MAR 19890004: MAYBELLE RIVER

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19890004

URANERZ EXPLORATION AND MINING LIMITED

ASSESSMENT REPORT FOR MINERAL EXPLORATION PERMITS

6884100001, 6884100002

AND

6884120001.

LOCATED IN TOWNSHIPS 104, 105 AND 106,

RANGES 4 AND 5, W4M.

FOR WORK COMPLETED DURING THE PERIOD OF

JANUARY 1, 1989 TO SEPTEMBER 30, 1989.

SUBMITTED TO THE ALBERTA DEPARTMENT OF

ENERGY AND NATURAL RESOURCES

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Project Geologist

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Date: October 10, 1989

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1. INTRODUCTION

1.1 Time of Investigations

This report contains work performed by, and on behalf of, Uranerz Exploration and Mining Limited during the period of January 1, 1989 to September 30, 1989.

1.2 Area

The Maybelle River project area is situated within northeastern Alberta, and lies to the south of Lake Athabasca. This is within N.T.S. area 74L, and is between latitudes 57°45'N and 58°30'N, and longitudes 110°00'W and 111°00'W (figure 1).

This report encompasses the exploration activities within Mineral Exploration Permits 6884100001, 6884100002 and 6884120001 located in Twps. 104 through 106 inclusive, Rngs. 4 and 5 inclusive, W4M (Table 1, figure 2).

2. REGIONAL GEOLOGY

The Maybelle River area is situated near the northwestern edge of the Canadian Shield, on the western margin of the Athabasca Basin. This is within a portion of the Churchill Structural province which remains little understood due primarily to the lack of outcrop. As a result, there has been relatively limited activity by both exploration companies and government agencies.

According to the lithostructural subdivision which has been developed by workers within the adjacent portion of Saskatchewan, the project area falls within the Firebag Domain of the Western Craton (Lewry and Sibbald, 1980). A more recent paper by Lewry et al. (1985) describes a new series of regional lithostructural subdivisions for the western Churchill Province. Within this scheme, the area which is bounded on the east by the Virgin River-Black Lake Shear Zone and to the west by the Macdonald Fault is called the Amer Lake Zone (figure 3, inset). It is projected to extend southwesterly to the Cordillera beneath the Interior Platform. To the north it extends northeasterly through to the eastern Arctic and probably beyond. This zone is somewhat synonymous with the former Western Craton, but now encompasses the geology of the entire western shield region.

Table 1: Summary of Dispositions - Maybelle River Project

No.	Province	Permit	Date of Recording	Area ha
1	Alberta	6884100001	October 16, 1984	6,384
2	Alberta	6884100002	October 16, 1984	1,764[1]
3	Alberta	6884120001	December 13, 1984	6,704
4	Alberta	6886050002	May 30, 1986	9,216
5	Alberta	6886050003	May 30, 1986	9,104
6	Alberta	6886050004	May 30, 1986	8,896
7	Alberta	6886050005	May 30, 1986	9,088
8	Alberta	6886050006	May 30, 1986	9,216
9	Alberta	6887090002	September 2, 1987	9,216
10	Alberta	6888030001	March 25, 1988	5,632
11	Alberta	6888030002	March 25, 1988	8,704
12	Alberta	6888030003	March 25, 1988	8,448
13	Alberta	6888030004	March 25, 1988	6,912
14	Alberta	6888030005	March 25, 1988	7,936
15	Alberta	6888040001	April 19, 1988	4,608
16	Alberta	6888040002	April 19, 1988	8,448
17	Alberta	6888040003	April 19, 1988	8,704
18	Alberta	6888040004	April 19, 1988	8,192
19	Alberta	6888040005	April 19, 1988	6,912
20	Alberta	6888040006	April 19, 1988	9,216
21	Alberta	6888040007	April 19, 1988	9,216
22	Alberta	6888040008	April 19, 1988	7,616
			Total	170,132

Notes: [1] reduced from 3,376 ha at end of first term.

Lewry et al. (1985) characterize the Amer Lake Zone as a semicratonic foreland which consists of an Archean basement with isolated remnants of Aphebian cover rocks. The overall level of Hudsonian overprinting is low but variable, with restricted brittle to plastic zonal reworking, huge shear zones, extensive Hudsonian granite plutonism and isotopic resetting. The outliers of Aphebian supracrustals are thought to include both passive marginal platformal to miogeoclinal assemblages and local foreland basin sequences, the ages of which may be widely differing and difficult to correlate.

Within both northern Alberta and Saskatchewan, much of the Amer Lake Zone is comprised of Archean cratonic domains in which the upper amphibolite to pyroxene granulite facies paragneisses and Archean structures are mildly retrograded and refoliated.

As there is no known outcrop within the project area, its lithostructural setting remains conjectural. The basement has been mapped both to the north and south of the project area as: i) probable pre-Kenoran aged banded granite gneisses which show evidence of both an earlier granulite facies metamorphism and a later amphibolite facies overprinting; ii) high grade, layered to banded metasediments of probable Archean age, found principally within the granite gneisses; iii) a series of Aphebian-aged intrusive, massive to foliated, amphibolite facies anatectic granitoids, which formed mantled gneiss domes and which show several phases of related (Hudsonian?) deformation; and iv) isolated outliers of low grade metasedimentary and metavolcanic rocks which lie in apparent unconformity upon the Archean granite gneisses, but which are in an uncertain position relative to the Aphebian granitoids (Langenberg and Nielsen, 1982; Godfrey, 1969; Godfrey and Langenberg, 1978). There are no evidences of metamorphosed Aphebian supracrustal rocks in outcrop. Burwash (1978) however, in a study of the subsurface extension of the basement beneath the Phanerozoic cover rocks of the Interior Platform did recognize metasedimentary rocks, and suggests that perhaps only the keels of infolded Aphebian sediments remain.

Unconformably overlying the basement are sandstones which belong to the Helikian-aged Athabasca Group. The western margin of the basin has been reinterpreted westwards a number of times, most recently by Wilson (1985), who places it as nearly coincident with the Richardson River, 12 to 15 km west of the centre of the project area (figure 3). Drilling has indicated the presence of a basement inlier within the south-central portion of the project area.

The irregular, eastern border of the Phanerozoic sediments is also interpreted as lying for the most part to the west of the project area. However, some drillholes within the project area intersected what may be embayments or outliers of Devonian-aged Methy Formation dolomites.

Extensive glacial drift and outwash cover the whole of the project area. Of note is a small area of active sand dunes which lies immediately to the west of the project area.

3. INVESTIGATIONS

Exploration work conducted during the reporting period is summarized in Table 2.

Table 2: Summary of 1989 Field Program Activities for Permits 6884100001, 6884100002 & 6884120001, to 30-Sept-89.

Activity	Production	
6884100001		
Line cutting:	3.1	km
Diamond drilling:	330.3	m
Lithogeochemistry:	12	sa
XRD clay analysis:	12	sa
Time domain EM:	4	days
Access roads:	6	km
6884100002		
Grid rechaining:	1	km
Diamond drilling:	270.3	m
Lithogeochemistry:	30	sa
XRD clay analysis:	8	sa
Time domain EM:	1.6	days
Access roads:	0.5	km
6884120001		
Grid rechaining:	0.4	km
Diamond drilling:	248	m
Lithogeochemistry:	18	sa
XRD clay analysis:	11	sa
Time domain EM:	0.7	days
Access roads:	10	km

3.1 Diamond Drilling

A total of 848.6 metres (4 holes, ddh MR61, MR63, MR64 & MR67) of NQ-sized drilling was completed (Table 3, map 1).

Downhole (total count) radiometric probing (Mt. Sopris 2500 with G375A, GF375A, or ST-22 probes) was routinely performed through the rods. The output was captured both digitally and on a analog strip chart. The geological and radiometric logs are contained in Appendix 1.

Table 3: Maybelle River Project - 1989 Diamond Drilling Summary for Permits 6884100001, 6884100002 & 6884120001

DDH	LINE & STATION	PERMIT	OB	AGp	UC	BSMT	DEPTH	AZ.	DIP	START	FINISH
MR61x	L148+00N/173+00E	6884100001	34.1	-	-	0.0	75.3	240	-60	7-Feb-89	11-Feb-89
MR61	L148+00N/173+01E	6884100001	34.1	119.2	182.3	72.7	255.0	240	-60	11-Feb-89	16-Feb-89
MR63	L128+00N/165+60E	6884120001	19.8	25.7	74.9	97.9	172.8	225	-60	21-Feb-89	24-Feb-89
MR64	L92+00N/161+20E	6884100002	28.0	73.9	117.8	152.5	270.3	225	-60	24-Feb-89	2-Mar-89
MR67	L128+00N/164+95E	6884120001	8.5	20.6	66.0	9.2	75.2	-	-90	30-Mar-89	2-Apr-89
		TOTALS=	124.5	239.4		332.3	848.6				

NOTES: OB = Overburden, AGp = Athabasca Group, UC = Unconformity, BSMT = Basement, U = Uranium, Gf = Graphite; all depths are along the DDH.
MR61x was abandoned due to drilling difficulties.

MR61: L148+00N/173+01E, 240°/-60° (map 1 & graphic-log 1). This hole was a follow-up of drillholes MR20 and MR21 in which were contained geochemically anomalous values of U, Pb, and MgO. The target was the possible intersection of graphitic gneisses as interpreted from the lithologies in MR20/21 and their position relative to similar rocks in the Dragon Lake area. It had been interpreted that both of these holes had underdrilled the targeted graphitic gneisses. MR61 was collared so as to intersect the unconformity 50 m west of MR20. The original EM-37 conductivity-thickness value was 21 siemens.

MR63: L128+00N/165+60E, 225°/-60° (map 1 & graphic-log 2). The target of this hole was the follow-up of the basement-hosted nickel-uranium mineralization intersected in holes MR25, and MR30-MR33.

MR64: L92+00N/161+20E, 225°/-60° (map 1 & graphic-log 3). The target of this reconnaissance hole was the southern extension of the favourable C6/C6a conductor and lithostructural horizon. This hole was spotted 3.6 km south from the next hole to the north (MR25), on L128N. A broad, 50-metre wide, 16 siemens, conductive zone, having an estimated vertical depth of 190 metres, was defined by resurveying this year with EM-37 prior to drilling. The target was estimated to be near vertical in dip. Weaker, flanking, EM responses were also outlined to the east of the axis on which this hole was spotted.

MR67: L128+00E/164+95E, -/-90° (map 1 & graphic-log 4). The target of this vertical hole was to intersect, at the unconformity, the up-dip projection of the graphitic horizon seen in MR63. Significant hydrothermal alteration was present in MR63 in both the Athabasca Group and basement rocks, as was a five metre interval of brecciated graphitic gneisses in the basement. This hole was spotted 27 metres grid-west along the unconformity of MR63.

3.2 Lithogeochemistry - Drillcore

A total of 39 core samples were submitted for chemical analyses. In addition to the 1 metre split core samples collected through mineralized or anomalous sections, successive 10-metre composites through each of the Athabasca Group formations were routinely collected in each hole. The composite material consisted of a piece of core collected every 1.5 metres. All samples were analyzed for 25 major, minor, and trace elements by an I.C.P./A.A. package, plus total and partial uranium, boron, arsenic, and bismuth (Table 4). The data is contained in Appendix 2.

Table 4: Routine Lithogeochemical Analyses

Element (or oxide)	Detection Limit	Accuracy at background levels	Digestion	Method
Al_2O_3	0.1	± 0.2	$HF/HNO_3/HClO_4$	AA
Fe_2O_3	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
CaO	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
MgO	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
K_2O	0.01	± 0.025	$HF/HNO_3/HClO_4$	AA
Na_2O	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
Ni	1	± 1	$HF/HNO_3/HClO_4$	AA
Pb total	2	± 2	$HF/HNO_3/HClO_4$	AA
Pb partial				
Mo	5	± 2.5	$HF/HNO_3/HClO_4$	ICP
P_2O_5	0.01	± 0.01	$HF/HNO_3/HClO_4$	ICP
Zn	1	± 1	$HF/HNO_3/HClO_4$	ICP
Cd	1	± 1	$HF/HNO_3/HClO_4$	ICP
Co	2	± 1.5	$HF/HNO_3/HClO_4$	ICP
MnO	0.001	± 0.001	$HF/HNO_3/HClO_4$	ICP
Cr	1	± 30	$HF/HNO_3/HClO_4$	ICP
V	1	± 1	$HF/HNO_3/HClO_4$	ICP
Be	1	± 1	$HF/HNO_3/HClO_4$	ICP
Cu	1	± 1	$HF/HNO_3/HClO_4$	ICP
TiO_2	0.01	± 0.01	$HF/HNO_3/HClO_4$	ICP
Zr	1	± 5	$HF/HNO_3/HClO_4$	ICP
Y	1	± 1	$HF/HNO_3/HClO_4$	ICP
La	1	± 2	$HF/HNO_3/HClO_4$	ICP
Th	3	± 3	$HF/HNO_3/HClO_4$	ICP
Sr	1	± 5	$HF/HNO_3/HClO_4$	ICP
Ba	1	± 4	$HF/HNO_3/HClO_4$	ICP
U total	0.2	± 0.2	$HF/HNO_3/HClO_4$	Fluor.
U partial	0.1	-	4N HNO_3 70°C	Fluor.
As	0.2	± 0.2	$HF/HNO_3/HClO_4$	AA(Hyd.)
B	10	± 0.2	KOH Fusion	ICP
Bi				

3.3 Drillcore Semi-Quantitative XRD Clay Analyses

Twenty-nine Athabasca Group sandstone samples were submitted for quantitative XRD clay determinations (illite, chlorite, kaolinite, % clay, and accessory mineral determinations). The material for these was taken from the 10-metre composite samples submitted for chemistry. The objective of these analyses is to outline anomalous clays (typically chlorite) related to U mineralization. This data forms part of Appendix 2.

