NORTHERN PLATINUM LTD.

KANICHEE PROPERTY

TECHNICAL REPORT ON WORK CONDUCTED FOR THE ONTARIO MINERAL EXPLORATION PROGRAM

AUGUST 26, 1988 to DECEMBER 31, 1988

OMEP grant OM88-8-C-213

DATED JUNE 1, 1989

JOHN McGORAN, BSc.

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SUMMARY

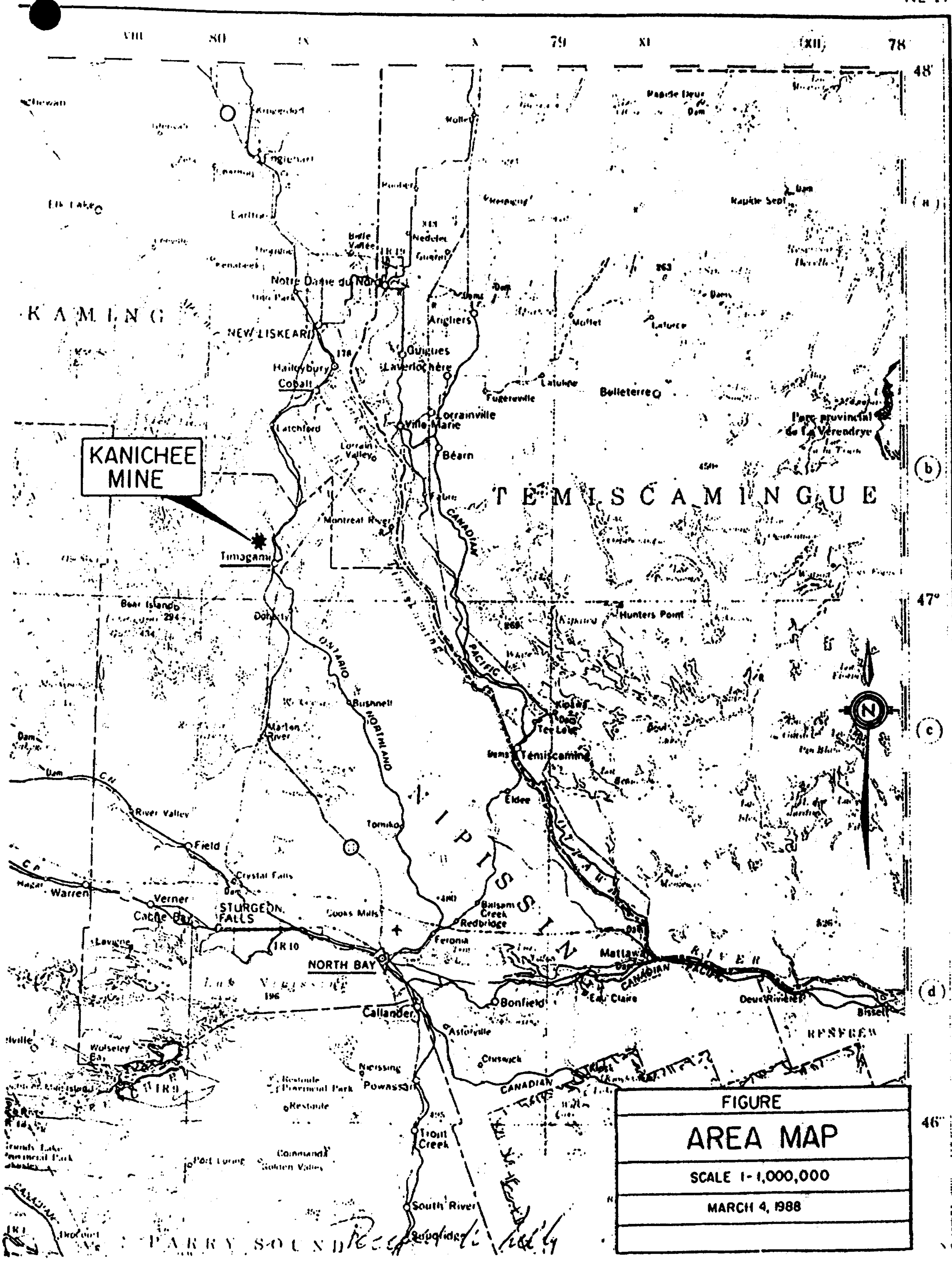
The following is a technical report written for the Ontario Mineral Exploration Program (OMEP) on work done on the Kanichee Property of Northern Platinum Ltd., between August 26, 1988 and Dec 31, 1988. This report is submitted to OMEP to fufill the requirements for OMEP grant OM88-8-C-213.

Location and Access

The Kanichee Property is located in the west central sector of Strathy Township, some five kilmeters northwest of the Town of Temagami, Northeastern Ontario. The City of North Bay is located about 110 road miles to the southeast of the property at the junction of Hwy 11 and Hwy 17. Access to the ground is by logging road 4.5 km west of Hwy 11 at Net Lake. Location of the Kanichee Property is shown on Figure 1.

Property Status

The Kanichee Property consists of fifteen surveyed and contiguous mining claims in twelve leases totalling 582.73 acres.



FIGURE

AREA MAP

SCALE 1-1,000,000

MARCH 4, 1988

CLAIM	LEASE	AREA
EB 26	102609	40.45
TR 3187	18039	31.42
TRT 3448	102795	41.00
TRT 4310	18242	38.45
TRT 4311	18241	55.80
TRT 4369	18040	42.50
TRT 4370	18041	43.23
TRT 4371	18042	41.80
TRT 4381	18043	27.85
TRT 5953, 5954,5955 & 5956	102536	150.88
TRT 6763	18239	21.43
TRT 6773	18240	42.43

In September, 1987 Northern Platinum Ltd. purchased a 10% Net Profits Interest in the property from J.P. Sheridan. Northern Platinum also signed an option agreement with J.P. Sheridan in which Northern Platinum Ltd. can earn a 55% interest in the property by spending $1,000,000 on development of the property by September 30, 1991.

History

The area of Strathy Township was first mapped during the 1887-95 period by A.E. Barlow for the Geological Survey of Canada. The claims in the present property area were surveyed and leased between the years 1911 and 1934. Platinum was first reported in 1929. In 1932 the property was aquired by Cuniptau Mines Limited. In 1933 Cuniptau Mines did a ground magnetometer survey and diamond drilled six holes totalling 1,492 feet. In 1934 a vertical shaft was sunk to 245 feet on claim TR 3187, with levels at the 100 foot and 225 foot elevations. Lateral underground development totaling 2200 feet outlined a body of disseminated chalcopyrite, pyrrhotite and pyrite containing pockets and veins of massive sulphide mineralization associated with quartz-carbonate veining. The body was calculated to have an average north-south dimension of 300 feet and an average width of 60 feet, grading 1.49% combined copper-nickel. In 1936 a 50 ton per day pilot plant operated at the minesite and milled 212,000 pounds of matte containing 98,924 lbs copper, 65,434 lbs nickel, 37.02 oz of gold, 82.7 oz of platinum, 196.28 oz of palladium and 909.90 oz of silver. Two bulk samples were shipped from the property, 1 ton to International Nickel Co. and 18 tons to American Nickel Co. Results were 7.48% copper, 3.75% nickel, 0.075 oz/t gold, 0.22 oz/t platinum, 0.56 oz/t palladium for one sample, and 9.45% copper, 2.64% nickel, 0.26 oz/t gold and 0.41 oz/t platinum for the other. Operations ceased in 1937 and the claims were aquired by the Ontario Nickel Corporation.

In 1947 the claims were acquired by Trebor Mines Limited. Geophysical and geological surveys took place in 1947 and 1948. In 1949 Trebor mines drilled 128 diamond drill holes and blocked out 3 zones totalling 5,425,700 tons averaging 0.62% combined copper-nickel. In 1952 a study by the General Engineering Co. reported that 800,000 to 850,000 tons of ore grading 0.38% nickel and 0.65% copper could be profitably concentrated. Recoveries were estimated to range between 83.5% of the copper to 59% of the palladium.

In 1961 Ajax Minerals Limited acquired control of Trebor Mines Limited. Between 1961 and 1970 Ajax conducted geological and geophysical surveys and did minor diamond drilling and metallurgical testing. In 1971 Falconbridge optioned the property, did 1754 feet of diamond drilling, and bulk sample tested the core. In 1972 Lakefield Research did metallurgical tests on samples from the Kanichee property. In 1973 more geophysical surveys were done.

In 1973 Kanichee Mining Incorporated acquired a 30% interest in the Kanichee property and and built a 500 ton per day mill on the property. Production commenced from an open pit in the shaft area in 1974. At that time, reserves were estimated to be 429,376 tons grading 0.75% copper and 0.42% nickel. Production ceased in 1976 and Ajax Minerals was dissolved in 1978.

In 1987 Northern Platinum Ltd. drilled 2231 feet on the property.

WORK CONDUCTED

August 26, 1988 to December 31, 1988

Linecutting

Linecutting was done in September, 1988 by Mike Curran and Philip Perkins. Five kilometers of line was cut. The area covered by linecutting is found in Appendix 1.

Geophysical Survey

A surface DEEPEM Survey was carried out on the Kanichee Property Between September 10 and 17, 1988. The survey was carried out by Eric Vierira and Peter Reid of Crone Geophysics. The report on the geophysical survey is found in Appendix 2.

Trenching

Twenty-four hundred cubic metres of trenching was done in late September and October of 1988. The excavators were supplied by Helmer Pedersen Construction and were a L932 Crawler Excavator and a JD690B Crawler Excavator. The trenching was done by Rodger and Daniel Brassard under the supervision of Henry

Dillion-Leitch. A map showing the trench locations is found in Appendix 3. Seventeen samples were sent to Acme Analytical Laboratories Ltd. and were analyzed for copper, nickel, cobalt, chromium, silver, gold, platinum, palladium and rhodium. Assay Certificates are found in Appendix 5.

Geology

Geological mapping was undertaken by Henry Dillion-Leitch in October, November and December of 1988. Dave Kuran and Sheila Churchill also did geolgical interpretation of the property in November 1988. A geological map of a portion of the Kanichee Property was produced and is found in Appendix 4.

Diamond Drilling

From October 1, 1988 to December 15,1988 eleven diamond drill holes were drilled on the Kanichee Property by Noble Drilling for Northern Platinum Ltd. Drill hole locations are shown on the Diamond Drill Hole Location Plan in Appendix 6. Core size was BW, total footage drilled was 3288 feet. Core was split and sent to Acme Analytical for analysis by the end of December 1988. Two hundred and ninety samples were analyzed for copper, nickel, cobalt, chromium, silver, gold, platinum, palladium and rhodium. Assay Certificates are found in Appendix 5.

Section maps showing drill hole geology are found in Appendix 6.

All drill holes were logged by Henry Dillion-Leitch. Drill hole logs are found in Appendix 7.

Bulk Sample

Northern Management and Consultants Limited was hired by Northern Platinum Ltd. to undertake a 10,000 ton bulk sample and pilot plant test of the deposit. To facilitate this test, Lakefield Research conducted metallurgical tests on two fifty pound samples sent to them. The samples were taken by Henry Dillion- Leitch and consisted of composite chip samples of coarse and fine material taken from the open pit. These samples were selected to be representitive of mineralization on the property. Also, an eighteen ton sample of mineralized rock from the pit was crushed on site and trucked to Lakefield Research for metallurgical testing.

Preparations for dewatering of the original open pit commenced in December, 1988. The bulk sample will be taken at the bottom of the original open pit when dewatering is complete.

APPENDIX 1

LINECUTTING

See map titled "1988 linecutting" in back pocket.

APPENDIX 2

GEOPHYSICAL SURVEY

REPORT FOR	: NORTHERN PLATINUM LTD.
SURVEY	: SURFACE DEEPEM SURVEY LINES: L0N, 3+25E to 6+00E L100N TO L500N, 0+00E to 8+00E L250E, 0+50S to 0+50N L350E to L450E, 1+00s to 1+50N
AREA	: KANICHEE MINE PROPERTY
SURVEYED BY	: CRONE GEOPHYSICS LTD. MISSISSAUGA, ONTARIO
SURVEY PERIOD	: SEPTEMBER 1988
SURVEY OPERATOR	: ERIC VIEIRA
REPORT BY	: J. DUNCAN CRONE, B.A., P. ENG., GEOPHYSICIST
DATE	: OCTOBER 31, 1988

Report For	: Northern Platinum Ltd.
Survey	: Surface Deepem Survey Lines LON, 3+25E to 6+00E L100N to L500N, 0+00E to 8+00E L250E, 0+50S to 0+50N L350E tO L450E, 1+00S tO 1+50N
Area	: Kanichee Mine Property
Surveyed By	: Crone Geophysics Ltd. Mississauga, Ontario
Report By	: J. Duncan Crone
Date	: October 31, 1988

Introduction:

A surface "DEEPEM" survey was carried out on the Kanichee Mine grid northwest of Temagami between September 10 to 17, 1988 under operator Eric Vieira with his helper Peter Reid (both of Crone Geophysics Ltd.).

Survey Particulars:

The survey utilized two loop positions as described below;
Loop #1:-300m by 500m using 12 gauge wire
-0+00N to 5+00N with eastern edge 50 meters to west of the Baseline
Lines surveyed: LON, 3+25E to 6+00E
L100N to L500N, BL to 8+00E

Loop #2:-300m by 450m using 12 gauge wire
-1+00N/4+00N, 2+00E/6+50E
Lines surveyed: L250E, 0+50S to 0+50N

INTERPRETATION:

The line survey profiles are contained in this report, along with a summary chart of the anomalies. Anomalies due to surface man made structures, etc. are indicated in the summary. The remaining anomalies are weak, low conductivity and shallow.

Line 4+00N:

A weak anomaly at 225E to 250E (Anomaly A) appears in both the horizontal in-line and vertical plot. The expression of this anomaly is being masked by the intense response due to the power line at 75E, therfore depth and conductivity calculations are not possible. From the anomaly shape the conductor can be inferred to be shallow and weak. The corresponding geology map indicates a fault at 225E which could be the cause.

Line 5+00N:

A one station, questionable, weak anomaly occurs at 300E.

Summary:

The Deepem survey over the Kanichee Mine Grid produces one small, weak conductor at L400N 225E to 250E and a questionable, one station anomaly at L500N 300E. The remainder of the anomalies are cultural.

Respectfully submitted

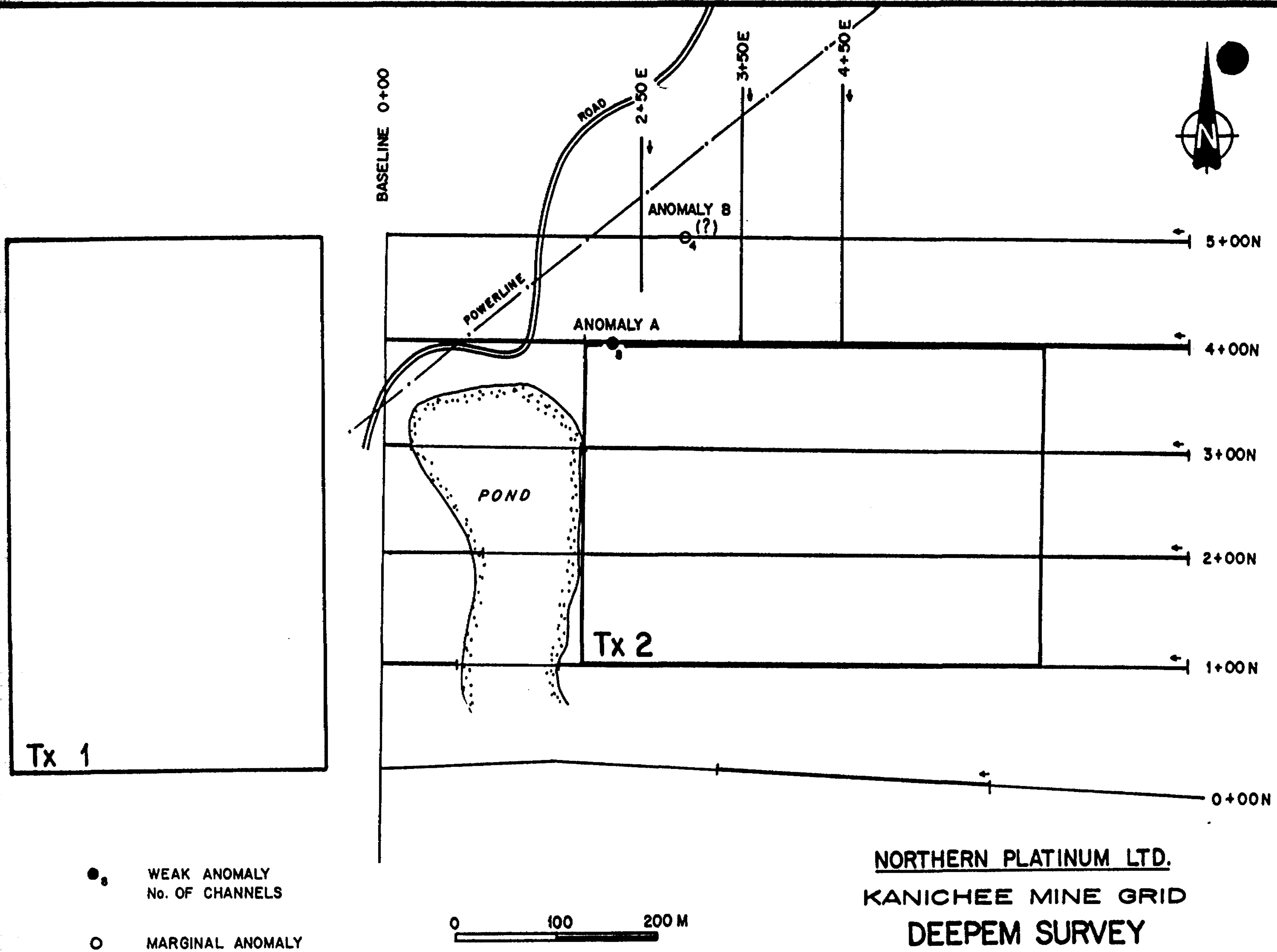
J. Duncan Crone

J. Duncan Crone

NORTHERN PLATINUM KANICHEE MINE GRID

Line No.	Tx Loop	Anomalies	Comments
0+00N	1		-No anomalies
1+00N	1	50E	-Water pipe on Surface
2+00N	1		-No anomalies
3+00N	1	0E	-Water pipe on surface
4+00N	1	75E 225E to 250E - 8	-Power line -Anomaly A:
5+00N	1	200E 300E - 4	-Power line - Anomaly B: (questionable)
2+50E	2		-No anomaly
3+50E	2		-No anomaly
4+50E	2		-No anomaly

Legend: Under the anomaly heading, the position of an anomaly is followed by the number of channels in which it appears.



8 WEAK ANOMALY
No. OF CHANNELS

O MARGINAL ANOMALY

NORTHERN PLATINUM LTD.

KANICHEE MINE GRID

DEEPEM SURVEY

CRONE GEOPHYSICS LTD.

OCT. 1988

CRONE GEOPHYSICS LIMITED

DIGITAL PEM

User : Crone Geophysics Ltd.

File : LON1.RX

Client :
NORTHERN_PLATINUM

Grid :
KANICHEE_MINE

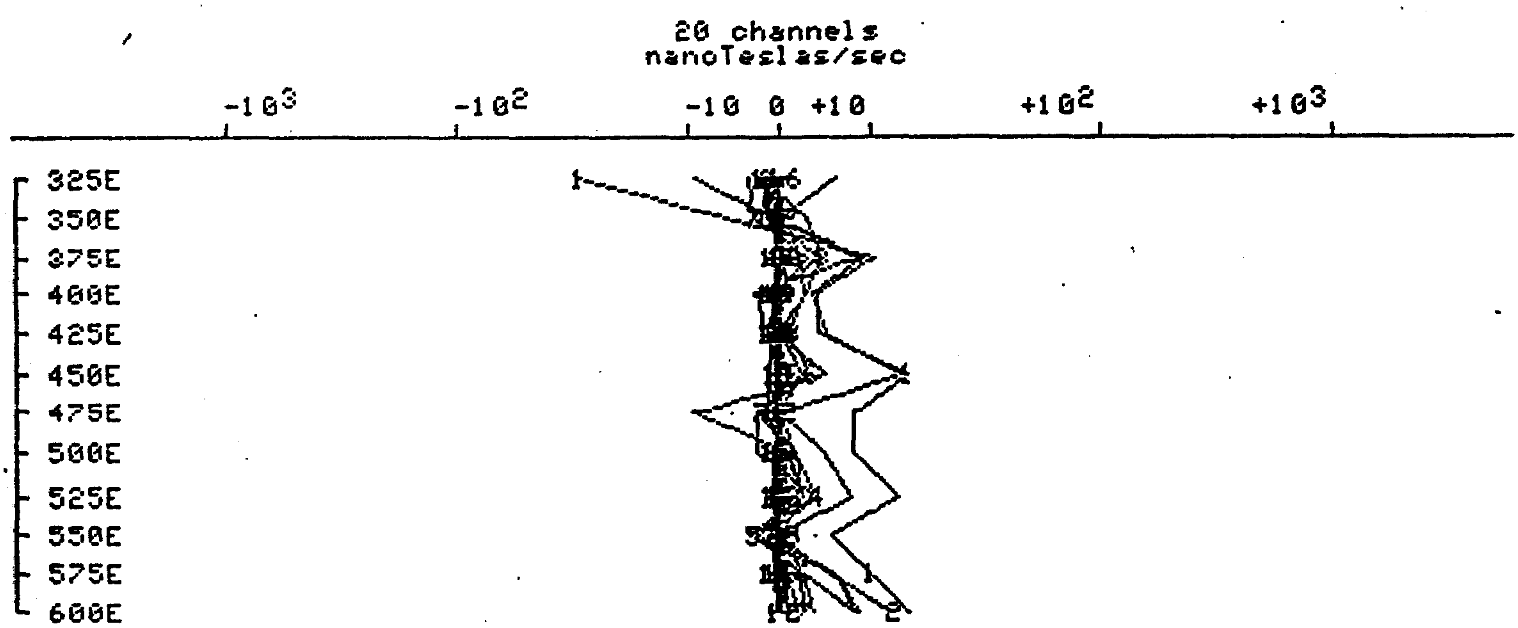
Tx Loop:
1

Line :
ON

Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

ZTS : 268
Date : Sep 14, 1988
Unit Scale: Compressed Lin-Log (nT/s)

IN-LINE HORIZONTAL Component dBx/dt



CRONE GEOPHYSICS LIMITED

DIGITAL PEM

User : Crone Geophysics Ltd.

File : LON1.RX

Client :
NORTHERN_PLATINUM

Grid :
KANICHEE_MINE

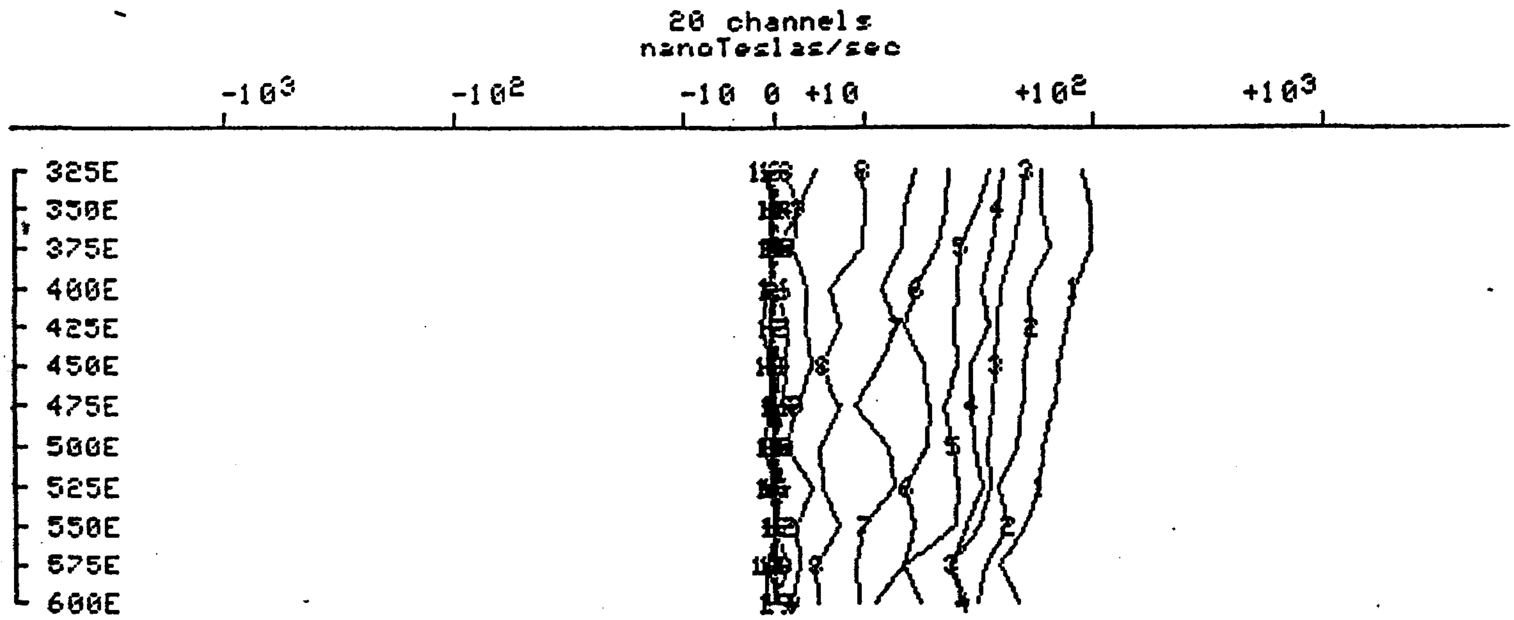
Tx Loop:
1

Line :
ON

Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

ZTS : 268
Date : Sep 14, 1988
Unit Scale: Compressed Lin-Log (nT/s)

VERTICAL Component dBz/dt

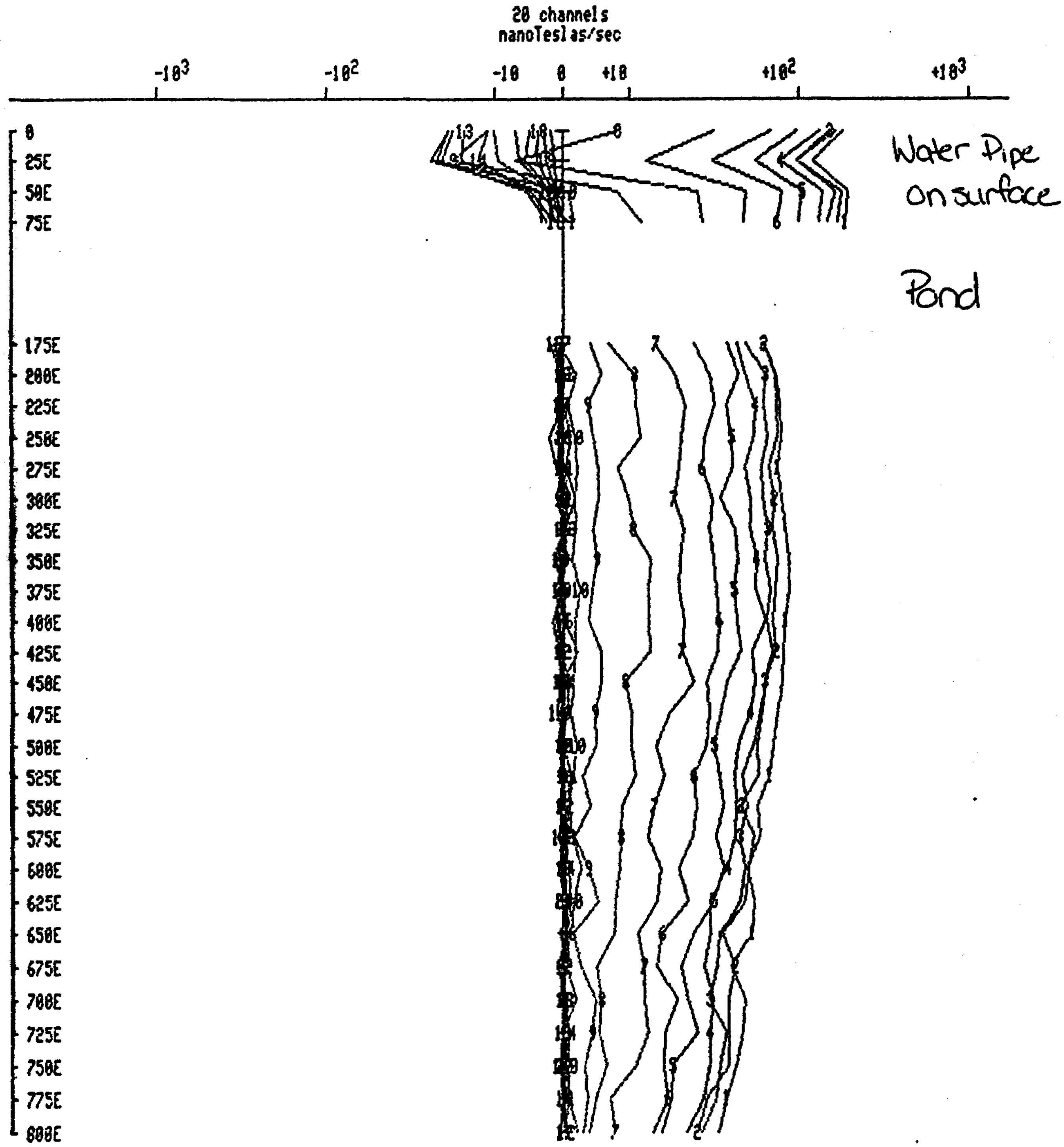


CRONE GEOPHYSICS LTD — DIGITAL PEM

Client : NOTHERN_PLATINUM
Tx Loop: 1
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid : KANICHEE_MINE
Line : 100N
File : L100N1.RX
Date : Sep 14, 1988
Unit Scale: Compressed Lin-Log

VERTICAL Component dBz/dt

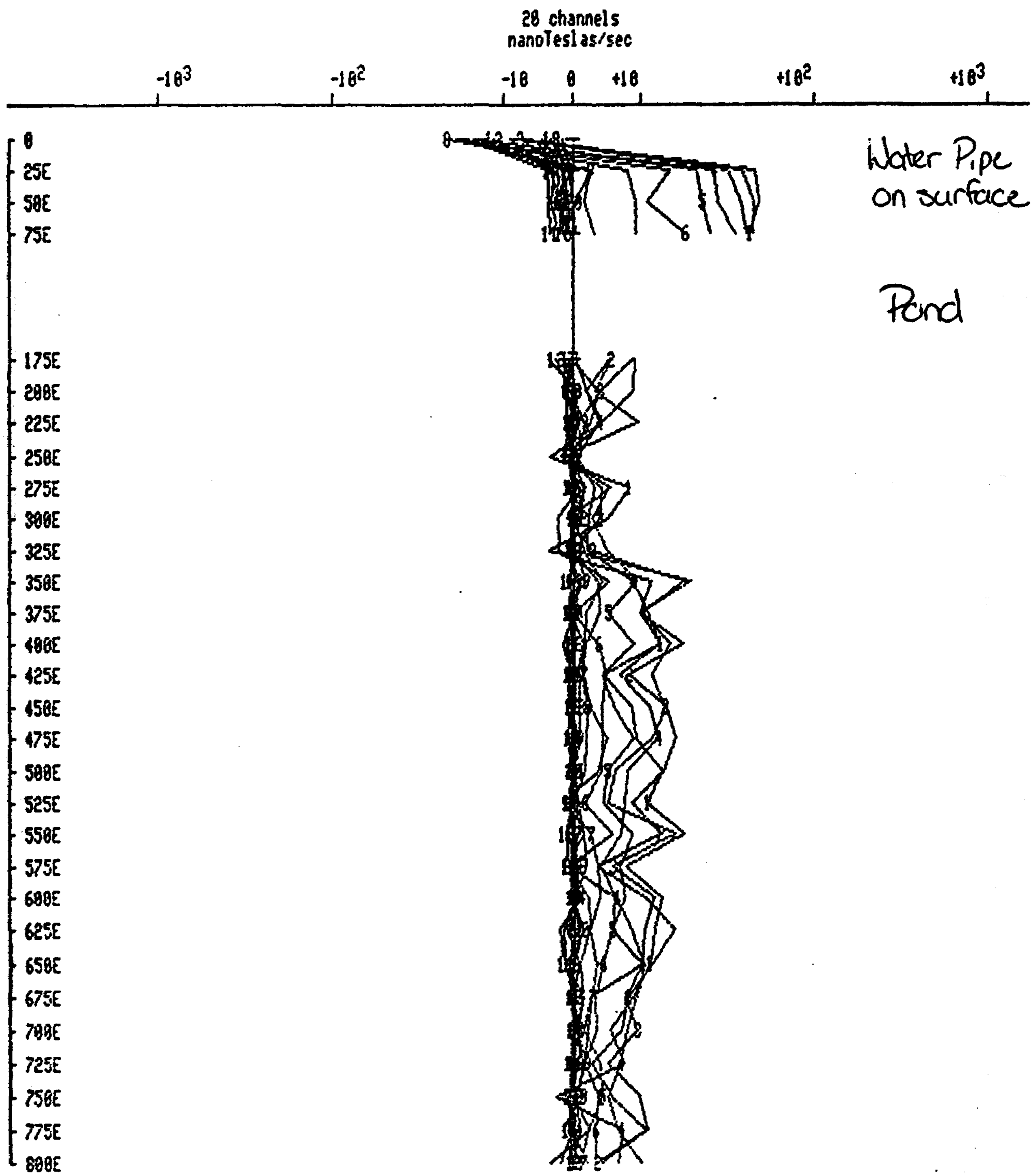


CRONE GEOPHYSICS LTD — DIGITAL PEM

Client :
NOTHERN_PLATINUM
Tx Loop:
1
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid :
KANICHEE_MINE
Line :
100N
File : L100N1.RX
Date : Sep 14, 1988
Unit Scale: Compressed Lin-Log

IN-LINE HORIZONTAL Component dBx/dt

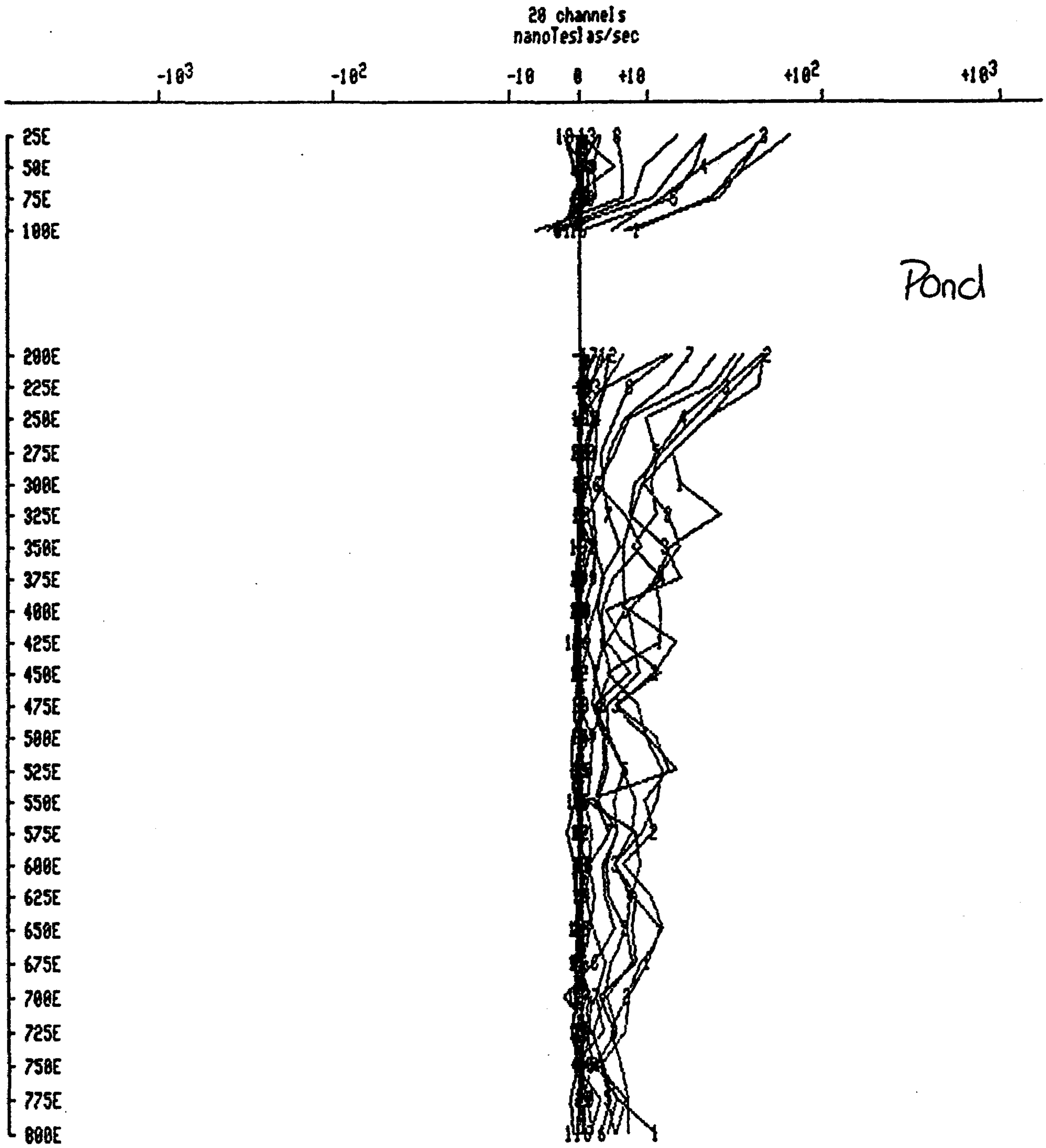


CRONE GEOPHYSICS LTD – DIGITAL PEM

Client :
NORTHERN_PLATINUM
Tx Loop:
1
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid :
KANICHEE_MINE
Line :
200N
File : L200N1.RX
Date : Sep 13, 1988
Unit Scale: Compressed Lin-Log

IN-LINE HORIZONTAL Component dBx/dt

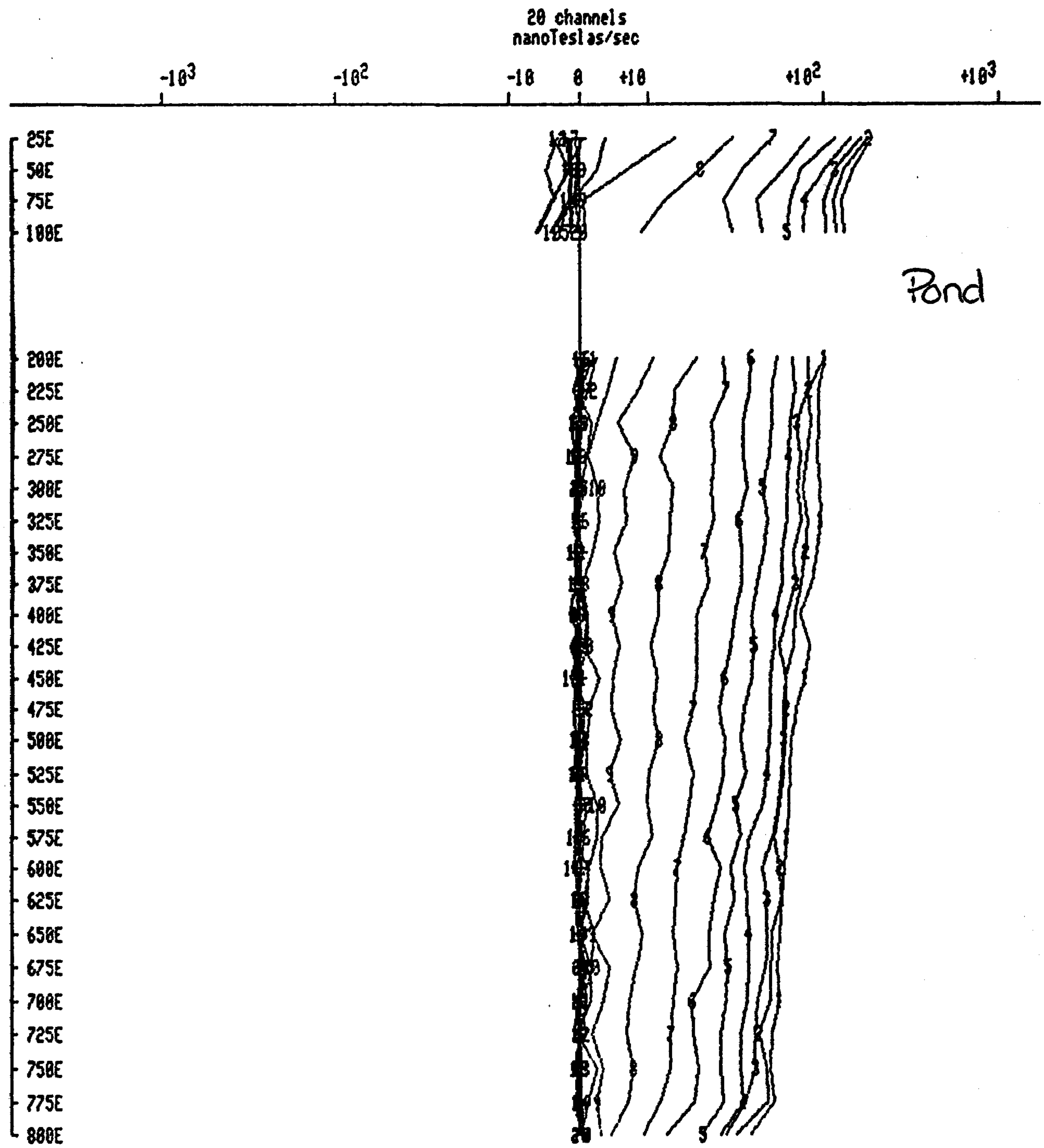


CRONE GEOPHYSICS LTD — DIGITAL PEM

Client : NORTHERN_PLATINUM
Tx Loop: 1
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid : KANICHEE_MINE
Line : 200N
File : L200N1.RX
Date : Sep 13, 1988
Unit Scale: Compressed Lin-Log

VERTICAL Component dBz/dt



CRONE GEOPHYSICS LTD — DIGITAL PEM

Client :
NORTHERN_PLATINUM

Tx Loop:
1

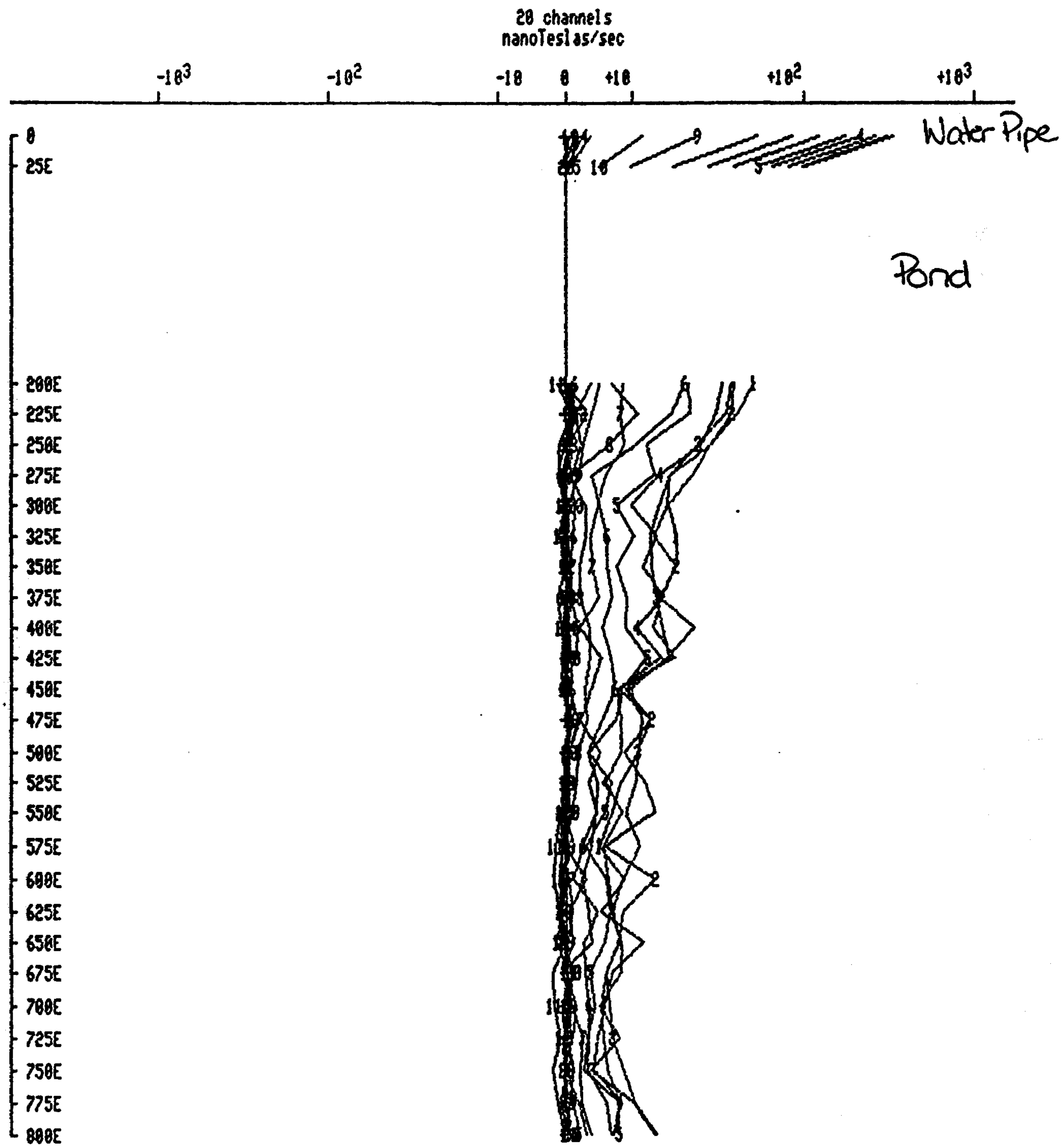
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid :
KANICHEE_MINE

Line :
300N

File : L300N1.RX
Date : Sep 13, 1988
Unit Scale: Compressed Lin-Log

IN-LINE HORIZONTAL Component dBx/dt

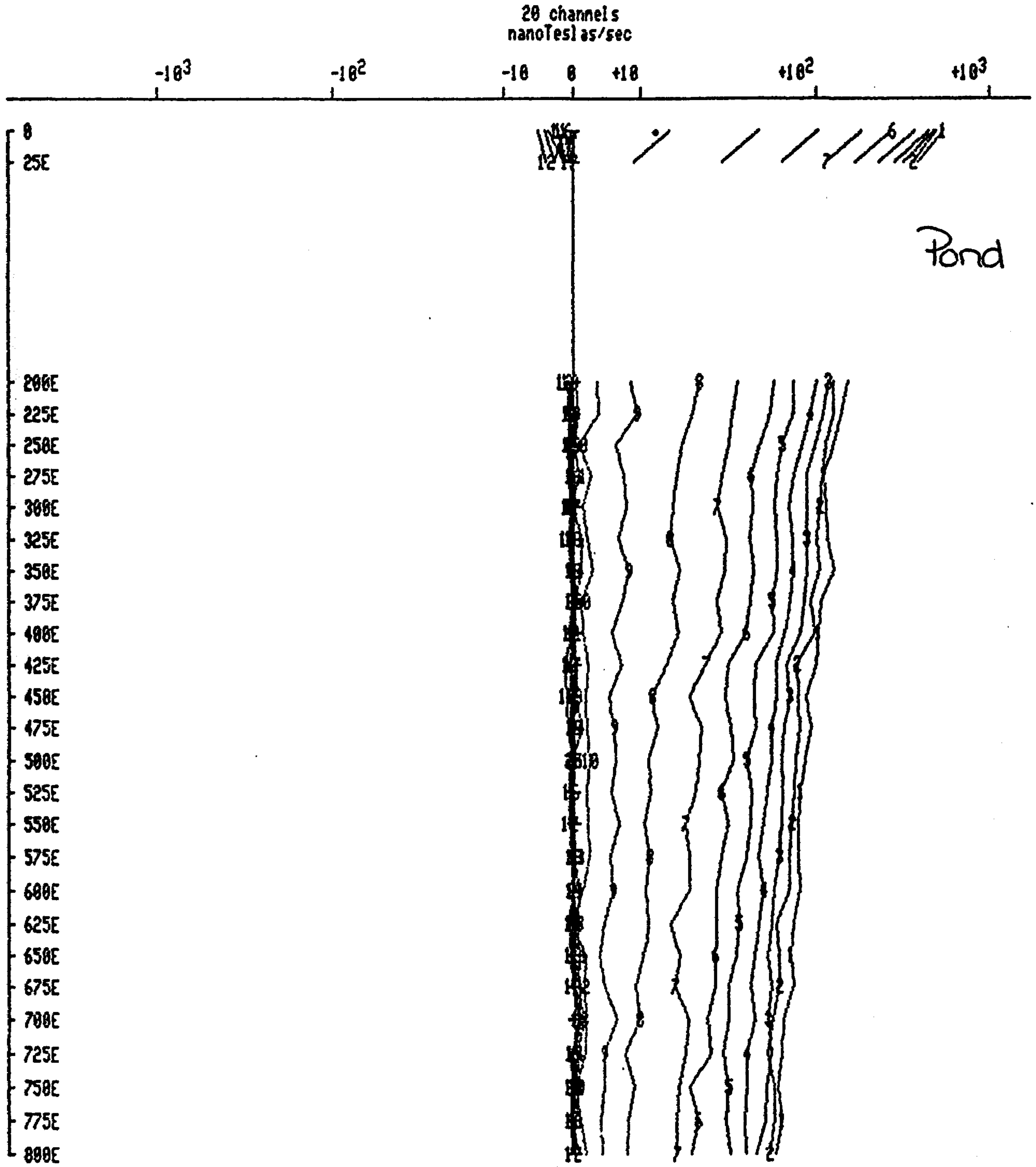


CRONE GEOPHYSICS LTD — DIGITAL PEM

Client : NORTHERN_PLATINUM
Tx Loop: 1
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid : KANICHEE_MINE
Line : 300N
File : L300N1.RX
Date : Sep 13, 1988
Unit Scale: Compressed Lin-Log

VERTICAL Component dBz/dt



CRONE GEOPHYSICS LIMITED

DIGITAL PEM

User : Crone Geophysics Ltd. File : L400N1.RX

Client : NORTHERN_PLATINUM

Grid : KANICHEE_MINE

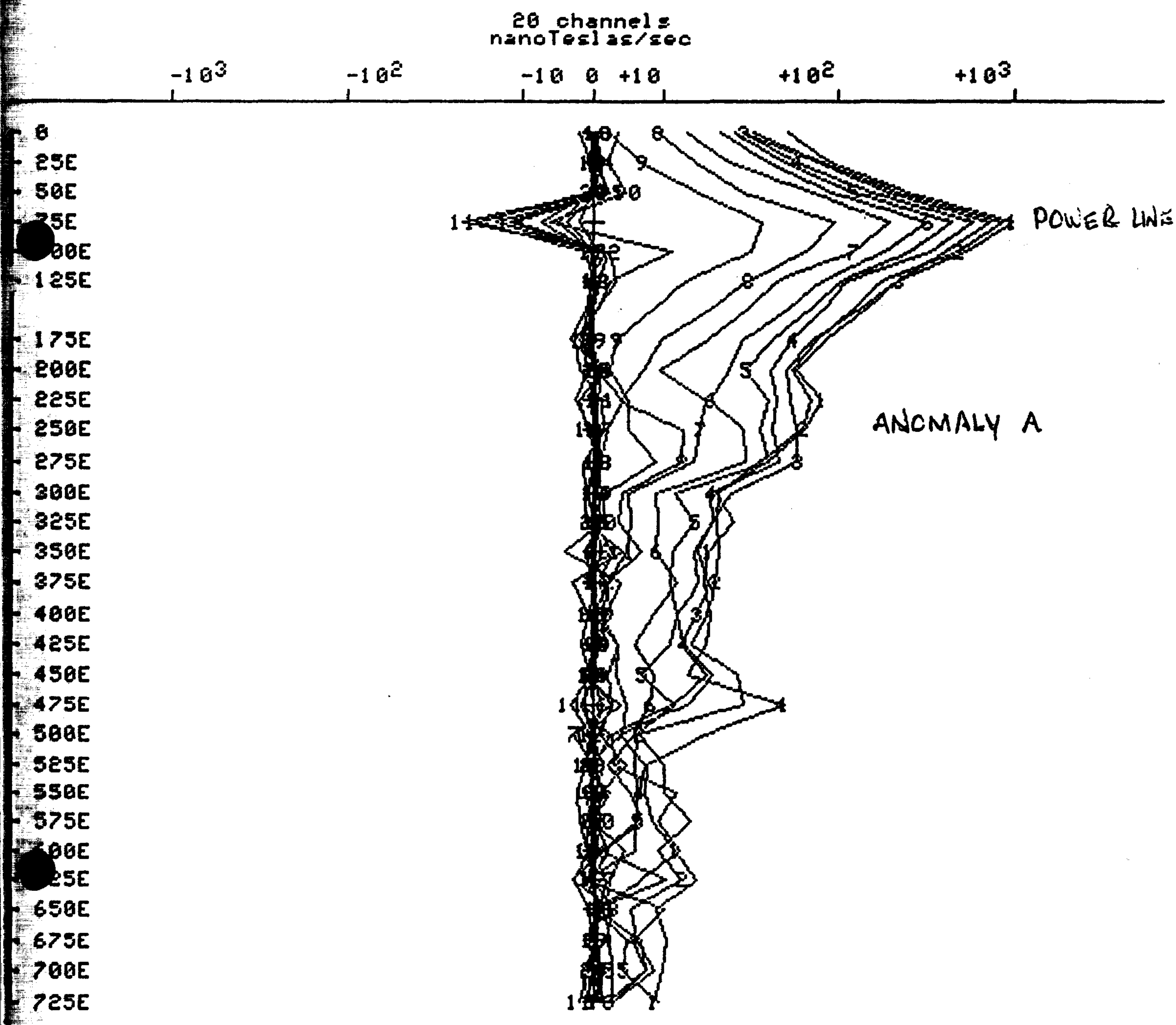
Tx Loop: 1

Line : 400N

Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

ZTS : 268
Date : Sep 12, 1988
Unit Scale: Compressed Lin-Log (nT/s)

IN-LINE HORIZONTAL Component dBx/dt



CRONE GEOPHYSICS LIMITED

DIGITAL PEM

User : Crone Geophysics Ltd.

