Burwash Creek just above the mouth of Tatamagouche Creek.
4. Collect fill-in geochemical soil samples along appropriate slopes free or relatively free from till.
5. Test the zone with anomalous platinum concentrations on the Burwash Uplands by diamond drilling when appropriate.

4.0 TRENCHING AND STRIPPING

4.1 Trench on Claim And 8

A trench 172 yards long by an average of 6 yards wide by an average of 1 yard deep, for a total of 1032 cubic yards was excavated by means of a D7 bulldozer on claim And 8. Fig. 4.1 shows some of the intrusive and structural relations among the following rocks:

red-brown volcanics, locally dark-grey-green grain size to 1 mm, laminated, weathers light tan and rusty

green volcanics, dark-grey-green, grain size to 1 mm, scattered quartz veinlets and globules 3-6 mm in size, rusty along fractures, weathers medium-grey-green

peridotite, dark-grey-black, grain size to 1 mm, magnetic, weathers rusty or medium-green-grey

serpentinized peridotite, dark-green-black, grain size to 1 mm, non magnetic, slickensides on many surfaces, weathers rusty or medium-green-grey

latite porphyry, tan, clayey, very crumbly, local pyrite or chalcopyrite, highly weathered to tan or rusty

Fifteen grab samples of rocks and fault material were analyzed by atomic absorption for copper, nickel, and cobalt, and by ICP-MS for gold, platinum, and palladium (Fig. 4.1, Appendices 1 and 2). Several samples contain anomalous concentrations of copper, gold, and platinum, but none are of economic grade. It is clear from their distribution that the anomalous concentratons of copper, gold, and platinum are related to faults or intrusive contacts with sample Bur 78 along an intrusive contact between latite porphyry and volcanics containing 359 ppm Cu, 21 ppb Au, and 49 ppb Pt. The peridotite in the western half of the trench contains nickel concentrations ranging from 253 to 927 ppm, background concentrations fairly typical of peridotite elsewhere on the property. The peridotite? near the east end of the trench contains much lower concentrations of nickel: 76 to 77 ppm; possibly it is not actually peridotite.

4.2 Trench at Johnson Creek

A trench 66 yards long by an average of 7 1/3 yards wide by an average of 1 2/3 yards deep, for a total of 806 2/3 cubic yards, was excavated by means of a D7 bulldozer on claim JY 51. Fig. 4.2 shows a section of the bedrock exposed along

the west side of this trench. Argillite and argillite-sandstone have faulted contacts with gabbro, with the direction of movement along these major faults not known. It is uncertain whether the argillite lies stratigraphically above the argillite-sandstone unit.

Eight samples from this trench were analyzed for copper, molybdenum, lead, and zinc by atomic absorption, and by neutron activation for gold (Fig. 4.2, Appendix 3). Samples from along faults contain anomalous concentrations from 400 to 970 ppm copper, from 10 to 110 ppm molybdenum, from 15 to 1500 ppm lead, from 380 to 650 ppm zinc, and from 39 to 413 ppb gold, whereas samples from the argillite and argillite-sandstone, and gabbro have only background concentrations of copper, molybdenum, lead, zinc, and gold. The highest concentrations of gold, 379 and 413 ppb, are in samples from two of the minor faults, whereas samples from the major faults with clayey gouge and bounding the gabbro, contain 39 and 12 ppb gold.

4.3 Trench on Claims And 1, 2, and 9

The trench on claim And 9 excavated in 1985 was extended easterly onto claims And 1 and 2 for a total length of 337 yards, an average width of 19.28 yards, and an average depth of ½ yard, by means of a D7 bulldozer (Fig. 5.3 and 5.4). It does not reach bedrock.

Two gravelly areas adjacent to the And trench on claim And 9 (Fig. 5.4) were stripped as follows:

Average Dimensions (yards)			Volume
Length	Width	Depth	(cubic yards)
65½	45½	1/3	993.42
103	54½	1/3	1,871.17

Bedrock was not reached.

5.0 PERCUSSION DRILLING

An Atlas Copco track-mounted percussion drill powered by a 600 cfm Gardner Denver wheel-mounted compressor completed 1507.8 m (4947 ft.) of drilling in 166 holes (Fig. 5.3 to 5.27; Appendix 4). In addition percussion holes attempted at the location of the trench on claim And 8 were not successful because of caving ground. The drill was capable of drilling to a depth of at least 70 feet, but most of the holes drilled were less than 40 feet. Initially, the drill towed the compressor; later both were mounted on a large skid, moved by a D7 bulldozer. In order to provide

reasonably smooth solid ground for moving the drill and compressor, to avoid soft clay from melted permafrost, and to facilitate the recovery of cuttings, the D7 bulldozer stripped unfrozen materials to permafrost shortly before moving and drilling at each site. Without casing, the drill was not capable of penetrating wet unconsolidated materials, as the air pressure was not sufficient to blow such materials out of the drillholes, nor to prevent plugging of the bit. In some holes, very slow drilling enabled the penetration of clayey material. Ice lenses more than ½ m thick are difficult to drill as plastic flow of the ice may stop circulation of air. Most frozen till was penetrated readily. In the last week or so of drilling, casing was used to complete some holes through wet and clayey overburden. Drilling in highly fractured rocks was largely unsuccessful, because when air is lost into the fractures, not enough is left to bring cuttings to the surface. Cross bits performed better in till as they do not plug as readily as button bits. Button bits were better in solid rock, but they wear out rapidly in highly fractured rocks.

Samples were collected as the cuttings emerged from the hole in sample catchers or on polythylene sheets and placed in sample bags. Those from bedrock or other deposits below the till were contaminated with till to varying extents. Initially, at each hole only samples at and near the base of the till were bagged, along with cuttings from the top five feet or so of the bedrock, if it was reached. Later, greater depths of bedrock were sampled. In some places more than one attempt to reach bedrock through soft and wet unfrozen clayey till and other difficult materials was made. A representative portion of each sample to be analyzed was carefully selected by spreading the sample out on a plastic sheet, marking it with a grid, and systematically sampling from each square in the grid.

In general, samples of peridotite, gabbro, and related rocks were analyzed for gold, platinum, and rhodium by fire-assay mass spectrometer methods, and for copper, nickel, vanadium, and chromium by ICP methods. Later some such samples were re-analyzed for chromium and vanadium after fusion and complete digestion of the samples. Samples of tuffs and volcanic rocks were analyzed for gold by neutron activation techniques, and for copper, lead, zinc, and molybdenum by atomic absorption techniques. Samples of till without other treatment were analyzed for some of the foregoing metals, as appropriate. All analytical results for samples from the percussion drillholes are in Appendix 5.

5.1 Along and Near Sue Claim Line (Fig. 5.3 to 5.16, 5.19)

Along and near the Sue claim line, the tills range from 8 to more than 40 feet in thickness. Most are frozen to a depth of at least 10 feet from the surface so in places bedrock may be reached without encountering unfrozen till, but unfrozen till is present in some places between the frozen till and bedrock. Some holes encountered what appear to be preglacial stream deposits. From north to south the results clearly show gabbro, peridotite, gabbro? and peridotite, granodiorite. If the base of the mafic and ultramafic intrusion is at the north, the drillholes may not have extended far enough north to show the increased concentrations of sulfides and platinum group metals in a setting similar to that found at the nearby Wellgreen deposit. On the other hand, the highest platinum concentrations accompanied by increasing copper concentrations are near the crossing of the Sue claim line by the access trail. They seem to be associated with faulting, but the presence of "white gabbro" is intriguing. For some distance south of this point, the percussion drillholes did not reach bedrock because of stream deposits which underlie the till there.

5.2 Along Nan Claim Line (Fig. 5.3, 5.16, and 5.20)

Along the Nan claim line, the till is similar to that along the Sue claim line. From south to north the bedrock in the holes drilled consists of peridotite, pyroxenite, mafic tuffs?, and pyroxenite.

5.3 Along And Claim Line (Fig. 5.3, 5.4, 5.17, 5.21)

Only three of the northerly holes reached bedrock, the others bottoming in up to 30 feet of till, which is similar to that along the Sue claim line. Pyroxenite is underlain by gabbro. It is possible that south of the pyroxenite is a band of till-covered tuffs before the granodiorite is reached. East of the And claim line the granodiorite contact may be related to the EJ fault on Tatamagouche Mountain north of Burwash Creek.

5.4 Near 101 Pup (Fig. 5.4, 5.17, 5.18, 5.22)

Perhaps because of a steeper slope with obvious creep features, only three of the fourteen holes drilled near 101 Pup reached bedrock: black pyroxenite and green tuffs. The other holes were abandoned in unfrozen clayey till at depths as shallow as 8 feet.

5.5 On Slope Between Bea Lake and Frying Pan Creek, Claim EL 48 (Fig. 5.22 to 5.24)

These holes were drilled along the access trail excavated to or about to bedrock on a dry poplar-covered slope, to test for the gold reported by others from panning gopher diggings. The more southerly holes penetrated tuffs, some of which contain small amounts of galena. Only two or three holes were drilled north of the gabbro contact. Some holes were very shallow because of blocky ground.

5.6 Near Confluence of Phil Creek with Frying Pan Creek (Fig. 5.25 to 5.27)

The Phil and Frying Pan holes were drilled as a follow up to heavy mineral sampling along Frying Pan Creek, but only one definitely reached bedrock: serpentinite at the bottom of Phil 0. In this area and probably downstream to the mouth of Frying Pan Creek as shown by till in drillholes and along an access trail constructed in November 1987, the valley of Frying Pan Creek is preglacial, and was covered by glacial till.

6.0 ACCESS TRAILS AND ROAD MAINTENANCE

The lengths of most of the access trails have been measured but their locations have not been surveyed; those shown in Fig. 5.1 to 5.4 are approximate only. D6 and D7 bulldozers and a John Deere backhoe were used in their construction, with a dump truck also used for gravelling part along Bea Creek.

6.1 Along Bea Creek (Fig. 5.1)

About 1 km of the old access trail to the north of the lower part of Bea Creek was rerouted closer to Bea Creek to reduce its gradient and to encounter less permafrost. The new tote-road is about 5 to 7 m wide. About 200 to 300 m in its lower part were gravelled. Beyond the new stretch the old trail was improved by building grades and ditching. The trail starts at the Duke River road.

Metrage	Description
0- 180	stripped to gravel on river flat
180	base of valley side of Duke River
180- 373	graded and ditched on high side
373- 493	graded
493-1420	graded and ditched on high side
898	trail to bed of Bea creek
1286	junction with previous trail
180- 400	gravelled
1369	junction with winter road to Bea Lake
1369-1665	across swamp
1420-1630	graded and ditched on both sides

Metrage	Description
1630-1665	graded and ditched on high side
1665	base of knoll
1665-1750	gradient up knoll
1750-1987	across swamp
1750-1878	grade not completed; ditch 20 m wide on north side for drainage and to obtain material for grade
1878-1952	graded and ditched on high side
1952-1987	cleared only

6.2 Bea Creek to South of Bea Lake (Fig. 5.1)

At metrage 1369 of access trail along Bea Creek, a winter road about 400 m long was constructed across a swamp to connect with the previously constructed trail north of Bea Lake. About 1000 m of the previously constructed trail passing west of Bea Lake, was improved by widening and smoothing.

6.3 South of Bea Lake to Frying Pan Pup (Fig. 5.1 and 5.2)

The previously constructed access of about 1600 m partly along the poplar slope from south of Bea Lake on claim EL 46 to the bank above Frying Pan Creek and thence up the right side of Frying Pan Creek to Frying Pan Pup was widened and improved.

6.4 Frying Pan Pup to Lake One (Fig. 5.2 and 5.3)

A winter road suitable for 4-wheel-drive vehicles was stripped for about 6½ km from Frying Pan Pup to Lake One to provide access for drilling and to the camp when the road through the lower canyon of Burwash Creek became impassible because of ice. Parts of this road are on gravel ridges.

6.5 Near 101 Pup (Fig. 5.4)

The grade on the access trail from the valley of Burwash Creek near the mouth of 105 Pup and climbing just west of 101 Pup to the Burwash Uplands was improved and large parts virtually completed. From 105 Pup to its crossing of 101 Pup it is about 1085 m long and 6 to 7 m wide.

Metrage	Description
0- 120	previous trail partly rerouted to reduce its gradient; local gradients require further reductions
120- 257	previously built grade ditched on west side
257- 985	new grade about 6 m wide; ditched on both sides
985-1085	previously constructed grade
1085	crossing of 101 Pup

6.6 101 Pup to Lake One (Fig. 5.3 and 5.4)

The access along 101 Pup was continued from the crossing of 101 Pup by building a grade 6 to 7 m wide for about 2360 m to Lake One, with ditches on both sides.

6.7 Near Lower Part of Frying Pan Creek (Fig. 5.1)

A winter road was constructed for about 1300 m along the north side of Frying Pan Creek from its mouth to just below the first canyon to provide access for drilling there.

6.8 South of Bea Lake to Frying Pan Creek (Fig. 5.1)

A winter road about 1100 m long was constructed on claims EL 46, 53, and 54 from the access trail at the north end of the poplar slope on claim EL 46 easterly to the confluence of Phil and Frying Pan Creeks.

6.9 Near Mullere Creek (Fig. 5.3)

About 20 m near the large Besner shed at the beginning of the trail up Mullere Creek was rerouted to avoid a soft section. Starting about 200 m farther up the previously constructed access trail, a new trail with a significantly lower gradient was constructed for 125 m around a poplar-covered spur free of permafrost. The next 100 m in permafrost was partly stripped and cleared, ready for more work in another season. The next 200 m, perviously constructed, was improved. A grade, ditched on one side was constructed for the next 190 m to the end of the trail at 830 m.

6.10 Road Maintenance in Lower Canyon of Burwash Creek

Heavy rain in mid August 1987, resulted in a very bad flood along Burwash Creek. Rock slides in the Lower Canyon blocked the road in two places, and high water washed out considerable stretches leaving a paucity of material fine enough for road building. Making the road through the Lower Canyon passable again required 80 hours with a D7 bulldozer and 16 hours with a John Deere backhoe.

Respectfully submitted,

L.B. Halferdahl, Ph.D., P.Eng.

Edmonton, Alberta
1988 07 29

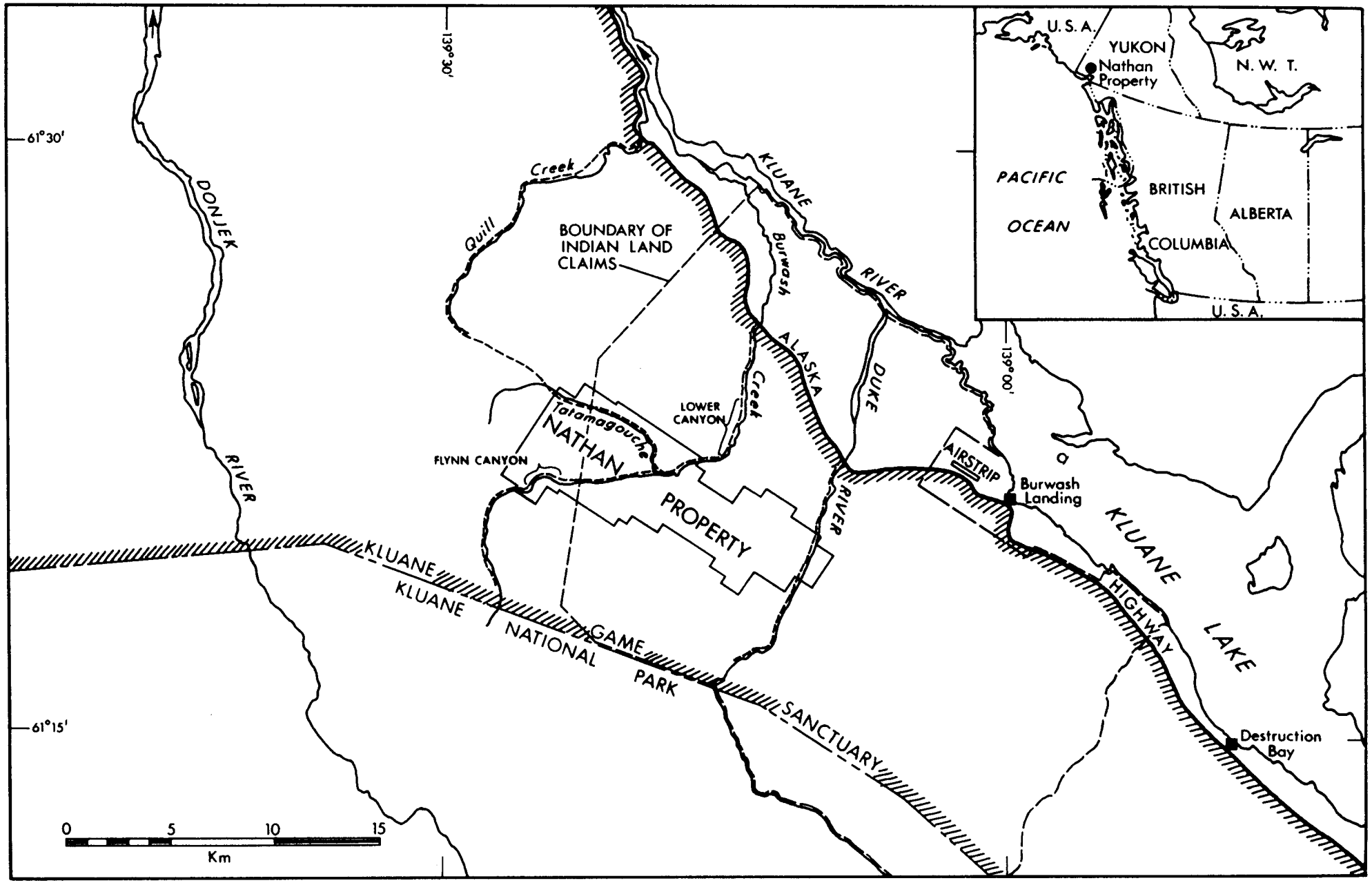
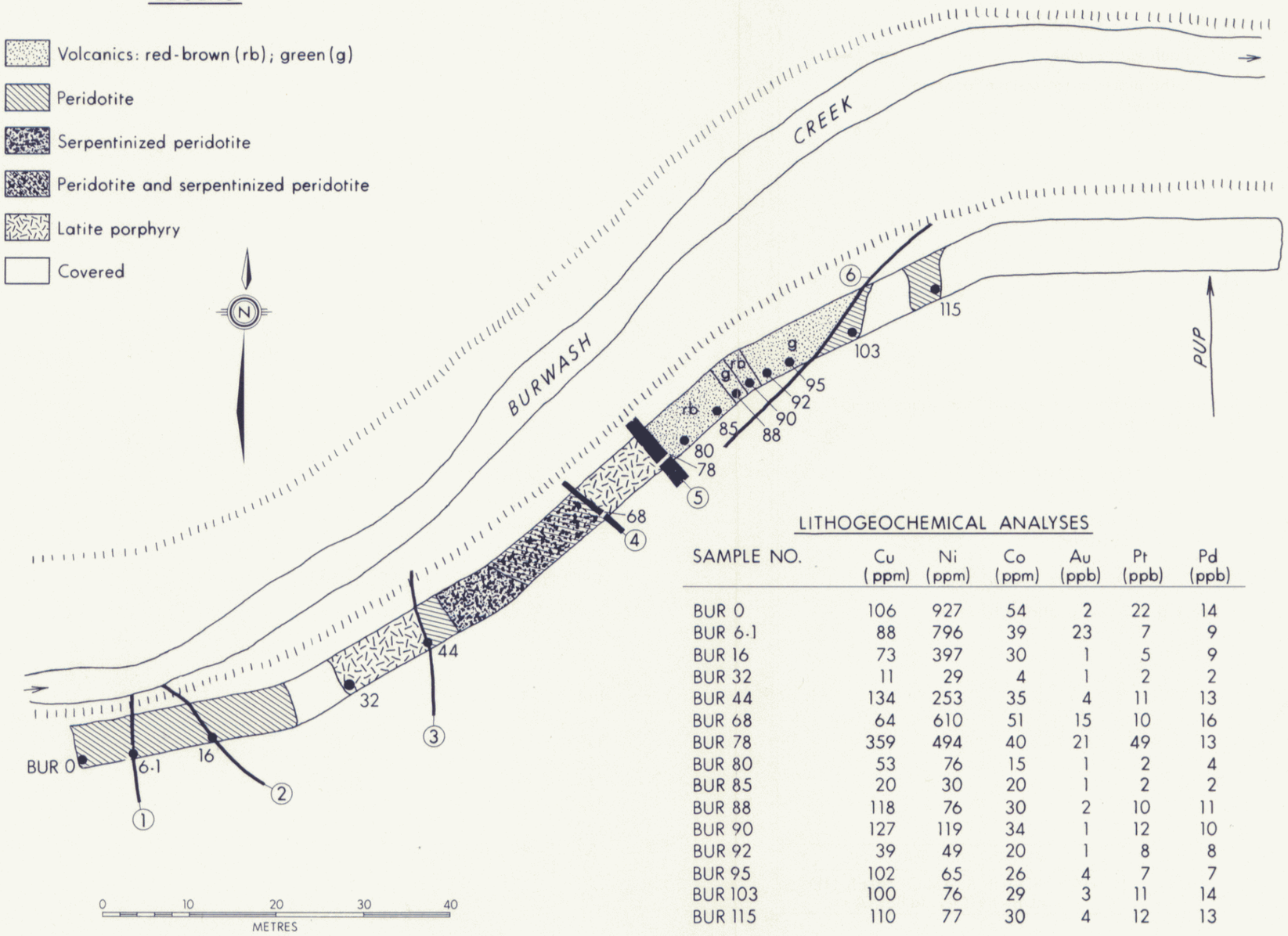


Fig. 1.1 Location and Index Map

F1

LEGEND

- Volcanics: red-brown (rb); green (g)
- Peridotite
- Serpentinized peridotite
- Peridotite and serpentinized peridotite
- Latite porphyry
- Covered



SYMBOLS

Fault with number ..... (2)

Lithogeochemical sample location with number ..... 32●

..... 78

LITHOGEOCHEMICAL ANALYSES

SAMPLE NO.	Cu (ppm)	Ni (ppm)	Co (ppm)	Au (ppb)	Pt (ppb)	Pd (ppb)
BUR 0	106	927	54	2	22	14
BUR 6·1	88	796	39	23	7	9
BUR 16	73	397	30	1	5	9
BUR 32	11	29	4	1	2	2
BUR 44	134	253	35	4	11	13
BUR 68	64	610	51	15	10	16
BUR 78	359	494	40	21	49	13
BUR 80	53	76	15	1	2	4
BUR 85	20	30	20	1	2	2
BUR 88	118	76	30	2	10	11
BUR 90	127	119	34	1	12	10
BUR 92	39	49	20	1	8	8
BUR 95	102	65	26	4	7	7
BUR 103	100	76	29	3	11	14
BUR 115	110	77	30	4	12	13

NOTES

Sample numbers correspond to distance along trench from sample Bur 0.

Fault	strike	dip
1	180°	70°W
2	140°	25°S
3	160°	45°W
4	obscured	
5	obscured	
6	35°	35°S

See Fig. 5·3 for location of trench.

092529

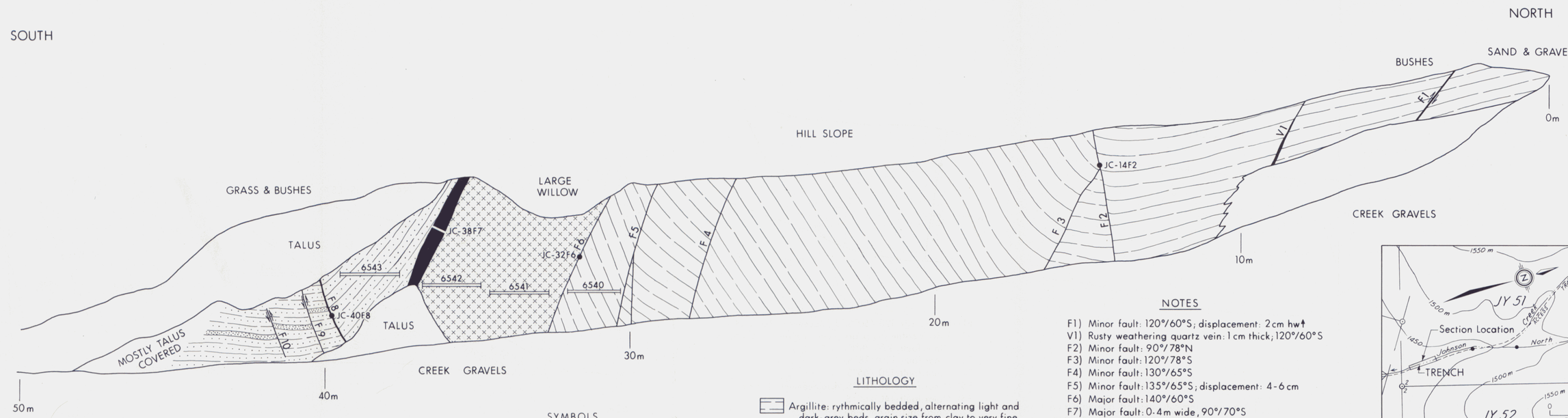
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 4·1 Trench on Claim And 8.

BURWASH CREEK AREA, YUKON

BT 1988·01



LITHOGEOCHEMICAL ANALYSES

Sample No.	Cu(ppm)	Mo(ppm)	Pb(ppm)	Zn(ppm)	Au(ppb)	Length(m)
6540	52	1	4	158	5	2·0
6541	105	4	1	62	2	2·0
6542	103	1	1	86	1	2·0
6543	67	2	2	68	5	2·0
JC-14F2	540	40	20	380	379	<0·1
JC-32F6	400	14	24	650	39	<0·1
JC-38F7	690	10	15	156	12	0·4
JC-40F8	970	110	1500	580	413	0·1

SYMBOLS

Lithogeochemical sample location with number 6542

..... ●JC-40F8

LITHOLOGY

Argillite: rythmically bedded, alternating light and dark-grey beds, grain size from clay to very fine sand, beds 1-2cm, scattered pyrite crystals to 1mm, weathers rusty

Gabbro: dark-green-black, feldspars 2mm in size, others to ½mm, pyritic, weathers rusty and medium-grey-green

Argillite-Sandstone: black argillite, beds 1-2 cm, weathers rusty; light-brown-grey sandstone, fine quartzitic sand, several units to 30 cm thick, weathers rusty

NOTES

F1) Minor fault: 120°/60°S; displacement: 2cm hw↑
V1) Rusty weathering quartz vein: 1cm thick; 120°/60°S
F2) Minor fault: 90°/78°N
F3) Minor fault: 120°/78°S
F4) Minor fault: 130°/65°S
F5) Minor fault: 135°/65°S; displacement: 4-6cm
F6) Major fault: 140°/60°S
F7) Major fault: 0·4m wide, 90°/70°S
F8) Minor fault: 50°/80°N
F9) Minor fault: 50°/85°N; displacement: 60cm hw↑
F10) Minor fault: 50°/80°N; displacement: 40cm hw↑

0 1 2 3 4
METRES

Location Map

092529

NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 4-2 Section in Trench along Johnson Creek.

BURWASH CREEK AREA, YUKON

BT 1988-01

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JAN 67 YA78509 | JAN 65 YA75395 | JAN 63 YA75393 | JAN 61 YA75391 | JAN 59 YA76389 | EL 49 YA75428 | EL 47 YA75427 | EL 45 YA75425 | EL 43 YA75423 | EL 41 YA75421 | EL 69 YA75469

JAN 68 YA78510 | JAN 66 YA75396 | JAN 64 YA75394 | JAN 62 YA75392 | JAN 60 YA75390 | EL 50 YA75430 | EL 48 YA75428 | EL 46 YA75426 | EL 44 YA75424 | EL 42 YA75422 | EL 70 YA75480

JAN 71 YA75399 | JAN 69 YA75397 | EL 57 YA75437 | EL 55 YA75435 | EL 53 YA75433 | EL 51 YA75431 | EL 71 YA75451

JAN 72 YA75400 | JAN 70 YA75398 | EL 58 YA75438 | EL 56 YA75436 | EL 54 YA75434 | EL 52 YA75432 | EL 72 YA75452

JAN 77 YA75405 | JAN 75 YA75403 | EL 65 YA75445 | EL 63 YA75443 | EL 61 YA75441 | EL 59 YA75439 | EL 73 YA75453

JAN 78 YA75406 | JAN 80 YA75408 | EL 66 YA75446 | EL 64 YA75444 | EL 62 YA75442 | EL 60 YA75440 | EL 74 YA75454

EL 83 YA81418 | EL 81 YA81416 | EL 79 YA81414 | EL 77 YA81412

EL 84 YA81419 | EL 82 YA81417 | EL 80 YA81415 | EL 78 YA81413

Ph | Kgd | Pg

BEA LAKE ELEV. 1027± | MARSH LAKE | WEST FORK | MAIN FORK | BEA CREEK | JAN CREEK | KNOB CREEK | FERNIE CREEK | PH CREEK | DUKE RIVER | PTARMIGAN CREEK | SQUIRREL CREEK

LEGEND

See fig. 5-3

SYMBOLS

- Geological boundary, defined / approximate
- Area of outcrop
- Isolated outcrop
- Strike and dip of bedding
- Fault, defined, approximate
- Road, improved, unimproved
- Claim post location

INDEX MAP

Scale: 1:104 000

A | B | C | D | E | F

NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

REVISIONS	
BY	DATE
LBH	1985-12
LBH	1986-12
BT	1988-02

Fig. 5-1 Geology of Map Sheet A

092529

BURWASH CREEK AREA, YUKON

0 100 200 300 400 500 METRES

LBH SCALE: 1:5000 1984 10

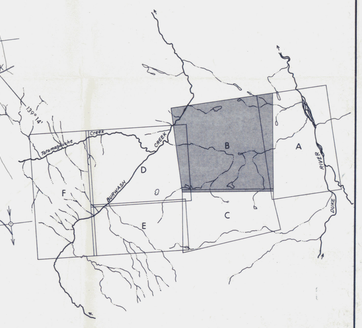
HBS

LEGEND

See fig. 5-3

SYMBOLS

Geological boundary, defined ..... approximate .....
Area of outcrop .....
Isolated outcrop x
Strike and dip of bedding ..... 34°
Road, improved, unimproved .....