3.4 Time Domain EM Surveying

A total of 6.3 days of time domain EM surveying was used to define drilling targets for the 1989 season (map 2). The contractor's report is contained in Appendix 3.

During February, 1989, a total of 4.2 km of fixed loop profiles and 0.8 km of moving loop profiles were completed under contract by JVX Ltd. of Toronto. The equipment used was a Geonics EM-37 unit, operating at a primary frequency of 30 Hz. For the fixed loop work, transmitter loop sizes varied from 200 m x 400 m for the shallowest targets, up to 800 m x 800 m over deeper sandstone-covered areas. For the moving loop surveys, loop sizes were 100 m x 100 m in one case and 200 m x 200 m in a second area. Receiver measurements were taken at 50 m intervals on all profiles. The work is summarized in table 5.

Table 5: Summary of 1989 TDEM Surveying in Permits 6884100001, 6884100002 & 6884120001

Grid Area	Conductor Target	Permit #	Fixed Loop (km)	Moving Loop (km)
L164N	C6a,C6b	6884100001	1.9	0.8
L92N	C6	6884120001	0.7	
--	--	6884100002	1.6	
		TOTAL	4.2 km	0.8 km

Area 1, Line 164N: The objective of this work was to provide better resolution of the C6a, C6b conductor system in the vicinity of 1986 DDH MR22. A new grid of 3 short lines was cut perpendicular to the established basement strike direction, as shown in Maps 1 and 6.

Fixed loop TEM profiles were completed from opposite 200 m x 400 m loops and clearly identified the presence of the two basement conductors spaced approximately 225 m apart. The

horizontal component profile data from both transmitter loops are shown in Figure 4. The western conductor horizon (C6a at 8+75E, line 1+00N) is the stronger, with an estimated conductance of 31 S, versus 18 S for the eastern conductor (C6b at 11+00E, line 1+00N). Evidence of an easterly dip (steep) is noted for the C6a horizon. Due to the shielding effect of the dominant C6a conductor, or possibly due to an unusual dip orientation, the eastern conductor is not visible in the fixed loop coverage from the western transmitter loop. The TEM responses are compatible with depths to basement of 165 m, as indicated in the nearby drillhole MR22.

Moving loop profiles were completed on line 1+00N to add more information on the C6b horizon. Two transmitter to receiver spacings (100 m and 200 m from the transmitter loop centre) were used to provide a comparison of conductor responses and resolution. The horizontal components (Hx) of both sets of spacing data are shown in Figure 5. In this representation the data are plotted at the receiver location (100 m or 200 m to the east of the transmitter loop), which should provide an Hx component peak in Figure 5 at each conductor location.

The 100 m spacing profile displays better spacial resolution but is more affected by noise than the 200 m spacing profile. In both cases, the dominant C6a conductor is clearly shown in late time channels in the vicinity of 8+75E. The C6b conductor is confirmed to be in the vicinity of 11+00E. At this location there is a striking migration of the late time moving loop peak responses towards the east, which is probably caused by a shallow angle of dip towards the east for this conductor.

<u>Area 2, Line 92N:</u> Fixed loop TEM coverage was obtained from two 200 m x 400 m loops as shown in Map 6. The C6 conductor horizon in this vicinity had previously been identified by a 1985 Horizontal Loop EM survey (an extremely weak response) and by a nearby 1986 TEM survey (EM-37 by MPH Consulting, Ltd.).

The horizontal component data from both fixed loops are shown in Figure 6. The late time peak responses from both loops settle at 160+00E, the C6 conductor axis, with a decay time constant of 3 msecs - equivalent to a conductance value of 16 S. The conductance value obtained from the eastern loop is slightly larger, suggesting a steep (near vertical) dip towards the northeast. At early times (channels 1 to 6) a weaker basement conductor is visible in the western loop profile at 157+75E. This has a rapid decay (0.1 msecs) and low conductance value (0.8 S), and possibly represents a poorly conductive segment of the flanking conductor horizon C5. Some early time migrating responses on the eastern side

of C6 (from the eastern loop coverage) could represent a 200 m-wide package of low resistivity basement (ie. weakly graphitic or brecciated and altered basement) and/or altered sandstone in the region 160+00E to 162+00E.

The apparent depth of the C6 conductor axis, from the present coverage, is 190 m. This value may be overestimated because of the interference of the nearby weakly conducting features mentioned above.

3.5 Linecutting

Linecutting which was carried out in the course of the geophysical surveying was undertaken by Uranerz personnel.

3.6 Access Road Building

A contractor was hired to open both existing drill access trails as well as push new trails to this year's drilling sites.

4. STATEMENT OF EXPENDITURES

Table 6: 1989 Year to Date Expenditures by Permit, to 30-Sept-89.

Permit 6884100001

Line cutting:	3.1 km @	$400.00	$1,240
Diamond drill:	330.3 m @	$106.00	$35,012
Lithogeochem:	12 sa @	$39.63	$476
XRD clay:	12 sa @	$22.00	$264
Time domain EM:	4 days @	$1,880.00	$7,520
Access roads:	6 km @	$995.00	$5,970
		subtotal =	$50,481
Prorated costs*:			+ $43,180
		1989 total =	$93,661

Permit 6884100002

Rechaining:	1 km @	$200.00	$200
Diamond drill:	270.3 m @	$106.00	$28,652
Lithogeochem:	15 sa @	$39.63	$ 594
XRD clay:	8 sa @	$22.00	$176
Time domain EM:	1.6 days @	$1,880.00	$3,008
Access roads:	0.5 km @	$995.00	$498
		subtotal =	$33,128
Prorated costs*:			+ $28,336
		1989 total =	$61,464

Permit 6884120001

Rechaining:	0.4 km @	$200.00	$80
Diamond drill:	248 m @	$106.00	$26,288
Lithogeochem:	12 sa @	$39.63	$476
XRD clay:	9 sa @	$22.00	$198
Time domain EM:	0.7 days @	$1,880.00	$1,316
Access roads:	10 km @	$995.00	$9,950
		subtotal =	$38,308
Prorated costs*:			+ $32,767
		1989 total =	$71,074

*Prorated costs include all directly allocatable permanent and temporary labour, materials and supplies, transportation, rentals and ownership costs, land tenure, insurance, communications, and overhead. These costs are prorated based on the proportion of those costs itemized above to the actual total expenditures for that year.

Declared before me this 16th day of October, 1989 at Saskatoon, Saskatchewan:

R. Loewer

R. Loewer

Roland Loewer

A Commissioner for oaths in and for Saskatchewan

My appointment expires Dec 31 19[illegible]

I certify that the above statement of expenditures is correct.

[redacted]

Rodney G. Orr
Project Geologist

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October 18, 1989

DECLARATION

I, James D. Murphy, Senior Geologist of Uranerz Exploration and Mining Limited and as a registered Professional Geologist in Alberta, do hereby declare, that I have reviewed the assessment submission made by Rodney G. Orr for Mineral Exploration Permits 6884100001, 6884100002 and 6884120001 and hereby attest to its veracity.

James D. Murphy
P. Geol. Alberta

:sc

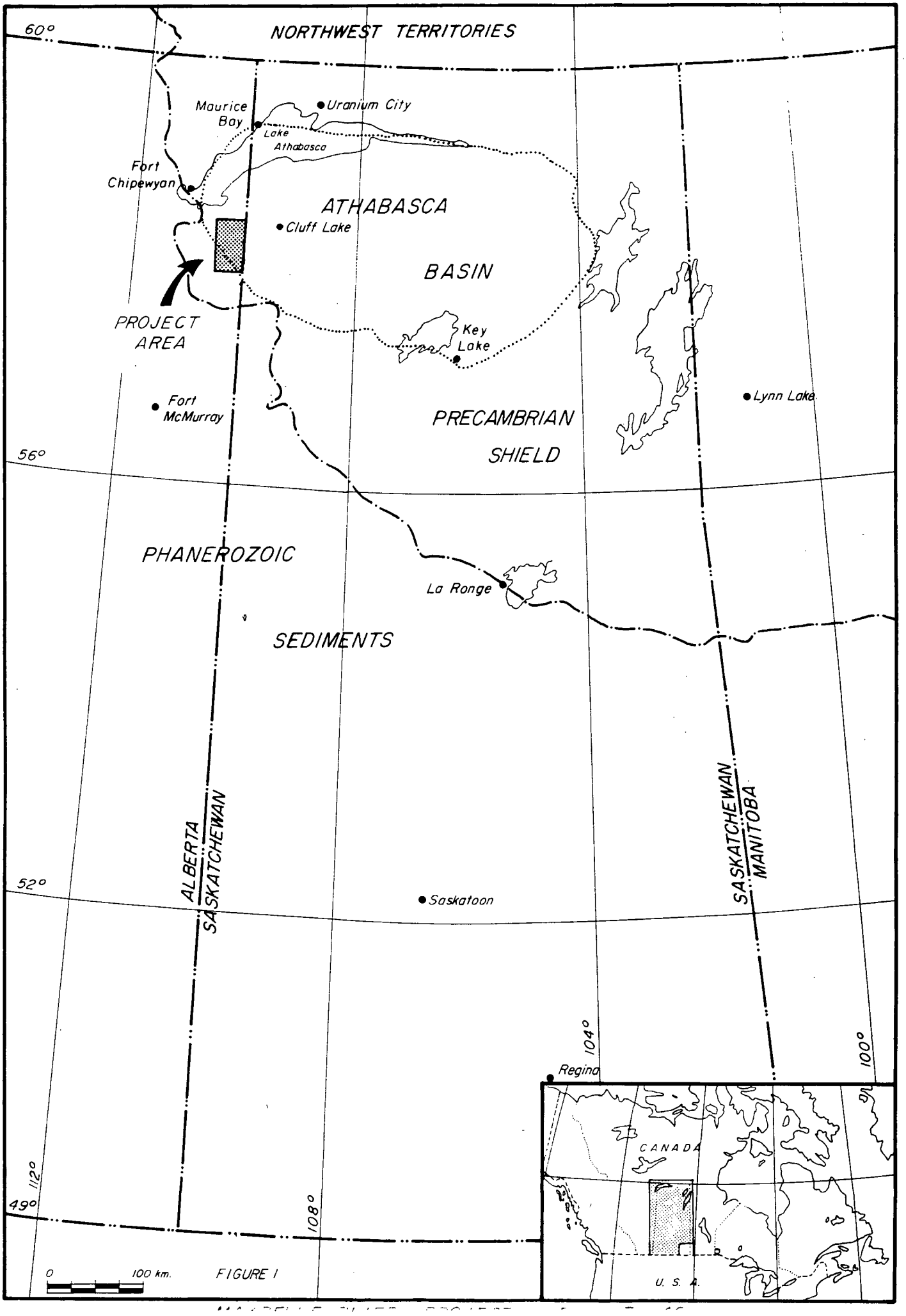
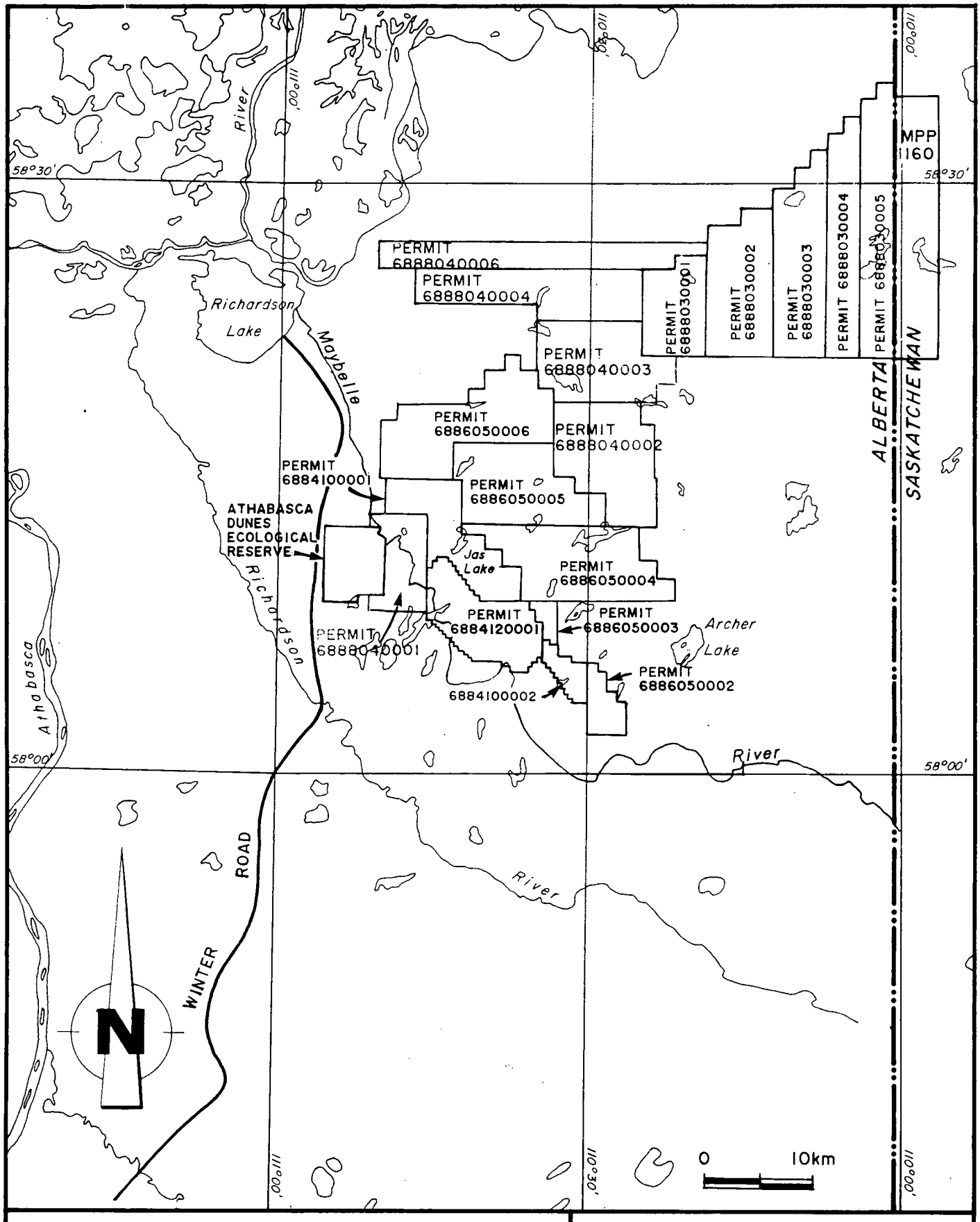