File : L500N1.RX

Client :
NORTHERN_PLATINUM

Grid :
KANICHEE_MINE

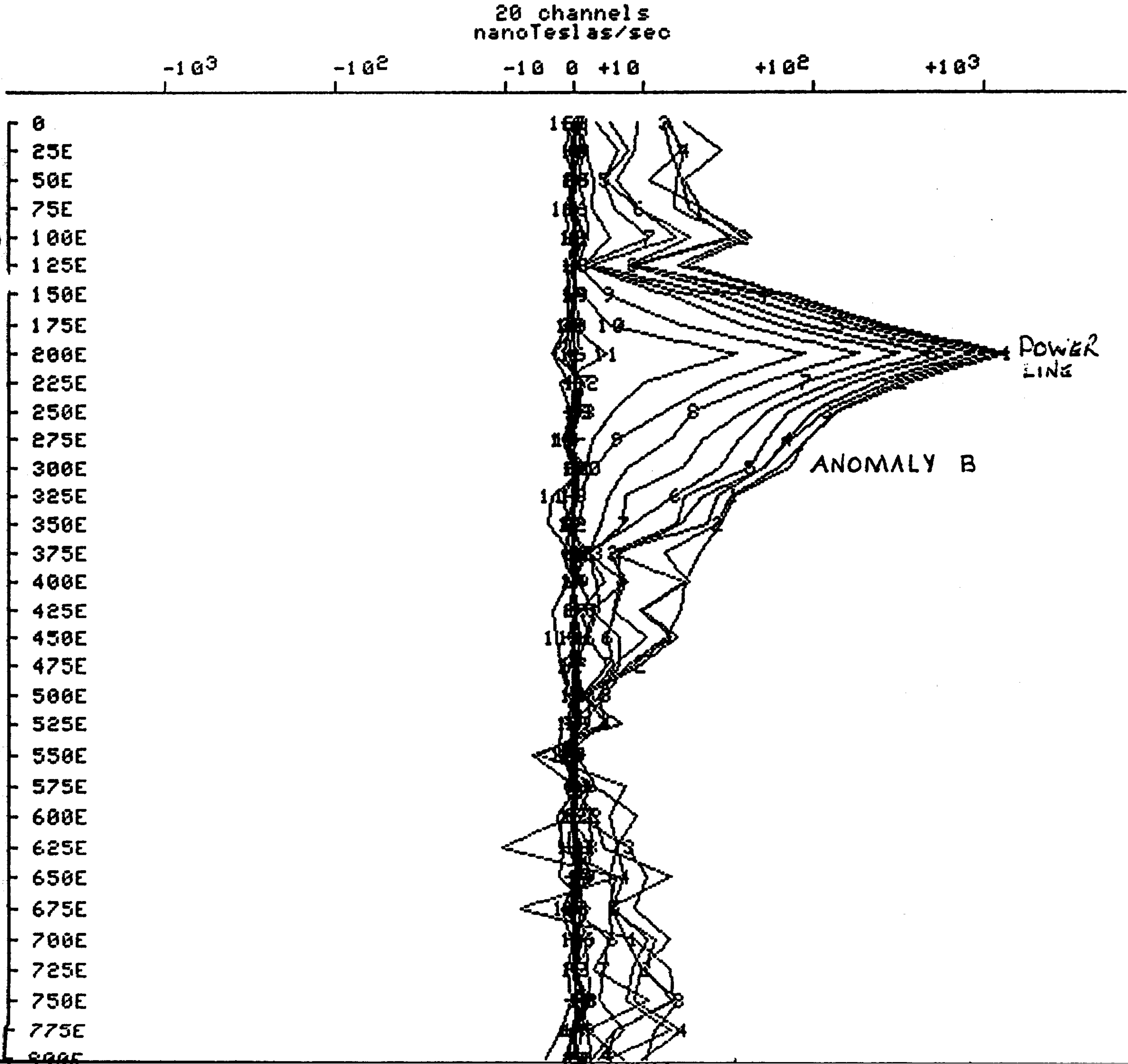
Tx Loop:
1

Line :
500N

Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

ZTS : 268
Date : Sep 11, 1988
Unit Scale: Compressed Lin-Log (nT/s)

IN-LINE HORIZONTAL Component dBx/dt



DIGITAL PEM

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Client : NORTHERN_PLATINUM

Grid : KANICHEE_MINE

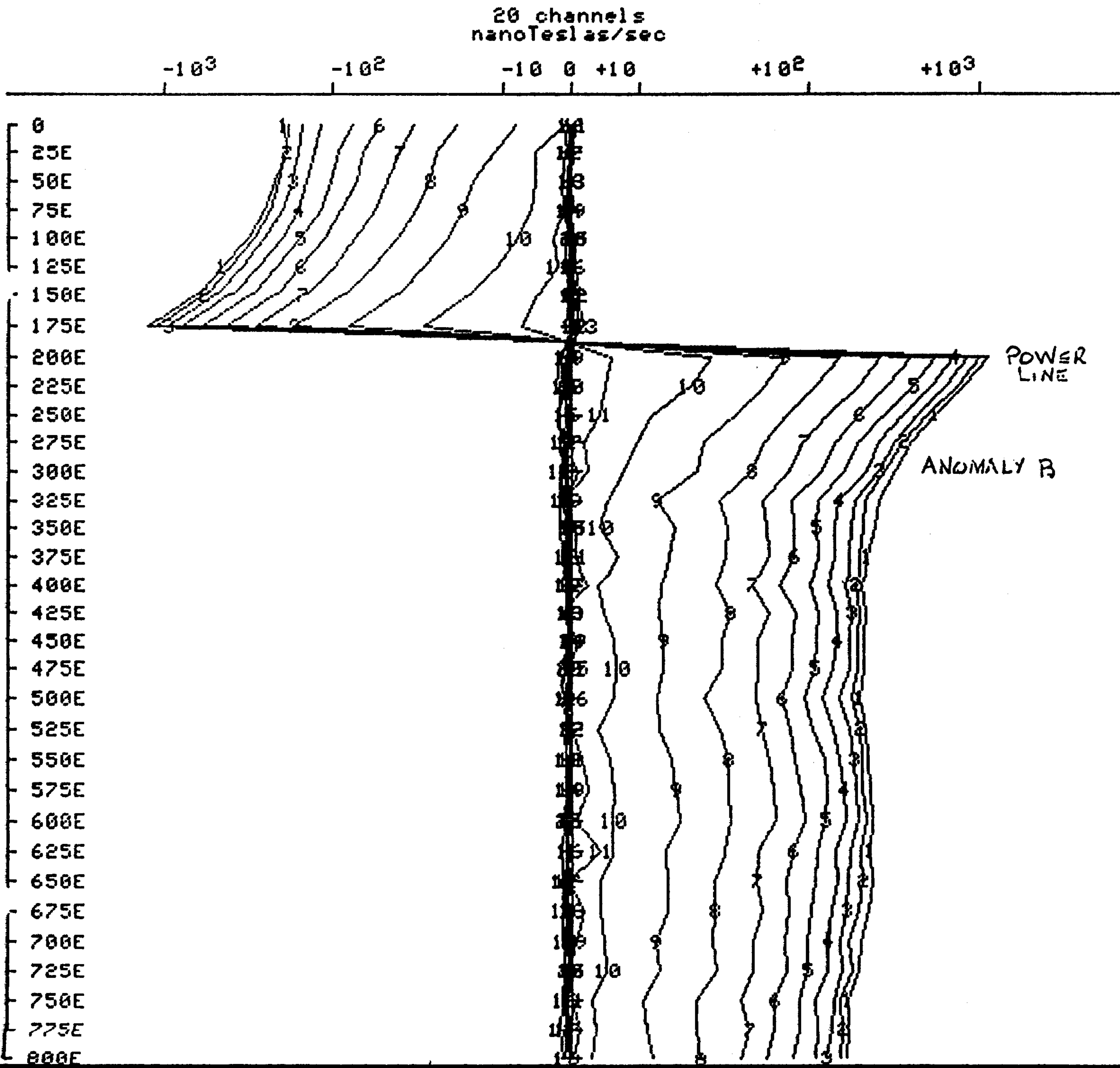
Tx Loop: 1

Line : 500N

Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

ZTS : 268
Date : Sep 11, 1988
Unit Scale: Compressed Lin-Log (nT/s)

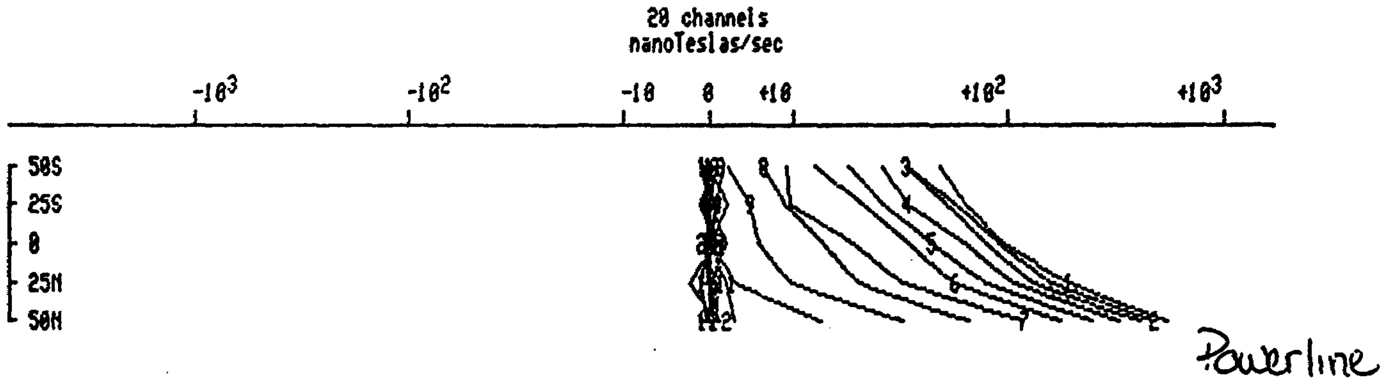
VERTICAL Component dBz/dt



CRONE GEOPHYSICS LTD — DIGITAL PEM

Client : NORTHERN_PLATINUM
Grid : KANICHEE_MINE
Tx Loop: 2
Line : 250E
Time Base: 16.66 ms
File : L250E2.RX
Ramp Time: 1.50 ms
Date : Sep 16, 1988
Scale : 1:5000
Unit Scale: Compressed Lin-Log

IN-LINE HORIZONTAL Component dBx/dt

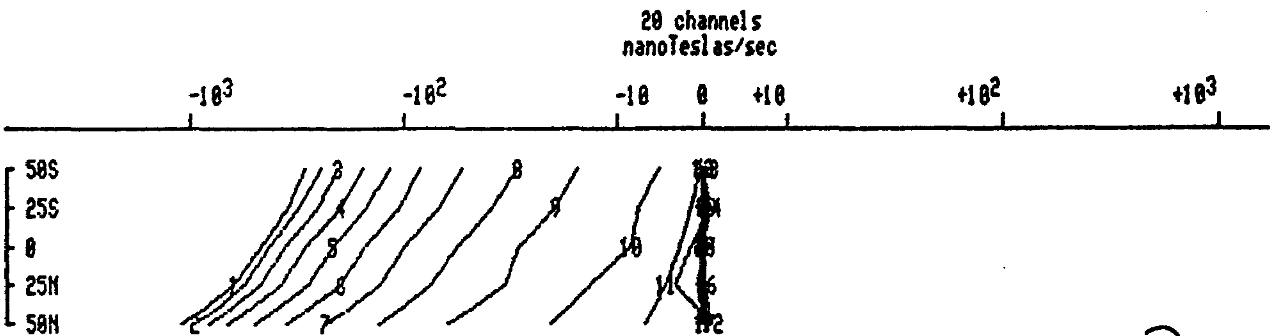


CRONE GEOPHYSICS LTD — DIGITAL PEM

Client :
NORTHERN_PLATINUM
Tx Loop:
2
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid :
KANICHEE_MINE
Line :
250E
File : L250E2.RX
Date : Sep 16, 1988
Unit Scale: Compressed Lin-Log

VERTICAL Component dBz/dt



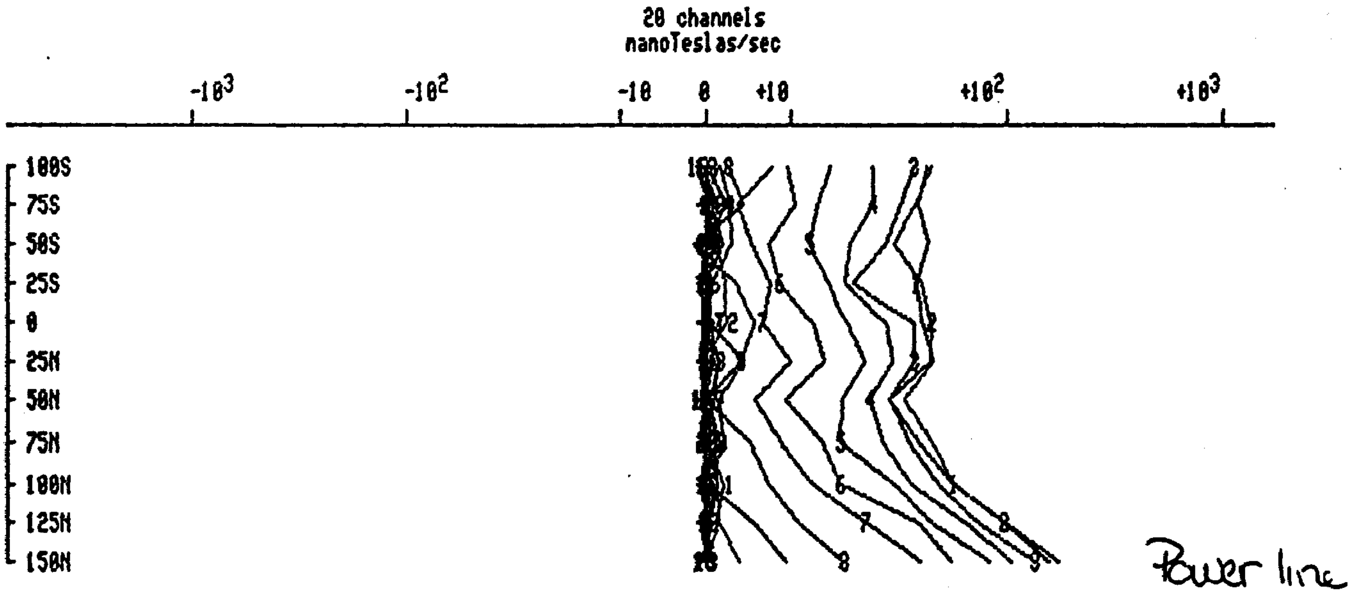
Power line

CRONE GEOPHYSICS LTD — DIGITAL PEM

Client : NORTHERN_PLATINUM
Tx Loop: 2
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid : KANICHEE_MINE
Line : 350E
File : L350E2.RX
Date : Sep 16, 1988
Unit Scale: Compressed Lin-Log

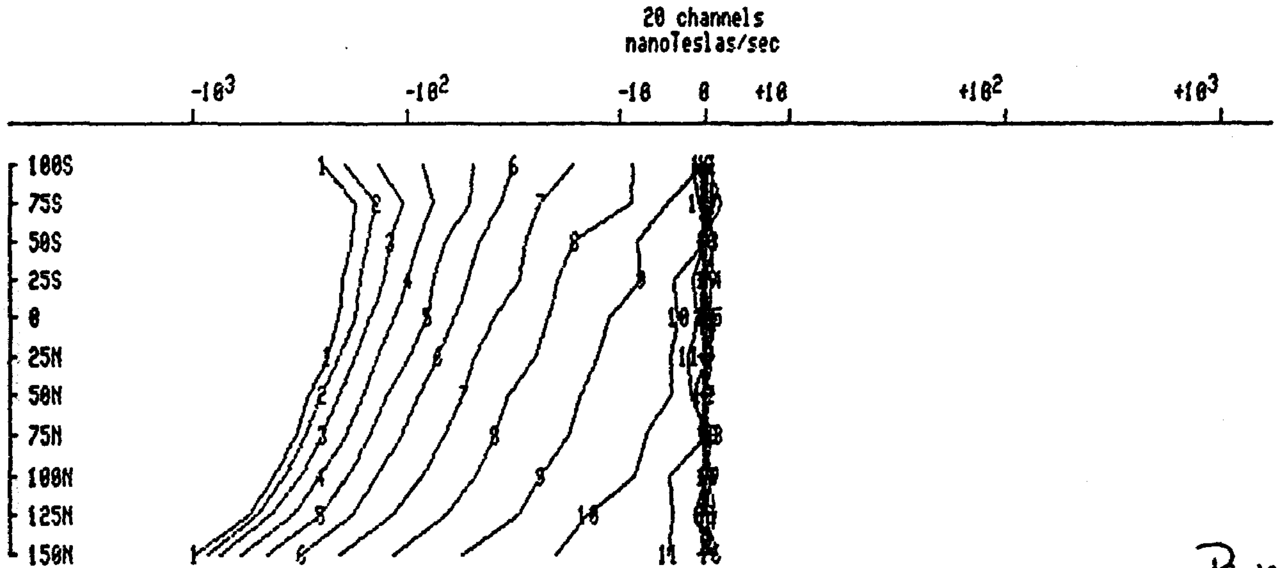
IN-LINE HORIZONTAL Component dBx/dt



CRONE GEOPHYSICS LTD - DIGITAL PEM

Client :	Grid :
NORTHERN_PLATINUM	KANICHEE_MINE
Tx Loop:	Line :
2	350E
Time Base: 16.66 ms	File : L350E2.RX
Ramp Time: 1.50 ms	Date : Sep 16, 1988
Scale : 1:5000	Unit Scale: Compressed Lin-Log

VERTICAL Component dBz/dt



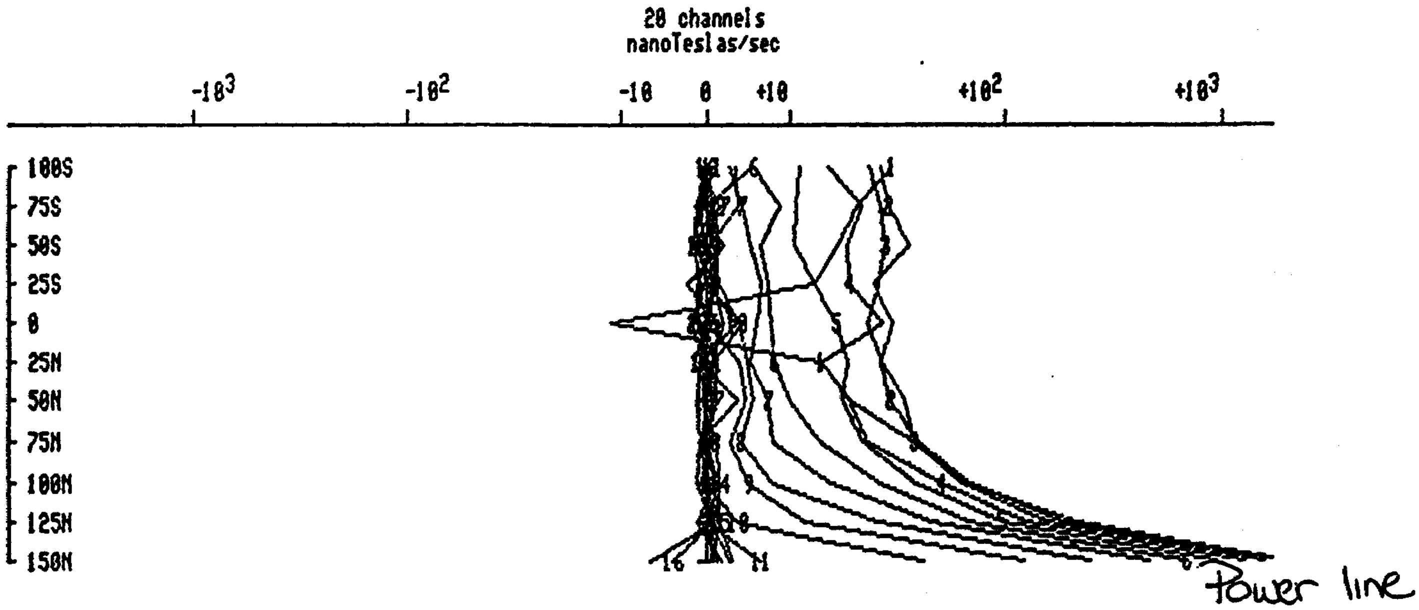
Power line

CRONE GEOPHYSICS LTD - DIGITAL PEM

Client :
NORTHERN_PLATINUM
Tx Loop:
2
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid :
KANICHEE_MINE
Line :
450E
File : L450E2.RX
Date : Sep 16, 1988
Unit Scale: Compressed Lin-Log

IN-LINE HORIZONTAL Component dBx/dt

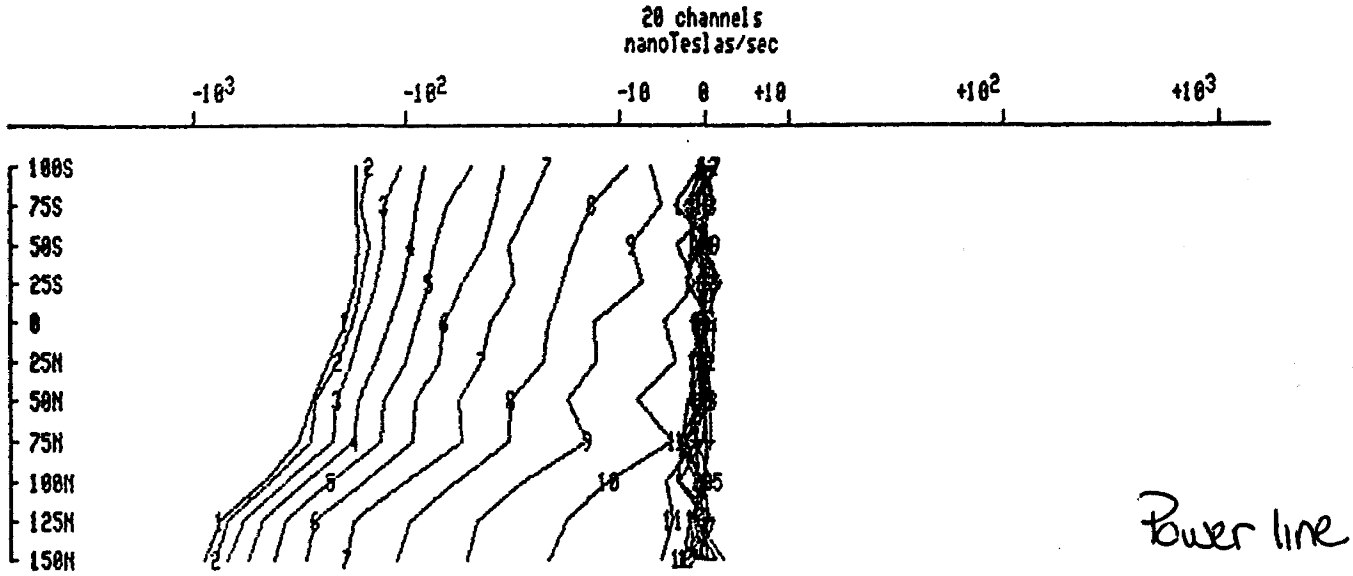


CRONE GEOPHYSICS LTD — DIGITAL PEM

Client : NORTHERN_PLATINUM
Tx Loop: 2
Time Base: 16.66 ms
Ramp Time: 1.50 ms
Scale : 1:5000

Grid : KANICHEE_MINE
Line : 450E
File : L450E2.RX
Date : Sep 16, 1988
Unit Scale: Compressed Lin-Log

VERTICAL Component dBz/dt



FIELD REPORT FOR:	Northern Platinum
COVERING:	DEEPEM Survey
PROPERTY:	KANICHEE MINE
SURVEY BY:	Crone Geophysics Limited, Mississauga.
OPERATOR:	Eric Vieira
REPORT BY:	Eric Vieira
SURVEY PERIOD:	September 09 - 17, 1988
DATE:	October 03, 1988

A DeepEM survey was done on the Kanichee Mine Grid in Temagami for Northern Platinum from September 09 - 17, 1988.

A 500 x 300 metre TX loop #1 was laid out to survey the east-west lines. The loop was energized at 96 volts and 7 amps. All positive responses were do to overhead powerlines and water casing which were on surface.

A 400 x 300 metre TX loop #2 was laid out to survey the north-south lines. The loop was energized at 96 volts and 5.5 amps. All positive responses were again caused by overhead powerlines.

Accommodations were provided at the Scandia Inn in Temagami. A company van was used for transportation to and from work. During the course of the survey the TX anntena was damaged due to strong winds, also 1.5 rain days were encountered. One operator and one second operator were used to complete the survey.

Respectfully Yours

Eric Vieira

DIGITAL PULSE EM RECEIVER

This advanced Pulse EM Receiver can be programmed in the field to measure a wide range of channel numbers, positions and widths. It contains solid state memory, noise rejection, calibrated output and many other features made possible with the digital instrumentation. Data transfer is via RS232 to an IBC-PC or compatible microcomputer. The software contains a wide selection of plotting scales and formats as well as filtering programs. It is backed by the Crone tradition of reliable, compact instrumentation — a result of 25 years of manufacturing experience.

CRONE GEOPHYSICS LIMITED

3607 WOLFDALE ROAD, MISSISSAUGA, ONTARIO, CANADA L5C 1V8
TELEPHONE: (416) 270-0096 TELEX:06-961260

SPECIFICATIONS – DIGITAL PULSE EM RECEIVER

ON/OFF TIME BASE:

Set at the transmitter and entered into the receiver; for 60 Hz areas 8.33ms, 16.66ms, 33.33ms; for 50 Hz areas 10.0ms, 20.0ms, 40.0ms; for compatibility with Analog and Datalogger PEM Rx 10.89ms, 21.79ms.

NUMBER OF CHANNELS:

Selection of logarithmic time windows based on 10, 20, or 30 channels in a 16.66 time base or programmable using a basic slice of 4.5 u sec.

	TIME BASE ms.	NUMBER OF CHANNELS					
		PRESET			PEM–8	XI EM–37	VI
60 Hz Areas	8.33	8	16	25	—	19	Programmable
	16.66	10	20	30	8	22	
	33.33	11	22	34	8	26	
50 Hz Areas	10.0	8	17	26	8	20	
	20.0	10	20	31	8	23	
	40.0	11	23	35	8	26	
Analog PEM TX	10.89	9	18	27	8	20	
	21.79	10	21	31	8	24	

NOISE REJECTION:
Automatic spike rejection. Power line filtering.

STACKING:
512, 1024, 2048 and 4096 readings.

STORAGE:
32K RAM data storage (expandable).

ZERO TIME SET:
The current shut off can be scanned to determine its shape and the zero time entered.

RAMP TIME:
Selectable in 4.5 u sec. steps.

CALIBRATION:
Output is in nano-tesla/sec. when Rx coil calibration is entered.

SYNCHRONIZATION:
Cable, radio and optional crystal clock.

BATTERIES:
2 of rechargeable 12V gel.

DISPLAY:
Large L.C.D. 8 lines, 20 characters and small L.C.D. 2 lines, 16 characters.

HUMIDITY:
Desiccant controlled with colour indicator.

WEIGHT:
Normal operation: 12.5 kg., shipping: 23 kg. Cold weather operation (below -20°C) 15.0 kg., shipping: 25.5 kg.

RECEIVER COIL AND TRIPOD:
Lightweight design for 2 or 3 component measurements; horizontal and vertical level bubbles, calibrated output; internal preamplifier with power supply of 2 of 9V mallory no. 1604 transistor batteries; weight: 4.5 kg; shipping: 11 kg.

- **Battery chargers:**
  Supplied for all rechargeable battery units.
- **All instruments and equipment operational from -40°C to +50°C.**
- **Shipping boxes:**
  Are reusable plywood construction with closed cell foam shock protection.

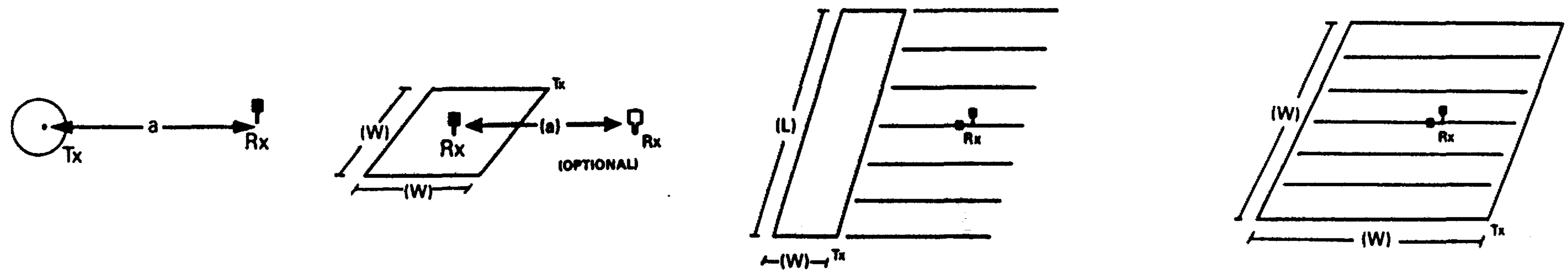
CRONE GEOPHYSICS LTD.
SURFACE PULSE-EM SYSTEMS

3607 WOLFEDALE RD.
MISSISSAUGA, ONT.
CANADA, L5C 1V8

RECEIVER Rx — **TRANSMITTER Tx 24V to 115V**

↓

RECEIVE COIL



METHOD	MOVING COIL	MOVING IN-LOOP	DEEPEM	LARGE IN-LOOP
	Rx & Tx moved along line (Slingram method)	Readings taken at centre of Tx Loop. Rx & Tx moved along line. Optional 2nd Rx in Moving Coil mode	Lines are read perpendicular to long side of Tx Loop. Line length 5 × W	Lines read inside large Tx Loop.
Reading Component	dBz/dt	dBz/dt (dBx/dt, dBy/dt)	dBz/dt, dBx/dt (dBy/dt)	dBz/dt, dBx/dt (dBy/dt)
Tx Loops	7 turn, 13.7m dia.	100m x 100m to 300m x 300m	100m x 100m to 500m x 1000m	1000m x 1000m or greater
Depth Capabilities	to 150m	to 700m	to 500m	to 700m
Target	Vertical to flat lying & lens-type conductors in areas of surficial conductivity.	Flat lying & lens-type conductors in areas of high surficial conductivity. Second Rx sensitive to vertical bodies.	Conductors with dips of 45° or more. Data filtering required in conductive environments.	Conductors with dips of 50° or less. Data filtering required in conductive environments.

BATTERY PACK 24V/20AHe ← With 100m² loop only

MOTOR GENERATOR 24V to 115V VOLTAGE RECTIFIER 24V to 115V

APPENDIX 3

TRENCHING

APPENDIX 3

TRENCHING

See map titled "Trench Location Plan" in back map pocket.

APPENDIX 4

GEOLOGICAL MAP

see map titled " Surface Plan, Geology, Drilling Trenching" in back pocket.

APPENDIX 5

ASSAY CERTIFICATES

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

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .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 SR 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: CRUSHED CORE   AU** PT** PD** RH** BY FA-MS FROM 20 GM SAMPLE.

DATE RECEIVED: DEC 14 1988 DATE REPORT MAILED: Dec 23/88. SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM   File # 88-6273

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-14 1.35-3.0m	605	.7	686	51	1400	7	49	130	5
88-N-14 3.0-5.0m	3389	2.5	2795	124	1149	65	109	421	10
88-N-14 5.0-6.43m	889	.9	895	77	1403	9	38	98	5
88-N-14 6.43-9.0m	3180	1.9	1978	99	1152	43	121	344	10
88-N-14 9.0-12.0m	397	.5	622	61	1469	12	39	74	3
88-N-14 12.0-15.0m	631	.5	863	65	1113	6	27	64	3
88-N-14 15.0-18.15m	783	.9	776	63	1274	5	36	86	4
88-N-14 18.15-21.0m	715	.5	794	53	1433	8	42	96	4
88-N-14 21.0-23.4m	913	.8	923	63	879	6	48	102	4
88-N-14 23.4-27.0m	655	.7	659	51	1162	68	34	94	3
88-N-14 27.0-30.0m	895	.5	1040	68	1204	6	39	102	3
88-N-14 30.0-32.0m	663	.6	752	53	1307	6	22	70	2
88-N-14 32.0-33.88m	1168	1.3	1424	89	1059	9	53	139	5
88-N-14 33.88-34.60m	3471	2.6	1947	125	1224	58	126	294	7
88-N-14 34.60-37.53m	2015	2.2	1647	99	1027	1048	71	186	6
88-N-14 37.53-40.64m	3288	2.8	1990	111	1088	18	89	217	5
88-N-14 37.53-40.64m A	3809	3.2	2110	117	1051	33	135	382	7
88-N-14 40.64-42.21m	652	.6	1492	73	1309	11	50	144	6
88-N-14 42.21-43.60m	827	1.6	1159	70	531	41	44	85	2
88-N-14 43.60-46.0m	2629	2.4	2730	131	824	34	108	291	9
88-N-14 46.0-48.0m	3649	3.0	2492	149	798	126	128	326	7
88-N-14 48.0-50.0m	1959	2.1	1955	109	797	62	75	193	6
88-N-14 50.0-51.50m	3504	3.8	3950	199	778	38	255	433	11
88-N-14 51.50-54.09m	1832	2.5	1684	98	777	40	74	171	9
88-N-14 54.80-57.0m	606	1.1	1170	75	1214	3	32	96	4
88-N-14 57.0-59.0m	297	.8	1078	76	1378	9	21	52	2
88-N-14 59.0-62.33m	501	.7	1007	67	1195	2	28	90	2
STD C/FA-5X	62	7.4	68	30	57	97	101	100	22

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

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .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.
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- SAMPLE TYPE: CRUSHED CORE AU** PT** PD** RH** BY FA-MS.

DATE RECEIVED: DEC 5 1988 DATE REPORT MAILED: Dec 23/88 SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM File # 88-6136 Page 1

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-11 97.0-100.0m	2409	1.9	1399	92	1001	97	113	250	5
88-N-11 100.0-103.0m	2404	1.9	1822	112	952	124	150	365	8
88-N-11 103.0-106.0m	1466	1.0	1520	94	969	49	75	179	4
88-N-11 106.0-108.0m	2413	1.5	2272	120	820	96	178	387	12
88-N-11 108.0-110.65m	4504	2.7	2670	153	1027	86	202	513	10
88-N-11 110.65-113.0m	1351	.6	1027	68	1552	31	103	163	4
88-N-11 113.0-114.70m	522	.2	736	56	1977	26	74	97	5
88-N-11 114.70-116.24	5433	3.0	2951	181	1219	150	254	569	11
88-N-11 116.24-118.0m	707	.5	956	86	1657	44	41	122	3
88-N-11 118.0-120.0m	776	.5	817	58	1213	44	53	94	2
88-N-11 120.0-122.86m	2994	2.0	1984	118	1528	94	159	299	12
88-N-11 122.86-124.95m	1671	1.2	961	64	1625	17	103	211	3
88-N-11 125.98-127.22m	3161	2.6	1463	95	1256	38	172	412	5
88-N-11 127.22-132.54m	955	1.1	461	50	957	7	52	141	2
88-N-12 2.83-5.63m	221	.1	331	43	533	5	9	18	2
88-N-12 5.63-8.0m	3491	3.4	1766	102	1279	73	183	537	10
88-N-12 8.0-11.0m	3755	5.0	1929	94	1219	77	447	611	12
88-N-12 11.0-14.0m	482	.1	475	47	658	73	15	64	2
88-N-12 14.0-16.17m	455	.7	522	49	570	2676	54	98	2
88-N-12 17.60-20.0m	255	.3	492	53	851	41	24	45	2
88-N-12 20.0-22.82m	838	1.6	615	54	822	15	47	115	2
88-N-12 46.15-49.0m	1190	1.3	851	70	914	35	37	154	3
88-N-12 49.0-51.50m	1192	.9	797	60	1003	24	96	200	4
88-N-12 51.50-53.50m	3439	3.3	1594	79	953	56	161	436	11
88-N-12 53.50-55.0m	1452	2.1	982	67	1114	59	102	201	5
88-N-12 55.0-57.0m	3175	4.0	1730	95	1544	46	202	390	8
88-N-12 57.0-59.12m	1241	2.0	1166	82	1733	20	79	202	4
88-N-12 59.50-61.50m	2057	3.9	1296	87	1525	26	124	318	5
88-N-12 61.50-63.0m	2757	5.5	1012	75	1821	38	123	321	6
88-N-12 63.0-65.0m	1212	2.4	916	69	1688	34	55	132	3
88-N-12 65.0-67.0m	1263	2.9	1112	85	2038	58	165	279	7
88-N-12 67.0-69.0m	936	1.8	974	69	1467	14	65	98	4
88-N-12 69.0-71.55m	1255	2.0	782	65	1889	37	144	173	5
88-N-12 72.18-74.35m	950	1.5	709	70	1650	12	58	103	4
88-N-12 74.91-77.0m	2036	2.3	795	73	1754	33	105	247	5
88-N-12 77.0-79.30m	355	.4	441	44	1966	5	44	45	2
STD C/FA-5X	63	7.2	72	31	58	97	103	102	23

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-12 79.30-80.28m	194	.6	589	47	904	13	37	74	2
88-N-12 80.28-83.0m	664	.7	777	62	956	26	46	99	4
88-N-12 83.0-86.0m	990	.8	1045	67	1162	32	49	103	2
88-N-12 86.0-89.0m	822	.7	858	62	1530	41	58	110	4
88-N-12 89.0-92.0m	2706	1.9	1708	114	770	87	131	316	8
88-N-12 92.0-95.0m	3071	2.2	1928	126	883	114	144	333	8
88-N-12 95.0-98.0m	2110	1.5	1957	112	996	87	101	234	5
88-N-12 98.0-101.0m	2882	2.2	2130	116	1024	124	127	293	8
88-N-12 101.0-103.15m	2104	1.7	1541	91	1127	76	98	216	6
88-N-12 103.15-106.0m	871	.6	1011	63	1506	19	67	117	4
STD C	61	6.7	67	32	55	-	-	-	-

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

GEOCHEMICAL ANALYSIS CERTIFICATE

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- SAMPLE TYPE: CRUSHED CORE   AU** PT** PD** RH** BY FA-MS.

DATE RECEIVED: DEC 16 1988   DATE REPORT MAILED: Dec 23/88   SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM   File # 88-6307

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-15 3.15-6.0m	957	1.0	950	66	1082	23	63	99	7
88-N-15 6.0-9.0m	627	.7	903	72	1094	51	42	61	5
88-N-15 9.0-10.90m	873	.6	920	68	994	36	44	77	4
88-N-15 10.90-14.0m	990	.9	926	59	1414	15	52	87	5
88-N-15 14.0-16.12m	811	.7	942	62	982	16	56	82	7
88-N-15 16.12-18.0m	3607	3.0	1825	104	971	35	175	285	10
88-N-15 18.0-20.70m	2017	2.3	1403	85	1342	11	55	119	3
88-N-15 20.70-22.70m	1178	.9	834	55	1441	4	27	45	2
88-N-15 22.70-25.75m	2514	1.7	1516	96	1272	65	105	250	17
88-N-15 25.75-26.24m	11511✓	7.2	6190	382	755	156	677	450	39
88-N-15 26.24-29.0m	1142	1.0	1509	87	1004	11	33	95	5
88-N-15 29.0-32.0m	1261	1.5	2009	108	821	26	52	189	5
88-N-15 32.0-34.0m	2967	1.8	2599	132	740	147	91	322	12
88-N-15 34.0-36.06m	2032	1.5	1755	99	920	95	68	189	5
88-N-15 36.06-36.30m	6166	4.6	6154	288	551	198	340	749	26
88-N-15 36.30-38.0m	7487	4.1	2140	113	801	203	134	422	19
88-N-15 38.0-40.0m	4536	5.3	2961	155	756	355	225	556	26
88-N-15 40.0-42.22m	6233	6.0	2444	131	797	124	145	451	17
88-N-15 42.22-42.52m	6030	34.9✓	16388✓	756	175	120	25	124	5
88-N-15 42.52-44.85m	7140	5.0	4054	204	733	66	106	604	11
88-N-15 44.85-48.0m	1136	1.6	1537	93	865	3	12	160	3
88-N-15 48.0-50.78m	398	.9	1059	75	970	1	11	68	2
88-N-15 51.26-54.0m	635	.4	1185	75	1022	1	15	73	2
88-N-15 54.0-57.0m	819	.6	1071	80	963	26	43	114	3
88-N-15 57.0-60.0m	222	.1	936	73	1082	33	14	28	2
88-N-15 60.0-62.0m	504	.5	994	73	1596	10	29	88	3
88-N-15 62.0-65.0m	568	.3	805	61	1212	2	18	52	2
88-N-16 1.37-4.0m	3028	2.1	1877	89	701	89	191	496	15
88-N-16 4.0-7.38m	1975	.8	1273	73	788	59	111	330	12
88-N-16 11.40-14.0m	2549	.8	1718	85	711	60	169	435	32
88-N-16 14.0-16.0m	7262	3.6	2397	92	669	266	287	989	22
88-N-16 16.0-18.35m	3254	2.1	1693	78	643	112	171	595	18
88-N-16 24.50-26.20m	2831	2.5	2455	131	409	411	104	390	12
STD C/FA-5X	61	7.0	70	31	56	97	102	96	18

✓ - ASSAY REQUIRED FOR CORRECT RESULT -

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

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- SAMPLE TYPE: CRUSHED CORE AU** PT** PD** RH** BY FA-MS.

DATE RECEIVED: DEC 9 1988 DATE REPORT MAILED: Dec 23/88 . SIGNED BY. C. Leong . . D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM File # 88-6209 Page 1

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-13 0.90-4.0m	1243	.8	1241	70	1420	35	97	171	4
88-N-13 4.0-7.0m	2009	1.1	1930	103	1257	38	105	292	8
88-N-13 7.0-10.0m	1983	1.2	2033	101	1307	189	140	391	12
88-N-13 10.0-13.0m	750	.5	960	63	1451	17	58	109	4
88-N-13 13.0-16.0m	835	.7	985	65	1637	20	81	128	6
88-N-13 16.0-18.08m	1154	.7	1120	75	1538	20	76	207	9
88-N-13 18.75-22.0m	1405	1.0	1256	73	1640	51	74	180	4
88-N-13 22.0-23.81m	491	.8	442	38	1549	18	22	76	3
88-N-13 23.81-27.20m	676	.5	845	61	1502	19	29	90	3
88-N-13 28.30-30.70m	761	.6	1076	68	1582	11	64	144	5
88-N-13 31.38-33.83m	689	.5	1230	77	1290	49	35	202	4
88-N-13 33.83-35.57m	797	.6	600	36	1515	25	72	184	7
88-N-13 35.57-38.04m	1042	.9	1029	62	1424	20	78	207	10
88-N-13 38.65-42.0m	1878	1.3	1562	90	1298	46	132	250	13
88-N-13 42.0-45.0m	985	.8	910	60	1591	38	94	149	6
88-N-13 45.0-47.86m	1045	.7	1115	72	1296	41	77	137	6
88-N-13 47.86-49.68m	1280	3.0	1671	83	1192	27	63	177	4
88-N-13 49.68-52.0m	1377	1.0	1823	101	874	38	85	191	4
88-N-13 52.0-54.60m	2503	2.0	2522	120	789	42	135	349	9
88-N-13 54.60-57.48m	1774	1.4	2020	106	737	37	91	264	7
88-N-13 57.48-59.47m	1679	1.1	1925	100	769	23	72	207	4
88-N-13 59.47-62.0m	2561	1.9	2678	131	778	78	147	360	9
88-N-13 62.0-65.50m	2130	1.8	1875	120	765	92	97	270	2
88-N-13 65.50-68.0m	2264	1.9	1954	142	740	81	90	259	8
88-N-13 68.0-68.57m	1418	1.2	2114	137	707	64	68	233	11
88-N-13 68.57-70.62m	1878	1.5	2097	130	849	85	104	301	9
88-N-13 70.62-71.05m	287	.5	51	7	23	6	3	4	2
88-N-13 71.05-71.97m	2067	1.5	1685	94	892	81	72	201	9
88-N-13 71.97-73.37m	5350	4.3	2572	138	509	63	85	179	11
88-N-13 73.37-75.0m	549	.6	1675	105	1033	35	76	164	10
88-N-13 75.0-78.0m	1573	1.3	1892	103	895	67	76	194	7
88-N-13 78.0-81.0m	1645	1.4	2013	115	855	35	72	201	7
88-N-13 81.0-83.55m	449	.6	1272	79	1001	17	9	72	3
88-N-13 83.55-85.0m	2730	2.4	2228	116	838	252	181	530	15
88-N-13 85.0-87.0m	2168	1.8	2407	130	1204	131	114	322	9
88-N-13 87.0-88.46m	2564	2.3	1929	103	1438	95	113	278	12
STD C/FA-5X	61	7.1	73	31	57	102	96	99	19

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-13 88.46-90.0m	388	.4	1370	121	1043	46	88	181	2
88-N-13 90.0-92.05m	52	.7	455	46	710	2	7	2	2

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

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DATE RECEIVED: NOV 18 1988 DATE REPORT MAILED: Dec 15/88 SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM File # 88-5913 Page 1

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-10 5.60-8.0m	2092	4.0	1453	96	652	1018	146	259	19
88-N-10 8.0-10.0m	2646	5.1	1786	103	718	29	122	234	21
88-N-10 8.0-10.0m A	2459	4.8	1719	99	696	248	155	278	30
88-N-10 10.0-12.0m	2814	4.6	2043	109	655	247	215	386	41
88-N-12 12.0-14.0m	2895	4.9	1708	93	531	127	210	417	45
88-N-12 14.0-16.0m	3350	5.2	1967	104	539	96	200	384	36
88-N-12 16.0-18.0m	3530	5.7	2097	108	639	132	261	454	37
88-N-12 16.0-18.0m A	3529	5.5	2180	119	623	343	276	478	45
88-N-12 18.0-20.0m	2354	3.8	1831	98	790	37	161	344	36
88-N-12 20.0-22.0m	1724	2.8	1334	101	642	594	121	207	20
88-N-12 22.0-24.0m	2279	3.7	1651	88	700	76	201	361	43
88-N-12 24.0-26.0m	1763	2.9	1246	82	709	43	137	273	30
88-N-12 26.0-28.0m	2894	4.2	1792	108	726	58	142	335	40
88-N-12 28.0-30.0m	2301	3.3	1407	92	702	41	236	348	30
88-N-12 30.0-31.57m	2385	4.0	1542	102	879	146	171	404	40
88-N-12 31.57-31.88m	5722	9.7	1042	81	319	421	99	336	29
88-N-12 31.88-34.0m	2517	4.1	1549	98	912	58	176	280	26
88-N-12 34.0-36.08m	1175	1.6	993	61	490	67	80	196	20
88-N-12 36.08-38.0m	1393	2.2	1643	97	734	102	137	306	33
88-N-12 38.0-40.0m	1360	1.6	1249	79	598	24	94	239	24
88-N-12 40.0-42.0m	3716	4.0	2381	123	737	129	312	518	55
88-N-12 42.0-45.30m	3160	3.2	1955	115	689	88	335	449	59
88-N-12 45.30-48.0m	903	1.1	1004	69	1205	18	84	137	20
88-N-12 48.0-51.0m	861	.8	1048	75	1455	18	93	150	41
88-N-12 51.0-53.75m	1229	1.0	958	59	1663	23	93	155	18
88-N-12 53.75-56.0m	2830	2.2	2304	119	1030	45	242	424	56
88-N-12 56.0-58.0m	2813	2.0	2520	127	796	130	273	363	51
88-N-12 58.0-60.0m	2526	2.3	2585	120	793	48	181	348	41
88-N-12 58.0-60.0m A	2610	1.9	2584	120	798	7	34	384	2
88-N-12 60-61.65m	3027	2.2	2399	119	684	66	231	430	73
88-N-12 61.65-65.6m	600	.7	1259	81	776	7	48	100	14
88-N-12 65.60-67.0m	1821	1.1	1743	88	836	43	151	242	37
88-N-12 67.0-69.20m	3387	2.6	3350	163	760	183	223	370	42
88-N-12 69.20-70.63m	1106	.9	1380	78	830	118	68	142	11
88-N-12 70.63-71.0m	5758	3.6	3626	181	250	427	484	1393	107
88-N-12 71.0-74.0m	2651	2.0	1461	88	947	432	192	419	37
STD C/FA-5X	60	6.9	67	31	56	102	97	96	21

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-10 74.0-77.0m	1570	1.0	827	60	889	38	223	259	2
88-N-10 77.0-80.0m	726	.5	1000	62	995	635	321	261	3
88-N-10 80.0-82.0m	883	.8	754	54	1261	16	3	98	2
88-N-10 82.0-84.70m	63	.1	490	41	1134	2	4	6	2
STD C	57	6.8	69	31	57	-	-	-	-

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

GEOCHEMICAL ANALYSIS CERTIFICATE

ICP - .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 SR 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: CRUSHED CORE AU** PT** PD** RH** BY FA-MS.

DATE RECEIVED: NOV 29 1988 DATE REPORT MAILED: Dec 15/88 SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM File # 88-6066

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-11 17.04-20.0m	1183	.9	896	63	980	31	52	114	5
88-N-11 20.0-23.26m	1195	.8	1221	80	886	38	77	153	5
88-N-11 24.33-27.0m	378	.5	1240	88	633	20	33	58	4
88-N-11 27.0-30.0m	755	.8	829	62	1462	23	46	89	3
88-N-11 30.0-33.0m	1135	1.2	1158	82	1301	39	59	124	5
88-N-11 33.0-36.0m	548	.8	648	52	1770	16	40	71	4
88-N-11 36.0-40.32m	654	.7	815	60	1212	156	40	67	2
88-N-11 40.32-41.15m	739	1.0	821	60	1016	16	39	96	3
88-N-11 41.15-43.0m	1010	.9	725	59	1375	14	42	72	3
88-N-11 43.0-45.15m	1014	1.5	1135	79	912	37	60	140	4
88-N-11 45.15-47.0m	1799	1.7	1606	92	739	60	72	219	5
88-N-11 47.0-49.0m	2083	2.0	1713	102	778	65	73	227	4
88-N-11 49.0-51.0m	1642	1.4	1387	96	761	40	80	177	7
88-N-11 51.0-53.0m	2762	2.2	1580	109	769	83	122	322	8
88-N-11 53.0-53.74m	2958	2.1	1431	103	795	52	75	213	3
88-N-11 53.74-56.0m	1478	1.2	1379	92	946	47	59	198	7
88-N-11 56.0-58.0m	2706	2.2	1517	105	787	66	110	306	8
88-N-11 58.0-60.0m	3055	2.5	1564	110	894	70	97	282	6
88-N-11 60.0-62.0m	2619	2.0	1942	119	998	51	60	230	4
88-N-11 62.0-64.04m	3213	2.5	2186	122	1128	81	113	315	9
88-N-11 66.25-68.0m	936	.9	783	81	1347	27	21	66	2
88-N-11 68.0-70.0m	654	.8	1150	88	1625	55	35	101	2
88-N-11 70.0-72.0m	254	.4	1061	76	2264	72	28	101	3
88-N-11 72.0-74.0m	1967	1.6	1349	100	1687	122	49	139	3
88-N-11 74.0-76.0m	2665	2.9	1990	118	1167	278	141	367	9
88-N-11 76.0-79.0m	1050	.9	770	62	1397	80	49	105	5
88-N-11 79.0-82.0m	588	.5	666	56	1253	9	32	94	5
88-N-11 82.0-85.0m	458	.7	445	43	1635	3	26	57	3
88-N-11 85.0-87.0m	1495	1.3	1237	75	1535	20	80	226	8
88-N-11 87.0-89.0m	1485	1.6	1005	69	1745	18	57	136	7
88-N-11 89.0-91.0m	1557	1.4	1071	75	1315	22	33	93	4
88-N-11 91.0-93.0m	1951	1.9	1370	91	1274	18	88	153	7
88-N-11 93.0-95.0m	2141	2.4	1537	106	798	151	108	271	8
88-N-11 95.0-97.0m	1494	1.7	1625	105	1008	29	49	116	3
STD C/FA-5X	62	6.9	73	31	55	98	102	99	20

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

GEOCHEMICAL ANALYSIS CERTIFICATE

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- SAMPLE TYPE: CRUSHED CORE AU** PT** PD** RH** BY FA-MS.

DATE RECEIVED: NOV 9 1988 DATE REPORT MAILED: Dec 6/88 SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM File # 88-5731 Page 1

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
NP L0+50S 76-78ME	39	.1	36	15	113	10	1	3	2
NP L0+50S 78-80ME	34	.1	34	17	102	5	1	2	2
NP L0+50S 80-82ME	30	.2	48	22	192	3	2	2	2
NP L0+50S 82-84ME	47	.1	50	21	169	4	1	2	2
NP L0+50S 84-86ME	16	.1	13	7	29	1	1	2	2
NP L0+50S 86-88ME	225	.3	107	21	144	8	6	9	2
NP L0+50S 88-90ME	686	.6	427	31	150	9	12	14	3
NP L0+50S 90-92ME	3110	3.1	2265	102	979	29	116	264	10
NP L1+00S 45-47ME	183	.5	79	25	37	61	8	4	2
NP L1+00S 47-49ME	1101	1.4	274	34	63	261	36	71	2
NP L1+00S 49-51ME	1719	1.8	895	66	638	81	141	245	6
NP L1+00S 51-53ME	1364	1.1	1068	58	851	23	104	191	7
NP L1+00S 53-55ME	1836	1.9	1380	89	944	23	84	227	8
NP L1+00S 55-57ME	1644	1.5	1245	73	909	26	90	257	8
NP L1+00S 57-59ME	261	.3	668	52	1254	6	13	28	2
NP L1+00S 59-61ME	363	.3	665	48	1038	4	31	59	2
NP L1+00S 61-63ME	173	.2	609	52	1194	3	24	36	2
88N-6 1.0-4.0M	496	.4	1091	69	839	12	28	64	2
88N-6 4.0-7.0M	299	.2	1195	75	886	4	17	25	2
88N-6 7.0-10.0M	331	.2	1007	70	899	3	19	18	2
88N-6 10.0-13.0M	697	.3	1003	65	931	28	38	48	2
88N-6 13.0-16.0M	303	.4	837	56	1056	2	10	14	2
88N-6 16.0-18.0M	319	.2	647	38	1136	3	8	10	2
88N-6 18.0-20.0M	3302	2.1	1379	64	940	50	139	360	2
88N-6 20.0-22.0M	2135	1.3	1202	65	953	7	23	85	2
88N-6 22.0-24.50M	84	.1	1024	72	1118	1	6	10	2
88N-6 24.5-25.25M	263	.1	565	51	821	12	45	76	2
88N-6 25.25-28.0M	111	.1	988	69	1074	1	10	8	2
88N-6 28.0-31.0M	385	.2	1094	68	931	7	22	40	2
88N-6 31.0-33.0M	101	.1	922	72	927	39	15	11	2
88N-6 33.0-36.0M	120	.1	880	70	1030	2	10	20	2
88N-6 36.0-38.0M	224	.1	862	62	941	1	12	18	2
88N-6 38.0-40.0M	267	.2	885	61	1053	2	12	19	2
88N-6 40.0-42.0M	516	.3	1046	67	1341	3	25	52	2
88N-6 42.0-44.0M	197	.2	798	52	1232	4	22	25	2
88N-6 44.0-46.0M	219	.2	586	46	941	2	14	16	2
STD C/FA-5X	63	7.2	72	31	59	104	98	100	21

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88N-6 46.0-48.0M	44	.2	403	37	670	3	8	17	3
88N-6 48.0-50.60M	94	.1	395	40	652	1	18	13	2
88N-7 17.70-19.0M	1941	1.0	1065	70	872	118	117	230	3
88N-7 19.0-21.25M	1508	1.1	1027	69	690	43	57	140	2
88N-7 21.25-21.88M	3839	2.5	1423	79	358	421	581	2137	5
88N-7 21.88-24.10M	3657	2.0	2246	125	841	85	234	599	9
88N-7 24.10-26.0M	1904	1.1	1273	82	925	60	145	314	3
88N-7 26.0-29.0M	658	.3	911	72	977	29	34	43	2
88N-7 42.50-45.03M	2583	1.6	1536	92	1104	194	113	256	7
88N-7 45.68-49.15M	593	.3	528	46	1105	4	32	46	2
88N-7 49.43-51.83M	235	1.0	376	51	793	1	19	24	2
88N-7 51.83-53.0M	7	.1	179	28	419	1	2	3	2
88N-7 53.0-56.0M	519	1.6	476	54	1502	3	20	38	3
88N-7 56.0-59.0M	97	.6	275	26	1106	10	24	27	2
88N-7 59.0-61.60M	91	.5	275	29	868	1	14	15	2
STD C/FA-5X	59	6.9	68	30	55	102	97	99	19

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

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ICP - .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 SR 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: CRUSHED CORE AU** PT** PD** RH** BY FA-MS.

DATE RECEIVED: NOV 14 1988 DATE REPORT MAILED: Nov 18/88 SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM File # 88-5801 Page 1

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-8 0.0-2.0M	1447	1.1	1484	83	929	28	65	138	4
88-N-8 2.0-4.0M	328	.4	1075	75	897	4	5	4	2
88-N-8 4.0-6.63M	1533	1.2	1667	92	876	21	96	216	7
88-N-8 6.40-6.63M	5367	2.7	2634	125	475	81	263	619	7
88-N-8 6.63-9.00M	3271	2.2	1427	81	958	26	61	96	2
88-N-8 9.00-11.00M	322	.6	1060	71	933	9	20	27	2
88-N-8 11.00-13.00M	297	.4	939	67	921	8	27	38	2
88-N-8 13.00-15.00M	353	.4	834	60	959	5	17	16	2
88-N-8 15.00-17.00M	476	.5	888	60	990	6	20	45	2
88-N-8 17.00-20.19M	896	.8	886	57	1040	9	43	102	2
88-N-8 20.19-20.43M	68004	45.9	13351	532	184	502	2937	4286	8
88-N-8 20.43-22.18M	1063	.9	1309	61	1247	86	117	265	3
88-N-8 22.18-22.45M	55864	39.0	3488	155	287	347	1534	2011	17
88-N-8 22.45-25.00M	15411	9.4	2832	136	1359	151	168	321	5
88-N-8 25.00-27.50M	1622	1.3	1307	68	1154	37	141	226	3
88-N-8 27.50-28.45M	8497	6.1	4705	235	469	277	388	774	7
88-N-8 28.45-31.00M	4989	3.3	1531	77	867	205	231	485	2
88-N-8 31.00-33.40M	4406	3.1	1198	67	972	472	316	471	2
88-N-8 33.40-36.00M	627	.7	538	48	919	34	29	67	2
88-N-8 36.00-39.00M	624	.6	605	57	1176	34	63	86	2
88-N-8 39.00-42.00M	791	.7	898	65	1301	14	53	94	2
88-N-8 42.00-45.00M	1394	1.1	832	64	1411	345	334	154	2
88-N-8 45.00-47.00M	1956	1.8	854	70	1917	9	83	58	2
88-N-8 47.00-49.00M	269	.3	579	43	1964	5	17	26	2
88-N-8 50.25-53.00M	439	.4	725	49	1965	4	32	49	2
88-N-8 53.00-56.00M	457	.6	702	51	1798	21	58	155	2
88-N-8 56.00-59.00M	253	.4	667	51	1943	2	9	14	2
88-N-8 59.00-62.00M	306	.4	637	55	1585	3	16	21	2
88-N-8 62.00-65.00M	184	.2	634	56	1765	3	16	34	2
88-N-8 65.00-68.00M	131	.3	565	55	1716	3	7	10	2
88-N-8 68.00-70.00M	158	.3	556	58	1482	3	14	27	2
88-N-8 70.00-72.13M	120	.3	501	58	1468	23	10	71	2
88-N-8 72.13-72.90M	1637	1.1	392	37	1014	54	30	92	5
88-N-8 72.90-75.00M	115	.2	443	57	1083	42	13	17	2
88-N-8 75.00-77.13M	181	.3	500	58	1068	5	20	27	2
88-N-9 8.00-11.00M	2449	1.4	1672	83	858	52	179	290	3
STD C/FA-5X	61	7.1	73	31	55	96	103	104	20

- ASSAY REQUIRED FOR CORRECT RESULT for Cu Ni >1%

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88-N-9 11.00-14.00M	235	.2	1049	73	857	5	17	38	2
88-N-9 14.00-17.00M	274	.4	1083	76	928	4	19	19	2
88-N-9 17.00-19.55M	336	.3	1007	68	970	19	175	67	17
88-N-9 19.55-20.00M	2694	1.2	676	41	460	43	86	260	5
88-N-9 20.00-23.00M	307	.3	1123	79	1042	3	27	39	2
88-N-9 23.00-26.00M	365	.4	1129	77	1020	7	27	44	2
88-N-9 26.00-29.00M	428	.5	920	71	1151	6	28	44	2
88-N-9 29.00-32.60M	117	.2	945	71	1060	4	14	8	2
88-N-9 32.60-33.00M	2375	2.2	2025	98	877	75	381	824	17
88-N-9 33.00-35.73M	3898	2.5	1427	83	1165	222	230	343	2
88-N-9 35.73-37.30M	554	.6	679	62	1041	21	46	81	2
88-N-9 37.30-39.25M	1608	1.2	933	59	950	60	87	165	4
88-N-9 39.25-41.63M	690	.6	731	57	981	29	71	171	5
88-N-9 41.63-43.11M	3039	1.9	901	64	758	84	371	382	2
88-N-9 43.11-46.00M	2029	1.2	702	58	626	107	69	258	2
88-N-9 46.00-49.65M	1904	1.3	1028	66	988	34	85	152	2
88-N-9 49.65-50.06M	26651	20.5	6994	313	215	206	1129	1684	46
88-N-9 50.06-53.00M	500	.4	800	65	860	16	38	165	2
88-N-9 53.00-56.00M	109	.2	903	69	1150	7	11	16	2
88-N-9 56.00-59.00M	176	.2	912	72	1303	4	12	37	3
88-N-9 59.00-62.50M	401	.4	829	58	1511	5	23	38	2
88-N-9 63.74-67.00M	1252	.8	860	57	1493	84	44	100	2
88-N-9 67.00-70.00M	235	.3	821	60	1048	4	19	144	2
88-N-9 73.00-76.00M	213	.2	522	44	1060	4	21	28	2
88-N-9 76.00-78.30M	131	.1	348	32	709	2	9	16	2
STD C/FA-5X	63	6.9	73	31	55	100	97	98	23

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ICP - .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 SR 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: Core AU** PT** PD** RH** BY FA-MS.

DATE RECEIVED: OCT 19 1988 DATE REPORT MAILED: Oct 28/88 SIGNED BY. C. Leong ..D.TOYE, C.LEONG, B.CHAN, J.WANG; CERTIFIED B.C. ASSAYERS

NORTHERN PLATINUM LTD. File # 88-5307

SAMPLE#	Cu PPM	Ag PPM	Ni PPM	Co PPM	Cr PPM	Au** PPB	Pt** PPB	Pd** PPB	Rh** PPB
88N7 95.0-96.6	2067	.9	1499	88	933	52	141	320	4
88N7 96.6-98.1	50267 ✓	22.2	4839	247	512	300	460	4191	16
88N7 98.1-101.9	5267	2.5	2648	122	949	159	253	669	9
88N7 101.9-105.0	5215	2.7	2010	116	897	171	174	528	6
88N7 105.0-114.0	4608	2.3	2455	141	844	166	185	470	9
88N7 114.0-124.0	5028	2.6	2309	124	775	138	238	514	6
88N7 124.0-127	2645	1.4	1880	100	1039	89	102	253	5
88N7 132-144	4710	2.6	2774	168	841	141	167	453	19
STD C/FA-5X	60	6.9	70	30	55	102	97	98	22

✓ Assay required for correct result

APPENDIX 6

DRILL HOLE LOCATIONS

AND

DRILL HOLE SECTIONS

APPENDIX 6

DRILL HOLE LOCATIONS

AND

DRILL HOLE SECTIONS

See maps titled "Diamond Drill Hole Location Plan" and "Diamond Drill Hole Cross Section Geology in back pocket.

APPENDIX 7

DIAMOND DRILL HOLE LOGS

International Geosystems Corporation — Geolog System — Geoform

S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Z = Alpha Z

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT	ID OF DRILLHOLE	SIZE OF CORE	GEOLOGGED YY MM DD BY	DRILLING BY	CO-ORD SYSTEM	PAGE OF
I	DEN	6 8 0 2	0 2	KANICH	88N-6	BQ	88 01 BHDL	NOBLE	NP	01 03
I	PRJ			NORTHERN PLATINUM LTD				KANICHEE MINE		

Survey Data

KEY	MT/FT	TOTAL DEPTH/LENGTH	AZM	V-ANG	NORTHING	EASTING	ELEVATION
S	X	71.22	.	-90.00	205.00	97.00	LAKE+1.0

(SE = SERPENTINE)

FLAG	FROM	TO	ROCK/SOIL	TYPIFY-MAT	GRAIN	STRUCT ID	DIP	MINERALIZATION / SUITES
P	00.00	00.95	CASG					
P	0095	4300	PERD	PXOLSEQ	45			D) D– D–
R TEX	095	4300	MODERATELY MAGNETIC DUE TO FINE MT FROM SERPENTINIZATION OF OL. SULFIDES ARE RARE EXCEPT ON OR NEAR CALCAREOUS FRACTURES OR VEINLETS. NUMEROUS VEINLET ORIENTATIONS. MANY SHOW A PINCH AND SWELL FORM. THICKER VEINLETS (1 TO 20 CM) ARE BANDED AND MAY CONTAIN MINOR TALC AND/OR SERPENTINE.					
D VEN	230	235	CARB			CT	-30	M
D VEN	563	570	CARB			CT	-20	M
R STR	830	1000	A NUMBER OF VERY THIN SUBVERTICAL CB VEINLETS.					
D ALT	1350	2100	PERD	PXOLSEQTB	55	VV	-30	D1 J–
				FOVN		VV	-40	J–
R ALT	1350	2100	A BLEACHED ZONE DUE TO CARBONATE-TALC? ALTN ASSOCIATED WITH INTENSE PATCHES OF FRACTURING AND CALCITE VEIN-VEINLETS. FRACTURES HAVE SAME ORIENTATION.					
D STR	1615	1630	FLZN		55			
D VEN	1668	1675	VEIN			CT	-20	M8 B2 B– B–
D STR	2035	2040	FLZN	SH	55	SH	-40	

International Geosystems Corporation — Geolog System — Geoform

S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Z = Alpha Z

Identity Data: D E N | 6 8 0 2 | 0 2 | KANICH88N-6 | ADL | Page 02 of 03

P R J: NORTHERN PLATINUM LTD — KANICHEE MINE

Survey Data: MT/FT X

Key	Flag	From	To	Rock-Soil / Comment	Typify-Mat	Textures	Grain	Struc 1 ID	Dip	Alteration	Mineralization
D	STR	2080	2090	FLZN		SH		CB	-40	L4	L2
D	DYK	2100	2106	DYKE		AH	34	C/	-70	D3	
D	ALT	2460	2525	PERD	PXOL6	EQVN	45	CT	-35	D1	
D	VEN	2485	2500	VEIN				C/	-40	M8	L2
R	STR	3100	3450	THIN CB VEINLET AT 85-90° TO CORE AXIS. PINCHES AND SWELLS WITH NO SULFIDES. MINOR SERPENTINE.							
D	VEN	3495	3505	VEIN		BN		CT	-45	M8	L2
D	VEN	3673	3680	VEIN				C/	-65	M9	L1
D	SUL	3700	4300	PERD	PXOL6	EQTB	45				J- J*
P		4300	5060	OLPX	PXOL1	EQHG	45	CB	-50	D+	J- J-
R	TEX	4300	5060	WEAKLY FOLIATED, SULFIDES (RARE) ON SCHISTOSITY.							
P		5060	7122	MFVL		A*	35				
D	DYK	5720	5980	DYKE			34	CT	-70	D2	
								CB	-50		
D	VEN	5740	5760	VEIN				C/	-50M		

International Geosystems Corporation — Geolog System — Geoform

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Identity Data

FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT	ID of DRILLHOLE	GEOLOGGED BY	PAGE	OF
DEN	6 B 0 2 0	2	KANI CH	88 N-6	HDL	03	03
PRJ			NORTHERN PLATINUM LTD				

KANICHEE MINE

Survey Data: MT/FT ✓

FLAG	FROM	TO	Data
DDYK	59.80	61.85	OLDBPFPX0L=HGTB45 … D)
RTEX	59.80	61.80	MAY BE A FINE-GRND EQV OF MAIN INTRUSION. APPEARS TO CONTAIN PLAGE FELDSPAR, IE., CONTAMINATED?
RSTR	43.06	72.22	FRACTURES ARE AT LOW CORE ANGLE AND FILLED WITH QTZ.

EOH

International Geosystems Corporation

Geolog System

NORTHERN PLATINUM (METRIC) **Geoform**

S = Alpha S   0 = Zero   1 = One   2 = Two   7 = Seven   Ø = Alpha O   I or i = Alpha I   Z = Alpha Z

Identity Data

I — DEN 680202 | Identity of project: KANICH | ID of drillhole: 88-N-7 | Size of core: BQ | Geologged: 88 10 23 HDL | Drilling by: NOBLE | Co-ord system: NP | Page 01 of 3

I — PRJ | NORTHERN PLATINUM LTD | KANICHEE MINE

Survey Data

S — MT/FT: X | Total depth/length: 71.34 | AZM: 105. | V-ANG: -70.0 | Northing: 235.0 | Easting: 118.0 | Elevation: LAKE.

Upper Tier Geodata — Alteration & mineralization: (QZ) (CB) (MG) (SE) (PY) (CP) — SERPENTINE

Lower Tier Geodata — (PR)

Key/Flag	From	To	Rock/Soil	Typify-Mat / Textures	Struct / Dip	Alteration / Mineralization
P	00.00	17.68	CASG			
P	17.68	49.15	PERD	PXOL646TB45		D=D+ J) J+
R TEX	17.68	49.15	HEAVILY SERPENTINIZED. CARBONATE ALTN VARIES ABOUT CARB-RICH SHEARS AND OCCURS AS PERVASIVE REPLACEMENT OF OL. HEAVY SULFIDE ASSOC WITH CARB SHEARS AND ALTN (CP-PO-RICH, TO 15% SULF).			
D SUL	17.68	21.00	PERD	PXOL6HGTB45		D+D+ J(J)
D VEN	19.92	19.95	VEIN	VN	V/ -30	MB
D STR	21.25	21.88	VEIN	VNSH	CT -50 / CB -30	L5 L3 L1 L+
R STR	21.25	21.88	CONTAINS LATE BARREN CROSSCUTTING CALCITE VEINS. HIGHLY SHEARED TO BRECCIATED. OVERLYING ALTD PERIDOTITE IS FOLIATED AT -55.			
D SUL	21.00	24.10	PERD	CBPXOL6FOSH45 VNHG		F+ J=
R SUL	21.00	24.10	UP TO 20% SULF, TENDS TO BE FINELY DISS WITH BLEBBY PATCHES			
D SUL	24.10	29.42	PERD	CBPXOL6TBHG45		D(D)
D STR	29.42	29.63	PERD	CBPXOL4FOSH SX	CT -05	B1 B2
D SUL	29.63	39.00	PERD	PXOL6TBHG45		J= J=
R SUL	29.63	39.00	SULF CONT RANGES FROM 8 TO 20% CP-RICH; MI MOR MASSIVE SULF.			