092529

NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

REVISIONS	
BY	DATE
LBH	1985-12
LBH	1986-12
LBH	1988-09

Fig. 5-2 Geology of Map Sheet B

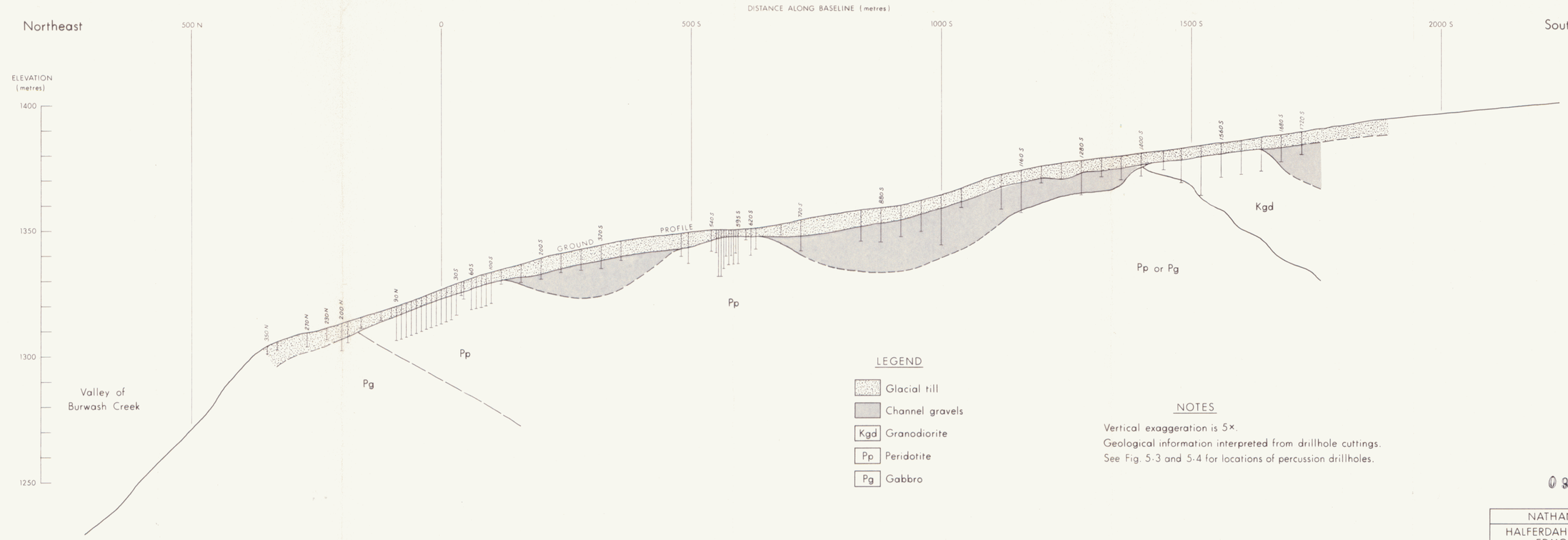
BURWASH CREEK AREA, YUKON

0 100 200 300 400 500 METRES

LBH (486) SCALE: 1:5000 1984.10


TATAMAGOUCHE MOUNTAIN
KAT 28
KAT 29
KAT 30
JO 9
JO 10
WEN 9
WEN 10
DEN 9
DEN 10
EL 9
KAT 10
KAT 7
KAT 8
JO 7
JO 8
WEN 7
WEN 8
DEN 7
DEN 8
EL 7
EL 8
KAT 12
KAT 5
KAT 6
JO 5
JO 6
WEN 5
WEN 6
DEN 5
DEN 6
EL 5
EL 6
KAT 14
KAT 3
KAT 4
JO 3
JO 4
WEN 3
WEN 4
DEN 3
DEN 4
EL 3
EL 4
KAT 1
KAT 2
JO 1
JO 2
WEN 1
WEN 2
DEN 1
DEN 2
EL 1
EL 2
JY 7
JY 8
AND 7
AND 8
SUE 7
SUE 8
NAN 7
NAN 8
JAN 7
JAN 8
JY 5
JY 6
AND 5
AND 6
SUE 5
SUE 6
NAN 5
NAN 6
JAN 5
JAN 6
JY 12
JY 13
JY 14
JY 3
JY 4
AND 3
AND 4
SUE 4
NAN 3
NAN 4
JAN 3
JAN 4
AND 1
AND 2
SUE 1
SUE 2
NAN 1
NAN 2
JAN 1
JAN 2
JY 15
JY 16
JY 1
JY 2
AND 9
AND 10
SUE 9
SUE 10
JY 32
JY 37
JY 38
FAULT D
FAULT E
EJ FAULT
AREA OF FIG 4.1
LAKE 1
LAKE 2
Thirty Pup
BURWASH
LEGEND
TERTIARY
Paleocene
Tpl Latite porphyry
CRETACEOUS
Kgd Granodiorite
UPPER TRIASSIC
Ꞧn Nikolai Formation: basalt; cgl-conglomerate
PERMIAN-TRIASSIC
Pp Peridotite
Pg Gabbro
LOWER PERMIAN
Skolai Group
Hasen Creek Formation
Phm Main Member: argillite; r-rusty weathering argillite; ch-chert; ls-limestone
Station Creek Formation
Psc Volcaniclastic Member
Psf Volcanic Flow Member,
Basic dyke
Psr Rust Member
SYMBOLS
Geological boundary, defined
approximate
Area of outcrop
Isolated outcrop
Strike and dip of bedding
Strike and dip of schistosity
Strike and dip of joint
Strike and plunge of lineation
Fault, defined
Road (graded, winter)
Contour line, interval 10 metres
Spot elevation in metres
Claim post
Claim boundary, location line
other
Claim name
WEN 3
Abandoned adit
Anticlinal axis
Location of percussion drillhole
Claim posts and claim boundaries are only approximate.
NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA
REVISIONS
INITIALS DATE
BH 1980.08
LBH 1981.04
DBN 1981.11
LBH 1984.10
LBH 1985.12
LBH 1987.02
LBH 1988.09
Fig. 5.3 Geology of Sheet D.
092529
BURWASH & TATAMAGOUCHE CREEKS, Y.T.
Metres
SCALE: 1:5000
RB
487
1979.08

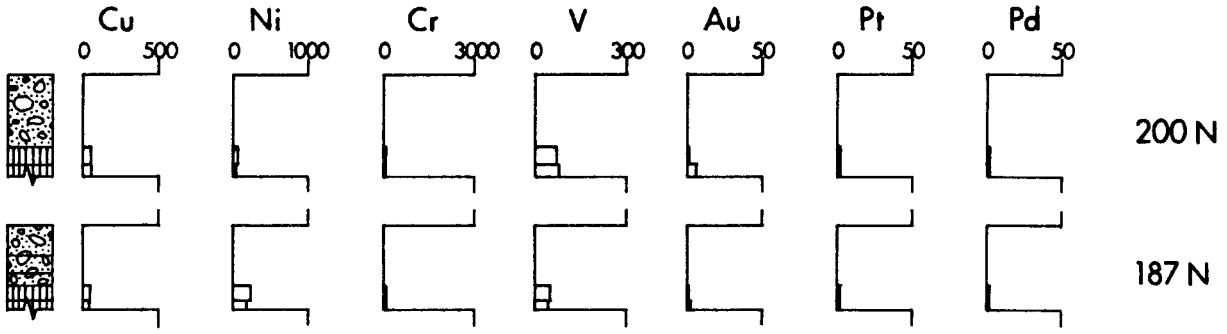

JY 15 YA51131
JY 16 YA51132
JY 1 YA23601
JY 2 YA23602
JY 38 YA52578
JY 37 YA52575
JY 31 YA52569
JY 32 YA52570
JY 39 YA52577
JY 40 YA52576
JY 33 YA52567
JY 34 YA52572
AND 9 YA52595
AND 10 YA52596
AND 11 YA52597
AND 12 YA52598
SUE 1 YA23545
SUE 2 YA23546
SUE 9 YA59001
SUE 10 YA59002
SUE 11 YA75195
Tpl
Psc ?
Pp
Pg
Kgd
TRENCH (LOG) CREEK
BURWASH CREEK
101 PUP
102 PUP
103 PUP
AMPHITHEATRE CREEK
Amphitheatre Lake
SYMBOLS
Geological boundary (defined, approximate)
Outcrop
Strike and dip of bedding, schistocity, joint
Fault (defined, approximate, assumed)
Location of percussion drillhole
Road (graded, winter)
Claimpost location (approximate)
INDEX MAP
Scale: 1:104 000
NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA
REVISIONS
BY DATE
BT 1988.01
Fig. 5-4 Geology of Sheet E.
092529
BURWASH CREEK AREA, YUKON
METRES
SCALE: 1:5 000
LBH
1985.10



082529

NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD. EDMONTON, ALBERTA
Fig. 5·5 Section Looking SE Through Drillholes Along Sue Claim Line.
BURWASH CREEK AREA, YUKON
BT, JG 1988·03

484



See Fig. 5.3 for locations of drillholes

092529

Glacial Till

Peridotite

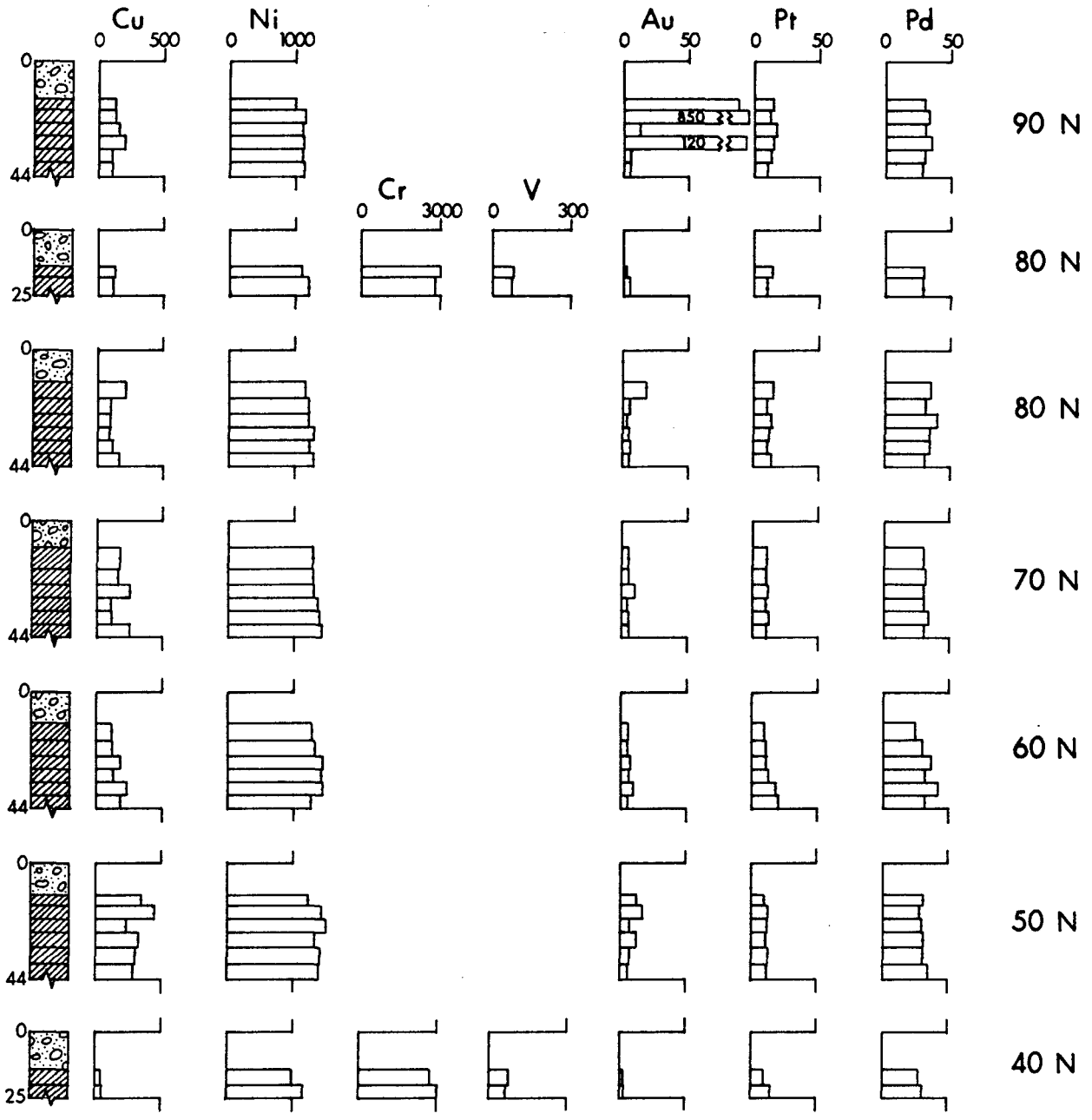
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.6 Drillhole Sections with Analytical Results Along Sue Claim Line (200N and 187N)

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.3 for locations of drillholes

Glacial Till

Peridotite

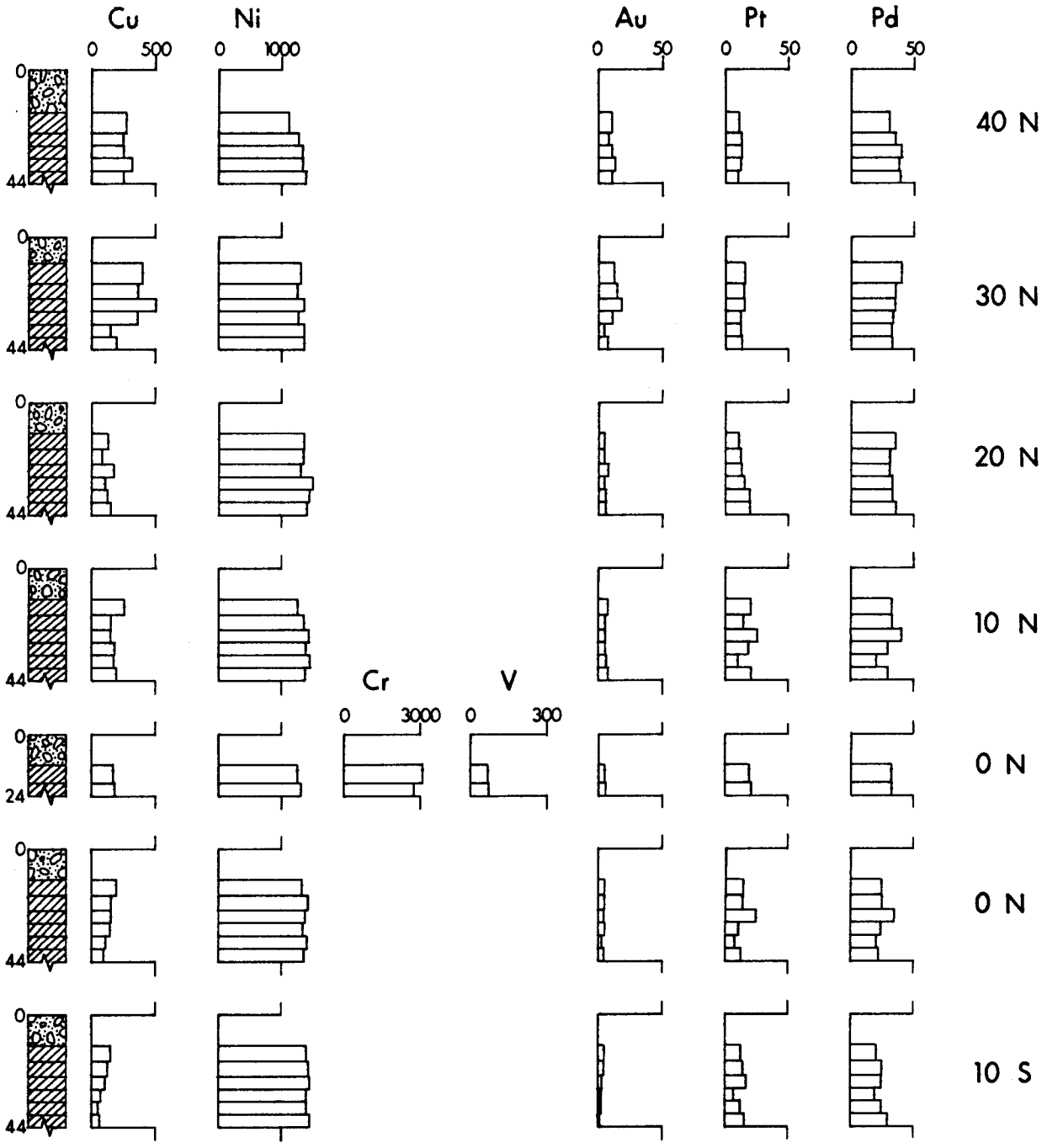
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.7 Drillhole Sections with Analytical Results Along Sue Claim Line (90N to 40N)

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.3 for locations of drillholes

Glacial Till

Peridotite

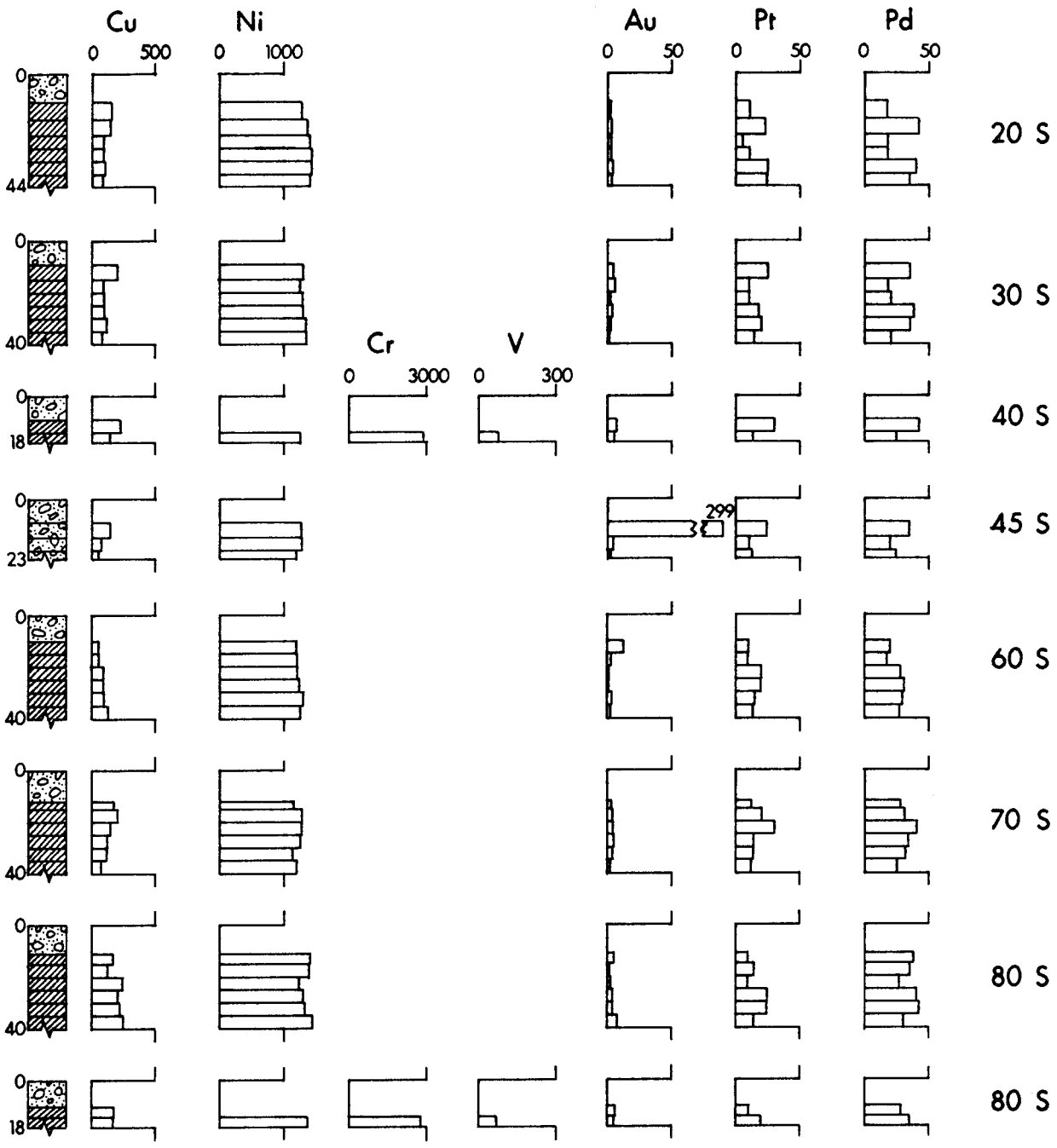
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.8 Drillhole Sections with Analytical Results Along Sue Claim Line (40N to 10S)

BURWASH CREEK AREA, YUKON

BT 1988 01

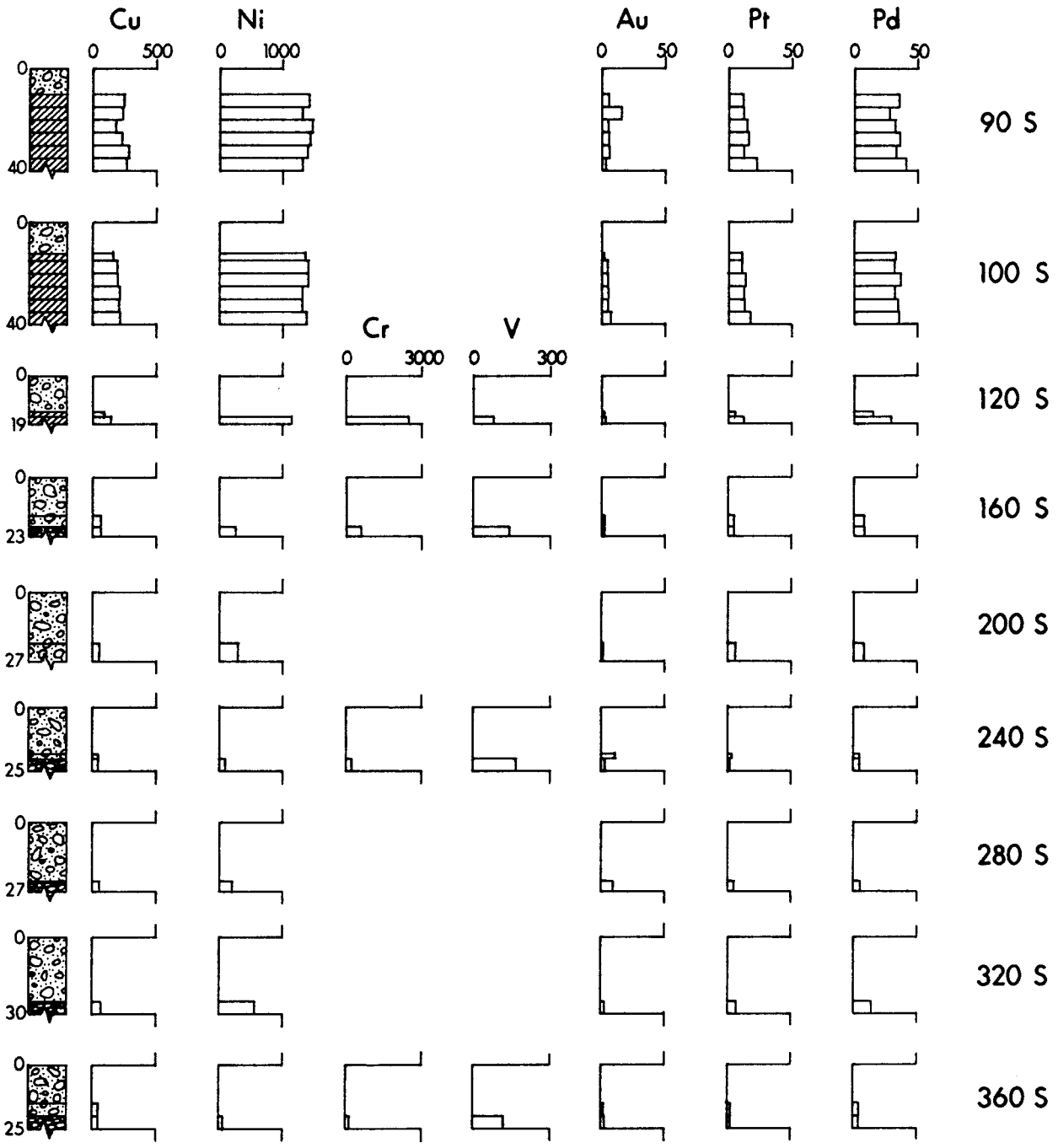


See Fig. 5.3 for locations of drillholes

Glacial Till

Peridotite

NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD. EDMONTON, ALBERTA
Fig. 5.9 Drillhole Sections with Analytical Results Along Sue Claim Line (20S to 80S) BURWASH CREEK AREA, YUKON
BT 1988 01



See Fig. 5.3 for locations of drillholes

Glacial Till
Stream Deposits
Peridotite

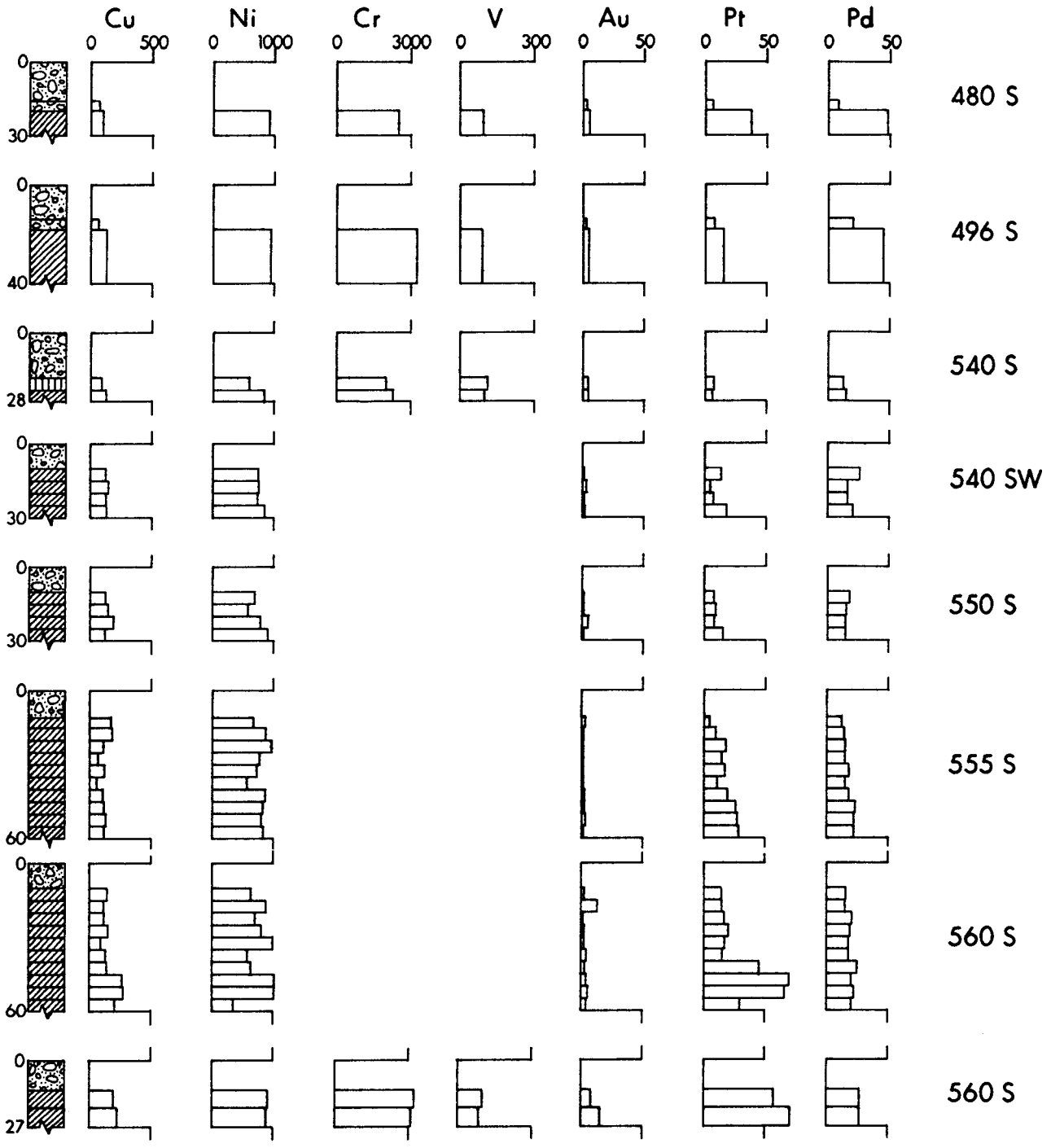
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.10 Drillhole Sections with Analytical Results Along Sue Claim Line (90S to 360S)

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.3 for locations of drillholes

Glacial Till
Gabbro
Peridotite

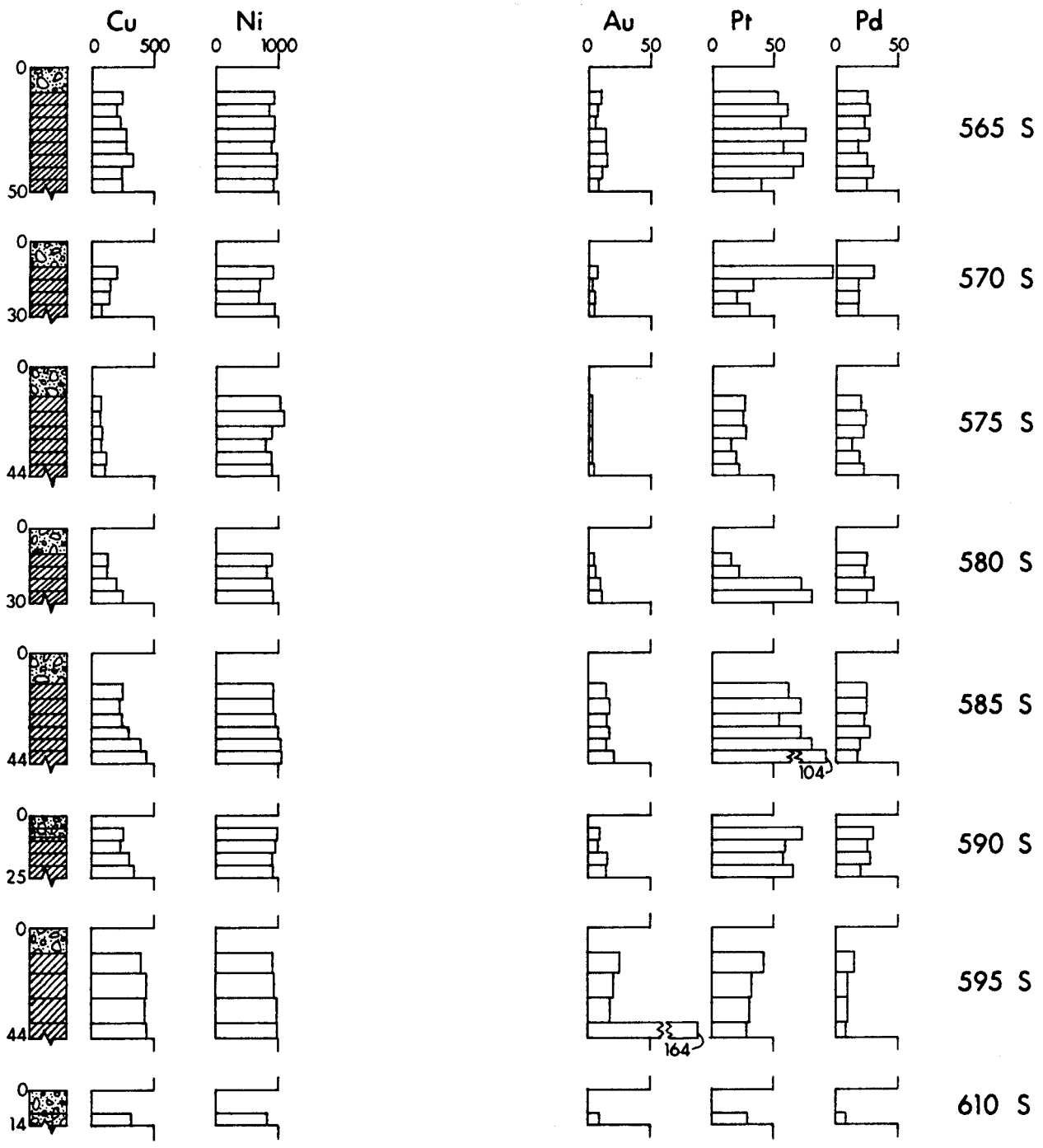
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.11 Drillhole Sections with Analytical Results Along Sue Claim Line (480S to 560S)

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.3 for locations of drillholes