NORTHWEST TERRITORIES
60°
Maurice Bay
Uranium City
Lake Athabasca
Fort Chipewyan
ATHABASCA
Cluff Lake
BASIN
PROJECT AREA
Key Lake
Fort McMurray
Lynn Lake
PRECAMBRIAN SHIELD
56°
PHANEROZOIC
La Ronge
SEDIMENTS
ALBERTA
SASKATCHEWAN
SASKATCHEWAN
MANITOBA
52°
Saskatoon
104°
100°
Regina
CANADA
112°
49°
108°
U. S. A.
0
100 km.

FIGURE 1

42-4



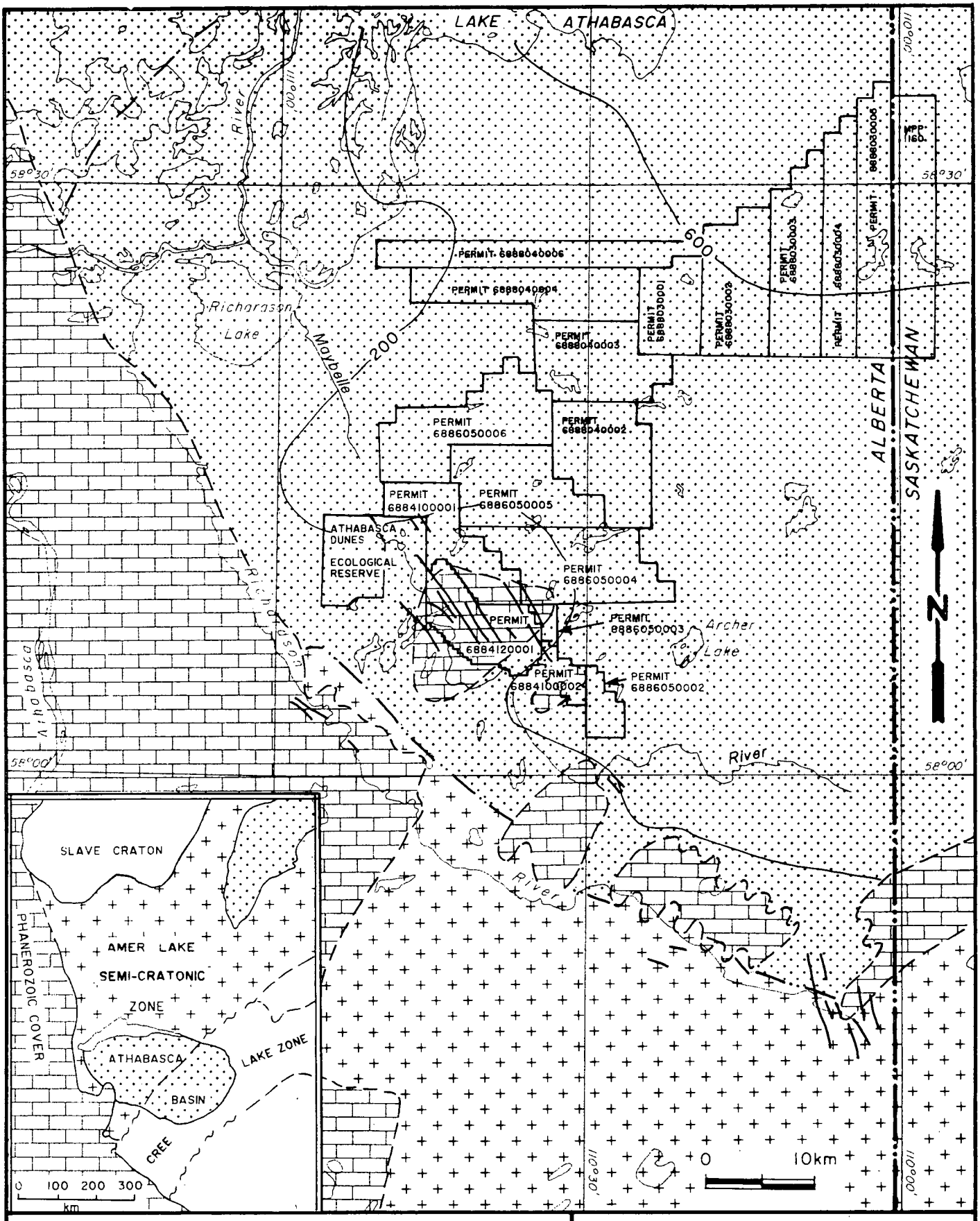
OCTOBER 1989

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42

LAND STATUS

SCALE 1:500,000

FIGURE 2



LEGEND:

OCTOBER 1989

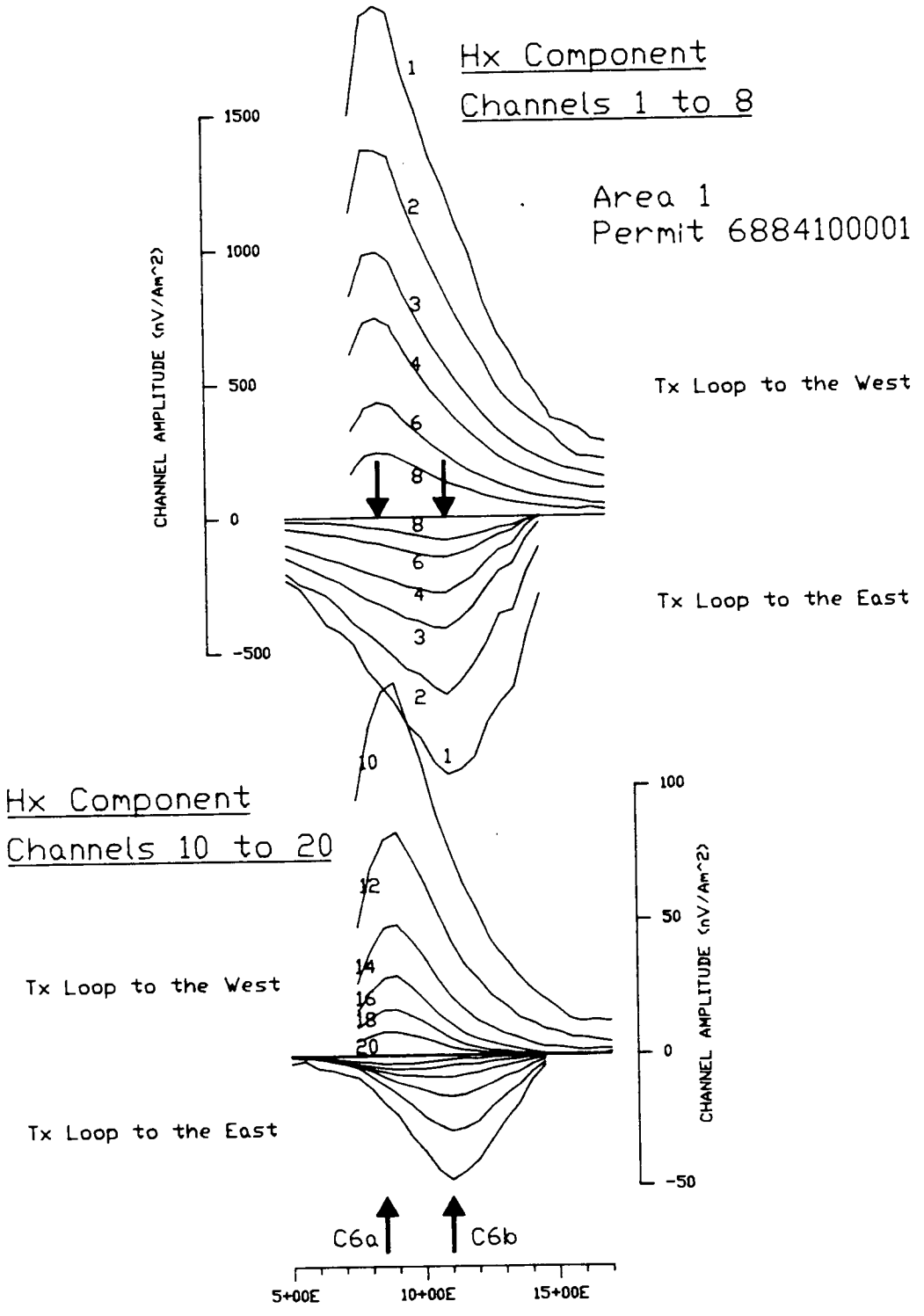
- EM CONDUCTOR AXIS
- PHANEROZOIC SEDIMENTS
- ATHABASCA GROUP SANDSTONE (HELIKIAN)
- UNDIFFERENTIATED PRECAMBRIAN BASEMENT
- 200 ATHABASCA GROUP ISOPACH