International Geosystems Corporation — **Geolog System** — **Geoform**

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data	Flag	Format version / Spec	Identity of project	Size of core or hole	Geologged by	Page	Of
I	DEN	680202	KANICH88-N-7	BQ	HDL	02	3
I	PRJ		KANICHEE MINE				

Survey Data: MT/FT: X

Flag	From	To	Rock-Soil	Typify-Mat / Qalmat	Textures	Struc 1 ID	Dip	61–64	65–66	67–70	71–72
DVEN	3120	3125	VEIN	FOBN		CB	-30MS	MI		P2	L=
										L+	
DVEN	3700	3730	VEIN	FO		C/	-70	B			P+
										P)	
DDYK	3900	4000	DYKE	PFPXCL4	EQ 34	CB	-70				
DSTR	4000	4018	FAUL		SHBR	FO	-70				
DSTR	4185	4200	VEIN	SECB7	FO	CT	-45				D*
										D*	
DVEN	4220	4233	MSSX		FO	CT	-45		P≡		P1
										P6	
DSUL	4018	4450	PERD	CBBXOL5	TEH645						J)
										J+	
DLTH	4450	4945	PERD	CBPXO<3	THH655						J-
										J*	
RLTH	4450	4915	DECREASE IN OL CONTENT TO OLIVENE-PYROXENITE- SULFIDE CONTENT DROPS ALSO. MINOR OL CONC FLUCTUATIONS SUGGEST CUMULATE ORIGINS.								
DDYK	4503	4568	DIAB	?=PEHB6	TBEQ35	CT	-45		D)		
						CB	-45				
DDYK	4660	4687	DIAB	DHHB6	TBEQ35	CT	-45		D*		
P	4915	6160	OLPX	PXOLI	TBHG45			D=			D-
					BLFO					D(	
DDYK	4920	4943	DIAB	PXPFZ	TBEQ35	CT	-40		D)		

Graphic: MSSX

International Geosystems Corporation — **Geolog System** — **Geoform**

S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Z = Alpha Z

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole	Size of Core	Geologged By	Page	Of
I	DEN	6 B 0 2	0 2	KANICH	88-N-7	BQ	HDL	03	3
I	PRJ	NORTHERN PLATINUM LTD				KANICHEE MINE			

Survey Data: MT/FT X

Flag	From	To	Rock-Soil	Typify-Mat	Textures	Struct	Dip	Other
DSTR	50.42	50.50	VEIN	QZPFCB3	BN	CT	-40	
DSTR	5120	5183	VEIN	PFQZCB3	FO BN BL			
DLTH	5183	5300	PERD	PXOL2		CT	-60	D+
DSTR	5450	5700	VEND	CBQZPF5	VNBN			J*
RSTR	5450	6100	BLEACHED COLOUR AND VEINED BY CALCITE >PF OR QZ. ONLY TRACES OF SULFIDE. LOWER IM IS CHILLED ZONE.					
P	6160	7134	ANLP	HBPFQZ5	FR 36			D-
DZEN	6340	6400	PYRX	PX9	34	CT	-50	D*
						CB	-50	
DZEN	6480	6520	PYRX	PX9	34	CT	-70	
RLTH	6340	6520	GOOD EXAMPLES OF CHILLED ORIGINAL LIQUID??					

EOH

International Geosystems Corporation — Geolog System — Geoform

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE (PRE-FIX / TYPE / NUMBER)	SIZE OF CORE OR HOLE	GEOLOGGED YY MM DD	BY	DRILLING BY	COMPLETED MM DD	PAGE	OF
I	DEN	6 B 0 2 0	2	KANICH	88-N-8	BQ	88 11 03	HDL	NOBLE	10 28	01	02
I	PRJ	NORTHERN PLATINUM LTD							KANICHEE MINE			

Survey Data

TURN'G PT 000 = Collar	FROM	TO	MT/FT	TOTAL DEPTH/LENGTH	AZM CLOCKWISE FROM TRUE N	V-ANG NEG IF DOWN	NORTHING NEG IF SOUTH	EASTING NEG IF WEST	ELEVATION NEG IF SUB-SEA
S			X	77.13	105.00	-70.00	220.00	106.00	1. above Lake

Upper Tier Geodata: FLAG (N A M / S C L), Unit of Recov., Unit of Length, RECOVERY, T MOD, Mix, ROCK-SOIL, TYPIFY-MAT TM1 TM2, QALMAT QM1, TEXTURES TX1 TX2, GRAIN, FRACTURE COUNT, STRUC1 ID, STRIKE AZM, DIP, QZ, BI, ALTERATION & MINERALIZATION DEFAULT SUITES: CY, CB, MG, SE, PY, CP, GL, YY, SUMMARY

Lower Tier Geodata: FLAG (N A M / S C L), M or F, Unit of RQD, RQD, AGE Form'n, ENV, RTQ, LC Colour, TM3, QM2, TX3, TX4, STRUC2 ID, AZM, DIP, KF, MU, CL, EP, HE, Hw Amt, PR, MO, SL, Hw Amt, How2, How2

Logged intervals

KEY/FLAG	FROM	TO	ROCK / CODES	TEXTURES	GRAIN	STRUC	DIP	ALTERATION/MINERALIZATION	SUMMARY
P	0000	4500	PERD PXOL6	HGEQ TB	45			D+ J*	J(
RTEX	0000	4500	66 TO 80% OLIVINE (1-4 MM). LESS THAN 1% SULF (PO7CP) AS 2-5 MM INTERSTITIAL GRAINS AND AS <1MM DISS GRAINS. MINOR THIN (<4MM) CALCITE VEINLETS.						
DSTR	640	663	VEINSXSECB8	FOSH LMBN		CT	-40	L+	L=
DVEN	1350	1352	VEIN SECB6	BNFO		CI	-30		
DVEN	2019	2043	MSSXCBPOCP4	BNFO		CT CB	-30 -35		
DVEN	2218	2245	VEINCBSX	BNFO VN		FO	-40	L=	P3
DSUL	2245	2410	PERDCBPXOL5		45			J= J=	J+ 4
DSUL	2455	2500	PERDCBPXOL5	FO	45			J+	J)
DVEN	2530	2535	VEINSETACB5	FO		CT	-35		
DVEN	2560	2577	VEINSETACB6	FOBN		CT	-40	L)	P*
DVEN	2607	2613	VEINSETACB5	FO		VV	-30		
DSUL	2500	2750	PERD PXOL6	FRH6	45			J*	J-

International Geosystems Corporation — Geolog System — Geoform

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ENTER KEYS IN COL. 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE	SIZE OF CORE OR HOLE	GEOLOGGED BY	PAGE	OF
I	DEN	6 8 0 2	0 2	KANICH	88-N-8	BQ	HDL	02	02

KEY	FLAG	
I	PRJ	NORTHERN PLATINUM LTD KANICHEE MINE

Survey Data

TURN'G PT. 000 = Collar | FROM | TO | MT/FT: X | TOTAL DEPTH/LENGTH | AZM | V-ANG | NORTHING | EASTING | ELEVATION

Upper Tier Geodata: FLAG | RECOVERY | TMOD | ROCK-SOIL | TYPIFY-MAT | QALMAT | TEXTURES | GRAIN | FRACTURE COUNT | STRUC1 ID | STRIKE AZM | DIP | ALTERATION & MINERALIZATION DEFAULT SUITES | SUMMARY

Lower Tier Geodata: FLAG | M or F | RQD | AGE | ENV | RTQ | LC Colour | TM | QM | TX | STRUC2 ID | AZM | DIP | KF | MU | CL | EP | HE | PR | MO | SL

FLAG	FROM	TO	ROCK-SOIL / CODES	STRUC	DIP	ALT/MIN	SUMMARY
DSHR	2750	2845		CT	-50	V1	L=
				CB	-45		L)
RSHR	2750	2845	AN ERRATIC CB-VEIN-SHEAR ZONE WITH A STEEP CORE ANGLE. FROM PATCHY INTERSECTIONS MAY BE 50% LARGER.				
DSUL	2845	3340	PERDCBPXOL5 HGEQ45 FOSH			D=	J+ J=
DSHR	2945	2965	CBSE SHFO35	CT	-50		L1 L+
DSUL	3340		PERDCBPXOL5 HGEQ45			D=	J- J*
DVEN	4220	4228	VEIN SETACB6BNFO	C/	-30		J- J-
DVEN	4463	4470	VEINTASECB3FO				L1 L+
P	4500	6200	PERD PXOL4HGTB45			D)	J- J*
DDYK	4900	5025	LAMPBIPECL7EQ 44	CT / CB	-45 / -45		
DSTR	5103	5105	FAUL BRSS	C/	-45		
DVEN	5556	5559	VEIN SECB8FOBN	C/	-40		
P	6200	7713	PERD PXOL6HGEQ45			D+	J- J*
DSTR	7213	7290	VEND SECB2FOBN	CT	-45		J) J*

GRAPHIC: (VEIN ZONE)

81-130

Toll

International Geosystems Corporation

Geolog System

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Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT	ID OF DRILLHOLE/TRAVERSE	SIZE OF CORE OR HOLE	GEOLOGGED BY	DRILLING BY	COMPLETED MM DD	PAGE	OF
I	DEN	6 8 0 2 0	2	KANICH	88-N-9	BQ	HDL	NOBLE	11 02	01	03
I	PRJ	NORTHERN PLATINUM LTD						KANICHEE MINE			

Survey Data

MT/FT	TOTAL DEPTH/LENGTH	AZM	V-ANG	NORTHING	EASTING	ELEVATION
X	86.28	227.00	-40.00	137.00	95.00	.

Geodata

FLAG	FROM	TO	Text / ROCK-SOIL	TEXTURES	STRUC / DIP	Other
P	60.00	8.00	CASG			
P	8.00		PERD PXOL6HGEQ55			D+ J(J*
DSUL	8.00	11.00	PERD PXOL6AGEQ55			D+ J) J+
RSUL	8.0	11.00	SULFIDES TEND TO BE COARSER THAN USUAL (1 TO 4MM), PATCHY TO FORM WEAK NET-LIKE AREAS.			
RSTR	8.00	22.00	NUMEROUS THIN CALCITE VEINLETS AT 45 TO CORE-AXIS (FRACTURE SET)			
DSTR	19.55	20.00	VEND	FOBR	FO -50	V3 J- J-
DFAL	20.05	20.10	FAUL	BR55	C1 -66	
RFAL	20.05	20.10	1 CM THICK FAULT GOUGE.			
DVEN	27.66	27.70	VEIN FJSFCB9	FOBN		M9 L1 P- P-
DSTR	32.60	33.60	VEND	VNFO BR	FO -70; CB -20; CT -50	P) A+
DSUL	33.43	35.73	PERD PXOL6HGEQ45			J+ J)
RSUL	33.43	35.73	PATCHY, NET-LIKE SULFIDES ASSOC WITH CARBONATE ALTN OF PYROXENE? ACTUAL SULFIDE GRAINS ARE FINELY DISSEMINATED IN PATCHES			
DSUL	35.73	37.30	PERDSFPXOL6HGEQ45			J* J)
DSUL	35.73	37.30	HIGHLY VARIABLE SULF CONTENT (TRACE TO 3%)			

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE) / ID OF DRILLHOLE/TRAVERSE	SIZE OF CORE OR HOLE	GEOLOGGED BY	PAGE	OF
I	DEN	6 8 0 2	0 2	KANICHBB-N-9	BQ	HDL	02	03
I	PRJ	NORTHERN PLATINUM LTD				KANICHEE MINE		

Survey Data: TURN'G PT (000 = Collar) · FROM · TO · MT/FT · TOTAL DEPTH/LENGTH · AZM (CLOCKWISE FROM TRUE N) · V-ANG (NEG IF DOWN) · HASH TOTAL = F + T + TD + AZM + V-ANG + N + E + EL NOT INCLUDING ANY BLANK FIELDS · NORTHING (NEG IF SOUTH) · EASTING (NEG IF WEST) · ELEVATION (NEG IF SUB-SEA)

Upper Tier Geodata: FLAG (NAM / SCL) · Unit of Recov. · Unit of Length · RECOVERY · T MOD · Mix · ROCK-SOIL · TYPIFY-MAT (TM_1, TM_2) · QALMAT QM_1 · TEXTURES (TX_1, TX_2) · GRAIN (Fi, Cr, %C, MP) · FRACTURE COUNT (1, 2) · STRUC1 ID · STRIKE AZM · DIP To Right · ALTERATION & MINERALIZATION DEFAULT SUITES: QZ, BI, CY, CB, MG, SE, PY, CP, GL, YY · SUMMARY

Lower Tier Geodata: FLAG (NAM / SCL) · M or F · Unit of RQD · RQD · AGE Form'n · ENV · RTQ · LC Colour · TM_3 · QM_2 · TX_3 · TX_4 · STRUC2 ID · AZM · DIP To Right · KF · MU · CL · EP · HE · Hw Amt · PR · MO · SL · Hw Amt · How

A / H / F: Any Zone Flag or Flag = COMposite MAX or MIN or 001 – 999 · H Flag = COM then Col 21-68 = SS No groups · Flag = Rnn where nn is any no. 01-99 as defined · RECOVERY · SS = Sample Serial No · A1 … A9 · From SS# To SS# · HASH TOTAL

Graphic	Flag	From	To	Rock-Soil / Codes (col 24–48)	Struc (col 49–53)	Dip (col 54–57)	Alteration (col 61–70)	Summary (col 71–72)
	DSUL	3730	3925	PERDSEPXOL6FOHG45			D1D+	J+
				VN				J1
	DSUL	3925	4163	PERDSEPXOL6HGEQ45			D+	J*
								J)
	DSUL	4163	4311	PERDSEPXOL6HGEQ45			D=D+	P+
				FO				P1
	DSUL	4311	5050	PERDSEPXOL6HGEQ45			D+	J(
				CB				J)
	DVEN	4390	4410	VEND SECB2FOBR				L)
								L+
	DSTR	4568	4587	SHZN VNFO	CT	-65		L-
					CB	-35		L)
SXUN	DVEN	4710	4720	VEIN SECB6BRFO	CT	-45		P2
					CB	-45		P1
	RALT	4600	5300	NUMEROUS CALCITE MICROVEINLETS AND DISS CARB ALTN ASSOC WITH SULFIDE-BEARING VEINS				
SXUN	DVEN	4965	5006	VEINTASECB7FOBN	CT	-25		L2
				SX PABR	CB	-25		L3
					FO	-40		
	DSUL	5050	7200	PERDSEPXOL6HGEQ45				J-
				TB				
	DVEN	5624	5625	VEIN TACB9	CA	-15		
	DVEN	5693	5701	VEINTASECB5FOBN	CA	-10		
	DVEN	5874	5880	VEIN SECB6BNPA	CA	-20		
				FO				

1 2 3 4 5 6 7 … 80

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Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE PRE-FIX / TYPE / NUMBER	SIZE OF CORE OR HOLE	GEOLOGGED BY	PAGE	OF
I	DEN	6B02	02	KANICH	88-N-9	BQ	HDL	03	63
I	PR3	NORTHERN PLATINUM LTD							

KANICHEE MINE

Survey Data: TURN G.PT. 000 = Collar; FROM (Marks Loc of Feature); TO; MT/FT: X; TOTAL DEPTH/LENGTH; AZM (CLOCKWISE FROM TRUE N); V-ANG (NEG IF DOWN); HASH TOTAL = F + T + TO + AZM + V-ANG + N + E + EL NOT INCLUDING ANY BLANK FIELDS; NORTHING (NEG IF SOUTH); EASTING (NEG IF WEST); ELEVATION (NEG IF SUB-SEA)

Upper Tier Geodata: FLAG; Unit of Recov.; Unit of Length; RECOVERY; TMOD; MIX; ROCK-SOIL; TYPIFY-MAT TM1 TM2; QALMAT QM1; TEXTURES TX1 TX2; GRAIN; FRACTURE COUNT; STRUCT ID; STRIKE AZM; DIP; QZ; BI; ALTERATION & MINERALIZATION DEFAULT SUITES CY CB MC SE PY CP GL YY; SUMMARY

Lower Tier Geodata: FLAG; M or F; Unit of RQD; RQD; AGE Form'n; ENV; RTQ; LC Colour; TM3; QM2; TX3; TX4; STRUC2 ID; AZM; DIP; KF; MU; CL; EP; HE; Hw Amt; PO; MO; SL; Hw Amt; How

Flag	From	To	Rock / Description	Grain	Struct	Dip	Alteration
DDYK	6250	6374	RAMP PX PFCL 7 EQ	34	CT	-10	
			BI		CB	-10	
RALT	6100	6500	BLEACHED ZONE ABOUT DYKE. PX ALTD TO AMPHIBOLE.				
DVEN	6514	6518	VEIN SE CB TA 4 FO				B+
							B+
DVEN	6652	6256	VEIN CB SE TA 4 FO				
P	7200	7830	OLPX PXOL I HG	45			D* J-
							J*
RTEX	7200	7300	PERD (40% OL) TO OLPX (10% OL) TRANSITION. SPARSE SULFIDES AS PO-RICH BLEBS 4mm-6mm ACROSS. WEAK MAGNETISM ∝ TO LOW OL CONTENT.				
P	7830	8628	MTVC FR	56			
RTEX	7830	8628	INTERMEDIATE (ANDESITE TO RHYODACITIC COARSE FRAGMENTAL. VEINLETS ARE QZ AND DF.				

GRAPHIC

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International Geosystems Corporation

Geolog System

S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Z = Alpha Z

ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT	ID OF DRILLHOLE	SIZE OF CORE	GEOLOGGED BY	COMPLETED MM DD	DRILLING BY	PAGE	OF
I	DEN	6 B 0 2	0 2	KANICH	88-N-10	BQ	HDL	1 Ø 10	NOBLE	01	6
I	PRJ	NORTHERN PLATINUM LTD						1	KANICHEE MINE		

Survey Data

KEY	MT/FT	TOTAL DEPTH/LENGTH	AZM	V-ANG	NORTHING	EASTING	ELEVATION
S	X	110.36	250.	-40.	137.00	195.0	LAKE

Upper Tier Geodata: FLAG, RECOVERY, ROCK-SOIL, TYPIFY-MAT, QALMAT, TEXTURES, GRAIN, FRACTURE COUNT, STRUC 1, STRIKE AZM, DIP, QZ, BI, ALTERATION & MINERALIZATION DEFAULT SUITE (CY, CB, MC, SE, PY, CP, GL, YY), SUMMARY

Lower Tier Geodata: FLAG, M or F, RQD, AGE Form'n, ENV, RTO, LC Colour, TM, QM, TX, STRUC 2, AZM, DIP, KF, MU, CL, EP, HE, Hw Amt, PR, MO, SL

FLAG	FROM	TO	ROCK-SOIL / COMMENT	TYPIFY-MAT / TEXTURES	STRUC	DIP	ALTERATION & MINERALIZATION
P	00.00	65.60	CASG				
P	5.60	45.30	PERD	PX OL 6 TB HG 55			D+ J= J=
DSUL	5.60	17.00	PERD	PX OL 6 TB HG 55			D+ J+ J+
RTEX	5.60	17.00	TABULAR OL 2-TO 8 MM LONG. SULFIDES ARE MOSTLY INTERSTITIAL WITH RARE PATCHES TO 5 MM. OL AND SULFIDES ARE WEAKLY FOLIATED. THIS IS A PRIMARY FOLIATION. (FLOW) OL GRAINS HAVE FORMS WHICH SUGGEST MINOR MECHANICAL ABRASION.				
DSUL	17.00	19.00	PERD	PX OL 6 TB FO	FO	-65	D+ J= J1
RSTR	19.03	19.90	NUMEROUS THIN QZ AND PF? VEINLETS WITH MINOR SULFIDES. 10 CM CORE GROUND OUT.				
DSUL	19.00	22.25	PERD	PX OL 6 TB 55			J+ J=
DVEN	19.67	19.70	VEIN	QZ PF CB 6 BN SE TA	BN	-30	P+ P*
DVEN	23.70	23.80	VEIN	SE QZ PF 7 BN BR FO	CB	-40	P+ P+
DVEN	22.60	22.65	VEIN	SE QZ PF 8 FO BN	CT	-70	P+ P+
RSTR	19.00	22.00	VEINS RICH IN PF OR ALBITE? HAVE HIGHLY FOLIATED-SERPENTINIZED PLUS SULFIDE-RICH MARGINS FOR UP TO 25 CM. SULFIDES ARE CARRIED IN FRACTURES IN FELDSPAR. APPEAR TO BE LATE ASSC WITH SE OR TA.				

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S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Z = Alpha Z

Identity Data: I — D E N 6 8 0 2 0 2 KANICH BB-N-10 BQ HDL NOBLE — Page 02 of 6

I — P R J NORTHERN PLATINUM LTD KANICHEE MINE

Survey Data: S — MT/FT: X

FLAG	FROM	TO	Text / Codes	Struct	Dip	Summary
DSUL	22.25	26.00	PERD CBPXOL 6 TB FO45			J) J=
DSUL	26.00	45.30	PERD SEPXOL 6 TB FO45 / VNBN	FO / V/	-65 / -35	L= L1
DFLT	24.93	24.96	FAUL FOBR 88	C/	-35	
DFLT	26.03	26.04	FAUL FOBR 88	C/	-40	
DSTR	25.66	25.78	VEND VNFO			
DSTR	25.90	26.10	VEND VNBR			
DVEN	27.90	27.94	VEIN QZSEPF9FR			K1 K=
DVEN	30.14	30.19	VEIN QZSEPF9	V/	-35	K+ K)
DVEN	30.38	30.48	VEIN PF9	V/	-40	L= K+
DVEN	30.52	30.56	VEIN PF9	V/	-60	K+ K)
DVEN	31.57	31.88	VEND QZSEPF8BR FR	C7	-35	K1 K=
RSTR	32.95	35.00	NUMEROUS THIN FELDSPATHIC VEINS. MOST ARE FRACTURED WITH MINOR SULFIDES. MANY ARE BRECCIATED AND MAY HAVE FAULT GOUGE IN PLACES			
DVEN	35.20	36.08	VEND SEABPF6BRSA QZ VN			K K>
RFAL	33.20	35.80	ABUNDANT FAULT GOUGE.			

FAULT ZONE

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Geolog System

S = Alpha S   0 = Zero   1 = One   2 = Two   7 = Seven   Ø = Alpha O   I or i = Alpha I   Ƶ = Alpha Z

Identity Data

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole/Traverse	Size of Core or Hole	Geologged By	Drilling By	Page	Of
I	DEN	6 8 0 2 0	2	KANICH	88-N-10	BQ	HDL	NOBLE	03	6
I	PRJ	NORTHERN PLATINUM LTD						KANICHEE MINE		

Survey Data

Turn'g Pt.	From	To	MT/FT	Total Depth/Length	AZM	V-ANG	Northing	Easting	Elevation
			X						

Geodata entries

Flag	From	To	Rock-Soil / Description	Struc	Dip	Alteration	Summary
R STR	3870	4000	HIGHLY FRACTURED WITH FAULT GOUGE. 10 CM CORE MISSING = FAULT ZONE.				
D	4530	8300	PERD PXOL6HGEQ45 CU				J) J+
K TEL	4530	8300	CYCLIC GRADATION OF OLIVINE GRAIN SIZE. COARSE, TABULAR OL OVERLAIN OR GRADES TO FINE OL. COMPOSITIONALLY OL-60 TO 8090. THIN CHLORITE DYKES MAY BE ASSOC WITH CARB-TALC-SULFIDE VEINS.				
D DYK	4540	4546	DYKE PFCL6EQ 34				
D DYK	4574	4587	DYKEBIPFCL6EQPP34	CT	-50		
D ALT	4700	4751	PERD CBPXOL6EO 45			D1	J* J*
D VEN	4775	4785	VEINSETACB6BRFU	CT	-40		<= <+
D ALT	4850	4910	PERD CBPXOL6PAVN45			P2	J- J-
D TEX	4587	4645	PERD PXOL7HGEQ34				J- J*
D TEX	4910	5000	PERD PXOL7HGEQ34				J- J+
D TEX	5000	5025	PERD PXOL6TBHG45				J* J+
D TEX	5025	5050	PERD PXOL7HGEQ34				J- J*

FAULT ZONE

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Identity Data

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole	Size of Core	Geologged By	Drilling By	Page	Of
I	DEN	6B02	02	KANICH	88-N-10	BQ	HDL	NOBLE	04	6
I	PRJ	NORTHERN PLATINUM LTD						KANICHEE MINE		

Geodata

Flag	From	To	Rock-Soil	Typify-Mat / Textures / Grain	Struct	Dip	Alteration	Summary
D TEX	5050	5090	PERD	PXOL6TBHG45				J* / J+
D TEX	5090	5160	PERD	PXOL7HGEQ44				J- / J+
D TEX	5160	5232	PERD	PXOL6TBHG45				J+ / J)
D VEN	5200	5208	VEIN	TASECB4FO / QZPF	FO	-30		L1 / L1
D TEX	5232	5374	PERD	CBPXOL6PAHG45 / TB			P	P- / P*
D SUL	5374	5417	PERD	PXOL6TB 55				J) / J+
D TEX	5417	5434	PERD	PXOL7HGEQ34				J- / J-
D SUL	5434	6165	PERD	PXOL6TBHG45				J) / J=
D VEN	5673	5677	VEIN	TASECB4FO	C/	-35		K* / K+
R TEX	5434	6165	A MED-GRND PERD. SULF CONTENT IS VARIABLE FROM 3 TO 10%.					
D TEX	6165	6560	PERD	PXOL6TBHG45				JC / J)
D STR	6560	6600	PERD	CBPXOL6FOVN45 / FR	CT / FO	-50 / -35		K= / K1
D SUL	6600	6920	PERD	PXOL6VNFO45 / HGTB				J+ / J=

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S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Ƶ = Alpha Z

Identity Data

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole/Traverse	Size of Core	Geologged YY MM DD	By	Drilling By	Page	Of
I	DEN	6802	02	KANICHA	88-N-10	BQ	88 1 13	HDL	NOBLE	05	6
I	PRI	NORTHERN PLATINUM LTD							KANICHEE MINE		

Survey Data: MT/FT: X

Flag	From	To	Description / Rock-Soil and codes	Struct	Dip	Alteration & Mineralization
RSTR	6560	6840	HIGHLY FRACTURED, VEINED, AND RARE CHLORITE DYKE. HIGHEST CONC OF SULFIDES ABOUT VEIN-SHEARS WITH SULFIDES ON FOLIATION.			
DDYK	6756	6768	DYKE BIP FCL8 EQ 34	CL	-75	
DSUL	6920	7063	PERD PX OL6 TBHG 45			J* / J)
DSUL	7063	7090	PERD SE PX OL5 FOVN 45			K= / K1
DDYK	7090	7100	DYKE PFCL7 EQFR 33			
DSUL	7100	7475	PERD SE PX OL6 HG 45			J) / J=
DSTR	7200	7230	PERD CB PX OL VNFO / SE BR			
DDYK	7174	7186	DYKE PFCL7 EQ 34	CB	-30	
DFAL	7260	7300	FAUL BRFO / 88			
RFAL	7260	7300	MISSING CORE			
DSUL	7475	8300	PERD PX OL5 HGTB 45			P* / P*
DVEN	7795	7845	VEIN CB PF SE	CL	-85	K= / K1
D	8300	8670	OLPX PX OL7 HGFQ 45			J- / J*

FAULT

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE (PRE-FIX / TYPE / NUMBER)	SIZE OF CORE OR HOLE	GEOLOGGED BY	DRILLING BY	PAGE	OF
I	DEN	6B02	02	KANICH	89-N-10	BQ	HDL	NOBLE	06	06
I	PRJ	NORTHERN PLATINUM LTD						KANI CHEE MINE		

Survey Data

KEY	TURN G PT	FROM	TO	MT/FT	TOTAL DEPTH/LENGTH	AZM	V-ANG	NORTHING	EASTING	ELEVATION
S				X						

Geodata

KEY/FLAG	FROM	TO	ROCK-SOIL / TEXTURES / GRAIN	STRUC	DIP
P	8670	11036	DIAB QZ 4 B PF 5 TB EQ 35		
D ZEN	8560	8636	OLPX PXOL 1 4G 45		
D VEN	8995	9008	VEIN HB PF QZ 5 BR FO	CT	-50
D VEN	10082	10094	QZVN PF QZ 9	CB	-35

R TEX: DYAB DYKE HAS CHILLED UPPER MARGIN. GRAIN SIZE INCREASES TO 4MM PF LATHS. WEAKLY MAGNETIC. ALL VEINIG IS QUARTZ ± PF. NO SULFIDES IN VEINS

EOH

81-130

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S = Alpha S   0 = Zero   1 = One   2 = Two   7 = Seven   Ø = Alpha O   I or i = Alpha I   Ƶ = Alpha Z

Identity Data

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole (Prefix-Type-Number)	Size of Core	Geologged YY MM DD	By	Drilling By	Completed MM DD	Page	Of
I	DEN	6 8 0 2 0	2	KANICH	88-N-11	BQ	88 11 22	HDL	NOBLE	16 16	01	5
I	PRJ	NORTHERN PLATINUM LTD							KANICHEE MINE			

Survey Data

MT/FT	Total Depth/Length	AZM	V-ANG	Northing	Easting	Elevation
X	135.36	—	-90.00	116.	210.	.

Flag	From	To	Rock/Description	Textures	Struc	Dip	Suites
P	000	100	CASG				
P	100	1704	DIAB HBPF5	TB EQ35 / PP			D+
DZEN	115	300	PERDSEPXOL5	TBHG45	CT / CB	-50 / -80	J✱ ✓ / J)
DZEN	640	726	PERDSEPXOL5	TBHG45	CT / CB	-65 / -80	J✱ ✓ / J)
DZEN	745	860	PERDSEPXOL5	TBHG45	CT / CB	-70 / -40	J(✓ / J✱
RLTH	860	1704	MULTIPLE DIABASE DYKES THIN, VFINE-GRAINED PLAG PHYRIC DYKES CUT LATH-LIKE DIAB. BOTH DYKES HAVE CHILLED MARGINS				
P	1704	12722	PERDSEPXOL4 / PF	TBHG45 / VM			J(/ J)
RTEX	1704	4032	ALTD CONTACT (PF ?). BRECCIATED AND CONTAINS NUMEROUS THIN DIABASE DYKELETS. SULFIDES ARE PATCHY BLEBS TO 2CM WITH MINOR DISS GRAINS.				
DDYK	1760	1793	DIAB	EQ 34			
DDYK	2093	2100	DIAB	EQ 34	CB	-70	
DDYK	2300	2312	DIAB	EQ 34	C1	-50	
DDYK	2326	2433	DIAB		CT / CB	-40 / -30	
DSUL	2433	4032	PERDCBPXOL4	TBHG45			JC / JB

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE (PRE-FIX / TYPE / NUMBER)	SIZE OF CORE OR HOLE	GEOLOGGED BY	PAGE	OF
I	DEN	6 8 0 2	0 2	KANICH	88-N-11	BQ	HDL	02	6
I	PRJ	NORTHERN PLATINUM LTD							

KANICHEE MINE

Survey Data — TURN'G PT. 000 = Collar; FROM; TO; MT/FT: X; TOTAL DEPTH/LENGTH; AZM; V-ANG; NORTHING; EASTING; ELEVATION

Upper Tier Geodata / Lower Tier Geodata — RECOVERY; ROCK·SOIL; TYPIFY-MAT; QALMAT; TEXTURES; GRAIN; FRACTURE COUNT; STRUCT 1 ID; STRIKE AZM; DIP; ALTERATION & MINERALIZATION DEFAULT SUITES; SUMMARY; RQD; AGE; ENV; RTQ; CC Colour; STRUC2 ID

KEY/FLAG	FROM	TO	ENTRY			
RSUL	2433	4032	SPARSE SULFIDES AS PO OR PO+CP-RICH BLEBS OR PATCHES. MINOR DISS SULFIDES TO 2%. HIGHLY METASOMATIZED PERD TO OLPYX HAS BEEN CARBONATED AND FELDSPATHITIZED (BIG WORD) AND PX RECRYSTALLIZED, NOW HB??			
RTEX	2433	4032	VEINLETS NEAR DIAB ARE QZ OR QZ+CB ± MINOR SERP			
DVEN	2803	2808	VEINSETACB2FO	C1	-50	
DVEN	3027	3033	VEINSETACB4FOBN AFQZ	CT	-35	D- D-
DVEN	3522	3530	VEIN CB FO	CB	-70	
DVEN	3560	3572	VEIN CB			
DSTR	3645	3670	PERDSEPXOL BRFO CB			
DSTR	4032	4115	SHZN SECB3FOVN BN			
DSUL	4115	4515	PERDCBPXOL5VNTB45 FO			J* J)
RSUL	4115	4515	MINOR PATCHES OF 5 TO 10% SULFIDES.			
DVEN	4260	4280	VEND SECB6VNFO GN			J) J)
DSUL	4515	5100	PERDSEPXOL6TBH6			J) JJ

"VEIN ZONE"

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S = Alpha S | 0 = Zero | 1 = One | 2 = Two | 7 = Seven | Ø = Alpha O | I or i = Alpha I | Ƶ = Alpha Z

Identity Data

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole/Traverse	Geologged By	Page	Of
I	DEN	6802	02	KANICH	88-N-11	HDL	03	5
I	PRJ	NORTHERN PLATINUM LTD			KANICHEE MINE			

Survey Data: TO: MT/FT: X

Flag	From	To	Comment	Rock-Soil	Typify-Mat / Qalmat	Textures	Struc / Dip	Alteration & Mineralization	Summary
D SUL	51.00	53.74		PERD	SEPXOL7	TBHG45 / EQ		D+	J+ / J=
D TEX	5374	5428		PERD	PXOL6	EQHG44	CT -30		J(/ J*
D SUL	5428	5600		PERD	PXOL7	TBHG55			J* / J+
D VEN	5525	5535		VEND	SEPFCB6	VNFO / BN	CT -50		
D SUL	5535	6000		PERD	SEPXOL7 / TA	TB 55			J) / J+
D SUL	6000	6404		PERD	SEPXOL7 / TA	TB 55			J+ / J1
R TEX	5535	7600	HIGHLY SERPENTINIZED AND TALCOSE?						
D DYK	6404	6625		LAMP	BIPFCL7	EQPP34	CT -60 / CB -20		
D SUL	6625	7600		PERD	SEPXOL6 / TA	TBHG45 / FO	FO -50		J) / J+
D FAL	7290	7310		FAUL	SECL	FO$$ / BX	FO -80		
D TEX	7600	7630		DYKE	PFPXCL7 / OL	BRPA			P+ / P=
D SUL	7630	8700		PERD	CBPXOL6	TBHG55		D1	J(/ J)
D FAL	8535	8660		PERD	CLPXOL5	BR$$45 / FO TB	FO -30		

Graphic: FAULT ZONE

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S = Alpha S   0 = Zero   1 = One   2 = Two   7 = Seven   Ø = Alpha O   I or i = Alpha I   Z = Alpha Z

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT	ID of DRILLHOLE	GEOLOGGED BY	PAGE	OF
I	DEN	6802	02	KANICH	80-N-11	HDL	04	5
I	PRJ	NORTHERN PLATINUM LTD				KANICHEE MINE		

Survey Data: MT/FT: X

	FLAG	FROM	TO	ROCK	TYPIFY-MAT / QM	TEXTURES	STRUC / DIP	ALTERATION & MINERALIZATION / SUMMARY
	D SUL	8700	9100	PERD	SEPXOL6	TBHG 55		D=D+ J*
					CB			J+
	D SUL	9100	9250	PERD	CBPXOL6	TBHG 55		D+ J+
								J=
	D SUL	9250	9600	PERD	CBPXOL6	TBHG 55		D+ J)
						FO		J=
FAULT	D FAL	9292	9300	FAUL	CLSE	BRFO	C/ -40	
	D SUL	9600	10500	PERD	SEPXOL6	TBHG 55		J*
								J)
	D STR	9720	9780	PERD	SEPXOL5	FOVN		
					PFCB	BRPA		
	D SUL	10500	11068	PERD	SEPXOL6	TBHG 55		D1 J+
								J1
	D SUL	11068	11470	PERD	SEPXOL5	TBHG 55		D1
					CB			
	D SUL	11470	11624	PERD	SEPXOL5	TBHG 55		D1 P+
					CB	VNPA		P=
	D SUL	11624	12000	PERD	SEPXOL4	HGTB 55		J*
								J)
	D SUL	12000	12286	PERD	PXOL5	TBHG 55		J+
								J=
	D SUL	12286	12495	PERD	PXOL3	HGTB 55		J*
								J)
	D DYK	12495	12598	LAMP	BIPFCL7	PPHG 34	CT -45	D=
							CB -55	

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Identity Data:
- DEN | Format Version 6 B 0 2 | Spec 0 2 | Identity of Project: KANICH88-N-11 | Geologged by: HDL | Page 05 of 55
- PRJ | NORTHERN PLATINUM LTD | KANICHEE MINE

Flag	From	To	Rock-Soil	Typify-Mat	Qalmat	Textures	Grain	
DSUL	12598	12722	PERD	CBPX	OL3	HG	45	J* J+
P	12722	13254	OLPX		PXOL1	HGEQ	45	J- J+
P	13254	13536	MTVL			HGBR	36	

RTEX 13254 13536 GENERALLY A VFN-GRAINED MAFIC-ANDESITIC VOLCANIC WITH SPARSE, LESS MAFIC FRAGMENTS. ACTUAL CONTACT WITH THE ULTRAMAFIC INTRUSION IS NOT DISTINCT (TO ME ANYWAYS)

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Identity Data

Flag	Format Version	Spec	Identity of Project	ID of Drillhole/Traverse	Size of Core	Geologged By	Drilling By	Completed	Page	Of
D E N	6 8 0 2 0	2	KANICH	88-N-12	BQ	HOL	NOBLE	1022	07	4
P R J	NORTHERN PLATINUM LTD						KANICHEE MINE			

Survey Data

MT/FT	Total Depth/Length	AZM	V-ANG	Northing	Easting	Elevation
X	126.52	— . —	-90.00	130.00	220.0	.

Geodata

Flag	From	To	Rock/Soil – Codes	Struc	Dip	Other
P	0.00	1.22	CASG			
P	1.22	22.82	OLPX HBPX OLI FO PA 46 / PFCBAC BR	FO	-30	
RTEX	1.22	4.25	HIGHLY ALTD ROCK, POSSIBLY METAVOLCANIC OR ULTRAMAFIC MARGINAL PHASE. PATCHES OF QZ AND PF GIVE A PORPHYRITIC APPEARANCE			
DVEN	4.05	4.25	VENDPFQZCB FOBN	BN	-30	
DTEX	4.25	11.00	OLPX ACPX OLI TB FO 45 / HB PAUN			P=P) / P)
DVEN	5.44	5.63	VEINSEPFCB2 / QZ			
DSUL	5.63	11.00	OLPX ACPX OLI FO TB 45 / PA	FO	-45	
RSUL	5.63	11.00	5 TO 10% SULFIDES, PYRITE-RICH AT TOP, BECOMES PO-RICH WITH DEPTH.			
DTEX	11.00	14.00	PYRX PFPX AC9 TB EQ 45			J- / J-
DTEX	14.00	15.30	OLPX ACPX OLI TB			J- / J-
DVEN	15.30	16.17	VENDSECBQZ6 PABR			
DDYK	16.17	17.60	DIAB QZHBP HS EQ 34	CB / CT	-60 / 45	
DTEX	17.60	22.82	PYRX ACPX			J- / J-

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International Geosystems Corporation — Geolog System — Geoform

S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Z = Alpha Z

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole/Traverse	Geologged By	Page	Of
I	DEN	6B02	02	KANICH	88-N-12	HDL	02	4
I	PRJ	NORTHERN PLATINUM LTD			KANICHEE MINE			

S	Turning Pt	From	To	MT/FT	Total Depth/Length	AZM	V-ANG	Northing	Easting	Elevation
S				X						

Flag	From	To	Rock-Soil / Typify-Mat / Qalmat / Textures	Grain	Struc / Dip	Alteration & Mineralization / Summary
DSUL	2215	2282	PYRX			J+ J+ / J=
P	2282	4615	DIAB PF1B5HGEQ34			
KTEX	2282	4615	VFN PLAGE- PHYRIC (TABULAR) DIABASE. NON MAGNETIC.			
DXEN	4060	4170	OLPXSEPXOL1HG	45		J- / J*
P	4615	12652	PERDCBPXOL4TBHG	45		J) / J=
DSUL	4615	4800	PERD PXOL2HG	45		J* / J)
DSUL	4800	5150	OLPX PXOL1HG	45		J- / J-
DSUL	5150	5356	OLPX PXOL1HG			J+ / J/
DDYK	5335	5356	LAMPDFBICL8EQ	34	C/ -60	
DSUL	5356	5445	OLPX PXOL1HG	45		J+ / J=
DDYK	5445	5470	LAMPBIPFCL7EQ	34	C/ -65	
DVEN	5470	5500	VENDSEPFCB2FOBN TA			
DSUL	5500	5700	PERD CBPXOL4FOTB	45		J+ / J/

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Geolog System (unclear) Geoform

S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Ƶ = Alpha Z

ENTER KEYS IN COL. 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE PRE-FIX / TYPE / NUMBER	SIZE OF CORE OR HOLE	GEOLOGGED YY MM DD	BY	ASST BY	COMPLETED MM DD	DRILLING BY	STARTED YY MM DD	COMPLETED MM DD	DRILLING TIME HRS	SURVEYED BY	CO-ORD SYSTEM	GRID AZIMUTH	PAGE	OF
I	DEN	6 8 0 2	0 2	KANICH	88-N-12			HDL									.	03	4
I	PRJ	NORTHERN PLATINUM LTD									KANICHEE MINE								

Survey Data

KEY	TURN G PT 000 = Collar	FROM Marks Loc of Feature	TO	MT/FT	TOTAL DEPTH/LENGTH	AZM CLOCKWISE FROM TRUE N	V-ANG NEG IF DOWN	HASH TOTAL = F + T + TD + AZM + V-ANG + N + E + EL NOT INCLUDING ANY BLANK FIELDS	NORTHING NEG IF SOUTH	EASTING NEG IF WEST	ELEVATION NEG IF SUB-SEA
S				X	126.52						

Upper Tier Geodata: FLAG (N A M / S C L) · Unit of Recov. · Unit of Length · RECOVERY · T_{MOD} · % Mix · ROCK-SOIL · TYPIFY-MAT (TM_1, TM_2) · QALMAT (QM_1) · TEXTURES (TX_1, TX_2) · GRAIN (Fr, Cr, °C, MP) · FRACTURE COUNT (1, 2) · Int Typ · T_1 · STRUC 1 ID · STRIKE AZM · DIP To Right · QZ · BI · ALTERATION & MINERALIZATION & FAULT SUITE: CY, (CB), (MC), (TA), PY, (CP), GL, YY · SUMMARY

Lower Tier Geodata: FLAG (N A M / S C L) · M or F · Unit of RQD · RQD · AGE Form'n · ENV · RTQ · CC Colour · TM_3 · QM_2 · TX_3 · TX_4 · Se, Rn, Sd, O/C · Ik, Gm, k, Sl · Int Typ · T_2 · STRUC 2 ID · AZM · DIP To Right · KF · MU · CL · EP · HE · Hw Amt · (PR) · MO · SL · Hw Amt · How · How

A / H / F: Any Zone Flag or Flag = COMposite, MAX or MIN or 001 – 999 · H Flag = COM then Col 21-68 = SS No. groups · Flag = Rnn where nn is any no. 01-99 as defined · RECOVERY · SS = Sample Serial No. · A1–A9: From SS# / To SS# · HASH TOTAL

KEY	FLAG	FROM (5–10)	TO (11–16)	17–23	ROCK-SOIL (24–27)	TYPIFY-MAT / QALMAT (28–34)	TEXTURES (35–38)	GRAIN (39–42)	STRUC 1 ID (49–53)	DIP (54–56)	61–64	67–70	71–72
D	SUL	5706	5912		PERD	CBPXOL2	FOH6	45					J)
												J+	
D	DYK	5912	5951		LAMP	BIPFCL6	EQ	34	CT	-45			
D	SUL	5951	6300		PERD	CBPXOL5	TBFO	45	FO	-60	D1	J1	$+
						TA	VN					$1	
D	SUL	6300	6400		PERD	CBPXOL5	TBFO	45				J1	JC
						TA	VN					J)	
D	SUL	6400	7033		PERD	CBPXOL5	TBH6	45			D1	J1	$+
						TA	VMFO					$1	
R	TEX	5951	8900	HIGHLY	CARBONATED.	AND VEINED	WITH TALC	TO 10-20%					
D	SUL	7033	7583		PERD	CBPXOL5	TBH6	45			D1	J1	J*
						TA	VMFO					J+	
D	DYK	7155	7218		LAMP	BEPFCL6	EQ	34	C/	-30			
D	DYK	7433	7491		LAMP	BIPFCL5	EQ	34	CT	-30			
D	SUL	7583	8900		PERD	TAPXOL5							JC
						CB						J)	
D	VEN	7930	8028		VEND	SEQZCB3	VNFO						DC
						PF	BR						DH
D	DYK	8101	8180		LAMP	BIPFCL6	TBEQ	34	CT	-20			
D	VEN	8390	8412		VEND	SEPFCB5	VNBN						
						QZ							

FAULT ??

GRAPHIC

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S = Alpha S | 0 = Zero | 1 = One | 2 = Two | 7 = Seven | Ø = Alpha O | I or i = Alpha I | Z = Alpha Z

Identity Data		
I	DEN 680202	KANICH 88-N-12 — Geologged by HDL — Page 04 of 4
I	PRJ	NORTHERN PLATINUM LTD — KANICHEE MINE

Survey Data: MT/FT: X

Flag	From	To	Rock-Soil	Typify-Mat / Textures	Struc 1 ID	Dip	Remarks
DSUL	8900	10315	PERD	CB PX OL 6 TB HG 95			D+ D+ J* J+
DSTR	9170	9195	FAUL	SSSH BRCA	FO	-10	
DSTR	9248	9260	FAUL	BRSH CA	CB	-20	
DSTR	9290	9298	FAUL	BRCA			
RTEX	9100	9300	10 CM CORE MISSING, IE FAULT GOUGE.				
DSUL	9750	10315	PERD	FO 45			J+ J=
DSTR	9490	9503	FAUL	FOBR CA	FO	-35	
DSTR	9870	9885	FAUL	FOBR CA			
DSUL	10315	12400	PERD	PX OL 6 TB HG 45			P* P*
D?EX	12400	12652	OLPX	PX OL 2 HG TB 45			J- J(
RTEX	10315	12400	GRAIN-SIZE AND CONCENTRATION OF OLIVINE DECREASES TO BECOME OL 20^ OLPX. SULFIDES AS PATCHES [illegible] OR PO. NOT SAMPLED 106 TO 126 M.				

(Margin note beside rows 9170–9298: Fault zone)

EOH

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Geolog System

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ENTER KEYS IN COL. 1 TO ACTIVATE ENTRIES

Identity Data

Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole (Prefix-Type-Number)	Size of Core	Geologged YY MM DD	By	Drilling By	Completed MM DD	Page	Of
I	DEN	6802	02	KAMICH	88-N-13	BQ	881202	HDL	NOBLE	1201	01	5
I	PRJ	NORTHERN PLATINUM LTD							KAMICHEE MINE			

Survey Data

Key	MT/FT	Total Depth/Length	AZM	V-ANG	Northing	Easting	Elevation
S	X	114.33	.	-90.00	86.00	155.00	.

Geodata

Key	Flag	From	To	Comment	Rock-Soil	Typify-Mat / Qalmat / Textures	Struct	Dip	Alteration
P		0000	122		CASG				
P		0093			PERD	PX OL4HG EQ45			D+ J* J)
D	STR	595	600		VEIN	TASECB5	C/	-35	
D	TEX	854	915		PERD	PX OL4HGEQ45	CT	-20	J- J*
R	TEX	854	915	FINER-GRAINED UNIT					
D	TEX	1010	1023		PERD	PX OL4HG 45			
D	SUL	090	1000		PERD	PX OL4HG 45			J* J)
D	TEX	1023	1060		PERD	PX OL4HG 55			J- J-
D	TEX	1060	1238		PERD	PX OL4HG 45			J- J-
R	TEX	1060	1238	FINE- TO MEDIUM-GRAINED PERD					
D	SUL	1238	1808		PERD	PX OL6HGEQ45			J- J-
D	DYK	1808	1875		DIAB	PFHB5EQTB34	CT	-40	
R	TEX	1808	1875	WEAKLY MAGNETIC, POSSIBLY A FG PERD					

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KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID OF DRILLHOLE/TRAVERSE (PRE-FIX, TYPE, NUMBER)	GEOLOGGED BY	PAGE	OF
I	DEN	6 8 0 2	0 2	KANICH	BB-N-13	HDL	02	5
I	PRJ	NORTHERN PLATINUM LTD				KANICHEE MINE		

FLAG	FROM	TO	ROCK-SOIL	TYPIFY-MAT (TM1, TM2)	QALMAT QM1	TEXTURES	GRAIN	STRUC1 ID	DIP	ALTERATION & MINERALIZATION	SUMMARY
DSUL	18.75	2381	PERD	CPPX / SETA	OL4	FOBR / VNPA	45			P2 D+ / J)	J*
DSTR	2246	2354	SHZN	SEPX	CB2	BRFO / SH					
DVEN	2354	2381	VEIN	SE	CB			CT	-30	M8 M2	
DLTH	2381	2720	OLPX	PX	OL2					D+ / J*	J-
RLTH	2381	2720	APPROACHING OLPX COMP, TRULY PERD?								
DDYK	2720	2830	LAMP	BIPF / CL	HB4	PPEQ	34	CT	-60	D+ D3	
DTEX	2830	2900	PERD	SEPX / CB	OL2	HG	45			D1 / J*	J-
DTEX	2900	2970	PERD	PX	OL2	HG	44			J-	J-
DTEX	2970	3070	PERD	PX	OL2	HG	45			J-	J-
DDYK	3070	3138	DIAB	BIPF	H65	HGTB	34	CT / CB	-45 / -60		
DSUL	3138	3383	PERD	PX	OL3	HG	44			D+	J*
RSUL	3138	3383	VFINE-GRAINED DISS SULFIDES								
DSUL	3383	3557	PERD	PX	OL3	HG	45			J*	J-

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International Geosystems Corporation — Geolog System — Geoform

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Key	Flag	Format Version	Spec	Identity of Project	ID of Drillhole/Traverse	Geologged By	Drilling By	Page	Of
I	D E N	6 B 0 2	0 2	KANICH	88-N-13	HDL		03	5
I	P R J	NORTHERN PLATINUM LTD					KANICHEE MINE		

Survey Data: S — MT/FT: X

Flag	From	To	Cols 17–23	Rock-Soil / Typify-Mat / Qalmat	Textures / Grain	Struc / Dip	Alteration / Mineralization	Summary
D SUL	3537	3655		PERD PXOL2	HG 45		D) J+	J*
D SUL	3655	3804		PERD SE PXOL2	HG 46		D) D2 J*	J-
D DYK	3804	3865		LAMP BI PF CL4	PP 34	CT -45; CB -45		
D SUL	3865	4200		PERD TA SE PX5 OL3	EQ HG 6 45		D1 J+	J*
D SUL	4200	4786		PERD TA SE O[illegible]4	HG 45		D1 J*	J-
D VEN	4554	4560		VEIN SE TA CB3	FO	C/ -50	L6	
D STR	4786	5200		FAZN	FO VN BR		J+	J*
D VEN	4786	4800		VEIN SE CB9	BN PA FO	CT -45; FO -30		
R STR	4800	4867	FAULT GOUGE, 20 CM CORE MISSING					
D TEX	4800	4968		FAUL TA SE CB	FO BR SS SH	FO -35		
D SUL	4968	5200		PERD CB PX OL5	FR VN		P1 J+	J)
D STR	5180	5200		FAUL	BR FR			
D SUL	5200	5460		PERD CP PX OL6	TB HG 55 FO		D= J=	J)

GT-130

International Geosystems Corporation

Geolog System

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE (PRE-FIX / TYPE / NUMBER)	GEOLOGGED BY	PAGE	OF
I	D E N	6 8 0 2	0 2	KANICH	88-N-13	HDL	04	5
I	P R J	NORTHERN PLATINUM LTD				KANICHEE MINE		

SIZE OF CORE OR HOLE · GEOLOGGED YY MM DD · ASST BY · COMPLETED MM DD · DRILLING BY · STARTED YY MM DD · COMPLETED MM DD · DRILLING TIME-HRS · SURVEYED BY · CO-ORD SYSTEM · GRID AZIMUTH

Survey Data — TURN'G PT. 000 = Collar · FROM (Marks Loc of Feature) · TO · MT/FT · TOTAL DEPTH/LENGTH · AZM (CLOCKWISE FROM TRUE N) · V-ANG (NEG IF DOWN) · HASH TOTAL = F + T + TD + AZM + V-ANG + N + E + EL NOT INCLUDING ANY BLANK FIELDS · NORTHING (NEG IF SOUTH) · EASTING (NEG IF WEST) · ELEVATION (NEG IF SUB-SEA)

Upper Tier Geodata — FLAG (N A M / S C L) · Unit of Recov. · Unit of Length · RECOVERY · T_{MOD} · Mix · ROCK-SOIL · TYPIFY-MAT (TM_1, TM_2) · QALMAT (QM_1) · TEXTURES (TX_1, TX_2) · GRAIN (Fr, Cr, C, MP) · FRACTURE COUNT (1, 2) · Int Typ · T_1 · STRUC 1 ID · STRIKE AZM · DIP To Right · ALTERATION & MINERALIZATION DEFAULT SUITES: QZ, BI, CY, CB, MG, SE, PY, CP, GL, YY · SUMMARY

Lower Tier Geodata — FLAG (N A M / S C L) · M or F · Unit of ROD · ROD · AGE Form'n · ENV · RTO · LC Colour · TM_3 · QM_2 · TX_3 · TX_4 · Sa · Rn · Sw · O/C · Is · Im · k · Int Typ · T_2 · STRUC 2 ID · AZM · DIP To Right · KF · MU · CL · EP · HE · TA · PR · MO · SL · Hw Amt · How 2

A / H / F — Any Zone Flag or Flag = COMposite, MAX or MIN or 001 – 999 · H Flag = COM, then Col 21-68 = SS No. groups · Flag = Rnn, where nn is any no. 01-99 as defined · RECOVERY · SS = Sample Serial No. · A1 … A9 (From SS # / To SS #) · HASH TOTAL

Key	Flag	From	To	Rock-Soil	Codes (cols 28–38)	Grain (cols 39–40)	Struc	Dip	Alt. (cols 61–62)	cols 65–66	cols 67–69	cols 71–72
D	SUL	5460	5947	PERD	PXOL7TB	45				D+		J*
											J+	
D	SUL	5947	6200	PERD	PXOL7TB	55				D+		J)
											J=	
D	SUL	6200	6550	PERDSE	PXOL7TB	45				D+		J*
											J+	
D	SUL	6550	6800	PERD	PXOL7TB	45						J)
											J9	
D	STR	6800	6857	PERDCB	PXOL6FOSH	45						L=
					TB						L2	
D	SUL	6857	7062	PERD	PXOL6HGTB	45						J)
											J=	
D	VEN	7062	7105	VEIN	SECB9		CTCT	-30				
D	SUL	7105	7197	PERDEB	PXOL6FRSH	45			P1			L=
											L2	
D	STR	7197	7337	SHZNSE	CBSX3BNFO							L1
					BRVN						L3	
D	SUL	7337	7400	PERDCB	PXOL7TBHG	45						J+
											J=	
D	SUL	7400	8355	PERD	PXOL7TB	55						J*
											J+	
D	STR	8090	8095	VEIN	SECB8FO		CT	-35				
							CB	-63				
D	STR	8146	8156	VEND	SECB8FO		CT	-45				

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KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID OF DRILLHOLE/TRAVERSE	GEOLOGGED BY	PAGE	OF
I	DEN	6 B 0 2	0 2	KANICH	88-N-13	HDL	05	5
I	PRJ	NORTHERN PLATINUM LTD			KANICHEE MINE			

Survey Data: MT/FT: X

FLAG	FROM	TO	ROCK-SOIL / DESCRIPTION	TEXTURES	OTHER
R STR	8090	8355	HIGHLY FRACTURED, VEINED, AND SHEARED PERIDOTITE. 20CM CORE MISSING. FAULT GOUGE AT 82.66 TO 82.95 AND 83.50 TO 83.55M.		
D SUL	8355	8800	PERD SEPX OL STBH 645 CB	FD	J= J2
R TEX	8355	8800	DECREASE IN OL CONTENT IS ABRUPT OVER 0.5M, 87.5 TO 88.0M.		
P	8800	8850	OLPX	PXOLITB	J* D+
P	8850	9205	PYRX	PXOL=TBBL	D+ J= D1)
D TEX	8980	9000	DIABBEPFHG CL		C1 -80
D TEX	9000	9205	PYRX	PXBE6FOPA	J= J=
R TEX	9000	9200	CONTACT METASOMATISM WITH MAFIC TO INT VOLCANICS. CONTACT IS GRADATIONAL.		
D STR	8955	8960	FAUL	BRSH	C1 -70
P	9205	11433	MTVL	AXPP35	A O A DC D)
R TEX	9205	11433	CONTAINS DISS PO ± CP, MINOR VEINLETS. ROCK HAS A FELTY APPEARANCE OF HB OR ACTINOLITE. COULD BE A MIXTURE OF VOLCANICS AND FINE GRAINED INTRUSION? NOT SAMPLED		

EOH

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

Key	Flag	Format Version	Spec	Identity of Project or Sub-Project (Unique)	ID of Drillhole/Traverse (Pre-fix / Type / Number)	Size of Core or Hole	Geologged YY MM DD	By	Asst By	Completed MM DD	Drilling By	Started YY MM DD	Completed MM DD	Drilling Time-Hrs	Surveyed By	Co-ord System	Grid Azimuth	Page	Of
I	DEN	6 8 0 2	0 2	KANICH	88-N-14	BQ	88 12 06	HDL			NOBLE		12 05				.	01	4
I	PRI	NORTHERN PLATINUM LTD									KANICHEE MINE								

Survey Data

Key	Turn'g Pt. 000 = Collar	From (Marks Loc of Feature)	To	MT/FT	Total Depth/Length	AZM Clockwise from True N	V-Ang Neg if Down	Hash Total = F + T + TD + AZM + V-ANG + N + E + EL not including any blank fields	Northing Neg if South	Easting Neg if West	Elevation Neg if Sub-Sea
S				X	92.68	105.0	-45.00	.	86.00	153.00	.

Upper Tier Geodata: Flag (NAM / SCL), Unit of Recov., Unit of Length, Recovery, T mod, % Mix, ROCK-SOIL, TYPIFY-MAT (TM1, TM2), QALMAT (QM1), TEXTURES (TX1, TX2), GRAIN (Fr, Cr, % C, MP), FRACTURE COUNT (1, 2), Int Typ, T1, STRUC 1 ID, STRIKE AZM, DIP To Right, QZ, BI, Alteration & Mineralization Default Suites: CY, (CB), (MG), (SE), PY, (CF), GL, YY, SUMMARY (Fa, Ai, Mz, 1)

Lower Tier Geodata: Flag (NAM / SCL), M or F, Unit of RQD, RQD, AGE Form'n, ENV, RTO, LC Colour, TM3, QM2, TX3, TX4, Sa, Ru, Sh, O/C, Is, Int, h, S1, Int Typ, T2, STRUC2 ID, AZM, DIP To Right, KF, MU, CL, EP, HE, Hw Amt, (PR), MO, SL, Hw Amt, How1, How2

A / H / F: Any Zone Flag or Flag = COMposite, MAX or MIN or 001 – 999; If Flag = COM, then Col 21-68 = SS No. groups; Flag = Rnn, where nn is any no. 01-99 as defined; RECOVERY; SS = Sample Serial No.; From SS# / To SS# (A1 … A9); HASH TOTAL

Key	Flag	From	To	Rock-Soil	TM / QM	Textures	Struc ID	Dip	Col 63-64	Col 65-66	Col 69-70	Col 71-72
P		0.00	1.22	CASG								
P		1.22		PERD	PXOL6	TBH645				J+		J-
											J*	
D	SUL	1.35	3.00	PERD	PXOL7	TB 55				J=		J-
											J*	
D	SUL	3.00	6.43	PERD	CB PX OL6	TBH645			J=	J+		J)
											J=	
D	SUL	6.43	8.00	PERD	PX OL6	TBH645				J+		J*
											J)	
D	STR	7.76	7.91	PERD		VNSH	FO	-25				
						FO						
D	SUL	8.00	10.70	PERD	PXOL	HGT645						J-
											J*	
D	STR	9.25	9.42	FAUL	CPSECL	88FO	C/	-60				
						VN						
D	TEX	10.70	11.86	PERD	PXOL4	HG 45						J-
											J-	
D	TEX	11.86	15.25	PERD	PXOL5	TBH645						J-
											J(	
D	TEX	15.25	18.15	OLPX	PXOL2	HG 45				D+		J-
											J(	
D	STR	18.07	18.15	OLPX		BZFR	C/	-15				
						VN						
D	TEX	18.15	21.70	PERD	PXOL4	TBH645				D+		J-
											J*	

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International Geosystems Corporation — Geolog System — Geoform

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ENTER KEYS IN COL 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE	GEOLOGGED BY	PAGE	OF
I	DEN	6 8 0 2	0 2	KANICH	88-N-14	HDL	02	4
I	PRJ	NORTHERN PLATINUM LTD						
		KANICHEE MINE						

Survey Data

KEY	TURN G PT. 000 = Collar	FROM	TO	MT/FT	TOTAL DEPTH/LENGTH	AZM	V-ANG	NORTHING	EASTING	ELEVATION
S				X						

Geodata entries

Flag	From	To	Cols 17–23	Rock / TM (cols 24–34)	Textures (cols 35–42)	Struc (cols 49–53)	Dip (cols 54–57)	Cols 61–64	Cols 65–68	Cols 69–70	Cols 71–72	Cols 73–76
DTEX	2170	2340		OLPX PXOL2	TBHG45				D))		J-	
					FOSH					J-		
DSTR	2240	2340		OLPXTASEPX5	FOSH				3			
					FR							
RTEX	2170	2340	MAY BE INTENSE ALTN AND NOT A PRIMARY TEXTURE/COMPOSITION									
DTEX	2340	3245		PERD PXOL4	TB 45				D+		J-	✓
										J(		
DSUL	3245	3388		PERD PXOL4	TB 45						J*	✓
										J)		
DSUL	3388	3466		PERDCBPXOL5	TBFO55						J+	✓
										J1		
DSUL	3460	3753		PERDSE PXOL5	HGTB45						J*	
										J+		
DSUL	3753	4064		PERD PXOL5	TBHG55						J+	
										J=		
RSUL	3753	4064	QUITE CP-RICH									
DTEX	4064	4221		PERDSEPXOL8	TBFB55	EO	-30	1			J*	
				TACB						J)		
DDYK	4221	4244		LAMPB1 PFCL6		CT	-15					
DFAL	4244	4315		FAUL	BRFO							
					VNSH							
RFAL	4244	4315	FAULT GOUGE, 30 CM CORE MISSING.									