Glacial Till
Peridotite

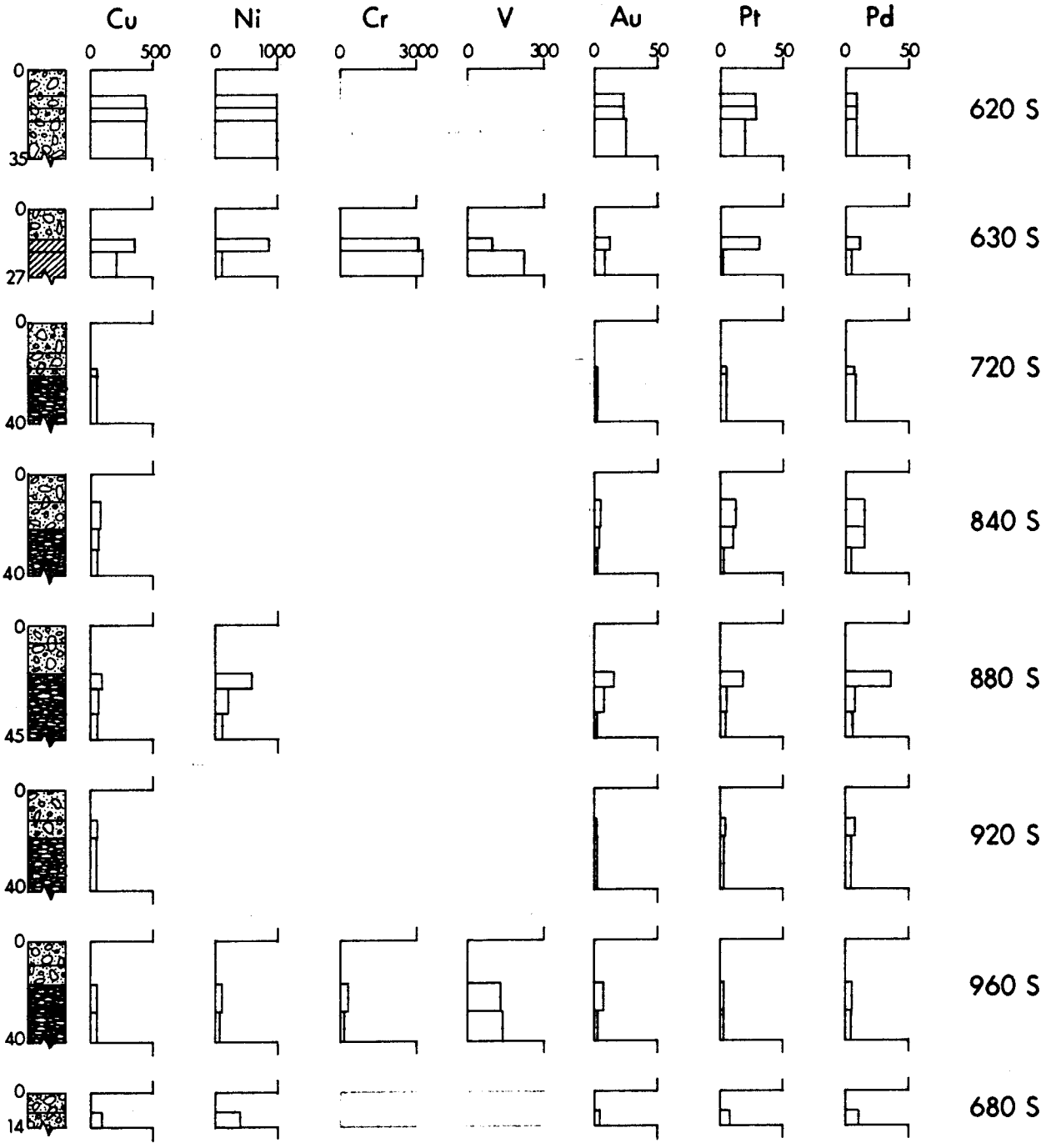
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.12 Drillhole Sections with Analytical Results Along Sue Claim Line (565S to 610S)

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.3 and 5.4 for locations of drillholes

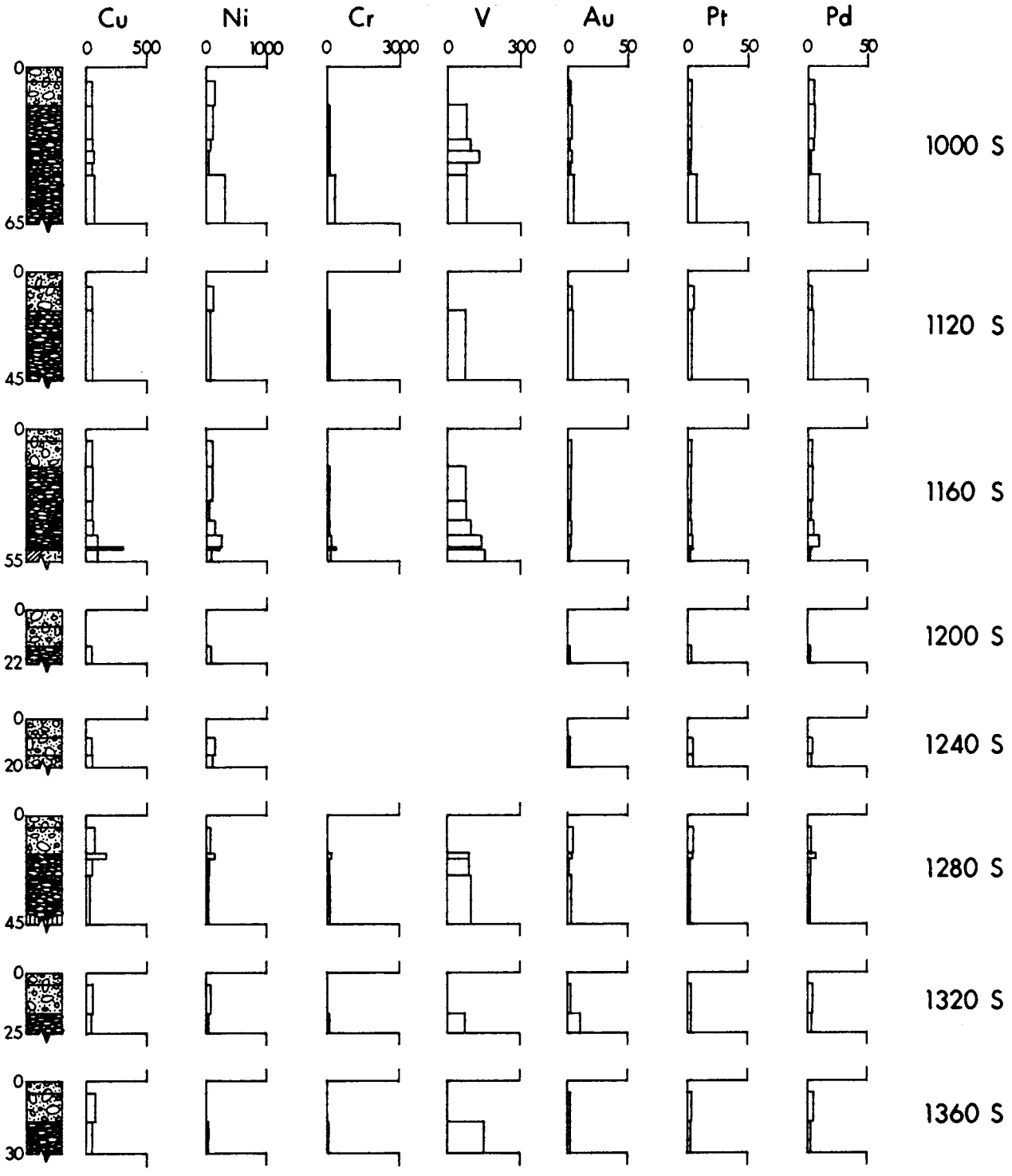
Glacial Till
Stream Deposits
Peridotite

NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.13 Drillhole Sections with Analytical Results Along Sue Claim Line (620S to 960S)

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.4 for locations of drillholes

- Glacial Till
- Stream Deposits
- Peridotite
- Gabbro
- Granodiorite

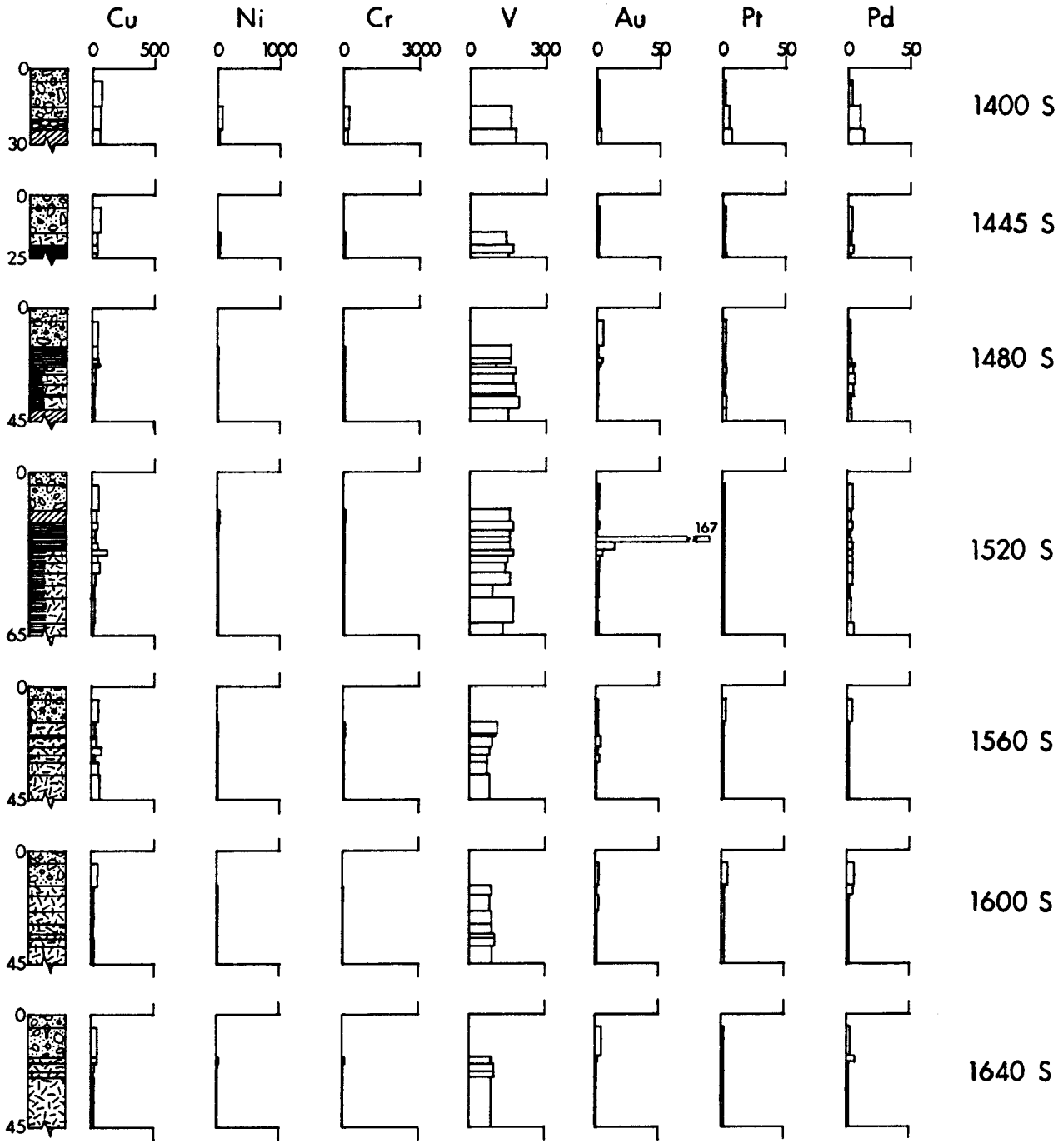
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.14 Drillhole Sections with Analytical Results Along Sue Claim Line (1000S to 1360S)

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.4 for locations of drillholes

Glacial Till
Stream Deposits
Peridotite
Granodiorite
Contact Rocks

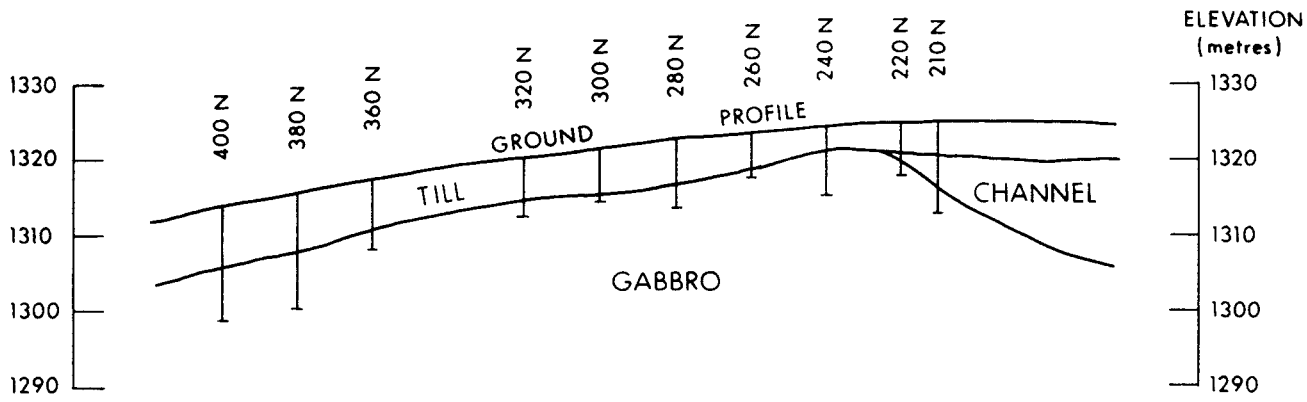
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.15 Drillhole Sections with Analytical Results Along Sue Claim Line (1400S to 1640S)

BURWASH CREEK AREA, YUKON

BT 1988 01

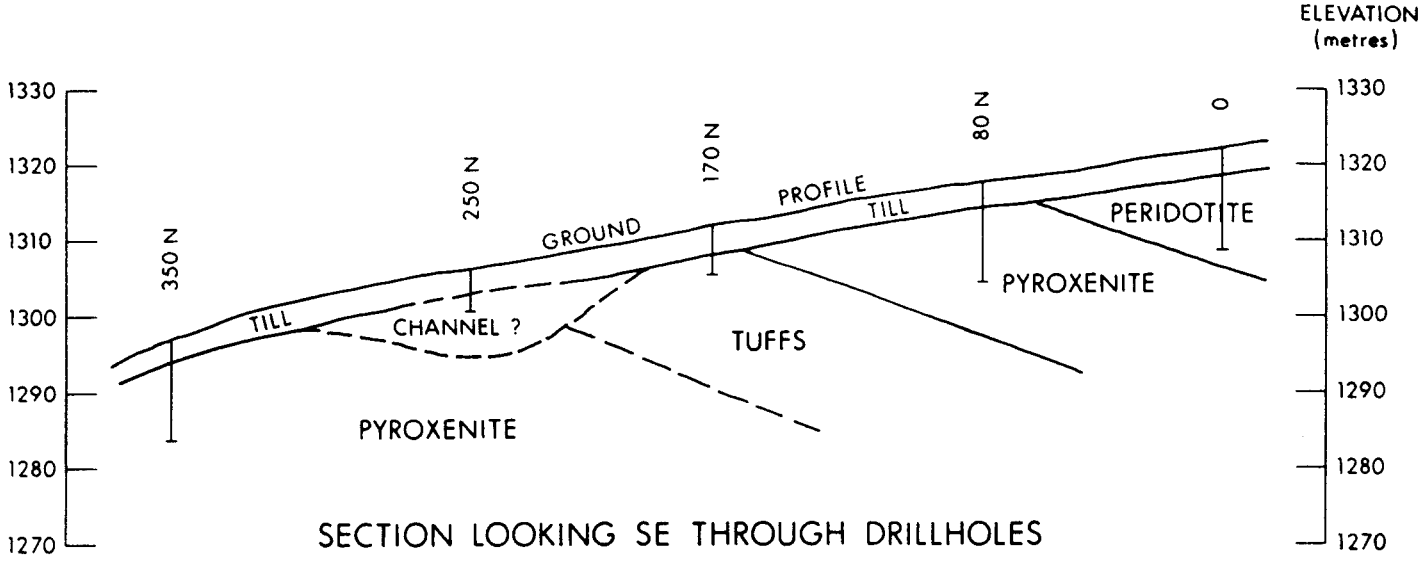


SECTION LOOKING SE THROUGH DRILLHOLES ON LINE 270m EAST OF SUE TRENCH

(Horizontal Scale: 1:2000)

(Vertical Exaggeration: 2x)

See Fig. 5.3 for locations of drillholes



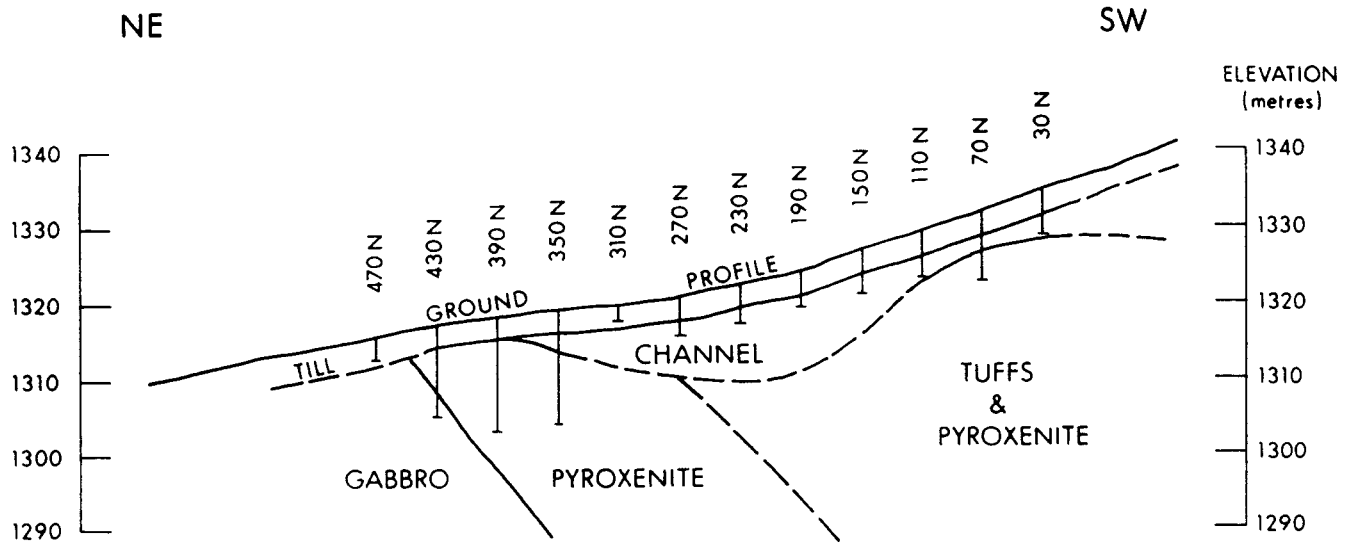
SECTION LOOKING SE THROUGH DRILLHOLES ALONG NAN TRENCH

(Horizontal Scale: 1:2500)

(Vertical Exaggeration: 2·5x)

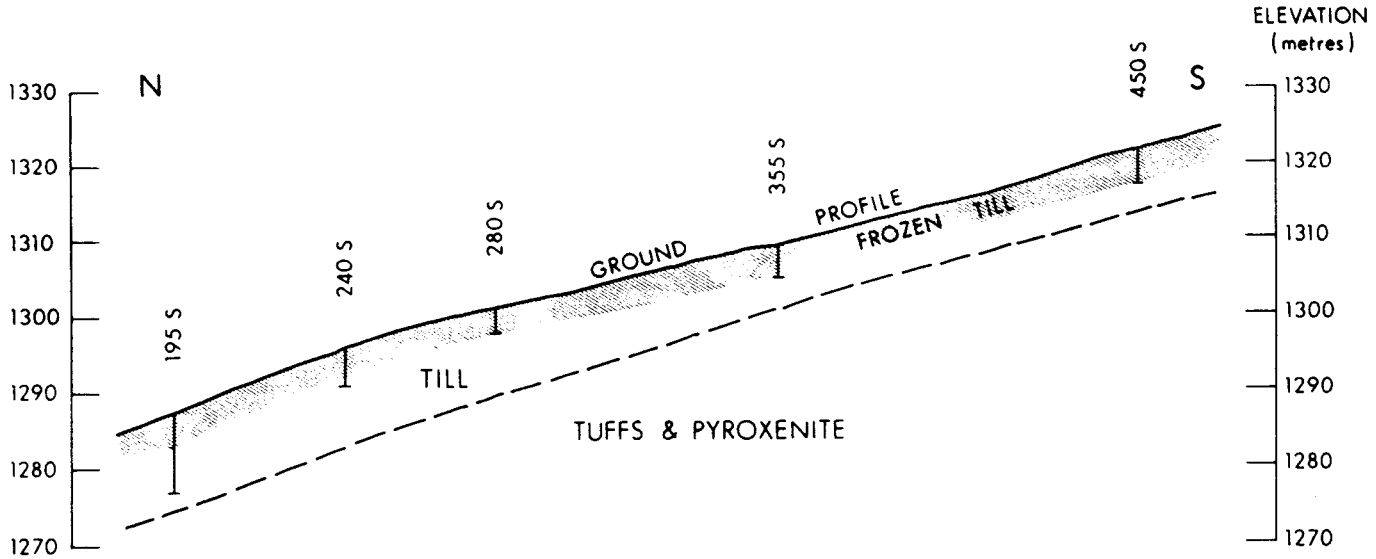
See Fig. 5.3 for locations of drillholes

NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD. EDMONTON, ALBERTA
Fig. 5.16 Sections Looking SE Along Line 270 m East of Sue Claim Line and Along Nan Claim Line BURWASH CREEK AREA, YUKON
BT 1988 01



SECTION LOOKING SOUTHEAST THROUGH DRILLHOLES ALONG AND TRENCH
(Horizontal Scale: 1:5000, Vertical Exaggeration: 5x)

See Fig. 5.3 and 5.4 for locations of drillholes

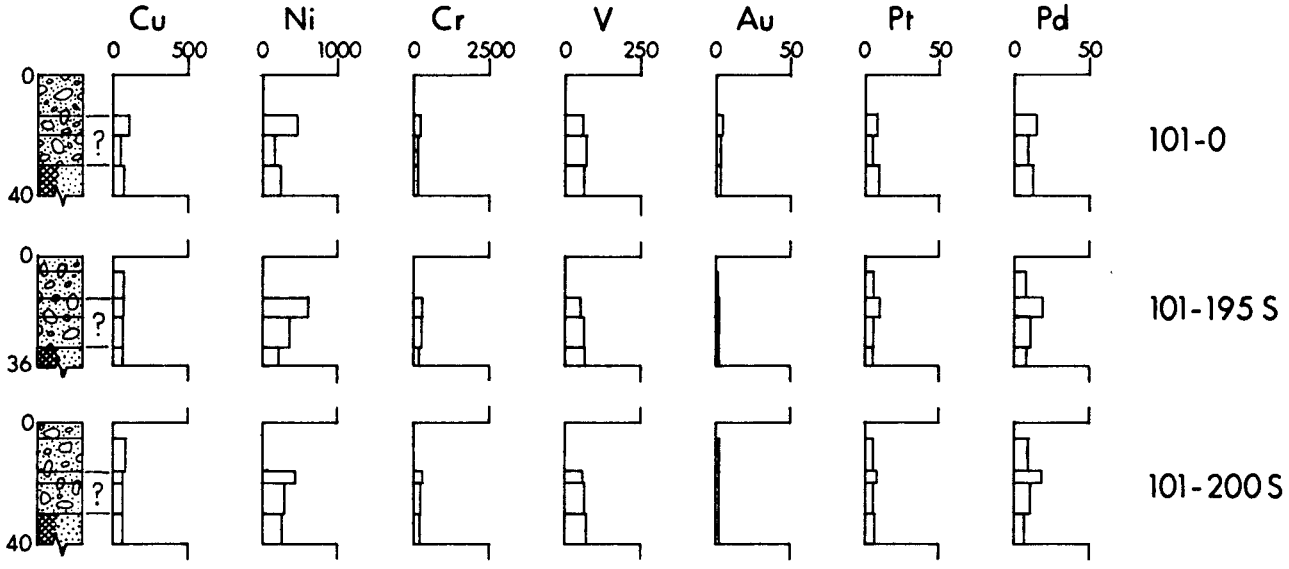


SECTION LOOKING EAST THROUGH DRILLHOLES WEST OF 101 PUP
(Horizontal Scale: 1:2000, Vertical Exaggeration: 2x)

See Fig. 5.4 for locations of drillholes

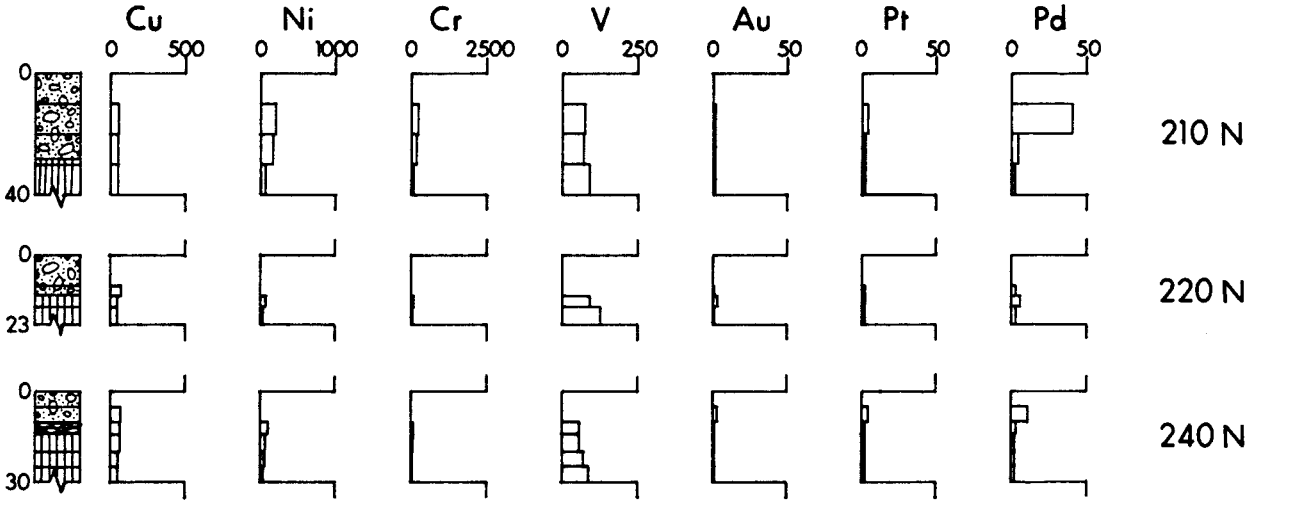
NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD. EDMONTON, ALBERTA
Fig. 5.17 Section Looking Southeast Along And Claim Line and Section Looking East, West of 101 Pup BURWASH CREEK AREA, YUKON
BT 1988 01

101 Pup Drillholes



See Fig. 5.4 for locations of drillholes

Drillholes 270m East of Sue Trench



See Fig. 5.3 for locations of drillholes

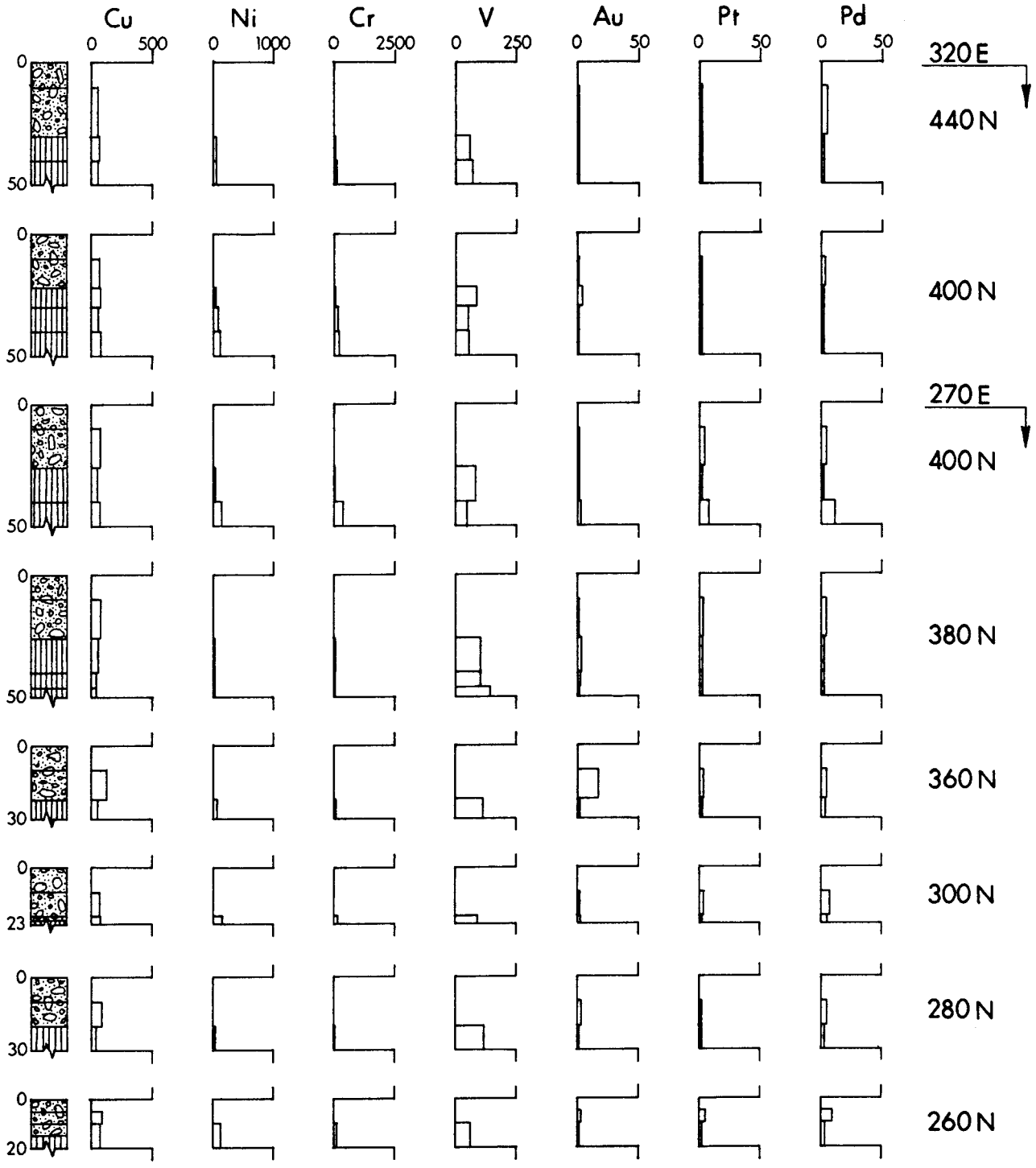
- Glacial Till
- Stream Deposits
- Tuff
- Gabbro
- Pyroxenite

NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.18 Drillhole Sections with Analytical Results Along 101 Pup and Line 270 m East of Sue Claim Line (210N to 240N)
BURWASH CREEK AREA, YUKON