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42

GENERAL GEOLOGY

SCALE 1:500,000

FIGURE 3

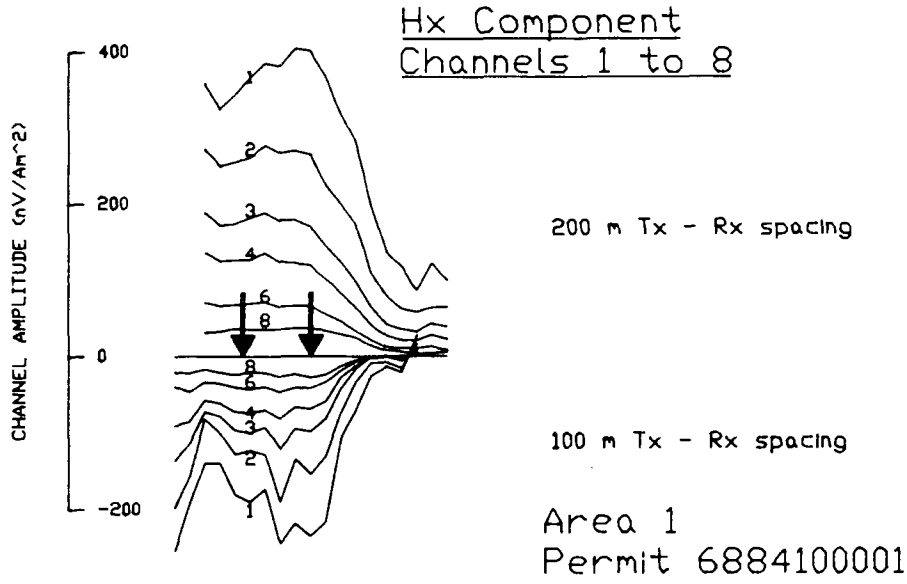


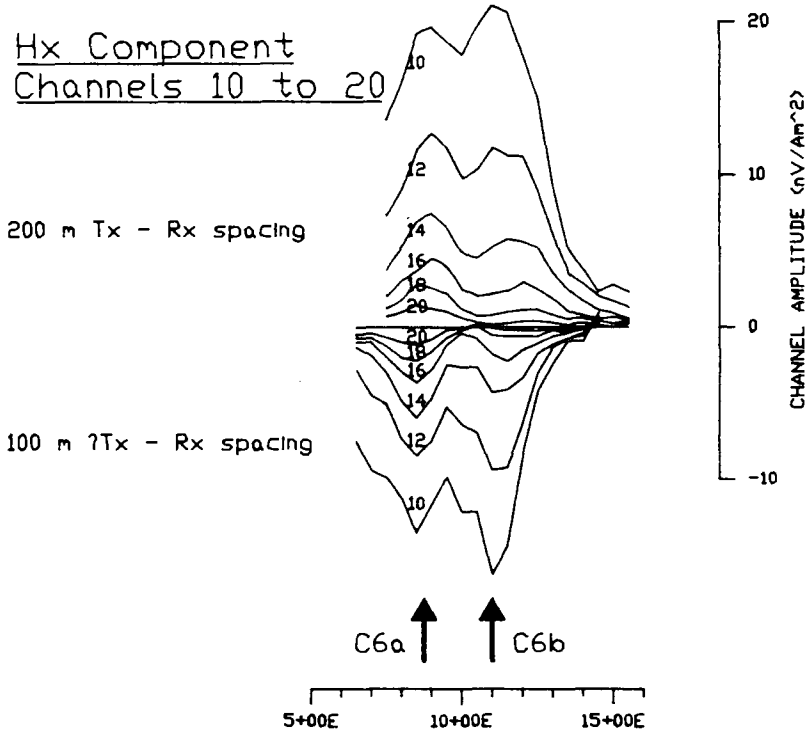
Transmitter Loop Sizes : 200 m x 400 m

C6a ↑ EM Conductor Axis

Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
EM-37 FIXED LOOP SURVEY
LINE 1N
Hx COMPONENT DATA
Survey by JVX Inc., 1989

Scale 1:25000 PR 05/89 Figure 4





Transmitter Loop size : 100 m x 100 m

Transmitter Orientation : To the West

Data is plotted at the receiver location.

C6a ↑ EM Conductor Axis

Uranerz Exploration and Mining Limited

MAYBELLE RIVER PROJECT 71-42

EM-37 MOVING LOOP SURVEYS

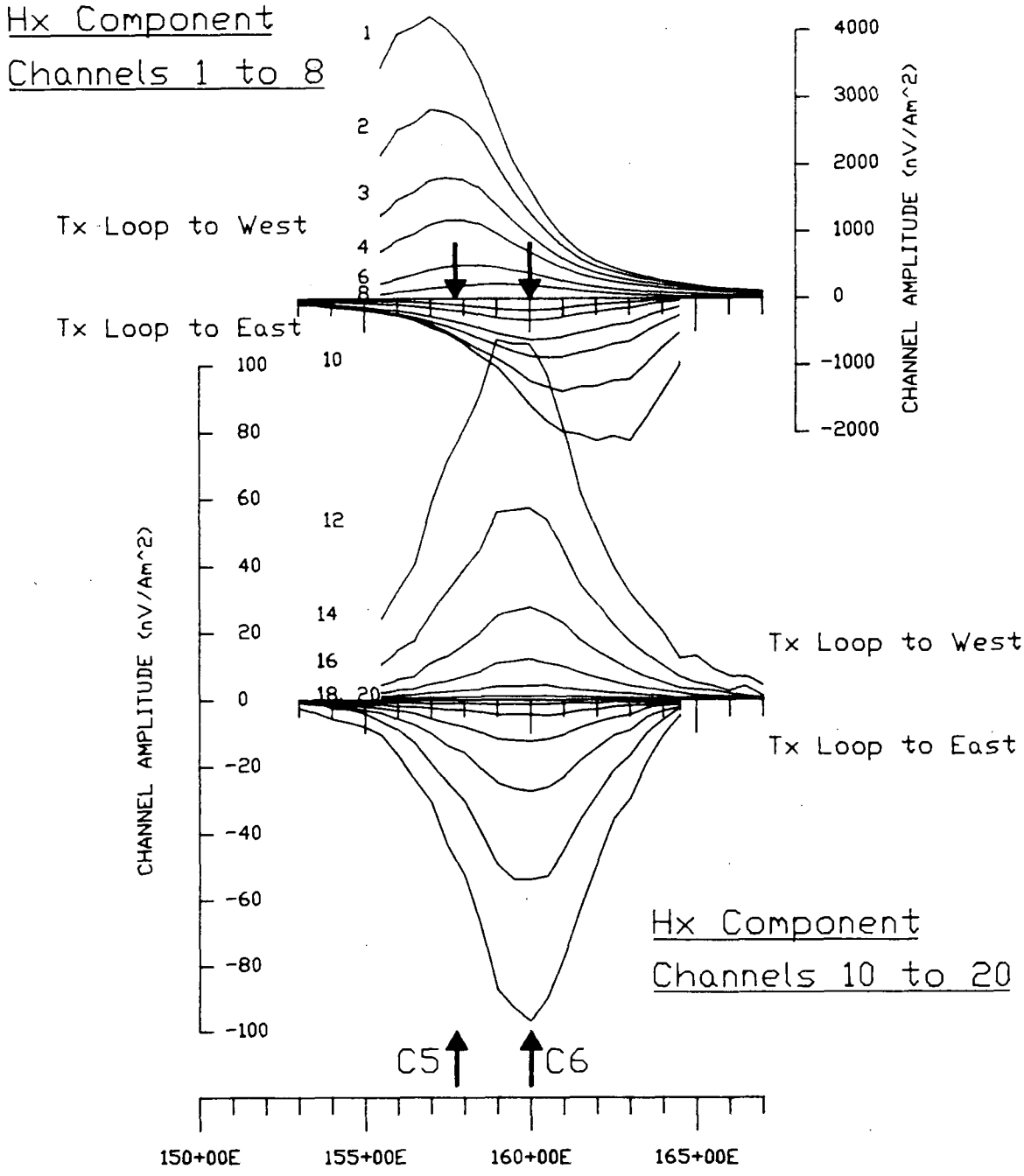
LINE 1N

Hx COMPONENT DATA

Survey by JVX Inc., 1989

Scale 1:25000 PR 05/89 Figure 5

Area 2 Permit 6884100002



C5 ↑ EM Conductor Axis

Transmitter Loop Sizes : 400 m x 200 m

Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
EM-37 FIXED LOOP SURVEY
LINE 92N
Hx COMPONENT DATA
Survey by JVX Inc., 1989
Scale 1:20000 PR 05/89 Figure 6

Appendix 1:

Drillcore Geological Descriptions

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR61

AREA: Maybelle River	DISPOSITION: 688410000 1 PROJECT NO.: 7142	PAGE 1 OF 13 DRILLED BY: Advance
COORDINATES: L148 N 173+01 E	PLASTIC PIPE: yes (no) DEPTH: — CASING REMOVED: (yes) no DEPTH: 70.7	COMMENCED: Feb. 14/89 COMPLETED: Feb. 16/89.
TOTAL DEPTH (m): 255.8 m ELEVATION (m A.S.L.): 312 (est.) DIP/AZIMUTH: -60°/240°	GEOLOGY BY: David Mitchell CORE STORED AT: Jas Lake	CORE SIZE: NQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 13	DOWN-HOLE PULSE-EM yes (no)

DIP TEST: Pajari

TEST AT(m)	255.8															
DIP	-59°															
AZIMUTH	248°															

UNIT		FROM - TO	SUMMARY OF OBSERVATIONS
		0 - 61.3*	Overburden + Devonian + upper portion of Manitou F.
Athabasca Group	Manitou Falls Fm	61.3 - 165.5m	Sandstone mod-str. bleached, weak to strong silicification, locally strongly fractured and fault brecciated, bitumen, pyrite and euhedral quartz common along fractures.
	Fair Point Fm	165.5 - 182.3m	Gritty sandstone with clay matrix, locally conglomeratic, weakly bleached with weak maroon and red hematite.
Basement.		182.3 - 199.9m	Mod. bleached, strongly hematized, weakly chloritized qtz-feldsp-gneiss (granitoid), regolith, massive to locally foliated (protomylonitic to mylonitic)
		199.9 - 218.5	Mod. hem., str. chlor. qtz-fsp-biotite-gneiss (red/green zone)
		218.5 - 255.8	Mod-strong (locally fresh) qtz-(fsp)-(garnet if)-biotite gneiss (green zone)-chlor. alt. dec. at depth.
		*34.1 - 63.1 m	Devonian Sed. - inferred from DDH MR-61X and gamma log

INVESTIGATIONS: (DOWN-HOLE GAMMA-LOG, GEOCHEMISTRY, MINERALOGY, OTHERS)

* Triconed through incompetant sandstone + Devonian, see MR61x for detail description of Devonian and upper portion of Manitou Falls.

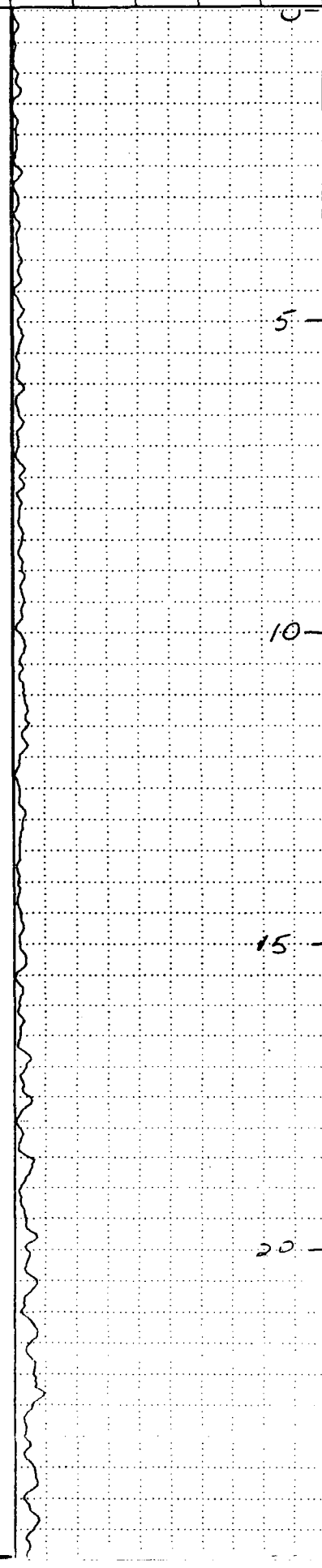
SAMPLES FOR LITHOGEOCHEM

MR-61-1	172.0-182.0	SS	F.P.	MR-61-7	115.0-125.0	SS	MF
-2	166.0-172.0	SS.	F.P.	-8	105.0-115.0	SS	MF
-3	155.0-165.0	SS	MF.	-9	95.0-105.0	"	"
-4	145.0-155.0	"	"	-10	85.0-95.0	"	"
-5	135.0-145.0	"	"	-11	75.0-85.0	"	"
-6	125.0-135.0	"	"	-12	71.0-75.0	"	"

DDH No. MR61

PAGE 2 OF 13

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 0 20 40 60 80 100	SAM #
					OVERBURDEN					0	
										5	
10										10	
15										15	
20										20	



DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 0 20 40 60 80	SAM #
25										25	
30										30	
35					Devonian (34.1-63.1m) - inferred from DDH MR-61X and gamma log					35	
40										40	
45										45	
50											

DDH No. MR-61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BITUMEN	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	GAMMA LOG (CPS/DIV) 0 20 40 60 80	SAM #
50													
55												55	
60												60	
					63.1 m								
					Possible start of Athabasca Group - Manitou Falls Fm. inferred from DDH MR-61X								
65												65	
70					CASING TO 70.7 m							70	
					ATHABASCA GROUP Manitou Falls Fm. 70.7-165.5								
2	100	40	>30	≠40° ≠45° ≠50°	← green cta/ch frac fine-med grained sst. gen well sorted with occas. silt bands - weak-strongly bleached, weak red hematite, weak to strong silicification - local tectonite zone decreasing intensity with depth, mod. fract. - bitumen, sub qtz, pyrite conc along fractures	small [illegible]	STRONG				STRONG		MR-61-12

DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BITUMEN	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIF.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
75	98	60	>30		71.3 - 78.7 - local tectonite prod. moderate fracturing WK bitumen, euh qtz, pyrite (massive sph.) along fract surface av. ∓ 40° CA, ocass. ∓ 10° CA with str. euh qtz - strong silicif. & bleached, med gr sst - weak green clay on occass fract surf.							75	
.3	98	80	20	∓40° ∓25° T30°	78.7 - 88.2 - weak fracturing 79.0 - white-grey clay lined fract 78.4 - 2cm mudstone-silt interbed 79.5 - 1cm mudstone ∓ 40°								
80				∓30° op ∓50° op	← whitish clay-lined frac. common							80	MR-61-11
.3				∓60° op ∓20°	← sph. pyrite (tr)								
	100	90	6	T35° ∓30°	← sph pyrite (tr)						STRONG THRU TECT ZONES		
.4				∓60°	← whitish clay lined fract with trace massive pyrite (sooty)								
85	100	92	10	∓40°	2 small clay gouge, tr. pyrite							85	
				∓60°	← abund. pyrite								
				∓30° n	← small - 1-2 cm clay clasts (yellowish) with v. weak red hematite 30cm band								
.4				∓60° ∓60°	← tr. pyrite								
	100	70	25		87.9 - 88.8 - mod fracturing. ∓40° ← spheroidal pyrite common, white clay lined fractures. ∓30°		STRONG						
90				T 30°								90	
.5	100	50	>30	n ∓30° n ∓30° pyr ∓30°	white clay, pyr common on fract, abund. healed fract prod healed f breccia, euh. qtz on op. fract								MR-61-10
				∓10° ∓30°	fracture zone, abud pyr & euh qtz along fract. surface								
.5	100	96	10	∓30 pyr pyr ∓10° ∓0°	93.5 - 114.4 moderately bleached med gr sst with weak red hematite, occass relic lies rings weakly silicified, occass bitumen, pyrite (tr) on open fractures							95	
95				T 30°	96.8 - 101.0 occass c gr interbeds 1-10 mm alt with silt								
.6	100	97	3	T 30°	← small clay clasts 1-3 cm with red hem		MODERATE				WEAK		
.6													

DDH No. MR61

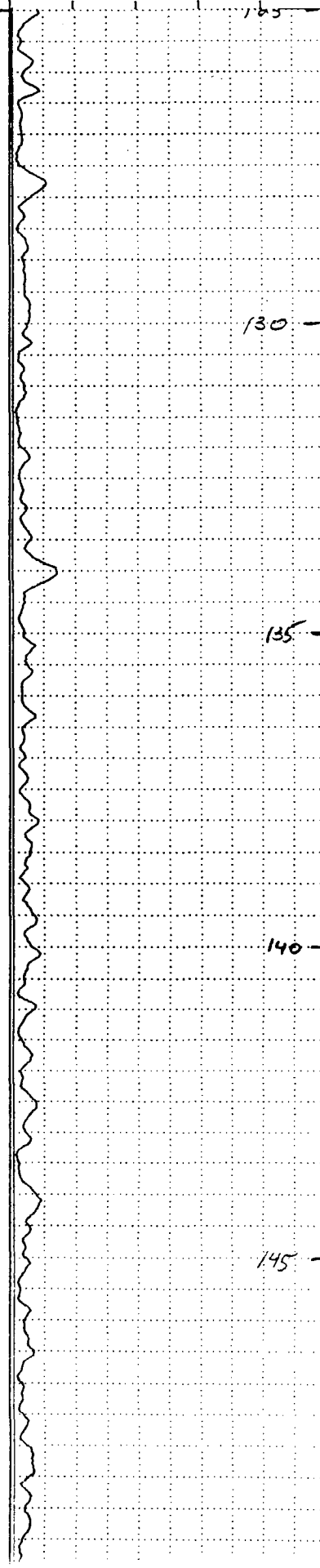
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIF.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
100	100	99	2		101.1 → periodic c. gr interbeds, with X-bedding evident, fine clay seams, occass. mud clasts but predomin m. grained.	MODERATE				WEAK		MR-61-9
.7				30°								
	100	97	3		clay clasts (1-3 cm) surr by dk rd hem band							
105				h ≠60°							105	
.7				≠40°	← greyish clay-lined fract							
	100	91	6	≠20°	107.3 - scatt pyr on fract							
					107.6 → 114.4 - red hematite v. weak prod faint pink coloration with weak Leisgang rings, occass. maroon hem. bands assoc. with fract. -weak silicification							
.8				≠60°								
110	100	91	8	≠30° ≠30°							110	MR-61-8
					← 3 cm clay gouge surr by maroon hem band							
.8				≠60°	← grayish clay lined fract							
	100	98	4									
					114.4 - 119.0 - red hematite (↑gr size) slightly more pronounced	MODERATE						
.9				h ≠70°	increased frequ. of thin silty-clay interbeds (fract mm's) & clay clasts							
115				30°	← 2 cm clay band						115	
	100	92	8	≠20°	← clay clasts surr by maroon hem, greyish clay lined healed fract							
.9				30° ≠60°	← grey clay lin fract							
	100	100	9	≠50° ≠60°	← white clay-lined fract							
120				≠50°							120	MR-61-[illegible]
					121.0 - 135.0 - strongly bleached, med gr. sst with cm wide siltstone interbeds	STRONG						
	[illegible]	97	[illegible]	30°	← grey mudstone band 5 cm wide							
				≠60°	grey mud-siltstone band ≈ 10 cm							

V. WEAK (conc. as pale rings along bedding planes)

DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIF.	SAM #
125	100	97	7	60°, 50°, 45°, 50°, 30°	white clay lined fracture; mudstone layer = 2 cm wide	STRONG		WEAK			MR-61-6
.1	100	94	6	15°	mud-siltstone bed ≈ 5cm wide						
130	100	100	2	60°							
.1				25°	mudstone beds ≈ 2cm ; 1cm						
135	100	93	7	50°, 60°	135.0 – 165.5 moderat. bleached, weak red hem, med gr sst., occas bitumen along fractures, course & fine gr. interbeds ↑ with depth - weak red hem. rings common	MODERATE				WEAK	MR-61-5
.2	100	97	3	50°							
.2				60°							
140	100	94	5		large vug (3cm) filled white clay						
.3				50°, 60°							
	100	97	1	50°, 30°	greenish white clay on frac; strong bitumen on fracture						
145											
				60°	sulfide (trace) on frac.						
					clay gouge (yellowish-white) 2cm wide						

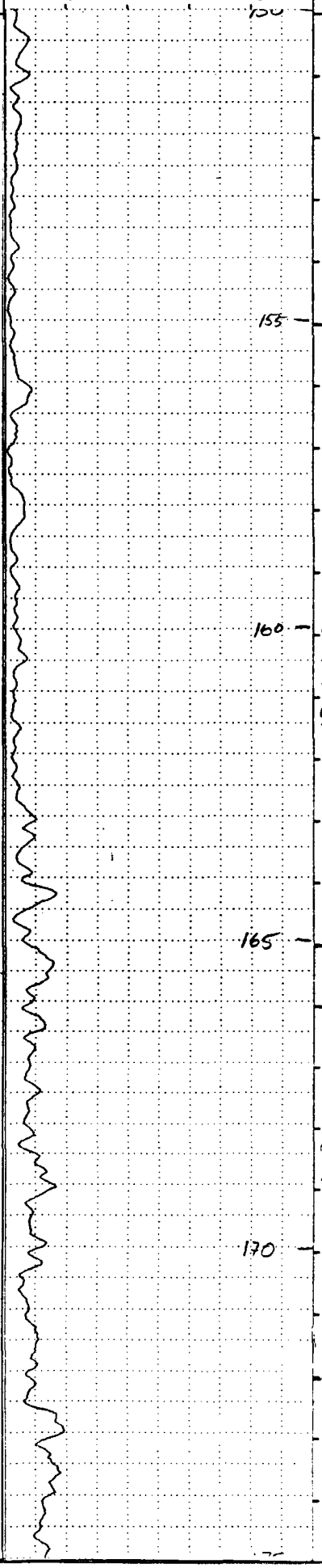
GAMMA LOG (CPS/DIV)



DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIF.	SAM #
150	100	93	7	T 30°	151.0 → increasing number of c. gr beds, bitum on fract						
.4				≠25°	← strong btu. on fract surface						
	100	97	4	≠50°	← dissm pyr						
155	100	97	1	≠50°	← 156.2-156.6 - moderate red hematite	MODERATE		WEAK		WEAK	
.5	100	91	8	T 40° ≠40° ≠30°	← strong bitumen on fract						
160				≠50°	← brownish white clay on fract suff by maroon hematite						
	100	91	7	≠50°	← weak bitumen on fract						MR-61-3
.6				≠10°	← healed fract with weak bitumen						
165 .5	100	98	8	≠30° ≠20° ≠40° btu	MF/FP CONTACT 165.5m						
.7	97	94	5	≠50° ≠40° ≠50° btu ≠30°	Fairpoint Fm. 165.5-182.3 - med-course grained, pebbly-conglomeritic sst with clay rich matrix, no visible bedding - weakly bleached with weak red hematite and weak maroon hem. locally - occass. siltstone interbeds near base - mod bitumen along fractures,	WEAK					
.7					165.5 → 172.8 - gritty, c gr sst with occass qtz pebbles < 2 cm common - weak red hemat						
170	100	78	12	≠40° ≠15° btu ≠15° ≠25°	171.6 → btu. on open fracture with ≈ 10cm friable sand						MR-61-2
.8	100	91	11	≠60° pyr ≠25° n ≠40°	172.8-175.7 med or gritty sst, qtz pebbles > 2-3 cm rare, sulfide on fract bands of mod maroon hematite red hematite weak but more evident ← clay gouge (2cm) c/w white clay, blk sl		WEAK	WEAK			

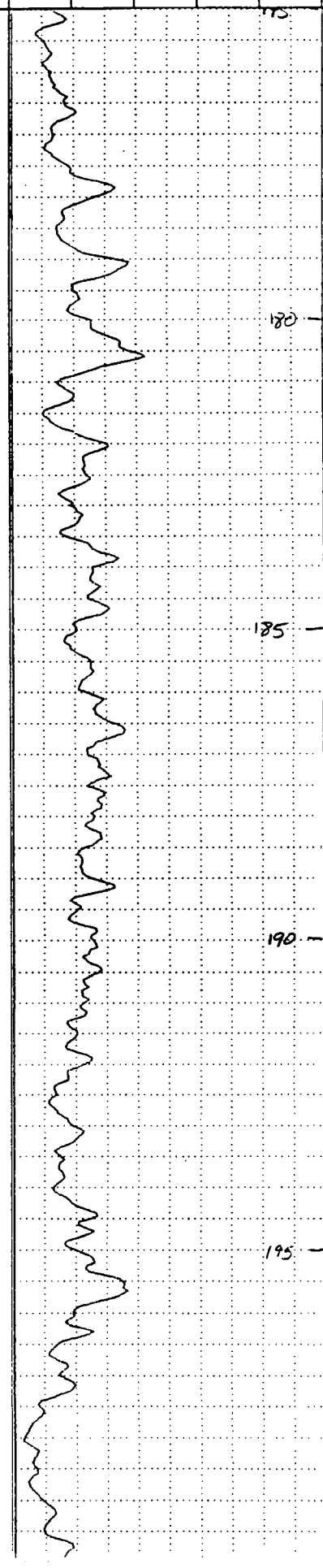
GAMMA LOG (CPS/DIV)



DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SAM #
175										
.8	100	88	9	≠60° ≠50°	175.7-177.4 - strong btu. c/w maroon h. c. grained with abund qtz clasts >2 cm		M WEAK	WEAK		
					177.4-178.2 - siltstone layer c/w occas. qtz pebble, mud clasts					
.9	100	88	8	≠80° ≠70° ≠40° ≠30°	178.2-182.3 - qtz pebble conglomerate (fanglomerate) containing ang. qtz frag. ranging in size mm's → >3 cm with occas. silt interbeds - maroon hematite bands more pronounced but still weak	WEAK	WEAK	WEAK		MR-61-1
180					siltstone interbed					
					U/C 182.3 m					
	100	85	8	≠20°	BASEMENT 182.3-199.3 - 'Red Zone' mod bleached (sericitized), strongly hematized weakly chloritized (regolith) quartz-feldsp-gneiss ? - locally granatoid, protomylonic to mylonitic, gniessic in texture					
185	100	94	16	≠30°	182.3-188.9 - strong hematiz, qtz, in overprinted gneissic texture - weakly foliated, weakly chloritic at end					
.1	100	94	12	≠20°	188.9-191.0 - hemat, sericit, qtz-(fdsp) protomylonite to mylonite - weakly chloritic, laminated qtz					
190										
.1	100	76	10	≠5°	191.0-199.9 - strong hemat, sericit, qtz-(fdsp)-gneiss - weakly chloritic	MODERATE	STRONG			
195	100	94	9	≠50°	← green clay on fract				WEAK	
.2	100	97	7	≠40°						
200										

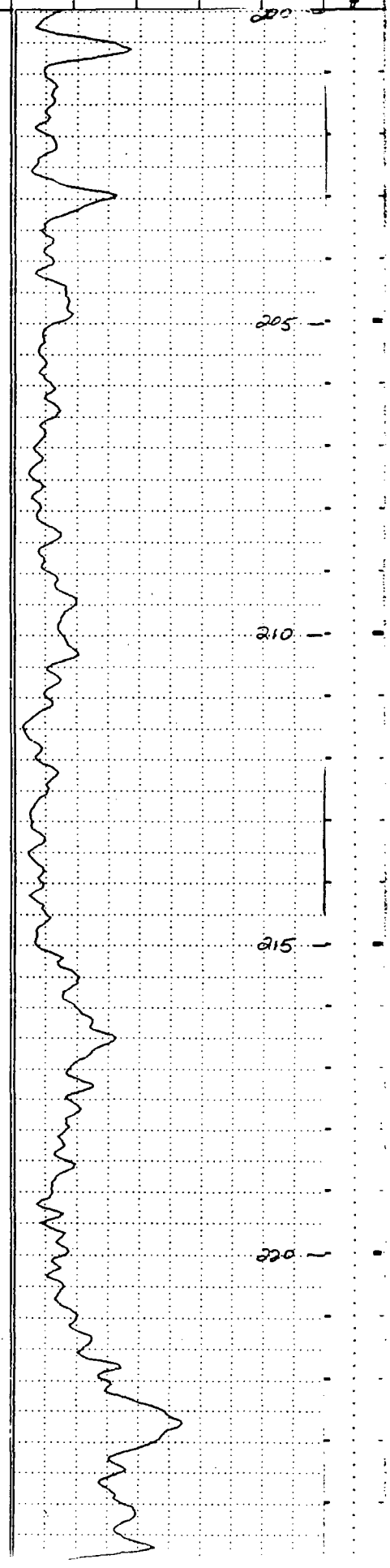
GAMMA LOG (CPS/DIV)



DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
200	100	88	8		199.9 - 218.5 - Red Green zone - qtz- (fsp)- (biot) gneiss - mod hematiz & mod- strong chlorite increasing with depth - gneissic (overprint) with intervals of v. strong hem & chlorit - numerous rehealed fract				
.3				∠20°					
205	100	94	15						
.3	100	94	9	∠40°			MODERATE		MODERATE
.3				∠40°					
210	100	94	5	∠30°					
				∠30°	210.9 - 211.3 - numerous vien-like fract filled with CO_3 - evid of dissolut & offsetting visible				
.4	100	85	12	∠10°					
				∠40°	carbonate-vien filling.		WEAK		
215 .4	100	93	5						
.5	100	85	18	∠35°	218.5 - 222.0 - Green zone - qtz (fdsp)- garnetif (relic) (biot) gneiss - strong chloritiz prod dk green colorat, well foliated - dissem pyrite?				STRONG
220				∠50°	wk fract zone from dirupt of numerous healed fract				
.5	100	66	21		222.0 - 255.7 - slightly alt or 'fresh' qtz- fdsp- biot- garnetiferous gneiss with migmatic segregations prod local sect of granitic texture				STRONG
.6 225				∠40°					

GAMMA LOG (CPS/DIV)

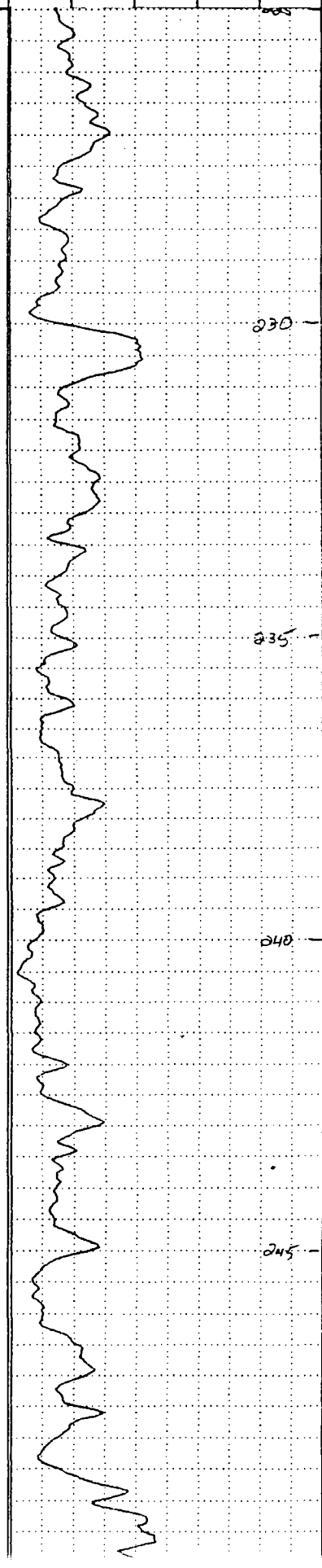


SAM #

DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
225	100	91	8	50°, 40°	222.0 - 223.2 - weak fract of healed breccia material - green clay-lined fractures 223.3 - 225.0 - strong fract c/w slickenslides. Small graphitic layers (trace) on fracture surfaces: 40° CA · Slickenslides indic strike-slip + 5° CA				
.6	100	88	19	40°, 10°	227.0 - 227.8 - healed breccia diss. pyrite along fract, btu. carbonate vein material				
230					230.3 - 230.7 - local fract zone				
.7	100	97	5	30°	- pyrite 232.2 - 238.6 - wkl chloritic qtz-fdsp-(biot) granitic gniess (granatoid texture - weak fol) - dissem. pyrite				
235	100	97	6						WEAK
.8	100	97	5	30°, 45°					
.8					238.6 - 248.3 - mod hemat + - mod chlor, sericic garnetif-qtz-fdsp-(biot) gniess - dissem pyrite common - btu. on fract (weak)			MODERATE	MODERATE
240	100	85	11	50°, 40°					
.9	100	94	7	50°, 40°					
245									
.9	100	94	4	40°, 50°, 45°	248.3 - 252.2 weakly chloritic, weak - hematitic, wk sericitic garnet-qtz-fdsp-biot-granitic gniess (< foliated in texture than gneiss) - pyrite (trace)				
250									

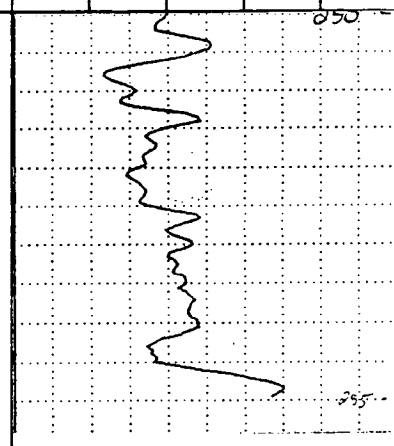
GAMMA LOG (CPS/DIV) 20 40 60 80



SAM #

DDH No. MR61

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
250	100	61	15	5°	251.0-252.2 Mod fract (local), btu on fract surf (trace)						
					252.2-255.8 v. weakly chlor.-fresh garnetif-qtz-feldsp.-biot granitic gniess (v. weak foliation)						
	100	66	9	25° 10°					WEAK		
255											
					E.O.H. 255.8 m						



URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-61

PAGE 13 OF 13

COORDINATE X:	L 148 N
COORDINATE Y:	173+00 E
ELEVATION Z:	312 ~~[illegible]~~ m
INCLINATION:	-60°
AZIMUTH:	240°
BOREHOLE Ø:	NQ 75.1 mm
CASING DEPTH:	70.7
CASING WALL THICKNESS:	NW 12.7 mm
WATER or MUD LEVEL:	—
DATE of DRILLING:	Feb 11 - Feb 16, 1989
TOTAL DEPTH:	255.8 m
LOGGED THROUGH: OPEN HOLE | PLASTIC PIPE | (RODS)	
INSTRUMENT:	Recorder MTS 2500 AI-5-8 #79, Winch AI-4-3
PROBE GAMMA:	G 375/A AI-61-500 S/N 442
PROBE NEUTRON:	~
DATE of LOGGING:	Feb 16, 1989
TIME of LOGGING:	10:30 a.m.
TOTAL DEPTH:	255.0
OPERATOR:	David Mitchell

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
255.0	10 c.p.s.	5 m/min	1:100				
0							

REMARKS: AQUIRE - File # MR-61.GR1

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR 63

AREA: Maybelle River	DISPOSITION: 6884120001 PROJECT NO.: 7142	PAGE 1 OF 8 DRILLED BY: Advance
COORDINATES: L128N 165+60E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: (yes) no DEPTH: 19.8	COMMENCED: Feb. 21/89 COMPLETED: Feb. 24/89
TOTAL DEPTH (m): 173m* ELEVATION (m A.S.L.): 315 (est) DIP/AZIMUTH: -60°/225°	GEOLOGY BY: B. Lacey CORE STORED AT: Jas Lake	CORE SIZE: NQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: (yes) no PAGE:	DOWN-HOLE PULSE-EM yes (no)

DIP TEST: Pajari

TEST AT(m)	173															
DIP	-62°															
AZIMUTH	239°															

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 19.8	Overburden.
Devonian.	19.8 - 49.2m	Interbedded dolomite and dolomitic sandstone, str. bitumen (in sandstone zones) and dk. green clay interbeds
Athabasca Group. Manitou Falls Fm	49.2 - 61.5m	Weak to moderately bleached sandstone, wk. red hem., dark green stain in matrix and along some fractures (from Devonian seds?), py, sooty py + euh. qtz common along fractures, locally str. silicification
Athabasca Group. Fair Point Fm	61.5 - 74.9m	Mod. - str. bleached gritty to conglomeratic sandstone, white clay matrix, pervasive and mottled brick red hem locally, clay enrichment locally, py + sooty py along some fracs
Basement	74.9 - 85.6m	Fault rock, str. bleached, str. chlor., wk. red hem., dominantly zones of fault breccia, crush breccia and fault gouge, rock completely decomposed from alteration, only minor zones or fault breccia clasts of original rock (mylonite).
	85.6 - 118.7m	Mod.- str. bleached, chlor., locally hem., qtz-(fsp)-mylonite, locally ultramylonite, zones of f. breccia and fracturing.
	118.7 - 123.3m	Pyritic (tr-5% diss) - graphitic (tr-5%) - (feld) - qtz - mylonite, tr. - 5% gf, 5-10% along shears, zones of f. breccia and gouge
	123.3 - 141.2m	Mod. bleached, mod. hem., mod chlor., (bio) - qtz - (feld) - mylonite locally silicified and f. brecciated (crush breccia)
	141.2 - 172.8m	Fresh to weakly altered (w. chlor., w. hem., bio - qtz - fsp - mylonite, mylonitic texture decreases at depth, 162.1 - 173m - massive to weakly foliated texture
	E.O.H. @ 172.8m	

INVESTIGATIONS: (DOWN-HOLE GAMMA-LOG, GEOCHEMISTRY, MINERALOGY, OTHERS)

Downhole Radiometric Peaks*
68.4m - 120cps
68.7m - 118cps
84.7m - 156 cps
169.1 - 123cps
171.04 - 194cps

Samples
MR63-1 49-61m sst MF
-2 62-65m sst FP
-3 65-75m sst FP
-4 65.6-66.6m sst FP
-5 81.5-82.5m BSMT
-6 114.3-115.3m BSMT
-7 139.8-140.8m BSMT

* ~1.5-2m discrepancy between downhole γ log and core run markers - total DDH depth should be ~174.5 m, according to run markers - 173m

DDH No. MR63.