FAULT ZONE

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Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE	GEOLOGGED BY	PAGE	OF
I	DEN	6B0202		KANICH	B8-N-14	HDL	03	4
I	PRJ	NORTHERN PLATINUM LTD				KANICHEE MINE		

Survey Data: MT/FT X

FLAG	FROM	TO	Coded fields	Right-hand columns
DSUL	4244	4360	PERD CB PX OL 5 TB HG 45	J* / J*
DSUL	4366	5000	PERD PX OL 6 TB HG 45	J+ / J=
DSTR	4590	4600	FAUL BRFR	
DSUL	5000	5150	PERD PX OL 7 TB HG 55	J= / J2
RSUL	5000	5100	INTERSTITIAL AND CM-SCALE SULFIDE PATCHES.	
DSUL	5150	5409	PERD SE PX OL 6 TB HG 45 / TA	J) / J+
DSTR	5235	5240	PERD FRBR / [illegible]	
DVEN	5271	5277	VEIN SE TA CB 8 FO BN CT -45 / KF 22	L+ / L)
DDYK	5409	5480	LAMP BI PE CL 8 EQ PP 34 CT -20 J	
DSUL	5480	5900	PERD SE PX OL 5 HG TB 45	J(/ J)
DSTR	5480	5510	FAUL BRFR / VNSH	
RALT	5200	5900	BLEACHED PERD DUE TO DIAB DYKE, PROBABLY DUE TO HIGHER AMPHIBOLE (ACTINOLITE??) CONTENT.	
DVEN	5570	5590	VEND PE CB 6 VNPA	

81-130

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S = Alpha S 0 = Zero 1 = One 2 = Two 7 = Seven Ø = Alpha O I or i = Alpha I Z = Alpha Z

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE	GEOLOGGED BY	PAGE	OF
I	DEN	6 B 0 2	0 2	KANICH	88-N-14	HDL	04	4
I	PRJ	NORTHERN PLATINUM LTD				KANICHEE MINE		

KEY	FROM	TO	ROCK-SOIL / DESCRIPTION			
P	5900	6124	OLPX HBPXOLIHG 45	D)	J(	J*
RTEX	5900	6124	AMPHIBOLE ± BIOTITE-RICH CONTACT METASOMATISM BY LARGE DIABASE DYKE			
P	6124	6233	PYRX HBPXOL=	D*	J-	J*
RSTR			CONTACT WITH DIABASE IS GRADATIONAL.			
P	6233	8600	DIAB PFHB5TBPP45			
RTEX	6233		PLAGE-PHYRIC (TABULAR) WITH RARE FELDSPAR CLOTS TO 1 CM ACROSS. WEAK-TO NON MAGNETIC. MOST VEINS ARE CARBONATE AT UPPER CONTACT, BECOME QZ AND PLAGE WITH DEPTH. NO SULFIDES.			
P	8600	9268	DIAB PFHB8PPEQ34 CT E30 -J	D*		
RTEX	8600	9268	DIFFERENT DIABASE, WEAKLY PF-PHYRIC AND WEAKLY MAGNETIC. PF ARE LESS TABULAR - SUBEQUANT TO SUBROUNDED.			

FEOH

81-130

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Geolog System

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ENTER KEYS IN COL. 1 TO ACTIVATE ENTRIES

Identity Data

Key	Flag	Format Version	Spec	Identity of Project or Sub-Project	ID of Drillhole/Traverse	Size of Core or Hole	Geologged YY MM DD	By	Drilling By	Completed MM DD	Page	Of
I	DEN	6 B 0 2 0	2	KANICH	88-N-15	BQ	88 12 10	HDL	NOBLE	1209	01	2
I	PRI	NORTHERN PLATINUM LTD							KANICHEE MINE			

Survey Data

Key	MT/FT	Total Depth	AZM (clockwise from true N)	V-ANG (neg if down)	Northing	Easting	Elevation
S	X	80.48 (0641)	105.	-45.00	61.00	143.00	

Geodata

Key/Flag	From	To	Rock-Soil / Typify-Mat / Qalmat / Textures / Grain	Fracture / Struct	Alteration & Mineralization
P	00.00	1.89	CASG		
P	1.89	3.15	DIAB MTPFHG6EQ 34		D=
P	3.15	63.23	PERD PX OL3TBHG55		D+ J) J*
D SUL	10.00	10.90	PERD PXOL4TBHG55		D+ J+ J)
D TEX	10.90	15.83	OLPXBIDXOL2HG 45		D+ D) J* J-
R TEX	10.90	15.83	RANGE 0 TO 20% OLIVE PYROXENITE TO OLPX		
D DYK	15.83	16.12	DIABOLPFHG5EQ 34	CT -25	
D SUL	16.12	20.70	PERDBIPXOL5HGTB 45		D+ D+ J+ J*
D SUL	20.70	22.70	PERDBIPXOL3HG 45		D= J* J-
D SUL	22.70	25.70	PERDHBPXOL2HG 45 BI		D= D) J) J*
D SUL	25.70	26.24	PERDBI PXOL4HG 45		P1 P=
D SUL	26.24	36.06	PERDCBPXOL6TBHG45		V= J9 J*
R STR	30.00	50.00	NUMEROUS THIN CALCITE VEINLETS AT LOW (50) CORE ANGLES MAKE A VERY BLOCKY CORE [illegible] RICH PARTS OF VEINLETS [illegible]		

International Geosystems Corporation — **Geolog System**

S = Alpha S · 0 = Zero · 1 = One · 2 = Two · 7 = Seven · Ø = Alpha O · I or i = Alpha I · Z = Alpha Z

ENTER KEYS IN COL. 1 TO ACTIVATE ENTRIES

Identity Data

Key	Flag	Format Version	Spec	Identity of Project / ID of Drillhole	Geologged By	Page	Of
I	DEN	6 B 0 2 0	2	KANICH 88-N-15	HDL	02	2
I	PRJ	NORTHERN PLATINUM LTD		KANICHEE MINE			

Survey Data: MT/FT: X

Geodata

Key	Flag	From	To	Rock / Typify-Mat / Qalmat / Textures	Struc 1 / Dip	Alteration & Mineralization	Summary
D (margin: FAUL)	SUL	3606	3630	FAVL SX SE CB5 BRFO	CT -50	L1	L=
D	SUL	3630	3700	PERD PX OL6 TBHG45		J)	J*
D	SUL	3700	4220	PERD CBPXOL TBHG45		V= J1	J=
D	VEN	4220	4252	VEINSES X CB5 FO PA	CT -	L1 P3	P1
D	SUL	4252	4485	PERD CBPXOL6 VNFO45 TB		J1	J=
D	SUL	4885	5078	PERD PXOL6 TBHG45		J*	J-
D	DYK	5078	5126	LAMP BIPFC L6 EQPP35	CT -15 D1 / CB -60		
D	SUL	5126	6100	PERD PXOL5 TBHG45		J*	J(
D	STR	4725	4762	VEND SETACB4 VMFO BK		D=	D+
D	STR	6103	6175	PERD VNFO SHSS	V1 -90		
D	TEX	6100	6323	PERD PXOL3 TBHG45		J+	J-
P		6323	6500	DYKX PXOL1 HG 45		D	J-
P		6500	8048	MTVL			
D	VEN	6852	6885	VEIN Q29			D+

CMLL

D+

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ENTER KEYS IN COL. 1 TO ACTIVATE ENTRIES

Identity Data

KEY	FLAG	FORMAT VERSION	SPEC	IDENTITY OF PROJECT OR SUB-PROJECT (UNIQUE)	ID of DRILLHOLE/TRAVERSE (PRE-FIX / TYPE / NUMBER)	SIZE OF CORE OR HOLE	GEOLOGGED YY MM DD	BY	DRILLING BY	COMPLETED MM DD	PAGE	OF
I	DEN	6802	02	KANIC	88-N-16	BQ	881213	HDL	NOBLE	1212	01	1
I	PRJ	NORTHERN PLATINUM LTD.							KANICHEE MINE			

Survey Data

KEY	MT/FT	TOTAL DEPTH	AZM CLOCKWISE FROM TRUE N	V-ANG NEG IF DOWN	NORTHING NEG IF SOUTH	EASTING NEG IF WEST	ELEVATION NEG IF SUB-SEA
S	X	36.89	020.00	-55.00	108.	282.	

Geodata

KEY	FLAG	FROM	TO	ROCK-SOIL	TYPIFY-MAT / QALMAT	GRAIN	ALTERATION
P		0000	122	CASG			
P		122		OLPX BIPX OLIHG	45		D= J) J=
R	SUL	122	738	OLPX TO OPYRX. SULFS ARE PATCHY AS INTERSTITIAL GRAINS AND CM SIZE PATCHES. RANGE TR TO 10% SULFIDES POTTCP			
D	DYK	738	1140	DIAB PFAG5	34		
R	DYK	738	1140	CHILLED UPPER AND LOWER MARGINS. VERY FINE PF-ANYRIC			
D	SUL	1140	1835	OLPX BIPX OLIHG	45		D1 J+ J=
D	DYK	1835	2450	DIAB PFA66TBA6	45		
R	DYK	1835	2450	PF-PHYRIC.			
D	SUL	2450	2620	OLPX PXOLIHG	45		P) P=
P		2620	3689	MTVL	33		

EOH

SI-130

ROCK TYPE CODES

Rock Code	Short Form	Rock Type
ACID	AI	acidic rock, gen.
ADAM	AD	adamellite
AGLM	AG	agglomerate
AGPC		" , pyroclastic
AGVL		" , volcanic
AGXX	AG	agglomerate, alt'v form
ALAS	AL	alaskite
ALNT	AT	alonite
AMFB	AM	amphibolite
AMPH	AM	" , alt'v form
AN/D		andesite dyke
AN/F		" flow
AN/L		" sill
ANDS	AN	andesite
ANLP		andesite, lapilli
ANOR	AO	anorthosite
ANPF		andesite, plagioclase-felspar
ANTF		" , tuff
AP/D		aplite dyke
APLT	AP	aplite
ARGL	AR	argillite
ARKS	AK	arkose
ARSL		argillite, with siltstone
ARSN		" , with sandstone
AUTC	AC	autoclastic rock
BASC	BA	basic rock, gen. (MAFC)
BASL	BS	basalt
BEDS	/B	any bed
BENT	BN	bentonite
BIOC	BC	bioclastic rock, gen.
BN/B		bentonite bed
BOL.		boulder
BONE	BO	bone coal
BRAC		breccia, autoclastic
BRAF		" , flow
BRAI		" , intrusion
BRCG		" , conglomerate
BRCL		" , chlorite
BRCQ		" , carbonate-quartz
BRFQ		breccia, feldspar-quartz
BRHT		" , heterolithic (polymictic)
BRHM		" , homolitic (oligomitic)
BRHY		" , hypocrystalline
BRIG		" , igneous
BRIP		" , igneous-porphioric

Rock Code	Short Form	Rock Type
BRPC		breccia, pyroclastic
BRQC		" , quartz-carbonate
BRQF		" , quartz-feldspar
BRQZ		" , quartz
BRSX		" , sulphide
BRVL		" , volcanic
BRVC		" , volcaniclastic
BRVI		" , volcano-igneous
BRXX	BR	breccia, gen.
BS/D		basalt dyke
BS#F		" flow
CARB	CB	carbonatite
CGCP		conglomerate, chert pebble
CGEC		" , epiclastic
CGEV		conglomerate, epivolcaniclastic
CGIG		" , igneous
CGVC		" , volcaniclastic
CGVL		" , volcanic
CGXX	CG	" , alt'v form
CHER	CH	chert
CLAY	CY	claystone
CLIN	CN	clinopyroxenite
CLY.		clay unconsol., (overburden)
COAL	CO	coal
COS0		coal seam 0
COS1		" " 1
COS2		" " 2
COS3		" " 3
COS4		" " 4
COS5		" " 5
COS6		" " 6
COS7		" " 7
COS8		" " 8
COS9		" " 9
CO10		" " 10 (up to CO99)
CONG	CG	conglomerate
CRBN	CB	carbonatite, alt'v form
CYSH	CS	clayshale
DACT	DC	dacite
DIAB	DB	diabase
DB/D		" dyke
DB/L		" sill
DIAT	DI	diatomite
DIOR	DR	diorite
DO/B		dolomite bed

Rock Code	Short Form	Rock Type
DOLM	DO	dolomite
DOLR	DL	dolerite
DORF		dolomite reef
DR/D		diorite dyke
DR/L		" sill
DRIF	DF	drift, glacial
DUNT	DN	dunite
DYKE	D/	any dyke rock
DYKE	/D	" " " alt'v form
DYK1		dyke type/age 1
DYK2		" " 2
DYK3		" " 3, etc.
ECLG	EG	eclogite
EPIC	EC	epiclastic rock
EPVC	EV	epivolcaniclastic rock
EXTR	EX	extrusive rock
FALT		fault (zone), alt'v form
FAUL		fault (zone)
FELS	FL	felsite
FLOW	-F	flow rock
GABR	GB	gabbro
GBOL	GO	" , olivine
GD/D		granodiorite dyke
GNES	GN	gabbro, alt'v form
GNIS	GN	gneiss
GRAN	GR	granite
GRBL		granoblastite
GRDR	GD	granodiorite
GRFL	GF	granofels
GRIT	GI	grit
GRLT	GL	granulite
GRNT	GT	granitic rock
GRTC	GT	" " , alt'v form
GRV.		overburden, gravel
GSCH	G#	greenschist
GSTN	GS	greenstone
GWAC	GW	graywacke
GWTF		graywacke tuff
HARZ	HZ	harzburgite (PERD, OL)
HBIT	HB	hornblendite
HORN	HF	hornfels
HRNF	HF	" , alt'v form
IGNS	IG	igneous rock
IGNM	IM	ignimbrite
INTR	IN	intrusive rock
JASP	JP	jasper

Rock Code	Short Form	Rock Type
JSPD	JD	jasperoid
KIMB	KM	kimberlite
LAHR	LH	lahar
LAMP	LM	lamprophyre
LAPL	LP	lapillistone
LATR	LR	laterite
LATT	LT	latite
LAVA	LV	lava
LHER	LE	lherzolite
LIMS	LS	limestone
LM/D		" dyke
LOST	LC	lost core
LS/B		" bed
LSRF		" reef
LSSQ		" sequence
MAFC	MF	mafic rock, gen. (BASC)
MARB	MR	marble
MARK	MK	meta-arkose
MARL	MA	marl or marlstone
MATR	MM	matrix
METM	MT	metamorphic rock, gen.
MFIC	MF	mafic rock, alt'v form
MFVL	MV	mafic rock, volcanics
MIGM	MG	migmatite
MILL	ML	mill-rock
MINT	MI	minette
MISS		missing core
MONZ	MZ	monzonite
MSOX		" oxides
MSSI		" silicates
MSSU		" sulphates
MSSX		" sulphides
MSXX	MX	massive any min.XX
MTDB	MD	metadiabase
MTSD	MS	metasediments, gen.
MTVC		metavolcaniclastics, gen.
MTVL		metavolcanics, gen.
MUD.		overburden, mud
MUDS	MD	mudstone
MYLN	MY	mylonite
NELS	NL	nelsonite
NORD	ND	nordmarkite
NORT	NR	norite
ORG.		overburden, organics
ORGN		orthogneiss
ORPY		orthopyroxenite
OVR.		overburden

Rock Code	Short Form	R o c k T y p e
PAGN		paragneiss
PBSN	PS	pebbly sandstone
PEB.		overburden, pebble
PEGM	PG	pegmatite
PERD	PR	peridotite
PHON	PN	phonolite
PHYL	PH	phyllite
PICR	PI	picrite
PPFQ		porphyry, felspar-quartz
PPFX		porphyry, felspar
PPQF		" , quartz-felspar
PPQZ		" , quartz
PPXX	PP	porphyry, gen.
PYRC	PC	pyroclastic rock
PYRX	PY	pyroxenite
Q1/V		quartz vein type 1
Q2/V		quartz vein type 2, etc.
QZ/V	QV	quartz vein
QZBS	QB	quartz basalt
QZDR	QD	quartz diorite
QZGB	QG	quartz gabbro
QZIT	QT	quartzite
QZLT	QL	quartz latite
QZMZ	QM	quartz monzonite
QZPH	QP	quartz phyllite
QZVN	QV	quartz vein, alt'v form
REEF	RF	reef
RHYD	RD	rhyodacite
RHYL	RY	rhyolite
ROC1		rock type 1*
ROC2		" " 2*
ROCX	RX	any rock, gen.
RX1I		intrusive rock type 1*
RX1M		metamorphic " " 1*
RX1V		volcanic rock type 1*
		(* to be identified later)
SAN.		sand unconsl. (overburden)
SAND	SN	sandstone
SCH#	S#	schist
SCHS	S#	" , alt'v form
SEAT	SE	seatearth
SEDM	SD	sedimentary rock, gen.
SEQC	SQ	sequence
SERP	SR	serpentinite
SHAL	SH	shale
SHCH		shale-chert
SHSI		shale with siltstone *
SHSN		shale with sandstone *
SICG		siltstone with conglom. *
SIL.		silt unconsol. (overburden)
SILL	/L	sill
SILT	SI	siltstone
SISH		siltstone with shale *
SISN		siltstone with sandstone*
SKAR	SK	skarn
SLAT	SL	slate
SNCG		sandstone with conglom. *
SNSH		sandstone with shale *
SNSI		sandstone with siltstone*
		(* interbedded & <50%)
SOL.		soil as overburden
SULF	SF	sulphide
SYDR		syenodiorite
SYEN	SY	syenite
SYNF		" , nepheline
TACT	TT	tactite
TCAN	TA	trachyandesite
TFAQ		tuff, aquagene
TFBS	TB	" , basaltic
TFLP	TL	" , lapilli
TFXL		" , crystal lapilli
TFXT	TX	" , crystal
TFWL	TW	" , welded
TIL.		till as overburden
TILL	TI	till, glacial
TING	TG	tinguanite
TLIT		tillite
TONL	TN	tonolite
TRAC	TC	trachite
TRAP	TP	trap
TRON	TR	tronghjemite
TUFF	TF	tuff
TUFS		tuffasite
ULBA	UB	ultrabasic rock
ULMF	UM	ultramafic, alt'v form
UNKN		unknown rock
VEIN	/V	vein, alt'v form
VEIN	VN	vein
VLCC	VC	volcaniclastics
VN>>		macrovein
VN<<		microvein
VOLC	VL	volcanics
WEBS	WB	websterite
WERH	WH	werhlite

G-SCALE - PERCENTAGE ESTIMATE OF ANY GEOLOGICAL MATERIAL

The G-scale is a very effective scale for estimating and recording the percentage presence of minerals in rock and soils. It is applied where percentage amounts are required. In a simple form, the G-scale can be presented as follows:

G-SCALE VALUE	ASSIGNED VALUE	RANGE
X	100%	100
9	90	86-99
8	80	+- 5
7	70	+- 5
6	60	+- 5
5	50	+- 5
4	40	+- 5
3	30	+- 5
2	20	+- 5
1	10	+- 4
-	5	4 - 6
+	3	2 - 4
)	1	.7 - 2
*	.3	.2 -.7
(	.1	.07-.2
-	.03	.02-.06
.	.01	trace <.02
0	0	absent
?	0	possibly present
/	.07	present, no estimate given
"	Return to Blank	

Figure 2.1 - G-SCALE - PERCENTAGE ESTIMATE OF ANY GEOLOGICAL MATERIAL

THE HOW-SCALE - MODE OF OCCURRENCE OF A MINERAL

The HOW-Scale is a one character code for describing the mode of occurence of alteration and mineralization minerals. A mineral may be present in one form or it may be found to occur in a combination of entities. Therefore the HOW-Scale consists of two subsets, a descriptor set for the most dominant form mode, and a descriptor set for a combination of modes. The single mode code is the first letter from the descriptor of how the mineral occurs, or its most prevalent form (Figs 2.2A, 2.2B). The combination mode is a digit from 0 to 9, a higher number signifies a higher pervasiveness. When the pervasiveness increases beyond "9", then the mineralization or alteration is massive, "X" (Fig. 2.2). This code belongs to both subsets of the HOW-Scale.

HOW-SCALE VALUE	DESCRIPTOR
A	Amygdaloids, cavity fillings
B	Blebs
+	breccia fillings
C	Coatings
*	clasts
D	Disseminations and scattered crystals
E	Envelopes
F	Framework crystals
G	Gouge
H	replaced phenocryst
I	eyes, augen
J	interstitial
K	stocKworK
L	Laminations/bedded
M	Massive
>	macro-vein
<	micro-vein(s)
N	Nodules
O	spOts
P	Pervasive
Q	patches (as in Quilts)
R	Rosettes and crystal clusters
S	Selvages
$	$heeting
T	sTainings, as in Tarnish
U	eUhedral crystals
V	veins
W	boxWork
X	massive
Y	dalmationite (spots and/or patches)
"	Return to Blank

Figure 2.2A - HOW-SCALE - SINGLE MODE

CHAPTER 2. SCALES OF THE GEOLOG SYSTEM

The effectiveness of the GEOLOG System is due to the organization and completeness of the information gathered on GeoForm, the data collection form used for field recording. Understanding the concepts on which scaling and coding are based is fundamental to understanding GEOLOG.

Disregarding the angular measurements for strike and dip, and analytical laboratory determinations relatively few quantitative measurements are associated with conventional geological observations. GEOLOG corrects this deficiency by using scales that help the geologists and engineers to quantify geological observations traditionally recorded in a highly subjective manner.

Nine scales compose the GEOLOG System. They are as follows.

1. The G-scale is used for estimating and recording the percentage presence of an element. G stands for Grade.

2. The HOW-scale is used for describing the mode of occurrence of a mineral or material.

3. The N-scale is used for estimating and recording the intensity or degree of development of various geological conditions or attributes. N stands for Natural and Numeric. The N-scale is the scale of equal steps and therefore requires no assigned value in order to be properly interpreted. The assigned values are, in fact, the scale values. The N-scale is used for degree of roundness (N002-scale), degree of sorting (N001-scale), and alteration and mineralization intensity (N003-scale).

4. The SHAPE-scale is used for describing the sphericity and shape of rock particles and phenocrysts, etc.

5. The SIZE-scale is used for estimating and recording the size of grains, particles and fragments of rocks. The Size-scale allows the characterization of particles, from clays to boulders.

6. The LC-scale is used for describing the lightness (L) of a colour, and the actual colour (C).

7. The F-scale is used for describing the degree of fracturing of a rock. F stands for fracture.

8. The M-scale is used for building geological models. This scale describes the combined occurence of geological features that are characteristic of a given model. M stands for Model. As there can be several M-scales in use on a given project, they have to be distinguished one from the other by labelling them M1, M2, etc. The M1-scale and M2-scale are used for describing the alteration facies. The M3-scale and M4-scale are used for describing the mineralization zones associated with ore deposits.

9. The T-scale is used to decribe the mode of thickness of sedimentary beds.

HOW-SCALE VALUE	DESCRIPTOR
X	M and/or L (Massive, Laminated)
9	P or D, < & V, S & E with +, K and/or $
8	P or D greater than V, <, S & E
7	P or D equal to V, <, S & E
6	P or D less than V, <, S & E
5	V -- often with abundant E
4	V -- occasionally with E
3	V and Y = O or Q
2	> and V
1	A, minor > and/or D (as scattered crystals)
0	O (fresh, primary rock)

Figure 2.3 - HOW-SCALE - COMBINATION MODE OF OCCURRENCE OF A MINERAL

The HOW-scale is used in the odd numbered columns from 57 to 65, and 69 to 73 of Upper Tier geological entries, and in columns 57 to 75 of Lower Tier geological entries. How-scale columns of Upper and Lower Tier entries correspond to the respective mineral default suites of Upper Tier and Lower Tier geological entries.

If pyrite is observed as fine disseminations, then the HOW-scale code is a "D". If pyrite is observed as fine disseminations in equal amounts to observed veining, then the HOW-scale code is "6". Now that pyrite has been recorded as to its type of occurence, the amount present in this mode should now be recorded by using the G-scale. Therefore an intersection of rock containing an estimated 1 percent of pyrite disseminations can be described by two codes, "D)", from the H and G scales.

If pyrite is observed in equal amounts as fire disseminations and as vein material, then the HOW-scale code is "6".

THE N-SCALE - INTENSITY OF GEOLOGICAL PARAMETERS

The N-scale is a numeric scale of equal steps. Unlike the G-scale, the N-scale does not have assigned values for each of its scale values, 0 to 10 (the 10 represented by the Roman Numeral, X). The assigned values are the scale values.

The N-scale yields useful numbers by replacing vague descriptors, such as little, much, and many, by quantitative estimates of the degree of development. The N-scale is illustrated below.

N-SCALE VALUE	DESCRIPTOR
X	Totaled
9	Extremely high
8	Very high
7	High
6	Fairly high
5	Intermediate
4	Fairly low
3	Low
2	Very low
1	Extremely low
0	Nil
"	Return to Blank

Figure 2.4 - N-SCALE - INTENSITY OF GEOLOGICAL PARAMETERS

To create an N-scale for a geological parameter take the two possible extremes of that parameter, such as extremely low and extremely high, and set them equal to 1 and 9 respectively. Now divide equally the interval between these two extremes and set the mid-point equal to 5. The 5 always represents intermediate, moderate or fair. Take the mid-points of the two equal intervals formed above and below the 5 and set them equal to 3 and 7 respectively. The descriptors for these two scale points are LOW and HIGH.

The descriptors for 2 and 8 usually both contain the adjective VERY; the 4 and 6, the adjective FAIRLY; and the 1 and 9, the adjective EXTREMELY. Note that the descriptors for the even numbers are really not required. If the estimation falls between the 5 and 7, enter 6. It is almost redundant to give it a name as well as a number.

MINERALS

Mineral Code	Description /	% Metal
AA	andalusite	
AB	albite	
AC	actinolite	
AD	adularia	
AE	aegerine	
AG	anglesite	68Pb
AH	anhydrite	
AI	argentite	87Ag
AK	ankerite	
AL	alunite	
AM	almandine	
AN	anorthite	
AO	asbestos	
AP	apatite	
AR	aragonite	
AS	arsenopyrite	45As
AT	axinite	
AU	augite	
AX	amphiboles, gen.	
AY	anthophyllite	
AZ	azurite	
AZ	azurite alone	
B:	biotite : hornblende	
B<	BI<HB	
B-	BI-HB	
B>	BI>HB	
BA	barite	
BE	beryl	
BI	biotite	
BI	biotite alone	
BO	bornite	63Cu
BR	brochantite	56Cu
BS	bismuthinite	81Bi
C$	chalcocite	
C.	chalcocite on gangue	
C:	clay : muscovite	
C<	CY<MU	
C-	CY-MU	
C>	CY>MU	
CA	calcite (see D:)	
CA	calcite alone	
CB	carbonates, gen.	
CC	chalcocite, gen.	80Cu
CD	chloritoid	
CE	cerussite	77Pb

Mineral Code	Description /	% Metal
CF	coffinite	
CH	chalcanthite	25Cu
CI	cuprite	89Cu
CK	chrysocolla	36Cu
CL	chlorite	
CN	cinnabar	86Hg
CO	cordierite	
CP	chalcopyrite	35Cu
CQ	chert	
CR	chromite	46Cr
CS	chrysotile	
CT	cassiterite	79Sn
CU	copper, native	Cu
CV	covellite	66Cu
CX	clinopyroxene, gen.	
CY	clay	
CY	clay alone	
CZ	clinozoisite	
D:	dolomite : calcite	
D<	DO<CA	
D-	DO-CA	
D>	DO>CA	
DC	dickite	
DG	digenite	
DI	diopside	
DO	dolomite	
DO	dolomite alone	
DV	dravite	
EN	enargite	
EP	epidote	
ER	erythrite	30Co
ES	enstatite	
FA	fayalite	
FD	feldspathoids, gen.	
FL	fluorite	49F
FM	ferrimolybdite	40Mo
FO	forsterite	
FR	ferberite	W
FT	famatinite	
FU	fuchsite	5Cr2O3
FX	feldspars, gen.	
G:	galena : sphalerite	
G<	GL<SL	

Mineral Code	Description	% Metal
G-	GL-SL	
G>	GL>SL	
GA	garnet	
GC	glaucophane	
GD	gold	Au
GK	greenockite	78Cd
GL	galena	86Pb
GL	galena alone	
GN	glauconite	
GO	goethite	
GR	graphite	C
GS	glass, gen.	
GY	gypsum	
H:	hematite : magnetite	
H<	HE<MG	
H-	HE-MG	
H>	HE>MG	
HA	halite	
HB	hornblende alone	
HB	hornblende (see B:)	
HE	hematite, earthy	70Fe
HM	hydromica (IL)	
HV	helvite	
HS	hematite, specularite	
HE	hematite alone	
HU	huebnerite	61W
HY	hypersthene	
IL	illite (HM)	
IM	ilmenite	32Ti
JA	jarosite	
JD	jadeite	
JO	jordisite	60Mo
K:	K-spar : plagioclase	
K<	KF<PF	
K-	KF-PF	
K>	KF>PF	
KA	kaolin	
KF	K-spar, orthoclase	
KF	K-spar alone	
KY	kyanite	
LE	leucoxene	
LI	limonite	
LM	laumontite	
LU	leucite	
LW	lawsonite	

Mineral Code	Description	% Metal
M:	malachite : azurite	
M<	MC<AZ	
M-	MC-AZ	
M>	MC>AZ	
MA	magnesite	48MgO
MC	malachite	58Cu
MC	malachite alone	
ME	micrite	
MF	sericite mica-fluorite	
MG	magnetite alone	
MG	magnetite (see H:)	72Fe
MI	micas, gen.	
ML	melnicovite	
MM	montmorillonite	
MN	manganite	68Mn
MO	molybdenite	60Mo
MR	mariposite	
MS	muscovite-sericite	
MT	marcasite	
MU	muscovite alone	
MU	muscovite (see C:)	
MZ	monazite	
NF	nepheline	
NI	niccolite	44Ni
OL	olivine (chrysolite)	
OP	opal	
OQ	opaques, gen.	
OR	orthopyroxene, gen.	
OX	oxides, gen.	
PB	polybasite	65Ag
PF	plagioclase alone	
PF	plagioclase (see K:)	
PH	phlogopite	
PL	pyrolusite	
PN	pentlandite	
PO	powellite	58Mo,W
PP	pyrophyllite	
PR	pyrrhotite	
PS	psilomelane	Mn
PT	platinum	Pt
PW	powellite	10WO3
PX	pyroxene, gen.	
PY	pyrite	
QA	quartz, agate	
QC	quartz-carbonate	
QH	quartz, chert	
QJ	quartz, jasper	

Mineral Code	Description / % Metal	
QM	quartz, amethyst	
QR	quartz, rutilated	
QS	quartz-sericite	
QT	quartz-tourmaline	
QV	quartz vein, massive	
QX	quartz, crystals	
QZ	quartz, gen.	
RC	rhodochrosite	Mn
RN	rhodonite	Mn
RU	rutile	60Ti
RS	proustite	65Ag
SA	sanidine	
SB	stibnite	72Sb
SC	scapolite	
SD	siderite	48Fe
SE	serpentine	
SF	sericite-fluorite	
SH	scheelite	
SI	sillimantie	
SL	sphalerite	67Zn
SL	sphalerite alone	
SO	sodalite	
SP	sphene	
SR	sperrylite	
SS	silver & sulphosalts	
ST	staurolite	
SU	sulphates, gen.	
SV	silver	Ag
SX	sulphides, gen.	
SZ	scorzalite	
TA	talc	
TE	tenorite	80Cu
TL	tellurides, gen.	Te
TN	tennantite	50Cu56Sb+As
TO	tourmaline	
TR	tremolite	
TT	tetrahedrite	Cu+Sb
TX	TT & TN, undif.	
TZ	topaz	

Mineral Code	Description / % Metal	
UR	uraninite (pitchblende)	92U+/-
UX	uranium minerals, gen.	
VA	vanadinite	73Pb,11V
VE	vesuvianite	
WD	wad	Mn+other
WF	wolframite	62W
WN	wulfenite	56Pb+26Mo
WO	wollastonite	
ZE	zeolites, gen.	
ZI	zircon	
ZO	zoisite	

XX any mineral, replace with code.
YY any mineral, replace with code.
X1 any mineral, to be identified later.
A1 temporary mineral code, assigned approved code later.

STRUCTURES

Structure Code	Description
AX	axis of fold
AN	anticline
AS	syncline
AD	drag fold
BN	banding
BD	bedding; B1, B2 . . specific bedding when more than 1
B/	bedding, alternative
CV	cleavage; C1, C2 . . specific cleavage sets
C/	contact
D/	dyke; D1, D2 . . specific dyke swarms
DS	discontinuity
F/	fault; F1, F2 . . specific faults
FB	flow banding
FO	foliation
FS	fracture set; SF single fracture
FZ	fault zone
GN	gneisosity
JS	joint set; SJ single joint
L/	sill
LS	lens
LN	lineations; L1, L2 . . specific lineation sets
SH	shear
S-	seam of coal; -1, -2 . . or -A, -B . . specific seams
$H	schistosity
$/	stringers
S#	schistosity
$$	slickensides
U/	unconformity
UA	unconformity - angular
UD	unconformity - disconform
UN	unconformity - unconform
V/	vein; V1, V2 . . specific veiset s
<<	microveins
>>	macroveins
VE	epidote vein(ing)
VC	calcite vein(ing)
VP	pyrite vein(ing)
VQ	quartz vein(ing)

TEXTURES

Texture Code	Description
(C	casted
(X	crystal-casted
(F	flute-casted
(L	load-casted
>>	macroveined
<<	microveined
A*	amygdaloidal
AB	animal bored, burrowed
AG	augen structured
AH	aphanitic
AM	algal matted
AN	anhedral
AP	aplitic
BC	bioclastic
BD	bedded
BI	bioturbaceous, (disturbed by animals)
BK	blocky
BL	bladed
BN	banded
BR	brecciated
BT	botryoidal
CA	cataclastic
CC	concretionary
CG	clay-galled
CM	chilled margin
CS	closed-structured framework supported
CR	crenulated
CT	clastic
CU	cumulate
DF	drag-folded en echelon shearing
DS	dents
EL	elongated
EQ	equigranular
ET	eutaxitic
EU	euhedral
F$	fissile

Texture Code	Description
F(	fos-calcareous
F2	folded slightly
F3	" lightly
F5	" moderately
F7	" strongly
F9	" tightly
FB	flow banded
FC	fos-carbonaceous
FF	fos-faunal
FG	fos-graphitic
FL	flaser-structured
FM	fos-marine
FN	fos-non-marine
FO	foliated
FP	fos-plants
FR	fragmental
FS	fossiliferous
FT	flattened
FU	fluidal
FZ	feldspar zoned
FY	flaggy
G;	graded-bedded
GB	granoblastic
GF	graphic
GL	granulose
GN	gneissic
GP	lomero-porphyritic
GT	granitic
GY	greasy, sectile
HG	hypiiomorphic granular
HF	honfelsic structured
HO	homogeneous
HT	heterogeneous
IB	interbedded
IM	imbricated
IN	interstitial
IQ	inequigranular
KR	crackled
LB	lensoid-banded, (streaky)
LE	lineated
LL	lit-par-lit

Texture Code	Description
LM	laminated
LN	lenticular
LS	listric-surfaced
LT	lithic
LX	low angle cross-bedding
M3	lightly RM
M5	moderately RM
M7	strongly RM
MC	mud-cracked
MH	mesh structure
MK	myrmekitic
MM	migmatitic
MS	matrix supported
MX	massive
MY	mylonitic
ND	nodular
NP	not supported
OS	open-structured
OV	ovoid
PA	patchy
PB	porphyroblastic
PG	pegmatitic
PH	phyllitic
PI	pisolitic, pea-like
PK	poikilitic
PL	pelleted
PP	porphyritic
PS	penecont. slumping
PW	partings & whisps of coal
R2	slightly RW
R3	lightly RW
R5	moderately RW
R7	strongly RW
RA	asymmetrical RM
RB	ribbon-like, banded
RM	ripple-marked
RP	rain printed
RS	symmetrical RM
RW	reworked
SB	slabby
SC	schistose
SF	spherulitic
SH	sheared
SK	slickensides

Texture Code	Description
SL	slaty
SM	stromatolitic
SO	scoriaceous
SP	sparry
SR	scoured
SS	soft sediment slumping
ST	stylolitic
SU	subhedral
SW	stockworked
TB	tabular
TG	trachytic
UF	uniform textured
VG	vuggy
VR	variolitic
VS	vesicular
VV	veined
WB	wavy banded
WF	weakly foliated-disrupted
WL	welded
XB	cross-bedded matrix-supported
XC	cross-cutting
XE	xenolithic

IGNEOUS, METAMORPHIC & CHEMICAL	PARTICLE DIAMETER RANGE	ASSGN VALUE	SYMBOL	THE S-SCALE FOR GRAIN OR PARTICLE SIZE <<FOR GENERAL WORK FOR DETAIL WORK>>	SYMBOL	ASSGN VALUE	VOLCANI-CLASTICS
Glassy	$2^{-8}=.004$	.003 mm	0	CLAY SIZE	A	.003	
Extremely fine grained (aphanitic)	2^{-7}	.008	1	V.FINE SILT	B	.006	fine ash
	$2^{-6}=.016$			FINE SILT	C	.011	
	2^{-5}	.03	2	MEDIUM SILT	D	.022	
	$2^{-4}=.06$			COARSE SILT	E	.044	
Fine grained	2^{-3}	.12	3	V.FINE SAND	F	.088	coarse ash
	$2^{-2}=.25$			FINE SAND	G	.177	
	2^{-1}	.5	4	MEDIUM SAND	H	.354	
	$2^{0} = 1$			COARSE SAND	I	.707	
Medium grained (granular)	2^{1}	2	5	GRIT	J	1.41	
	$2^{2} = 4$			GRANULE	K	2.83	
Coarse grained	2^{3}	8	6	V.SMALL PEBBLE	L	5.66	small lapilli
	$2^{4} = 16$			SMALL PEBBLE	M	11.3	
Very coarse grained	2^{5}	3.2 cm	7	MEDIUM PEBBLE	N	22.6	large lapilli
	$2^{6} = 64$			LARGE PEBBLE	Ø	45.3	
Pegmatitic	2^{7}	13	8	SMALL COBBLE	P	90.5	cobble-size bombs & blocks
	$2^{8} = 250$			LARGE COBBLE	Q	181	
Megapegma-titic	2^{9}	½m	9	SMALL BOULDER	R	362	boulder-size bombs & blocks
	$2^{10} = 1m$			MEDIUM BOULDER	S	724	
Extra-coarse megapegma-titic	2^{11}	2m	X	LARGE BOULDER	T	1450	extra large bombs & blocks
				V.LARGE BOULDER	U	2900	

NOTE: It is quite permissible to intermix the alphabetic symbols with the numeric symbols of this S-Scale, whenever detail work demands it — no conflict ensues by doing so.

Figure 2.8 - SIZE-SCALE - GRAIN SIZE

FLAGS

HORIZON

Flags Code	Description
BRS	bedrock surface
BVC	base of visible chalcocite
C/	contact
C/1-C99	identified contacts
C/G	gradational contact
D/	dyke, dike
D/1-D99	identified dykes
F/	fault
F/1-F99	identified faults
F/C	fault contact
M	marker, marker bed
M/1-M99	identified markers
PAR	parting in coal seam
S/1-S99	identified seams
S/1-S99	identified shears
S/C	seam of coal
SEM	seam
SH/	shear
SIL	sill
SL1-SL9	identified sills
TPS	topographic surface
U/	unconformity
U/1-U/9	identified uncomformity
V/	vein
V/1-V99	identified veins

ZONE

Flags Code	Description
BRX	breccia zone
CAP	caprock
DOX	disseminated oxide zone
DSX	disseminated sulphide zone
F/W	footwall
FRC	significant fracture zone
FRX	fresh rock, primary
FWP	footwall, probable
GRF	graphite zone
H/W	hangingwall
HWP	hangingwall, probable
HYP	hypogene zone
LAT	laterite
MSX	massive sulfides
OVB	overburden
PIP	pipe
REG	regolith
SIG	significant zone
SOX	supergene oxide zone
SSX	supergene sulphide zone
STF	stratiform
STR	stringer zone
SUP	supergene zone
TR1-TR9	identified transition zone
TRN	transition zone
VOX	vein oxides
VSX	vein sulphides
WTH	weathered zone

ADDITION DEFINITIONS OF ROCK TYPES

FLZN - fault zone

OLPX - olivine pyroxinite

OLDB - olivine diabase

VEND - banded vein

SHZN - shear zone

APPENDIX 8

METALLURGICAL TESTING

To: John McGorman Dec. 21 1988

From: Rob MacPhail

Attached are the results from the first test done on the Pit Comp. feed. The testwork is proceeding with a finer grind and more cleaners to determine whether this will improve the grade and recovery of the Cu and the Ni.

Lakefield Research will be closed for Christmas holidays from Dec. 26th to Dec. 30th. The office will open on January 2nd 1989.

Sincerely;

Rob MacPhail
Metallurgist

Head analysis of samples sent to Lakefield by John McGorman.

	Fine ore bin	Pit Comp.
Assay (g/t)		
Au	0.40	0.14
Ag	0.80	0.40
Pt	0.35	1.53
Pd	1.12	10.3
Assay (%)		
Cu	0.82	2.16
Ni	0.62	0.70
Fe	12.4	-
S	3.77	5.60
MgO	21.4	

Test No. 1 Proj. No. NPt. 3637 Date Dec. 14 1988 Operator: R. S. MacPhail

Purpose: to produce a bulk sulfide concentrate

Procedure:
- 40 min/2kg @ 65% solids
- 70:30 mixture of A350:A3477 as a collector
- low viscosity carboxy methyl cellulose to depress talc

Feed: 2 Kg of Pit Comp.

Grind: 40 min/2kg @ 65% solids

Stage	A350	Na2CO3	A3477	DOW 1012	CMC 7LT	Time, minutes				
							Grind	Cond.	Froth	pH
Grind		2000					40			
COND. 1	30		70					1		9.8
COND. 2					300			2		9.8
RO FLOT'N									5	9.4
COND 3					100			2		9.0
CLNR. FLOT'N				8					6	9.0
CLNR. TLS SCAV									3	-

Stage	Sulf. Ro	1st clnr.	Scav. of clnr. tls
Flotation Cell	Denver	Denver	Denver
Speed: r.p.m.	1800	1320	1320
% Solids			
cell size (g)	1000	500	500
%-200 mesh		88.7	

Test number1 Project no 3637 date: Dec 14 1988

Product	Weight		Assays (%)			Dist'n (%)		
	g	%	Cu	Ni	S	Cu	Ni	S
Cleaner conc.	559	28.4	7.00	1.83	12.40	95.4	75.3	66.3
Clnr. scav. conc	56.8	2.89	0.25	0.33	2.21	0.3	1.4	1.2
Clnr. scav. tls	153.8	7.82	0.11	0.19	0.92	0.4	2.2	1.4
Ro tails	1197.6	60.9	0.13	0.24	2.72	3.8	21.2	31.2
Head (calc.)	1967.2	100	2.08	0.69	5.32	100	100	100

Calculated grades and recoveries

Ro conc	769.6	39.1	5.12	1.39	9.35	96.2	78.8	68.8

LAKEFIELD RESEARCH
SCREEN ANALYSIS RECORD

Operator RoryC **Project No.** 3637 **Date** DEC 15/88

1	Ro TAIL					140 min/2kg grind				
Microns	Mesh size (Tyler)	Weight grams	% Retained Ind.	Cum.	% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained Ind.	Cum.	% Pass. Cum.
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65	0.1	0.1	0.1	99.9	65				
147	100	0.2	0.2	0.3	99.7	100				
104	150	2.6	2.6	2.9	97.1	150				
74	200	8.4	8.4	11.3	88.7	200				
53	270	11.7	11.7	23.0	77.0	270				
37	400	11.4	11.4	34.4	65.6	400				
	−400	65.6	65.6	100.0	—	−400				
	Total	100.0	100.0			Total				

Microns	Mesh size (Tyler)	Weight grams	% Retained Ind.	Cum.	% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained Ind.	Cum.	% Pass. Cum.
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65					65				
147	100					100				
104	150					150				
74	200					200				
53	270					270				
37	400					400				
	−400					−400				
	Total					Total				

Test No. 2 Proj. No. NPt. 3637 Date Dec. 21 1988 Operator: R. S. MacPhail

Purpose: to produce a bulk sulfide concentrate

Procedure:
- 50 min/2kg @ 65% solids
- 70:30 mixture of A350:A3477 as a collector
- low viscosity carboxy methyl cellulose to depress talc

Feed: 2 Kg of Pit Comp.

Grind: 50 min/2kg @ 65% solids

Stage	A350	Na2CO3	A3477	DOW 1012	CMC 7LT	Time, minutes				
							Grind	Cond.	Froth	pH
Grind		2000					50			
COND. 1	30		70					1		9.6
COND. 2					300			2		9.2
RO FLOT'N				23					3	
COND 3					100			2		9.1
1ST CLNR.				8					6	9.0
COND 4					100			2		
2ND CLNR.				8					4.5	9.0
COND 5					100			2		
3RD CLNR.				8					3.5	9.0
Stage	Sulf. Ro	Sulf. clnr.'s								
Flotation Cell	Denver	Denver								
Speed: r.p.m.	1800	1320								
% Solids										
cell size (g)	1000	500								
%-200 mesh										

Test number: 2 Project no. 3637 date: Dec. 21 1988

Product	Weight		Assays (%)			Dist'n (%)		
	g	%	Cu	Ni	S	Cu	Ni	S
Cp conc.	144.3	8.26	18.10	3.73	30.40	81.0	48.4	46.2
3rd clnr. tls	33.5	1.91	3.42	2.57	15.40	3.5	7.7	5.4
2nd clnr. tls	109	6.22	0.88	0.86	5.63	3.0	8.4	6.4
1st clnr. tls	450.7	25.7	0.22	0.27	1.80	3.1	10.9	8.5
Ro tails	1015.2	57.9	0.3	0.27	3.13	9.4	24.6	33.4
Head (calc.)	1753.2	100	1.85	0.64	5.43	100	100	100

Calculated grades and recoveries

2nd clnr. conc.	178.3	10.2	15.34	3.51	27.58	84.6	56.1	51.7
1st clnr. conc.	287.3	16.4	9.86	2.51	19.25	87.5	64.5	58.1
Ro conc.	738	42.1	3.97	1.14	8.59	90.6	75.4	66.6

To: John McGorman Jan. 20 1988

From: Rob MacPhail

Attached are the results from the three test done on the Pit Comp feed. The second test tested a finer grind along with more cleaners in an effort to increase the grade and recovery of Cu and Ni into the bulk concentrate. The third tested the addition of copper sulfate to the flowsheet along with a second collector addition to the first cleaner stage in an effort to increase the nickel recovery.

The testwork is now aimed at investigating the flotation kinetics of the copper, nickel, and the gangue minerals with the CMC 7LT as compared with Guar 703 or Guar MDD in the rougher flotation stage. The rougher conditions are otherwise similar to those employed for test number 3 as this test had the best nickel recovery into the rougher stage.

Feel free to contact me with any questions.

Sincerely:

Rob MacPhail
Metallurgist

LAKEFIELD RESEARCH

SCREEN ANALYSIS RECORD

Operator Rory C **Project No.** 3637 **Date** JAN 3/89

COMB #2

Microns	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65	0.1	0.1	0.1	99.9	65				
147	100	0.1	0.1	0.2	99.8	100				
104	150	1.0	1.0	1.2	98.8	150				
74	200	6.1	6.1	7.3	92.7	200				
53	270	10.9	10.9	18.2	81.8	270				
37	400	13.2	13.2	31.4	68.6	400				
	−400	68.6	68.6	100.0	—	−400				
	Total	100.0	100.0			Total				

Microns	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65					65				
147	100					100				
104	150					150				
74	200					200				
53	270					270				
37	400					400				
	−400					−400				
	Total					Total				

Test No. 3 Proj. No. NPt. 3637 Date Jan. 4 1989 Operator: R. G. MacPhail

Purpose: to produce a bulk sulfide concentrate
increase Ro flot'n time
increase amount of collector to Ro flot'n
add collector to cleaner flotation

Procedure: - 40 min/2kg @ 65% solids
- 70:30 mixture of A350:A3477 as a collector
- low viscosity carboxy methyl cellulose to depress talc

Feed: 2 Kg of Pit Comp.

Grind: 40 min/2kg @ 65% solids

Stage	A350	Na2CO3	A3477	DOW 1012	CuSO4 .5H2O	CMC 7LT	Time, minutes	Grind	Cond.	Froth
Grind		2000						50		
COND. 1	30		70		200				1	
COND. 2						300			2	
RO FLOT'N				15						14
COND 3	15		35						1	
COND 4						100			2	
1ST CLNR.				10						10
COND 5						100			2	
2ND CLNR.				5						9
COND 6						100			2	
3RD CLNR.				15						7
COND. 7						100			2	
4TH CLNR.				7.5						6
Stage	Sulf. Ro	1ST clnr.	2ND,3RD,4TH clnr.'s							
Flotation Cell	Denver	Denver	Denver							
Speed: r.p.m.	1800	1800	1320							
% Solids										
cell size (g)	1000	1000	500							
% -200 mesh	88.7									

Test number: 3 Project no. 3637 date: Jan. 4 1989

Product	Weight		Assays (%)			Dist'n (%)		
	g	%	Cu	Ni	S	Cu	Ni	S
Cp conc.	449.6	26.0	7.26	1.96	17.30	94.0	76.8	86.2
4th clnr. tls	32.5	1.9	0.80	0.83	6.00	0.7	2.4	2.2
3rd clnr. tls	84.6	4.9	0.53	0.67	5.96	1.3	4.9	5.6
2nd clnr. tls	114.1	6.6	0.26	0.25	1.05	0.9	2.5	1.3
1st clnr. tls	445.2	25.7	0.11	0.17	0.48	1.4	6.6	2.4
Ro tails	605.8	35.0	0.1	0.13	0.35	1.7	6.9	2.3
Head (calc.)	1731.8	100	2.01	0.65	5.21	100	100	100

Calculated grades and recoveries

3rd clnr. conc.	482.1	27.8	6.82	1.88	16.54	94.7	79.1	88.4
2nd clnr. conc.	566.7	32.7	5.96	1.70	14.96	96.0	84.1	94.0
1st clnr. conc.	680.8	39.3	4.94	1.46	12.63	96.8	86.5	95.3
Ro conc.	1126	65	3.03	0.95	7.82	98.3	93.1	97.7

NORTHERN PLATINUM LTD.

KANICHEE PROPERTY

GEOLOGICAL REPORT

FOR

ONTARIO MINERAL EXPLORATION PROGRAM

INCLUDING

CONCLUSIONS AND RECOMMENDATIONS

ON

TRENCHING AND DRILLING

(an addition to OMEP Report dated June 1, 1989)

OMEP GRANT OM88-8-C-213

DATED JULY 5, 1989

JOHN MCGORAN, B.Sc.

GENERAL

During 1988 Henry Dillon-Leitch and Dave Kuran logged core, mapped outcrop and compiled data on the Kanichee ultramafic intrusion in the vicinity of the Kanichee deposit, District of Nipissing, Strathy Township, Ontario.

ACCESS

The group of claims comprising the Kanichee Property consists of fifteen contiguous mineral leases located in the west central sector of Strathy Township, some five kilometers northwest of the town of Temagami, northeastern Ontario. The claims have been surveyed and cover an area of 235.83 hectares.

TOPOGRAPHY

The topography is of low relief and ranges between elevations of 980 to 1075 feet above sea-level. The topographic trend is northeasterly and is marked by a series of low, rocky ridges and intervening valleys of muskeg with a few small ponds or lakes. The overburden is sand, gravel and glacial boulders. The timber is spruce, jackpine, birch and poplar of relatively small size, having been ravaged by forest fires over the years.

GEOLOGY

The Kanichee intrusion is an ellipsoid body 1070 metres by 760 meters made up of wehrlite and olivine clinopyroxenite. A layer of fine grained clinopyroxenite to gabbro is present at the contact with the surrounding rocks which range in composition from rhyolite to basalt and include minor sediments. This fine grained gabbro to clinopyroxenite margin varies in thickness from several metres to several tens of metres and grades from fine to medium grained from the contact toward the centre of the intrusion. Wall rock contamination is evident as an increase in feldspar content in and around partially assimilated fragments of wallrock and at the contact.

Alternate layers of dunite and olivine clinopyroxene occur throughout the intrusive. These layers vary from cyclical type variations, which occur in DDH 88-N-7 where there is thin banding, to layering or banding of up to tens of metres.

There are patches of tremolite, talc and biotite which appear to be secondary. These alteration products are more common in the vicinity of the higher grade sulphides on the northwest apophysis.

There are two periods of diabase intrusion.

STRUCTURE

The major sulphide mineralized fracture systems are 95 degrees and 345 degrees. Numerous other near vertical fractures at 25 degrees, 45 degrees, 95 degrees and 345 degrees are filled with talc and serpentine.

MINERALIZATION

There appears to be three stages of chalcopyrite plus pyrrhotite/pentlandite mineralization. The first is at the contact and consists mostly of pyrrhotite as blebs and massive sulphides along the contact with the underlying basement rocks. The second type of mineralization is disseminated as fine to medium grained sulphides within the olivine pyroxenite and ranges from the contact up to 120 metres into the intrusion. The third type of mineralization occurs as steep veins with attitudes of 95 degrees and 345 degrees. These veins vary in widths up to 2.0 metres. The chalcopyrite to pyrrhotite ratio in the veins appears to be greater than in the disseminated mineralization. There is a halo of sulphide enrichment several metres into the wallrock on each side of the veins. The majority of these sulphide veins occur in the vicinity of the open pit.

CONCLUSIONS

Trenching has been instrumental in assisting with geological mapping of the deposit and outlining mineralization on the margins of the intrusion. Drilling was undertaken in order to establish the ratio of precious metals to base metals in mineralized zones of the intrusion. Results to date are inconclusive.

RECOMMENDATIONS

Further trenching with an excavator is recommended around the perimeter of the intrusion in order to follow the sulphide mineralization which occurs near the margin of the intrusion. Follow-up drilling should be conducted to trace the down dip extension of mineralization and to locate further higher grade mineralization within the intrusion.

STATEMENT OF QUALIFICATIONS

I, John P. McGoran, of the City of Vancouver, Province of British Columbia, herby certify as follows;

1. I reside at 2111 W 34th Ave, Vancouver, B.C.

2. I graduated with a degree of Bachelor of Science, Geology, from Carlton University in 1972.

3. I have practiced my profession as a geologist for the past 17 years.

4. I am the Chairman of Fleck Resources Ltd., with offices at 800 - 543 Granville St., Vancouver, B.C. V6C 1X8

5. I am a Member of the Canadian Institute of Mining and Metallurgy, a Fellow of the Geological Association of Canada, and a Member of the American Institute of Mining Engineers.

Dated at Vancouver, Province of British Columbia, this 3rd day of July, 1989

John P. McGoran, B.Sc.
Geologist

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5. I am a Member of the Canadian Institute of Mining and Metallurgy, a Fellow of the Geological Association of Canada, and a Member of the American Institute of Mining Engineers.

Dated at Vancouver, Province of British Columbia, this 3rd day of July, 1989

John P. McGoran, B.Sc.
Geologist

1988 REPORT

BULK SAMPLING

PILOT PLANT TESTING
AND

MINERAL DRESSING

KANICHEE DEPOSIT

FOR
NORTHERN PLATINUM LTD.

J.McGoran
B.Sc.

Sampling and mineral dressing was conducted to improve historical copper, nickel and precious metals recoveries as well as to improve the concentrate grade from ore from the Kanichee deposit. A sample of historic grades and recoveries are outlined in Appendix 1.

Two samples of ore were collected from pit run material. Bench tests were conducted at Lakefield Research Laboratory at Lakefield, Ontario. Preliminary results are outlined in Appendix 2.

Dewatering of the pit commenced in December 1988. Eighteen tons of representitive pit run material was crushed at the facilities at the nearby Kanichee mill. The selection of the pit-run material was under the direction of Dave Kuran. This material was trucked to Lakefield Research for further metallurgical testing. The metallurgical testing at Lakefield and the bulk sampling at Kanichee are ongoing during 1989.

KANICHEE MINING INC.

MONTHLY MILL REPORT

MONTH OF DECEMBER 1975

(USING KANICHEE WEIGHTS & ASSAYS)

	MONTH					YEAR TO-DATE				
	TONS	% Cu	% Ni	LBS. Cu	LBS. Ni	TONS	% Cu	% Ni	LBS. Cu	LBS. Ni
HEADS	8300	1.00	(.79)	166540	(130900)	150066	.72	(.50)	2174213	(1502916)
CONC.	960.75	7.28	4.91	142883	96356	11308.4	7.98	4.05	1811975	919682
TAILS	7319.25	.16	.24	23657	34544	138717.6	.13	.21	362238	582834
			.77		128046			.50		1506769

	MONTH	YEAR TO-DATE
AVERAGE TONS MILLED PER DAY	268	411
PERCENT RECOVERY	85.% (73.6)	83.3% (61.2%)
PERCENT RUNNING TIME	64.2%	86.6%

32

REAGENTS AND SUPPLIES USED:

SODA ASH		LBS.		LBS. PER TON
XANTHATE	1748	LBS.	.211	LBS. PER TON
FROTHER	4920	LBS.	.593	LBS. PER TON
COPPER SULPHATE	3200	LBS.	.386	LBS. PER TON
~~D.M.~~T. GUARTEC	10,900	LBS.	1.31	LBS. PER TON
GRINDING RODS	RODS REMOVED DURING SHUTDOWN	LBS.		LBS. PER TON
GRINDING BALLS (2")	3300	LBS.	.398	LBS. PER TON
FILTER BAGS				PER TON

MILL SUPERINTENDENT

1974 production
... is a Kanichee
... tons

To: John McGorman Jan. 20 1988

From: Rob MacPhail

Attached are the results from the three test done on the Pit Comp feed. The second test tested a finer grind along with more cleaners in an effort to increase the grade and recovery of Cu and Ni into the bulk concentrate. The third tested the addition of copper sulfate to the flowsheet along with a second collector addition to the first cleaner stage in an effort to increase the nickel recovery.

The testwork is now aimed at investigating the flotation kinetics of the copper, nickel, and the gangue minerals with the CMC 7LT as compared with Guar 703 or Guar MDD in the rougher flotation stage. The rougher conditions are otherwise similar to those employed for test number 3 as this test had the best nickel recovery into the rougher stage.

Feel free to contact me with any questions.

Sincerely;

Rob MacPhail
Metallurgist

Head analysis of samples sent to Lakefield by John McGorman.

	Fine ore bin	Pit Comp.
Assay (g/t)		
Au	0.40	0.14
Ag	0.80	0.40
Pt	0.35	1.53
Pd	1.12	10.3
Assay (%)		
Cu	0.82	2.16
Ni	0.62	0.70
Fe	12.4	-
S	3.77	5.60
MgO	21.4	

Test No. 2 Proj. No. NPt. 3637 Date Dec. 21 1988 Operator: R. S. MacPhail

Purpose: to produce a bulk sulfide concentrate

Procedure:
- 50 min/2kg @ 65% solids
- 70:30 mixture of A350:A3477 as a collector
- low viscosity carboxy methyl cellulose to depress talc

Feed: 2 Kg of Pit Comp.

Grind: 50 min/2kg @ 65% solids

Stage	A350	Na2CO3	A3477	DOW 1012	CMC 7LT	Time, minutes				
							Grind	Cond.	Froth	pH
Grind		2000					50			
COND. 1	30		70					1		9.6
COND. 2					300			2		9.2
RO FLOT'N				23					3	
COND 3					100			2		9.1
1ST CLNR.				8					6	9.0
COND 4					100			2		
2ND CLNR.				8					4.5	9.0
COND 5					100			2		
3RD CLNR.				8					3.5	9.0
Stage	Sulf. Ro	Sulf. clnr.'s								
Flotation Cell	Denver	Denver								
Speed: r.p.m.	1800	1320								
% Solids										
cell size (g)	1000	500								
%-200 mesh										

Test number: 2 Project no. 3537 date: Dec. 21 1988

Product	Weight		Assays (%)			Dist'n (%)		
	g	%	Cu	Ni	S	Cu	Ni	S
Cp conc.	144.5	8.26	18.10	3.73	30.40	81.0	48.4	46.2
3rd clnr. tls	33.5	1.91	3.42	2.57	15.40	3.5	7.7	5.4
2nd clnr. tls	109	6.22	0.88	0.86	5.63	3.0	8.4	6.4
1st clnr. tls	450.7	25.7	0.22	0.27	1.80	3.1	10.9	8.5
Ro tails	1015.2	57.9	0.3	0.27	3.13	9.4	24.6	33.4
Head (calc.)	1753.2	100	1.85	0.64	5.43	100	100	100

Calculated grades and recoveries

2nd clnr. conc.	178.3	10.2	15.34	3.51	27.58	84.6	56.1	51.7
1st clnr. conc.	287.3	16.4	9.86	2.51	19.25	87.5	64.5	58.1
Ro conc.	738	42.1	3.97	1.14	8.59	90.6	75.4	66.6

LAKEFIELD RESEARCH

SCREEN ANALYSIS RECORD

Operator: RORY C   Project No. 3637   Date: JAN 3/89

COMB #2

Microns	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65	0.1	0.1	0.1	99.9	65				
147	100	0.1	0.1	0.2	99.8	100				
104	150	1.0	1.0	1.2	98.8	150				
74	200	6.1	6.1	7.3	92.7	200				
53	270	10.9	10.9	18.2	81.8	270				
37	400	13.2	13.2	31.4	68.6	400				
	−400	68.6	68.6	100.0	—	−400				
	Total	100.0	100.0			Total				

Microns	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained Ind.	% Retained Cum.	% Pass. Cum.
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65					65				
147	100					100				
104	150					150				
74	200					200				
53	270					270				
37	400					400				
	−400					−400				
						Total				

Test No 1 Proj. No. NPt 3637 Date Dec. 14 1988 Operator: R. S. MacPhail

Purpose: to produce a bulk sulfide concentrate

Procedure:
- 40 min/2kg @ 65% solids
- 70:30 mixture of A350 A3477 as a collector
- low viscosity carboxy methyl cellulose to depress talc

Feed: 2 Kg of Pit Comp.