BT 1988 01



Glacial Till

Gabbro

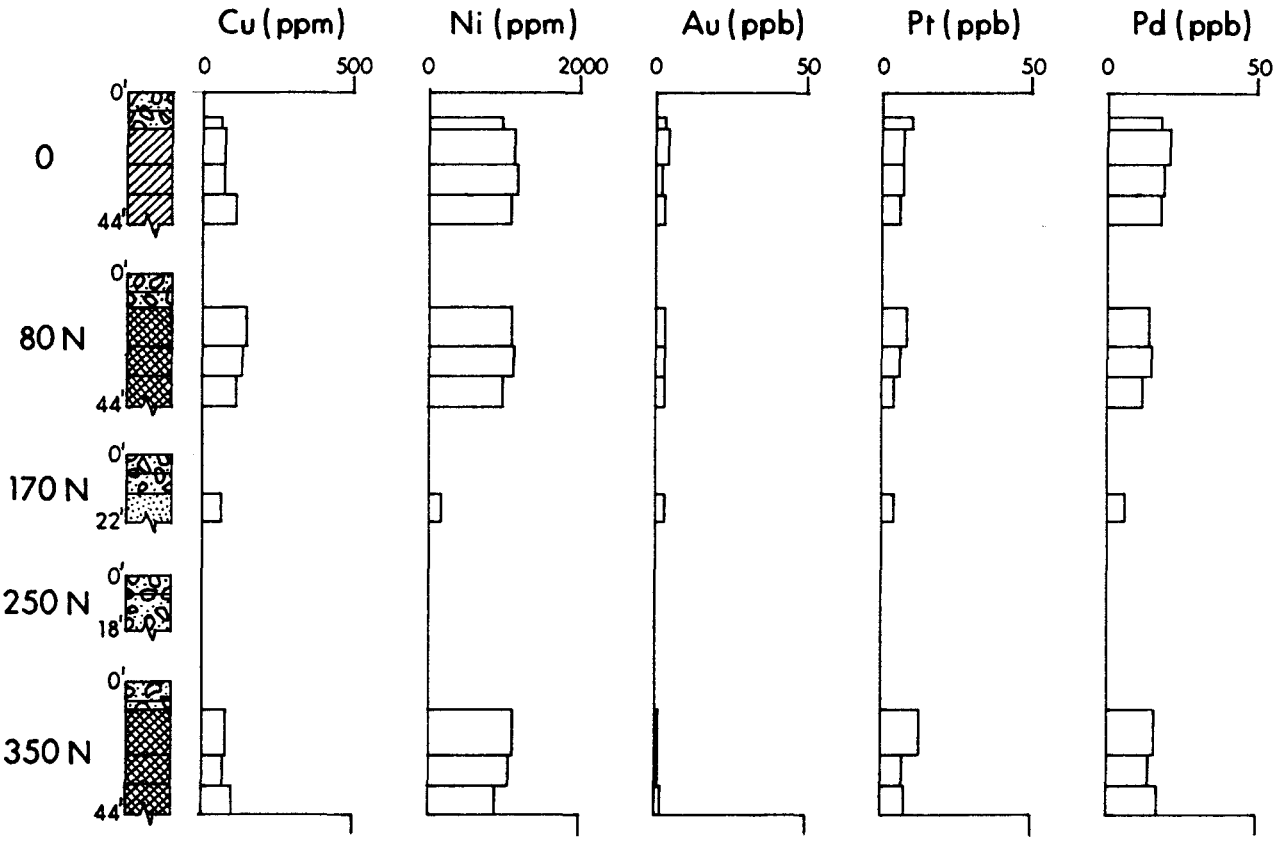
See Fig. 5.3 for locations of drillholes

NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.19 Drillhole Sections with Analytical Results Along Line 320 m East of Sue Claim Line (440N and 400N) and Along Line 270 m East of Sue Claim Line (400N to 260N)
BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.3 for locations of drillholes

LITHOLOGY

- Glacial Till
- Peridotite
- Tuff
- Pyroxenite

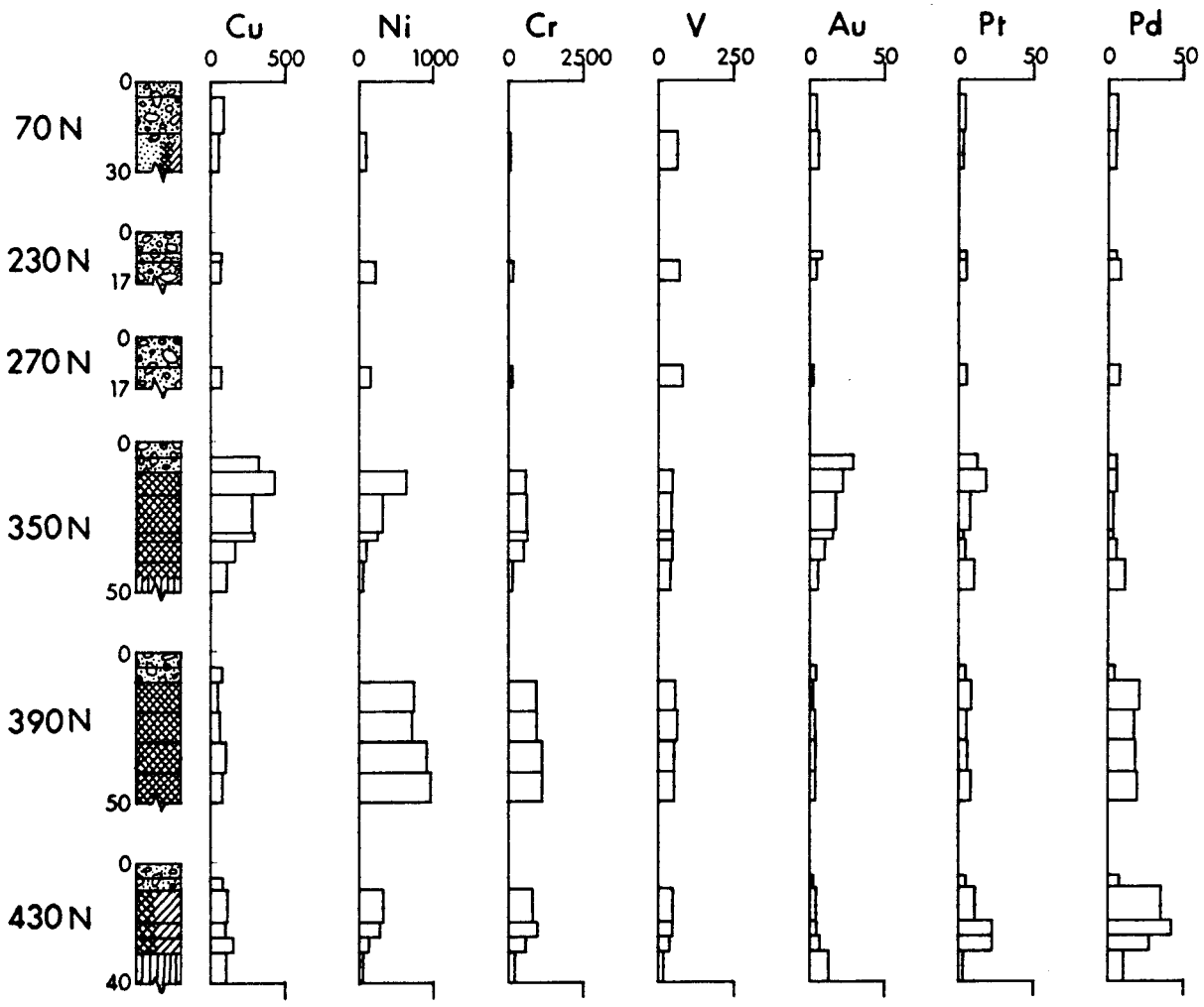
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.20 Drillhole Sections with Analytical Results Along Nan Claim Line

BURWASH CREEK AREA, YUKON

BT 1988 01



See Fig. 5.3 and 5.4 for locations of drillholes

Glacial Till
Tuff
Peridotite
Gabbro
Pyroxenite

NATHAN MINERALS INC.

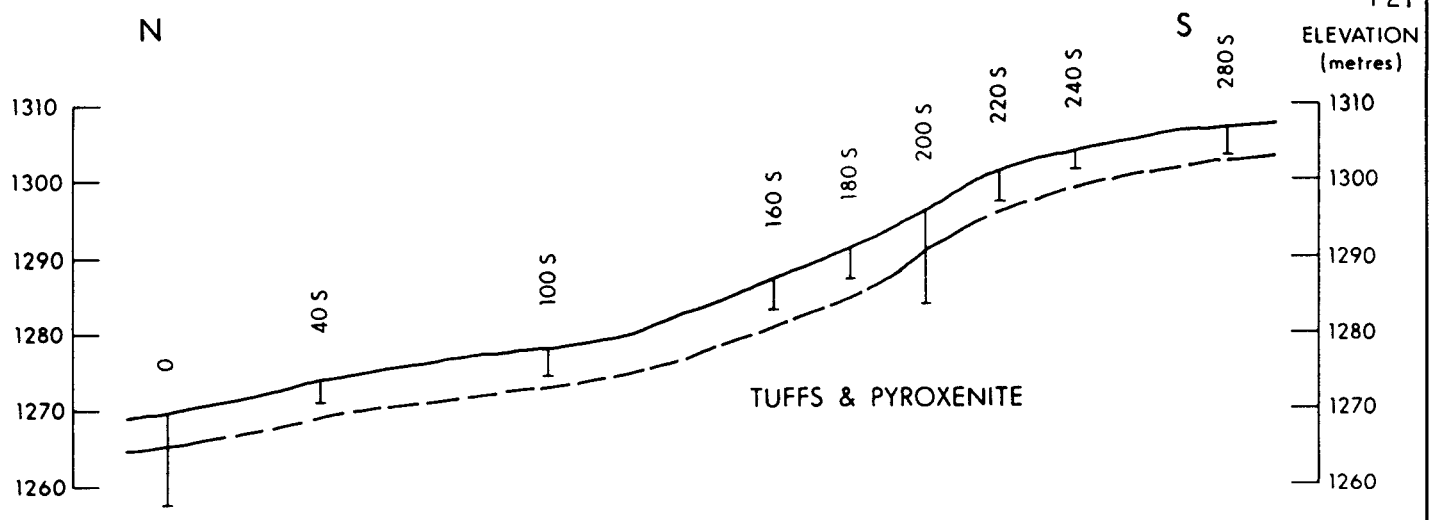
HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.21 Drillhole Sections with Analytical Results Along And Claim Line

BURWASH CREEK AREA, YUKON

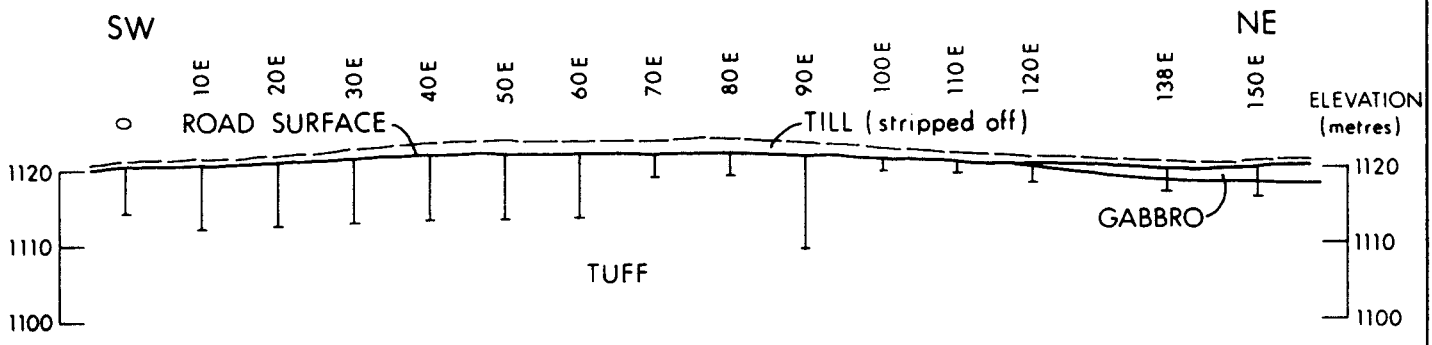
BT 1988 01

F21



SECTION LOOKING EAST THROUGH DRILLHOLES ALONG ROAD WEST OF 101 PUP
(Horizontal Scale: 1:2000, Vertical Exaggeration: 2x)

See Fig. 5.4 for location of drillholes



SECTION LOOKING NORTHWEST THROUGH DRILLHOLES ALONG ROAD ON CLAIM EL 48, NORTH OF FRYING PAN CREEK & SOUTHWEST OF BEA LAKE.
(Horizontal & Vertical Scales: 1:1000)

See Fig. 5.23 for locations of drillholes

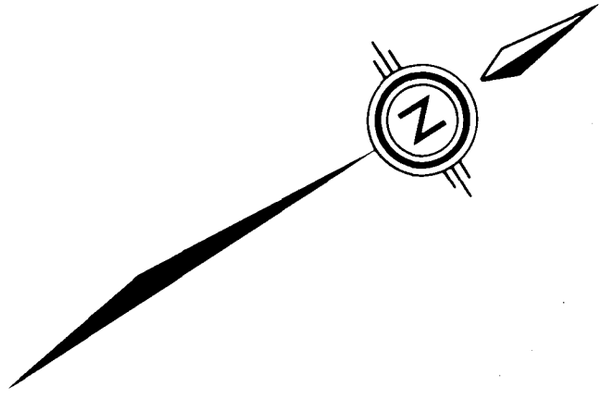
NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD. EDMONTON, ALBERTA
Fig. 5.22 Sections Looking East Along Road West of 101 Pup and Looking Northwest Along Road on Claim EL 48 BURWASH CREEK AREA, YUKON
BT 1988 01

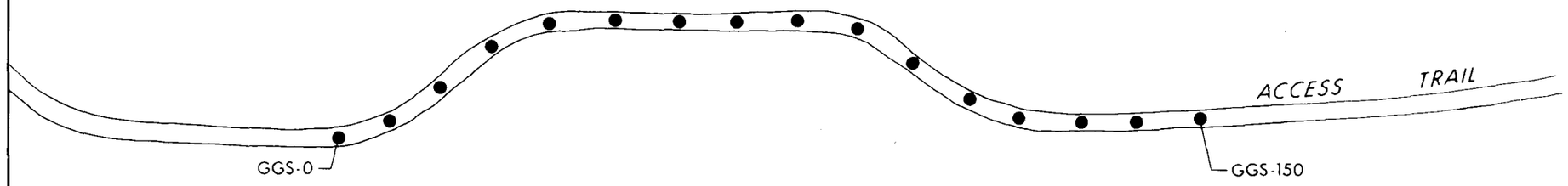
POST NO. 2 EL 47/48

CLAIM LINE

EL 47 1/2 EL 45

EL 48 1/2 EL 46





SYMBOLS

Location of percussion drillhole ..... ●

Location of claim post ..... ⊙

NOTES

A total of 16 percussion holes were drilled at intervals of about 10m.

Drillhole numbers correspond to distance along trail from GGS-0 (metres).

0 50

METRES

092529

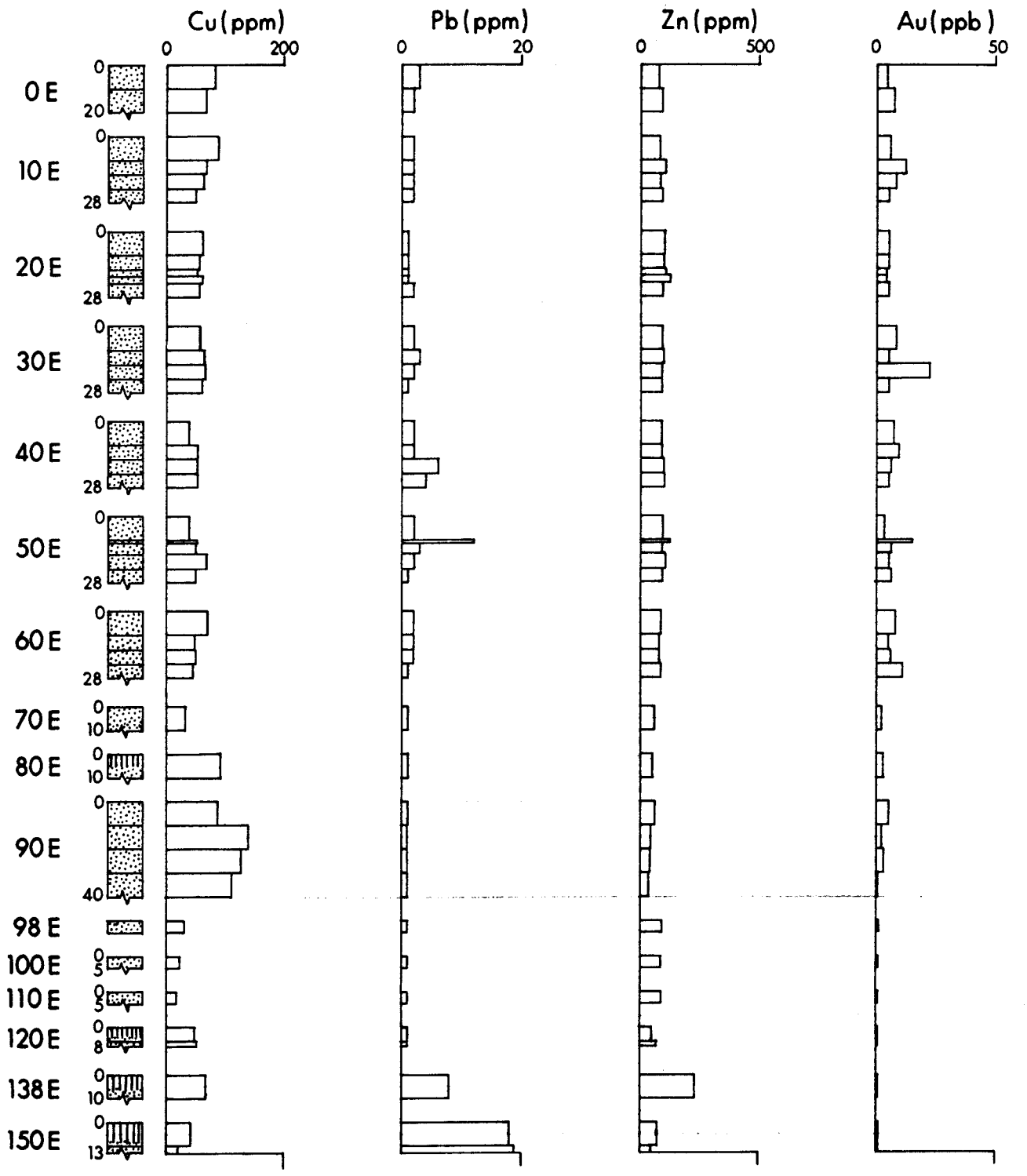
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5-23 Location of Percussion Drillholes on Claim EL 48.

BURWASH CREEK AREA, YUKON

BT 1988-01



See Fig. 5.23 for locations of drillholes

Tuff

Gabbro

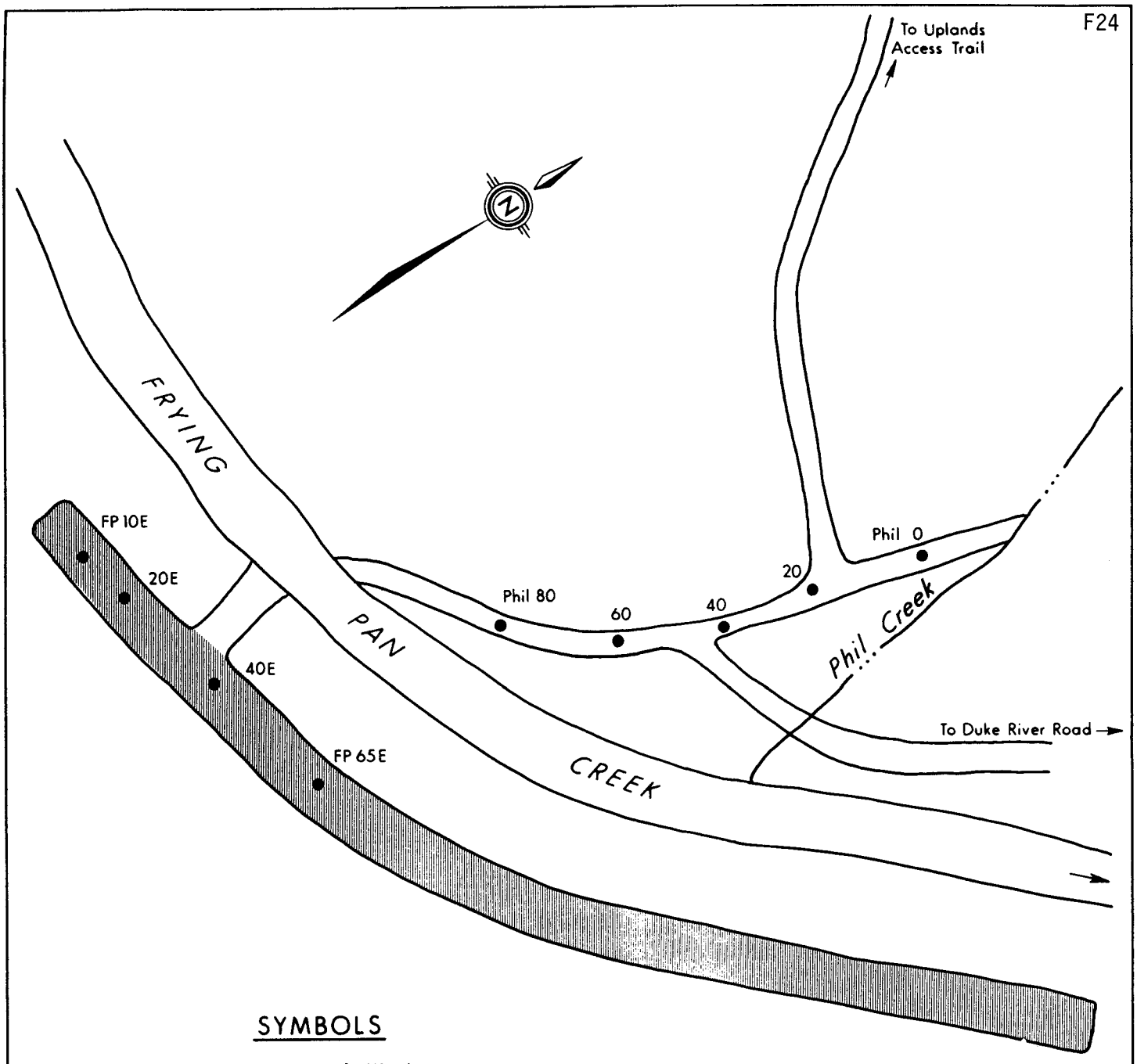
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.24 Drillhole Sections with Analytical Results Along Road on Claim El 48

BURWASH CREEK AREA, YUKON

BT 1988 01



SYMBOLS

Location of percussion drillhole.....

Stripped area .....

Access trail.....

0 50

METRES

NOTES

Drillhole numbers correspond to distance, in metres, along trail or stripped area from a given point.

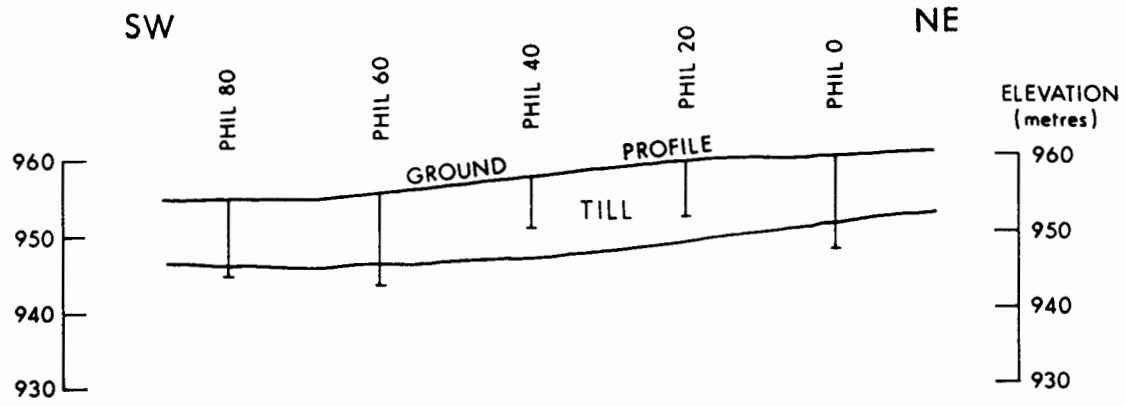
NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig.5.25 Location of Percussion Drillholes on Claim EL 54.

BURWASH CREEK AREA, YUKON

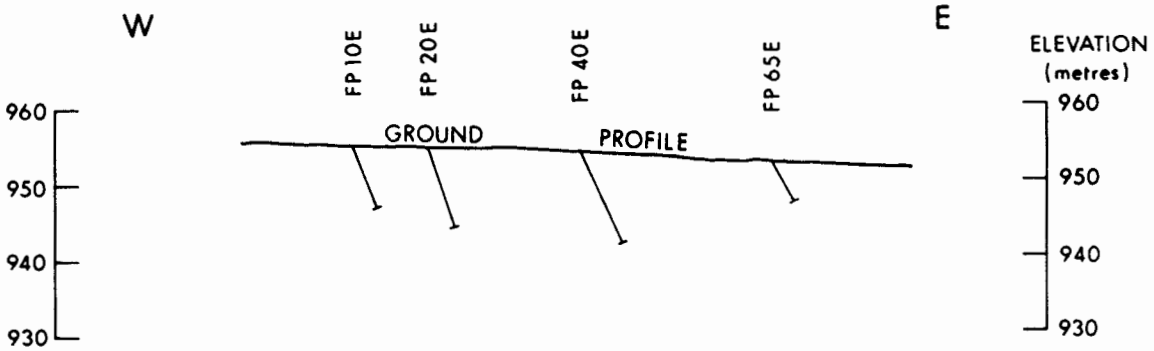
BT 1988-01



SECTION LOOKING NORTHWEST THROUGH DRILLHOLES ALONG PHIL CREEK ACCESS ROAD ON CLAIM EL 54

(Horizontal Scale & Vertical Scale: 1:1000)

See Fig. 5.25 for locations of drillholes

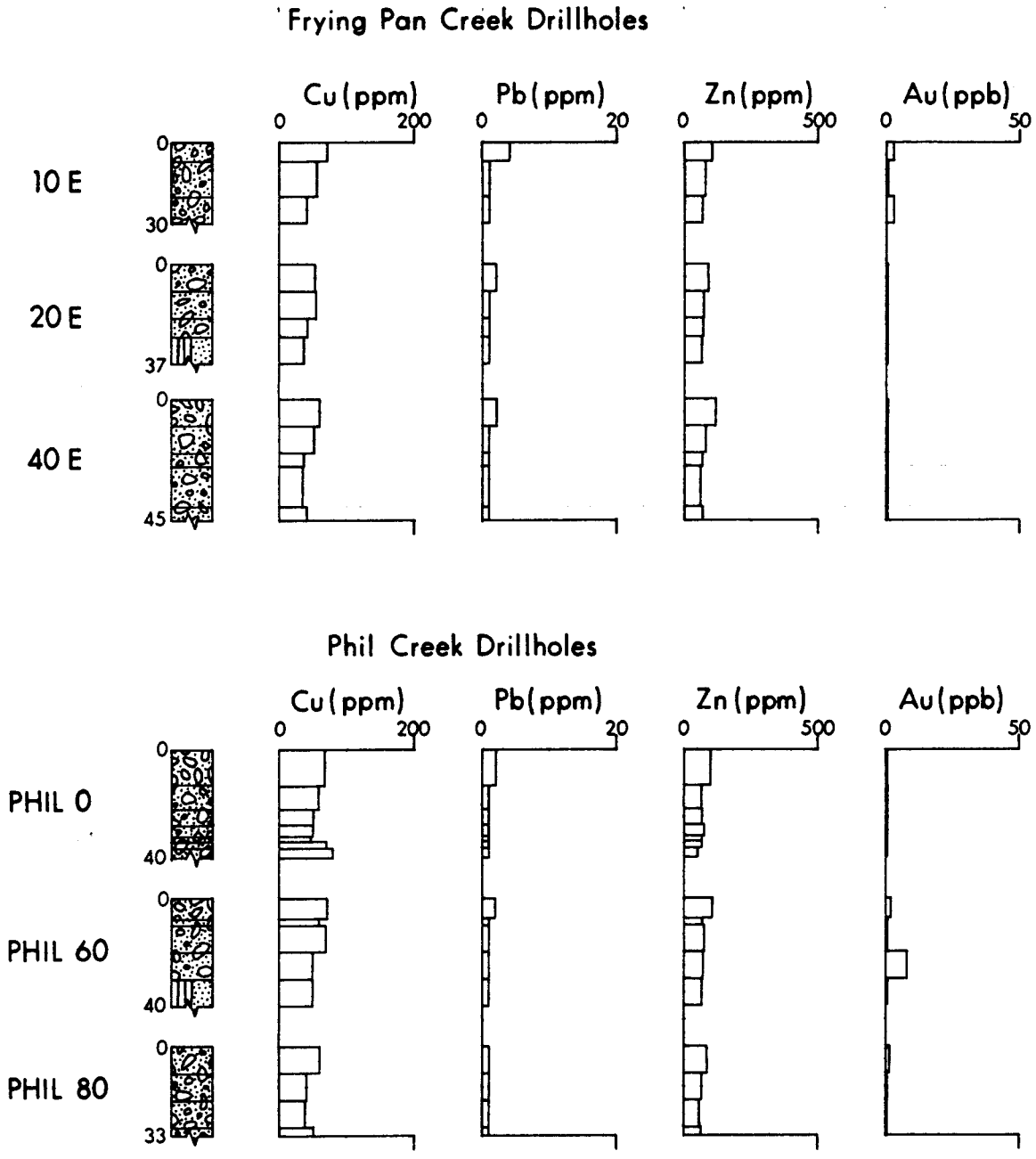


SECTION LOOKING NORTH THROUGH DRILLHOLES ALONG FRYING PAN CREEK ON CLAIM EL 54

(Horizontal Scale & Vertical Scale: 1:1000)

See Fig. 5.25 for locations of drillholes

NATHAN MINERALS INC.
HALFERDAHL & ASSOCIATES LTD. EDMONTON, ALBERTA
Fig. 5.26 Sections Looking Northwest Along Phil Creek Access Road and Looking North Along Frying Pan Creek BURWASH CREEK AREA, YUKON
BT 1988 01



See Fig. 5.25 for locations of drillholes

Glacial Till
Gabbro
Tuff

NATHAN MINERALS INC.

HALFERDAHL & ASSOCIATES LTD.
EDMONTON, ALBERTA

Fig. 5.27 Drillhole Sections with Analytical Results for Frying Pan and Phil Creek Drillholes

BURWASH CREEK AREA, YUKON

BT 1988 01

APPENDIX 1: DESCRIPTIONS OF LITHOGEOCHEMICAL SAMPLES FROM TRENCH ON CLAIM AND 8

Sample numbers correspond to metres measured easterly along the trench.

Sample Number	Description
Bur 0	along minor curving fault in black magnetic peridotite
Bur 6.1	along red-orange fault ($180^{o}/70^{o}W$) in black fine-grained magnetic peridotite with little olivine
Bur 16	fault gouge (red-orange in centre with medium-green borders) ($140^{o}/25^{o}S$) in black peridotite with rusty patches, weathers medium-green-grey; east of fault and above it - fine-grained with minor olivine; west of fault and below it - black, fine-grained with olivine less than 1 mm
24-32 m	covered
Bur 32	latite? all weathered tan to light-rusty-brown, crumbly, specks of rust and pyrite, clayey from alteration or weathering
Bur 44	green and very black fault gouge along fault ($160^{o}/45^{o}W$) between latite on west and green-and-black, fine-grained, non-magnetic peridotite with some slickensides
48-56½ m	serpentinized peridotite
56½-67 m	peridotite and serpentinized peridotite
Bur 68	greenish sheared material with white chert stringers 1-3 mm thick
70-77 m	blocky latite
77 m	shearing about 2 m wide along abscure fault
Bur 78	tan volcanic near fault; weathers green or rusty, local shears, malachite on some surfaces
Bur 80	red-brown volcanics on weathered surface, medium-grey-green on fresh surface
Bur 85	dark-grey-green fine-grained volcanics; weather medium-grey-green, rusty along some fractures, few growths and veinlets of quartz 3-6 mm in size
Bur 88	west side of green volcanics of Bur 90 near contact with red-brown of Bur 85
Bur 90	dark-green-grey volcanics or tuff, local laminations ($130^{o}/80^{o}W$), weather rusty-brown and light-tan
Bur 92	red-brown volcanics on E side of green volcanics of Bur 90, fine-grained sparse pyrite, rusty along fractures; weathers rusty or dark tan
Bur 95	dark-green-grey volcanics or tuff
100 m	fault ($035^{o}/35^{o}S$)
Bur 103	peridotite
106-112 m	covered
Bur 115	black fine-grained peridotite?

APPENDIX 2: ANALYTICAL REPORTS OF SAMPLES FROM TRENCH ON CLAIM AND 8

ACME ANALYTICAL LABORATORIES LTD.
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE(604)253-3158 FAX(604)253-1716

DATE RECEIVED: OCT 13 1987
DATE REPORT MAILED: Oct 24/87

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEC. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: Rock Chips AU** PT** PD** RH** BY FA-MS.