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silic.	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
0												
5					OVERBURDEN						5	
10					Possible start of Devonian (11.0 m) from γ Log.						10	
15											15	
20					19.8. - 49.2m Devonian - undifferentiated, interbedded Dolomite and dolomitic sandstone, soft dark green interbedded clay, trace bitumen in sandstone.						20	

DDH No. MR63

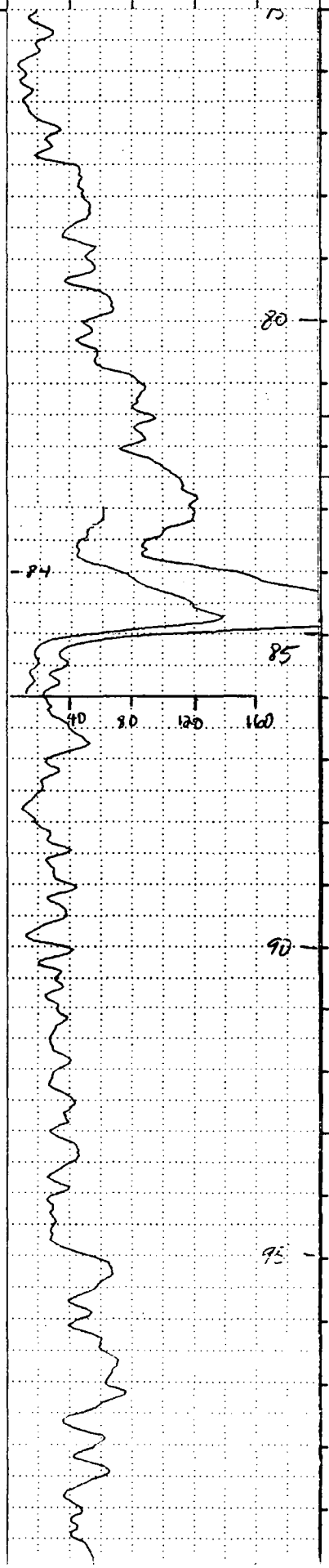
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
25					Devonian ↓					25	
30										30	
35										35	
40										40	
45										45	
	100	?	?		euhedral qtz						

DDH No. MR63.

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	Py/Sch. qtz	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicification	Bitumen	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
50					49.2-61.5 M Manitou Falls Fm	py								
.9	100	33%	>30		Weak to locally Moderately bleached sandstone, weak red hematite, dark green stain in matrix (from Devonian). moderately fractured, py, sooty py + euh qtz common along fractures locally strong silicification	sch, sch, py	Moderate		Wk	Wk. along fractures + matrix - from Dev Seds	strong along select fractures			MR63-1
.9						qtz, qtz, py								
55	100	61	>30		55.6-55.8 - 20cm soft clay + sand - fault gouge.								55	
.9	100	33	>30											
						qtz, py								
60						qtz, py							60	
	100	85	15		60.8-61.5m strong "brick red hematite"	py			M					
					61.5-74.9m Fairt Point Fm. Mod.-strongly bleached gritty sandstone with white clay matrix, no apparent bedding (poorly sorted), conglomeratic layers, brick red hem as mottles or as pervasive feature into matrix, local enrichment of clay in matrix, pyrite sooty? common along fract's.						V. weak along			
65	100	88	17+			py							65	MR63-2
.1					75-100 cps SPP2 clay + sand gouge (pebbly)									63-4
	100	90	19		65.6-63.9m clay gouge with abundant sooty pyrite within and in wall rock	py								
.1					66.75-67.2m clay enriched sandstone, strongly friable		Strong		Mottles/pervasive patches					
70	100	93	18		68.3-74.9m blebs of pervasive brick red hematite				Wk.				70	MR63-3
	100	76	6.2		← 2m → cross section; milky qtz matrix									
75					74.4-74.5m - recealed f. breccia (crush breccia), frags. w/em, angular in milky white qtz matrix									

DDH No. MR63

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicification	GAMMA LOG (CPS/DIV) 10	SAM #
75	100	91	18	30°	74.9-85.6m strongly bleached (strong ser), strongly chlor. wk- red hem, Fault Rock, zones of f. breccia, crush breccia and f. gouge, zones of original rock type - mylonite to ultramyl, Strong clay alteration (chlor, ser) has mostly decomposed rock, crumbly original mylonite commonly visible with varying degrees of decomposition due to faulting and hydrothermal alt.	Strong		Mod				
80	94	6	>30		- Crush breccia zones have associated brick red hematite.			Weak				
	100	9	>30	Sooty As	78.7 82.2m - strongest clay alteration in zone, soft green clay with fragments of original rock type. gouge. euhed. qtz.			Mod		S		63-5
					82.2 - 82.4 m str. silicified, vuggy zone, euhedral qtz in vugs, sooty As (garlic smell) 82.4 - 84.3 - f. breccia w red hematite. 84.3-85.6 silic. myl + f. breccia, red. hem.							
85	100	85	24	40°	85.6 - 118.7 Mod - str. bleached, chloritized, locally hematized, qtz-fsp-mylonite (locally ultramylonitic), locally f. brecciated and silicified, locally fractured (abundant rehealed)				Strong (light green			
	100	79	>30	50° op 50°								
90					85.6 - 94.3m - strongly bleached (light green alteration to original minerals)							
	100	91	21	20° op 40°	← 1cm soft green clay gouge along fracture.			Weak				
95	100	90	13	10° 50°	~94 m ~ mylonitic texture less developed ie coarser grained							
	100	84	20	40°	← minor lt. green f. gouge along fractures ∥ to S_2	Mod	Mod					
100												

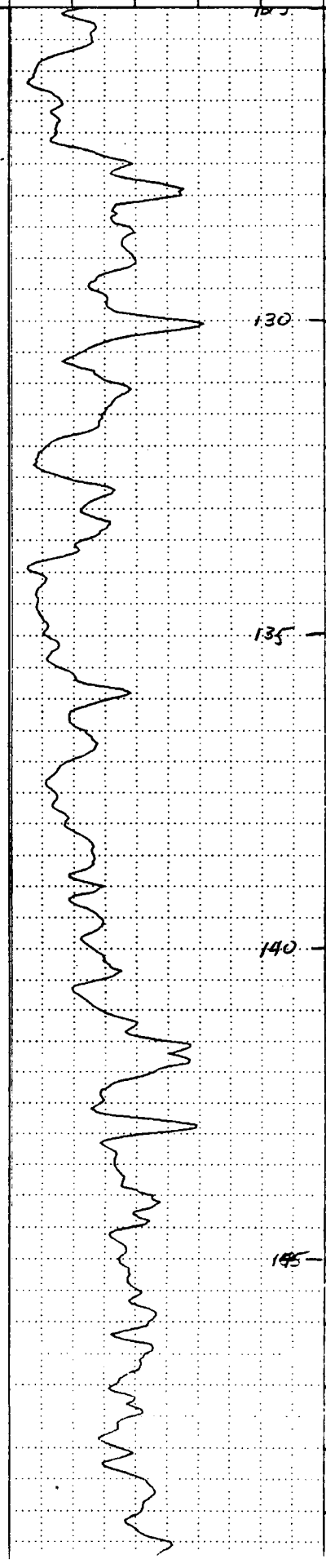


DDH No. MR63.

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	silicif.	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
100	96	63	25	5°	101.4 - 103.6 m - strong maroon hematite in blastomylonite?	Mod.	Mod					
.7				50°		Wk	Strong					
	100	98	6	45°								
105					106.5 - 106.3 m str. silicification	Mod.	Wk.			Str		
.7	100	88	22	40°	105.8m - Large (1-2cm) vugs with euhedral qtz + dark-reddish-brown needle like crystals (mineral?)							
.8												
110	100	88	28			Strong		Weak	Strong (Lt. green)			
					graphite in 10cm fault zone (cataclasite) — trace to 5% gf							
.8												
	100	61	>30	40°	112.3 - 118.7m - strongly fractured and brecciated.							
115												63-6
.9	100	33	>30									
					117.3 - 117.4m fault rock (fault breccia) with graphite along shears.							
.9					40cm graphitic fault gouge (fault contact)							
120	100	42	>30	Fault	118.7 - 123.3m Pyritic (tr - 5%) - graphitic (trace - 5%) - (fold) - qtz mylonite; tr - 5% diss. graphite with 5-10% along fractures and shears. Zone of fault brecciation (recemented) and veined (qtz).				Str. dk green			
	100				123 - 124.3m Silicified (rock breccia) (qtz vein) - white qtz with country rock fragments.	Mod.	Mod	Weak	Mod	Str		
125												

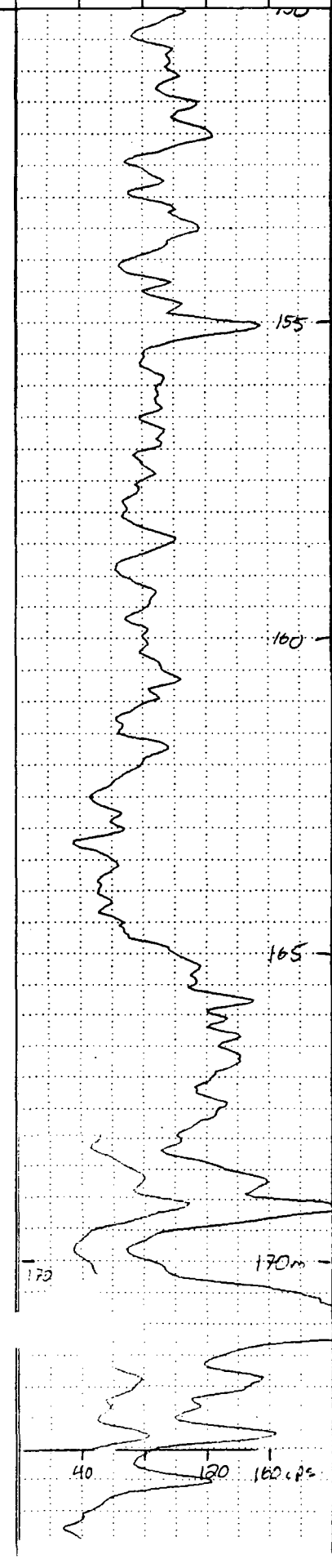
DDH No. MR63

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silic.	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
125	100	79	27		124.3 - 141.2. Moderately bleached, mod. hematized. mod. chloritized., (biotite) - qtz (feldspar) - mylonite, banded, locally faulted and fractured.							
.1	100	66	24				Mod					
130					129.3 - 129.8m Crush breccia. strongly silicified (>90% white quartz) with veinlets of brick red hematite and minor clasts of chloritized country rock					S		
.1	100	33%	>30		129.8 - 131.3. Strongly fractured with vugs. hematite (red) in vugs. traces of graphite (diss)							
.1					garnet relicts	Mod		Weak	Mod. (light green)			
135	100	66	>30		129.8 - 136.5m trace of locally							
.2	100	45	>30									
.2					138.2 - 141.2 strongly mylonitic to ultramylonitic rock, strong light green alteration (str. bleached), fractured.	Strong			Strong			
140	100	50	>30		140.3m 120cps SRAT							63-7
					141.2 - 142.5m Ultramylonite (fresh)							
.3	100	73	18		141.2 - 173m Fresh to weakly altered (w. chlor weakly hem) - biotite - quartz - feldspar - mylonite with ultramyl. intervals - mylonitic texture decreases with depth.		Weak					
145												
.3	100	85	13		146.5 - 150.8m Well developed [illegible] [illegible] ultramylonite				Weak			
.4	100	66	>30									



DDH No. MR63

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10	SAM #
150				50°	150.8 - E.O.H						
.4	100	88	12	60°	slicks laminated texture (gneissic) - fresh to weakly altered bio-qtz-feld (plag)-gneiss calcium carbonate [illegible] along fractures						
.5											
155	100	89	21	55°							
.5											
	100	91	16		rhombohedral calcite xtals along fracture pink calcite xtals along fracture $CaCO_3$						
160											
.6	100	91	11	50°	5cm - fractures ∥ foliation with $CaCO_3$ Texture more massive C. grained, foliation less evident - relatively sharp contact.		Weak		Weak		
.6											
165	100	94	18	30°	CO_3						
.7	100	92	9	50° 15°							
170	100	91	13	10° 40°	170.3 - 170.6 m mod. [illegible] - tr. pyrite along fractures @ 170.4 m 75cps (SRAT)						
					E.O.H. @ 173m						



URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR63

PAGE 8 OF 8

COORDINATE X: L 128 N

COORDINATE Y: 165+60E

ELEVATION Z: 315 est

INCLINATION: -60°

AZIMUTH: 225°

BOREHOLE Ø: NQ

CASING DEPTH: 49m (Reamed down)

CASING WALL THICKNESS: NW

WATER or MUD LEVEL: —

DATE of DRILLING: – Feb. 24/89

TOTAL DEPTH: 172m

LOGGED THROUGH:
OPEN HOLE | PLASTIC PIPE | (RODS)

INSTRUMENT: Mt Sopris 2500 SN 79

PROBE GAMMA: G375/A SN 442

PROBE NEUTRON: —

DATE of LOGGING: Feb. 24/89

TIME of LOGGING: 10:30 – 12:30

TOTAL DEPTH: 174.5?