Grind: 40 min/2kg @ 65% solids

Stage	A350	Na2CO3	A3477	DOW 1012	CMC 7LT	Time, minutes				
							Grind	Cond.	Froth	pH
Grind		2000					40			
COND. 1	30		70					1		9.8
COND. 2					300			2		9.8
RO FLOT'N									5	9.4
COND 3					100			2		9.0
CLNR. FLOT'N				8					6	9.0
CLNR. TLS SCAV									3	-

Stage	Sulf. Ro	1st clnr.	Scav. of clnr. tls
Flotation Cell	Denver	Denver	Denver
Speed: r.p.m.	1800	1320	1320
% Solids			
cell size (g)	1000	500	500
%-200 mesh		88.7	

Test number1 Project no 3637 date: Dec 14 1988

Product	Weight		Assays (%)			Dist'n (%)		
	g	%	Cu	Ni	S	Cu	Ni	S
Cleaner conc.	559	28.4	7.00	1.83	12.40	95.4	75.3	66.3
Clnr. scav. conc	56.8	2.89	0.25	0.33	2.21	0.3	1.4	1.2
Clnr. scav. tls	153.8	7.82	0.11	0.19	0.92	0.4	2.2	1.4
Ro tails	1197.6	60.9	0.13	0.24	2.72	3.8	21.2	31.2
Head (calc.)	1967.2	100	2.08	0.69	5.32	100	100	100

Calculated grades and recoveries

Ro conc	769.6	39.1	5.12	1.39	9.35	96.2	78.8	68.8

LAKEFIELD RESEARCH
SCREEN ANALYSIS RECORD

Operator Rory C Project No. 3637 Date DEC 15/88

1	Ro TAIL 140 min/2kg grind									
Microns	Mesh size (Tyler)	Weight grams	% Retained		% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained		% Pass. Cum.
			Ind.	Cum.				Ind.	Cum.	
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65	0.1	0.1	0.1	99.9	65				
147	100	0.2	0.2	0.3	99.7	100				
104	150	2.6	2.6	2.9	97.1	150				
74	200	8.4	8.4	11.3	88.7	200				
53	270	11.7	11.7	23.0	77.0	270				
37	400	11.4	11.4	34.4	65.6	400				
	−400	65.6	65.6	100.0	—	−400				
	Total	100.0	100.0			Total				

Microns	Mesh size (Tyler)	Weight grams	% Retained		% Pass. Cum.	Mesh size (Tyler)	Weight grams	% Retained		% Pass. Cum.
			Ind.	Cum.				Ind.	Cum.	
1651	10					10				
1168	14					14				
833	20					20				
589	28					28				
417	35					35				
295	48					48				
208	65					65				
147	100					100				
104	150					150				
74	200					200				
53	270					270				
37	400					400				
	−400					−400				
	Total					Total				

Test No. 3 Proj. No. NFt. 3637 Date Jan. 4 1989 Operator: R. S. MacPhail

Purpose: to produce a bulk sulfide concentrate
increase Ro flot'n time
increase amount of collector to Ro flot'n
add collector to cleaner flotation

Procedure:
- 40 min/2kg @ 65% solids
- 70:30 mixture of A350:A3477 as a collector
- low viscosity carboxy methyl cellulose to depress talc

Feed: 2 Kg of Pit Comp.

Grind: 40 min/2kg @ 65% solids

Stage	A350	Na2CO3	A3477	DOW 1012	CuSO4 .5H2O	CMC 7LT	Time, minutes			
								Grind	Cond.	Froth
Grind		2000						50		
COND. 1	30		70		200				1	
COND. 2						300			2	
RO FLOT'N				15						14
COND 3	15		35						1	
COND 4						100			2	
1ST CLNR.				10						10
COND 5						100			2	
2ND CLNR.				5						8
COND 6						100			2	
3RD CLNR.				15						7
COND. 7						100			2	
4TH CLNR.				7.5						6
Stage	Sulf. Ro	1ST clnr.	2ND,3RD,4TH clnr.'s							
Flotation Cell	Denver	Denver	Denver							
Speed: r.p.m.	1800	1300	1320							
% Solids										
cell size (g)	1000	1000	500							
%-200 mesh	68.7									

Test number: 3 Project no. 3637 date: Jan. 4 1989

Product	Weight		Assays (%)			Dist'n (%)		
	g	%	Cu	Ni	S	Cu	Ni	S
Cp conc.	449.6	26.0	7.26	1.96	17.30	94.0	76.8	86.2
4th clnr. tls	32.5	1.9	0.80	0.83	6.00	0.7	2.4	2.2
3rd clnr. tls	84.6	4.9	0.53	0.67	5.96	1.3	4.9	5.6
2nd clnr. tls	114.1	6.6	0.26	0.25	1.05	0.9	2.5	1.3
1st clnr. tls	445.2	25.7	0.11	0.17	0.48	1.4	6.6	2.4
Ro tails	605.8	35.0	0.1	0.13	0.35	1.7	6.9	2.3
Head (calc.)	1731.8	100	2.01	0.65	5.21	100	100	100

Calculated grades and recoveries

3rd clnr. conc.	482.1	27.8	6.82	1.88	16.54	94.7	79.1	88.4
2nd clnr. conc.	566.7	32.7	5.96	1.70	14.96	96.0	84.1	94.0
1st clnr. conc.	680.8	39.3	4.94	1.46	12.63	96.8	86.5	95.3
Ro conc.	1126	65	3.03	0.95	7.82	98.3	93.1	97.7

1988 REPORT

BULK SAMPLING

PILOT PLANT TESTING

KANICHEE DEPOSIT

FOR
NORTHERN PLATINUM LTD.

J.McGoran
B.Sc.

NORTHERN PLATINUM

RE: Preparation for Bulk Metallurgical Sample from the Open Pit of Kanichee Mine

PERIOD: Nov 23, 1988 to Dec 31, 1988

BULK SAMPLE

Northern Management and Consultants Ltd. was hired by Northern Platinum Ltd. to obtain and process a 10,000 ton bulk sample from the existing working and process this tonnage at the on-site plant. To complete this task, the pit, which had been flooded to a depth of 83 ft plus the top 7 feet of an adjacent natural pond, had to be dewatered. The mill had not run since January 31, 1976 and therefore required maintenance and repairs. To this end, the following activities were completed during this period.

The following is a list of activites which took place at the Kanichee property from November 23, 1988 to December 31, 1988. Not included are the additional costs of mobilization of personnel, the time and cost of locating and acquiring equipment and supplies and the necessary engineering and supervision of the project.

Personnel on Project

2 millwrights
1 geologist/surveyor
1 mining engineer
1 electrician
2 heavy equipment operators
6 skilled labourers

Activites include the following:

1) locate and rent pump starter, switches, 15,000 ft of 550V 200A cable, transformer and 3 phase ground fault indicator.

2) build pump shack and pump float

3) moving 8'x 8'x 8' pump shack to pit edge on haul road plowed by D-7 cat

4) install electrical gear in pumpshack and test

5) rewire breaker box in jaw crusher building to service pump shack with power

6) salvage 1400 ft of 4 inch Victaulic steel water line, clean pipe and old couplings, supply some new gaskets and bolts

7) lay 2 x 700 ft discharge lines from pump in pit to an area 10 ft lower than ice level in pit

8) block up and level line, install quick release couplings at low spots to facilitate draining line if pump fails

9) daily breakage of ice about raft in pond and maintenance of discharge lines

10) plow snow around mill, office and pit roads

11) maintain office/shop building heating facilities

12) equip, organize and clean up maintenance/shop area

13) remove and cleanup collapsed roof structures over jaw crusher

14) replace and insulate roof on crusher building

15) inspect and test wiring and electrical panels in jaw crusher, including inspection trace back to main in sub-station

16) supply and wire 220V electric heaters to melt ice and frozen muck in sump of jaw crusher

17) supply and install propane powered fan/heaters in jaw sump

18) clean out ice and muck from jaw sump and conveyor tail pulley area.

19) remove and repair tail pulley assembly, corroded belt idlers, reinstall and adjust tension

20) clean and test conveyer drive motor

21) rebuild and test conveyer safty shut-off switch

22) construct belt scrapper and discharge chute on conveyer line to dump 4" - ore to truck box for 18 ton sample

23) inspect and test jaw crusher motor

24) repair indicated ground fault in crusher motor

25) replace and adjust drive belts on jaw crusher

26) inspect, lubricate and hand turn jaw crusher

27) inspect, maintain and repair certain components of crusher auto lube system

28) inspect and lubricate apron feeder to jaw crusher

29) rebuild apron feeder drive motor windings

30) replace worn components, bolts and plates on apron feeder belt

31) inspect and replace grizzley bar clamps

32) test jaw crusher starter mechanism

33) replace/rebuild corroded starter components

34) test pan feeder, jaw and conveyor no load

35) repair worn conveyer belts, bent connector links

36) obtain and break oversize/pit run ore to -30 inch

37) crush to -4 inch 18 tons of pit run material

38) transfer to truck and deliver to Lakefield Research

39) set up survey control stations in the vicinity of the pit

An Investigation of

THE RECOVERY OF COPPER AND NICKEL

from samples

submitted by

NORTHERN PLATINUM LIMITED

Progress Report No. 1

Project No. L.R. 3637

NOTE:

This report refers to the samples as received.

The practice of this Company in issuing reports of this nature is to require the recipient not to publish the report or any part thereof without the written consent of Lakefield Research.

LAKEFIELD RESEARCH
A DIVISION OF FALCONBRIDGE LIMITED
July 18, 1989

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INTRODUCTION

This report details the results of testwork on samples of copper-nickel ore from the Old Kanichee Mine in Temagami, Ontario as requested by Mr. John McGoran of Northern Platinum Limited.

The objective of the testwork was to produce a copper-nickel concentrate and subsequently perform a copper-nickel separation. The recovery of precious metals was also monitored.

The results and direction of the testwork were discussed with Mr. McGoran during the program.

LAKEFIELD RESEARCH

for R.S. Salter
General Manager

K.W. Sarbutt
Manager - Mineral Processing

R.S. MacPhail
Senior Project Metallurgist

Experimental Work By: J. McCarthy
L. Paquette

SUMMARY

1. Sample Description

Three samples were received for this testwork: Fine Ore Bin, Pit Composite and NPCOMPA. The testwork was carried out on Pit Composite and NPCOMPA. The Fine Ore Bin was not used as this sample was quite oxidized. The head assays are summarized in Table No. 1.

TABLE NO. 1 : Head Assays

Composite	Assays g/t				% Distribution				
	Au	Ag	Pt	Pd	Cu	Ni	Fe	S	MgO
Fine Ore Bin	0.4	0.8	0.35	1.12	0.82	0.62	12.4	3.77	21.4
Pit Composite	0.14	0.4	1.53	10.3	2.16	0.70	-	5.60	20.3
NPCOMPA	0.12	4.6	0.16	0.4	0.51	0.39	11.1	2.21	22.6

Mineralogy indicated that the Pit Composite contained pentlandite occasionally associated with pyrrhotite. Exsolution pentlandite represented less than 10 percent of this nickel sulphide. Alteration of pentlandite to violarite was well developed on some grains of pentlandite. The only copper mineral present in this composite was chalcopyrite. The violarite can be expected to form slimes in grinding and much of it can be expected to report as Ni losses to tailings. The mineralogy of the NPCOMPA sample was similar. A more detailed mineralogical report for each can be found in the Appendix.

2. Testwork

2.1. Gangue Depression

Previous work had been conducted on this ore body at Lakefield Research for Jack Koza Limited (Ajax Project) under our project number LR 1519 (Progress Report No. 1 and 2, March 24 and August 29, 1972). The operation of the Kinichee mill was well documented in an article by F.M. Makarinsky - Talc Problems Encountered in the Mining and Milling of Kinichee Nickel-Copper Ore for presentation to the Canadian Mineral Processors, January 1975. The testwork began upon review of the literature.

Summary - Continued

Two tests were done to investigate the effect of grind and one to investigate the effect of copper sulphate. The gangue depressant employed was CMC 7LT, a medium viscosity carboxy methyl cellulose. The ore was ground to 89 % -200 mesh for Test 1, 93 % -200 mesh for Test 2 and 89 % -200 mesh for Test 3. Copper sulphate was added in Test 3. For Test 1, a rougher concenrate was recovered with A350 (potassium amyl xanthate) and A3477 (dithiophosphate). The rougher concentrate was cleaned once with additional CMC 7LT. The cleaner tails were scavenged. The rougher stage for Test 2 was the same as for Test 1. The rougher concentrate was cleaned three times with additional CMC added to each stage. Copper sulphate was added prior to the rougher stage in Test 3- four cleaning stages were done rather than three. The results are summarized in Table No. 2.

TABLE NO. 2 : Batch Flotation

Test No.	%-200 mesh	Conditions	Product	Weight %	Assays % Cu	Assays % Ni	Assays % Gg*	% Distribution Cu	% Distribution Ni	% Distribution Gg
1	89	CMC 7LT A350/A3477	Cleaner Conc	28.4	7.00	1.83	91.2	95.4	75.3	26.6
			Rougher Conc	39.1	2.08	1.39	93.5	96.2	78.8	37.6
			Rougher Tails	60.9	0.13	0.24	99.6	3.8	21.2	62.4
			Head (Calc)	100.0	2.08	0.69	97.2	100.0	100.0	100.0
2	93	CMC 7LT A350/A3477	3rd Cl Conc	8.3	18.1	3.73	78.2	81.0	48.4	6.6
			2nd Cl conc	10.2	15.3	3.51	81.1	84.6	56.1	8.5
			1st Cl Conc	16.4	9.86	2.51	87.6	87.5	64.5	14.7
			Rougher Conc	42.1	3.97	1.14	90.6	90.6	75.4	41.0
			Rougher Tails	57.9	0.30	0.27	99.4	9.4	24.6	59.0
			Head (Calc)	100.0	2.01	0.66	97.3	100.0	100.0	100.0
3	89	CMC 7LT A350/A3477 Cu Sulphate	4th Cl Conc	26.0	7.26	1.96	90.8	94.0	76.8	24.2
			3rd Cl Conc	27.8	6.82	1.88	91.3	94.7	79.1	26.1
			2nd Cl Conc	32.7	5.88	1.70	92.4	96.0	84.1	31.1
			1st Cl Conc	39.3	4.94	1.46	93.6	96.8	86.5	37.8
			Rougher Conc	65.0	3.03	0.95	96.0	98.3	93.1	64.1
			Rougher Tails	35.0	0.10	0.13	99.8	1.7	6.9	35.9
			Head (Calc)	100.0	2.01	0.66	97.3	100.0	100.0	100.0

*Gg = gangue = 100 % (Cu assay & Ni assay).

The results indicate that the copper floats quite readily. The best Ni grade was 3.7 % in Test 3, however the recovery was low at 48 %.

Summary - Continued

The results of the first three tests lead to an investigation of alternative gangue depressants. The depressants tested were:

- CMC 7LT (low viscosity carboxy methyl cellulose)
- Jaguar 703 (guar gum)
- Jaguar MDD (guar gum)
- Sodium silicate

Sodium carbonate was added to the grind. Copper sulphate, A350 and A3477 were added to the ground pulp. The gangue depressant was added and a rougher concentrate was collected kinetically to determine the rates of flotation of copper, nickel and gangue. A graphical representation of the rates of flotation due to the various depressants is shown in Figures 1, 2 and 3.

Figure 1: Rate of Copper flotation

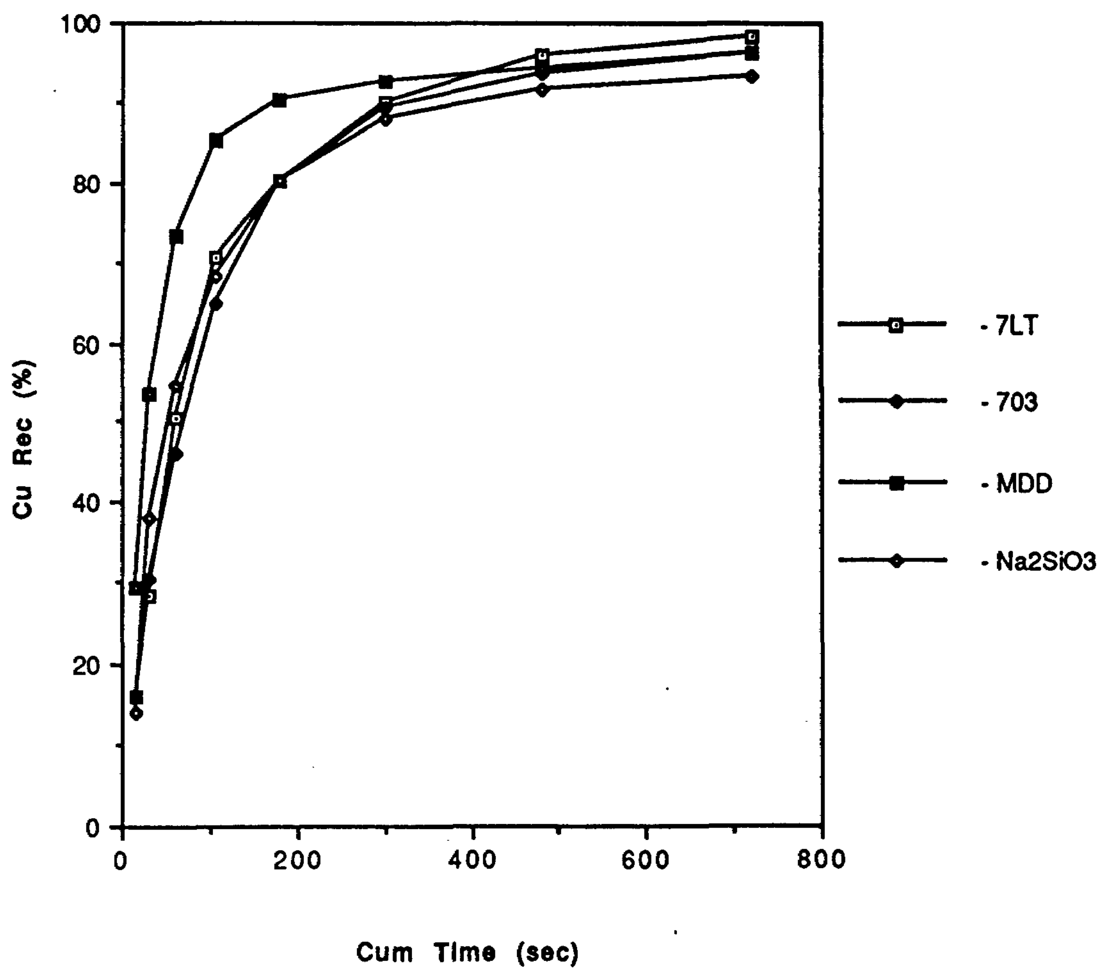


Figure 2: Rate of nickel flotation

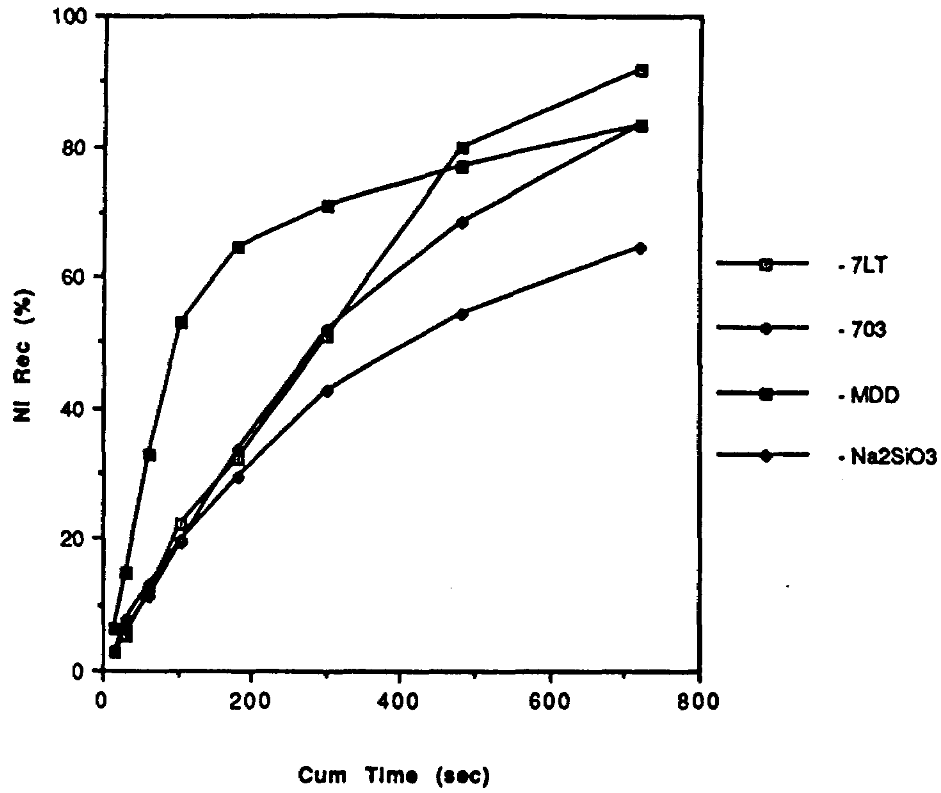
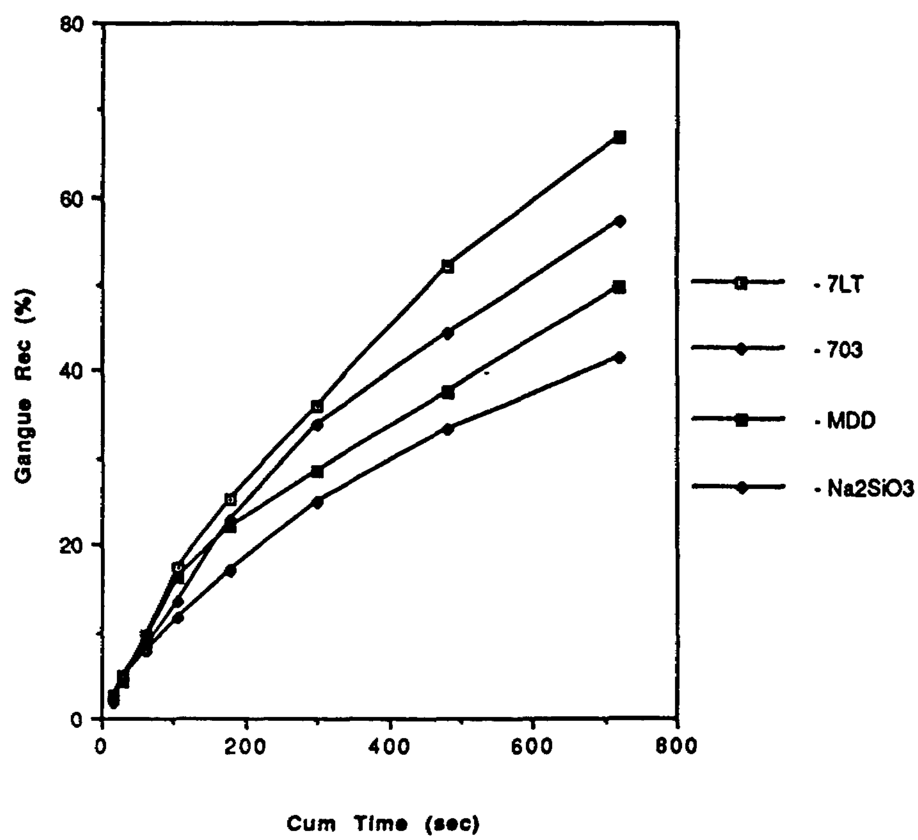


Figure 3: Rate of gangue flotation

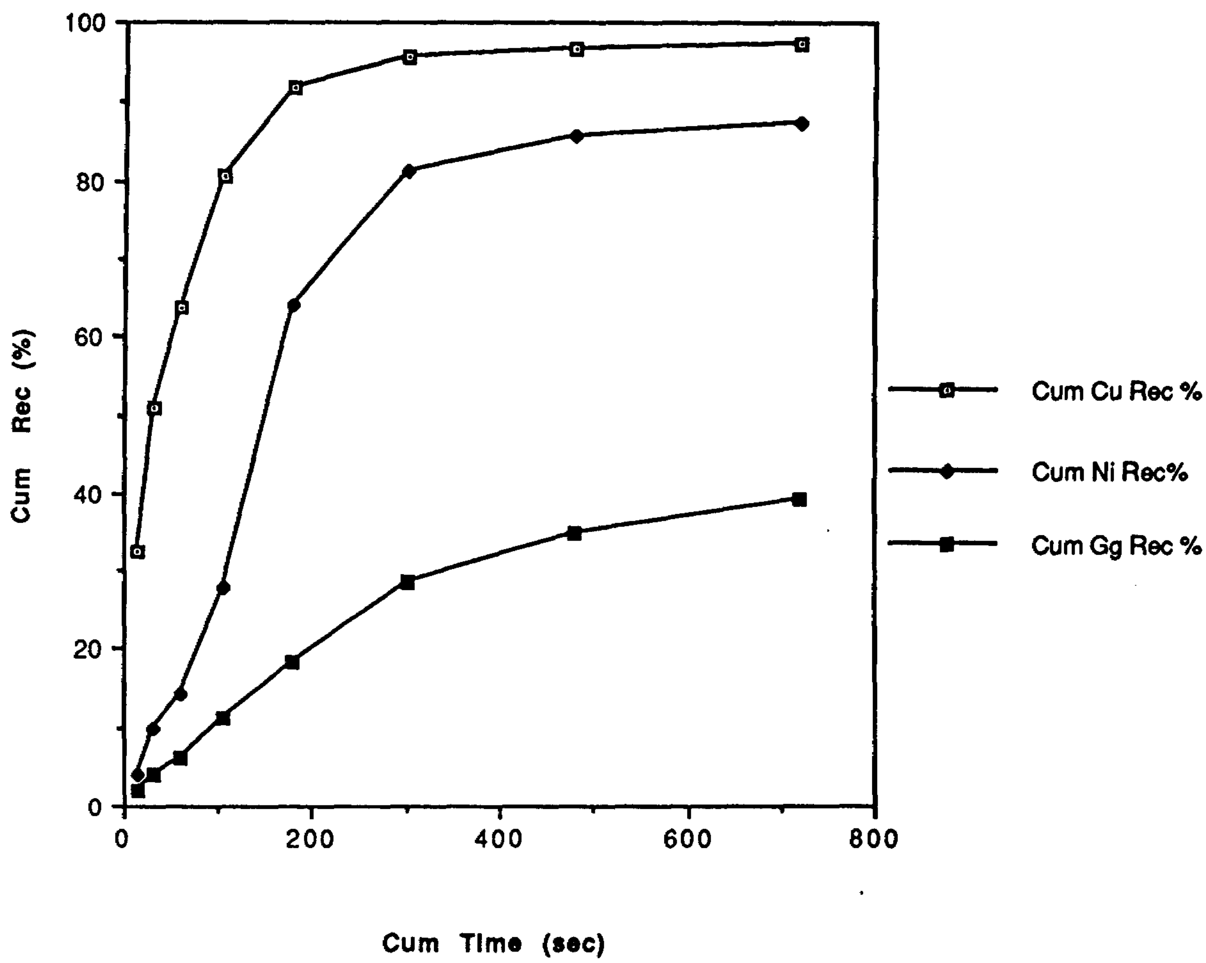


Summary - Continued

The preceeding figures indicate that the rate of copper flotation was relatively unaffected by any of the depressant investigated, therefore the assessment of the depressants was based on the rates of nickel and gangue flotation. CMC 7LT had the least effect on nickel flotation, however, this reagent also had the least effect on gangue flotation. Sodium silicate caused depression of nickel and Jaguar 703 was only slightly more effective than CMC 7LT as a gangue depressant. Figures 2 and 3 indicate that Jaguar MDD depressed the gangue without substantially effecting nickel flotation. Therefore, the testwork proceeded with Jaguar MDD as a depressant for gangue.

Test No. 8 was the final test conducted on the Pit Composite. This test was done to determine the optimum cleaner duration using the rates of nickel and gangue flotation as the criteria. The result of this test is represented graphically in Figure No. 4.

Figure 4: Optimization of first cleaner



Summary - Continued

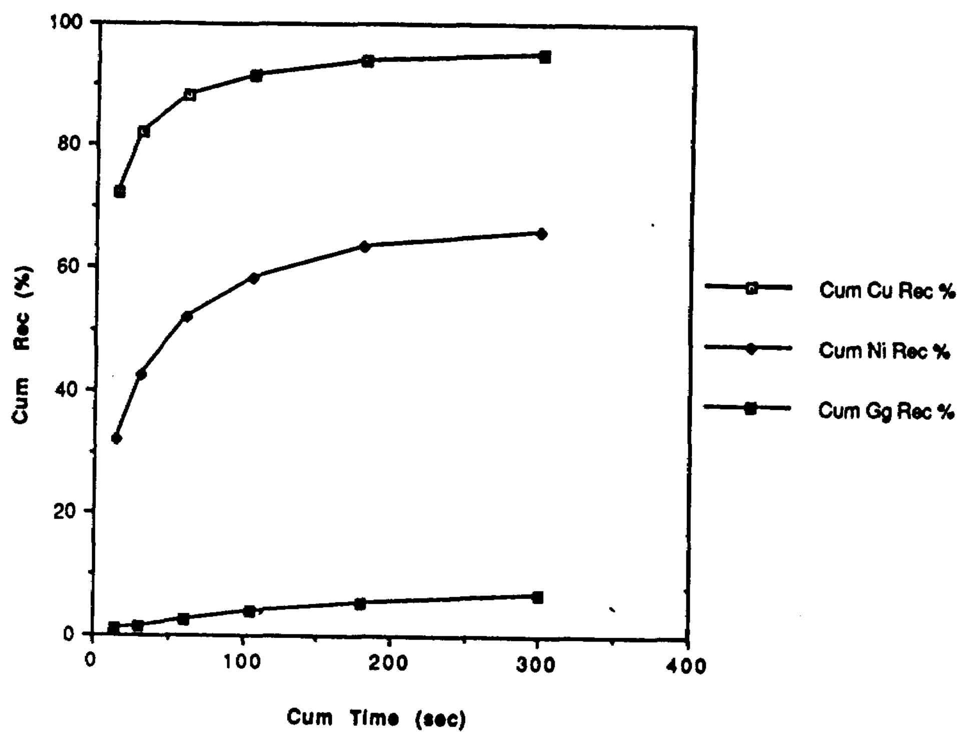
The results represented in Figure 4 indicate that the nickel-gangue separation efficiency (equal to the nickel recovery - the gangue recovery) was at a maximum at approximately 360 seconds.

Another sample arrived at Lakefield Research which was intended to be more representative of the ore body. Testwork then continued on this sample (NPCOMPA). Three notable differences in this sample were observed; the same grind power input produced a product which was 92 % -200 mesh, the pH of the pulp was 9.0 without a soda ash addition and it was necessary to double the guar addition to reduce gangue flotation.

Test 10 was the first test done on NPCOMPA. The purpose of this test was to optimize the second cleaner stage. The sample was ground and rougher flotation carried out in a similar manner to previous tests conducted on Pit Composite. It was immediately apparent that this sample would require more guar to reduce talc flotation as the froth was more "slimy" than with the same conditions on the previous sample. As a result of this higher guar addition, more frother was required to produce a suitable froth. Dowfroth 1012 was used because of its stability in high talc flotations.

The first cleaner stage was conducted for a duration of six minutes, again with double the guar addition because of high talc flotation. Jaguar MDD was added to the first cleaner concentrate and a second cleaner concentrate was collected kinetically. The results are displayed in Figure No. 5.

Figure 5: Optimization of second cleaner



Summary - Continued

These results indicate that the nickel-gangue separation efficiency was at a maximum at approximately 200 seconds.

The testwork proceeded using the optimum times derived from the previous testwork. The objective of Test 11 was to perform a copper-nickel separation of the second cleaner concentrate with lime added to a pH of 12.0 and a modest addition of sodium cyanide (10 g/t). The results are summarized in Table No. 3.

TABLE NO. 3 : Cu-Ni Separation of 2nd Cleaner Concentrate

Product	Weight %	Assays %			% Distribution		
		Cu	Ni	Gg	Cu	Ni	Gg
Cu Concentrate	1.9	19.4	3.6	77.0	80.7	19.0	1.5
Ni Concentrate	1.6	1.4	5.3	93.3	4.7	23.4	1.5
Cu-Ni Concentrate	3.5	11.2	4.4	84.5	85.4	42.4	3.0
1st Cleaner Concentrate	9.3	4.4	2.0	93.7	89.0	51.8	8.8
Rougher Concentrate	43.7	0.98	0.55	98.5	94.2	68.3	43.4
Rougher Tailings	56.3	0.05	0.20	99.8	5.8	31.7	56.6
Head (Calc)	100.0	0.45	0.35	99.2	100.0	100.0	100.0

These data indicate that a modest Cu-Ni separation was achieved with a Cu-Ni separation efficiency of 0.62. The results also indicate unacceptable losses of nickel to the rougher and 1st cleaner stages. Test 12 was done on the assumption that the nickel losses may be due to the greater amount of guar added. The purpose of this test was to determine the effect of adding the guar in stages, that is, add one-half of the amount added previously at the beginning of the rougher stage and then add the remainder at the half-way point of the rougher stage. The results are summarized in Table No. 4.

TABLE NO. 4 : Results of Stage Additions of Guar in the Rougher Stage

Product	Weight %	Assays %			% Distribution		
		Cu	Ni	Gg	Cu	Ni	Gg
Cu-Ni Concentrate	14.6	3.35	1.96	94.7	93.4	72.4	13.9
1st Cleaner Concentrate	39.2	1.28	0.84	97.9	96.0	83.0	38.6
Rougher Concentrate	69.4	0.74	0.53	98.9	97.9	92.2	69.2
Rougher Tailings	30.6	0.04	0.10	99.9	2.1	7.8	30.8
Head (Calc)	100.0	0.52	0.39	99.1	100.0	100.0	100.0

Summary - Continued

These results indicate that the method of adding the guar incremently during the rougher stage resulted in increased recovery of nickel, but an increase in gangue flotation was also noted.

The nickel-gangue separation testwork continued with Tests 13 and 15. Test 13 investigated the effect of increasing the guar addition to the 1st cleaner stage and Test 15 investigated the effect of a collector addition to the 1st cleaner stage as well as increasing the guar addition. The results are summarized in Table No. 5.

TABLE NO. 5 : Effect of Increasing Guar Addition and Adding Collector in the 1st Cl Stage

Test No.	Product	Weight %	Assays %			% Distribution		
			Cu	Ni	Gg	Cu	Ni	Gg
13	Cu-Ni Concentrate	5.6	6.98	3.14	89.9	82.7	48.5	5.1
	1st Cleaner Conc	10.7	3.94	2.07	94.0	88.8	60.9	10.1
	Rougher Conc	53.8	0.84	0.55	98.6	95.1	81.0	53.5
	Rougher Tails	46.2	0.05	0.15	99.8	4.9	19.0	46.5
	Head (Calc)	100.0	0.48	0.36	99.2	100.0	100.0	100.0
15	Cu-Ni Concentrate	6.4	6.37	3.22	81.9	84.6	61.1	5.4
	1st Cleaner Conc	22.5	1.90	1.09	94.5	88.9	72.6	21.8
	Rougher Conc	58.1	0.78	0.50	97.3	93.6	85.3	57.7
	Rougher Tails	41.9	0.07	0.12	99.2	6.4	14.7	42.3
	Head (Calc)	100.0	0.48	0.34	98.2	100.0	100.0	100.0

These results show that increasing the guar addition to the 1st cleaner stage reduced gangue recovery to 5.1 % (T-13) from 13.9 % (T-12) but nickel recovery was also reduced. The addition of collector to the 1st cleaner stage resulted in an increase in nickel recovery from 48.5 % to 61.1 % without effecting the gangue recovery.

Four tests were conducted to investigate alternatives to Jaguar MDD. Three gangue depressants were tested, they were; A3-3 (Test 19), Doe Run Starch (Test 20), and CMC 6CTL (Tests 21 and 22). The composition of A3-3 and Doe Run Starch were proprietary. The investigations using A3-3 and Doe Run Starch were conducted on the 2nd cleaner stage.

The tests with CMC 6CTL recovered a rougher concentrate with copper sulphate, A350 and A3477. The rougher concenrate was recovered with incremental additions of CMC. The CMC was added incrementally to inhibit gangue flotation while minimizing the effect on sulphide flotation. The rougher concentrate was cleaned once with additional A3477, A350 and CMC.

Summary - Continued

The rougher tails were scavenged with A350. Test 21 was conducted at natural pH and Test 22 was conducted at pH 9.0.

A test (Test 18) was also done to investigate the effect, on gangue flotation, of regrinding the 1st cleaner concentrate.

The results for the alternative gangue depressants are outlined in Table 6.

TABLE NO. 6 : Further Gangue Depression Tests

Test No.	Conditions	Product	Weight %	Assays % Cu	Ni	Gg*	% Distribution Cu	Ni	Gg
19	A3-3	Cu-Ni Concentrate	24.9	1.79	0.81	97.4	80.1	49.5	24.5
		2nd Cleaner Conc	32.1	1.42	0.72	97.9	81.9	56.5	31.7
		1st Cleaner Conc	46.7	1.09	0.70	98.2	91.4	81.0	46.3
		Rougher Concentrate	73.9	0.70	0.49	98.9	93.4	89.7	73.8
		Rougher Tailings	26.1	0.14	0.16	99.7	6.6	10.3	26.2
		Head (Calc)	100.0	0.56	0.41	99.0	100.0	100.0	100.0
20	Doe Run Starch	Cu-Ni Concentrate	40.4	1.26	0.70	98.0	94.5	71.7	40.0
		1st Cleaner Conc	49.4	1.05	0.65	98.3	96.5	81.0	49.0
		Rougher Concentrate	76.1	0.70	0.46	98.8	98.4	89.1	75.0
		Rougher Tailings	23.9	0.04	0.18	99.8	1.6	10.9	24.1
		Head (Calc)	100.0	0.54	0.39	99.1	100.0	100.0	100.0
18	Regrind 1st Cleaner Conc	Cu-Ni Concentrate	16.3	2.57	1.09	96.3	84.7	46.7	15.8
		1st Cleaner Conc	29.3	1.58	0.96	97.5	93.9	74.1	28.8
		Rougher Concentrate	73.5	0.66	0.45	98.9	97.8	88.1	73.3
		Rougher Tailings	26.5	0.04	0.17	99.8	2.2	11.9	26.7
		Head (Calc)	100.0	0.49	0.38	99.1	100.0	100.0	100.0
21	CMC 6CTL natural pH	Rougher Cleaner Conc	3.7	11.6	4.06	84.3	86.0	38.3	3.2
		Rougher Concentrate	10.9	4.27	2.03	93.7	92.3	55.8	10.3
		Ro + Scav Conc	20.1	2.36	1.33	96.3	94.3	67.7	19.6
		Scavenger Tails	79.9	0.04	0.16	99.8	5.7	32.3	80.5
		Head (Calc)	100.0	0.50	0.40	99.1	100.0	100.0	100.0
22	CMC 6CTL pH = 9	Rougher Cl Conc	3.4	13.9	5.95	80.2	85.3	45.2	2.7
		Rougher Concentrate	15.2	3.36	1.87	94.8	93.3	64.3	14.6
		Ro + Scav Conc	29.2	1.81	1.20	97.0	96.6	79.1	28.6
		Scavenger Tails	70.8	0.03	0.13	99.8	3.4	20.9	71.4
		Head (Calc)	100.0	0.55	0.44	99.0	100.0	100.0	100.0

Summary - Continued

The results summarized in Table 6 indicate that neither A3-3 nor Doe Run Starch was as efficient as Jaguar MDD in depressing gangue.

The tests using CMC 6CTL show promise as an alternative to Jaguar MDD and additional testwork with this reagent would be required to increase nickel recovery.

2.2. Copper-Nickel Separation

Six flotation tests were conducted to investigate a method of copper-nickel separation. These tests were performed on the Cu-Ni concentrates produced during the gangue depression investigations. The conditions tested for copper-nickel separation were as follows;

Test 13 - lime to pH 12.0
Test 14 - lime to pH 12.0 and 200 g/t NaCN
Test 15 - regrind Cu-Ni conc in the presence of lime
Test 16 - regrind Cu-Ni conc in the presence of lime and cyanide
Test 17 - thicken Cu-Ni conc, repulp, add A3477 and float

The results of this testwork are summarized in Table 7. The recoveries are based on the Cu-Ni concentrate (feed to the copper-nickel separation stage).

TABLE NO. 7 : Cu-Ni Separation Results

Test No.	Conditions	Product	Weight %	Assays %		% O'all Dist.		% Distribution*		SE**
				Cu	Ni	Cu	Ni	Cu	Ni	
13	lime to pH 12	Cu Concentrate 1	1.0	19.3	3.07	41.2	8.6	49.8	17.7	0.32
		Cu Concentrates 1&2	1.5	18.2	3.13	57.6	13.0	69.7	26.8	0.43
		Cu Conc 1, 2 & 3	1.9	16.5	3.35	66.4	17.6	80.2	36.3	0.44
		Cu Conc 1, 2, 3 & 4	2.5	13.8	3.46	73.4	24.0	88.8	49.5	0.39
		Ni Concentrate	3.1	1.43	2.87	9.3	24.5	11.2	50.5	-
		Cu-Ni Concentrate	5.6	6.98	3.14	82.7	48.5	100.0	100.0	-
14	lime to pH 12 200 g/t NaCN	Cu Concentrate	0.6	7.39	2.09	9.1	3.4	11.5	8.1	0.03
		Ni Concentrate	2.8	12.6	5.27	69.5	38.8	88.5	91.9	-
		Cu-Ni Concentrate	3.4	11.6	4.69	78.6	42.2	100.0	100.0	-
15	Regrind in the presence of lime	Cu Concentrate 1	1.2	17.1	3.07	42.9	11.0	50.7	18.0	0.33
		Cu Concentrates 1&2	1.7	14.8	3.36	53.3	17.3	63.0	28.3	0.35
		Cu Conc 1, 2 & 3	2.4	12.6	3.51	61.8	24.6	73.0	40.3	0.33
		Cu Conc 1,2,3 &4	2.8	11.5	3.53	66.1	28.9	78.1	47.3	0.31
		Ni Concentrate	3.7	2.45	2.98	18.5	32.2	21.9	52.7	-
		Cu-Ni Concentrate	6.5	6.37	3.22	84.6	61.1	100.0	100.0	-

*based on feed to copper-nickel separation stage

**separation efficiency = copper recovery - nickel recovery

TABLE NO. 7 : Cu-Ni Separation Results - Continued

Test No.	Conditions	Product	Weight %	Assays % Cu	Ni	Gg*	% Distribution* Cu	Ni	Gg	SE**
16	Regrind in the presence of lime and NaCN	Cu Concentrate 1	0.4	10.3	1.38	10.1	1.6	11.9	3.0	0.09
		Cu Concentrates 1&2	0.6	10.4	1.75	13.7	2.7	16.2	5.1	0.11
		Cu Conc 1,2 & 3	1.2	12.3	2.29	33.9	7.4	40.1	14.0	0.26
		Cu Conc 1,2,3 & 4	1.7	13.1	2.34	52.2	11.0	61.7	20.9	0.41
		Cu Conc 1,2,3,4,&5	1.8	13.1	2.35	55.0	11.6	65.0	22.0	0.43
		Ni Concentrate	3.1	4.11	4.81	29.6	41.1	35.0	78.0	-
		Cu-Ni Concentrate	4.9	7.42	3.91	84.6	52.7	100.0	100.0	-
17	Thicken Cu-Ni conc	Cu Concentrate 1	2.3	13.0	5.31	62.6	33.5	73.1	66.8	0.06
		Cu Concentrates 1&2	3.0	11.9	5.12	73.2	41.5	85.5	82.8	0.03
		Cu Conc 1,2 & 3	3.5	11.1	4.88	80.5	46.4	94.0	92.6	0.01
		Cu Conc 1,2,3 & 4	3.9	10.5	4.64	85.0	49.2	99.3	98.2	0.01
		Ni Concentrate	0.6	0.5	0.53	0.6	0.9	0.7	0.8	-
		Cu-Ni Concentrate	4.5	9.2	4.09	85.6	50.1	100.0	100.0	-

*based on feed to copper-nickel separation stage

**separation efficiency = copper recovery - nickel recovery

Based on the separation efficiencies calculated for each test in Table 7 it is apparent that the better tests were with lime only to pH 12 or regrinding the Cu-Ni concentrate in the presence of lime and cyanide.

Mineralogical examination of the Cu-Ni concentrates from Tests 16 and 17 indicated that the chalcopyrite and the pentlandite in each concentrate was liberated and therefore "locking" of these minerals is not a problem. A more complete mineralogical report can be found in the Appendix. Further investigation is required to determine a method for acceptable copper-nickel separation.

2.3. Precious Metals Recovery

The products from Tests 16 and 17 were submitted for precious metals analysis. These tests were chosen as the Cu-Ni concentrates from these tests were the best in terms of copper and nickel grades and recoveries. These results are summarized in Table No. 8.

Summary - Continued

TABLE NO. 8 : Precious Metals Balance

Test No.	Product	Weight %	Assays g/t Au	Assays g/t Pt	Assays g/t Ag	% Distribution Au	% Distribution Pt	% Distribution Ag
16	Cu-Ni Conc	4.9	11.0	1.12	45.0	94.4	28.2	71.0
	1st Cleaner Conc	30.8	1.80	0.35	8.6	97.1	54.9	85.2
	Rougher Conc	76.9	0.73	0.20	3.75	98.8	78.6	92.6
	Rougher Tails	23.1	0.03	0.19	1.00	1.2	21.4	7.4
	Head (Calc)	100.0	0.57	0.18	3.11	100.0	100.0	100.0
17	Cu-Ni Conc	4.5	4.08	1.32	49.9	63.8	29.6	68.1
	1st Cleaner Conc	21.0	1.27	0.50	12.5	92.4	52.5	79.1
	Rougher Conc	68.6	0.40	0.22	4.38	95.7	73.7	90.6
	Rougher Tails	31.3	0.04	0.17	1.00	4.3	26.4	9.4
	Head (Calc)	100.0	0.29	0.20	3.32	100.0	100.0	100.0

The gold assay for the Cu-Ni concentrate in Test 16 is suspect as evidenced by the high calculated head. The remainder of the assays are similar for both tests. The results summarized in Table 8 indicate that a method of activating the sperrylite ($PtAs_2$) is required to increase the platinum recovery.

In addition to the precious metals analysis, the Cu-Ni concentrates from Tests 16 and 17 were analysed for gangue components. These analyses are outlined in Table No. 9.

TABLE NO. 9 : Gangue Components of Cu-Ni Concentrate

Product	Assays % SiO_2	Assays % MgO	Assays % Al_2O_3	Assays % As	Assays % Hg
T-16 Cu-Ni Conc	20.9	11.9	1.87	0.15	3×10^{-5}
T-17 Cu-Ni Conc	19.6	11.5	1.57	0.012	3×10^{-5}

CONCLUSIONS

Preliminary testwork on two samples from the Kinichee Mine in Temagami indicated the following:

- CMC 6CTL and Jaguar MDD provided the best gangue depression.
- the best Cu-Ni concentrate was produced using Jaguar MDD assayed 9 % Cu and 4 % Ni, corresponding to recoveries of 86 % and 50 % respectively.
- additional testwork will be required to improve nickel recovery when CMC 6CTL is used in place of Jaguar MDD.
- additional testwork will be required to affect an adequate copper nickel separation.
- additional testwork will be required to obtain adequate sperrylite recovery.

RECOMMENDATIONS

The Kanichee Mine, when in operation, produced a Cu-Ni concentrate which assayed 8 % Cu and 4 % Ni. This concenrate was shipped to Falconbridge Limited for subsequent smelting. By today's standards this would be considered a low grade concentrate and the penalties incurred as a result of the copper content alone would be prohibitive. Therefore, additional teswork is recommended to investigate copper-nickel separation to reduce the copper content and increase the nickel grade.

Results should be confirmed by locked cycle testing to quantify the effects of recycled streams.

SAMPLE PREPARATION

On December 1, 1988, two 5-gallon pails containing Fine Ore Bin and four 5-gallon pails containing Pit Composite were received at Lakefield Research and given our Reference Numbers 8830954 and 8830958 respectively. On February 6, 1989 one 5-gallon pail containing NPCOMPA was received and given our Reference Number 8931322. Head samples and test charges were prepared from these samples.

On February 13, 1989 approximately fifteen tons of ore was received at Lakefield Research for prospective pilot plant work. This sample is currently stored on site.

ONLY SAMPLES
8830954 & 58 [illegible]
eligible for [illegible]

DETAILS OF TESTS

Test No. 1 Project No. 3637 Date: Dec 14/88 Operator: R.S. MacPhail

Purpose: to produce a bulk sulphide concentrate

Procedure:
-40 min/2kg @ 65 % solids
-70:30 mixture of A350:A3477 as a collector
-low viscosity carboxy methyl cellulose to depress talc

Feed: 2 kg of Pit Comp.

Grind: 40 min/2kg @65% solids

Stage	Reagents added, grams per tonne							Time, minutes			
	A350	Na2CO3	A3477	DOW 1012	CMC 7LT			Grind	Cond.	Froth	pH
Grind		2000						40			
COND. 1	30		70						1		9.8
COND. 2					300				2		9.8
RO FLOT'N										5	9.4
COND. 3					100				2		9
CLNR. FLOT'N				8						6	9
CLNR. TLS SCAV										3	-
Stage	Rougher		Cleaner		Scavenger						
Flotation Cell	1000g D-1		500g D-1		500g D-1						
Speed: r.p.m.	1800		1320		1320						
% Solids											
%- mesh			88.7								

Test No. 1

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cl Conc	559.0	28.4	7.00	1.83	91.2	95.4	75.3	26.6
2. Cl Scav Conc	56.8	2.9	0.25	0.33	99.4	0.3	1.4	3.0
3. Cl Scav Tail	153.8	7.8	0.11	0.19	99.7	0.4	2.2	8.0
4. Ro Tail	1197.6	60.9	0.13	0.24	99.6	3.8	21.2	62.4
Head (calc)	1967.2	100.0	2.08	0.69	97.2	100.0	100.0	100.0
Combined Products								
1 - 3		39.1	5.12	1.39	93.5	96.2	78.8	37.6

Size analysis for : Test 1 Date: Dec. 15/88
Ro. Tail
Project No.: 3637 Grind: 40 min./2kg

Particle Size	Weight (grams)	% Retained Cumulative	% Passing Cumulative
208 um	0.1	0.1	99.9
147 um	0.2	0.3	99.7
104 um	2.6	2.9	97.1
74 um	8.4	11.3	88.7
53 um	11.7	23.0	77.0
37 um	11.4	34.4	65.6
-37 um	65.6	100.0	-
Total	100.0	-	-

Test No. 2 Project No. 3637 Date: Dec 21/88 Operator: R.S. MacPhail

Purpose: to produce a bulk sulphide concentrate

Procedure: -50 min/2kg @ 65 % solids
-70:30 mixture of A350:A3477 as a collector
-low viscosity carboxy methyl cellulose to depress talc

Feed: 2 kg of Pit Comp.

Grind: 50 min/2kg @65% solids

	Reagents added, grams per tonne							Time, minutes			
Stage	A350	Na2CO3	A3477	DOW 1012	CMC 7LT			Grind	Cond.	Froth	pH
Grind		2000						50			
COND. 1	30		70						1		9.6
COND. 2					300				2		9.2
RO FLOT'N				23						8	
COND. 3					100				2		9.1
1st CLNR				8						6	9.0
COND 4					100				2		
2nd CLNR				8						4.5	9.0
COND 5					100				2		
3rd CLNR				8						3.5	9.0
Stage	Roughers		Cleaners								
Flotation Cell	1000g D-1		500g D-1								
Speed: r.p.m.	1800		1320								
% Solids											
%- mesh											

Size analysis for : Test 2 Date: Dec. 21/88
Comb. Prod.
Project No.: 3637 Grind: 50 min./2kg

Particle Size	Weight (grams)	% Retained Cumulative	% Passing Cumulative
208 um	0.1	0.1	99.9
147 um	0.1	0.2	99.8
104 um	1	1.2	98.8
74 um	6.1	7.3	92.7
53 um	10.9	18.2	81.8
37 um	13.2	31.4	68.6
-37 um	68.6	100.0	-
Total	100.0	-	-

Test No. 2

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc	144.8	8.3	18.1	3.73	78.2	81.0	48.4	6.6
2. 3rd Cl Tail	33.5	1.9	3.42	2.57	94.0	3.5	7.7	1.8
3. 2nd Cl Tail	109.0	6.2	0.88	0.86	98.3	3.0	8.4	6.3
4. 1st Cl Tail	450.7	25.7	0.22	0.27	99.5	3.1	10.9	26.2
5. Ro Tail	1015.2	57.9	0.30	0.27	99.4	9.4	24.6	59.0
Head (calc)	1753.2	100.0	1.85	0.64	97.5	100.0	100.0	100.0
Combined Products								
1 + 2		10.2	15.3	3.51	81.1	84.6	56.1	8.5
1 - 3		16.4	9.86	2.51	87.6	87.5	64.5	14.7
1 - 4		42.1	3.97	1.14	94.9	90.6	75.4	41.0

Test No. 3 Project No. 3637 Date: Jan 4/89 Operator: R.S. MacPhail

Purpose: to produce a bulk sulphide concentrate,
increase Ro flot'n time
increase amount of collector to Ro flot'n
add collector to cleaner flotation

Procedure: -40 min/2kg @ 65 % solids
-70:30 mixture of A350:A3477 as a collector
-low viscosity carboxy methyl cellulose to depress talc

Feed: 2 kg of Pit Comp.

Grind: 40 min/2kg @65% solids

Stage	Reagents added, grams per tonne						Time, minutes			pH
	A350	Na2CO3	A3477	DOW 1012	CMC 7LT	CuSO4 .5H2O	Grind	Cond.	Froth	
Grind		2000					40			
COND. 1	30		70			200		1		
COND. 2					300			2		
RO FLOT'N				15					14	
COND. 3	15		35					1		
COND 4					100			2		
1st CLNR				10					10	
COND 5					100			2		
2nd CLNR				5					8	
COND 6					100			2		
3rd CLNR				15					7	
COND 7					100			2		
4th CLNR				7.5					6	

Stage	Roughers	1st Cleaner	2nd, 3rd, 4th, Cleaners			
Flotation Cell	1000g D-1	1000g D-1	500g D-1			
Speed: r.p.m.	1800	1800	1320			
% Solids						
%- mesh	88.7					

Test No. 3

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc	449.6	26.0	7.26	1.96	90.8	94.0	76.8	24.2
2. 4th Cl Tail	32.5	1.9	0.80	0.83	98.4	0.7	2.4	1.9
3. 3rd Cl Tail	84.6	4.9	0.53	0.67	98.8	1.3	4.9	5.0
4. 2nd Cl Tail	114.1	6.6	0.26	0.25	99.5	0.9	2.5	6.7
5. 1st Cl Tail	445.2	25.7	0.11	0.17	99.7	1.4	6.6	26.3
6. Ro Tail	605.8	35.0	0.10	0.13	99.8	1.7	6.9	35.9
Head (calc)	1731.8	100.0	2.01	0.66	97.3	100.0	100.0	100.0
Combined Products								
1 + 2		27.8	6.82	1.88	91.3	94.7	79.1	26.1
1 - 3		32.7	5.88	1.70	92.4	96.0	84.1	31.1
1 - 4		39.3	4.94	1.46	93.6	96.8	86.5	37.8
1 - 5		65.0	3.03	0.95	96.0	98.3	93.1	64.1

Test No. 4,5,6,7 Project No. 3637 Date: Jan 27/89 Operator: R.S. MacPhail

Purpose: to test a variety of gangue depressants

Procedure:
-40 min/2kg @ 65 % solids
-70:30 mixture of A350:A3477 as a collector
-test CMC 7LT, Jaguar 703, Jaguar MDD, Sodium Silicate

Feed: 2 kg of Pit Comp.

Grind: 40 min/2kg @65% solids

	Reagents added, grams per tonne								Time, minutes		
Stage	A350	Na2CO3	A3477	CuSO4 .5H2O	(4) CMC 7LT	(5) Jaguar 703	(6) Jaguar MDD	(7) Sodium Silicate	Cond.	Froth	pH
Grind		2000									9.2
COND. 1	30		70	200					1		9.0
COND. 2					300	80	200	250	2		9.0
RO FLOT'N 1										0.25	
RO FLOT'N 2										0.25	
RO FLOT'N 3										0.50	
RO FLOT'N 4										0.75	
RO FLOT'N 5										1.25	
RO FLOT'N 6										2.00	
RO FLOT'N 7										3.00	
RO FLOT'N 8										4.00	
Stage	Roughers										
Flotation Cell	1000g D-1										
Speed: r.p.m.	1800										
% Solids											
%- mesh	88.7										

Test No. 4 Project No. 3637 Date: Jan 6,89

Product	Weight g	Weight %	Assays (%) Cu	Assays (%) Ni	Assays (%) Rk	% Distribution Cu	% Distribution Ni	% Distribution Rk
1. Ro Conc 1	50.7	2.6	12.50	0.73	86.77	16.2	2.8	2.3
2. Ro Conc 2	44.1	2.3	10.70	0.79	88.51	12.1	2.6	2.1
3. Ro Conc 3	109.7	5.6	7.87	0.80	91.33	22.1	6.6	5.3
4. Ro Conc 4	155.8	8.0	5.06	0.86	94.08	20.2	10.1	7.8
5. Ro Conc 5	153.4	7.9	2.43	0.85	96.72	9.6	9.8	7.8
6. Ro Conc 6	212.4	10.9	1.80	1.20	97.03	9.8	19.2	10.9
7. Ro Conc 7	311.1	16.0	0.74	1.23	98.03	5.9	28.8	16.1
8. Ro Conc 8	276.4	14.2	0.32	0.58	99.10	2.3	12.1	14.5
9. Ro Tails	629.4	32.4	0.11	0.17	99.72	1.8	8.1	33.2
Head (calc)	1943.0	100.0	2.01	0.68	97.31	100.0	100.0	100.0

Combined Products

1 + 2	94.8	4.9	11.66	0.76	87.58	28.3	5.4	4.4
1 - 3	204.5	10.5	9.63	0.78	89.59	50.5	12.0	9.7
1 - 4	360.3	18.5	7.65	0.81	91.53	70.7	22.1	17.4
1 - 5	513.7	26.4	6.09	0.83	93.08	80.3	31.9	25.3
1 - 6	726.1	37.4	4.84	0.93	94.24	90.1	51.1	36.2
1 - 7	1037.2	53.4	3.61	1.02	95.37	96.0	79.9	52.3
1 - 8	1313.6	67.6	2.92	0.93	96.16	98.2	91.9	66.8

Test No. 5 Project No. 3637 Date: Jan 23,89

Product	Weight		Assays (%)			% Distribution		
	g	%	Cu	Ni	Rk	Cu	Ni	Rk
1. Ro Conc 1	44.2	2.3	14.10	0.85	85.05	16.2	2.9	2.0
2. Ro Conc 2	52.3	2.8	10.50	0.87	88.63	14.3	3.5	2.5
3. Ro Conc 3	76.0	4.0	7.85	0.86	91.29	15.5	5.0	3.8
4. Ro Conc 4	108.5	5.7	6.70	0.98	92.32	18.9	8.1	5.4
5. Ro Conc 5	177.0	9.3	3.33	1.01	95.66	15.4	13.6	9.2
6. Ro Conc 6	211.2	11.1	1.65	1.20	97.20	9.1	19.3	11.1
7. Ro Conc 7	194.6	10.2	0.84	1.11	98.05	4.3	16.5	10.3
8. Ro Conc 8	240.7	12.7	0.40	0.80	98.80	2.5	14.7	12.9
9. Ro Tails	796.7	41.9	0.18	0.27	99.50	3.7	16.4	42.9
Head (calc)	1901.2	100.0	2.02	0.69	97.28	100.0	100.0	100.0

Combined Products

1 + 2	96.5	5.1	12.15	0.86	86.99	30.6	6.3	4.5
1 - 3	172.5	9.1	10.25	0.86	88.88	46.1	11.3	8.3
1 - 4	281.0	14.8	8.88	0.91	90.21	65.0	19.4	13.7
1 - 5	458.0	24.1	6.74	0.95	92.32	80.4	33.1	22.9
1 - 6	669.2	35.2	5.13	1.03	93.86	89.5	52.4	34.0
1 - 7	863.8	45.4	4.16	1.05	94.80	93.8	68.9	44.3
1 - 8	1104.5	58.1	3.34	0.99	95.67	96.3	83.6	57.1

Test No. 6 Project No. 3637 Date: Jan 23,89

Product	Weight		Assays (%)			% Distribution		
	g	%	Cu	Ni	Rk	Cu	Ni	Rk
1. Ro Conc 1	61.8	3.1	18.90	1.36	79.74	29.5	6.2	2.6
2. Ro Conc 2	51.0	2.6	18.60	2.33	79.07	23.9	8.8	2.1
3. Ro Conc 3	96.0	4.9	8.17	2.54	89.29	19.8	18.0	4.5
4. Ro Conc 4	146.8	7.4	3.25	1.85	94.90	12.0	20.1	7.2
5. Ro Conc 5	115.8	5.9	1.76	1.33	96.91	5.1	11.4	5.8
6. Ro Conc 6	124.6	6.3	0.74	0.70	98.56	2.3	6.4	6.4
7. Ro Conc 7	176.3	8.9	0.41	0.46	99.13	1.8	6.0	9.1
8. Ro Conc 8	233.1	11.8	0.30	0.38	99.32	1.8	6.5	12.0
9. Ro Tails	973.0	49.2	0.15	0.23	99.62	3.7	16.5	50.3
Head (calc)	1978.4	100.0	2.00	0.68	97.31	100.0	100.0	100.0

Combined Products

1 + 2	112.8	5.7	18.76	1.80	79.44	53.4	15.0	4.7
1 - 3	208.8	10.6	13.89	2.14	83.97	73.2	33.0	9.1
1 - 4	355.6	18.0	9.50	2.02	88.48	85.3	53.1	16.3
1 - 5	471.4	23.8	7.60	1.85	90.55	90.4	64.5	22.2
1 - 6	596.0	30.1	6.16	1.61	92.23	92.7	70.9	28.6
1 - 7	772.3	39.0	4.85	1.35	93.80	94.6	76.9	37.6
1 - 8	1005.4	50.8	3.80	1.12	95.08	96.3	83.5	49.7

Test No. 7 Project No. 3637 Date: Jan 27,89

Product	Weight		Assays (%)			% Distribution		
	g	%	Cu	Ni	Rk	Cu	Ni	Rk
1. Ro Conc 1	40.8	2.1	13.00	0.86	86.14	14.0	2.7	1.9
2. Ro Conc 2	61.3	3.2	14.90	1.08	84.02	24.1	5.1	2.8
3. Ro Conc 3	63.7	3.3	9.75	1.04	89.21	16.4	5.1	3.0
4. Ro Conc 4	83.2	4.3	6.31	1.08	92.61	13.8	6.9	4.1
5. Ro Conc 5	105.2	5.5	4.28	1.17	94.55	11.9	9.5	5.3
6. Ro Conc 6	153.3	8.0	1.88	1.13	96.99	7.6	13.3	8.0
7. Ro Conc 7	160.0	8.3	0.89	0.97	98.14	3.8	11.9	8.4
8. Ro Conc 8	152.6	7.9	0.54	0.86	98.60	2.2	10.1	8.0
9. Ro Tails	1100.0	57.3	0.22	0.42	99.36	6.4	35.5	58.5
Head (calc)	1920.1	100.0	1.98	0.68	97.35	100.0	100.0	100.0

Combined Products

1 + 2	102.1	5.3	14.14	0.99	84.87	38.0	7.8	4.6
1 - 3	165.8	8.6	12.45	1.01	86.54	54.4	12.9	7.7
1 - 4	249.0	13.0	10.40	1.03	88.57	68.2	19.8	11.8
1 - 5	354.2	18.4	8.58	1.07	90.34	80.1	29.2	17.1
1 - 6	507.5	26.4	6.56	1.09	92.35	87.7	42.5	25.1
1 - 7	667.5	34.8	5.20	1.06	93.74	91.5	54.4	33.5
1 - 8	820.1	42.7	4.33	1.02	94.64	93.6	64.5	41.5

Test No. 8 Project No. 3637 Date: Jan 30/89 Operator: R.S. MacPhail

Purpose: to add Jaguar MDD in Rougher and the Cleaner

Procedure: As outlined below

Feed: 2 kg of Pit Comp.