ASSAYER: D. Toye. DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDABL & ASSOCIATES FILE # 87-4951 Page 7

SAMPLE#	CU PPM	NI PPM	CO PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
BUR 0	106	927	54	2	22	14	2
BUR 6.1	88	796	39	23	7	9	2
BUR 16	73	397	30	1	5	9	2
BUR 32	11	29	4	1	2	2	2
BUR 44	134	253	35	4	11	13	2
BUR 68	64	610	51	15	10	16	2
BUR 78	359	494	40	21	49	13	2
BUR 80	53	76	15	1	2	4	2
BUR 85	20	30	20	1	2	2	2
BUR 88	118	76	30	2	10	11	2
BUR 90	127	119	34	1	12	10	2
BUR 92	39	49	20	1	8	8	2
BUR 95	102	65	26	4	7	7	2
BUR 103	100	76	29	3	11	14	2
BUR 115	110	77	30	4	12	13	2
STD C/FA-5X	61	70	28	98	96	100	25

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

To: HALFERDAHL & ASSOC. LTD.,
DEPT. 18,
10509 - 81ST AVE.,
EDMONTON, ALTA.
T6E 1X7

A8724463

Comments:

CERTIFICATE A8724463

HALFERDAHL & ASSOC. LTD.,
PROJECT :
P.O.# :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 29-OCT-87.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	4	Rock & core: Ring

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2	4	Cu ppm: HNO3-aqua regia digest	AAS	1	10000
3	4	Mo ppm: HNO3-aqua regia digest	AAS	1	10000
4	4	Pb ppm: HNO3-aqua regia digest	AAS-BKGD CORR	1	10000
5	4	Zn ppm: HNO3-aqua regia digest	AAS	1	10000
101	4	Au ppb: Fuse 10 g sample	FA-NAA	1	10000

APPENDIX 3: ANALYTICAL REPORTS OF SAMPLES FROM TRENCH AT JOHNSON CREEK

Chemex Labs Ltd.
Analytical Chemists • Geochemists • Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

To: HALFERDAHL & ASSOC. LTD.,
DEPT. 18,
10509 - 81ST AVE.,
EDMONTON, ALTA.
T6E 1X7

Project :
Comments:

Date :29-OCT-87
Invoice # :I-8724463
P.O. # :

CERTIFICATE OF ANALYSIS A8724463

SAMPLE DESCRIPTION	PREP CODE		Cu ppm	Mo ppm	Pb ppm	Zn ppm	Au NAA ppb
JC-14 F2	205	--	540	40	20	380	379
JC-32 F6	205	--	400	14	24	650	39
JC-38 F7	205	--	690	10	15	156	12
JC-40 F8	205	--	970	110	1500	580	413

A4

CERTIFICATION : Hart Bichler

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

To: HALFERDAHL & ASSOC. LTD.,
DEPT. 18,
10509 - 81ST AVE.,
EDMONTON, ALTA.
T6E 1X7

Project :
Comments:

Date :29-OCT-87
Invoice # :I-8724461
P.O. # :

CERTIFICATE OF ANALYSIS A8724461

SAMPLE DESCRIPTION	PREP CODE		Cu ppm	Mo ppm	Pb ppm	Zn ppm	Au NAA ppb
6540	205	--	52	1	4	158	5
6541	205	--	105	4	1	62	2
6542	205	--	103	1	1	86	1
6543	205	--	67	2	2	68	5

A5

CERTIFICATION : Ian Bichler

APPENDIX 4 : INFORMATION ON PERCUSSION DRILLHOLES

An unfrozen layer of grass, bushes, and humus up to 2 feet thick was stripped off to expose the permafrost below, with footages measured from the original ground surface at each drillsite.

The cuttings were examined briefly in the field. The +10 mesh fractions of selected samples were washed free of clay and described in more detail in the office.

All references to depths are in feet, even though the symbol for feet has been omitted.

Some sample intervals do not agree with the intervals in the analytical reports because for some holes the rods used were 6 feet long instead of the expected 5-feet lengths. Where discrepancies exist between the sample intervals in this appendix and those in the analytical reports, those in this appendix are correct.

Location	Date 1987	Total Depth (ft.)		Notes
Sue Claim Line				
350 N	Nov. 14	10	2-10	frozen clayey till, unfrozen clayey till below 10 not drillable without casing (sample 5-10)
330 N	Nov. 14	10	2-10	frozen clayey till, unfrozen clayey till below 10 not drillable without casing (sample 5-10)
270 N	Nov. 14	18	2-11	frozen clayey till; 11-18 frozen till?, sandy with small pebbles; unfrozen clayey till below 18 not drillable without casing (samples 5-11 and 11-18)
230 N	Nov. 14	15	2-10	frozen clayey till; 10-15 ice (sample of till 2-10)
230 N	Aug. 6	30	2- 8	frozen clayey till; 8-30 ice (no sample)
200 N	Aug. 6	34	2-24	frozen clayey till; 24-30 bedrock, medium-grey-green, medium crystalline, weakly magnetic, quartz veins, very fine limy grains, 30-34 bedrock, medium-grey-green with >5% black grains, finely crystalline, as 24-30 (samples of bedrock 24-30 and 30-34)
			Office	
			24-30	angular fragments with coating of grey-green clay forming small pellets - 85% grey-green gabbro, fine-grained hypidiomorphic granular, non-magnetic, 60% euhedral green pyroxene laths up to 1 mm, surrounded by anhedral white feldspar, minor black mafic perhaps a second pyroxene - 10% rounded lithic fragments of basic and felsic tuff, serpentinite, peridotite, granodiorite, hematite ironstone - 5% quartz, white or rusty, some with chlorite inclusions, probably vein quartz

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
			30-34	angular fragments coated with grey-green clay forming little pellets, 20% +10 mesh, lithologies as above but with 2-3% angular magnetitic peridotite fragments
187 N	Aug. 6	28	5-10	frozen sandy pebbly till, 10-14 frozen clayey till, 14-16 unfrozen clayey till (sample 10-16), 16-20 very wet clayey till, 20-25 bedrock, medium-grey-green, medium crystalline, >5% black grains, 25-28 bedrock, medium-green, fine to medium crystalline, 5% black grains, >1% magnetite (samples 20-25 and 25-28)
			Office	
			20-25	angular fragments with grey-green sticky clay coating and balls of humus coated in clay, 20% +10 mesh
				- 95% grey-green gabbro, fine-grained, hypidiomorphic granular, non-magnetic, about 50% euhedral green or grey-green pyroxene laths up to 1 mm in anhedral white feldspar matrix
				- 2-3% rounded quartz fragments some rusty
				- 2-3% lithic fragments, partly rounded, mainly mafic and rusty felsic tuffs
			25-28	angular fragments with some grey-green clay coating; similar to 20-25 uphole but in addition to green pyroxene are a few black silicate crystals perhaps another pyroxene phase
160 N	Aug. 6	14	2-12	frozen clayey and pebbly till, 12-14 unfrozen pebbly till (sample of very pebbly till 10-14)
120 N	Aug. 6	12	2-10	frozen clayey till; 10-12 unfrozen pebbly till (sample 9-12)
100N	Sept. 26	14	2-14	frozen clayey till; 14 unfrozen clayey till (sample 6-14)
90N	Sept. 26	44	2-14	frozen clayey till (sample 6-14), 14-44 peridotite (samples 14-18, 18-23, 23-28, 28-33, 33-38, 38-44)
			Office	
			14-18	angular fragments coated with grey-green sticky clay
				- 95% dark-grey, fine-grained magnetic peridotite, hypidiomorphic granular, 60-75% light-green to yellow-brown rounded olivine, 10-15% interstitial magnetite, 10-15% poikilitic grey to black pyroxene, minor chlorite and albite, sparse reddish-brown mica and sulfides, slickensides coated with calcite and serpentine common, few calcite veinlets

Location	Date 1987	Total Depth (ft.)	Notes
			- 1-2% fibrous to massive green serpentinite
			- 2-3% lithic fragments, partly rounded: quartz, mafic and felsic tuffs
			18-23 angular fragments with some clay coating, similar to 14-18, fewer lithic fragments, a few grains of loose vein quartz, more slickensides; no obvious differences from samples above and below
			23-28 angular fragments, some greenish-grey clay coating, as uphole, a bit more brown alteration of olivine
			28-33 angular fragments with some clay coating, as uphole, less alteration of olivine
			33-38 as 28-33 uphole but more serpentinization around fractures, a few more lithic fragments
			38-44 as 33-38 uphole
80 N	Aug. 6	25	2-14 frozen clayey till; 14-18 peridotite mostly black with some iron stains,>80% magnetic grains, sulfides?, 18-25 peridotite very similar to 14-18, more iron stains or sulfides,>80% magnetic grains (samples 14-18 and 18-25)
80 N	Sept. 26	44	2-12 frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office
			12-18 angular fragments coated with damp olive-green clay from till uphole
			- 95% dark-grey fine-grained magnetitic peridotite, hypidiomorphic granular, 60-70% rounded light-green to brown (altered) olivine, 10-15% interstitial magnetite, 10-15% poikilitic pyroxene, minor chlorite, calcite, or albite; slickensides with calcite, serpentinite and minor iron sulfides, minor calcite veinlets
			- 1-2% serpentinite, light-green, partly fibrous
			- 2-3% rounded lithic fragments from till: quartz, mafic tuffs, granodiorite
			18-24 angular fragments coated with greenish-grey clay, similar to 12-18 uphole, about 97% peridotite with about 5% less olivine, 5% more magnetite, olivines tend to be elongated along subparallel axes, 1% lithic fragments
			24-29 angular fragments, as 18-24 uphole with more abundant calcite-serpentine-coated fractures many showing slickensides, several larger fragments of calcite
			29-34 angular fragments, as 24-29 uphole but with more serpentine alteration

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
			34-39	as uphole, peridotite fragments, all adhere to magnet
			39-44	as uphole, whitish coatings of brucite? on slickensides, very sparse dissiminated pyrite or pyrrhotite in some peridotite fragments
70 N	Sept. 26	44	2-10	frozen clayey till (sample 6-10);
			10-44	peridotite (samples 10-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office	
			10-18	angular fragments coated in damp olive-green clay
				- 95% dark-grey, fine-grained, magnetitic peridotite, hypidiomorphic granular; 60-75% rounded greenish-white olivine or with brown coatings, 10-15% clear grey poikilitic pyroxene, 10-15% interstitial magnetite, minor chlorite and albite,, very sparse disseminated pyrite or pyrrhotite
				- 2-3% calcite and quartz especially on fractures with chlorite or serpentine
				- 2-3% rounded lithic fragments from till
			18-24	angular fragments coated in greenish-grey clay, as 10-18 uphole with more slickensides with serpentine-brucite? alteration containing rounded rusty iron sulfide patches, several calcite veinlets
			24-29	angular fragments as uphole
			29-34	as uphole
			34-39	as uphole
			39-44	as uphole, very little rusty alteration of olivine, a bit more magnetite
60 N	Sept. 26	44	2-12	frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office	
			12-18	angular fragments covered in sticky olive-green clay forming rounded balls
				- 90% fine-grained dark-grey magnetitic peridotite, hypidiomorphic granular, 60-70% cumulate-textured olivine, rounded with fresh to altered rims, 15-20% interstitial magnetite, clear grey poikilitic pyroxene to 5 mm or more, minor chlorite and albite, calcite and serpentine veinlets, slickensides
				- 2-3% rounded and angular quartz with chlorite inclusions or rusty

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				- 2-3% calcite and serpentinite, probably vein fragments
				- 5% rounded till clast fragments, granite, granodiorite, felsic and basic tuffs, chert
			18-24	angular fragments with some olive-green clay coating, as 12-18 with a bit more serpentinite, 10-15% magnetite in peridotite with more rusty-coated olivine, minor pyrrhotite
			24-29	angular fragments, as 12-18 with only 2-3% rounded till clasts
			29-34	angular fragments, as 18-24 but fresher olivines, only 1% fragments from till
			34-39	as above, olivines rustier, several fragments of fibrous chrysotile
			39-44	angular fragments, as in 18-24 but peridotite with 65-75% olivine much of it fresh and white to light-green in poikilitic pyroxene, magnetite about 10%, a few till fragments
50 N	Sept. 26	44	2-12	frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-16, 16-21, 21-26, 26-32, 32-38, 38-44)
			Office	
			12-16	angular fragments
				- 95% dark grey fine-grained magnetitic peridotite, 50-70% rusty-brown rounded olivine in poikilitic pyroxene and/or hornblende matrix, minor chlorite and serpentine alteration along fractures and slickensides, up to 10% magnetite
				- 2-3% green serpentinite
				- 1% quartz with chlorite inclusions
				- 1% assorted rounded fragments of tuff, chert, and sandstone
			16-21	slightly damp, some greenish clay, peridotite as 12-16 uphole, more rusty-coated olivines, extremely sparse pyrite or chalcopyrite; a few fragments of banded basic tuffs
			21-26	peridotite as 16-21 uphole with a few fragments of chrysotile asbestos
			26-32	peridotite as uphole
			32-38	angular fragments

Location	Date 1987	Total Depth (ft.)		Notes
				- 95% dark-grey, fine- to medium-grained magnetitic peridotite, hypidiomorphic granular, 60% olivine, 20-25% dark-grey pyroxene or hornblende, 10-15% interstitial magnetite, minor calcite veinlets
				- 2-3% chloritic quartz fragments
				- 1% rounded tuff fragments from till
			38-44	angular fragments as uphole but 65-75% olivine, pyroxene, and less magnetite, more calcite veinlets and fragments than 32-38 uphole
40 N	Aug. 5	25	2-14	frozen clayey till (not sampled); 14-25 peridotite same as 14-25 in hole at 80 N with 70-80% magnetic fragments
40 N	Sept. 25	44	2-16	frozen clayey till (sample 6-16); 16-44 peridotite (samples 16-24, 24-29, 29-34, 34-39, 39-44)
			Office	
			16-24	damp, olive-green clay from till before washing, after washing chips of angular peridotite
				- 95% dark-grey fine-grained magnetitic hornblende peridotite, hypidiomorphic granular, 60-70% rounded olivine grains, some chloritized or rusty but not nearly as much as in lower part of hole at 30 N, 20-25% dark-grey poikilitic hornblende, 10-15% magnetite (bit richer in magnetite than hole at 30 N)
				- 2-3% quartz, chloritic or rusty
				- 1% rounded shale, sandstone, and tuff fragments from till
			24-29	as above, poikilitic mineral may by a pyroxene (probably a clinepyroxene) or hornblende, minor serpentinization on slickensides with patches of calcite or quartz along fractures
			29-34	as uphole, minor rusty alteration of olivine, obvious cumulate texture in a few chips
			34-39	angular fragments of peridotite as uphole, with a few more serpentinite fragments, minor asbestos
			39-44	peridotite as uphole, olivines a bit rustier than uphole
30 N	Sept. 25	44	2-10	frozen clayey till (sample 6-10); 10-44 peridotite (samples 10-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office	
			10-18	about 70% damp clayey grey-green fines, angular chips
				- 95% dark-grey fine-grained magnetitic peridotite, up to 10% magnetite, poikilitic grey pyroxene up to 5 mm surrounding ¼-½ mm rounded brown olivines, some fractures

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			with serpentinized slickensides, a few veinlets of calcite and chrysotile
			- 3% pale-green serpentinite, partly fibrous
			- 2% quartz, rusty or with chlorite inclusions
			- < 1% brown tuff fragments, few rounded amygdaloidal basalt fragments
			18-24 about 80% damp clayey grey-green fines, angular chips of bedrock, as uphole but with abundant rusty alteration of olivines along fracture faces, especially with calcite veinlets
			24-29 dry grey-green angular chips of bedrock, as 18-24 uphole but 3-4% chloritic quartz chips from broken veinlets
			29-34 dry greenish-grey angular chips of bedrock, as 18-29 uphole but a little less rusty alteration of olivines
			34-39 dry grey angular chips of bedrock
			- 95% dark-grey or black fine-grained magnetitic peridotite hypidiomorphic granular, 60-70% rusty-brown olivine, 20-30% dark-grey to black poikilitic pyroxene, 10-15% magnetite, minor serpentinite and calcite veinlets, some slickensides
			- 2-3% green serpentinite, partly fibrous, some altered to talc
			- 1% quartz with chlorite inclusions
			39-44 dry grey angular chips of bedrock, as uphole
20 N	Sept. 25	44	2-12 frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office
			12-18 angular chips of bedrock
			- 90% brownish-grey fine-grained magnetitic peridotite, many slickensides, some serpentinized, including 5% fragments of olivine in poikilitic pyroxene
			- > 5% green serpentinite
			- < 5% granodiorite, tuff, sandstone in rounded chips
			18-24 angular chips of bedrock
			- 90% brownish-grey magnetitic peridotite, some slickensides, a few large poikilitic pyroxenes
			- 5% green serpentinite

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 3% felsic tuff fragments
			- 2% large white feldspar crystals - < 1% tuffs in rounded chips
			24-29 angular chips of bedrock
			- 85% brownish-grey fine-grained magnetitic peridotite, some slickensides
			- 10% green serpentinite
			- 5% felsic tuffs
			- > 1% quartz
			29-34 angular chips of bedrock
			- 95% peridotite as above
			- 5% serpentinite
			- < 1% felsic tuff and quartz
			34-39 angular chips of bedrock
			- 95% brownish-grey fine-grained magnetitic peridotite (probably harzburgite), 60-80% rounded brown olivines ½-1 mm in size in poikilitic dark-grey pyroxenes to 5 mm, 5-10% magnetite
			- 5% green partly fibrous serpentinite
			- < 1% felsic tuff and quartz
			39-44 bedrock, as uphole, peridotite with a few calcite and serpentinite veinlets
10 N	Sept. 25	44	2-12 frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office
			18-24 mainly angular fragments covered in damp sticky olive-green clay
			- 85% dark-grey fine-grained magnetitic peridotite, hypidiomorphic granular, 65-80% brown olivine partly altered to chlorite, 10-15% dark-grey poikilitic pyroxene, 5-10% magnetite, some slickensides
			- 10% grey and green partly fibrous serpentinite
			- 5% round grains of granodiorite, quartz, sandstone, felsic and mafic tuffs and limestone, derived from till
			24-29 angular fragments coated in sticky olive-green clay, as uphole, numerous calcite and quartz veinlets on fracture faces, minor angular milky quartz with chlorite inclusions

Location	Date 1987	Total Depth (ft.)	Notes
			29-34 angular chips of bedrock - 85% fine-grained black magnetitic peridotite not much altered, some serpentinized and slickensided - 5% quartz with chlorite inclusions, resembling vein quartz - 5% green serpentinite - 5% rounded till fragments, granite, granodiorite, brown tuff, green crystal tuff, calcite, biotite flakes 34-39 angular chips of peridotite bedrock, as 29-34 uphole 39-44 angular chips of bedrock - 85% fine-grained black magnetitic peridotite with 60-80% brown olivine - 10% green serpentinite, also as fine veinlets in peridotite - 3% quartz with chlorite inclusions - 2% rounded till fragments: sandstone, brown tuff, granite or granodiorite
0	Aug. 5	24	2-12 frozen clayey till (sample 6-12); 12-19 black peridotite, finely crystalline, 10% magnetic grains; 19-24 black peridotite as 12-19 (samples 12-19 and 19-24)
0	Sept. 25	44	2-12 frozen clayey till (sample 6-12); 12-44 black peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
10 S	Sept. 24	44	2-12 frozen clayey till (sample 6-12); 12-44 black peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
20 S	Sept. 24	44	2-11 frozen clayey till (sample 6-11); 11-44 black peridotite (samples 11-18, 18-24, 24-29, 29-34, 34-39, 39-44)
30 S	Sept. 23	44	2-11 frozen clayey till (sample 6-11); 11-44 black peridotite (samples 11-18, 18-24, 24-29, 29-34, 34-39, 39-44)
40 S	Aug. 5	18	2-14 frozen clayey till (sample 9-14); 14-18 black peridotite, finely crystalline, 40-50% magnetic chips, iron stained, some calcite veinlets (sample 14-18)
45 S	Sept. 23	27	2-27 frozen clayey till (samples 6-11, 11-18, 18-24, 24-27); 27 unfrozen clayey till (not drillable without casing)
60 S	Sept. 23	44	2-12 frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
70 S	Sept. 23	44	2-14 frozen clayey till (sample 6-14); 14-44 peridotite (samples 14-18, 18-24, 24-29, 29-34, 34-39, 39-44)

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
80 S	Aug. 5	18	2-14	frozen clayey till (sample 10-14); 14-18 dark-grey to black peridotite, 20% red-brown iron stains, 10-20% magnetic chips (sample 14-18)
80 S	Sept. 23	44	2-13	frozen clayey till (sample 6-13); 13-44 peridotite (samples 13-18, 18-24, 24-29, 29-34, 34-39, 39-44)
90 S	Sept. 23	44	2-12	frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
100 S	Sept. 23	44	2-14	frozen clayey till (sample 6-14); 14-44 peridotite (samples 14-18, 18-24, 24-29, 29-34, 34-39, 39-44)
120 S	Aug. 5	19	2-16	frozen clayey till (sample 14-16); 16-19 magnetitic peridotite, 60% magnetic grains, 20% pyroxene and olivine, 20% serpentine, calcite, feldspar? (sample 16-19)
160 S	Aug. 5	23	2-19	frozen clayey till (sample 15-19); 19-23 frozen channel deposits, 20% quartz and feldspar, 30% black minerals some magnetic, 30% grey-green minerals, 20% red rock fragments, very few rounded pebbles (sample 19-23)
200 S	Aug. 4	27	2-20	frozen clayey till; 20-27 unfrozen clayey till (sample 20-27)
240 S	Aug. 4	25	2-20	frozen clayey till (sample 18-20); frozen channel deposits similar to those in 160 S (sample 20-25)
280 S	Aug. 4	27	2-23	frozen clayey till; 23-27 channel deposits, pebbly gravel with clasts to 5 mm, much water (sample 23-27)
320 S	Aug. 4	30	2-24	frozen clayey till; 24-30 unfrozen channel deposits, water at 24 (sample 25-30)
360 S	Aug. 4	25	2-20	frozen clayey till with peaty layer at 18 (sample 15-20); 20-25 channel deposits similar to those in 160 S (sample 20-25)
392 S	July 30	40	2-20	frozen clayey till (sample); 20-40 frozen channel deposits similar to those in 160 S (sample at 40)
425 S	July 30	40	2-20	frozen clayey till; 20-40 dark-grey to black magnetic peridotite, more than 80% magnetic chips, very similar to that in 80 N, but less iron staining (sample at 40)
461 S	July 30	40	2-20	frozen clayey till; 20-40 peridotite, more than 80% magnetic chips, very similar to that in 425 S (sample at 40)
480 S	Aug. 7	30	2-12	frozen clayey till; 12-20 unfrozen clayey till (sample 16-20); 20-30 peridotite with more than 80% magnetic chips, same as that in 425 S (sample 20-30)
496 S	Aug. 7	40	2-18	frozen clayey till (sample 14-18); 18-40 peridotite with 70% magnetic chips, very similar to that in 40 N (sample at 40)

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
540 S	Aug. 7	28	2-18 frozen clayey till; 18-23 gabbro?, 60% grey-green and white rock fragments (white quartz veinlets?), 20% pyroxene and olivine, 20% quartz fragments, more than 50% magnetic chips (sample 18-23); 23-28 peridotite, 10-20% magnetite, very similar to that in 0 (sample 23-28)
540 SW	Sept. 22	34	2-12 frozen clayey till (sample 6-12); 12-34 peridotite (samples 12-18, 18-24, 24-29, 29-34)
			Office
			12-18 angular fragments coated in sticky grey-green clay
			- 95% dark-grey-brown, fine-grained, anidiomorphic granular magnetitic peridotite and dunite, 75-90% honey-brown olivine rounded with internal fractures, 0-15% dark-grey poikilitic pyroxene, 5-10% interstitial magnetite, minor hematite and sulfides
			- 5% lithic fragments, mostly albitized gabbro or diorite, some felsic and mafic tuff fragments and granodiorite
			18-24 angular fragments coated with grey-green clay from till
			- 95% greyish-brown fine-grained hypidiomorphic granular magnetitic peridotite similar to uphole but with 60-80% olivine
			- 5% lithic fragments: serpentinite, mafic tuffs, pink granite, granodiorite
			24-29 angular fragments as 12-18 uphole, more serpentinization along fractures, some slickensides with sparse pyrite
			29-34 angular fragments as 18-24 uphole, about 5% serpentinite or partly serpentinized peridotite, hematite probably from alteration of some magnetite
550 S	Sept. 22	34	2-12 frozen clayey till (sample 6-12); 12-34 peridotite (samples 12-18, 18-24, 24-29, 29-34)
			Office
			12-18 angular and rounded fragments coated in grey-green clay making 3-5 mm balls, small sample
			- 80% grey-brown fine-grained hypidiomorphic granular magnetitic peridotite, 60-80% honey-brown rounded olivine, cracked, minor alteration of rims to iron oxides and chlorite, 10-20% black or grey poikilitic pyroxene, 5-15% magnetite with minor alteration to hematite, 1-2% reddish-brown mica, sparse disseminated pyrite or pyrrhotite

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 10% green serpentinite, some partly fibrous, or serpentinized peridotite
			- 5% quartz with chlorite inclusions, some vein fragments with bits of peridotite
			- 5% assorted partly rounded lithic fragments, probably from till
			18-24 angular fragments with some grey-green clay coating, similar to 12-18 uphole, some peridotite fragments approach dunite, 5% serpentinite or serpentinized peridotite, 2-3% lithic fragments: banded mafic and felsic tuff, granodiorite and others
			24-29 angular fragments, minor coatings of grey-green clay, as uphole, some peridotite altered to chloritic matrix with olivine phenocrysts, some hematite, 2-3% lithic fragments rusty mafic banded vitric and crystal tuffs
			29-34 angular fragments, as uphole but about 10% peridotite with light-green chloritic matrix and honey-brown olivines, only 1-2% lithic fragments
555 S	Oct. 2	60	2-11 frozen clayey till (sample 5-11); 11-60 peridotite (samples 11-15, 15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50, 50-55, 55-60)
			Office
			11-15 angular fragments (fine grit) heavily coated with grey-green sticky clay
			- 95% grey-green fine-grained, hypidiomorphic to anidiomorphic granular magnetitic peridotite, 50-70% honey-brown olivine, rounded and fractured, 30% grey poikilitic pyroxene about half altered to light-green chlorite, 5-10% magnetite partly altered to hematite, minor reddish-brown mica, very sparse iron sulfides
			- 5% lithic fragments mostly laminated tuffs, hematite, granodiorite, and quartz
			15-20 angular fragments with some greyish-green clay coating, similar to 11-15 uphole, about one-third peridotite grains altered to chlorite in the groundmass, 1-2% lithic fragments as uphole, some banded green mafic tuffs
			20-25 angular fragments, some grey-green clay coating, as uphole
			25-30 angular fragments with grey-green clay coating
			- 95% peridotite as uphole with 40% altered to chlorite in groundmass (pyroxenes)
			- 5% lithic fragments: rusty felsic and mafic banded tuffs

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			30-35 angular fragments with grey-green clay coating, as uphole
			- 95% peridotite, about half altered to chlorite in the groundmass
			- 5% lithic fragments as uphole
			35-40 angular fragments
			- 35% peridotite as uphole
			- 30% peridotite with pyroxenes altered to chlorite
			- 30% peridotite altered to albite: marbly grains with altered olivines or pyroxenes still visible - gabbroic composition
			- 5% lithic fragments
			40-45 angular fragments
			- 85% magnetitic peridotite as described above
			- 10% peridotite altered to pale-green chlorite in groundmass
			- 5% peridotite altered to albite in groundmass as described for 35-40 uphole
			- 1-2% lithic fragments
			45-50 angualr fragments, similar to 40-45 uphole
			50-55 angular fragments as 40-45 uphole but with about 20% chloritized peridotite, 1-2% lithic fragments
			55-60 angular fragments as 40-45 uphole, about 10% chloritized peridotite, 1-2% lithic fragments, mostly mafic tuffs
560 S	Aug. 7	27	2-12 frozen clayey till; 12-19 black peridotite with 10% magnetite, very similar to that in 540 S (sample 12-19); 19-27 black peridotite with 20-30% magnetite (sample 19-27)
560 S (west)	Oct. 3	60	2-10 frozen clayey till (sample 5-10); 10-60 peridotite (samples 10-15, 15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50, 50-55, 55-60); rods tightened at 60 preventing deeper drilling
			Office
			10-15 angular fragments (grit) coated with grey-green sticky clay
			- 75% dark-grey magnetitic peridotite, fine-grained, hypidiomorphic granular, 60-75% honey-brown olivine, rounded, partly altered to chlorite, 20% grey poikilitic pyroxene, altering to chlorite, 5-10% magnetite, minor albite, minor reddish-brown mica, very sparse iron sulfide

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 15% peridotite as above but with pyroxene groundmass partly altered to serpentinite and albite
			- 10% gabbro or altered peridotite with relict olivines or pyroxenes in white feldspar matrix
			- 1-2% lithic fragments, mainly mafic tuffs and a few pieces of quartz
			15-20 angular fragments slightly coated with grey-green clay
			- 65% dark-grey magnetitic peridotite as 10-15 uphole
			- 25% light-green to turquoise-green chloritized or serpentinized peridotite as 10-15 uphole
			- 10% altered gabbro or peridotite with feldspathic matrix as 10-15 uphole
			- 1-2% lithic fragments
			20-25 angular fragments (grit) heavily coated with grey-green sticky clay
			- 50% dark-grey magnetitic peridotite as uphole
			- 25% chloritized or serpentinized peridotite as uphole
			- 15% fine-grained gabbro, 35-50% pale-green rounded pyroxene in white feldspar matrix, anidiomorphic granular
			- 5% quartz, milky-white
			- 5% lithic fragments, assorted
			25-30 angular fragments up to 2 cm, similar to 20-25 uphole
			- 75% dark-grey magnetitic peridotite
			- 15% chloritized peridotite
			- 5% gabbro
			- 2-3% lithic fragments
			30-35 angular fragments coated with grey-green clay
			- 85% dark-grey magnetitic peridotite as 10-15 uphole, some hematite after magnetite, some rusty-brown olivines
			- 10% serpentinized peridotite as uphole
			- 2-3% gabbro as uphole
			- 2-3% lithic fragments, assorted
			- 1% quartz
			35-40 angular fragments (gabbro chips at maximum as 35-40 in 555 S)
			- 50% dark-grey magnetitic peridotite as 10-15 uphole with alteration of magnetite to red hematite in some fragments

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				- 30% white fragments ranging from peridotite with alteration of poikilitic pyroxenes and interstitial feldspars to albite, through 'gabbroic' composite rocks of altered olivine or pyroxene phenocrysts in white feldspar (albite?) matrix to chips of feldspar and quartz with minor altered mafics and magnetite (possibly a small aplite vein with peripheral alteration)
				- 15% chloritized peridotite, olivines largely intact, matrix altered to turquoise-green chlorite and albite?
				- 5% lithic fragments, about half cream to pale-green chert
			40-45	angular fragments
				- 85% dark-grey fine-grained magnetitic peridotite, hypidiomorphic granular, 60-80% honey-brown olivine, rounded, in poikilitic grey pyroxene and magnetitic matrix, magnetite altering to hematite in a few grains, more olivine than uphole but otherwise similar
				- 10% light-green to greenish-brown serpentinized peridotite as uphole, olivines all or partly preserved
				- 2-3% lithic fragments
				- 2-3% feldspar-quartz-diopside? chips as 35-40 uphole
			45-50	angular fragments, similar to 40-45 uphole but with more hematite in peridotite
			50-55	angular fragments as 45-50 uphole
			55-60	angular fragments
				- 50% dark-grey magnetitic peridotite with hematite alteration
				- 30% pale-green very fine grained granular rock, hard silicified serpentinite or pyroxene or vitric tuff xenolith?
				- 15% serpentinized peridotite as above
				- 2-3% white feldspar-pyroxene or olivine fragments as above (alteration or dyke?)
				- 1-2% lithic fragments: quartz, tuffs, granodiorite
565 S	Oct. 3	50	2-10	frozen clayey till (sample 5-10); 10-50 peridotite (samples 10-15, 15-20, 20-25, 25-30, 30-35, 35-40, 40-45, 45-50)
			Office	
			10-15	angular fragments coated with grey-green sticky clay