Grind: 40 min/2kg @65% solids

Stage	Reagents added, grams per tonne						Time, minutes			
	A350	Na2CO3	A3477	CuSO4 .5H2O	Jaguar MDD	DOW 1012	Grind	Cond.	Froth	pH
Grind		2000					40			9.3
COND. 1	30		70	200				2		
COND. 2					200			3		
RO FLOT'N						30			15	
CLNR FLOT'N 1					100				0.25	
CLNR FLOT'N 2									0.25	
CLNR FLOT'N 3									0.50	
CLNR FLOT'N 4						10			0.75	
CLNR FLOT'N 5									1.25	
CLNR FLOT'N 6						5			2.00	
CLNR FLOT'N 7									3.00	
CLNR FLOT'N 8									4.00	
Stage	Roughers		Cleaners							
Flotation Cell	1000g D-1		1000g D-1							
Speed: r.p.m.	1800		1800							
% Solids										
%- mesh	88.7									

Test No. 8

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Clnr. Conc. 1	53.7	2.8	21.7	0.97	77.33	32.4	4.0	2.2
2. Clnr. Conc. 2	45.2	2.4	14.6	1.65	83.75	18.3	5.8	2.0
3. Clnr. Conc. 3	44.6	2.3	10.6	1.34	88.06	13.1	4.6	2.1
4. Clnr. Conc. 4	100.4	5.3	6.03	1.75	92.22	16.8	13.6	5.0
5. Clnr. Conc. 5	143.0	7.5	2.81	3.26	93.93	11.2	36.1	7.2
6. Clnr. Conc. 6	193.8	10.2	0.68	1.14	98.18	3.7	17.1	10.3
7. Clnr. Conc. 7	109.7	5.8	0.37	0.50	99.18	1.1	4.2	5.9
8. Clnr. Conc. 8	84.4	4.4	0.22	0.29	99.49	0.5	1.9	4.5
9. Clnr. tails	428.9	22.6	0.08	0.15	99.77	1.0	5.0	23.1
10. Ro. tails	698.0	36.7	0.10	0.14	99.76	1.9	7.6	37.6
Head (calc)	1901.7	100.0	1.89	0.68	97.43	100.0	100.0	100.0

Calculated Grades and Recoveries

Clnr. Conc. 1 - 2	98.9	5.20	18.5	1.28	80.26	50.7	9.8	4.3
Clnr. Conc. 1 - 3	143.5	7.55	16.0	1.30	82.69	63.8	14.4	6.4
Clnr. Conc. 1 - 4	243.9	12.8	11.9	1.48	86.61	80.6	28.1	11.4
Clnr. Conc. 1 - 5	386.9	20.3	8.5	2.14	89.32	91.8	64.2	18.7
Clnr. Conc. 1 - 6	580.7	30.5	5.9	1.72	92.36	95.5	81.3	28.9
Clnr. Conc. 1 - 7	690.4	36.3	5.0	1.49	93.47	96.6	85.5	34.8
Clnr. Conc. 1 - 8	774.8	40.7	4.5	1.38	94.11	97.1	87.4	39.3

Test No. 10 Project No. 3637 Date: Feb 23/89 Operator: R.S. MacPhail

Purpose: optimization of 2nd cleaner stage with lower grade sample

Procedure: 2000 g/t Na2CO3 added to mill
Jaguar MDD as talc depressant
copper sulphate as sulphide activator
comb. of A350/A3477 as collector

Feed: NP COMP A

Grind: 40 min/2kg @65% solids

	Reagents added, grams per tonne						Time, minutes			
Stage	A350	Na2CO3	A3477	CuSO4 .5H2O	Jaguar MDD	DOW 1012	Grind	Cond.	Froth	pH
Grind		2000					40			9.8
COND. 1	30		70	200				1		
COND. 2					400			2		
Bulk sulf Ro						113			15	
COND. 3					200			2		
CLNR FLOT'N 1						38			6	
COND. 4					100			2		
2ND CLNR 1									0.25	
2ND CLNR 2									0.25	
2ND CLNR 3									0.50	
2ND CLNR 4									0.75	
2ND CLNR 5									1.25	
2ND CLNR 6									2.00	
Stage	Roughers		1st Cleaner		2nd Cleaners					
Flotation Cell	1000g D-1		1000g D-1		500g D-1					
Speed: r.p.m.	1800		1800		1320					
% Solids										
%- mesh	91.6									

Size analysis for : Test 10 Date: March 14/89
Comb. Prod.
Project No.: 3637 Grind: 30 min./2kg

Particle Size	Weight (grams)	% Retained Cumulative	% Passing Cumulative
208 um	0.1	0.1	99.9
147 um	0.2	0.3	99.7
104 um	1.6	1.9	98.1
74 um	6.5	8.4	91.6
53 um	9.9	18.3	81.7
37 um	10.1	28.4	71.6
-37 um	71.6	100.0	-
Total	100.0	-	-

Test number: 10 Project no. 3637

Product	Weight		Assays			Dist'n (%)		
	g	%	Cu(%)	Ni(%)	RK(%)	Cu	Ni	Rk
clnr. conc. 1	42.3	2.2	15.7	5.24	39.2	72.4	31.9	0.9
clnr conc. 2	17.5	0.9	5.1	4.16	72.4	9.7	10.5	0.7
clnr conc. 3	22.4	1.1	2.54	2.92	83.2	6.2	9.4	1.0
clnr conc. 4	26.7	1.4	1.07	1.72	90.9	3.1	6.6	1.3
clnr conc 5	31.4	1.6	0.72	1.19	93.4	2.5	5.4	1.5
clnr conc 6	27.0	1.4	0.37	0.64	96.2	1.1	2.5	1.4
2nd clnr tails	293.8	15.0	0.041	0.12	99.5	1.3	5.1	15.4
1st clnr tails	516.0	26.4	0.021	0.14	99.4	1.2	10.4	26.9
ro tails	979.2	50.1	0.023	0.13	99.2	2.5	18.3	51.0
Head (calc.)	1956.3	100	0.47	0.36	97.3	100	100	100

Calculated grades and recoveries

clnr conc1 - 2	59.8	3.06	12.6	4.92	48.9	82.2	42.4	1.5
clnr conc1 - 3	82.2	4.2	9.9	4.38	58.3	88.4	51.8	2.5
clnr conc1 - 4	108.9	5.57	7.7	3.73	66.3	91.5	58.4	3.8
clnr conc 1 - 5	140.3	7.17	6.1	3.16	72.3	94	63.7	5.3
clnr conc 1 - 6	167.3	8.55	5.2	1.43	66.3	95	66.2	6.7
1st clnr conc	461.1	23.6	1.9	0.92	88.3	96.4	71.3	22.0
Ro conc	977.1	49.9	0.9	0.51	93.5	97.5	81.7	49.0

Test No. 11 Project No. 3637 Date: March 10/89 Operator: R.S. MacPhail

Purpose: to perform a Cu - Ni separation

Procedure: repeat test 10 with Cu - Ni separation of the flotation conc at a coarser grind.

Feed: 2kg NP COMP A

Grind: 30 min/2kg @65% solids

Stage	Reagents added, grams per tonne								Time, minutes			
	A350	Na2CO3	A3477	CuSO4 .5H2O	Jaguar MDD	DOW 1012	NaCN	Ca(OH)2	Grind	Cond.	Froth	pH
Grind		2000							30			9.8
COND. 1	30		70	200						1		
COND. 2					400					2		
Bulk sulf Ro						113					15	
COND. 3					200					2		
CLNR FLOT'N 1						38					6	
COND. 4					100					2		
2ND CLNR 1						13					4	
COND. 5							10	870			3	
Cu Ro 1											1	
Cu Ro 2											1	
Stage	Rougher		1st Cleaner		2nd Cleaners		Cu-Ro					
Flotation Cell	1000g D-1		1000g D-1		500g D-1		500g D-1					
Speed: r.p.m.	1800		1800		1320		1320					
% Solids												
%- mesh	91.6											

Test No. 11

Product		Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc 1		29.9	1.5	19.9	3.66	76.4	65.8	15.5	1.2
2. Cu Conc 2		7.7	0.4	17.6	3.22	79.2	15.0	3.5	0.3
3. Ni Conc		31.0	1.6	1.37	5.32	93.3	4.7	23.4	1.5
4. 2nd Cl Tail		116.4	5.8	0.28	0.57	99.2	3.6	9.4	5.8
5. 1st Cl Tail		685.7	34.4	0.068	0.17	99.8	5.2	16.5	34.6
6. Ro Tail		1120.0	56.3	0.047	0.20	99.8	5.8	31.7	56.6
Head (calc)		1990.7	100.0	0.45	0.35	99.2	100.0	100.0	100.0
Combined Products									
	1 + 2		1.9	19.4	3.57	77.0	80.7	19.0	1.5
	1 - 3		3.4	11.3	4.36	84.4	85.4	42.4	2.9
	1 - 4		9.3	4.35	1.98	93.7	89.0	51.8	8.8
	1 - 5		43.7	0.98	0.55	98.5	94.2	68.3	43.4

Size analysis for : Test 11 Date: March 14/89
Comb. Prod.
Project No.: 3637 Grind: 30 min./2kg

Particle Size	Weight (grams)	% Retained Cumulative	% Passing Cumulative
208 um	0.2	0.2	99.8
147 um	1.3	1.5	98.5
104 um	4.9	6.4	93.6
74 um	11.9	18.3	81.7
53 um	10.7	29.0	71.0
37 um	9.1	38.1	61.9
-37 um	61.9	100.0	-
Total	100.0	-	-

Test No. 12 Project No. 3637 Date: March 17/89

Purpose: -improve rock rejection, remove soda ash from grind
-sperrylite activation with sodium sulphide

Procedure: repeat test 11 with stage additions of Jaguar MDD.

Feed: 2kg NP COMP A

Grind: 40 min/2kg @65% solids

	Reagents added, grams per tonne						Time, minutes			
Stage	A350	Na2S	A3477	CuSO4 .5H2O	Jaguar MDD	DOW 1012	Grind	Cond.	Froth	pH
Grind							40			8.6
COND. 1		280		200				5		
COND. 2	30		70					2		
COND. 3					200			2		9.3
Bulk sulf Ro						15		2	7	
Bulk sulf Ro					200				8	
CLNR FLOT'N 1					200	8			6	
CLNR FLOT'N 2					100	4			3.5	

Stage	Rougher	1st Cleaner	2nd Cleaners
Flotation Cell	1000g D-1	1000g D-1	500g D-1
Speed: r.p.m.	1800	1800	1320
% Solids			
%- mesh			

Test No. 12

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu-Ni Conc	276.5	14.6	3.35	1.96	94.7	93.1	72.4	13.9
2. 2nd Cl Tail	465.8	24.6	0.06	0.17	99.8	2.8	10.6	24.7
3. 1st Cl Tail	574.2	30.3	0.03	0.12	99.9	1.7	9.2	30.5
6. Ro Tail	580.3	30.6	0.04	0.10	99.9	2.3	7.8	30.8
Head (calc)	1896.8	100.0	0.52	0.39	99.1	100.0	100.0	100.0
Combined Products								
1 + 2		39.1	1.29	0.84	97.9	95.9	83.0	38.7
1 - 3		69.4	0.74	0.52	98.7	97.7	92.2	69.2

Test No. 13 Project No. 3637 Date: March 22/89

Purpose: -perform a copper - nickel separation with lime to pH 12.0

Procedure:
- reduce grind time to 30 minutes
- remove sodium carbonate
- Cu -Ni separation with lime only

Feed: 2kg NP COMP A

Grind: 30 min/2kg @65% solids

	Reagents added, grams per tonne						Time, minutes			
Stage	A350	$Ca(OH)_2$	A3477	$CuSO_4$ $.5H_2O$	Jaguar MDD	DOW 1012	Grind	Cond.	Froth	pH
Grind							30			9.2
COND. 1				200				5		
COND. 2	30		70					1		
COND. 3					200			2		9.3
Bulk Sulf Ro					200	130		2	15	
CLNR FLOT'N 1					300	120			6	
CLNR FLOT'N 2					100				3.5	
Cu Ro 1		200							0.25	12.0
Cu Ro 2									0.25	
Cu Ro 3									0.50	
Cu Ro 4									0.75	

Stage	Rougher	1st Cleaner	2nd Cleaners	Cu Ro		
Flotation Cell	Agitair 6L	Agitair 6L	500g D-1	Agitair 1.5L		
Speed: r.p.m.	1000	1000	900	800		
% Solids						
%- mesh						

Test No. 13

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc 1	19.6	1.0	19.3	3.07	77.6	41.2	8.6	0.8
2. Cu Conc 2	9.5	0.5	15.8	3.26	80.9	16.4	4.4	0.4
3. Cu Conc 3	7.9	0.4	10.3	4.13	85.6	8.9	4.6	0.4
4. Cu Conc 4	11.8	0.6	5.39	3.84	90.8	6.9	6.4	0.6
5. Ni Conc	60	3.1	1.43	2.87	95.7	9.3	24.5	3.0
6. 2nd Cl Tail	97.9	5.1	0.57	0.89	98.5	6.1	12.4	5.0
7. 1st Cl Tail	833	43.1	0.07	0.17	99.8	6.4	20.1	43.4
8. Ro Tail	891.6	46.2	0.05	0.15	99.8	4.9	19.0	46.5
Head (calc)	1931.3	100.0	0.48	0.36	99.2	100.0	100.0	100.0
Combined Products								
1 + 2		1.5	18.2	3.13	78.7	57.6	13.0	1.2
1 - 3		1.9	16.5	3.35	80.2	66.4	17.6	1.5
1 - 4		2.5	13.8	3.46	82.7	73.4	24.0	2.1
1 - 5		5.6	6.98	3.14	89.9	82.7	48.5	5.1
1 - 6		10.7	3.94	2.07	94.0	88.8	60.9	10.1
1 - 7		53.8	0.84	0.55	98.6	95.1	81.0	53.5

Test No. 14 Project No. 3637 Date: March 22/89

Purpose: -perform a copper - nickel separation with lime and sodium cyanide

Procedure: - increase pH to 12.0 with $Ca(OH)_2$
- add 200 g/t NaCN

Feed: 2kg NP COMP A

Grind: 30 min/2kg @65% solids

Stage	Reagents added, grams per tonne							Time,	
	A350	Ca(OH)2	NaCN	A3477	CuSO4 .5H2O	Jaguar MDD	DOW 1012	Grind	Cond.
Grind								30	
COND. 1					200				2
COND. 2	30			70					1
COND. 3						200			2
Bulk Sulf Ro						200	150		
CLNR FLOT'N 1						300	100		1
CLNR FLOT'N 2						100			1
COND. 4		200							10
COND. 5			200						10
Cu Ro									

Stage	Rougher	1st Cleaner	2nd Cleaners	Cu Ro	
Flotation Cell	Agitair 6L	Agitair 6L	Agitair3L	Agitair 1.5L	
Speed: r.p.m.	1000	1000	900	800	
% Solids					
%- mesh					

Test No. 14

Product	Weight		Assays %			% Distribution		
	g	%	Cu	Ni	RK	Cu	Ni	RK
1. Cu Conc	11.4	0.6	7.39	2.09	90.5	9.1	3.4	0.6
2. Ni Conc	51.1	2.8	12.6	5.27	82.1	69.5	38.8	2.3
3. 2nd Cl Tail	71.5	3.9	0.91	1.15	97.9	7.0	11.8	3.9
4. 1st Cl Tail	820.6	45.2	0.1	0.20	99.7	8.9	23.6	45.5
5. Ro Tail	859.8	47.4	0.06	0.18	99.8	5.6	22.3	47.7
Head (calc)	1814.4	100.0	0.51	0.38	99.1	100.0	100.0	100.0
Combined Products								
1 + 2		3.4	11.6	4.69	83.6	78.6	42.2	2.9
1 - 3		7.4	5.92	2.80	91.2	85.6	54.1	6.8
1 - 4		52.6	0.92	0.57	98.5	94.4	77.7	52.3

Test No. 15 Project No. 3637 Date: April 7/89 Operator: Jim

Purpose: To produce a Cu-Ni Concentrate by flotation.

Procedure: As outlined below.

Feed: -10 mesh, 2kg NP Comp A

Grind: 30 minutes per 2 kg at 65% solids in the yellow lab ball mill.

	Reagents added, grams per tonne							Time, minutes			
Stage	CuSO4	A3477	A350	MDD	Dow 1012	Ca(OH)2		Grind	Cond.	Froth	pH
Cond 1	200	-	-	-	-	-			2		9.0
Cond 2	-	70	30	-	-	-			1		
Cond 3	-	-	-	200	90	-			2		
Rougher 1	-	-	-	200	60	-				15	
Cond 4	-	30	15	-	-	-			1		
Cond 5	-	-	-	200	-	-			2		
1st Clnr	-	-	-	100	-	-				7	
Cond 6	-	-	-	100	-	-			2		
2nd Clnr	-	-	-	-	-	-				4	
Regr Rod Mill	-	-	-	-	-	230		10			
Cu-Ni Flot'n	-	-	-	-	-	-					

Stage	Cond 1to 5	1st Cleaner	Cond 6	2nd Cleaner	Cu-Ni Flot'n	
Flotation Cell	6L Agitair	6L Agitair	6L Agitair	3L Agitair	1.5L Agitair	
Speed: r.p.m.	1000	1000	900	900	800	
% Solids						
%- mesh						

Test No. 15

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc 1	24.3	1.2	17.1	3.07	39.2	42.9	11.0	0.5
2. Cu Conc 2	10.5	0.5	9.60	4.04	72.4	10.4	6.3	0.4
3. Cu Conc 3	12.8	0.6	6.46	3.90	83.2	8.5	7.4	0.5
4. Cu Conc 4	7.9	0.4	5.23	3.64	90.9	4.3	4.2	0.4
5. Ni Conc	73.2	3.7	2.45	2.98	96.2	18.5	32.2	3.6
6. 2nd Cl Tail	323.5	16.1	0.13	0.24	99.5	4.3	11.5	16.4,
7. 1st Cl Tail	711.7	35.5	0.064	0.12	99.4	4.7	12.6	36.0
8. Ro Tail	839.6	41.9	0.074	0.12	99.2	6.4	14.9	42.3
Head (calc)	2003.5	100.0	0.48	0.34	98.2	100.0	100.0	100.0
Combined Products								
1 + 2		1.7	14.8	3.36	49.2	53.3	17.3	0.9
1 - 3		2.4	12.6	3.51	58.4	61.8	24.6	1.4
1 - 4		2.8	11.5	3.53	63.0	66.1	28.9	1.8
1 - 5		6.4	6.37	3.22	81.9	84.6	61.1	5.4

Test No. 16 Project No. 3637 Date: April 24/89

Purpose: As for test 15 but 2nd cleaner concentrate was reground with 230 g/t CaO and 50 g/t NaCN.

Procedure: As outlined below.

Feed: 2kg -200 Mesh NP Composite A

Grind: 30 min/2kg @65% solids in a lab ball mill

Stage	Reagents added, grams per tonne					Time, minutes			
	copper sulphate	A3477	Ax 350	Jaguar MDD	DF 1012	Grind	Cond.	Froth	pH
CONDITION	200	-	-	-	-		2		8.7
	-	70	30	-	-		1		
ROUGHER	-	-	-	200	186		2	6	8.8
	-	-	-	200	44		2	5	9.0
	-	-	-	-	29		1	4	
1st CLEANER	-	30	15	-	-		1		8.8
	-	-	-	200	44		2	2	9.0
	-	-	-	100	-		2	5	
2nd CLEANER	-	15	30	-	-		2	4	8.9
	Regrind 2nd cleaner concentrate for 10 minutes in a rod mill with 230g/t CaO and 50 g/t NaCN.								
Cu FLOTATION	-	-	-	-	-			0.5	12.0
	-	-	-	-	-			0.5	
	-	-	-	-	9			1	
	-	-	-	-	-			2	
	-	-	-	-	-			1	

Stage	Rougher+1st cleaner	2nd cleaner	Cu flotation
Flotation Cell	6 L Agitair cell	3L Agitair cell	1.5L Agitair cell
Speed: r.p.m.	1000	900	800
Air (on meter)	10	7	5
%- mesh			

Test No. 16

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc 1	8.3	0.4	10.3	1.38	88.3	10.1	1.6	0.4
2. Cu Conc 2	2.9	0.1	10.5	2.80	86.7	3.6	1.1	0.1
3. Cu Conc 3	12.0	0.6	14.2	2.80	83.0	20.2	4.7	0.5
4. Cu Conc 4	10.5	0.5	14.8	2.45	82.8	18.4	3.6	0.4
5. Cu Conc 5	1.7	0.1	13.6	2.54	83.9	2.7	0.6	0.1
6. Ni Conc	61.0	3.1	4.11	4.81	91.1	29.7	41.1	2.9
7. 2nd Cl Tail	508.9	25.9	0.13	0.30	99.6	7.8	21.4	26.0
8. 1st Cl Tail	904.1	46.1	0.048	0.12	99.8	5.1	15.2	46.4
9. Ro Tail	452.3	23.1	0.045	0.17	99.8	2.4	10.8	23.2
Head (calc)	1961.7	100.0	0.43	0.36	99.2	100.0	100.0	100.0
Combined Products								
1 + 2		0.6	10.4	1.75	87.9	13.7	2.7	0.5
1 - 3		1.2	12.3	2.29	85.4	33.9	7.4	1.0
1 - 4		1.7	13.1	2.34	84.6	52.2	11.0	1.5
1 - 5		1.8	13.1	2.35	84.5	55.0	11.6	1.5
1 - 6		4.9	7.42	3.91	88.7	84.6	52.7	4.4
1 - 7		30.9	1.29	0.87	97.8	92.5	74.1	30.4
1 - 8		76.9	0.55	0.42	99.0	97.6	89.2	76.8

Test No. 16

Product	Weight g	Weight %	Assays(g/t) Au	Assays(g/t) Pt	Assays(g/t) Ag	% Distribution Au	% Distribution Pt	% Distribution Ag
1. Cu-Ni Conc	96.4	4.9	11.0	1.12	45.0	94.4	28.2	71.0
2. 2nd Cl Tail	508.9	25.9	0.06	0.20	1.70	2.7	26.7	14.2
3. 1st Cl Tail	904.1	46.1	0.02	0.10	0.50	1.6	23.7	7.4
4. Ro Tail	452.3	23.1	0.03	0.18	1.00	1.2	21.4	7.4
Head (calc)	1961.7	100.0	0.57	0.19	3.11	100.0	100.0	100.0
1+2	605.3	30.8	1.80	0.35	8.60	97.10	54.90	85.20
1-3	1509.4	76.9	0.73	0.20	3.75	98.70	78.60	92.60

Cu-Ni Conc Additional Assays		
	SiO_2	20.8 %
	MgO	11.9 %
	Al_2O_3	1.81 %
	As	0.15 %
	Hg	0.00003 %

Test No. 17 Project No. 3637 Date: April 25/89

Purpose: As for test 15 but 2nd cleaner concentrate was washed with water and repulped with fresh water before Cu flotation.

Procedure: As outlined below.

Feed: 2kg -200 Mesh NP Composite A

Grind: 30 min/2kg @65% solids in a lab ball mill

Stage	Reagents added, grams per tonne					Time, minutes			
	copper sulphate	A3477	Ax 350	Jaguar MDD	DF 1012	Grind	Cond.	Froth	pH
CONDITION	200	-	-	-	-		2		8.8
	-	70	30	-	-		1		
ROUGHER	-	-	-	200	186		2	6	8.9
	-	-	-	200	44		2	5	
	-	-	-	-	29		1	4	
1st CLEANER	-	30	15	-	-		1		8.8
	-	-	-	200	44		2	2	9.0
	-	-	-	100	-		2	5	
2nd CLEANER	-	-	-	100	-		2	4	8.9
	2nd cleaner concentrate was filtered and washed two times with water.								
Cu FLOTATION	-	60	-	-	-		1	0.5	
	-	-	-	-	-			0.5	
	-	-	-	-	-			1	
	-	-	-	-	-			2	

Stage	Rougher+1st cleaner	2nd cleaner	Cu flotation
Flotation Cell	6 L Agitair cell	3L Agitair cell	1.5 L Agitair cell
Speed: r.p.m.	1000	900	800
Air (on meter)	10	7	5
%- mesh			

Test No. 17

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc 1	45.7	2.3	13.0	5.31	81.7	62.6	33.5	1.9
2. Cu Conc 2	12.9	0.7	7.78	4.45	87.8	10.6	7.9	0.6
3. Cu Conc 3	10.2	0.5	6.75	3.52	89.7	7.3	5.0	0.5
4. Cu Conc 4	7.8	0.4	5.44	2.54	92.0	4.5	2.7	0.4
5. Ni Conc	12.0	0.6	0.50	0.53	99.0	0.6	0.9	0.6
6. 2nd Cl Tail	323.5	16.5	0.18	0.44	99.4	6.1	19.7	16.6
7. 1st Cl Tail	931.5	47.6	0.052	0.13	99.8	5.1	16.7	47.9
8. Ro Tail	613.3	31.3	0.05	0.16	99.8	3.2	13.6	31.5
Head (calc)	1956.9	100.0	0.48	0.37	99.1	100.0	100.0	100.0
Combined Products								
1 + 2		3.0	11.9	5.12	83.0	73.2	41.5	2.5
1 - 3		3.5	11.1	4.88	84.0	80.5	46.4	3.0
1 - 4		3.9	10.5	4.64	84.8	85.0	49.2	3.3
1 - 5		4.5	9.16	4.09	86.8	85.6	50.0	4.0
1 - 6		21.1	2.11	1.22	96.7	91.7	69.7	20.5
1 - 7		68.7	0.68	0.47	98.9	96.8	86.4	68.5

Test No. 17

Product	Weight g	Weight %	Assays g/t Au	Assays g/t Pt	Assays g/t Ag	% Distribution Au	% Distribution Pt	% Distribution Ag
1. Cu-Ni Conc	88.6	4.5	4.08	1.32	49.9	63.8	29.6	68.1
2. 2nd Cl Tail	323.5	16.5	0.50	0.28	2.20	28.6	22.9	11.0
3. 1st Cl Tail	931.5	47.6	0.02	0.09	0.80	3.3	21.2	11.5
4. Ro Tail	613.3	31.3	0.04	0.17	1.00	4.3	26.4	9.4
Head (calc)	1956.9	100.0	0.29	0.20	3.32	100.0	100.0	100.0
1+2	412.1	21.0	1.27	0.50	12.46	92.40	52.50	79.10
1 - 3	1343.6	68.6	0.40	0.22	4.38	95.70	73.70	90.60

Cu-Ni Conc Additional Assays		
	SiO_2	19.6 %
	MgO	11.5 %
	Al_2O_3	1.57 %
	As	0.012 %
	Hg	0.00003 %

Test No. 18 Project No. 3637 Date: April 26/89

Purpose: As for test 15 but 1st cleaner concentrate was reground and Cu-Ni flotation carried out on the 1st cleaner concentrate.

Procedure: As outlined below.

Feed: 2kg -200 Mesh NP Composite A

Grind: 30 min/2kg @65% solids in a lab ball mill

Stage	Reagents added, grams per tonne					Time, minutes			
	copper sulphate	A3477	Ax 350	Jaguar MDD	DF 1012	Grind	Cond.	Froth	pH
CONDITION	200	-	-	-	-		2		8.8
	-	70	30	-	-		1		
ROUGHER	-	-	-	200	186		2	6	8.9
	-	-	-	200	44		2	5	
	-	-	-	-	29		1	4	
1st CLEANER	-	30	15	-	-		1		8.8
	-	-	-	200	44		2	2	9.0
	-	-	-	100	-		2	5	
Regrind 1st cleaner concentrate for 10 minutes in a rod mill.									
2nd CLEANER	-	15	30	-	-		1		8.9
	-	-	-	200	-		2	0.5	
	-	-	-	-	-			0.5	
	-	-	-	-	-			1	
	-	-	-	-	-			2	

Stage	Rougher+1st cleaner	2nd cleaner
Flotation Cell	6 L Agitair cell	3L Agitair cell
Speed: r.p.m.	1000	900
Air (on meter)	10	7
%- mesh		

Test No. 18

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Cu Conc 1	29.2	1.5	3.24	1.20	95.6	9.8	4.7	1.4
2. Cu Conc 2	75.9	3.9	5.91	0.88	93.2	46.5	9.0	3.7
3. Cu Conc 3	79.3	4.1	1.80	1.17	97.0	14.8	12.5	4.0
4. Cu Conc 4	133.3	6.8	0.98	1.13	97.9	13.5	20.4	6.8
5. Ni Conc	254.0	13.0	0.35	0.80	98.9	9.2	27.5	13.0
6. 1st Cl Tail	861.8	44.2	0.044	0.12	99.8	3.9	14.0	44.5
7. Ro Tail	516.9	26.5	0.041	0.17	99.8	2.2	11.9	26.7
Head (calc)	1950.4	100.0	0.49	0.38	99.1	100.0	100.0	100.0
Combined Products								
1 + 2		5.4	5.17	0.97	93.9	56.3	13.8	5.1
1 - 3		9.5	3.72	1.06	95.2	71.1	26.3	9.1
1 - 4		16.3	2.57	1.09	96.3	84.7	46.7	15.8
1 - 5		29.3	1.58	0.96	97.5	93.9	74.1	28.8
1 - 6		73.5	0.66	0.45	98.9	97.8	88.1	73.3

Test No. 19 Project No. 3637 Date: May 1,89

Purpose: To investigate the effect of A3-3 as a rock depressant in the second cleaner flotation on the Cu-Ni concentrat grade.

Procedure: As outlined below.

Feed: 2kg -200 Mesh NP Composite A

Grind: 30 min/2kg @65% solids in a lab ball mill

Stage	Reagents added, grams per tonne							Time, minutes			
	copper sulphate	A3477	Ax 350	Jaguar MDD	DF 1012	A3-3	Antiform C-1	Grind	Cond.	Froth	pH
CONDITION	200	-	-	-	-	-	-		2		9.0
	-	70	30	-	-	-	-		1		
ROUGHER	-	-	-	200	186	-	-		2	6	8.9
	-	-	-	200	44	-	-		2	5	8.8
	-	-	-	-	29	-	-		1	4	
1st CLEANER	-	30	15	-	-	-	-		1		8.8
	-	-	-	200	44	-	-		2	2	
	-	-	-	100	-	-	-		2	5	
2nd CLEANER	-	15	30	-	-	-	12 drps		1		9.2
	-	-	-	-	-	400	-		2	4	
3rd CLEANER	-	15	30	-	-	400	-			0.5	9.4
	-	-	-	-	-	-	-			0.5	
	-	-	-	-	-	-	-			1	
	-	-	-	-	-	-	-			2	

Stage	Rougher+1st cleaner	2nd cleaner
Flotation Cell	6 L Agitair cell	3 L Agitair cell
Speed: r.p.m.	1000	900
Air (on meter)	10	7
%- mesh		

Test No. 19

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % S	% Distribution Cu	% Distribution Ni	% Distribution S
1. Cu-Ni Conc1	114.5	6.0	4.22	0.85	94.9	45.4	12.6	5.7
2. Cu-Ni Conc 2	100.0	5.2	1.6	0.85	97.6	14.9	10.9	5.1
3. Cu-Ni Conc 3	102.7	5.3	1.12	0.79	98.1	10.6	10.3	5.2
4. Cu-Ni Conc 4	161.8	8.4	0.61	0.76	98.6	9.2	15.7	8.4
5. 3rd Cleaner Tail	138.1	7.2	0.14	0.40	99.5	1.8	7.1	7.2
6. 2nd Cleaner Tail	281.3	14.6	0.36	0.68	99.0	9.4	24.4	14.6
7. 1st Cleaner Tail	524.4	27.3	0.042	0.13	99.8	2.1	8.7	27.5
8. Rougher Tail	501.3	26.1	0.14	0.16	99.70	6.6	10.3	26.2
Head (calc)	1924.1	100.0	0.56	0.41	99.0	100.0	100.0	100.0
Combined Products								
1 + 2		11.2	3.00	0.85	96.2	60.3	23.4	10.9
1 - 3		16.5	2.40	0.83	96.8	71.0	33.7	16.1
1 - 4		24.9	1.80	0.81	97.4	80.2	49.5	24.5
1 - 5		32.1	1.42	0.72	97.9	82.0	56.5	31.7
1 - 6		46.7	1.09	0.70	98.2	91.4	81.0	46.3

Test No. 20 Project No. 3637 Date: May 1/89

Purpose: As for test 19 but Doe Run starch was used as a rock depressant

Procedure: As outlined below.

Feed: 2kg -200 Mesh NP Composite A

Grind: 30 min/2kg @65% solids in a lab ball mill

Stage	Reagents added, grams per tonne						Time, minutes			
	copper sulphate	A3477	Ax 350	Jaguar MDD	DF 1012	Doe Run Starch	Grind	Cond.	Froth	pH
CONDITION	200	-	-	-	-	-		2		8.6
	-	70	30	-	-	-		1		
ROUGHER	-	-	-	200	186	-		2	6	8.7
	-	-	-	200	44	-		2	5	
	-	-	-	-	29	-		1	4	
1st CLEANER	-	30	15	-	-	-		1		8.6
	-	-	-	200	44	-		2	2	
	-	-	-	100	-	-		2	5	
2nd CLEANER	-	15	30	-	-	-		1		8.5
	-	-	-	-	-	200		2	0.5	
	-	-	-	-	-	-			0.5	
	-	-	-	-	-	-			1	
	-	-	-	-	-	-			2	

Stage	Rougher+1st cleaner	2nd cleaner
Flotation Cell	6 L Agitair cell	3 L Agitair cell
Speed: r.p.m.	1000	900
Air (on meter)	10	7
%- mesh		

Test No. 20

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % S	% Distribution Cu	% Distribution Ni	% Distribution S
1. Cu-Ni Conc1	243.2	12.6	3.2	0.87	95.9	74.6	27.7	12.2
2. Cu-Ni Conc 2	139.7	7.2	0.63	0.74	98.6	8.4	13.5	7.2
3. Cu-Ni Conc 3	142.6	7.4	0.37	0.64	99.0	5.1	12.0	7.4
4. Cu-Ni Conc 4	256.5	13.3	0.26	0.55	99.20	6.4	18.5	13.3
5. 2nd Cleaner Tail	173.4	9.0	0.12	0.41	99.5	2.0	9.3	9.0
6. 1st Cl Tail	516.2	26.7	0.039	0.12	99.8	1.9	8.1	26.9
7. Ro Tail	461.8	23.9	0.036	0.18	99.8	1.6	10.9	24.1
Head (calc)	1933.4	100.0	0.54	0.39	99.1	100.0	100.0	100.0
Combined Products								
1 + 2		19.8	2.26	0.82	96.89	83.0	41.3	19.4
1 - 3		27.2	1.75	0.77	97.46	88.1	53.2	26.7
1 - 4		40.4	1.26	0.70	98.03	94.5	71.7	40.0
1 - 5		49.4	1.05	0.65	98.30	96.5	81.0	49.0
1 - 6		76.1	0.70	0.46	98.8	98.4	89.1	75.9

Test No. 21 Project No. 3637 Date: June 16/89 Operator: LP

Purpose: To investigate the effect of CMC 6CTL on the Cu-Ni flotation of Composite A.

Procedure: As outlined below.

Feed: 1000 grams minus 10 mesh Composite A

Grind: 30 minutes/2 kg at 65 percent solids in a lab ball mill

Conditions:

Stage	Reagents added, grams per tonne							Time, minutes			pH
	CuSO4	A3477	Ax350	CMC 6CTL	MIBC	DF250		Grind	Cond.	Froth	
Condition 1	200	-	-	-	-	-			2		8.2
Condition 2	-	70	30	-	-	-			1		
Rougher 1	-	-	-	500	40	12			1	2	
Rougher 2	-	-	-	100	-	-			1	2	
Rougher 3	-	-	15	100	-	-			1	2	
Scavenger	-	-	50	-	-	-			1	2	
	Combine rougher concentrates 1-3.										
Ro Cleaner	-	-	-	-	-	24			1	3	
	-	10	10	50	-	-			1	2	

Stage	Rougher and Scavenger	Rougher Cleaner
Flotation Cell	3L Agitair	1.5L Agitair
Speed: r.p.m.	800	600
Air (on meter)	7	5
%- mesh		

Test No. 21

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	% Distribution Cu	% Distribution Ni
1. Ro Cl Conc	37.1	3.7	11.6	4.06	86.0	38.3
2. Ro Cl Tail	70.9	7.1	0.44	0.97	6.2	17.5
3. Scav Conc	91.9	9.2	0.11	0.51	2.0	11.9
4. Scav Tail	794.6	79.9	0.036	0.16	5.7	32.3
Head (calc)	994.5	100.0	0.50	0.40	100.0	100.0
Combined Products						
1 + 2		10.9	4.27	2.03	92.3	55.8
1 - 3		20.1	2.36	1.33	94.3	67.7

Test No. 22 Project No. 3637 Date: June 22/89 Operator: LP

Purpose: As for test 21 but at pH 9.0.

Procedure: As outlined below.

Feed: 1000 grams minus 10 mesh Composite A

Grind: 30 minutes/2 kg at 65 percent solids in a lab ball mill

Conditions:

Stage	Reagents added, grams per tonne							Time, minutes			
	Na2CO3	CuSO4	A3477	Ax350	CMC 6CTL	DF250		Grind	Cond.	Froth	pH
Condition 1	-	200	-	-	-	-			2		8.3
Condition 2	270	-	70	30	-	-			1		9.2
Rougher 1	-	-	-	-	500	43			1	0.5	9.1
	-	-	-	-	-	18			1	1.5	
Rougher 2	-	-	-	-	100	-			1	2	9.0
Rougher 3	-	-	-	15	100	-			1	2	9.0
Scavenger	-	-	-	50	-	-			1	2	9.0
	Combine rougher concentrates 1-3.										
Ro Cleaner	40	-	-	-	-	-			1	3	9.2
	-	-	10	10	50	-			1	2	9.1

Stage	Rougher and Scavenger	Rougher Cleaner
Flotation Cell	3L Agitair	1.5L Agitair
Speed: r.p.m.	800	600
Air (on meter)	7	5
%- mesh		

Test No. 22

Product	Weight g	Weight %	Assays % Cu	Assays % Ni	Assays % RK	% Distribution Cu	% Distribution Ni	% Distribution RK
1. Ro Cl Conc	27.7	3.4	13.90	5.95	80.2	85.3	45.2	2.7
2. Ro Cl Tail	97.7	11.8	0.37	0.71	98.9	8.0	19.0	11.8
3. Scav Conc	115.2	14.0	0.13	0.47	99.4	3.3	14.9	14.0
4. Scav Tail	584.3	70.8	0.03	0.13	99.8	3.4	20.9	71.4
Head (calc)	824.9	100.0	0.55	0.44	99.0	100.0	100.0	100.0
Combined Products								
1 + 2		15.2	3.36	1.87	94.8	93.3	64.3	14.6
1 - 3		29.2	1.81	1.20	97.0	96.6	79.1	28.6

APPENDIX NO. 1

MINERALOGY

PIT COMPOSITE

The sample consisted of minus 10 mesh material and contained, as opaque minerals

pyrrhotite
chalcopyrite
pentlandite
violarite
magnetite

and as major non-opaque minerals

amphibole (sodic)
tacl
calcite
chlorite mineral
dolomite
antigorite

No attempt was made to identify the minor or accessory non-opaque minerals.

Pentlandite: occurred as anhedral to subhedral grains and as occasional exsolution intergrowths all associated with pyrrhotite. Exsolution pentlandite represented less than 10 percent of this nickel sulphide. Grain sizes ranged from a maximum of 60 micrometers to exsolution particles measuring 5 micrometers and smaller. Alteration of pentlandite to violarite was well developed on some grains of pentlandite - see illustrations 6, 8 and 9. Violarite represented an estimated 10-15 percent of the total nickel in the sample. Eighty percent of the nickel minerals measured less than 30 micrometers.

Chalcopyrite: was the only copper mineral present in the sample. It occurred as occasional coarse-grained particles - maximum size of 1 millimeter and smaller to particles smaller than 10 micrometers in size. It occurred replacing non-opaque gangue minerals and as inclusions in and replacing pyrrhotite. Eighty percent of the chalcopyrite measured less than 35 micrometers.

The violarite can be expected to form slimes in grinding and much of it can be expected to report as Ni losses to tailings.

Illustration 0
Pyrrhotite (po) with pentlandite (pn) and marcasite (mc). Grey is magnetite.

160X

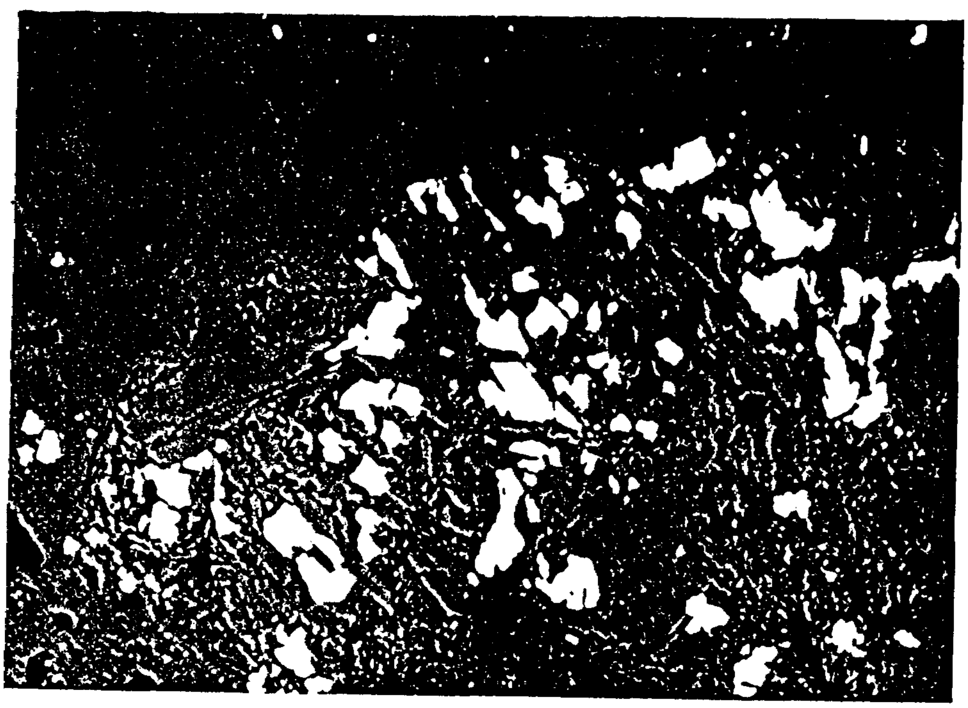


Illustration 1
Chalcopyrite (yellow) in non-opaque mineral.

160X

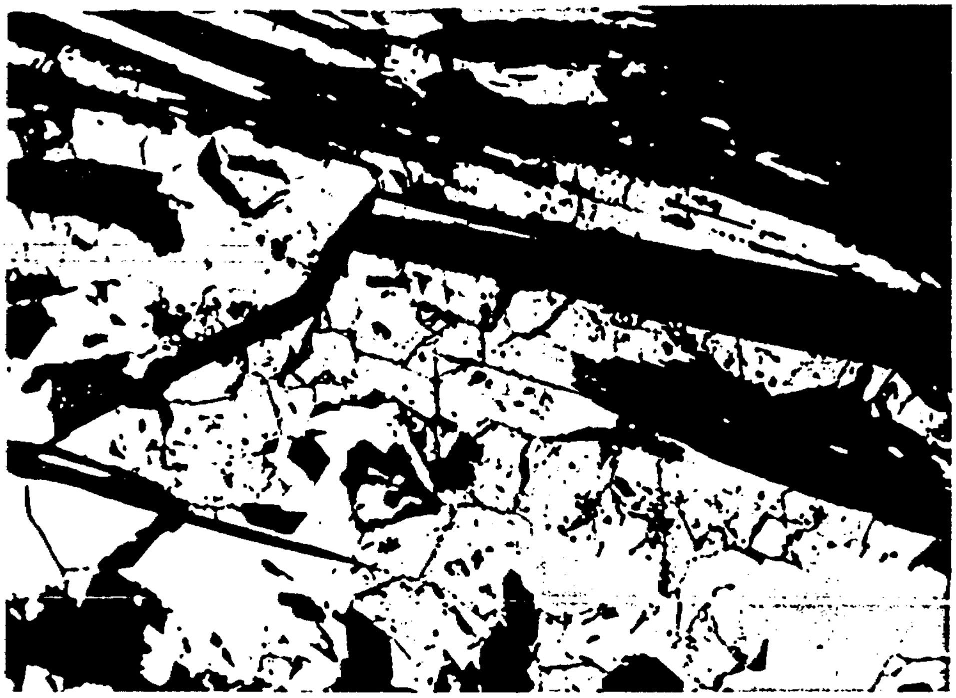


Illustration 2
Chalcopyrite (yellow) with pyrrhotite (light color) in amphibole (elongate).

160X

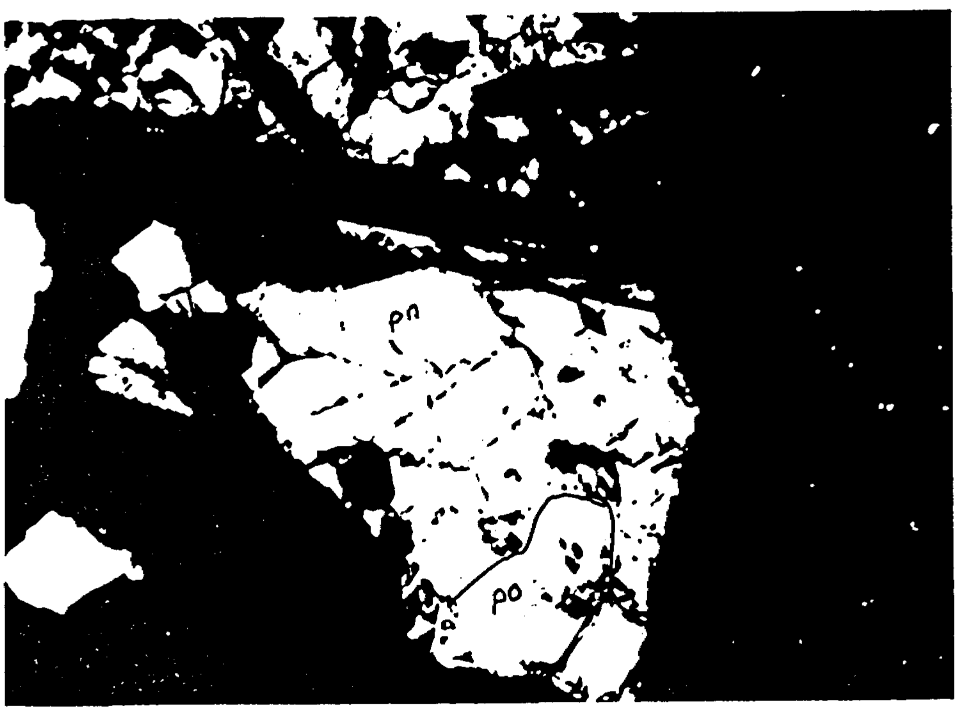


Illustration 3
Pentlandite (pn) on pyrrhotite (po).

160X

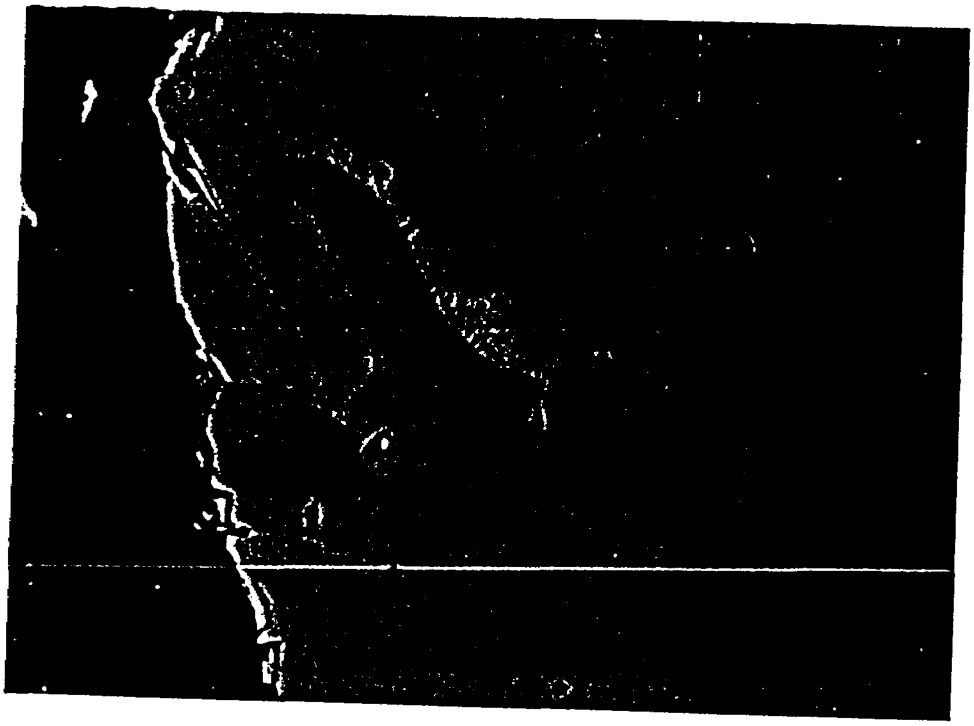


Illustration 4
Chalcopyrite (yellow) host to pyrrhotite (buff) and exsolved pentlandite (pale yellow).

600X

Illustration 5
Fine-grained chalcopyrite (yellow) and pyrrhotite (whitish yellow) in non-opaque mineral.

160X

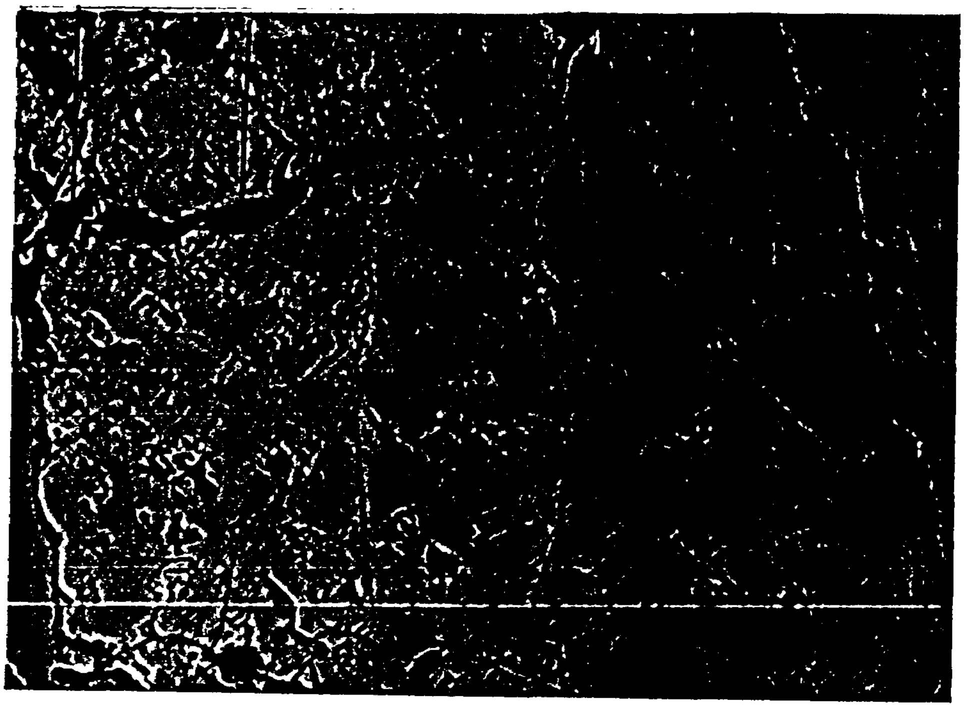


Illustration 6
Pentlandite (yellowish) partly altered to violarite (violet).

160X

Illustration 7
Magnetite (grey mass) with inclusions of pyrrhotite (po) and pentlandite (pn).
Coarser grained pyrrhotite and pentlandite to one side.

600X

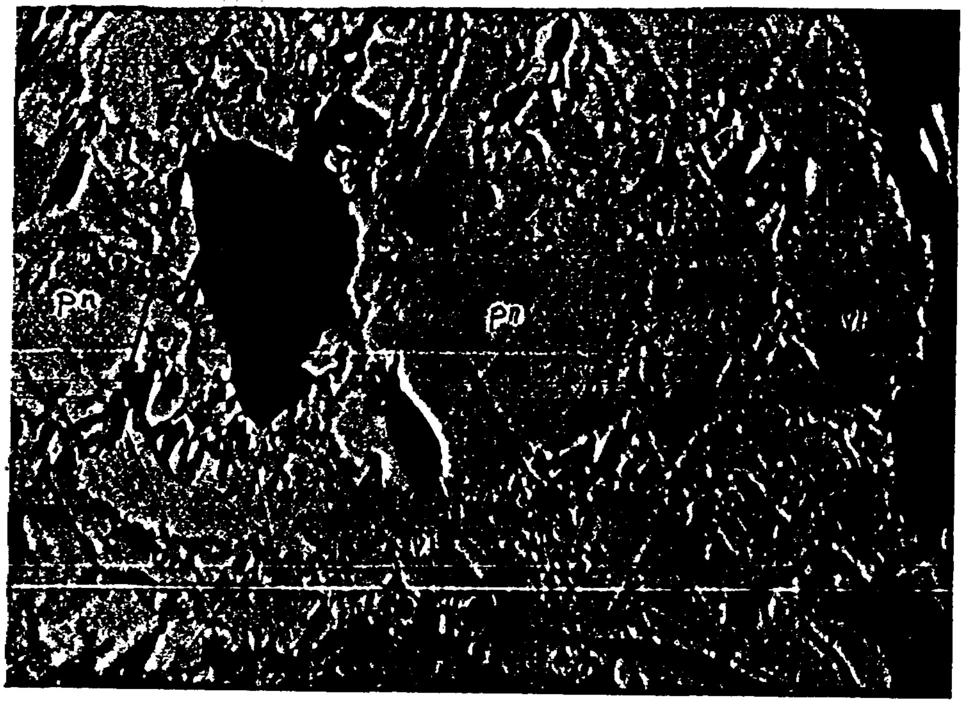


Illustration 8
An enlargement of the area outlined in red on illustration 6. Pn is pentlandite and vi is violartite.

600X

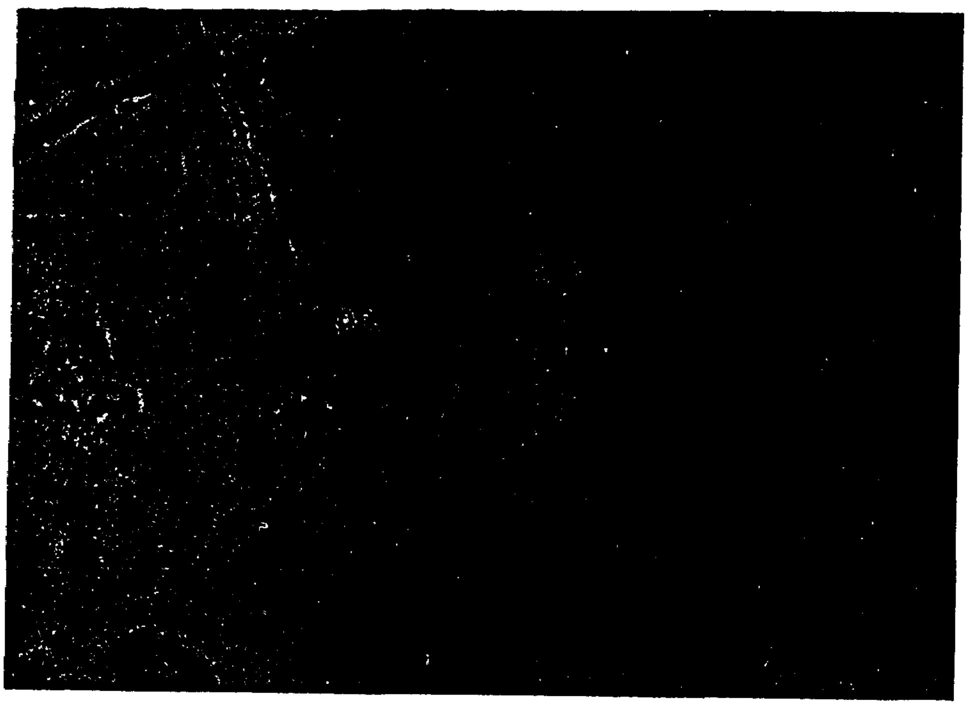


Illustration 9
Violarite (vi) after pentlandite (pn). Black areas are gangue or pitting. The area outlined in red on illustration 10.

600X

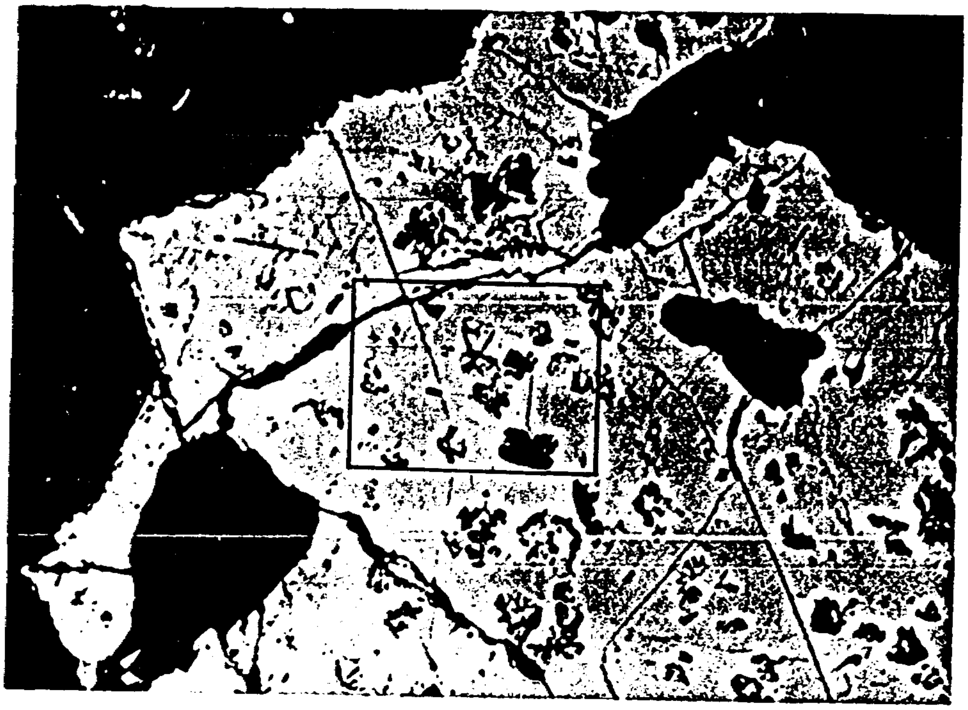


Illustration 10
Pentlandite (yellow) with violarite (violet) after pentlandite. Dark grey is gangue and black is pitting.

160X

SAMPLE NP COMPOSITE A

The sample was submitted for identification of the contained minerals and determination of the percent distribution by mineral association.

A portion of the sample was briquetted, polished then examined using reflected light microscopy.

The following tabulation lists the minerals identified plus the weight percent of each and the weight percent distribution by mineral association.

Mineral	Wt. %	Wt. % Distribution by Association Associated Mineral								
		po	pn	cp	ma	tc	cl	ca	am	other
pyrrhotite	5	20	20	10	-	45		-	-	-
pentlandite	1	90	5	-	-	0		-	-	5
chalcopyrite	2	40	-	40	-	15		-	-	5
magnetite	5	20	-	-	10	70		-	-	-
talc	50	60	-	5	-	30		-	-	5
clinochlore	27	60	-	5	-	30		-	-	5
carbonate	3	-	-	-	-	30	30	-	40	-
amphibole	7	-	-	-	-	50	20	30	-	-

Grain-size ranged from individual maximum for each mineral species to less than 25 micrometers. The measured maxima were

Mineral	Maximum Grain Size (μm)
pyrrhotite	825
pentlandite	70
chalcopyrite	360
magnetite	75
talc	<50
clinochlore	<50
carbonate	130
amphibole	120

SAMPLE: TEST NO. 1 RO TAILS

A portion of the sample was briquetted and polished for examination using reflected light microscopy.

The opaque minerals identified were pyrrhotite, pentlandite, chalcopyrite, marcasite and magnetite. Selected associations of pentlandite were photographed for purposes of illustration of the associations.

At least 95 percent of the pentlandite identified in this sample was associated with pyrrhotite forming middling particles in which the pentlandite and pyrrhotite were almost of equal size. Pentlandite tended to be the smaller of the two grains. The remaining 5 percent of pentlandite was associated with pyrrhotite as exsolution intergrowths. Two free grains of pentlandite were identified and one white mineral measuring 4 x 6 micrometers remains unidentified.

Illustration 1 -
Pentlandite (pn) in/on pyrrhotite (po).

450X

37 µm
(400 mesh)

Illustration 2
Pentlandite (pn) in pyrrhotite (po).

450X

37 µm
(400 mesh)

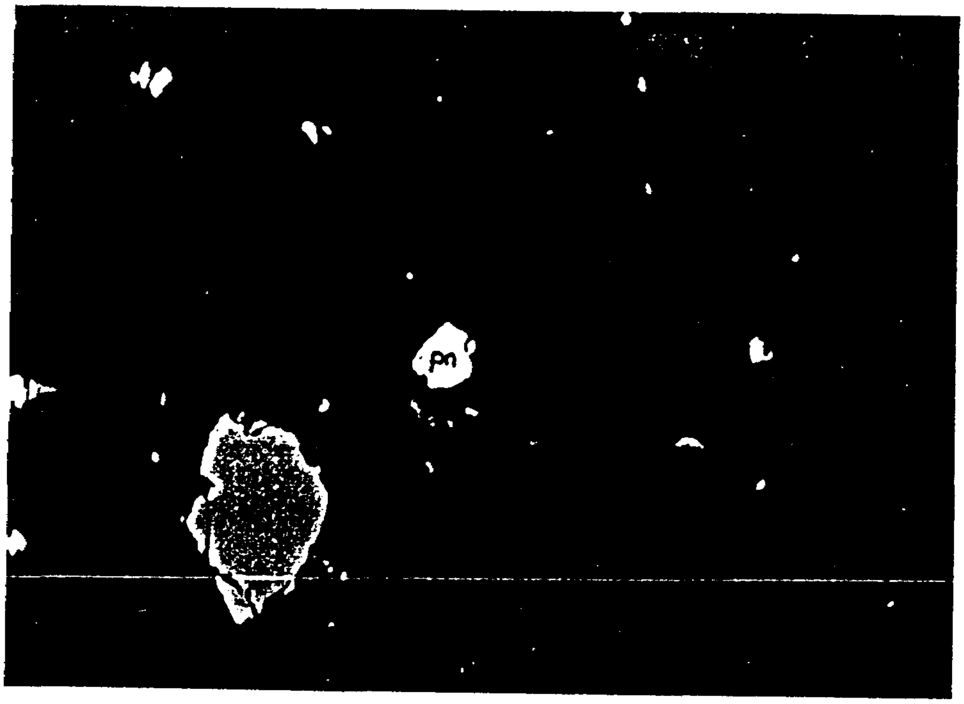


Illustration 3
One grain of free pentlandite.

450X

37 µm
(400 mesh)

Illustration 4
Free pentlandite (pn) and pyrrhotite.

450X

37 µm
(400 mesh)

37 µm
(400 mesh)

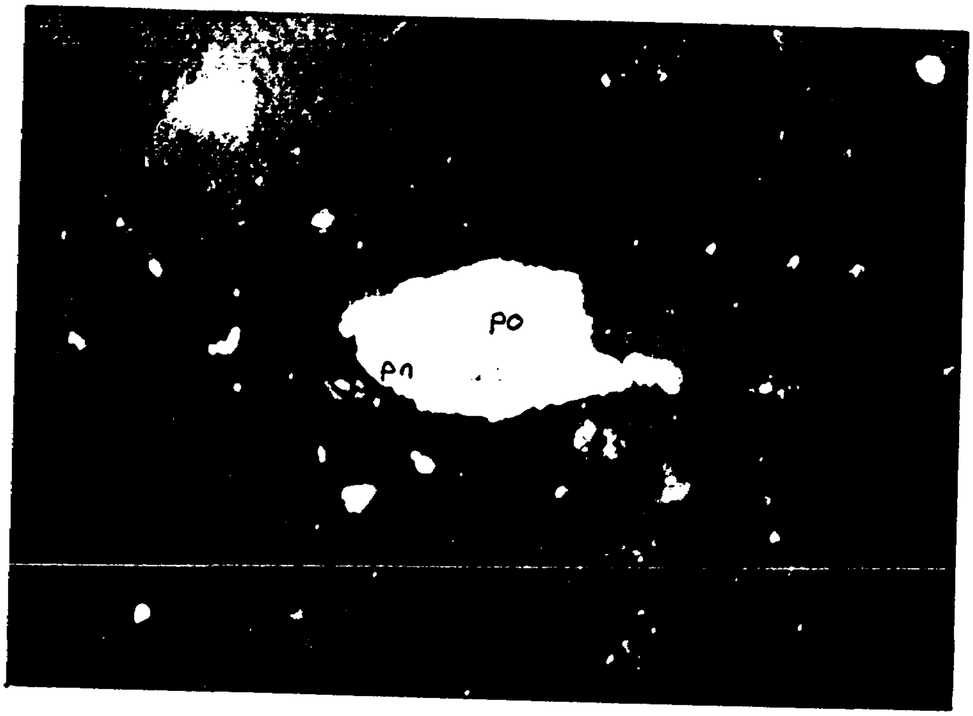
<u>Illustration 5</u>
Intergrowth of pentlandite (pn) pyrrhotite (po) and gangue (ga.)

450X

37 µm
(400 mesh)

<u>Illustration 6</u>
Pyrrhotite (po) plus pentlandite (pn) in gangue.

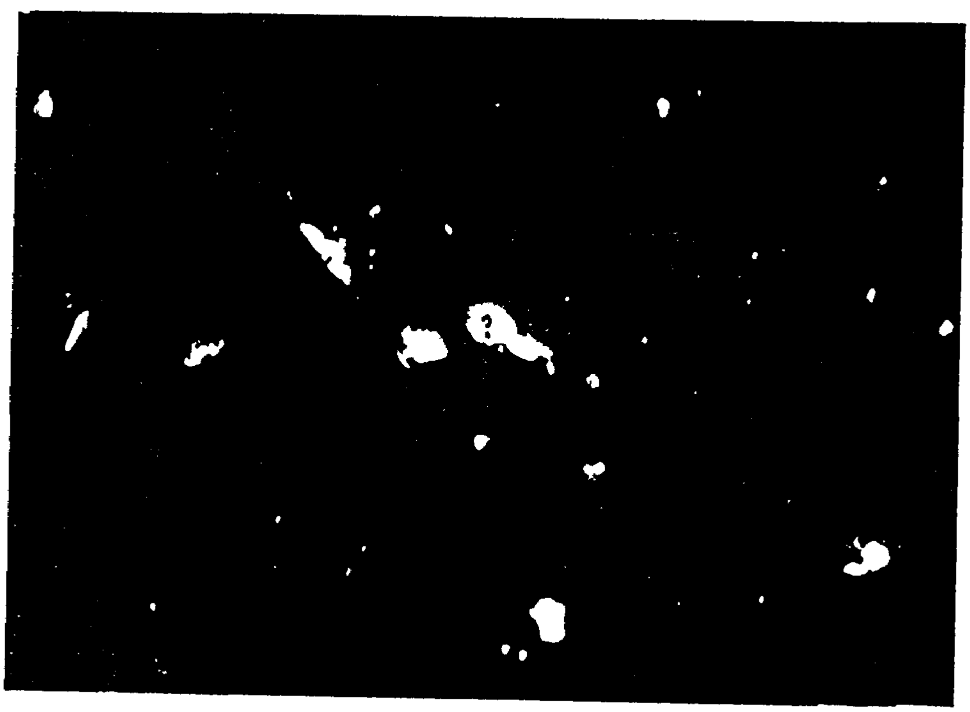
450X



28 µm

Illustration 7
Pentlandite (pn) on pyrrhotite (po).

600X



28 µm

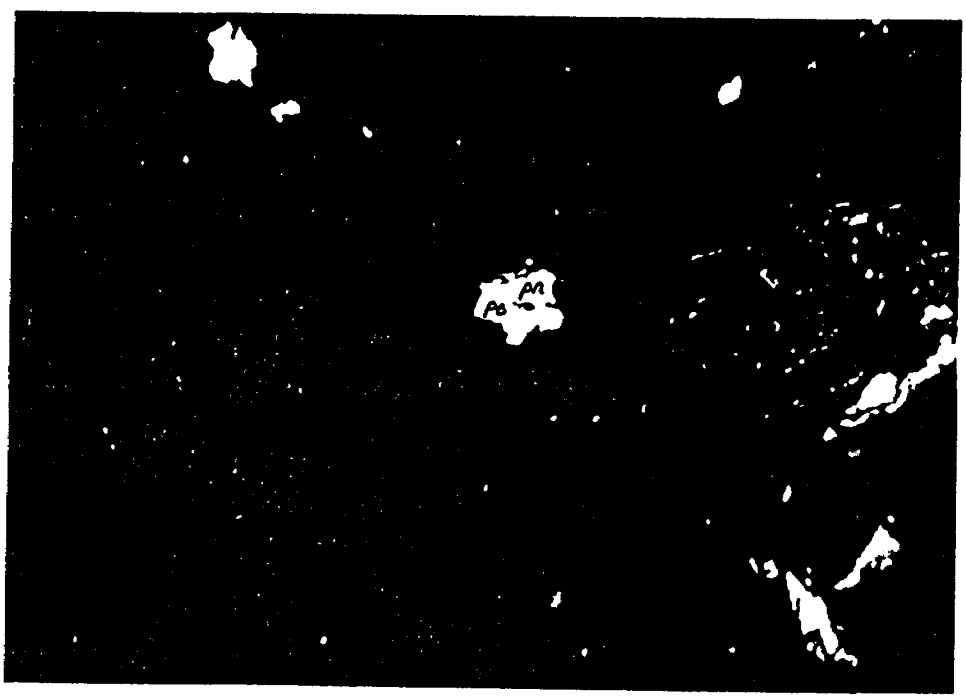
Illustration 8
Unidentified white mineral (?) in gangue.

600X

37 µm
(400 mesh)

<u>Illustration 9</u>
Mixed grain of pentlandite (pn) and pyrrhotite (po).

450X



37 µm
(400 mesh)

<u>Illustration 10</u>
Mixed grain of pentlandite and pyrrhotite.

450X

SAMPLE: TEST NO. 3 CLEANER CONCENTRATE

A portion of the sample was briquetted and polished for microscopic examination in reflected light. Another portion was submitted for x-ray powder diffractometry.

The sample contained the opaque minerals

chalcopyrite
pyrrhotite
pentlandite
magnetite
violarite
sphalerite

and the non-opaque minerals

talc
clay mineral
chlorite
amphibole

The estimated weight percent of each mineral and the weight percent distribution by mineral association of each mineral in the sample are shown in the following table.

Mineral	Wt. %	Wt. % Distribution by Association Associated Mineral								
		cp	pn	po	ma	tc	cm	ch	am	other
chalcopyrite (cp)	22	95	-	1	-	1	-	-	3	-
pentlandite (pn)	6	1	90	8	-	-	-	-	1	-
pyrrhotite (po)	32	5	5	75	-	1	-	1	8	5
magnetite (ma)	4	-	-	-	70	5	-	10	10	5
talc (tc)	14	-	-	-	7	95	-	2	1	-
clay mineral (cm)	8									
chlorite (ch)	8 }	1	-	9	5	2	-	8	-	75
amphibole (am)	5									
other (ot)	1 -	-	-	-	-	-	-	-	100	

The identification of one mineral as clay mineral was tentative and based on x-ray powder diffractometry peaks which could be correlated only with those given for kaolinite and nacrite by the International Center for Diffraction Data. However, the writer's personal opinion is that the presence of these minerals with talc is incompatible with the observed paragenesis.

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: KANICHEE HOLE No. 88-N-6

COLLAR SURVEY: DATE: 18/10/88

NORTHING: 205 m EASTING: 97 m LOGGED BY: H. Dillon-Lietch SHEET No: 1

AZIMUTH: 0.0° DIP: -90° DEPTH: 71.22 m CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0.00	0.95	CASING												
0.95	43.0	Peridotite - moderately magnetic due to fine magnetite	88-N-6	1.0	4.0	0.0496	0.1091	0.0069	839	0.4	12	28	64	2
		from serpentinization of olivine. Sulphides are rare	"	4.0	7.0	0.0299	0.1195	0.0075	886	0.2	4	17	25	2
		except on or near calcareous fractures or	"	7.0	10.0	0.0331	0.1007	0.0070	899	0.2	3	19	18	2
		veinlets. Numerous veinlets orientations. Many show	"	10.0	13.0	0.0697	0.1003	0.0065	931	0.3	28	38	48	2
		a pinch and swell form. Thicker veinlets (1 to 20 cm)	"	13.0	16.0	0.0303	0.0837	0.0056	1056	0.4	2	10	14	2
		are banded and may contain minor talc	"	16.0	18.0	0.0319	0.0647	0.0038	1136	0.2	3	8	10	2
		and/or serpentine.	"	18.0	20.0	0.3302	0.1379	0.0064	940	2.1	50	139	360	2
43.0	50.6	OLIVINE PYROXENITE - weakly foliated, rare sulphides	"	20.0	22.0	0.2135	0.1202	0.0065	953	1.3	7	23	85	2
		on schistosity. Low angle fractures filled with quartz	"	22.0	24.5	0.0084	0.1024	0.0072	1118	0.1	1	6	10	2
50.6	71.22	MAFIC VOLCANICS - may be a fine grained equivalent	"	24.5	25.25	0.0263	0.0565	0.0051	821	0.1	12	45	76	2
		of main intrusion. Appears to contain plagioclase	"	25.25	28.0	0.0111	0.0988	0.0069	1074	0.1	1	10	8	2
		feldspar ie contaminated? Low angle fractures	"	28.0	31.0	0.0385	0.1094	0.0068	931	0.2	7	22	40	2
		filled with quartz	"	31.0	33.0	0.0101	0.0922	0.0072	922	0.1	39	15	11	2
			"	33.0	36.0	0.0120	0.0880	0.007	1030	0.1	2	10	20	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-6

COLLAR SURVEY: DATE: 18/10/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE		DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
FROM	TO													
			88N-6	36.0	38.0	0.0224	0.0862	0.0062	941	0.1	1	12	18	2
			"	38.0	40.0	0.0267	0.0885	0.0061	1053	0.2	2	12	19	2
			"	40.0	42.0	0.0516	0.1046	0.0067	1341	0.3	3	25	52	2
			"	42.0	44.0	0.0197	0.0798	0.0052	1232	0.2	4	22	25	2
			"	44.0	46.0	0.0219	0.0586	0.0046	941	0.2	2	14	16	2
			"	46.0	48.0	0.0044	0.0403	0.0037	670	0.2	3	8	17	3
			"	48.0	50.6	0.0094	0.0395	0.0040	652	0.1	1	18	13	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-7

COLLAR SURVEY: DATE: 23/10/88

NORTHING: 235.0 m EASTING: 118.0 m LOGGED BY: H. Dillon Lietch SHEET No: 1

AZIMUTH: 105.0 ° DIP: -70 ° DEPTH: 71.34 m CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0.0	17.68	CASING												
17.68	49.15	PERIDOTITE – Heavily serpentinized. Carbonate	88N-7	17.7	19.0	0.1941	0.1065	0.0070	872	1.0	118	117	230	3
		alteration varies about carbonate-rich shears	"	19.0	21.25	0.1508	0.1027	0.0069	690	1.1	43	57	140	2
		and occurs as pervasive replacement of	"	21.25	21.88	0.3839	0.1423	0.0079	358	2.5	421	581	2137	5
		olivine. Heavy sulphide associated with	"	21.88	24.10	0.3657	0.2246	0.0125	841	2.0	85	234	599	9
		carbonate shears and alteration. Up to 5%	"	24.1	26.0	0.1904	0.1273	0.0082	925	1.1	60	145	314	3
		sulphides – chalcopyrite, pyrrhotite.	"	26.0	29.0	0.0658	0.0911	0.0072	977	0.3	29	34	43	2
49.15	61.6	OLIVINE PYROXENITE – Bleached colour and	"	31.2	31.7	0.2067	0.1499	0.0088	933	0.9	52	141	320	4
		veined by calcite. Only traces of sulphide. Lower	"	31.7	32.2	5.0267	0.4839	0.0247	512	22.2	300	460	4191	16
		1 metre is chilled zone	"	32.2	33.4	0.5267	0.2648	0.0122	949	2.5	159	253	669	9
61.6	71.34	ANDESITE – lapilli texture, rare sulphides.	"	33.4	34.4	0.5215	0.2010	0.0116	897	2.7	171	174	528	6
			"	34.4	37.4	0.4608	0.2488	0.0141	844	2.3	166	185	470	9
			"	37.4	40.7	0.5028	0.2309	0.0124	775	2.6	138	238	514	6
			"	40.7	41.7	0.2645	0.1880	0.0100	1039	1.4	89	102	253	5
			"	41.7	42.5	0.4710	0.2774	0.0168	841	2.6	141	167	453	19

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kani chee HOLE No. 88-N-7

COLLAR SURVEY: DATE: 23/10/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88 N-7	42.5	45.03	0.2583	0.1536	0.0092	1104	1.6	194	113	256	7
			88 N-7	45.68	49.15	0.0593	0.0528	0.0046	1105	0.3	4	32	46	2
			"	49.43	51.83	0.0235	0.0376	0.0051	793	1.0	1	19	24	2
			"	51.83	53.0	0.0007	0.0179	0.0028	419	0.1	1	2	3	2
			"	53.0	56.0	0.0619	0.0476	0.0054	1502	1.6	3	20	38	3
			"	56.0	59.0	0.0057	0.0275	0.0026	1106	0.6	10	24	27	2
			"	59.0	61.6	0.0091	0.0275	0.0029	868	0.5	1	14	15	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-8

COLLAR SURVEY: DATE: 3/11/88

NORTHING: 220.0 m EASTING: 106.0 m LOGGED BY: H. SHEET No: 1

AZIMUTH: 105.0° DIP: -70° DEPTH: 77.13 CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	45.0	PERIDOTITE - 60 - 80 % olivine (1-4 mm). Less	88-N-8	0.0	2.0	0.1447	0.1404	0.0083	929	1.1	28	65	138	4
		than 1% sulphides (pyrrhotite > chalcopyrite)	"	2.0	4.0	0.0328	0.1075	0.0075	897	0.4	4	5	4	2
		as 2-5 mm interstitial grains and as < 1mm	"	4.0	6.4	0.1533	0.1667	0.0092	876	1.2	21	96	216	7
		disseminated grains. Minor thin (<4mm)	"	6.4	6.63	0.5367	0.2634	0.0125	475	2.7	81	263	619	7
		calcite veins. Some thin intervals have higher sulphides.	"	6.63	9.00	0.3271	0.1427	0.0081	958	2.2	26	61	96	2
45.0	[illegible]	PERIDOTITE - As above, < 0.5% sulphides,	"	9.00	11.00	0.0322	0.1060	0.0071	933	0.6	9	20	27	2
	77.13	no areas of higher sulphides	"	11.00	13.00	0.0297	0.0939	0.0067	921	0.4	8	27	38	2
			"	13.00	15.00	0.0353	0.0834	0.0060	959	0.4	5	17	16	2
			"	15.00	17.00	0.0476	0.0888	0.006	990	0.5	6	20	45	2
			"	17.00	20.19	0.0896	0.0886	0.0057	1040	0.8	9	43	102	2
			"	20.19	20.43	6.8004	1.3351	0.0532	184	45.9	502	2937	4286	8
			"	20.43	22.18	0.1063	0.1309	0.0061	1247	0.9	86	117	265	3
			"	22.18	22.46	5.5864	0.3488	0.0155	287	39.0	347	1534	2011	17
			"	22.45	25.00	1.5411	0.2832	0.0136	1359	9.4	151	168	321	5
			"	25.00	27.50	0.1622	0.1307	0.0068	1154	1.3	37	141	226	3

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-8

COLLAR SURVEY: DATE: 3/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88-N-8	27.5	28.45	0.8497	0.4705	0.0235	469	6.1	277	388	774	7
			"	28.45	31.00	0.4989	0.1531	0.0077	867	3.3	205	231	485	2
			"	31.00	33.40	0.4406	0.1198	0.0067	972	3.1	472	316	471	2
			"	33.4	36.0	0.0627	0.0538	0.0048	919	0.7	34	29	67	2
			"	36.0	39.0	0.0624	0.0605	0.0057	1176	0.6	34	63	86	2
			"	39.0	42.0	0.0791	0.0898	0.0065	1301	0.7	14	53	94	2
			"	42.0	45.0	0.1394	0.0832	0.0064	1411	1.1	345	334	154	2
			"	45.0	47.0	0.1956	0.0854	0.007	1917	1.8	9	83	58	2
			"	47.0	49.0	0.0269	0.0579	0.0043	1964	0.3	5	17	26	2
			"	50.25	53.0	0.0439	0.0725	0.0049	1965	0.4	4	32	49	2
			"	53.0	56.0	0.0457	0.0702	0.0051	1798	0.6	21	58	155	2
			"	56.0	59.0	0.0253	0.0667	0.0051	1943	0.4	2	9	14	2
			"	59.0	62.0	0.0306	0.0637	0.0055	1585	0.4	3	16	21	2
			"	62.0	65.0	0.0184	0.0634	0.0056	1765	0.2	3	16	34	2
			"	65.0	68.0	0.0131	0.0565	0.0055	1716	0.3	3	7	10	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-8

COLLAR SURVEY: DATE: 3/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 3

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88-N-8	68.0	70.0	0.0158	0.0556	0.0058	1482	0.3	3	14	27	2
			"	70.0	72.13	0.0120	0.0501	0.0058	1468	0.3	23	10	71	2
			"	72.13	72.9	0.1637	0.0392	0.0037	1014	1.1	54	30	92	5
			"	72.9	75.0	0.0115	0.0443	0.0057	1083	0.2	42	13	17	2
			"	75.0	77.13	0.0181	0.0500	0.0058	1068	0.3	5	20	27	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-9

COLLAR SURVEY: DATE: 10/11/88

NORTHING: 137.0 m EASTING: 95.0 m LOGGED BY: H. Dillon Lietch SHEET No: 1

AZIMUTH: 227.0° DIP: -40° DEPTH: 86.28 m CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	8.0	CASING												
8.0	72.0	Peridotite – numerous thin calcite veinlets	88-N-9	8.0	11.0	0.2449	0.1672	0.0083	858	1.4	52	179	290	3
		at 45° to core axis (fracture set). Sometime	"	11.0	14.0	0.0235	0.1049	0.0073	857	0.2	5	17	38	2
		associated with sulphide bearing veins. Sulphides	"	14.0	17.0	0.0274	0.1083	0.0076	928	0.4	4	19	19	2
		tend to be coarser than usual (1-4 mm)	"	17.0	19.55	0.0336	0.1007	0.0068	970	0.3	19	175	67	17
		and patchy, forming weak net-like areas.	"	19.55	20.0	0.2694	0.0676	0.0041	460	1.2	43	86	260	5
		Actual sulphide grains are finely disseminated	"	20.0	23.0	0.0307	0.1123	0.0079	1042	0.3	3	27	39	2
		within the patches.	"	23.0	26.0	0.0365	0.1129	0.0077	1020	0.4	7	27	44	2
72.0	78.3	OLIVINE PYROXENITE – Transition zone from	"	26.0	29.0	0.0428	0.0920	0.0071	1151	0.5	6	28	44	2
		PERIDOTITE to OLIVINE PYROXENITE in top metres.	"	29.0	32.6	0.0117	0.0945	0.0071	1060	0.2	4	14	8	2
		Sparse sulphides as pyrrhotite rich blebs	"	32.6	33.0	0.2375	0.2025	0.0098	877	2.2	75	381	824	17
		4mm – 6mm across. Weak magnetism	"	33.0	35.73	0.3898	0.1427	0.0083	1165	2.5	222	230	343	2
		proportional to low olivine content.	"	35.73	37.3	0.0554	0.0679	0.0062	1041	0.6	21	46	81	2
78.3	86.28	METAVOLCANICS – intermediate (andesitic to rhyodacitic)	"	37.3	39.25	0.1608	0.0933	0.0059	950	1.2	60	87	165	4
		coarse fragmental. Veins are quartz and plagioclase feldspar.	"	39.25	41.63	0.0690	0.0731	0.0057	981	0.6	29	71	171	5

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-9

COLLAR SURVEY: DATE: 10/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE		DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	%Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
FROM	TO													
			88-N-9	41.63	43.11	0.3039	0.0901	0.0064	758	1.9	84	371	382	2
			"	43.11	46.0	0.2029	0.0702	0.0058	626	1.2	107	69	258	2
			"	46.0	49.65	0.1904	0.1028	0.0068	988	1.3	34	85	152	2
			"	49.65	50.06	2.6651	0.6994	0.0313	215	20.6	206	1129	1684	46
			"	50.06	53.0	0.0500	0.0800	0.0065	860	0.4	16	38	165	2
			"	53.0	56.0	0.0109	0.0903	0.0069	1150	0.2	7	11	16	2
			"	56.0	59.0	0.0176	0.0912	0.0072	1303	0.2	4	12	37	3
			"	59.0	62.5	0.0401	0.0829	0.0058	1511	0.4	5	23	38	2
			"	63.74	67.0	0.1252	0.0860	0.0057	1493	0.8	84	44	100	2
			"	67.0	70.0	0.0235	0.0821	0.0060	1048	0.3	4	19	144	2
			"	73.0	76.0	0.0213	0.0522	0.0044	1068	0.2	4	21	28	2
			"	76.0	73.3	0.0131	0.0348	0.0032	709	0.1	2	9	16	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-10

COLLAR SURVEY: DATE: 16/11/88

NORTHING: 137.0 m EASTING: 195.0 m LOGGED BY: H. Dillon-Lietch SHEET No: 1

AZIMUTH: 250° DIP: -40° DEPTH: 110.36 m CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	5.6	CASING												
5.6	45.3	PERIDOTITE – Tabular olivine 2 to 8 mm long.	88-N-10	5.6	8.0	0.2092	0.1453	0.0096	652	4.0	1018	146	259	5
		Sulphides are mostly interstitial with	"	8.0	10.0	0.2646	0.1786	0.0103	718	5.1	29	122	234	7
		rare patches to 5mm. Olivine and sulphides	"	10.0	12.0	0.2814	0.2043	0.0109	655	4.6	247	215	386	6
		are weakly foliated. This is a primary	"	12.0	14.0	0.2895	0.1708	0.0093	531	4.9	127	210	417	5
		foliation (flow). Olivine grains have	"	14.0	16.0	0.3350	0.1967	0.0104	539	5.2	96	200	384	7
		forms which suggest minor mechanical	"	16.0	18.0	0.3530	0.2097	0.0108	639	5.7	132	261	454	4
		abrasion. Veins rich in plagioclase or albite?	"	18.0	20.0	0.2354	0.1831	0.0098	790	3.8	37	161	344	7
		have highly foliated serpentinized plus	"	20.0	22.0	0.1724	0.1334	0.0101	642	2.8	594	121	207	4
		sulphide-rich margins for up to 25 cm.	"	22.0	24.0	0.2279	0.1651	0.0088	700	3.7	76	201	361	6
		Sulphides are chalcopyrite rich in fractures	"	24.0	26.0	0.1763	0.1246	0.0082	709	2.9	43	137	273	6
		in feldspar.	"	26.0	28.0	0.2894	0.1792	0.0108	726	4.2	58	142	335	7
45.3	83.0	PERIDOTITE – cyclic gradation of olivine	"	28.0	30.0	0.2301	0.1407	0.0092	702	3.3	41	236	348	6
		grain size. Coarse tabular olivine overlies	"	30.0	31.57	0.2385	0.1542	0.0102	879	4.0	146	171	404	4
		or grades to fine olivine. Compositionally	"	31.57	31.88	0.5722	0.1042	0.0081	319	9.7	421	99	336	4

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-10

COLLAR SURVEY: DATE: 16/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
		Olivine 6% to 80%. Thin chlorite	88-N-10	31.88	34.0	0.2517	0.1549	0.0098	912	4.1	58	176	280	5
		dykes may be associated with carbonate-	"	34.0	36.08	0.1175	0.0993	0.0061	490	1.6	67	80	196	4
		talc-sulphide veins. Highest concentration	"	36.08	38.0	0.1393	0.1643	0.0097	734	2.2	102	137	306	6
		of sulphides about vein-shears with	"	38.0	40.0	0.1360	0.1249	0.0079	598	1.6	24	94	239	5
		sulphides on foliation.	"	40.0	42.0	0.3716	0.2381	0.0123	737	4.0	129	312	518	11
83.0	86.7	OLIVINE PYROXENITE	"	42.0	45.3	0.3160	0.1955	0.0155	689	3.2	88	335	449	12
86.7	110.36	DIABASE - dyke has chilled upper margin.	"	45.3	48.0	0.0903	0.1004	0.0069	1205	1.1	18	84	137	4
		Grain size increases to 4mm plagioclase	"	48.0	51.0	0.0861	0.1048	0.0075	1455	0.8	18	93	150	6
		laths Weakly magnetic All veining is	"	51.0	53.75	0.1229	0.0958	0.0059	1663	1.0	23	93	155	4
		quartz and plagioclase. No sulphides	"	53.75	56.0	0.2830	0.2304	0.0119	1030	2.2	45	242	424	9
		in veins.	"	56.0	58.0	0.2813	0.2520	0.0127	796	2.0	130	273	363	10
			"	58.0	60.0	0.2526	0.2585	0.0120	793	2.3	48	181	348	8
			"	60.0	61.65	0.3027	0.2399	0.0119	684	2.2	66	231	430	13
			"	61.65	65.6	0.0600	0.1259	0.0081	776	0.7	7	48	100	3
			"	65.6	67.0	0.1821	0.1743	0.0088	836	1.1	43	151	242	7

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-10

COLLAR SURVEY: DATE: 16/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 3

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE		DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	%Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
FROM	TO													
			88-N-10	67.0	69.2	0.3387	0.3350	0.0163	760	2.6	183	223	370	8
			"	69.2	70.63	0.1106	0.1380	0.0078	830	0.9	118	68	142	2
			"	70.63	71.0	0.5758	0.3626	0.0181	250	3.6	427	484	1393	19
			"	71.0	74.0	0.2651	0.1461	0.0088	947	2.0	432	192	419	4
			"	74.0	77.0	0.1570	0.0827	0.0060	889	1.0	38	223	259	2
			"	77.0	80.0	0.0726	0.1000	0.0062	995	0.5	635	321	261	3
			"	80.0	82.0	0.0883	0.0754	0.0054	1261	0.8	16	3	98	2
			"	82.0	84.7	0.0063	0.0490	0.0041	1134	0.1	2	4	6	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-11

COLLAR SURVEY: DATE: 22/11/88

NORTHING: 116.0 m EASTING: 210.0 m LOGGED BY: H. Dillon-Leitch SHEET No: 1

AZIMUTH: 0.0° DIP: -90° DEPTH: 135.36 m CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	1.0	CASING	88-N-11	17.04	20.0	0.1183 ~~[illegible]~~	0.0896	0.0063	980	0.9	31	52	114	5
1.0	17.04	DIABASE - multiple diabase dykes. Thin, ~~vein~~	"	20.0	23.26	0.1195	0.1221	0.0080	886	0.8	38	77	153	5
		very fine grained plag phyric dykes at lath-like	"	24.33	27.0	0.0378	0.1240	0.0088	633	0.5	20	33	58	4
		diabase. Both dykes have chilled margins	"	27.0	30.0	0.0755	0.0829	0.0062	1462	0.8	23	46	89	3
17.04	127.22	PERIDOTITE - Altered contact (plagioclase?),	"	30.0	33.0	0.1135	0.1158	0.0082	1301	1.2	39	59	124	5
		brecciated and contains numerous thin	"	33.0	36.0	0.0548	0.0648	0.0052	1770	0.8	16	40	71	4
		diabase dykelets. Sulphides are patchy blebs	"	36.0	40.32	0.0654	0.0815	0.0060	1212	0.7	156	40	67	2
		to 1cm with minor disseminated grains to	"	40.32	41.15	0.0739	0.0821	0.0060	1016	1.0	16	39	96	3
		2%. Pyrrhotite or pyrrhotite plus	"	41.15	43.0	0.1010	0.0725	0.0059	1375	0.9	14	42	72	3
		chalcopyrite rich blebs. ~~Highly~~ In	"	43.0	45.15	0.1014	0.1135	0.0079	912	1.5	37	60	140	4
		places highly metasomatized peridotite	"	45.15	47.0	0.1799	0.1606	0.0092	739	1.7	60	72	219	5
		has been carbonated and feldspathitized and	"	47.0	49.0	0.2083	0.1713	0.0102	778	2.0	65	73	227	4
		pyroxene recrystallized - now horneblende?	"	49.0	51.0	0.1642	0.1387	0.0096	761	1.4	40 ~~80~~	80 ~~77~~	177	7
127.22	132.54	OLIVINE PYROXENITE	"	51.0	53.0	0.2762	0.1580	0.0109	769	2.2	83	122	322	8
132.54	135.36	META VOLCANICS - generally a very fine grained	"	53.0	53.74	0.2958	0.1431	0.0103	795	2.1	52	75	213	3

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-11

COLLAR SURVEY: DATE: 22/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
		mafic-andesitic volcanic with sparse, less mafic	88-N-11	53.74	56.0	0.1478	0.1379	0.0092	946	1.2	47	59	198	7
		fragments. Actual contact with	"	56.0	58.0	0.2706	0.1517	0.0105	787	2.2	66	110	306	8
		ultramafic intrusion is not distinct.	"	58.0	60.0	0.3055	0.1564	0.0110	894	2.5	70	97	282	6
			"	60.0	62.0	0.2619	0.1942	0.0119	998	2.0	51	60	230	4
			"	62.0	64.04	0.3213	0.2186	0.0122	1128	2.5	81	113	315	9
			"	66.25	68.0	0.0936	0.0783	0.0081	1347	0.9	27	21	66	2
			"	68.0	70.0	0.0654	0.1150	0.0088	1625	0.8	55	35	101	2
			"	70.0	~~[illegible]~~ 72.0	0.0254	0.1061	0.0076	2264	0.4	72	28	101	3
			"	72.0	74.0	0.1967	0.1349	0.01	1687	1.6	122	49	139	3
			"	74.0	76.0	0.2665	0.1990	0.0118	1167	2.9	278	141	367	9
			"	76.0	79.0	0.1050	0.0770	0.0062	1397	0.9	80	49	105	5
			"	79.0	82.0	0.0588	0.0666	~~[illegible]~~ 0.0056	1253	0.5	9	32	94	5
			"	82.0	85.0	0.0458	0.0455	0.0043	1635	0.7	3	26	57	3
			"	85.0	87.0	0.1495	0.1237	0.0075	1535	1.3	20	80	226	8
			"	87.0	89.0	0.1485	0.1005	0.0069	1745	1.6	18	57	136	7

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-11

COLLAR SURVEY:

DATE: 22/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 3

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88-N-11	89.0	91.0	0.1557	0.1071	0.0075	1315	1.4	22	33	93	4
			"	91.0	93.0	0.1951	0.1370	0.0091	1274 ~~1370~~	1.9	18	88	153	7
			"	93.0	95.0	0.2141	0.1537	0.0106	798	2.4	151	108	271	8
			"	95.0	97.0	0.1494	0.1625	0.0105	1008	1.7	29	49	116	3
			"	97.0	100.0	0.2409	0.1399	0.0092	1001	1.9	97	113	250	5
			"	100.0	103.0	0.2404	0.1822	0.0112	952	1.9	124	150	365	8
			"	103.0	106.0	0.1466	0.1520	0.0094	969	1.0	49	75	179	4
			"	106.0	108.0	0.2413	0.2272	0.0120	820	1.5	96	178	387	12
			"	108.0	110.65	0.4504	0.2670	0.0153	1027	2.7	86	202	513	10
			"	110.65	113.0	0.1351	0.1027	0.0068	1552	0.6	31	103	63	4
			"	113.0	114.7	0.0552	0.0736	0.0056	1977	0.2	26	74	97	5
			"	114.7	116.24	0.5433	0.2951	0.0181	1219	3.0	150	254	569	11
			"	116.24	118.0	0.0707	0.0956	0.0086	1657	0.5	44	41	122	3
			"	118.0	120.0	0.0776	0.0817	0.0058	1213	0.5	44	53	94	2
			"	120.0	122.86	0.2994	0.1987	0.0118	1528	2.0	94	159	299	12

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-11

COLLAR SURVEY: DATE: 22/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 4

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88-N-11	122.86	124.95	0.1671	0.0961	0.0064	1625	1.2	17	103	211	3
			"	124.98	127.22	0.361	0.1463	0.0095	1256	2.6	38	172	412	5

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-12

COLLAR SURVEY: DATE: 27/11/88

NORTHING: 130.0 m EASTING: 220.0 m LOGGED BY: H. Dillon-Leitch SHEET No: 1

AZIMUTH: 0.0° DIP: -90.00° DEPTH: 126.52 CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	1.22	CASING	88-N-12	2.83	5.63	0.0221	0.0331	0.0043	533	0.1	5	9	18	2
1.22	22.82	OLIVINE PYROXENITE - Highly altered possible	"	5.63	8.0	0.3491	0.1766	0.0102	1279	3.4	73	183	537	10
		meta-volcanic or ultramafic marginal	"	8.0	11.0	0.3755	0.1929	0.0094	1219	5.0	77	447	611	12
		phase in first 3 m. Patches of	"	11.0	14.0	0.0482	0.0475	0.0047	658	0.1	73	15	64	2
		quartz and plagioclase give porphyritic	"	14.0	16.17	0.0455	0.0522	0.0049	570	0.7	2676	54	98	2
		appearences. Sulphides up to 10%,	"	17.6 ~~16.17~~	20.0	0.0255	0.0492	0.0053	851	0.3	41	24	45	2
		pyrite rich at top becoming more	"	20.0	22.82	0.0838	0.0615	0.0054	822	1.6	15	47	115	2
		pyrrhotite rich with depth	"	46.15	49.0	0.1190	0.0851	0.007	914	1.3	35	37	154	3
22.82	46.15	DIABASE - very fine grained plagioclase -	"	49.0	51.5	0.1192	0.0797	0.006	1003	0.9	24	96	200	4
		phyric (tabular) diabase. Non-magnetic.	"	51.5	53.5	0.3439	0.1594	0.008	953 ~~1594~~	3.3	56	161	436	11
46.15	126.52	PERIDOTITE - highly carbonated and	"	53.5	55.0	0.1452	0.0982	0.0067	1114 ~~[illegible]~~	2.1	59	102	201	5
		Veined with talc in places. up to 20%.	"	55.0	57.0	0.3175	0.1730	0.0095	1544	4.0	46	202	390	8
		Sulphides up to 2% disseminated and	"	57.0	59.12	0.1241	0.1166	0.0082	1733	2.0	20	79	202	4
		in patches. Olivine decreases towards	"	59.5	61.5	0.2057	0.1296	0.0087	1525	3.9	26	124	318	5
		base of hole.	"	61.5	63.0	0.2757	0.1012	0.0075	1821	5.5	38	123	321	6

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-12

COLLAR SURVEY: DATE: 27/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE		DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
FROM	TO													
			88-N-12	63.0	65.0	0.1212	0.0916	0.0069	1688	2.4	34	55	132	3
			"	65.0	67.0	0.1263	0.1112	0.0085	2038	2.9	58	165	279	7
			"	67.0	69.0	0.0936	0.0974	0.0069	1467	1.8	14	65	98	4
			"	69.0	71.55	0.1255	0.0782	0.0065	1889	2.0	37	144	173	5
			"	72.18	74.35	0.0950	0.0709	0.0070	1650	1.5	12	58	103	4
			"	74.91	77.0	0.2036	0.0795	0.0073	1754	2.3	33	105	247	5
			"	77.0	79.3	0.0355	0.0441	0.0044	1966	0.4	5	44	45	2
			"	79.3	80.28	0.0194	0.0589	0.0047	904	0.6	13	37	74	2
			"	80.28	83.0	0.0664	0.0777	0.0062	956	0.7	26	46	99	4
			"	83.0	86.0	0.0990	0.1045	0.0067	1162	0.8	32	49	103	2
			"	86.0	89.0	0.0822	0.0858	0.0062	1530	0.7	41	58	110	4
			"	89.0	92.0	0.2706	0.1708	0.0114	770	1.9	87	131	316	8
			"	92.0	95.0	0.3071	0.1928	0.0126	883	2.2	114	144	333	8
			"	95.0	98.0	0.2110	0.1957	0.0112	496	1.5	87	101	234	5
			"	98.0	101.0	0.2882	0.2130	0.0116	1024	2.2	124	127	293	8

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: KANICHEE HOLE No. 88-N-12

COLLAR SURVEY: DATE: 27/11/88

NORTHING: EASTING: LOGGED BY: SHEET No: 3

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE		DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
FROM	TO													
			88-N-12	101	103.15	0.2104	0.1541	0.0091	1127	1.7	76	98	216	6
			"	103.15	106.0	0.0871	0.1011	0.0063	1506	0.6	19	67	117	4

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-13

COLLAR SURVEY: DATE: 2/12/88

NORTHING: 86.0 m EASTING: 155.0 m LOGGED BY: H. Dillon-Leitch SHEET No: 1

AZIMUTH: 0.0° DIP: -90° DEPTH: 114.33 CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	1.22	CASING	88-N-13	0.9	4.0	0.1243	0.1241	0.0070	1420 ~~[illegible]~~	0.8	35	97	171	4
1.22	88.0	PERIDOTITE - fine to medium grained,	"	4.0	7.0	0.2009	0.1930	0.0103	1257	1.1	38	105	292	8
		olivine content variable, abrupt	"	7.0	10.0	0.1983	0.2033	0.0101	1307	1.2	189	140	391	12
		decrease at base of section. Disseminated	"	10.0	13.0	0.0750	0.0960	0.0063	1451	0.5	17	58	109	4
		and patchy sulphides up to 3% in places.	"	13.0	16.0	0.0835	0.0985	0.0065	1637	0.7	20	81	128	6
		Some carbonate and diabase veinlets.	"	16.0	18.08	0.1154 ~~[illegible]~~	0.1120 ~~[illegible]~~	0.0075	1538	0.7	20	76	207	9
88.0	88.5	OLIVINE PYROXENITE	"	18.75	22.0	0.1405	0.1256	0.0073	1640	1.0	51	74	180	4
88.5	92.05	PYROXENITE - gradational contact at	"	22.0	23.81	0.0491	0.0442	0.0038	1549	0.8	18	22	76	3
		base with meta volcanics. Minor disseminated	"	23.81	27.2	0.0676	0.0845	0.0061	1502	0.5	19	29	90	3
		sulphides.	"	28.3	30.7	0.0761	0.1076	0.0068	1582	0.6	11	64	144	5
92.05	114.33	METAVOLCANICS - contains disseminated	"	31.38	33.83	0.0689	0.1230	0.0077	1290	0.5	49	35	202	4
		pyrrhotite and chalcopyrite, minor veinlets. Rock	"	33.83	35.57	0.0797	0.0600	0.0036	1515	0.6	25	72	184	7
		has a felty appearance of hornblende or	"	35.57	38.04	0.1042 ~~0.1029~~	0.1029	0.0062	1424	0.9	20	78	207	10
		actinolite. Could be a mixture of volcanics	"	38.65	42.0	0.1878	0.1562	0.0090	1298	1.3	46	132	250	13
		and fine grained intrusion.	"	42.0	45.0	0.0985	0.0910	0.0060	1591	0.8	38	94	149	6

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-13

COLLAR SURVEY: DATE: 2/12/88

NORTHING: ______ EASTING: ______ LOGGED BY: ______ SHEET No: 2

AZIMUTH: ______ DIP: ______ DEPTH: ______ CORE SIZE: ______

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88-N-13	45.0	47.86	0.1045	0.1115	0.0072	1296	0.7	41	77	137	6
			"	47.86	49.68	0.1280	0.1671	0.0083	1192	3.0	27	63	177	4
			"	49.68	52.0	0.1377	0.1823	0.0101	874	1.0	38	85	191	4
			"	52.0	54.6	0.2503	0.2522	0.0120	789	2.0	42	135	349	9
			"	54.6	57.48	0.1774	0.2020	0.0106	737	1.4	37	91	264	7
			"	57.48	59.47	0.1679	0.1925	0.0100	769	1.1	23	72	207	4
			"	59.47	62.0	0.2561	0.2678	0.0131	778	1.9	78	147	360	9
			"	62.0	65.5	0.2130	0.1875	0.0120	765	1.8	92	97	270	2
			"	65.5	68.0	0.2264	0.1954	0.0142	740	1.9	81	90	259	8
			"	68.0	68.57	0.1418	0.2114	0.0137	707	1.2	64	68	233	11
			"	68.57	70.62	0.1878	0.2097	0.0130	849	1.5	85	104	301	9
			"	70.62	71.05	0.0287	0.0051	0.0007	23	0.5	6	3	4	2
			"	71.05	71.97	0.2067	0.1685	0.0094	892	1.5	81	72	201	9
			"	71.97	73.37	0.5350	0.2572	0.0138	509	4.3	63	85	179	11
			"	73.37	75.0	0.0549	0.1675	0.905	1033	0.6	35	76	164	10

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: KANICHEE HOLE No. 88-N-13

COLLAR SURVEY:

DATE: 2/12/88

NORTHING: EASTING: LOGGED BY: SHEET No: 3

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88-N-13	75.0	78.0	0.1573	0.1892	0.0103	895	1.3	67	76	194	7
			"	78.0	81.0	0.1645	0.2013	0.0115	885	1.4	35	72	201	7
			"	81.0	83.55	0.0449	0.1272	0.0079	1001	0.6	17	9	72	3
			"	83.55	85.0	0.2730	0.2228	0.0116	838	2.4	252	181	530	15
			"	85.0	87.0	0.2168	0.2407	0.0130	1204	1.8	131	114	322	9
			"	87.0	88.46	0.2564	0.1929	0.0103	1438	2.8	95	113	278	12

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-14

COLLAR SURVEY: DATE: 6/12/88

NORTHING: 86.00 m EASTING: 153.00 m LOGGED BY: H. Dillon-Leitch SHEET No: 1

AZIMUTH: 105.0° DIP: -45.0° DEPTH: 92.68 CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	1.22	CASING	88-N-14	1.35	3.0	0.0605	0.0686	0.0051	1400	0.7	7	49	130	5
1.22	59.0	PERIDOTITE - disseminated and patchy	"	3.0	5.0	0.3389	0.2795	0.0124	1149	2.5	65	109	421	10
		sulphide to 3%. Peridotite bleached from	"	5.0	6.43	0.0889	0.0895	0.0077	1403	0.9	9	38	98	5
		52.0 to 59.0 due to diabase dyke,	"	6.43	9.0	0.1978	0.1152	0.0099	1152	1.9	43	121	344	10
		probably due to higher amphibole	"	9.0	12.0	0.0397	0.0662	0.0061	1469	0.5	12	39	74	3
		content.	"	12.0	15.0	0.0631	0.0863	0.0065	1113	0.5	6	27	64	3
59.0	61.24	OLIVINE PYROXENITE - Amphibole ± biotite-rich.	"	15.0	18.15	0.0783	0.0776	0.0063	1274	0.9	5	36	86	4
		Contact metasomatism by large diabase dyke.	"	18.15	21.0	0.0715	0.0794	0.0053	1433	0.5	8	42	96	4
61.24	62.33	PYROXENITE - contact with diabase is	"	21.0	23.4	0.0913	0.0923	0.0063	879	0.8	6	48	102	4
		gradational	"	23.4	27.0	0.0655	0.0659	0.0051	1162	0.7	68	34	94	3
62.33	86.00	DIABASE - plage-phyric (tabular) with	"	27.0	30.0	0.0895	0.1040	0.0068	1204	0.5	6	39	102	3
		rare feldspar clots to 1cm accross.	"	30.0	32.0	0.0663	0.0752	0.0053	1307	0.6	6	22	70	2
		Weak to non-magnetic. Most veins are	"	32.0	33.88	0.1168	0.1424	0.0089	1059	1.3	9	53	139	5
		carbonate at upper contact, become	"	33.88	34.6	0.3471	0.1947	0.0125	1224	2.6	58	126	294	7
		quartz and plagioclase with depth. No sulphides.	"	34.6	37.53	0.2015	0.1647	0.0099	1027	2.2	1048	71	186	6

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-14

COLLAR SURVEY: DATE: 6/12/88

NORTHING: EASTING: LOGGED BY: SHEET No: 2

AZIMUTH: DIP: DEPTH: CORE SIZE:

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
86.0	92.68	DIABASE - different diabase weakly plage-phyric	88-N-14	37.53	40.64	0.3288	0.1990	0.0111	1088	2.8	18	89	217	5
		and weakly magnetic Plagioclase are less	"	40.64	42.21	0.0652	0.1492	0.0073	1309	0.6	11	50	144	6
		tabular - subequant to subrounded.	"	42.21	43.6	0.0827	0.1159	0.0070	531	1.6	41	44	85	2
			"	43.6	46.0	0.2629	0.2730	0.0181	824	2.4	34	108	291	9
			"	46.0	48.0	0.3649	0.2492	0.0149	798	3.0	126	128	326	7
			"	48.0	50.0	0.1959	0.1955	0.0109	797	2.1	62	75	193	6
			"	50.0	51.5	0.3504	0.3950	0.0199	778	3.8	38	255	433	11
			"	51.5	54.09	0.1832	0.1684	0.0098	777	2.5	40	74	171	9
			"	54.8	57.0	0.0606	0.1170	0.0075	1214	1.1	3[illegible]	32	96	4
			"	57.0	59.0	0.0297	0.1078	0.0076	1378	0.8	9	21	52	2
			"	59.0	62.33	0.0501	0.1007	0.0067	1195	0.7	2	28	90	2

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-15

COLLAR SURVEY:

DATE: 10/12/88

NORTHING: 61.0 m EASTING: 143.0 m LOGGED BY: H. Dillon-Lietch SHEET No: 1

AZIMUTH: 105.0° DIP: -45° DEPTH: 80.48 CORE SIZE: BQ

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	1.89	CASING	88-N-15	3.15	6.0	0.0957	0.0950	0.0066	1082	1.0	23	63	99	7
1.89	3.15	DIABASE	"	6.0	9.0	0.0627	0.0903	0.0072	1094	0.7	51	42	61	5
3.15	63.23	PERIDOTITE - in places numerous thin calcite	"	9.0	10.9	0.0873	0.0920	0.0068	994	0.6	36	44	77	4
		veins at low core angles make very	"	10.9	14.0	0.0990	0.0926	0.0059	1414	0.9	15	52	87	5
		block core. Chalcopyrite-rich parts	"	14.0	16.12	0.0811	0.0942	0.0062	982	0.7	16	56	82	7
		of veinlets. Sulphides up to 5%	"	16.12	18.0	0.3607	0.1825	0.0104	971	3.0	35	175	285	10
63.23	65.00	PYROXENITE - Transitional zone? Minor	"	18.0	20.7	0.2017	0.1403	0.0085	1342	2.3	11	55	119	3
		sulphides	"	20.7	22.7	0.1178	0.0834	0.0055	1441	0.9	4	27	45	2
65.00	80.48	METAVOLCANICS - no sulphides	"	22.7	25.75	0.2514	0.1516	0.0096	1272	1.7	65	105	250	17
			"	25.75	26.24	1.1511	0.6190	0.0382	755	7.2	156	677	450	39
			"	26.24	29.0	0.1142	0.1509	0.0087	1004	1.0	11	33	95	5
			"	29.0	32.0	0.1261	0.2009	0.0108	821	1.5	26	52	189	5
			"	32.0	34.0	0.2967	0.2599	0.0132	740	1.8	147	91	322	12
			"	34.0	36.06	0.2032	0.1755	0.0099	920	1.5	95	68	189	5
			"	36.06	36.3	0.6166	0.6154	0.0288	551	4.6	198	340	749	26

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

PROPERTY: Kanichee HOLE No. 88-N-15

COLLAR SURVEY: DATE: 10/12/88

NORTHING: ______ EASTING: ______ LOGGED BY: ______ SHEET No: 2

AZIMUTH: ______ DIP: ______ DEPTH: ______ CORE SIZE: ______

FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
			88-N-15	36.3	38.0	0.7487	0.2140	0.0113	801	4.1	203	134	422	19
			"	38.0	40.0	0.4536	0.2961	0.0115	756	5.3	355	225	556	26
			"	40.0	42.22	0.6233	0.2444	0.0131	797	6.0	124	145	451	17
			"	42.22	42.52	0.6030	1.6388	0.0756	175	34.9	120	25	124	5
			"	42.52	44.85	0.7140	0.4054	0.0204	733	5.0	66	106	604	11
			"	44.85	48.0	0.1136	0.1537	0.0093	865	1.6	3	12	160	3
			"	48.0	50.78	0.0398	0.1059	0.0075	970	0.9	1	11	68	2
			"	51.26	54.0	0.0635	0.1185	0.0075	1022	0.4	1	15	73	2
			"	54.0	57.0	0.0819	0.1071	0.0080	963	0.6	26	43	114	3
			"	57.0	60.0	0.0222	0.0936	0.0073	1082	0.1	33	14	28	2
			"	60.0	62.0	0.0504	0.0994	0.0073	1596	0.5	10	29	88	3
			"	62.0	65.0	0.0568	0.0805	0.0061	1212	0.3	2	18	52	2
			"											
			"											
			"											

NORTHERN PLATINUM LTD.

DIAMOND DRILL LOG

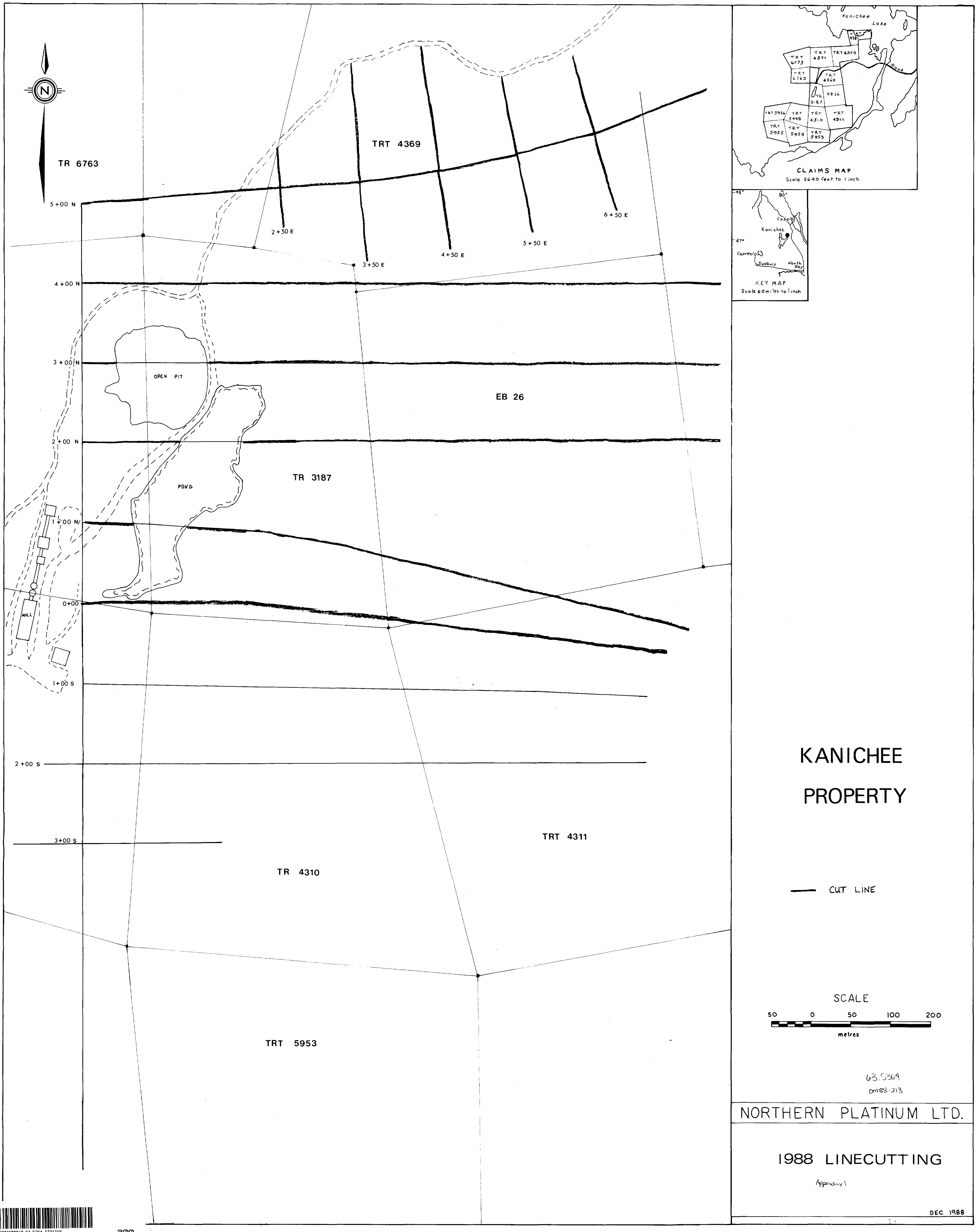
PROPERTY: Kanichee HOLE No. 88-N-16

COLLAR SURVEY: DATE: 13/12/88

NORTHING: 108.0 m EASTING: 282.0 m LOGGED BY: H. Dillon-Leitch SHEET No: 1

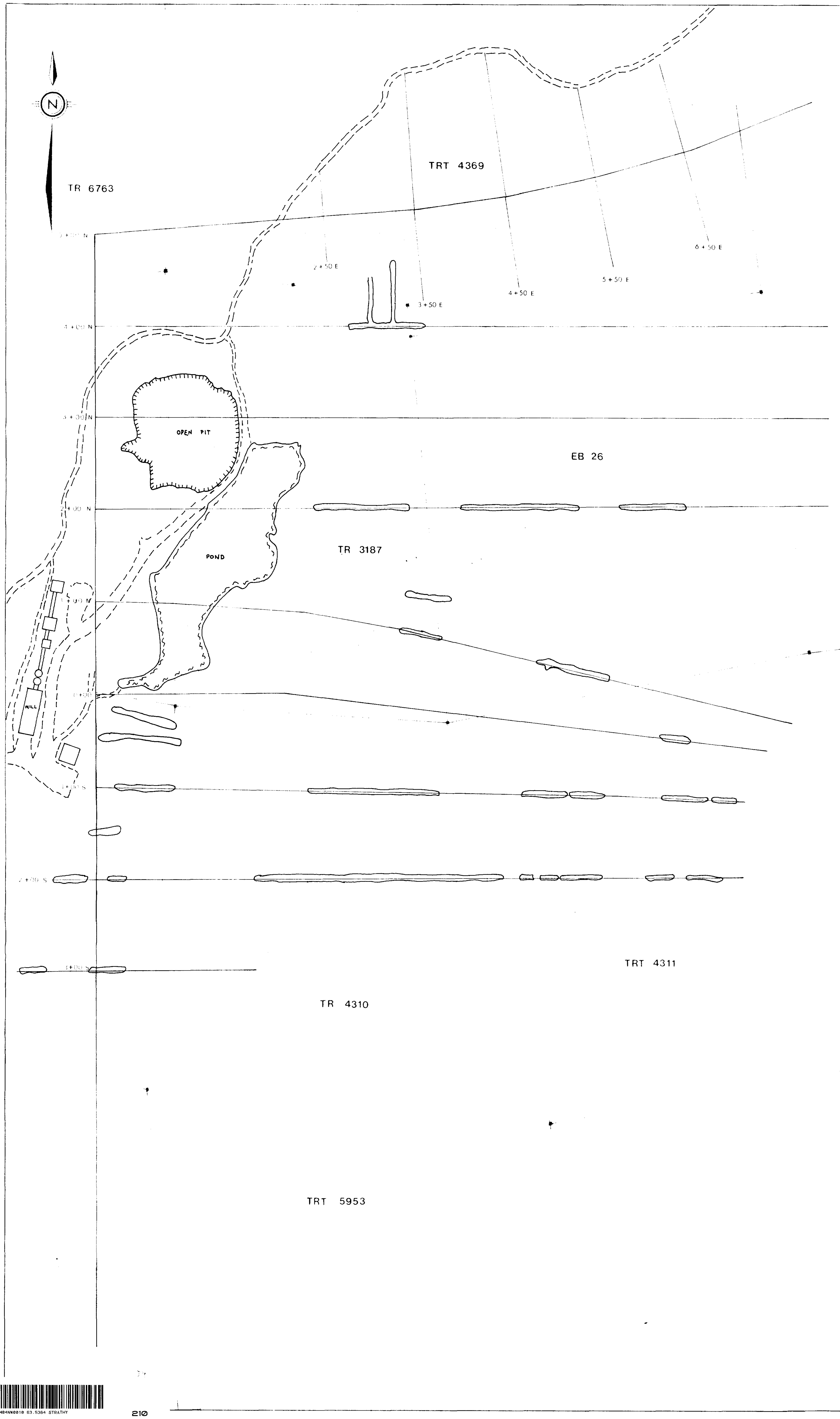
AZIMUTH: 020.0° DIP: -55° DEPTH: 36.89 CORE SIZE: BQ

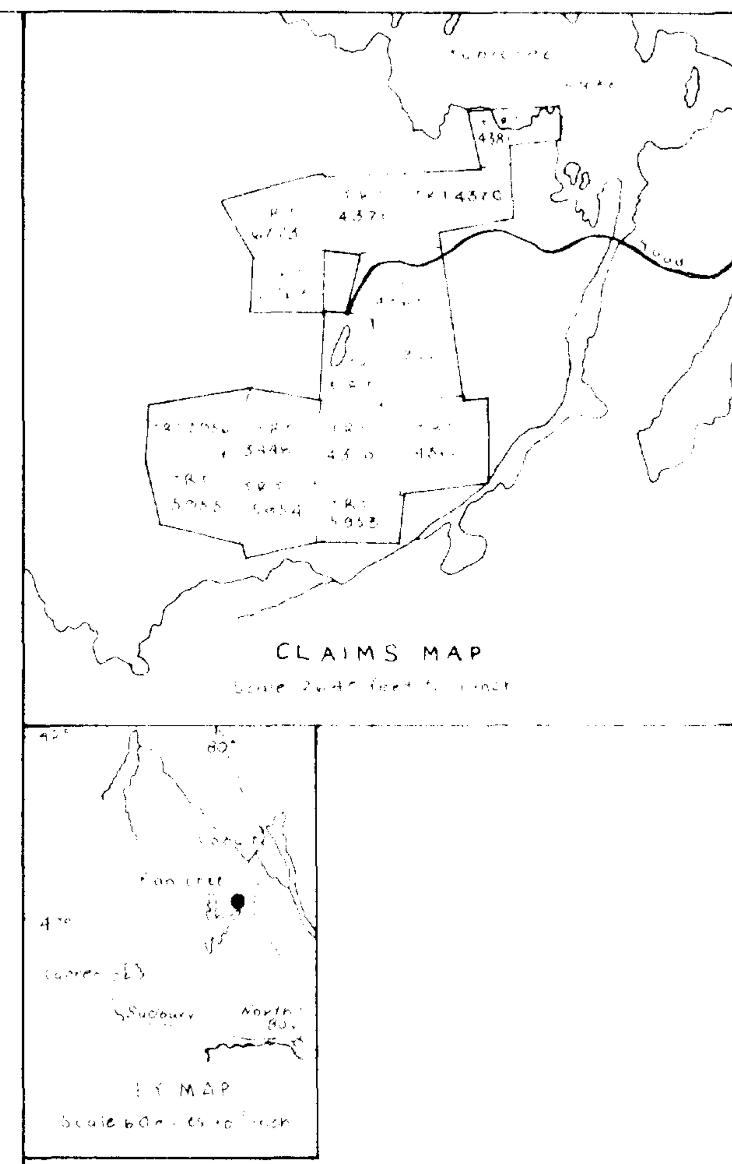
FOOTAGE FROM	FOOTAGE TO	DESCRIPTION	SAMPLE NO.	FROM	TO	% Cu	% Ni	% Co	ppm Cr	ppm Ag	ppb Au	ppb Pt	ppb Pd	ppb Rh
0	1.22	CASING	88-N-16	4.0	7.38	0.1975	0.1273	0.0073	788	0.8	59	111	330	12
1.22	26.2	OLIVINE PYROXENITE - to pyroxenite	"	11.4	14.0	0.2549	0.1718	0.0085	711	0.8	60	169	435	32
		sulphides are patchy as interstitial	"	14.0	16.0	0.7262	0.2397	0.0092	669	3.6	266	287	989	22
		grains and cm size patches. Range	"	16.0	18.35	0.3254	0.1693	0.0078	643	2.1	112	171	595	18
		Tr to 10% sulphides ~~pyrite~~	"	24.5	26.2	0.2831	0.2455	0.0131	409	2.5	411	104	390	12
		pyrrhotite >> chalcopyrite.												



31M04NW0010 63.5364 STRATHY

200





KANICHEE PROPERTY

SCALE

50 0 50 100 200

metres

63.5369

NORTHERN PLATINUM LTD.