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 80% dark-grey to brownish-grey fine-grained hypidiomorphic granular magnetitic peridotite, 60-80% rounded brown olivines in poikilitic grey pyroxenes, and 5-10% magnetite in places altered to hematite
			- 15% grey-green serpentinized peridotite as above, in various states of alteration: generally pyroxenes altered most leaving olivines more or less intact, some fragments of grey-green serpentine with magnetite specks
			- 2-3% lithic fragments, mostly mafic tuff and argillite
			- 2-3% chloritic quartz and chert (vitric tuff?)
		15-20	angular fragments
			- 80% dark-grey magnetitic peridotite as uphole
			- 5% serpentinized peridotite as above
			- 10% green semitransparent serpentinite, some chrysotile
			- 2-3% pale-green cherty tuff, some crystal fragments
			- 2-3% assorted lithic fragments
		20-25	angular fragments
			- 90% peridotite as uphole
			- 5% altered peridotite as uphole
			- 2-3% serpentinite as uphole
			- 1-2% lithic fragments, mostly mafic tuff
		25-30	angular fragments
			- 50% dark-grey peridotite as uphole, abundant hematite alteration
			- 40% altered green, grey-green, yellow-green serpentinized peridotite as in previous samples
			- 5% serpentinite as uphole
			- 2-3% lithic fragments
			- 1% chloritic quartz (veinlets)
		30-35	angular fragments
			- 65% fresh peridotite, hematite alteration common
			- 30% altered and serpentinized peridotite

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				- 2-3% serpentinite as uphole
				- 1-2% lithic fragments
			35-40	angular fragments, similar to 30-35 but with about 5% lithic fragments, mainly mafic tuff (vitric and crystal)
			40-45	angular fragments, as in 30-35 uphole but 75% peridotite, much with serpentinized fracture surfaces
				- 20% serpentinized peridotite
				- 2-3% dark-green serpentinite
				- 2-3% lithic fragments
			45-50	angular fragments as above but 80-85% peridotite with hematite alteration, 10-15% serpentinized peridotite
				- 2-3% dark-green serpentinite
				- 1-2% lithic fragments
570 S	Sept. 22	34	2-12	frozen clayey till (sample 6-12); 12-34 peridotite with much white powder (fault?) from 18-29 (samples 12-18, 18-24, 24-29, 29-34)
			Office	
			12-18	angular fragments heavily coated with damp, dark-grey-green sticky clay with humus
				- 95% dark-grey or grey-brown, fine-grained magnetitic peridotite or dunite, 70-90% rounded honey-brown to greenish-yellow olivine in poikilitic grey pyroxene matrix, about 5% interstitial magnetite altered to hematite in some places, slickensides common, very minor reddish-brown mica, extremely sparse iron sulfides
				- 2-3% serpentinite, yellow-green to dark-green, translucent, fibrous in places
				- 1-2% lithic fragments, mainly quartz and mafic tuff or flow fragments
			18-24	soft light-green clay (serpentine) with 10-15% angular rock fragments mainly of grit size (fault?)
				-~50% peridotite and dunite as uphole, with hematite common
				-~20% peridotite partly altered to serpentinite in various stages

Location	Date 1987	Total Depth (ft.)	Notes
			-~30% light-green soft serpentinite with finely disseminated magnetite specks, some layering, some slickensides
			- 1-2% lithic fragments: mainly mafic tuffs and quartz
			24-29 soft light-green clay (serpentine) with 10-15% angular rock fragments as uphole (mostly grit) (fault?) similar to 18-24 uphole but 30-40% peridotite and dunite
			- 20-30% peridotite partly altered to serpentinite
			- 30-40% light-green soft serpentinite
			- 1-2% partly rounded fragments of mafic vitric tuff to more than 1 cm in size. Samples 18-24 and 24-29 appear to intersect a fault with significant retrograde alteration corresponding with a trough on the magnetometer profile.
			29-34 angular fragments with some sticky grey-green clay coating
			- 80% peridotite as 12-18 uphole
			- 10% partly serpentinized peridotite as uphole
			- 5-7% light-green serpentinite as uphole
			- 1-2% lithic fragments
575 S	Sept. 29	44	2-12 frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office
			12-18 angular fragments coated with dark-grey-green clay
			- 95% dark-grey-brown fine-grained magnetitic peridotite, 50-75% brown or yellow-brown rounded olivine in poikilitic dark-grey pyroxene matrix, about 5% magnetite altered locally to hematite
			- 2-3% serpentinized peridotite, olivines still largely intact, with pyroxene altered to pale-bluish-green serpentine
			- 1-2% lithic fragments: vitric tuffs, granodiorite, siltstone, quartz, fragment of rhodochrosite
			18-24 angular fragments
			- 90% peridotite as uphole
			- 5-7% serpentinized peridotite as uphole

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 1-2% lithic fragments mainly quartz which may be veinlets in bedrock, a few larger rounded fragments of mafic volcanics and siltstone
			24-29 angular fragments, similar to 18-24 uphole but more altered
			- 50% peridotite as 12-18 uphole
			- 45% partly serpentinized peridotite as uphole with olivine and some parts of poikilitic pyroxene preserved, magnetite altered to hematite in places
			- 2-3% serpentinite dark-green, partly firbrous
			- 1-2% lithic fragments, including quartz
			29-34 angular fragments
			- 50% peridotite as uphole
			- 30% partly serpentinized peridotite as uphole
			- 15% white "gabbro" : white feldspar with pale-brown laths of amphibole (tremolite?), some fragments of free quartz, probably a small aplite vein with alteration on borders similar to 35-40 in 555 S and 560 S
			- 2-3% lithic fragments
			34-39 angular fragments
			- 50% peridotite as uphole
			- 40-45% partly serpentinized peridotite
			- 2-3% white "gabbro" chips, mostly with some partly assimilated peridotite
			- 2-3% lithic fragments
			39-44 angular fragments as 34-39 uphole but with no "gabbro" chips
580 S	Sept. 22	34	2-12 frozen clayey till (sample 6-12); 12-34 peridotite (samples 12-18, 18-24, 24-29, 29-34)
			Office
			12-18 mainly angular fragments coated with grey-green clay
			- 65% dark-grey fine-grained magnetitic peridotite, hypidiomorphic granular, 60-75% brown olivine in poikilitic dark-grey pyroxene with 5% interstitial magnetite

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 30% partly altered (serpentinized) peridotite, olivine phenocrysts largely intact in light-green or bluish-green serpentine matrix, variable amounts of alteration
			- 5% rounded lithic fragments: granodiorite, mafic tuffs, mafic flows (Nikolai? greenstone), quartz
			18-24 angular fragments
			- 60% peridotite as uphole
			- 30% partly serpentinized peridotite
			- 5-8% white "gabbro" as in previous samples: white feldspar with 30-50% pale-grey-brown amphibole or pyroxene (alteration?)
			- 2-3% lithic fragments
			24-29 angular fragments, as uphole
			- 80% peridotite
			- 20% partly altered serpentinized peridotite
			- 1-2% assorted lithic fragments
			29-34 angular fragments
			- 40-50% peridotite as uphole, unaltered
			- 40-50% partly serpentinized peridotite as described uphole
			- 1% lithic fragments
585 S	Sept. 29	44	2-12 frozen clayey till (sample 6-12); 12-44 peridotite (samples 12-18, 18-24, 24-29, 29-34, 34-39, 39-44)
			Office
			12-18 angular fragments with heavy coating of sticky dark-grey-green clay
			- 40% dark-grey magnetitic fine-grained peridotite as in previous holes, some alteration of matrix pyroxenes to serpentine, numerous slickensides
			- 55-60% partly to almost completely serpentinized peridotite, pale-green or pale-bluish-green serpentine matrix with more or less altered brown olivines
			- 1-2% rounded lithic fragments: green vitric and crystal tuffs, pink granite, white granodiorite, quartz
			18-24 angular fragments with minor grey-green clay coating as 12-18 uphole, virtually no sulfides observable; almost all lithic fragments of mafic crystal tuffs

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
			24-29	angular fragments as 12-18 uphole, more abundant slickensides with serpentine and quartz on slip surfaces
			29-34	angular fragments as 12-18 uphole but with 50-60% unaltered or only slightly serpentinized peridotite, 1-2% partly rounded lithic fragments including several of light-brown cherty vitric tuff
			34-39	angular fragments as 29-34 uphole
			39-44	angular fragments as 29-34 uphole including rounded brown vitric tuff fragments, no significant change in rock type or sulfides; platinum concentrations may be related to serpentinization adjacent to fault in hole 570 S
590 S	Sept. 22	30	2-6	frozen clayey till; 6-10 unfrozen sandy till; 10-30 peridotite (samples 6-12, 12-18, 18-24, 24-30)
			Office	
			6-12	angular and rounded fragments coated in sticky grey-green clay
				- 60% angular dark-grey magnetitic peridotite, fine-grained, 60-80% rounded honey-brown olivine in poikilitic grey pyroxenes, 5-10% magnetite
				- 20% partly serpentinized peridotite as in adjacent holes
				- 20% rounded fragments as above from till
				- 1-2% rusty biotite granodiorite as rounded fragments
			12-18	angular fragments with about 1% rounded fragments
				- 40% peridotite as 6-12 uphole
				-~60% partly serpentinized peridotite as uphole, some hematitic alteration
				-~1% assorted lithic fragments: granodiorite, mafic tuff, serpentinite
			18-24	angular fragments as 12-18 uphole
			24-30	angular fragments as uphole with 1-2% serpentinite fragments, abundant slickensides
595 S	Sept. 29	44	2-10	frozen clayey till; 10-44 peridotite (samples 10-18, 18-28, 28-38, 38-44)
			Office	
			10-18	angular fragments coated with olive-green clay
				- 70% dark-grey fine-grained magnetitic peridotite as in previous holes, many slickensides, minor hematitic alteration

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				- 25% partly serpentinized peridotite, matrix altered to light-blue-green chlorite minerals, olivines quite fresh
				- 5% mixed lithic fragments some partly rounded in serpentine, granodiorite, mafic and felsic tuffs
			18-28	angular fragments with minor clay coating as 10-18 uphole but about half fresh and half partly altered peridotite, 1-2% lithic fragments including vein quartz
			28-38	angular fragments as uphole
			38-44	angular fragments similar to uphole but about 60% serpentinized peridotite with widespread hematitic alteration of magnetite, numerous slickensides
605 S	Sept. 29	7	2-7	clayey till (no sample)
610 S	Sept. 22	16	2-11	clayey till (sample 6-11); 11-16 unfrozen sandy till (sample 11-16); 16 unfrozen clayey till
			Office	
			11-16	angular and rounded fragments coated with damp olive-green clay
				- 40% dark-grey-brown fine-grained magnetitic poikilitic peridotite, with alteration of magnetite to hematite in many fragments
				- 30% partly serpentized peridotite as above, serpentinization of matrix, numerous slickensides
				- 10% serpentinite
				- 10% assorted volcanic fragments: mafic and felsic tuffs and porphyritic flows, hematite (mainly derived from Nikolai Formation)
				- 5% sedimentary fragments and schists: limestone, chert, argillite, biotite schist
				- 5% granodiorite and quartz
				(This sample appears to be part till, part peridotite bedrock.)
617 S	Sept. 22	30	2-12	frozen clayey till (sample 6-12); 12-24 unfrozen sandy till (samples 12-18 and 18-24); 24-30 peridotite (sample 24-30)
			Office	
			24-30	angular fragments with minor grey-green clay coating
				- 35% peridotite as in previous holes
				- 60-65% partly serpentized peridotite as in previous holes

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 1-2% assorted lithic fragments, partly rounded
630 S	Aug. 7	27	2-12 clayey till; 12-27 peridotite, dark-grey-green to black, 10% magnetite (samples 12-17 and 17-27)
			Office
			17-27 mainly angular fragments
			- 95% peridotite and serpentized peridotite as in 617 S
			- 5% assorted partly rounded lithic fragments: granodiorite, mafic and felsic tuffs, chert, argillite
680 S	Aug. 7	14	2-14 clayey till (sample 8-14); 14 abandoned because of caving clay
720 S	Aug. 8	40	2-12 frozen clayey till; 12-18 sandy pebbly till (sample 12-18); 18-21 wet sandy pebbly clayey till (sample 18-21), 21-40 sandy pebbly channel deposits (sample 21-40)
720 S	Nov. 19	20	2-20 clayey till (sample 15-20)
720 SR	Dec. 3	70	2-20 clayey till; 20-70 channel deposits (samples 20-30, 30-40, 40-50, 50-60, 60-70)
			Office
			60-70 angular and rounded fragments coated with grey-green clay
			- 40% green finely crystalline serpentinite, some pieces with relict olivine crystals, resembling altered peridotite
			- 30% dark-grey fine-grained magnetitic peridotite as in previous holes, some serpentinization of matrix pyroxenes, some hematite
			- 10% quartz, some with biotite and hornblende crystals embedded, probably from granodiorite, some rusty
			- 10% assorted sedimentary fragments: limestone, argillite, chert, and minor biotite schist
			- 3% assorted mafic tuff and green to purple porphyry mostly derived from Nikolai Formation
			- 5% granodiorite
			This sample had fairly low clay content and appears to be stream gravel rather than till.
840 S	Aug. 9	40	2-22 frozen clayey till (sample 11-22); 22-30 frozen channel deposit sandy to gravelly with some round pebbles, coarse-grained, 20% quartz, feldspar, chert, 30% black minerals, 20% peridotite, 30% granodiorite, pyritic and rusty-weathering fragments (sample 22-30); 30-40 frozen channel deposit, silty to sandy to pebbly, clayey (sample 30-40)

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
880 S	Sept. 21	45	2-19 frozen clayey till (sample 7-19); 19-45 frozen channel deposits (samples 19-25, 25-35, 35-45); 45 unfrozen, water, caving
			Office
			35-45 angular and rounded fragments coated with grey-green clay, very similar to 60-70 in 720 SR except about 20-25% peridotite, and 10-15% mafic tuffs and flows including about 1-2% hematite fragments
920 S	Aug. 9	40	2-19 frozen clayey till (sample 12-19); 19-40 frozen channel deposits, mafic rocks, quartz, feldspar, olivine?, 30% black minerals including magnetics, 30% peridotite, 20% quartz and feldspar, 20% other lithologies: reddish, light-green, orange granodiorite (sample 19-40)
			Office
			19-40 mainly partly rounded fragments coated with grey-green clay - 45% assorted green to purple banded tuffs, lapilli tuffs, and porphyritic rocks, including granular hematite of Nikolai Formation - 20% green serpentinite - 10% dark-green peridotite - 10% mafic and felsic tuffs, cherty tuffs (Permian) - 10% quartz, some with biotite and hornblende - 5% granodiorite
960 S	Aug. 9	40	2-17 frozen clayey till (sample 9-17); 17-26 frozen channel deposits, sandy gravelly, quartz, feldspar, gabbro, peridotite, magnetite (sample 17-26); 26-28 light-colored boulder (sample 26-28); 28-40 frozen channel deposits, sandy, silty, pebbly, 20% quartz and feldspar, 60% peridotite and magnetite, 20% other (sample 28-40)
			Office
			17-26 mainly partially rounded fragments up to 1½ cm, very similar to those in 920 S, hard, mafic tuffs, 10% peridotite, 20% cherty Permian tuffs Rounding and resistance to weathering of most lithologies suggest stream gravels (channel).

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
960 S	Aug. 21	35		attempted to drill deeper to reach bottom of channel but motor mechanism on drill failed at 35, no notes nor samples
1000 S	Aug. 21	65	2-16	frozen clayey till (sample 6-16); 16-65 frozen channel deposits, 30% peridotite, 20% black minerals, 10% granodiorite, 10% quartz and feldspar, 30% others (samples 16-30, 30-35, 35-40, 40-45, 45-65)
			Office	
			40-45	fine grit, partially rounded in abundant sticky olive-grey clay (till?)
				- 80% hematitic green to purple tuff, lapilli tuff, and porphyry (Nikolai)
				- 10% quartz and granodiorite
				- 5% peridotite
				- 5% assorted sedimentary fragments
1040 S	Aug. 9	25	2-19	frozen clayey till (sample 12-19); 19-25 unfrozen clayey till? (no sample); 25 abandoned
1120 S	Aug. 21	45	2-16	frozen clayey till (sample 6-16); 16-45 frozen? channel deposits, 20% quartz and feldspar, 30% black minerals 30% peridotite, 20% other lithologies (sample 16-45)
1120 S	Nov. 14	11	2-11	frozen clayey till; 11 abandoned because of unfrozen clay
1160 S	Aug. 21	55	2-16	frozen clayey till (sample 5-16); 16-50 frozen channel deposits, 40% black minerals, 20% quartz and feldspar, 40% lithic fragments of granodiorite, peridotite, reddish feldspars? (samples 16-30, 30-38, 38-44, 44-49, 49-50); 50-55 bedrock (peridotite?), 30% black minerals including magnetite, 40% quartz and feldspar, 30% lithic fragments: granodiorite, peridotite, others (sample 50-55)
			Office	
			50-55	angular fragments coated with grey clay
				- 40% quartz, hornblende, magnetite, epidite rock (quartz diorite)
				- 60% clear to milky quartz
				- 10-20% euhedral black hornblende
				- 10-20% fine-grained black magnetite
				- 5-10% epidote apparently veins in contact zone
				- 35% dark-grey fine-grained magnetic peridotite as in previous holes

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				- 15% yellowish-white calcite with minor hornblende and epidote inclusions apparently from veins - 5% pale-green serpentinite, partly fibrous - 5% assorted partly rounded to rounded lithic fragments, mainly purple to green volcanic fragments and hematite (probably Nikolai Formation) This sample is probably partly bedrock because of the angular fragments with additions from uphole channel deposits.
1200 S	Aug. 9	25	2-15	frozen clayey till (sample 7-15); 15-22 channel deposits various lithologies, subrounded to 2 cm (sample 15-22); 22-25 unfrozen with water: abandoned (not sampled)
1240 S	Aug. 9	20	2-15	frozen clayey till (sample 8-15); 15-20 unfrozen clayey till (sample 15-20)
1280 S	Aug. 21	45	2-16	frozen clayey till (sample 5-16); 16-45 channel deposits? peridotite, granodiorite, black minerals in about equal amounts, less chert, iron-stained quartz, volcanics (samples 16-18, 18-25, 25-45)
			Office	
			25-45	angular fragments coated with grey clay - 50% light-grey medium-grained gabbro, hypidiomorphic granular - 20% quartz, clear to milky, with or without hornblende and epidote (veins?) - 20% pale-yellow serpentinite, fibrous to sucrosic texture with relict green olivine crystals - 5% yellowish-white calcite - 5% lithic fragments, partly rounded, mainly various lithologies of Nikolai Formation This sample may include bedrock in its lower part.
1280 S	Nov. 14	12	2-12	frozen clayey till (no sample); 12 unfrozen caving clay
1320 S	Aug. 9	16	2-16	frozen clayey till (sample 8-16); 16 abandoned when drill broke down
1320 S	Aug. 21	25	2-17	frozen clayey till (sample 5-17); 17-25 channel deposits, 20% quartz and feldspar, 30% black minerals, 20% peridotite, 20% pink and white granodiorite, 10% others (sample 17-25); 25 unfrozen caving material and water
1360	Aug. 10	30	2-15	frozen clayey till; 15-17 unfrozen clayey till (sample 5-17); 17-30 channel deposits, 40% quartz and feldspar,

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				10% magnetite, 40% peridotite and granodiorite, 10% others (sample 17-30)
			Office	
			17-30	angular fragments, some rounded, coated with grey clay (channel deposits)
				- 20% granodiorite
				- 20% peridotite
				- 10% serpentinite
				- 15% light-grey pyritic tuff
				- 15% green microcrystalline tuff
				- 10% green to purple flow rocks, hematite
				- 5% quartz
				- 5% calcite
1400 S	Aug. 10	30	2-20	frozen clayey till (sample 5-15); 20-30 channel deposits? 80% peridotite (samples 15-24 and 24-30)
			Office	
			15-24	angular and party rounded fragments coated with grey-green clay
				- 40% peridotite
				- 10% granodiorite
				- 10% serpentinite
				- 10% light-grey pyritic tuff
				- 10% green microcrystalline tuff
				- 10% Nikolai flows: porphyries and amygdaloidal basalt, green to purple, some hematite
				- 5% quartz
				- 5% calcite
				The rounded fragments suggest that probably the upper part of this sample consists of channel deposits.
1445 S	Aug. 17	26	2-15	frozen clayey till (sample 5-15); 15-20 metamorphosed pink granodiorite, 30-60% pink feldspar, 20-30% epidote, 10-20% hornblende (sample 15-20); 20-23 contact rocks, 10% magnetite, abundant olivine and peridotite, biotite schist, hornblende (sample 20-23); 23-26 schist, biotite, hornblende, magnetite, quartz (sample 23-26)

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			Office
			20-23 mainly rounded fragments coated with dark-grey sticky clay
			- 80% rounded fragments of fine-grained granular quartz and black amphibole (hornblende) in equal proportions, with minor black biotite, some fragments rusty
			- 5% angular fragments of dark-grey, fine-grained magnetitic peridotite
			- 5% subrounded fragments of fine-to medium-grained granodiorite as in previous holes
			- 5-8% intermediate to felsic vitrous and crystal tuffs
			- 3-5% mafic volcanics: porphyritic and amygdaloidal basalt, green to reddish-purple
1480 S	Aug. 17	45	2-15 frozen clayey till (sample 5-15); 15-23 magnetite schist, with vein quartz some rusty, granodiorite, peridotite (samples 15-20, 20-22, 22-23); 23-40 magnetitic granodiorite and schist, quartz some iron-stained, epidote, minor peridotite, 40-45 peridotite mostly, minor iron-stained quartz (samples 23-26, 26-30, 30-34, 34-35, 35-40, 40-45)
			Office
			40-45 angular and partly rounded fragments coated with dark-grey clay, channel deposits
			- 40% light-grey to rusty-brown very fine-grained granodiorite (quartz, hornblende, biotite), all rounded fragments
			- 30% assorted light-green or grey-green to purple-grey vitric to very fine grained crystal tuffs, hard angular fragments
			- 10% purple-brown very fine grained quartz-biotite or hornblende rock probably border phase of granodiorite in contact with peridotite
			- 5% peridotite
			- 5% light-green silicified serpentinite
			- 5% quartz, clear to milky
			- 2-3% other mafic volcanic fragments: amygdaloidal and porphyritic
			- 1-2% calcite

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
1520 S	Aug. 17	65	2-15 frozen clayey till (sample 5-15); 15-20 black magnetitic peridotite, minor quartz veins (sample 15-20), 20-31 magnetitic schist, iron-stained quartz, quartz-feldspar-epidote veinlets (samples 20-23, 23-26, 26-28, 28-31); 31-65 magnetitic schist and granodiorite, white and iron-stained quartz, hornblende (samples 31-33, 33-36, 36-40, 40-45, 45-50, 50-60, 60-65)
			Office
			28-31 mainly rounded or partly rounded fragments coated with olive-grey sticky clay
			- 65% grey very fine grained, rounded fragments of quartz-biotite-hornblende granodiorite, not magnetic, rust in some fragments
			- 20% rusty-brown quartz with inclusions of above lithology
			- 10% white quartz-hornblende, magnetite, feldspar granodiorite or quartz diorite
			- 5% lithic fragments: mainly green or grey-green vitric or microcrystalline tuffs, minor vesicular and amygdaloidal basalt
			45-50 angular and partly rounded fragments coated with dark-grey sticky clay
			- 95% granodiorite, fine- to medium-grained, quartz, feldspar, hornblende, biotite, anidiomorphic to hypidiomorphic granular, some magnetic fragments, some rusty
			- 5% assorted lithic fragments mostly grey or grey-green vitric tuffs
1520S	Nov. 14	10	2-10 frozen clayey till (no sample); 10 unfrozen clayey till and water, abandoned
1560 S	Aug. 18	45	2-14 frozen clayey till (sample 5-14); 14-45 orange-yellow and salt-and-pepper granodiorite (samples 14-19, 19-20, 20-24, 24-27, 27-30, 30-35, 35-45)
			Office
			14-19 crumbly angular fragments coated with dark-grey very sticky clay (requires wet seiving)
			- 80% light-grey fine-grained granodiorite, hypidiomorphic granular, 60% milky white feldspar, 20% clear quartz, 15% euhedral black amphibole, 5% biotite, chert, 10% rusty fragments, very few magnetic

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				- 10% rounded to angular fragments of grey-green or grey hard vitric tuff
				- 5% light-green serpentinite
				- 5% assorted volcanic fragments: purplish-brown to green, mainly basic tuff and amygdaloidal basalt with minor hematite
			24-27	crumbly fragments coated with olive-grey very sticky clay
				- 98% granodiorite, 14-19 uphole, but rusty orange
				- 2% assorted volcanic fragments, mainly mafic tuffs
1600 S	Aug. 18	45	2-14	frozen clayey till (sample 5-14); 14-45 orange-yellow and salt-and-pepper granodiorite (samples 14-18, 18-24, 24-29, 29-33, 33-35, 35-38, 38-45)
			Office	
			38-45	crumbly fragments coated with olive-grey sandy clay similar to 1560 S, granodiorite about half rusty half not, 2% assorted lithic fragments
1640 S	Aug. 18	45	2-17	frozen clayey till (sample 5-17); 17-45 orange-yellow and white chalky granodiorite, orange-yellow quartz and feldspar, 30% hornblende and magnetite (samples 17-19, 19-23, 23-25, 25-45)
			Office	
			25-45	crumbly fragments coated with grey-green sandy clay, similar to above, all fragments slighty to fairly rusty, 2-3% lithic fragments: grey vitric tuffs and basalt
1680 S	Aug. 18	35	2-16	frozen clayey till (sample 5-16); 16-35 channel deposits: granodiorite, peridotite, black minerals, reddish-purple, orange, yellow-green volcanics (samples 16-27, 27-35)
			Office	
			27-35	mainly rounded fragments up to 1½ cm with dark-grey wet clay (wet sieved), wide assortment of lithologies, mainly tuffs and porphyries of both Permian and Triassic ages, 1-2% granodiorite, peridotite, quartz
1720 S	Aug. 18	30	2-25	frozen clayey till; 25-30 unfrozen clayey till and water (sample 5-30)
			Office	
			5-30	till: mainly broken rounded fragments coated with dark-grey wet clay, as 27-35 in 1680 S but with fragments to 3 cm

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
200 m West of Sue Claim Line				
1400 S	Nov. 16	4	2-4	frozen clayey till (no sample)
1440 S	Nov. 14	12	2-12	frozen clayey till (sample 5-12); 12 unfrozen clayey till, abandoned
1480 S	Nov. 14	10	2-10	frozen clayey till (no sample); 10 unfrozen clayey till, abandoned
1520 S	Nov. 14	13	2-13	frozen clayey till (sample 5-13); 13 unfrozen clayey till, abandoned
270 m East of Sue Claim Line				
210 N	Nov. 27	40	2-20	frozen clayey till (sample 10-20); 20-28 unfrozen? clayey till (sample 20-30); 28-40 gabbro (sample 30-40)
			Office	
			20-30	very small sample, mainly rounded fragments coated with dark-grey sticky clay
				- 85% assorted mafic to felsic pyroclastic fragments mainly green, grey-green, and grey vitric or microcrystalline tuffs
				- 2-3% granodiorite
				- 2-3% quartz
				- 1-2% hematite
				- 1-2% calcite
			30-40	almost no +10 mesh fraction, angular chips coated with grey-green clay
				- 95% fine-grained grey gabbro, hypidiomorphic granular about half greyish-white anhedral feldspar, half grey-green euhedral to subhedral pyroxene slightly altered to serpentine
				- 5% assorted partly rounded lithic fragments, mainly pyroclastics, minor quartz
220 N	Nov. 27	23	2-17	frozen clayey till (samples 10-13, 13-17); 17-23 gabbro (sample 17-23)
			Office	
			17-23	angular fragments coated with dry greenish-grey clay
				- 95% gabbro as 30-40 in hole 210 N but more yellow-green patches with serpentine alteration, numerous slickensides
				- 5% assorted partly rounded lithic fragments: tuffs, granodiorite, peridotite, quartz, calcite

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
240 N	Nov. 27	30	2-10 frozen clayey till (sample 5-10); 10-14 channel deposits? (sample 10-14); 14-30 grey gabbro except red-brown at 25 and becoming grey towards 30 (samples 14-20, 20-25, 25-30)
			Office
			25-30 mainly angular fragments coated with grey-green clay - 90% gabbro as in 220 N, yellowish-white to rusty feldspar, some alteration to serpentine, dark-green pyroxene (diopside?) - 5% rusty quartz - 5% assorted rounded lithic fragments: tuffs, calcite, granodiorite
260 N	Nov. 27	20	2-15 frozen clayey till; 15-20 grey gabbro (samples 5-10, 10-20)
			Office
			10-20 mainly angular fragments in grey-green clay - 60% grey fine-grained gabbro, hypidiomorphic granular, some slickensides, about 50% each creamy feldspar and grey-green pyroxene - 45% lithic fragments from till: 30% green, grey-green, brown tuffs, vitric and crystal tuffs, minor flow rocks, few maroon or purple, 5% clear to rusty quartz, 2-3% peridotite and serpentinized peridotite, 1% calcite, 1% granodiorite
280 N	Nov. 27	30	2-20 frozen clayey till with rocks 10-12 (samples 5-10, 10-20); 20-30 grey gabbro (sample 20-30)
			Office
			20-30 mainly angular fragments coated with grey-green clay - 80 % dark-grey fine-grained gabbro, hypidiomorphic granular, 60-70% black pyroxene, euhedral to subhedral, 30-40% clean to milky-white anhedral feldspar, some rusty fragments - 10% green, grey-green and grey vitric to microcrystalline tuff (mafic to felsic) - 5% quartz, much rusty, some with gabbro inclusions - 5% other lithic fractions: mostly calcite and granodiorite

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
300 N	Nov. 28	23	2-23 frozen clayey till, gabbro at bottom? (samples 5-10, 10-20, 20-23)
			Office
			20-23 angular and rounded fragments coated with greenish-grey sticky clay, very small sample
			- 40% gabbro as in 280 N, grey or rusty-yellow-grey
			- 40% mafic to intermediate tuffs: green to grey
			- 5% maroon hematitic flow fragments
			- 5% quartz
			- 2-3% granodiorite
			- 2-5% peridotite
			- 1-2% calcite
320 N	Nov. 28	26	2-20 frozen clayey till (sample 5-20); 20-26 ice (no sample)
360 N	Nov. 30	30	2-14 frozen clayey till; 14-22 unfrozen clayey till, cased (sample 10-22); 22-30 green-grey gabbro (sample 22-30)
			Office
			22-30 mainly angular fragments in grey-green clay
			- 90% dark-grey fine-grained gabbro, hypidiomorphic granular, about 65% dark-grey pyroxene, 25% grey to white anhedral feldspar, some rusty patches
			- 5% green, grey-green, or maroon to grey tuffs
			- 2% quartz, milky to rusty
			- 2% granodiorite
			- 1% calcite, clear
380 N	Dec. 1	50	2-14 frozen clayey till; 14-26 unfrozen clayey till, cased (sample 10-26); 26-50 grey gabbro with few red-brown layers (samples 26-40, 40-46, 46-50)
			Office
			46-50 angular chips in olive-grey clay, very small sample
			- 99% rusty and olive-grey fine-grained gabbro, hypidiomorphic granular, about half feldspar and half greenish-grey euhedral to subhedral pyroxene, slightly altered to serpentine in some fragments, fracture surfaces coated in rust
			- 1% clear sparry calcite