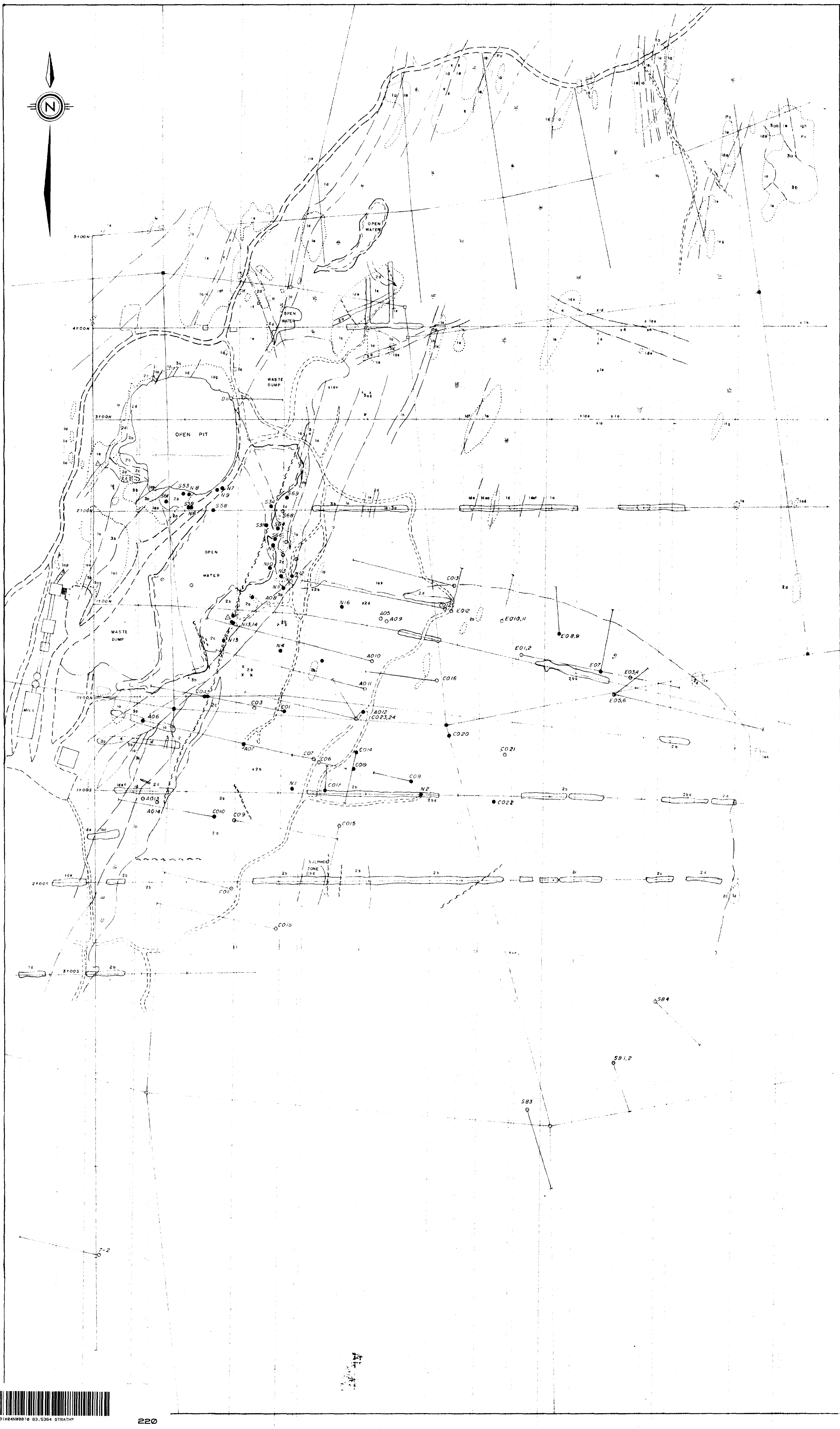
TRENCH

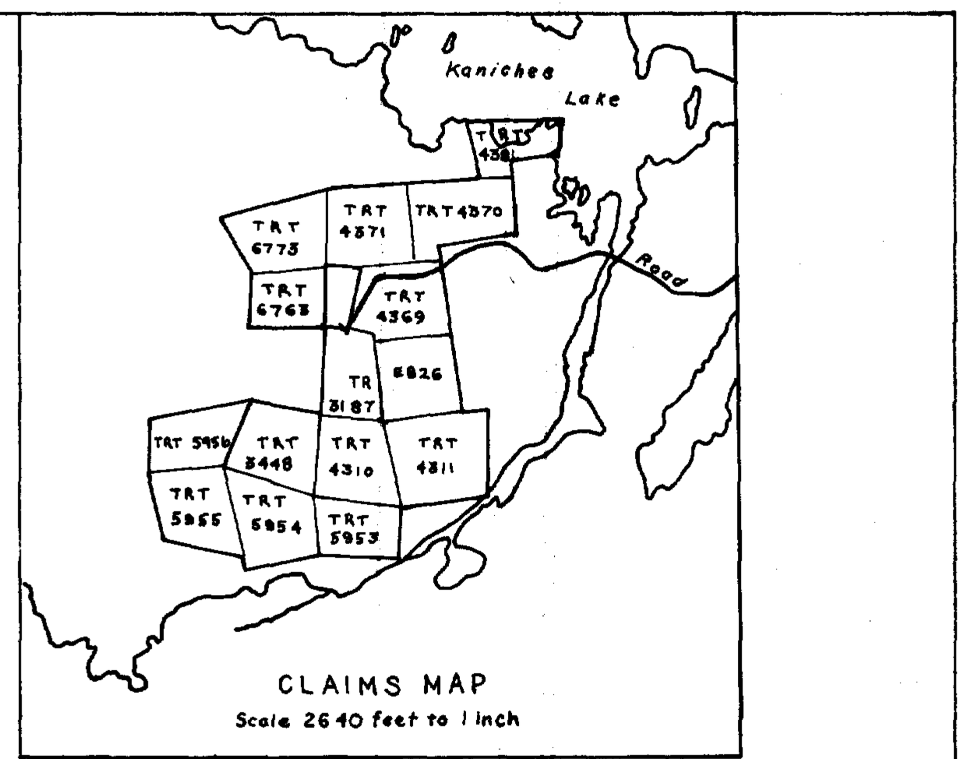
LOCATION PLAN

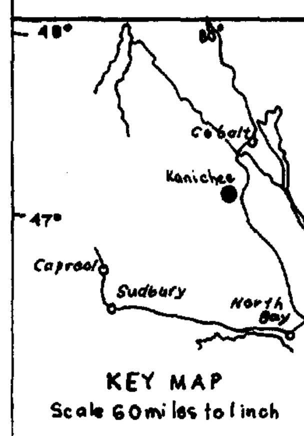
Appendix 3.

DEC 1988

210







LEGEND

5 LAMPROPHYRE
BIOTITE-CHLORITE DYKES

4 DIABASE
OLIVINE DIABASE, HIGHLY MAGNETIC

3 DIABASE
PLAGIOCLASE PHYRIC
a-FINE GRAINED
b-MEDIUM TO COARCE GRAINED

2 ULTRMAFIC ROCKS
a-DUNITE, <80% OLIVINE
b-PERIDOTITE, 20%-80% OLIVINE
c-OLIVINE PYROXENITE, 10%-20% OLIVINE
d-PYROXENITE, >10% OLIVINE
o-OIKOCRYSTS

1 METAVOLCANIC and ASSOCIATED ROCKS
a- MAFIC, MASSIVE
b- MAFIC, VOLCANICLASTIC
c- INTERMEDIATE, MASSIVE
d- INTERMEDIATE, VOLCANICLASTIC, ASH-BOMB
e- RHYODACITE, MASSIVE
f- RHYODACITE, VOLCANICLASTIC, ASH-LAPILLI
g- RHYODACITE, VOLCANICLASTIC, BOMB
h- RHYOLITE, MASSIVE
i- QUARTZ-FELDSPAR PORPHYRY, DYKE
j- INTERFLOW SEDIMENTS
V- VESICULAR, AMYGDALOIDAL
P- PILLOWED

SYMBOLS

OUTCROP
FAULT, INFERRED
GEOLOGICAL CONTACT, KNOWN, INFERRED
BEDDING, STEEP DIP
PILLOW FACING DIRECTION, STEEP DIP
TRENCHED, STRIPPED
PIT
ROAD, TRACK
SWAMP
CLAIM POST, LOCATED, NOT LOCATED
DDH COLLAR, LOCATED, NOT, UNKNOWN LOCATED HORIZONTAL PROJECTION
SURVEY PIN, LOCATED
CUT LINE
Py PYRITE
Cpy CHALCOPYRITE
Po PYRRHOTITE

SCALE
50 0 50 100 200
metres

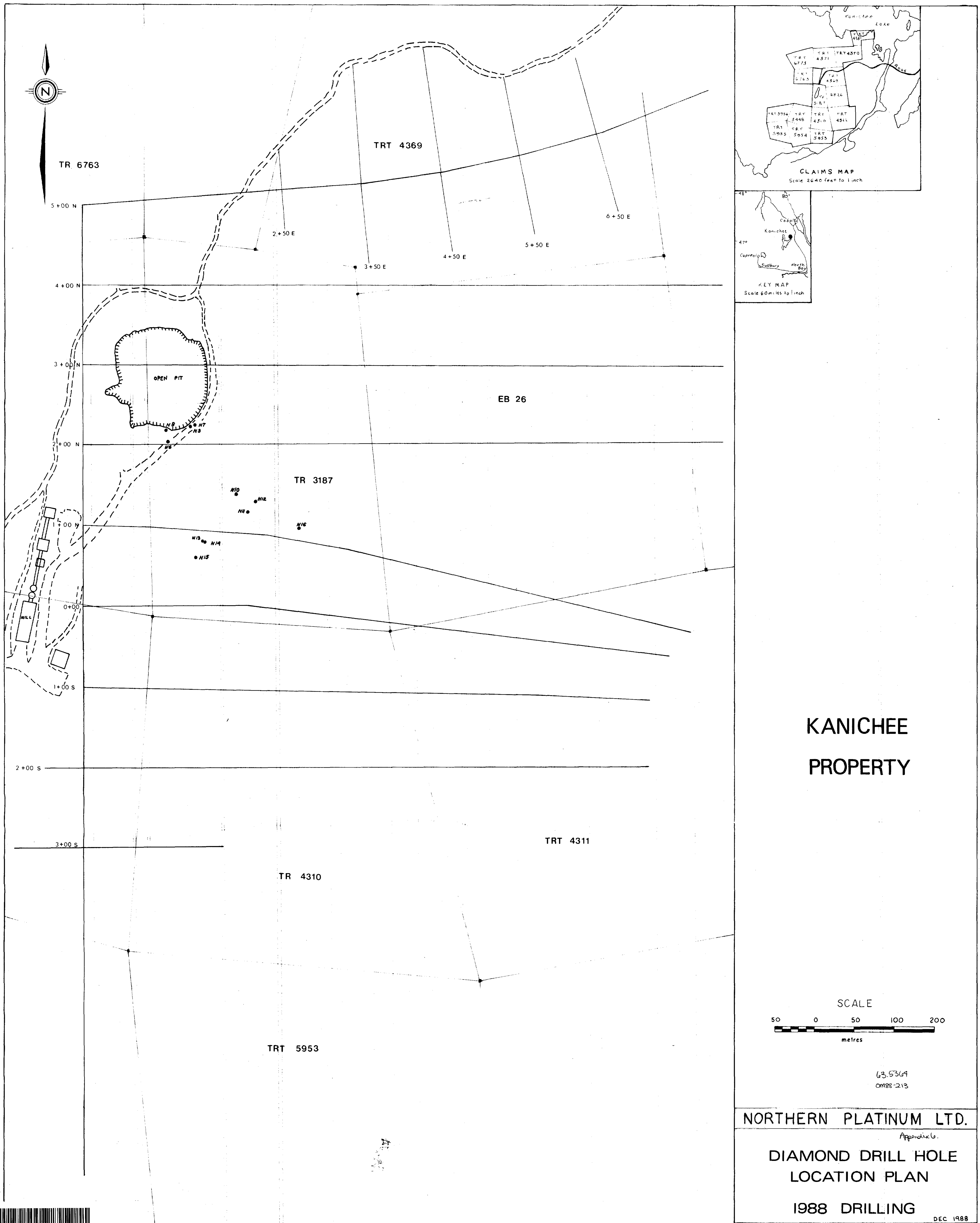
63.5364
om88-213

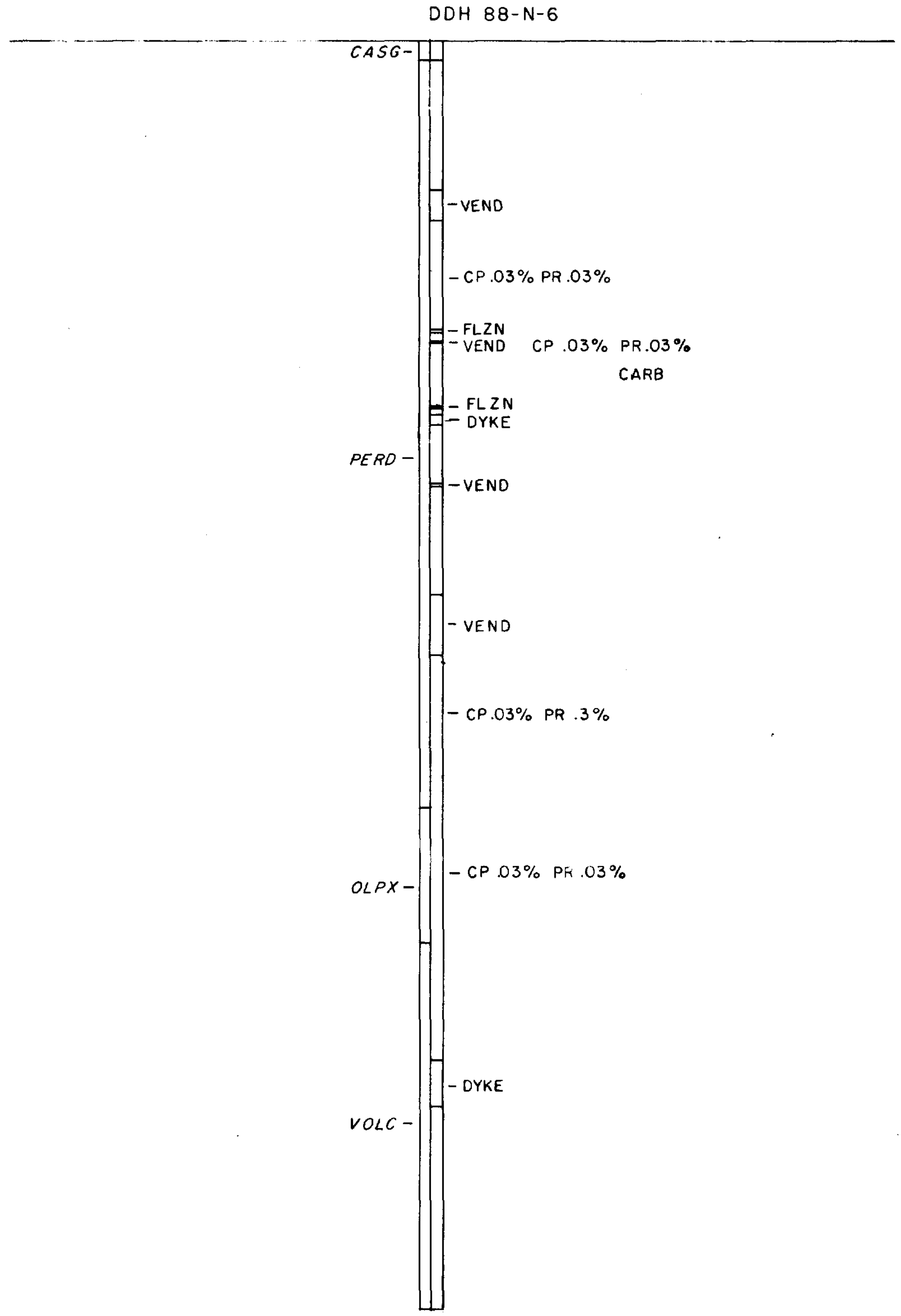
NORTHERN PLATINUM LTD.

Appendix 4

KANICHEE MINE
SURFACE PLAN
GEOLOGY
DRILLING
TRENCHING

DEC 1988


N
TR 6763
TRT 4369
EB 26
TR 3187
TRT 4311
TR 4310
TRT 5953
OPEN PIT
MILL
5+00 N
4+00 N
3+00 N
2+00 N
1+00 N
0+00
1+00 S
2+00 S
3+00 S
2+50 E
3+50 E
4+50 E
5+50 E
6+50 E
N6
N7
N8
N9
N10
N11
N12
N13
N14
N15
N16
CLAIMS MAP
Scale 2640 feet to 1 inch
KEY MAP
Scale 60 miles to 1 inch
Cobalt
Kanichee
Sudbury
North Bay
KANICHEE
PROPERTY
SCALE
50 0 50 100 200
metres
63.5369
OM88-213
NORTHERN PLATINUM LTD.
Appendix 6.
DIAMOND DRILL HOLE
LOCATION PLAN
1988 DRILLING
DEC 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5364
6m88-213

DIAMOND DRILL HOLE
CROSS SECTION
GEOLOGY

Appendix 6.

LEGEND

CASG - CASING
PERD - PERIDOTITE
OLPX - OLIVINE PYROXENITE
LAMP - LAMPROPHYRE DYKE
PYRX - PYROXENITE
VOLC - VOLCANICS
FLZN - FAULT ZONE
DIAB - DIABASE
VCBX - VOLCANIC BRECCIA
VEND - VEINED ROCK
DYKE - CHLORITIC DYKE

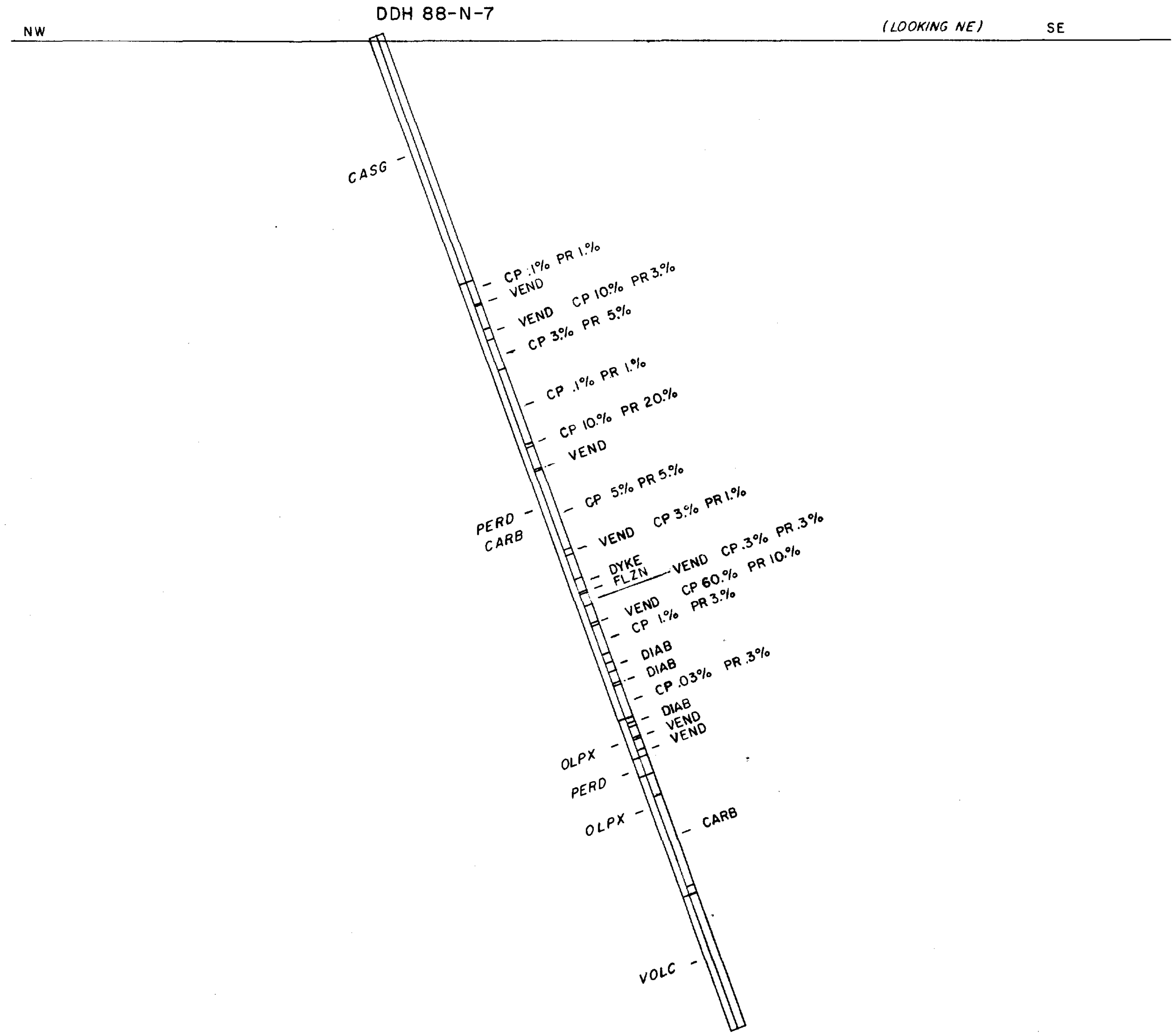
CP - CHALCOPYRITE
PR - PYRRHOTITE
CARB - CARBONATE

5 0 5 10
metres

DDH 88-N-6

STATION 205.00 N, 97.00 E

AZIMUTH —
DIP - 90°
LENGTH 71.22 m
COMPLETED OCTOBER 9, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5364
OM88-2-13
Appendix

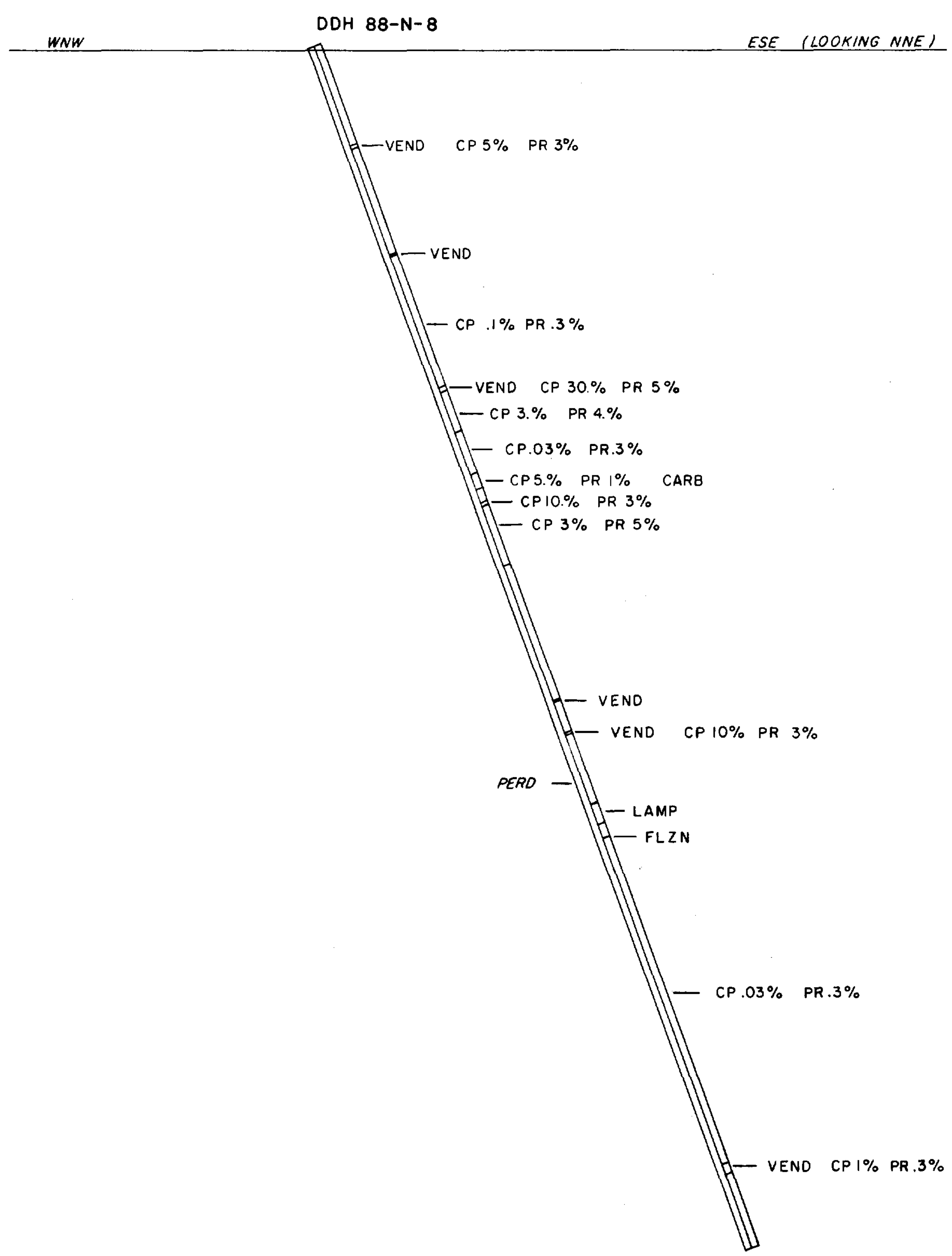
DIAMOND DRILL HOLE CROSS SECTION GEOLOGY

LEGEND

CASG	-	CASING
PERD	-	PERIDOTITE
OLPX	-	OLIVINE PYROXENITE
LAMP	-	LAMPROPHYRE DYKE
PYRX	-	PYROXENITE
VOLC	-	VOLCANICS
FLZN	-	FAULT ZONE
DIAB	-	DIABASE
VCBX	-	VOLCANIC BRECCIA
VEND	-	VEINED ROCK
DYKE	-	CHLORITIC DYKE
CP	-	CHALCOPYRITE
PR	-	PYRRHOTITE
CARB	-	CARBONATE

DDH 88-N-7

STATION	235.0 N, 118.0 E
AZIMUTH	105°
DIP	−70°
LENGTH	71.34 m
COMPLETED	OCTOBER 16, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5369
OM88-213

Appendix 6

DIAMOND DRILL HOLE
CROSS SECTION
GEOLOGY

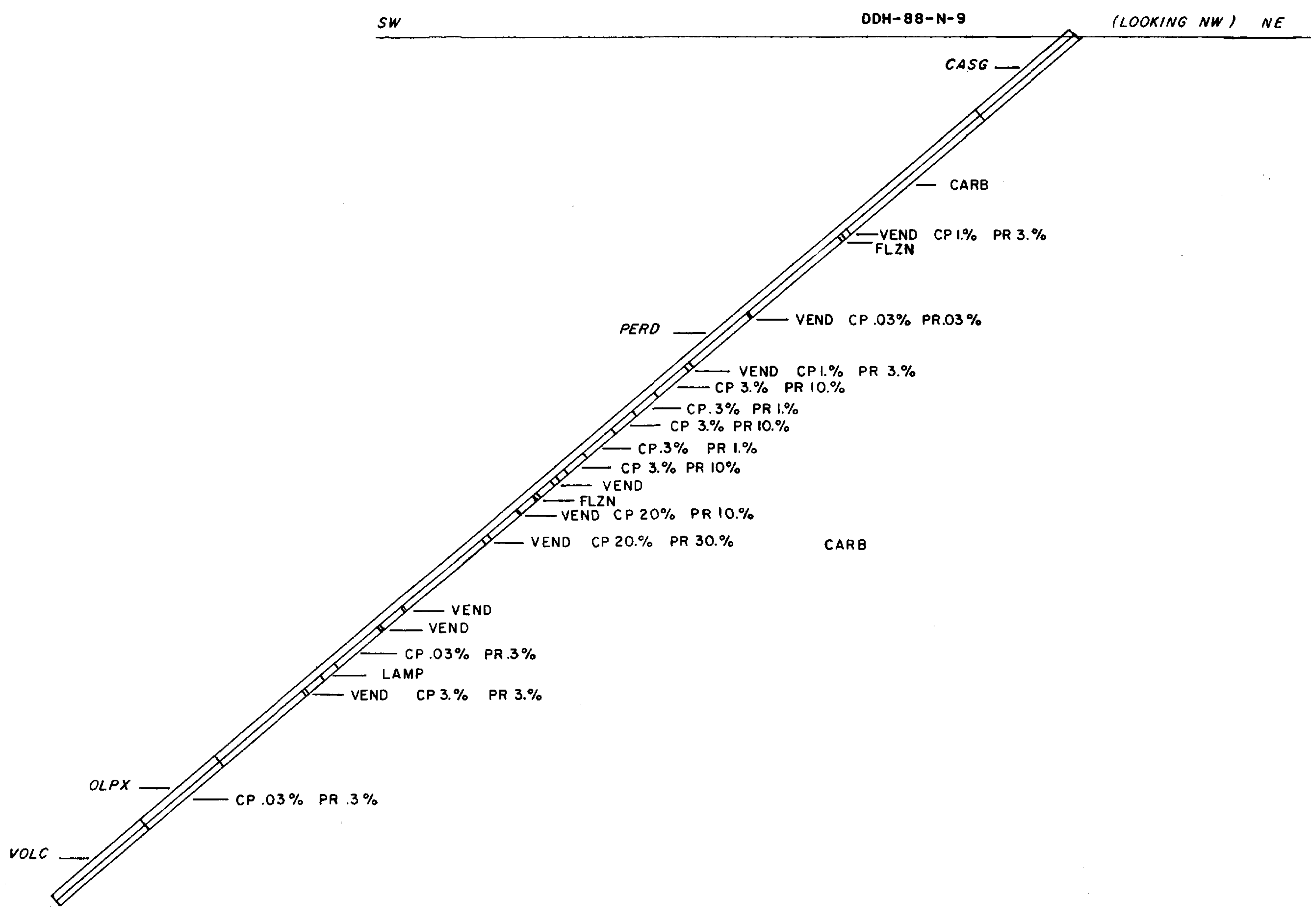
LEGEND

CASG	-	CASING
PERD	-	PERIDOTITE
OLPX	-	OLIVINE PYROXENITE
LAMP	-	LAMPROPHYRE DYKE
PYRX	-	PYROXENITE
VOLC	-	VOLCANICS
FLZN	-	FAULT ZONE
DIAB	-	DIABASE
VCBX	-	VOLCANIC BRECCIA
VEND	-	VEINED ROCK
DYKE	-	CHLORITIC DYKE
CP	-	CHALCOPYRITE
PR	-	PYRRHOTITE
CARB	-	CARBONATE

5 0 5 10
metres

DDH 88-N-8

STATION	220.0 N, 106.0 E
AZIMUTH	105.°
DIP	-70°
LENGTH	77.13 m
COMPLETED	OCTOBER 28, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5364
OM88-213
Appendix 6.

DIAMOND DRILL HOLE CROSS SECTION GEOLOGY

LEGEND

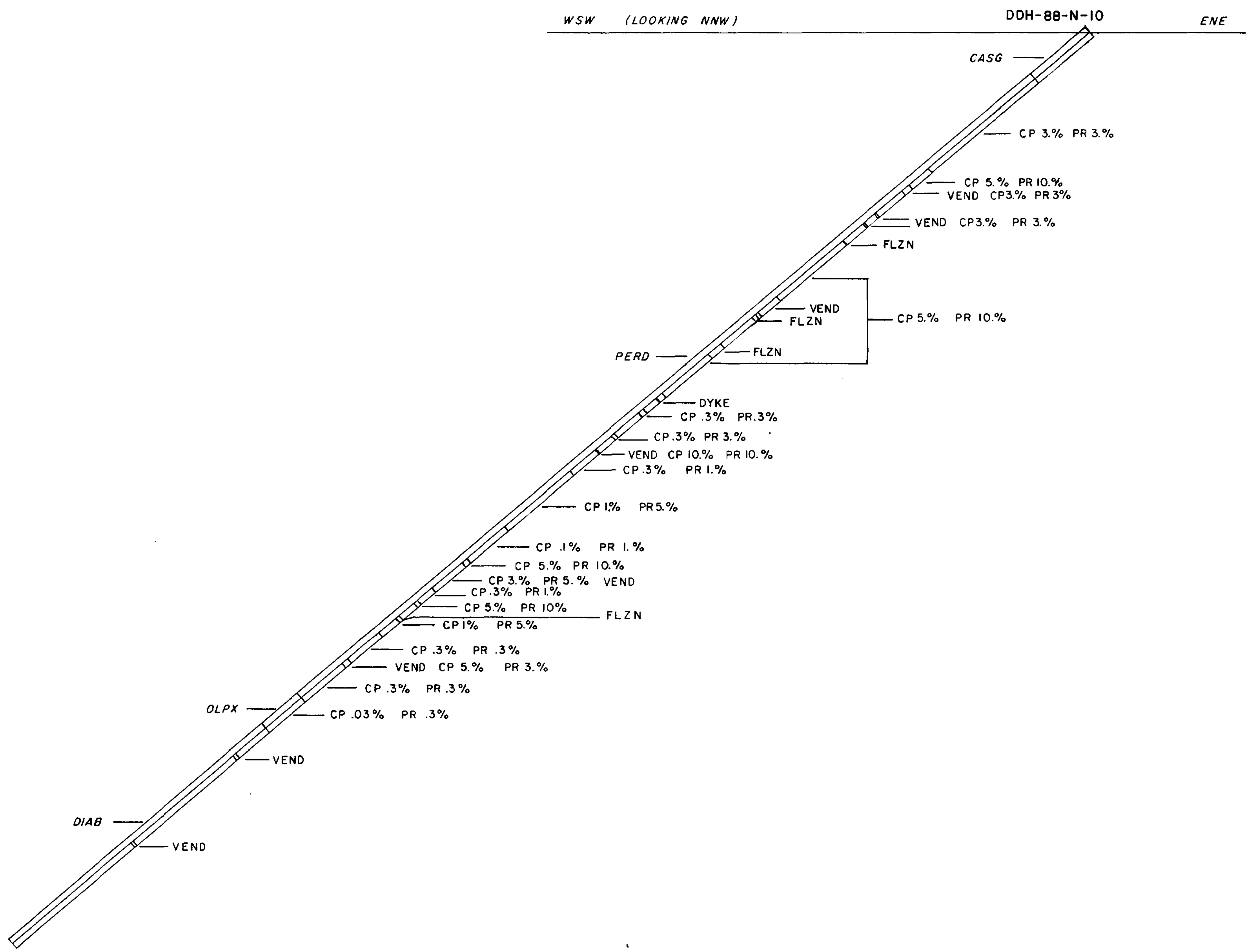
CASG	-	CASING
PERD	-	PERIDOTITE
OLPX	-	OLIVINE PYROXENITE
LAMP	-	LAMPROPHYRE DYKE
PYRX	-	PYROXENITE
VOLC	-	VOLCANICS
FLZN	-	FAULT ZONE
DIAB	-	DIABASE
VCBX	-	VOLCANIC BRECCIA
VEND	-	VEINED ROCK
DYKE	-	CHLORITIC DYKE
CP	-	CHALCOPYRITE
PR	-	PYRRHOTITE
CARB	-	CARBONATE

5 0 5 10
metres

DDH 88-N-9

STATION 137.00 N 95.00 E

AZIMUTH 227°
DIP -40°
LENGTH 86.28 m
COMPLETED NOVEMBER 2, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5364
OM88-2-13
Appendix 6.

DIAMOND DRILL HOLE CROSS SECTION GEOLOGY

LEGEND

CASG - CASING
PERD - PERIDOTITE
OLPX - OLIVINE PYROXENITE
LAMP - LAMPROPHYRE DYKE
PYRX - PYROXENITE
VOLC - VOLCANICS, INTERMEDIATE
FLZN - FAULT ZONE
DIAB - DIABASE
VCBX - VOLCANIC BRECCIA
VEND - VEINED ROCK
DYKE - CHLORITIC DYKE

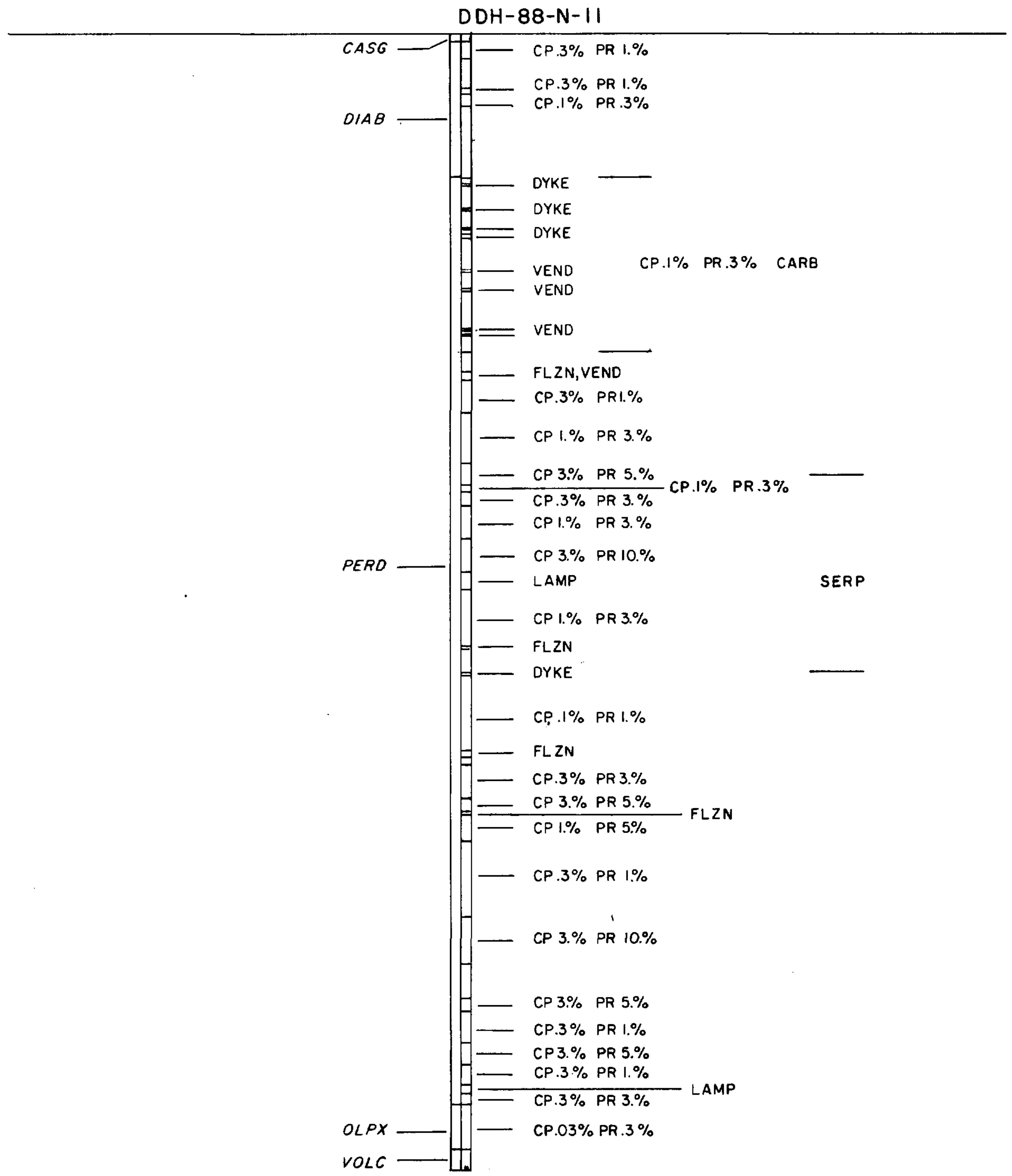
CP - CHALCOPYRITE
PR - PYRRHOTITE
CARB - CARBONATE

5 0 5 10
metres

DDH 88-N-10

STATION 137.0 N 195.0 E

AZIMUTH 250°
DIP -40°
LENGTH 110.36 m
COMPLETED NOVEMBER 10, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5364
OM88-213
Appendix 6

DIAMOND DRILL HOLE CROSS SECTION GEOLOGY

LEGEND

CASG - CASING
PERD - PERIDOTITE
OLPX - OLIVINE PYROXENITE
LAMP - LAMPROPHYRE DYKE
PYRX - PYROXENITE
VOLC - VOLCANICS, INTERMEDIATE
FLZN - FAULT ZONE
DIAB - DIABASE
VCBX - VOLCANIC BRECCIA
VEND - VEINED ROCK
DYKE - CHLORITIC DYKE

CP - CHALCOPYRITE
PR - PYRRHOTITE
CARB - CARBONATE
SERP - SERPENTINE

10 0 10 20
metres

DDH 88-N-11

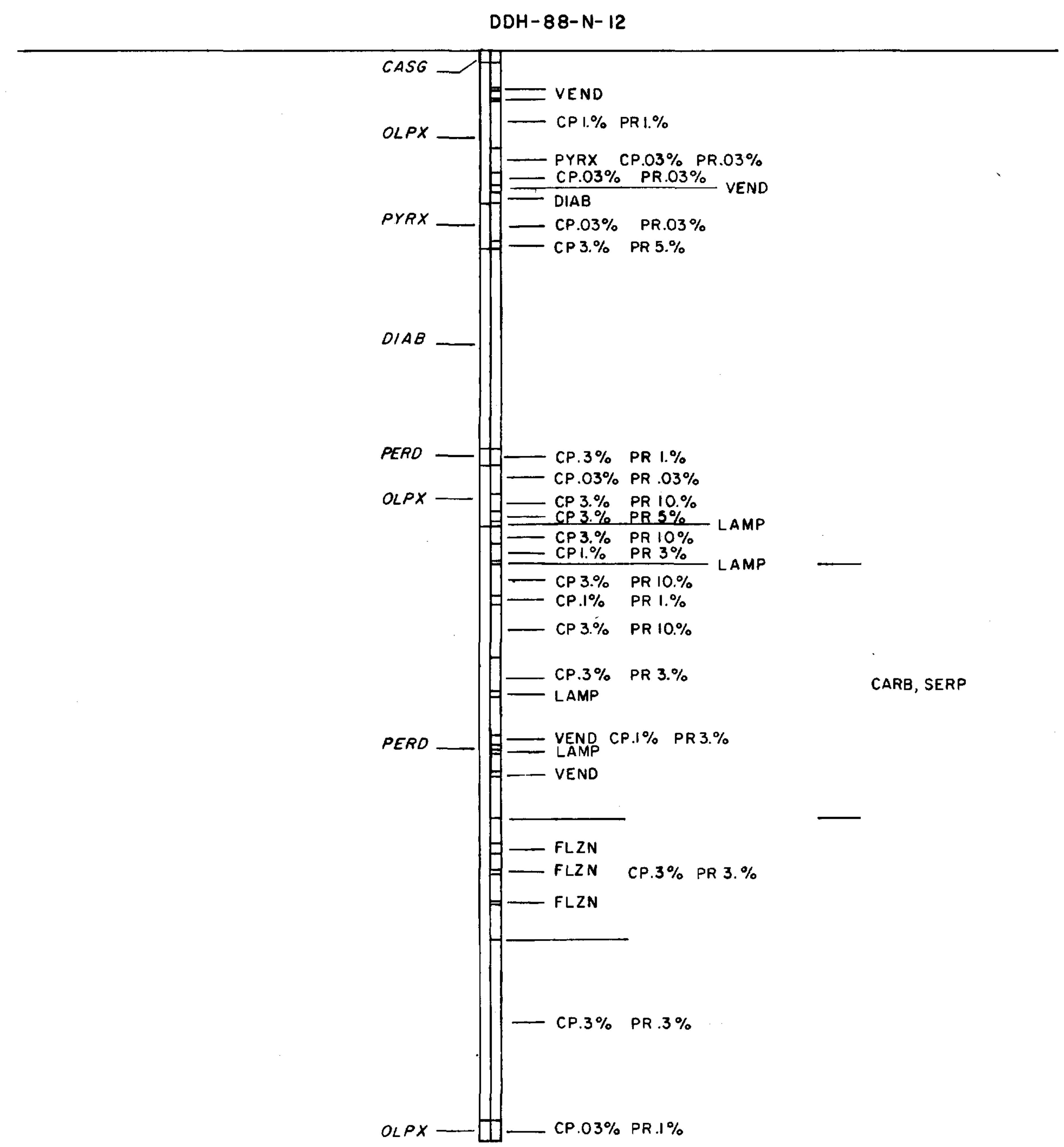
STATION 116.00 N 210.00 E

AZIMUTH —

DIP -90°

LENGTH 135.36 m

COMPLETED NOVEMBER 16, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

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Appendix

DIAMOND DRILL HOLE CROSS SECTION GEOLOGY

LEGEND

CASG - CASING
PERD - PERIDOTITE
OLPX - OLIVINE PYROXENITE
LAMP - LAMPROPHYRE DYKE
PYRX - PYROXENITE
VOLC - VOLCANICS , INTERMEDIATE
FLZN - FAULT ZONE
DIAB - DIABASE
VCBX - VOLCANIC BRECCIA
VEND - VEINED ROCK
DYKE - CHLORITIC DYKE

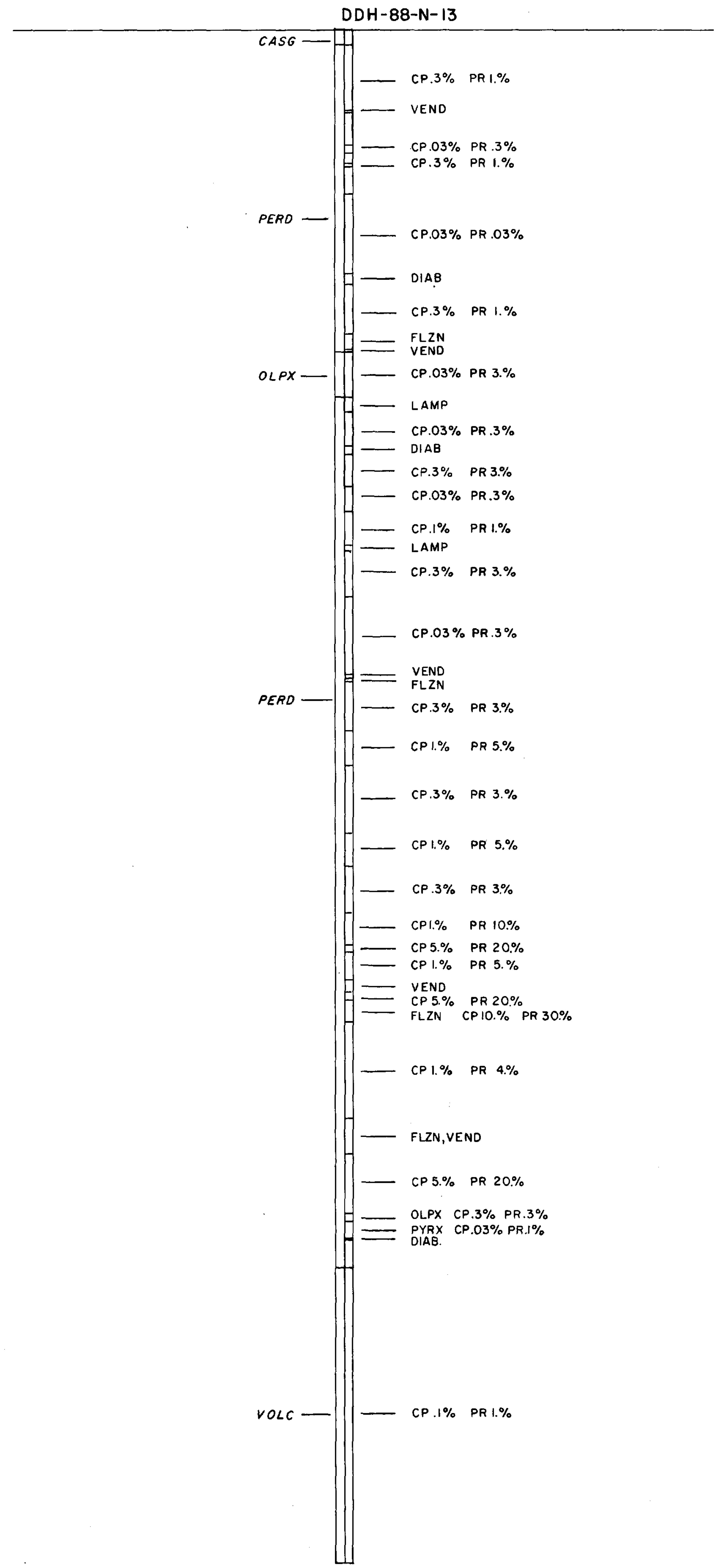
CP - CHALCOPYRITE
PR - PYRRHOTITE
CARB - CARBONATE
SERP - SERPENTINE

10 0 10 20
metres

DDH 88-N-12

STATION 130.0 N 220.0 E

AZIMUTH —
DIP - 90°
LENGTH 126.52 m
COMPLETED NOVEMBER 22, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5364
om88-213
Appendix

DIAMOND DRILL HOLE
CROSS SECTION
GEOLOGY

LEGEND

CASG - CASING
PERD - PERIDOTITE
OLPX - OLIVINE PYROXENITE
LAMP - LAMPROPHYRE DYKE
PYRX - PYROXENITE
VOLC - VOLCANICS, INTERMEDIATE
FLZN - FAULT ZONE
DIAB - DIABASE
VCBX - VOLCANIC BRECCIA
VEND - VEINED ROCK
DYKE - CHLORITIC DYKE

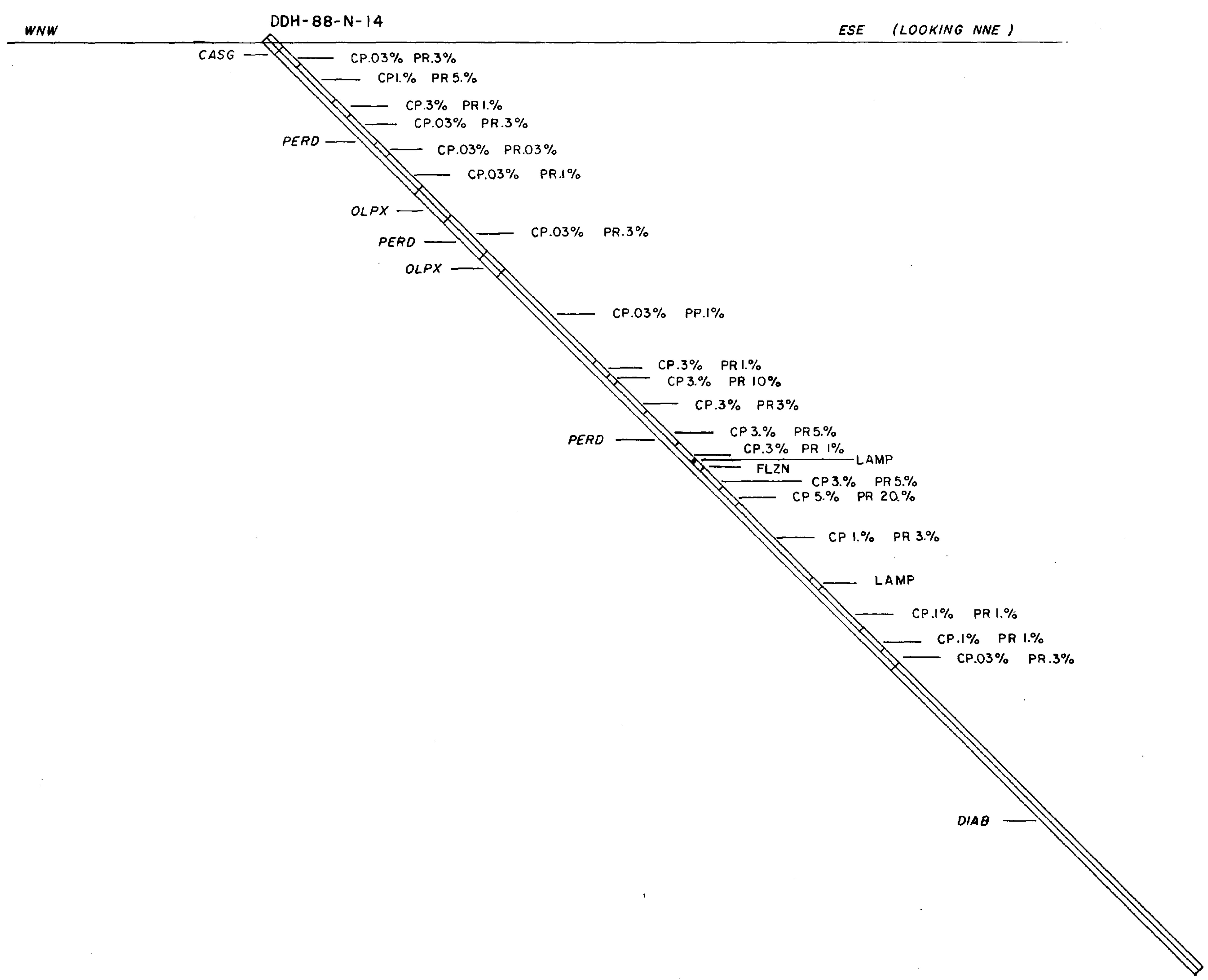
CP - CHALCOPYRITE
PR - PYRRHOTITE

5 0 5 10
metres

DDH 88-N-13

STATION 86.0 N 155.0 E

AZIMUTH —
DIP − 90°
LENGTH 114.33 m
COMPLETED DECEMBER 1, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5364
om88-213
Appendix6

DIAMOND DRILL HOLE
CROSS SECTION
GEOLOGY

LEGEND

CASG - CASING
PERD - PERIDOTITE
OLPX - OLIVINE PYROXENITE
LAMP - LAMPROPHYRE DYKE
PYRX - PYROXENITE
VOLC - VOLCANICS, INTERMEDIATE
FLZN - FAULT ZONE
DIAB - DIABASE
VCBX - VOLCANIC BRECCIA
VEND - VEINED ROCK
DYKE - CHLORITIC DYKE

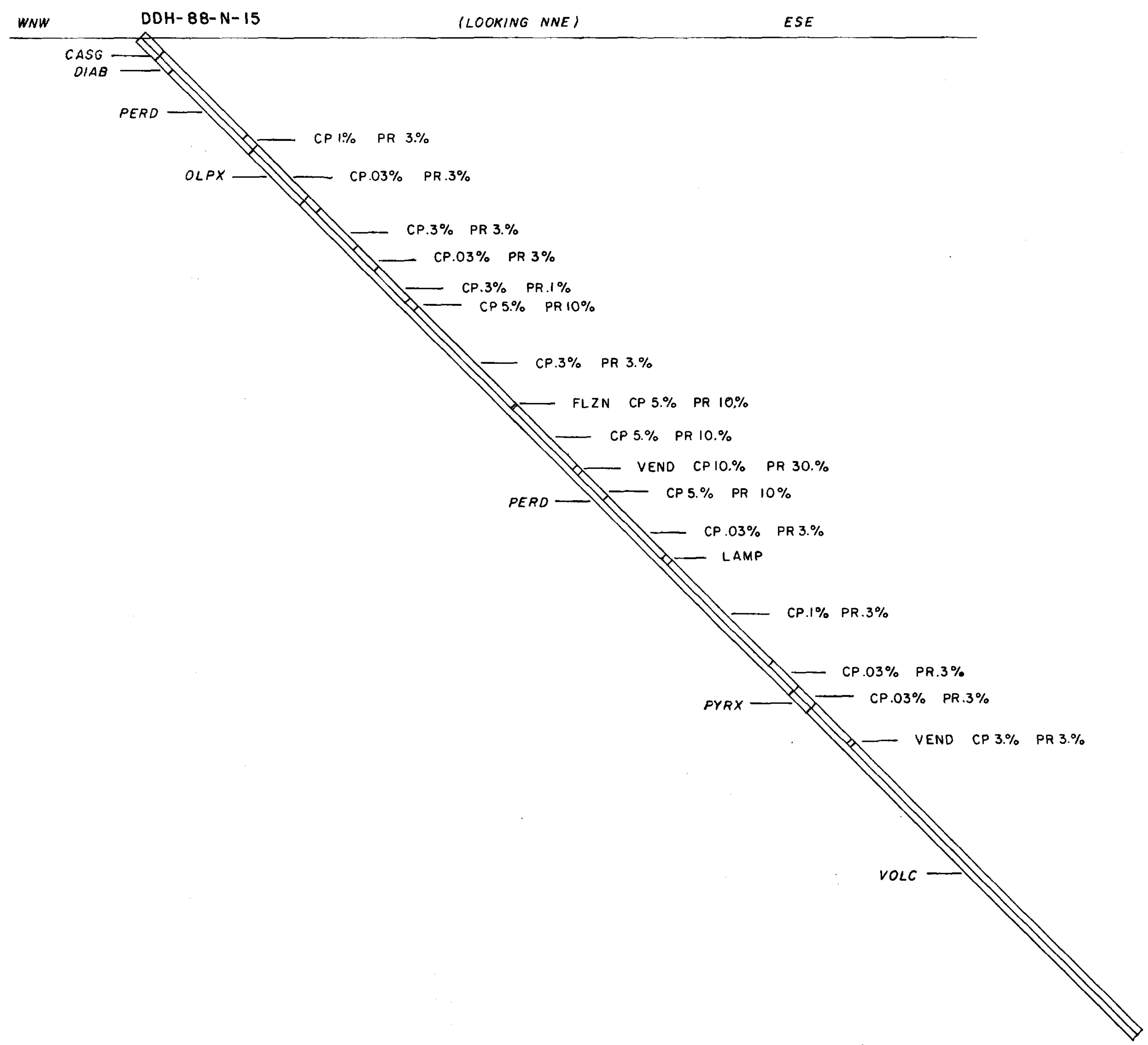
CP - CHALCOPYRITE
PR - PYRRHOTITE

5 0 5 10
metres

DDH 88-N-14

STATION 86.0 N 153.0 E

AZIMUTH 105.°
DIP -45°
LENGTH 92.68 m
COMPLETED DECEMBER 5, 1988



NORTHERN PLATINUM LTD.

KANICHEE MINE

63.5369
OM88-218
Appendix

DIAMOND DRILL HOLE CROSS SECTION GEOLOGY

LEGEND

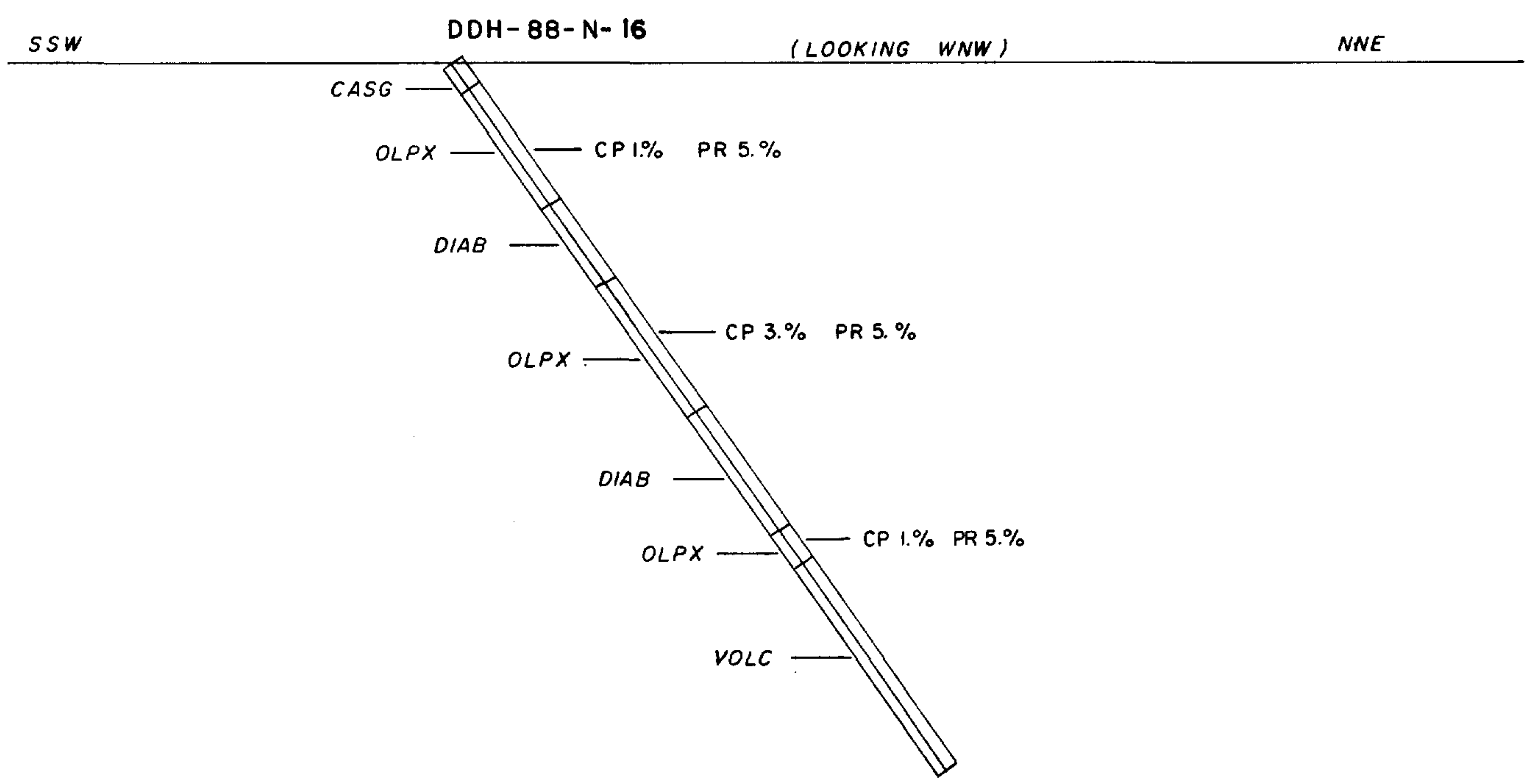
CASG	-	CASING
PERD	-	PERIDOTITE
OLPX	-	OLIVINE PYROXENITE
LAMP	-	LAMPROPHYRE DYKE
PYRX	-	PYROXENITE
VOLC	-	VOLCANICS , INTERMEDIATE
FLZN	-	FAULT ZONE
DIAB	-	DIABASE
VCBX	-	VOLCANIC BRECCIA
VEND	-	VEINED ROCK
DYKE	-	CHLORITIC DYKE
CP	-	CHALCOPYRITE
PR	-	PYRRHOTITE

5 0 5 10
metres

DDH 88-N-15

STATION 61.0 N 143.0 E

AZIMUTH 105°
DIP -45°
LENGTH 80.45 m
COMPLETED DECEMBER 9 1988



NORTHERN PLATINUM LTD.

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63.5364
OM88-213

DIAMOND DRILL HOLE CROSS SECTION GEOLOGY

Appendix 6.

LEGEND

CASG - CASING
PERD - PERIDOTITE
OLPX - OLIVINE PYROXENITE
LAMP - LAMPROPHYRE DYKE
PYRX - PYROXENITE
VOLC - VOLCANICS, INTERMEDIATE
FLZN - FAULT ZONE
DIAB - DIABASE
VCBX - VOLCANIC BRECCIA
VEND - VEINED ROCK
DYKE - CHLORITIC DYKE

CP - CHALCOPYRITE
PR - PYRRHOTITE

5 0 5 10
metres

DDH 88-N-16

STATION 108.0 N 282.0 E

AZIMUTH 020.°
DIP -55°
LENGTH 36.89 m
COMPLETED DECEMBER 12, 1988