APPENDIX 4: CONTINUED

Location	Date Year	Total Depth (ft.)		Notes
400 N	Dec. 1	50	2-14	frozen clayey till; 14-26 unfrozen clayey till, cased (sample 10-26); 26-50 grey gabbro with few red-brown layers (samples 26-40 and 40-50)
			Office	
			40-50	angular fragments, no clay
				- 95% grey-green fine-grained gabbro, hypidiomorphic granular, about 60% subhedral grey-green pyroxene, 40% milky-white feldspar, partly altered to serpentinite, about 20% rusty
				- 5% milky white to sparry calcite
320 m East of Sue Claim Line				
400 N	Dec. 2	50	2-14	frozen clayey till; 14-22 unfrozen clayey till, cased (sample 10-22); 22-50 grey gabbro (samples 22-30, 30-40, 40-50)
			Office	
			40-50	angular fragments, no clay, gabbro
				- as in 380 N and 400 N, 270 E, but with about 75% pyroxene, 25% feldspar
440 N	Dec. 2	50	2-14	frozen clayey till; 14-30 unfrozen clayey and sandy till; cased (sample 10-30); 30-50 grey gabbro with few thin red-brown layers (samples 30-40 and 40-50)
			Office	
			40-50	angular fragments, no clay, as above with about 20% rusty gabbro fragments, 1-2% calcite
Nan Claim Line				
0	Sept. 30	44	2-10	frozen clayey till; 10-44 magnetitic peridotite (samples 6-12, 12-24, 24-34, 34-44)
			Office	
			6-12	angular fragments covered with grey-green clay; both till and bedrock
				- 85% dark-grey fine-grained magnetitic peridotite, hypidiomorphic granular, green to yellow-brown rounded olivines, grey-brown poikilitic pyroxene, about 10% magnetite
				- 15% lithic fragments, partly rounded, mafic and felsic tuffs, limestone, granodiorite, quartz

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			12-24 as uphole, about 95% peridotite, 5% lithic fragments
			24-34 as uphole, 97% peridotite with 5-10% hematite in some fragments, very magnetic, 2-3% lithic fragments as uphole
			34-44 as 24-34 uphole, hematite common, 2-3% lithic fragments from till
80 N	Sept. 30	44	2-11 frozen clayey till (sample 6-11); 11-44 grey pyroxenite (samples 11-24, 24-34, 34-44)
			Office
			11-24 angular fragments covered with abundant grey-green sticky clay with many balls
			- 95% dark-grey fine-grained olivine pyroxenite, hypidiomorphic granular, 50-60% clear grey poikilitic pyroxene surrounding 10-15% euhedral black pyroxene, 20-25% green olivine, 3-5% black interstitial magnetite, very sparse disseminated iron sulfides, 1-2% reddish-brown mica
			- 5% partly rounded lithic fragments and quartz
			24-34 angular fragments some coated with grey-green clay, as uphole, 98% pyroxenite, some serpentinization, some minor hematite and reddish-brown mica, 1-2% lithic fragments
			34-44 angular fragments
			- 98% pyroxenite as uphole, with several percent albite and epidote in many chips, some resembling altered epidotized tuffs
			- some serpentinized slickensides
			- 2-3% lithic fragments from till
170 N	Sept. 30	22	2-13 frozen clayey till (sample 6-13); 13-22 greenish tuffs (sample 13-22)
			Office
			13-22 angular and rounded fragments covered with thick sticky dark-grey-green clay; basal till and bedrock
			- 50% green mafic tuffs, some crystal tuffs, most very fine grained vitric tuffs, commonly banded
			- 15% fine-grained hypidiomorphic granular hornblende, granodiorite
			- 10% olivine pyroxenite and peridotite
			- 10% grey chert
			- 5% quartz, some with chlorite inclusions, some rusty

APPENDIX 4: CONTINUED

Location	Date Year	Total Depth (ft.)		Notes
				- 10% assorted rounded lithic fragments including rusty felsic tuffs, limestone, granite, argillite, serpentinite
250 N	Sept. 30	18	2-16	frozen clayey till; 16-18 frozen sandy till; 18 unfrozen clayey till, abandoned (sample 6-18)
350 N	Sept. 30	44	2-9	frozen clayey till (sample 6-9); 9-44 grey pyroxenite, powdery white 32-33 (samples 9-24, 24-34, 34-44)
			Office	
			9-24	angular fragments
				- 95% dark-grey olivine pyroxenite as in 80 N, magnetic, with minor hematite and sparse iron sulfides
				- 2-3% felsic rusty banded vitric tuffs
				- 2-3% assorted rounded lithic fragments
			24-34	angular fragments
				- 80% dark-grey olivine pyroxenite as uphole
				- 15-18% light-grey-green fine-grained crystal tuff, 60% white feldspar ± quartz, 20% green pyroxene, 10% black amphibole, 5% magnetite, approximately dacite in composition
				- 2-3% lithic fragments from tuff, partly rounded
			34-44	angular fragments
				- 70% olivine pyroxenite as uphole
				- 25% or more dacitic crystal tuff: probably xenoliths near contact
				-< 5% lithic fragments, partly rounded
And Claim Line				
30 N	Nov. 12	19	2-19	frozen clayey till, sandy in middle (samples 5-10 and 10-19); 19 unfrozen clayey till, abandoned
70 N	Nov. 12	30	2-30	frozen clayey till (samples 5-17 and 17-30)
			Office	
			17-30	angular and partly rounded fragments coated with dark-grey clay, till with the following lithologies: peridotite, pyroxenite, green crystal and vitric tuffs, pyritic grey vitric tuff, green and maroon amygdaloidal lava, serpentinite, granodiorite, quartz, calcite, hematite; volcanic fragments predominate most with partly rounded faces

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
110 N	Nov. 12	20	2-10 frozen clayey till; 10-20 unfrozen clayey till; 20 abandoned (sample 5-20)
150 N	Nov. 12	19	2-10 frozen clayey till; 10-19 unfrozen clayey till; 20 abandoned (sample 5-19)
190 N	Nov. 12	16	2-10 frozen clayey till; 10-16 unfrozen clayey till; 16 abandoned (sample 5-16)
230 N	Nov. 13	17	2-10 frozen clayey till (sample 7-10); 10-17 coarse sandy till unfrozen from about 14 (sample 10-17)
270 N	Nov. 13	17	2-10 frozen clayey till; 10-17 sandy till unfrozen from about 14 (sample 10-17)
310 N	Nov. 13	7	2-7 frozen clayey till; 7 unfrozen
350 N	Nov. 13	50	2-10 frozen clayey till (sample 5-10); 10-50 black pyroxenite (samples 10-18, 18-30, 30-33, 33-40, 40-50)
			Office
			10-18 mainly angular fragments coated with olive-grey clay
			- 75% black fine-grained magnetitic pyroxenite anidiomorphic to hypidiomorphic granular
			- 10% dark-grey fine-grained magnetic peridotite, hypidiomorphic granular, rounded brown olivine phenocrysts in poikilitic pyroxene, magnetite in groundmass; grades into magnetitic pyroxenite described uphole
			- 5% green vitric and crystal tuffs, cherty
			- 5% grey cherty pyritic tuff
			- 2% granodiorite
			- 2% quartz
			- 1% calcite, hematite, amygdaloidal basalt or andesite
			40-50 angular fragments with some light-grey clay
			- 98% dark-grey fine-grained magnetic pyroxenite grading to gabbro, anidiomorphic granular, 75-90% black pyroxene, minor magnetite, 10-20% feldspar
			- 1% calcite
			- 1% assorted volcanic fragments
390 N	Nov. 13	50	2-10 frozen clayey till (sample 5-10); 10-50 dark-grey pyroxenite (samples 10-20, 20-30, 30-40, 40-50)
			Office
			40-50 angular fragments coated with grey-green clay

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
				- 90% dark-grey magnetic pyroxenite as in 350 N, grading into peridotite in some fragments
				- 5% light-grey-green serpentinized pyroxenite
				- 2-3% grey to grey-brown vitric tuff
				- 2-3% white quartz
430 N	Nov. 13	40	2-9	frozen clayey till (sample 6-9); 10-40 black pyroxenite and dark-grey peridotite (samples 9-20, 20-25, 25-30, 30-40)
			Office	
			20-25	angular fragments, coated with olive-grey clay
				- 80% dark-grey-brown fine-grained magnetic peridotite, hypidiomorphic granular, poikilitic, grading into
				- 15% black magnetic pyroxenite same as peridotite without brown olivines
				- 3-4% volcanic fragments, mostly tuffs
				- 1-2% quartz and calcite
			30-40	angular fragments coated with grey clay
				- 90% grey fine-grained gabbro, hypidiomorphic granular, 70% grey-green pyroxene, 30% white feldspar
				- 5-7% peridotite as uphole
				- 1-2% volcanic fragments: mostly tuffs
				- 1% quartz
470 N	Nov. 13	10	2-10	frozen clayey till; 10 unfrozen and water (no samples)
West of 101 Pup				
0	Nov. 4	40	0-14	frozen clayey till (sample 10-14); 14-30 till? (samples 14-20 and 20-30); 30-40 till?, greenish tuffs, pyroxenite (sample 30-40)
			Office	
			30-40	angular and partly rounded fragments coated with dark-grey sticky clay
				- 40% black fine-grained magnetitic pyroxenite, anidiomorphic granular, about 70% black pyroxene, 30% magnetite
				- 40% bright-green mafic to intermediate crystal tuff, euhedral white feldspar phenocrysts in very fine grained matrix of chloritized crystal fragments

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			- 10% light-grey pyritic vitric tuff (cherty)
			- 2-3% white quartz
			- 1-2% creamy white calcite
			- 1-2% peridotite
			- 1% hematite, granular
			- 2-3% green and maroon amygdaloidal basalt
40 S	Nov. 4	10	0-10 frozen clayey till (sample 0-10); 10 unfrozen clayey till, abandoned
100 S	Nov. 4	12	0-12 frozen clayey till (sample 0-12); 12 unfrozen clayey till, abandoned
160 S	Nov. 4	13	0-13 frozen clayey till (sample 10-13); 13 unfrozen clayey till, abandoned
180 S	Nov. 4	13	0-13 frozen clayey till (sample 5-13); 13 unfrozen clayey till, abandoned
200 S	Nov. 4	40	0-16 frozen clayey till (sample 5-16); 16-40 channel deposits? (samples 16-20, 20-30, 30-40)
			Office
			30-40 angular fragments with some rounded coated with dark-grey sticky clay, similar to 30-40 in 0
			- 40% black pyroxenite
			- 30% green crystal tuffs
			- 15% light-grey pyritic tuff (vitric)
			- 5% granodiorite
			- 2-3% white to clear quartz
			- 2-3% green and maroon amygdaloidal basalt
			- 1-2% calcite
			- 1-2% peridotite
			- 1% granular hematite
220 S	Nov. 4	13	0-13 frozen clayey till (sample 5-13); 13 unfrozen clayey till and water, abandoned
240 S	Nov. 4	8	0-8 frozen clayey till, 8 unfrozen clayey till, abandoned (no samples)
280 S	Nov. 4	12	0-12 frozen clayey till; 12 unfrozen clayey till and water, abandoned (no samples)

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
195	Nov. 5	36	2-14	frozen clayey till (sample 5-14); 14-36 frozen channel deposits or till (samples 14-20, 20-30, 30-36)
			Office	
			30-36	angular to rounded fragments coated with dark-grey sticky clay - 25% black pyroxenite - 30% green crystal tuff - 15% light-grey cherty tuff - 10% purple-grey fragments, hematitic - 5% peridotite - 5% granodiorite - 5% quartz, some rusty - 5% calcite Channel deposits or till; local bedrock is either tuffs or pyroxenite.
240	Nov. 5	17	2-12	frozen clayey till; 12-17 unfrozen clayey till; 17 abandoned (sample 5-17)
280	Nov. 5	12	2-12	frozen clayey till (sample 5-12); 12 unfrozen clayey till, abandoned
355	Nov. 4	15	2-15	frozen clayey till (sample 5-15); 15 unfrozen clayey till, abandoned
450	Nov. 4	16	2-16	frozen clayey till (sample 5-16); 16 unfrozen clayey till, abandoned
Along Road on Claim EL 48				
GGS 0	Nov. 21	20	0-20	tuff (samples 0-10 and 10-20); 20 abandoned when bit stuck
			Office	
			10-20	angular fragments of light-grey to grey cryptocrystalline tuff, cherty to extremely fine granular texture, very sparse disseminated iron sulfides, coatings of iron sulfate or carbonate on some joint fires
GGS 10E	Nov. 21	28	0-28	tuff (samples 0-10, 10-16, 16-22, 22-28)
			Office	
			22-28	angular fragments as uphole, lighter-grey, more cherty otherwise the same

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
GGS 20E	Nov. 21	28	0-28	tuff (samples 0-10, 10-16, 16-19, 19-22, 22-28)
			Office	
			22-28	angular fragments of grey cryptocrystalline tuff as above with more abundant though still very sparse disseminated pyrite or pyrrhotite as tiny rounded grains, some rusty material on joint faces appears to be iron sulfate or carbonate
GGS 30E	Nov. 21	28	0-28	tuff (samples 0-10, 10-16, 16-22, 22-28)
			Office	
			22-28	angular fragments, same as in GGS 20E, grey cryptocrystalline cherty tuff, some with semiconchoidal fractures, finely disseminated very sparse pyrite or pyrrhotite, possibly very fine grained white mica, rusty joints and fractures
GGS 40E	Nov. 21	28	0-28	tuff (samples 0-10, 10-16, 16-22, 22-28)
			Office	
			22-28	angular fragments as in previous GGS holes, but with very few sulfides, more rust
GGS 50E	Nov. 21	28	0-28	grey tuff with 10-11 red brown (samples 0-10, 10-11, 11-16, 16-22, 22-28)
			Office	
			22-28	angular fragments of light-grey cryptocrystalline tuffs, cherty fracture, with extremely sparse specks of iron sulfides, iron carbonate or sulfate coatings on some fractures, specks of galena?
GGS 60E	Nov. 21	28	0-28	tuff with minor overburden at top (samples 0-10, 10-16, 16-22, 22-28)
			Office	
			22-28	angular fragments of light-grey cryptocrystalline tuff, more siliceous and cherty than in GGS 50E, almost no sulfides, a few rusty quartz veinlets to 1 or 2 mm, several quartz fragments, some iron carbonate or sulfate rust coating fractures, possibly some galena on fractures
GGS 70E	Nov. 21	10	0-10	tuff (sample 0-10); 10 abandoned with plugged bit
			Office	
			0-10	angular fragments of light-grey or greenish-grey cryptocrystalline to vitric tuff, cherty, translucent in places, glassier than in GGS 60E, possibly minor chlorite, no apparent sulfides, some rusty fractures

APPENDIX 4: CONTINUED

Location	Date Year	Total Depth (ft.)	Notes
GGS 80E	Nov. 26	10	0-10 tuff and gabbro (sample 0-10); 10 abandoned with lost circulation
			Office
			0-10 very small sample of angular fragments
			- 50% cherty grey-green vitric tuff as in previous holes
			- 50% fine-grained grey gabbro, anidiomorphic to hypidiomorphic granular, partly chloritized in places
			From drill location this gabbro is probably rubble in the road from contact above.
GGS 90E	Nov. 26	40	0-40 grey tuff (samples 0-10, 10-20, 20-30, 30-40)
			Office
			30-40 angular fragments
			- 20% light-grey vitric tuff, cherty, as in previous samples
			- 50% fine-grained cherty grey-brown crystal tuff, probably similar composition (acidic) to vitric tuff, but with rounded feldspar crystals to 1 mm
			- 20% fine-grained grey gabbro, as in GGS 80E
			- 10% grey-brown fine-grained magnetic peridotite, about 75% rounded brown olivine in dark-grey matrix of pyroxene and magnetite
GGS 100E	Nov. 26	5	0-5 tuff (sample 0-5); 5 abandoned with lost circulation
			Office
			0-5 angular fragments of light-green to grey-green vitric tuff, cherty fracture, hard, some fragments with rounded black phenocrysts to ½ mm of a black mafic silicate, extremely sparse iron sulfides, small smudges of grey- possibly galena, less than 1% lithic fragments of serpentinite, gabbro, granodiorite
GGS 110E	Nov. 26	5	0-5 tuff (sample 0-5); 5 abandoned with lost circulation
			Office
			0-5 angular fragments of grey vitric tuff, cherty fracture, some grey-green fragments, almost no sulfides, some rusty fracture surfaces, 1% rounded fragments of granodiorite, serpentinite, other mafic tuffs
GGS 120E	Nov. 26	8	0-8 tuff and gabbro, 0-6 grey, 6-8 red-brown to grey; (samples 0-6 and 6-8); 8 abandoned with lost circulation

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			Office
			6-8 angular fragments, no clay
			- 90% grey vitric tuff, cherty fracture, semitranslucent at edges
			- very sparse disseminated pyrite or pyrrhotite, some fragments rusty on joint surfaces
			- 10% grey fine-grained gabbro, anidiomorphic granular, slightly altered to chlorite and albite
GGS 130E	Nov. 26	5	tuffs and gabbro (no sample because no circulation caused by numerous fractures)
GGS 138E	Nov. 26	10	0-10 tuff and gabbro (sample 0-10); 10 abandoned due to caving hole
			Office
			0-10 angular fragments to 4 cm
			- 40% light-grey, grey-brown or greenish-brown vitric tuff as in previous holes
			- 60% partly altered grey fine-grained gabbro, as in previous holes
GGS 150E	Nov. 26	13	0-13 gabbro (samples 0-10, 10-13); 13 abandoned due to caving hole
			Office
			10-13 finely powdered grey-green clay and fine sandy chips (drilled very slowly in blocky gabbro outcrop), only a few grains of +10 mesh angular fragments
			- 50% pale-green vitric cherty tuff, one or two pieces with sparse (feldspar) crystallites
			- 50% fairly mafic and very fine grained gabbro (chill margin)
			- one or two fragments of peridotite
Phil Creek			
0	Nov. 23	40	0-13 frozen clayey till, 10-13 red; 13-32 clayey dark-grey till, slow drilling (samples 0-10, 10-13, 13-22, 22-28, 28-32); 32-40 serpentinite (samples 32-34, 34-36, 36-40)
			Office
			28-32 angular and rounded fragments in grey clay, till: uniform mixture of grey and green vitric tuff, crystal tuffs, flow rocks, granodiorite, quartz, calcite, serpentinite, peridotite, jasper, hematite, limestone, chert, gabbro

APPENDIX 4 CONTINUED

Location	Date 1987	Total Depth (ft.)		Notes
			36-40	angular fragments, no clay, grey-green, light-green fine-grained foliated serpentinite, very soft, with small patches and veinlets of calcite and sparse finely disseminated chalcopyrite, less than 1% other mixed volcanic rock fragments
20	Nov. 23	24	0-10	frozen clayey till (sample 0-10); 10-24 unfrozen clayey till (sample 10-24); 24 abandoned in clayey till
40	Nov. 24	22	0-10	frozen clayey till (sample 0-10); 10-22 unfrozen clayey till (sample 10-22); 22 abandoned because of constantly plugged bit
60	Nov. 24	40	0-8	frozen clayey till (sample 0-8); 8-10 unfrozen clayey till with thin red-brown zone (sample 8-10); 10-40 unfrozen clayey till (samples 10-20, 20-30, 30-40); 40 abandoned because of caving
			Office	
			30-40	angular and rounded fragments coated with sticky grey clay, similar to 28-32 in Phil 0 but about 30% grey-green cherty tuff and 30% dark-grey to black peridotite and gabbro (gradational)
				This sample appears to contain both till and bedrock, basal till, or colluvium.
80	Nov. 24	33	0-10	frozen clayey till (sample 0-10), 10-33 till? (samples 10-20, 20-30, 30-33); 33 abandoned because of caving
			Office	
			30-33	angular and rounded pebbles in sticky grey clay, similar wide assortment of lithologies as 28-32 in Phil 0; till or stream gravels
Frying Pan Creek				
10E	Nov. 25	30		azimuth 072°, inclination -64°; 0-7 volcanic flow? red-brown 6-7 (sample 0-7); 7-20 grey and grey-grey volcanic flow? (sample 7-20); 20-30 unfrozen clayey till (sample 20-30); 30 abandoned because of stuck rods
			Office	
			20-30	heavy wet grey clay, wet sieving required, angular to rounded fragments with same uniform mix of lithologies as 28-32 in Phil 0; till
20E	Nov. 25	37		azimuth 090°, inclination -70°; 0-27 volcanic flow? (samples 0-10, 10-20, 20-27); 27-37 unfrozen till (sample 27-37); 37 abandoned in thick clay

APPENDIX 4: CONTINUED

Location	Date 1987	Total Depth (ft.)	Notes
			27-37 angular to rounded fragments in dark-grey clay, wet sieved, similar to 30-40 in Phil 60
			- about 30% grey to grey-green vitric tuffs
			- about 30% dark-grey gabbro to peridotite (gradational), and serpentinite
			- about 30% mixed lithologies as above
			- probably till and bedrock or colluvium representing local bedrock type
40 E	Nov. 25	45	azimuth 120°, inclination -65°; 0-10 frozen till? (sample 0-10); 10-45 till? (samples 10-20, 20-25, 25-40, 40-45); 45 abandoned because of caving
			Office
			20-25 angular to rounded fragments coated with wet grey clay, wet sieved
			- similar to 27-37 in 20 E but more quartz and cherty tuffs and other resistant rocks in mixed lithologies
			40-45 angular to rounded fragments in wet grey clay, wet sieved, assorted lithologies, similar to previous sample, till or channel deposit
65 E	Nov. 25	20	azimuth 120°, inclination -62°; 0-10 frozen till? (sample 0-10); 10-20 unfrozen watery till (sample 10-20); 20 abandoned because of water
			Office
			10-20 angular to rounded fragments in wet dark-grey clay, wet sieved, small sample of mainly clay till, uniform mixture of lithologies including grey and green vitric tuff, crystal tuff, basaltic flow rocks, granodiorite, gabbro, peridotite, serpentinite, jasper, hematite, chert, quartz, calcite; till

All the holes along Frying Pan Creek were inclined; one explanation for the till apparently underlying volcanic flows in 10 E and 20 E is that both holes started in bedrock and broke through into the till-covered valley of preglacial Frying Pan Creek.

APPENDIX 5: ANALYTICAL REPORTS OF SAMPLES FROM PERCUSSION DRILLHOLES

ACME ANALYTICAL LABORATORIES
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE 253-3158 DATA LINE 251-1011

DATE RECEIVED: AUG 20 1987
DATE REPORT MAILED: Aug. 31/87...

GEOCHEMICAL ICP ANALYSIS

.500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG.C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE CA P LA CR MG BA TI B W AND LIMITED FOR NA AND K. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1-BEDROCK P2-BASAL TILL AU** PT** PD** RH** BY FA-MS.

ASSAYER: D. Toye. DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDABL & ASSOCIATES File # 87-3468 Page 1

SAMPLE#	CU PPM	NI PPM	V PPM	CR PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 200N	62	41	79	42	6	2	2	2
SUE 187N	43	47	44	83	2	2	2	2
SUE 80N	112	1221	46	1475	5	11	28	2
SUE 40N	55	1165	39	1204	2	15	31	3
SUE 0	183	1321	24	547	6	21	33	3
SUE 40S	140	1242	39	728	6	13	25	2
SUE 80S	167	1366	22	395	5	19	35	3
SUE 120S	139	1151	44	728	3	12	29	2
SUE 160S	57	255	68	249	2	5	8	2
SUE 240S	49	87	76	84	3	2	5	2
SUE 360S	40	51	63	54	3	2	4	2
SUE 392S	68	228	71	266	3	7	8	2
SUE 425S	224	1035	45	984	8	12	33	2
SUE 461S	151	1029	48	1285	5	28	47	3
SUE 480S	95	919	54	1269	4	37	48	3
SUE 496S	130	947	39	889	4	14	44	2
SUE 540S	130	837	37	770	4	6	14	2
SUE 560S	223	890	35	901	16	71	27	3
SUE 630S	212	121	29	498	8	2	4	2
SUE 200N 24-30'	54	51	70	64	1	2	2	2
SUE 187N 20-25'	48	58	50	110	1	2	2	2
SUE 80N 14-18'	130	1105	45	1340	2	14	29	2
SUE 40N 14-20'	40	987	38	1136	2	10	27	2
SUE 0 12-19'	167	1247	22	527	5	19	33	3
SUE 540S 18-23'	90	591	25	516	4	7	12	2
SUE 560S 12-19'	202	916	35	872	8	57	27	3
SUE 630S 12-17'	356	859	26	582	12	31	11	2
STD C/FA-5X	59	71	59	61	103	98	101	20

Chromite is insoluble.

SAMPLE#	CU PPM	PB PPM	ZN PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 40S	223	8	55	7	31	42	3
SUE 80S	176	7	55	6	10	28	2
SUE 120S	92	11	61	2	6	15	2
SUE 160S	67	11	64	2	5	8	2
SUE 240S	50	11	65	11	3	5	2
SUE 360S	42	8	68	2	2	5	2
SUE 392S	54	13	73	4	3	4	2
SUE 480S	69	12	68	2	6	8	2
SUE 496S	63	7	62	2	8	20	2
SUE 720S	54	10	62	2	5	7	2
SUE 840S	80	9	54	4	12	15	2
SUE 920S	54	8	58	2	4	7	2
SUE 720S 21-40'CHAN.	55	11	65	2	4	8	2
SUE 840S 22-30'CHAN.	72	9	60	3	10	15	2
SUE 840S 30-40'CHAN.	53	7	68	2	2	4	2
SUE 920S 19-40'CHAN.	52	8	66	2	3	5	2
STD C/FA-5X	57	39	131	102	98	101	19

ACME ANALYTICAL LABORATORIES
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE 253-3158 DATA LINE 251-1011

DATE RECEIVED: SEPT 3 1987

DATE REPORT MAILED: Sept. 16/87

A54

GEOCHEMICAL ICP ANALYSIS

.500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG.C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE CA P LA CR MG BA TI B W AND LIMITED FOR NA AND K. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1 TO P2-BEDROCK P3-BASAL TILL AU** PT** PD** RH** BY FA-MS.

ASSAYER: D. Toye... DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDABL & ASSOCIATES File # 87-3875 Page 1

SAMPLE#	CU PPM	NI PPM	V PPM	CR PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 960S 17-28	50	108	69	108	7	3	5	2
SUE 960S 28-40	54	62	78	74	3	3	5	2
SUE 1360S 17-30	37	26	150	38	2	2	2	2
SUE 1400S 15-24	74	58	98	79	2	5	9	2
SUE 1400S 24-30	67	30	99	85	3	7	13	2
SUE 1445S 15-20	37	41	116	58	2	2	3	2
SUE 1445S 20-23	37	27	155	43	1	2	4	2
SUE 1445S 23-25	35	29	157	46	1	3	2	2
SUE 1480S 15-20	41	20	156	36	1	2	2	2
SUE 1480S 20-22	50	16	126	37	5	2	3	2
SUE 1480S 22-23	66	33	97	63	2	2	6	2
SUE 1480S 23-26	26	15	156	36	1	3	4	2
SUE 1480S 26-30	23	14	158	33	1	2	6	2
SUE 1480S 30-34	19	12	171	31	1	2	4	2
SUE 1480S 34-35	24	11	152	29	1	2	5	2
SUE 1480S 35-40	19	12	170	28	1	3	2	2
SUE 1480S 40-45	19	15	158	32	1	3	3	2
SUE 1520S 15-20	38	45	147	58	1	2	3	2
SUE 1520S 20-23	43	25	181	41	3	2	4	2
SUE 1520S 23-26	30	21	186	34	1	2	2	2
SUE 1520S 26-28	32	23	188	36	167	2	3	2
SUE 1520S 28-31	50	22	170	36	14	2	4	2
SUE 1520S 31-33	120	15	180	30	5	2	4	2
SUE 1520S 33-36	49	22	172	36	3	2	4	2
SUE 1520S 36-40	64	21	156	33	2	2	4	2
SUE 1520S 40-45	30	14	165	29	2	2	4	2
SUE 1520S 45-50	26	10	91	20	2	2	2	2
SUE 1520S 50-60	25	15	169	27	1	2	3	2
SUE 1520S 60-65	15	28	135	34	2	2	5	2
SUE 1560S 14-19	35	24	94	33	1	2	2	2
SUE 1560S 19-20	39	26	90	37	2	2	2	2
SUE 1560S 20-24	41	12	86	19	4	2	2	2
SUE 1560S 24-27	84	6	80	12	2	2	2	2
SUE 1560S 27-30	33	5	75	11	3	2	2	2
SUE 1560S 30-35	55	4	70	10	1	2	2	2
SUE 1560S 35-45	67	6	78	9	1	2	2	2
STD C/FA-5X	63	69	60	67	100	97	102	18

Chromite insoluble in acid.

SAMPLE#	CU PPM	NI PPM	V PPM	CR PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 1600S 14-18	25	19	89	24	1	5	2	2
SUE 1600S 18-24	23	7	98	13	3	2	2	2
SUE 1600S 24-29	26	4	90	9	1	2	2	2
SUE 1600S 29-33	21	3	93	8	1	2	2	2
SUE 1600S 33-35	21	4	99	10	1	2	2	2
SUE 1600S 35-38	29	5	96	10	1	2	2	2
SUE 1600S 38-45	29	3	100	10	1	2	2	2
SUE 1640S 17-19	53	72	80	68	2	2	7	2
SUE 1640S 19-23	28	15	102	21	1	2	2	2
SUE 1640S 23-25	20	5	102	11	1	2	2	2
SUE 1640S 25-45	29	8	99	12	1	2	2	2
SUE 1680S 16-27	69	83	77	82	1	2	2	2
SUE 1680S 27-35	63	65	82	68	2	2	2	2
STD C/FA-5X	68	71	61	66	101	99	102	21

SAMPLE#	CU PPM	PB PPM	ZN PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 960S	58	2	52	3	3	6	2
SUE 1360S 7-17	73	2	73	2	3	5	2
SUE 1400S 5-15	81	2	69	2	2	3	2
SUE 1445S	66	2	72	2	2	3	2
SUE 1480S	46	2	62	4	3	2	2
SUE 1520S	56	5	67	2	2	4	2
SUE 1560S	62	3	63	2	3	4	2
SUE 1600S	53	2	59	2	5	6	2
SUE 1640S	48	2	60	5	2	3	2
SUE 1680S	54	5	61	2	3	4	2
SUE 1720S	48	2	59	3	3	4	2
STD C/FA-5X	63	43	131	100	98	102	19

ACME ANALYTICAL LABORATORIES
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE 253-3158 DATA LINE 251-1011

DATE RECEIVED: SEPT 23 1987
DATE REPORT MAILED: Oct. 5/87...

GEOCHEMICAL ICP ANALYSIS

TOTAL V & CR - .50 GM SAMPLES ARE FUSED WITH 3 GM NA2O2 DISSOLVED IN 50 ML 20% HCl, ANALYSED ICP.
- SAMPLE TYPE: BEDROCK

ASSAYER: D. Toye. DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDABL & ASSOCIATES File # 87-3875 R Page 1

SAMPLE#	V PPM	CR PPM
SUE 960S 17-28	130	312
SUE 960S 28-40	140	169
SUE 1360S 17-30	200	66
SUE 1400S 15-24	160	173
SUE 1400S 24-30	180	150
SUE 1445S 15-20	140	92
SUE 1445S 20-23	170	56
SUE 1445S 23-25	150	49
SUE 1480S 15-20	160	46
SUE 1480S 20-22	160	49
SUE 1480S 22-23	100	66
SUE 1480S 23-26	180	44
SUE 1480S 26-30	170	40
SUE 1480S 30-34	180	37
SUE 1480S 34-35	160	32
SUE 1480S 35-40	190	37
SUE 1480S 40-45	150	40
SUE 1520S 15-20	160	109
SUE 1520S 20-23	170	50
SUE 1520S 23-26	160	39
SUE 1520S 26-28	160	40
SUE 1520S 28-31	160	37
SUE 1520S 31-33	170	25
SUE 1520S 33-36	150	32
SUE 1520S 36-40	140	29
SUE 1520S 40-45	160	200
SUE 1520S 45-50	90	33
SUE 1520S 50-60	170	40
SUE 1520S 60-65	130	55
SUE 1560S 14-19	110	89
SUE 1560S 19-20	100	71
SUE 1560S 20-24	90	28
SUE 1560S 24-27	80	24
SUE 1560S 27-30	70	14
SUE 1560S 30-35	70	10
SUE 1560S 35-45	80	11

SAMPLE#	V PPM	CR PPM
SUE 1600S 14-18	87	29
SUE 1600S 18-24	82	12
SUE 1600S 24-29	88	12
SUE 1600S 29-33	87	6
SUE 1600S 33-35	99	11
SUE 1600S 35-38	102	7
SUE 1600S 38-45	92	1
SUE 1640S 17-19	90	143
SUE 1640S 19-23	98	31
SUE 1640S 23-25	100	8
SUE 1640S 25-45	87	9
SUE 1680S 16-27	93	155
SUE 1680S 27-35	102	123

ACME ANALYTICAL LABORATORIES
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE 253-3158 DATA LINE 251-1011

DATE RECEIVED: SEPT 25 1987
DATE REPORT MAILED: Oct. 9/87

GEOCHEMICAL ICP ANALYSIS

.500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG.C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1-BEDROCK P2-BASAL TILL P3-TILL P4-6 SOIL AU** PT** PD** RH** BY FA-MS.

ASSAYER: D. Toye DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDABL & ASSOCIATES File # 87-4509 Page 1

SAMPLE#	CU PPM	NI PPM	V PPM	CR PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 1000S 16-30	54	119	75	121	3	3	5	2
SUE 1000S 30-35	59	74	97	87	1	3	4	2
SUE 1000S 35-40	64	47	129	49	3	2	2	2
SUE 1000S 40-45	46	41	75	59	2	2	2	2
SUE 1000S 45-65	65	309	76	292	4	7	9	2
SUE 1120S 16-45	50	77	75	87	4	3	4	2
SUE 1160S 16-30	57	98	73	99	3	3	4	2
SUE 1160S 30-38	50	56	77	70	2	2	3	2
SUE 1160S 38-44	63	140	95	113	3	3	5	2
SUE 1160S 44-49	92	290	143	207	3	4	9	2
SUE 1160S 49-50	293	254	107	355	2	4	3	2
SUE 1160S 50-55	94	83	154	123	1	2	2	2
SUE 1280S 16-18	163	142	92	174	3	4	7	2
SUE 1280S 18-25	51	52	89	64	1	2	3	2
SUE 1280S 25-45	32	30	97	39	3	2	2	2
SUE 1320S 7-25	40	54	75	70	11	3	3	2
40-3-134	119	1111	18	210	4	6	18	2
STD C/FA-5X	60	67	58	63	98	105	98	24

Acid soluble Cr only

HALFERDABL & ASSOCIATES FILE # 87-4509 Page 2

SAMPLE#	CU PPM	PB PPM	ZN PPM	NI PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 1000S	52	3	54	156	2	3	5	2
SUE 1120S	51	5	67	124	3	4	3	2
SUE 1160S	46	4	59	107	3	3	3	2
SUE 1280S	63	5	68	74	4	4	3	2
SUE 1320S	54	5	71	74	3	3	4	2

HALFERDABL & ASSOCIATES FILE # 87-4509 Page 3

SAMPLE#	CU PPM	PB PPM	ZN PPM	NI PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 187N 10-16	58	6	57	159	1	4	5	2
SUE 160N 10-14	53	5	55	241	2	5	6	2
SUE 120N 9-12	60	2	53	186	1	4	6	2
SUE 200S 20-27	51	8	58	280	1	6	8	2
SUE 280S 23-27	57	3	56	210	9	4	5	2
SUE 320S 25-30	76	4	60	565	3	7	14	2
SUE 680S 8-14	93	6	57	397	4	8	11	2
SUE 1040S 12-19	52	5	56	118	2	23	7	2
SUE 1200S 15-22	49	5	64	84	2	3	2	2
SUE 1240S 8-15	48	8	59	142	1	4	4	2
SUE 1240S 15-20	53	6	70	105	2	4	3	2
SUE 1320S 8-16	50	9	66	84	3	5	3	2
STD C/FA-5X	60	37	132	67	98	105	98	24

ACME ANALYTICAL LABORATORIES LTD.
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE(604)253-3158 FAX(604)253-1716

DATE RECEIVED: OCT 13 1987
DATE REPORT MAILED: Oct 24/87

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEC. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: Rock Chips AU** PT** PD** RH** BY FA-MS.

ASSAYER: D. Toye. DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDABL & ASSOCIATES File # 87-4951 Page 1

SAMPLE#	CU PPM	NI PPM	CO PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 90N 14-18	133	997	72	88	14	29	3
SUE 90N 18-23	128	1144	81	850	12	33	2
SUE 90N 23-28	157	1091	82	13	17	30	2
SUE 90N 28-33	197	1117	82	120	14	35	2
SUE 90N 33-38	102	1105	81	5	13	29	2
SUE 90N 38-44	107	1136	81	5	10	28	2
SUE 80N 12-18	217	1163	86	18	15	35	2
SUE 80N 18-24	95	1209	86	5	10	31	2
SUE 80N 24-29	90	1199	84	3	13	39	2
SUE 80N 29-34	91	1290	88	4	12	34	2
SUE 80N 34-39	116	1225	87	6	11	34	2
SUE 80N 39-44	169	1285	85	5	14	31	2
SUE 70N 10-18	176	1278	86	5	11	30	2
SUE 70N 18-24	160	1275	86	5	10	33	2
SUE 70N 24-29	256	1297	84	10	12	31	2
SUE 70N 29-34	110	1355	83	4	11	31	2
SUE 70N 34-39	114	1376	86	5	13	34	2
SUE 70N 39-44	253	1421	87	6	11	31	2
SUE 60N 12-18	119	1287	82	6	9	25	2
SUE 60N 18-24	120	1334	88	5	11	30	2
SUE 60N 24-29	185	1439	92	7	11	37	2
SUE 60N 29-34	130	1421	90	6	13	32	2
SUE 60N 34-39	233	1433	95	9	18	42	2
SUE 60N 39-44	184	1260	85	5	20	32	2
SUE 50N 12-16	346	1227	85	12	10	31	2
SUE 50N 16-21	444	1434	94	17	13	28	2
SUE 50N 21-26	227	1495	92	7	12	29	2
SUE 50N 26-32	318	1337	89	12	11	31	2
SUE 50N 32-38	299	1408	89	7	13	31	2
SUE 50N 38-44	285	1384	87	6	12	35	2
SUE 40N 16-24	275	1122	87	11	11	30	2
SUE 40N 24-29	245	1268	91	8	13	35	2
SUE 40N 29-34	247	1339	93	11	13	40	2
SUE 40N 34-39	315	1342	92	13	12	38	2
SUE 40N 39-44	256	1379	90	10	10	39	2
SUE 30N 10-18	398	1303	90	12	16	40	2
STD C/FA-5X	62	71	29	98	96	102	24

HALFERDABL & ASSOCIATES FILE # 87-4951 Page 2

SAMPLE#	CU PPM	NI PPM	CO PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 30N 18-24	366	1250	94	14	14	36	2
SUE 30N 24-29	504	1364	98	18	15	35	2
SUE 30N 29-34	359	1271	90	11	12	33	2
SUE 30N 34-39	147	1365	97	4	12	32	2
SUE 30N 39-44	191	1364	96	7	13	33	2
SUE 20N 12-18	135	1361	92	4	11	35	2
SUE 20N 18-24	84	1342	91	4	12	31	2
SUE 20N 24-29	177	1308	88	7	13	31	2
SUE 20N 29-34	98	1499	97	4	16	33	2
SUE 20N 34-39	121	1438	99	6	19	33	2
SUE 20N 39-44	146	1400	98	6	19	36	7
SUE 10N 12-18	262	1249	90	7	20	33	2
SUE 10N 18-24	152	1369	96	4	14	33	2
SUE 10N 24-29	147	1437	99	5	26	40	2
SUE 10N 29-34	183	1383	95	5	18	29	2
SUE 10N 34-39	177	1442	97	6	10	20	2
SUE 10N 39-44	191	1374	96	7	21	29	2
SUE 0 12-18	191	1341	93	5	15	25	2
SUE 0 18-24	159	1427	97	5	14	26	2
SUE 0 24-29	158	1374	97	4	24	35	3
SUE 0 29-34	143	1344	93	5	11	24	2
SUE 0 34-39	108	1398	96	3	8	20	2
SUE 0 39-44	92	1365	94	4	12	22	2
SUE 10S 12-18	152	1403	93	5	13	21	2
SUE 10S 18-24	119	1433	96	4	15	26	2
SUE 10S 24-29	107	1447	98	3	17	25	2
SUE 10S 29-34	75	1396	94	2	7	19	2
SUE 10S 34-39	58	1394	93	2	12	25	2
SUE 10S 39-44	71	1454	97	1	16	29	2
SUE 20S 11-18	161	1270	87	2	11	17	2
SUE 20S 18-24	144	1360	95	3	23	42	2
SUE 20S 24-29	94	1411	94	3	6	18	2
SUE 20S 29-34	93	1431	96	3	11	18	2
SUE 20S 34-39	106	1435	94	4	26	40	2
SUE 20S 39-44	84	1407	95	3	24	35	2
SUE 30S 9-15	210	1290	91	4	25	36	2
STD C/FA-5X	61	72	30	99	102	95	24

HALFERDABL & ASSOCIATES FILE # 87-4951 Page 3

SAMPLE#	CU PPM	NI PPM	CO PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 30S 15-20	85	1231	84	6	10	18	2
SUE 30S 20-25	96	1288	88	2	11	21	2
SUE 30S 25-30	96	1293	89	3	18	38	2
SUE 30S 30-35	112	1342	91	2	20	35	2
SUE 30S 35-40	81	1347	88	1	14	20	2
SUE 45S 9-15	141	1262	87	299	25	35	2
SUE 45S 15-20	72	1264	84	4	11	19	2
SUE 45S 20-23	55	1180	82	2	13	24	2
SUE 60S 10-15	59	1183	81	13	10	19	2
SUE 60S 15-20	59	1196	81	2	9	17	2
SUE 60S 20-25	92	1207	86	1	20	28	2
SUE 60S 25-30	91	1243	86	1	20	31	2
SUE 60S 30-35	97	1288	89	4	16	29	2
SUE 60S 35-40	127	1246	86	3	14	27	2
SUE 70S 12-15	178	1141	77	3	13	28	2
SUE 70S 15-20	203	1264	86	4	20	32	2
SUE 70S 20-25	143	1259	84	4	31	41	2
SUE 70S 25-30	122	1234	82	5	14	34	2
SUE 70S 30-35	116	1142	79	4	14	32	2
SUE 70S 35-40	76	1192	81	2	12	26	2
SUE 80S 11-15	170	1396	86	5	10	38	2
SUE 80S 15-20	129	1370	87	2	15	35	2
SUE 80S 20-25	249	1229	82	3	9	27	2
SUE 80S 25-30	209	1304	88	4	25	41	2
SUE 80S 30-35	219	1330	91	4	24	42	2
SUE 80S 35-40	259	1435	93	8	14	31	2
SUE 90S 10-15	235	1416	88	5	12	36	2
SUE 90S 15-20	233	1309	82	16	12	28	2
SUE 90S 20-25	182	1450	89	4	14	32	2
SUE 90S 25-30	228	1423	92	5	16	36	2
SUE 90S 30-35	283	1384	91	6	12	33	2
SUE 90S 35-40	265	1297	87	3	22	41	2
SUE 100S 12-15	160	1352	82	2	11	33	2
SUE 100S 15-20	190	1390	85	4	11	32	2
SUE 100S 20-25	193	1380	85	4	13	37	2
SUE 100S 25-30	212	1316	82	5	12	32	2
STD C/FA-5X	60	71	29	100	105	103	19

HALFERDABL & ASSOCIATES FILE # 87-4951 Page 4

SAMPLE#	CU PPM	NI PPM	CO PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 100S 30-35	206	1305	84	4	13	35	2
SUE 100S 35-40	208	1376	90	7	17	36	2
SUE 540SW 10-15	128	744	71	1	13	26	2
SUE 540SW 15-20	150	749	71	3	5	16	2
SUE 540SW 20-25	133	729	70	1	7	16	2
SUE 540SW 25-30	134	831	68	2	18	20	2
SUE 550S 10-15	124	691	66	1	8	18	2
SUE 550S 15-20	145	582	62	1	9	16	2
SUE 550S 20-25	188	770	73	5	8	14	2
SUE 550S 25-30	122	898	71	1	15	15	2
SUE 555S 11-15	175	669	68	3	4	12	2
SUE 555S 15-20	180	879	75	1	9	14	2
SUE 555S 20-25	112	984	76	1	18	15	2
SUE 555S 25-30	69	763	58	1	14	14	2
SUE 555S 30-35	120	728	59	1	17	18	2
SUE 555S 35-40	63	560	42	1	11	14	2
SUE 555S 40-45	107	855	74	2	19	18	2
SUE 555S 45-50	115	812	71	2	26	23	2
SUE 555S 50-55	136	793	71	3	27	22	2
SUE 555S 55-60	116	842	75	1	28	22	2
SUE 560S 10-15	142	632	53	2	14	16	2
SUE 560S 15-20	116	881	73	13	15	15	2
SUE 560S 20-25	117	697	60	1	17	21	2
SUE 560S 25-30	158	804	69	2	20	19	2
SUE 560S 30-35	94	992	74	2	17	18	2
SUE 560S 35-40	135	579	51	4	15	18	2
SUE 560S 40-45	139	626	63	3	46	25	2
SUE 560S 45-50	269	1014	84	4	69	20	2
SUE 560S 50-55	274	1007	84	6	66	22	2
SUE 560S 55-60	203	343	36	4	29	20	2
SUE 565S 10-15	247	952	86	10	53	25	2
SUE 565S 15-20	205	849	78	7	61	27	2
SUE 565S 20-25	233	961	87	5	55	22	2
SUE 565S 25-30	284	939	85	13	76	27	2
SUE 565S 30-35	284	880	84	13	58	17	2
STD C/FA-5X	62	71	29	100	97	98	23

HALFERDABL & ASSOCIATES FILE # 87-4951 Page 5

SAMPLE#	CU PPM	NI PPM	CO PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 565S 35-40	332	984	88	14	73	24	2
SUE 565S 40-45	242	975	87	11	66	29	2
SUE 565S 45-50	246	924	84	8	39	24	2
SUE 570S 10-15	202	932	89	7	98	31	2
SUE 570S 15-20	148	715	58	3	33	18	2
SUE 570S 20-25	139	688	52	5	19	18	2
SUE 570S 25-30	81	957	70	4	30	17	2
SUE 575S 12-18	76	1026	77	3	25	21	2
SUE 575S 18-24	67	1063	80	3	27	24	2
SUE 575S 24-29	87	912	72	3	25	22	2
SUE 575S 29-34	79	798	63	3	15	13	2
SUE 575S 34-39	113	877	75	3	19	19	2
SUE 575S 39-44	105	901	77	4	22	22	2
SUE 580S 10-15	123	914	80	4	26	25	2
SUE 580S 15-20	122	820	77	6	32	23	2
SUE 580S 20-25	197	907	85	9	72	30	2
SUE 580S 25-30	250	919	83	11	80	25	2
SUE 585S 12-18	242	937	84	14	62	25	2
SUE 585S 18-24	223	937	86	17	72	25	2
SUE 585S 24-29	239	966	88	15	55	23	2
SUE 585S 29-34	298	1001	90	17	72	27	2
SUE 585S 34-39	389	1041	89	14	81	19	2
SUE 585S 39-44	443	1053	90	21	104	17	2
SUE 590S 5-10	260	980	86	9	73	30	2
SUE 590S 10-15	233	964	87	8	59	26	2
SUE 590S 15-20	298	917	86	16	58	28	2
SUE 590S 20-25	338	927	88	14	66	20	2
SUE 595S 10-18	396	914	87	26	42	14	2
SUE 595S 18-28	444	952	91	21	32	9	2
SUE 595S 28-38	425	978	89	18	31	9	2
SUE 595S 38-44	445	983	87	164	28	8	2
SUE 610S 9-13	316	830	74	9	29	8	2
SUE 620S 10-15	440	995	87	23	28	8	2
SUE 620S 15-20	449	997	85	23	28	11	2
SUE 620S 20-35	446	972	84	25	19	11	2
SUE 880S 19-25	89	583	47	15	18	36	2
SUE 880S 25-35	64	200	23	8	5	7	2
STD C/FA-5X	60	70	29	103	105	104	18

HALFERDABL & ASSOCIATES FILE # 87-4951 Page 6

SAMPLE#	CU PPM	NI PPM	CO PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
SUE 880S 35-45	59	113	19	2	4	6	2
NAN 350N 9-24	77	1138	64	1	13	16	2
NAN 350N 24-34	66	1060	60	1	7	14	2
NAN 350N 34-44	98	894	52	2	8	17	2
NAN 170N 13-22	60	168	20	3	4	6	2
NAN 80N 11-24	144	1093	69	3	8	14	2
NAN 80N 24-34	132	1141	72	3	6	15	2
NAN 80N 34-44	111	984	67	3	4	12	2
NAN 0 8-12	60	971	58	3	10	18	2
NAN 0 12-24	73	1147	66	4	7	21	2
NAN 0 24-34	72	1186	70	2	7	19	2
NAN 0 34-44	113	1093	66	3	6	18	2
STD C/FA-5X	62	71	29	100	102	105	19

ACME ANALYTICAL LABORATORIES LTD.
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE(604)253-3158 FAX(604)253-1716

DATE RECEIVED: OCT 24 1987
DATE REPORT MAILED: Oct 28/87

GEOCHEMICAL ANALYSIS CERTIFICATE

TOTAL V AND CR - FUSED WITH NA2O2/ICP.
- SAMPLE TYPE: BEDROCK

ASSAYER: ..... DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDABL & ASSOCIATES File # 87-3468 R Page 1

SAMPLE#	V PPM	CR PPM
SUE 200N	354	155
SUE 187N	251	375
SUE 80N	70	2781
SUE 40N	67	2998
SUE 0	70	2778
SUE 40S	77	2856
SUE 80S	69	2775
SUE 120S	80	2449
SUE 160S	140	600
SUE 240S	165	208
SUE 360S	119	123
SUE 392S	152	645
SUE 425S	72	2674
SUE 461S	73	2730
SUE 480S	94	2510
SUE 496S	92	3221
SUE 540S	98	2286
SUE 560S	90	3079
SUE 630S	225	3266
SUE 200N 24-30'	294	294
SUE 187N 20-25'	243	487
SUE 80N 14-18'	81	3501
SUE 40N 14-20'	74	2718
SUE 0 12-19'	71	3113
SUE 540S 18-23'	111	1988
SUE 560S 12-19'	95	3214
SUE 630S 12-17'	96	3064

ACME ANALYTICAL LABORATORIES LTD. DATE RECEIVED: DEC 17 1987
852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6
PHONE(604)253-3158 FAX(604)253-1716 DATE REPORT MAILED: Dec 24/87.

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEC. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1-2 BEDROCK P3-BASAL TILL AU** PT** PD** RH** BY FA-MS.

ASSAYER: .. D. Toye DEAN TOYE, CERTIFIED B.C. ASSAYER

HALFERDAHI & ASSOCIATES File # 87-6233 Page 1

SAMPLE#	CU PPM	NI PPM	V PPM	CR PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
AND 70N 17-30	45	84	63	74	6	3	5	2
AND 230N 10-17	72	209	67	177	4	5	8	2
AND 270N 10-17	69	158	77	133	2	5	8	4
AND 350N 10-18	426	624	46	577	22	18	5	2
AND 350N 18-30	280	312	42	601	17	7	3	2
AND 350N 30-33	292	243	46	638	15	3	3	2
AND 350N 33-40	158	97	46	500	10	4	5	2
AND 350N 40-50	106	52	39	110	5	10	11	2
AND 390N 10-20	40	738	54	946	2	8	21	2
AND 390N 20-30	65	715	59	955	3	5	17	2
AND 390N 30-40	101	918	50	1108	3	6	18	2
AND 390N 40-50	83	959	50	1146	3	8	19	2
AND 430N 9-20	115	779	47	816	4	11	36	2
AND 430N 20-25	98	682	46	945	4	23	42	2
AND 430N 25-30	156	316	37	585	7	23	27	2
AND 430N 30-40	106	151	17	189	12	3	10	2
101 PUP-0 14-20	113	460	58	229	4	8	15	2
101 PUP-0 20-30	62	167	70	126	3	5	9	2
101 PUP-0 30-40	79	234	64	131	3	9	12	2
101 PUP-200S 16-20	63	441	57	303	2	8	18	2
101 PUP-200S 20-30	65	285	64	238	2	6	11	2
101 PUP-200S 30-40	65	251	69	206	2	7	7	2
101-195 14-20	72	612	52	315	2	10	19	2
101-195 20-30	68	361	63	286	2	6	11	2
101-195 30-36	66	211	67	178	2	5	8	2
S270E 210N 10-20	58	199	74	191	1	4	40	2
S270E 210N 20-30	48	166	69	159	1	2	4	2
S270E 210N 30-40	51	48	89	44	1	2	2	2
S270E 220N 13-17	39	72	92	55	3	2	6	2
S270E 220N 17-23	41	34	127	20	1	2	3	2
S270E 240N 10-14	65	93	61	81	1	2	3	2
S270E 240N 14-20	66	58	60	34	1	2	2	2
S270E 240N 20-25	49	45	69	27	1	2	2	2
S270E 240N 25-30	47	24	86	12	1	2	2	2
S270E 260N 10-20	66	122	60	116	1	2	3	2
S270E 280N 20-30	36	26	117	18	1	2	2	2
STD C/FA-5X	60	67	58	59	98	100	95	25

HALFERDAHI & ASSOCIATES FILE # 87-6233 Page 2

SAMPLE#	CU PPM	NI PPM	V PPM	CR PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
S270E 300N 20-23	73	147	93	147	3	2	5	2
S270E 360N 22-30	55	51	115	41	2	2	3	2
S270E 380N 26-40	55	31	103	24	3	2	2	2
S270E 380N 40-46	37	19	104	7	2	2	2	2
S270E 380N 46-50	40	21	143	4	1	2	2	2
S270E 400N 26-40	48	28	83	20	1	2	2	2
S270E 400N 40-50	75	138	47	379	2	8	11	2
S320E 400N 22-30	81	39	84	29	4	2	2	2
S320E 400N 30-40	55	71	50	176	1	2	2	2
S320E 400N 40-50	81	110	52	216	1	2	2	2
S320E 440N 30-40	75	47	57	34	1	2	2	2
S320E 440N 40-50	61	50	70	99	1	2	2	2
SUE 720SR 20-30	52	88	70	82	3	3	6	3
SUE 720SR 30-40	70	114	78	108	2	3	4	2
SUE 720SR 40-50	50	66	75	70	1	2	3	2
SUE 720SR 50-60	60	244	78	207	2	5	11	2
SUE 720SR 60-70	49	103	75	98	1	3	6	2
STD C/FA-5X	60	71	60	60	99	101	103	24

HALFERDAHI & ASSOCIATES FILE # 87-6233

SAMPLE#	MO PPM	CU PPM	PB PPM	ZN PPM	AU** PPB	PT** PPB	PD** PPB	RH** PPB
S270E 220N 10-13 BT	1	71	9	63	1	2	3	2
S270E 240N 5-10 BT	1	70	8	71	3	4	11	2
S270E 260N 5-10 BT	1	91	6	70	3	5	9	2
S270E 280N 10-20 BT	2	91	21	71	3	2	5	2
S270E 300N 10-20 BT	1	66	10	59	2	3	7	2
S270E 360N 10-22 BT	5	123	6	72	17	3	4	3
S270E 380N 10-26 BT	2	80	5	72	1	3	4	2
S270E 400N 10-26 BT	3	73	8	86	1	4	4	2
S320E 400N 10-22 BT	1	70	6	77	1	2	3	2
S320E 440N 10-30 BT	2	61	6	62	1	2	5	2
AND 70N 5-17 BT	1	84	5	60	4	4	6	2
AND 230N 7-10 BT	1	73	2	75	8	4	5	2
AND 350N 5-10 BT	2	315	4	62	29	12	6	2
AND 390N 5-10 BT	1	78	9	91	4	4	4	2
AND 430N 5-9 BT	1	87	7	72	2	5	7	2
SUE 270N 11-18 BT	2	68	6	58	1	3	5	2
101-195 5-14 BT	1	76	8	62	1	6	8	2
101 PUP-200S 5-16 BT	2	87	3	65	2	5	9	2
STD C/FA-5X	19	57	40	132	100	98	102	18

Chemex Labs Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 BROOKSBANK AVE., NORTH VANCOUVER,
BRITISH COLUMBIA, CANADA V7J-2C1
PHONE (604) 984-0221

To: HALFERDAHL & ASSOC. LTD.,
DEPT. 18,
10509 - 81ST AVE.,
EDMONTON, ALTA.
T6E 1X7

A8728616

Comments:

CERTIFICATE A8728616

HALFERDAHL & ASSOC. LTD.,
PROJECT :
P.O.# :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 19-JAN-88.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	66	Rock & core: Ring

* NOTE 2:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2	66	Cu ppm: HNO3-aqua regia digest	AAS	1	10000
3	66	Mo ppm: HNO3-aqua regia digest	AAS	1	10000
4	66	Pb ppm: HNO3-aqua regia digest	AAS-BKGD CORR	1	10000
5	66	Zn ppm: HNO3-aqua regia digest	AAS	1	10000
101	66	Au ppb: Fuse 10 g sample	FA-NAA	1	10000

A72

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Project :
Comments:

Page No. :1
Tot. Pages: 2
Date :19-JAN-88
Invoice # :I-8728616
P.O. # :

CERTIFICATE OF ANALYSIS A8728616

SAMPLE DESCRIPTION	PREP CODE		Cu ppm	Mo ppm	Pb ppm	Zn ppm	Au NAA ppb
FP-10E 7-20	205	--	56	1	1	79	< 1
FP-10E 20-30	205	--	42	1	1	68	3
FP-20E 0-10	205	--	53	1	2	90	< 1
FP-20E 10-20	205	--	55	1	1	73	< 1
FP-20E 20-27	205	--	42	1	1	69	< 1
FP-20E 27-37	205	--	36	1	1	65	< 1
FP-40E 10-20	205	--	52	1	1	80	< 1
FP-40E 20-25	205	--	36	1	1	64	< 1
FP-40E 25-40	205	--	35	1	1	60	< 1
FP-40E 40-45	205	--	40	1	1	67	< 1
GGS-0 0-10	205	--	83	1	3	75	4
GGS-0 10-20	205	--	68	1	2	90	7
GGS-10E 0-10	205	--	88	1	2	79	6
GGS-10E 10-16	205	--	68	1	2	104	12
GGS-10E 16-22	205	--	63	1	2	83	8
GGS-10E 22-28	205	--	51	1	2	91	5
GGS-20E 0-10	205	--	61	1	1	100	5
GGS-20E 10-16	205	--	56	1	1	98	5
GGS-20E 16-19	205	--	53	1	1	107	4
GGS-20E 19-22	205	--	61	1	1	125	4
GGS-20E 22-28	205	--	56	1	2	93	5
GGS-30E 0-10	205	--	57	1	2	89	8
GGS-30E 10-16	205	--	65	1	3	96	5
GGS-30E 16-22	205	--	66	1	2	89	22
GGS-30E 22-28	205	--	60	1	1	90	5
GGS-40E 0-10	205	--	38	1	2	86	7
GGS-40E 10-16	205	--	53	1	2	89	9
GGS-40E 16-22	205	--	53	1	6	98	6
GGS-40E 22-28	205	--	54	1	4	102	5
GGS-50E 0-10	205	--	38	1	2	93	3
GGS-50E 10-11	205	--	53	1	12	122	15
GGS-50E 11-16	205	--	50	1	3	91	6
GGS-50E 16-22	205	--	67	1	2	105	5
GGS-50E 22-28	205	--	51	1	1	93	6
GGS-60E 0-10	205	--	71	1	2	90	8
GGS-60E 10-16	205	--	48	1	2	82	5
GGS-60E 16-22	205	--	52	1	2	81	6
GGS-60E 22-28	205	--	45	1	1	88	11
GGS-70E 0-10	205	--	33	1	1	57	2
GGS-80E 0-10	205	--	93	1	1	49	3

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CERTIFICATION : Hart Bichler

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EDMONTON, ALTA.
T6E 1X7

Project :
Comments:

Date :19-JAN-88
Invoice # :I-8728616
P.O. # :

CERTIFICATE OF ANALYSIS A8728616

SAMPLE DESCRIPTION	PREP CODE		Cu ppm	Mo ppm	Pb ppm	Zn ppm	Au NAA ppb
GGS-90E 0-10	205	--	88	1	1	61	5
GGS-90E 10-20	205	--	140	1	1	45	2
GGS-90E 20-30	205	--	127	1	1	42	3
GGS-90E 30-40	205	--	113	1	1	37	< 1
GGS-98E ROCK	205	--	30	1	1	94	1
GGS-100E 0-5	205	--	22	1	1	83	1
GGS-110E 0-5	205	--	17	1	1	84	< 1
GGS-120E 0-6	205	--	47	1	1	51	< 1
GGS-120E 6-8	205	--	53	1	1	69	1
GGS-138E 0-10	205	--	67	1	8	235	< 1
GGS-150E 0-10	205	--	43	1	18	72	< 1
GGS-150E 10-13	205	--	19	1	9	48	< 1
PHIL-0 13-22	205	--	58	1	1	66	< 1
PHIL-0 22-28	205	--	51	1	1	66	< 1
PHIL-0 28-32	205	--	49	1	1	75	1
PHIL-0 32-34	205	--	47	1	1	65	< 1
PHIL-0 34-36	205	--	70	1	1	66	< 1
PHIL-0 36-40	205	--	79	1	1	50	< 1
PHIL-60 8-10	205	--	59	1	1	66	< 1
PHIL-60 10-20	205	--	69	1	1	76	< 1
PHIL-60 20-30	205	--	51	1	1	71	8
PHIL-60 30-40	205	--	49	1	1	67	< 1
PHIL-80 0-10	205	--	60	1	1	87	2
PHIL-80 10-20	205	--	41	1	1	67	< 1
PHIL-80 20-30	205	--	38	1	1	59	< 1
PHIL-80 30-33	205	--	50	1	1	67	< 1

A74

CERTIFICATION : Hart Bichler

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To: HALFERDAHL & ASSOC. LTD.,
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EDMONTON, ALTA.
T6E 1X7

A8728615

Comments:

CERTIFICATE A8728615

HALFERDAHL & ASSOC. LTD.,
PROJECT :
P.O.# :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 19-JAN-88.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
202	5	Dry, sieve -80 mesh, save reject

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
2	5	Cu ppm: HNO3-aqua regia digest	AAS	1	10000
3	5	Mo ppm: HNO3-aqua regia digest	AAS	1	10000
4	5	Pb ppm: HNO3-aqua regia digest	AAS-BKGD CORR	1	10000
5	5	Zn ppm: HNO3-aqua regia digest	AAS	1	10000
101	5	Au ppb: Fuse 10 g sample	FA-NAA	1	10000

A75

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CERTIFICATE OF ANALYSIS A8728615

SAMPLE DESCRIPTION	PREP CODE		Cu ppm	Mo ppm	Pb ppm	Zn ppm	Au NAA ppb
FP 10E 0-7 BT	202	---	70	1	4	103	3
FP 40E 0-10 BT	202	---	60	1	2	121	< 1
FP 65E 10-20 BT	202	---	65	1	1	106	< 1
PHIL 0 10-13 BT	202	---	67	1	2	100	< 1
PHIL 60 0-8 BT	202	---	72	1	2	108	2

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CERTIFICATION : Hart Bichler