OPERATOR: B. Lacey

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
C	20cps/div	5m/min	100/1	113	20	3m/min.	
174.5m				122			
				81	20	3m/min	
				85			
				66	20	3m/min	
				70			

REMARKS: Digitally logged as MR63.GRØ
D.T. corrected. MR63.GDØ

217 62

FORM 32 172

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR-64

AREA: Maybelle River	DISPOSITION: 6884100002 PROJECT NO.: 7142	PAGE 1 OF 13 DRILLED BY: Advance
COORDINATES: L 92 N 161+20E	PLASTIC PIPE: yes (no) DEPTH: — CASING REMOVED: yes (no) DEPTH: 28	COMMENCED: Feb. 24/89 COMPLETED: March 2/89
TOTAL DEPTH (m): 270.3m ELEVATION (m A.S.L.): 328 DIP/AZIMUTH: -60°/225°	GEOLOGY BY: David Mitchell CORE STORED AT: Jas Lake	CORE SIZE: NQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 13	DOWN-HOLE PULSE-EM yes (no)

DIP TEST:

	Pajari	Acid	Acid.
TEST AT(m)	27.3	118.0	46.3
DIP	-61°	-60°	-60
AZIMUTH	233°	—	—

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0-28.0 m	Overburden
	28.0-43.9 m	Dolomite, dolomitic sst, unconsolidated dolomitic sand.
ATHABASCA GROUP Manitou Falls Fm.	43.9-117.8m	Strongly silicified, mod.-strongly red hemat., mod-str bleach, fine-med. gr; well-sorted, bedded sandstone with interbed. silt-layers, clay clasts. Mod-strongly fractured locally with mod-strg bitumen, diss. pyrite, euhedral qtz on fractures.
BASEMENT	117.8-139.3	Mod.-strongly hemat. (red+maroon), chlorit, serecit; qtz-(fsp)-mylonite. Varying textures from gneissic-protomylon-mylonitic. Paleoweathering.
	139.3-206.5m	Mod.-strongly hemat., serecit, chlorit, graphitic (tr)-qtz-(fsp) mylonite. Protomylonitic-ultramyl. textures. Strong silicif. locally, crush breccia zones, ~~access.~~ pyrite, euh. qtz. 194.6-206.4 - relic garnets (?) visible
	206.5-227.5	Strongly chlorit., massive-wkly foliated ~~pelitic~~. ~~graphitic~~ mafic rock-(Garnetif)-pyritic (tr-1%)-graphitic (tr-3%)-qtz-(fsp)-(biot, pyrx) gneiss. 219.0-227.6 - 'fault breccia.
	227.5-235.7m	Graphitic (tr)-pyritic (tr-1%)-qtz-(fsp) 'fault breccia'. Strongly ~~chlorit.~~, serecit. with 'pegmatoidal' texture. Felsic.
	235.7-242.9m	Str. chlorit. pyritic (tr-2%)-graphitic (5-10%) mylonitic 'crush breccia' Predomin. qtz viening, fault gouge, massive graphite on shears, slickenslide
	242.9-270.3m E.OH.	Str. chlor. pyritic (tr-3%), graphitic (5-10%)-(biot-pyrx)-qtz-fsp laminated gneiss. Texture varies locally banded gneissic → mylonitic.

INVESTIGATIONS: (DOWN-HOLE GAMMA-LOG, GEOCHEMISTRY, MINERALOGY, OTHERS)

DOWN-HOLE γ LOG PEAKS

119.30 m	138 c.p.s
132.95 m	239 c.p.s
157.50 m	191 c.p.s
243.50 m	150 c.p.s
260.95 m	118 c.p.s.

DIGITAL γ LOG FILE:
MR 64. ØRØ
64 ØDØ

LITHOGEOCHEM. SAMPLES

MR-64-1	44.0-47.0	SST.	MF
-2	47.0-57.0	"	"
-3	57.0-67.0	"	"
-4	67.0-77.0	"	"
-5	77.0-87.0	"	"
-6	87.0-97.0	"	"
-7	97.0-107.0	"	"
-8	107.0-117.0	"	"
MR-64-9	117.8-118.8	BSMT.	
-10	118.8-119.8	BSMT	
-11	119.8-120.8	BSMT	

SPLITS:

MR-64-12	120.55-120.65	BSMT
-13	134.20-134.30	"
-14	158.0-159.0	"
-15	244.4-245.4	"

DDH No. MR-64

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
0											
5										5	
10					OVERBURDEN					10	
15										15	
20										20	
										25	

DDH No. MR-64

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BITUMEN	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIC	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
25					CASING TO 28.0 m								
					Devonian 28.0 - 43.9 m - dolomite, dolom sst, uncon dolomitic sand; mod bitumen mod green chloritic clay, wk bleaching locally - interbedded								
30												30	
.6													
35 .6												35	
.7													
40												40	
	98	66	>30		- breccia contain strong hemat sst frag. in carbonaceous sand matrix								
				≠40°	ATHABASCA GROUP 43.9 m Manitou Falls Formation (43.9 - 117.8) - fine to med gr. well sorted, bedded sst. - mod to strongly red hem and mod to strong bleaching, strong [illegible]								
45	98	61	>30	≠10°								45	MR-64-1
				≠15°	← btu								
.8				≠20°	← pyrite - [illegible] of strong [illegible] strong btu, sph pyrite, sooty pyrite, abundant euhedral qtz on fract.								
	97	64	>30	65° ≠20°	44.2 - 45.8 - f. breccia c/w strong btu, sph pyr, carbonate on fract & veins	MODERATE	MOD		STRONG		STRONG		

DDH No. MR-64

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BITUMEN	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIF.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
50	98	66	>30		45.8 - 56.3 m - strongly hemat, mod to strong bleached locally, strongly silicified, mod fractured fine-grained sst - mod btu, euh qtz (?sooty) sph pyrite along fract ← euh qtz s. pyrite w btu euh qtz, btu ← btu, euh qtz ← sooty pyr strg btu, euh qtz	MODERATE	MODERATE (locally)		STRONG			50	MR-64-2
55	98	55	>30									55	
	96	10	>30		56.3 - 63.1 - 'fracture zone' - strongly fract, str hemat str silicified, mod bleached sst - strong btu, euh qtz, sooty pyrite common - trace white clay on frac - core in form 'rubble'	STRONG					STRONG		
60	96	10	>30									60	MR-64-3
	96	33	>30		63.1 - 87.6 - strong hemat, moderate (loc) bleached, str. silicified - zones of mod to strong fracturing								
65	98	33	>30		← btu - hematite more pronounced than prev. - mod to strong btu, euh qtz, - spheroidal ; sooty pyrite common - occass. silt bands and mud clasts - maroon hematite occass. appearing as rings along bedding planes btu, pyr euh qtz				STRONG (more pronounced)			65	
70	100	33	>30		- 69.6 - greenish white chy filled fracture ∠ 10° CA ≈ 5 mm wide ← btu, sooty pyr ← str pyr - 71.0 - 75.0 - silt layers v common (< 2 mm)	STRONG	MODERATE					70	MR-64-4
	96	10	>30		72.8 - 75.2 - strongly fractured zone c/w strong hemat, strong btu on fract - sooty pyrite								

DDH No. MR-64

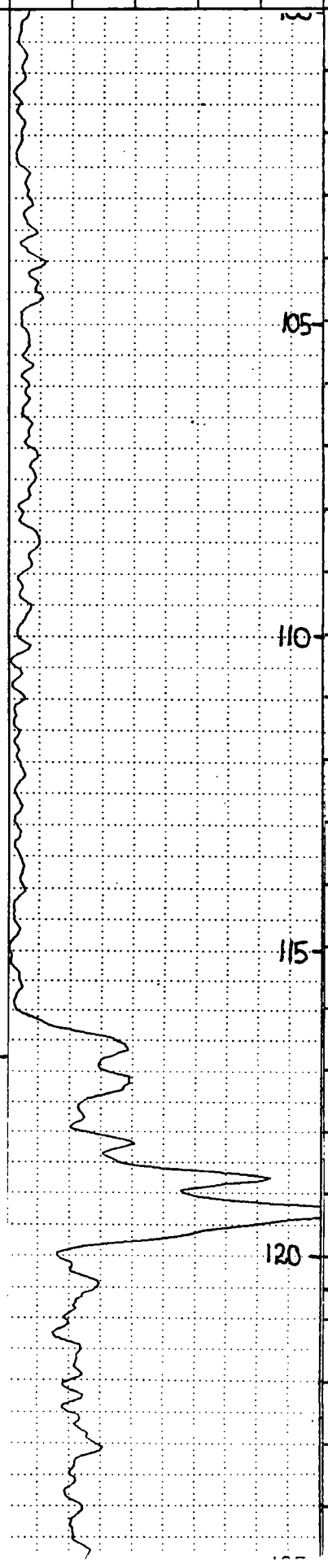
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BITUMEN	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIC	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
75 .2	100	64	>30	70°	-75.8 silt layers 2-3mm interbedded -76.2-77.1 - strong fract with btu, greyish white clay on frac	MODERATE	MODERATE		STRONG		STRONG		MR-64-5
				10°									
				5°	←pyr (sooty)								
.3	100	80	12	15° 0°	-78.1 ←abund spher & sooty pyrite on fracture face								
				30°	←btu								
80												80	
	100	76	11	40° 70°	81.7 - mudstone layer ≈ 5cm wide 82.7 - mudstone interbed ≈ 2cm wide				MODERATE				
				35°	←sooty pyrite								
.4							STRONG						
85	100	88	8	35°	←btu, s.pyr.				WEAK			85	
.4	100	66	12	70°	87.6-114.0 m -v strongly bleached, strongly silicified fine to med gr sst	MODERATE - STRONG	V STRONG						MR-64-6
				20° 30°	←btu euh qtz s.pyr -mod-str btu, sooty pyrite & euh. qtz on fract -thin interbedded mud layers <1mm abundant altern with courser grained layers 1-3 mm in width, occas mud clasts								
90 .5	100	66	>30	40°								90	
				40° 10°	btu euh qtz -mud clast 90.5-93.5 - fracturing along bedding planes frequent (weak fracturing) due to mud layers ≈70°CA								
.5	98	40	>30	15°									
95				20° 35° 30°	94.8-96.8 -strong fract zone -strong bitumen, euhedral qtz							95	
.6	100	76	12	25°	96.5 - clay gouge - greyish white clay								
				0° 50°	←btu euh qtz								
.6													

DDH No. MR-64

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BITUMEN	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIC.	SAM #
100	100	76	13	∢30° h ∢20°	← btu	STRONG	STRONG				STRONG	MR-64-7
.7	100	76	12	⊤70° ∢30° ∢35°	103.1 - white clay-lined fract ← strong bitumen on fract							
105 .7	100	81	80	⊤70° ∢30° h ∢40°	105.2 - sand gouge c/w whitish-grey clay ← wk btu, sooty pyr - increasing number of large grained pebble bands with depth (mm's - 1-2cm)						MOD-WEAK	
.8 110	100	85	6	⊤70° ∢30°	108.2-114.0 ← clay gouge grey white color - mod-weakly bleached (locally) weakly silicified, moderatly hematized (pale pink) medium grained sst - moderate-weak bitumen on frac - increasingly courser grained layers with depth and increasing amount of clay in matrix (psuedo F.P.) ← weak btu	MODERATE	MODERATE		MODERATE			MR-64-8
	100	97	2								WEAK	
.9 115	100	94	12	h ∢25°	114.0 - 117.8 - weakly silicified, strongly hematized (bright pink) med gr sst - occass small qtz pebbles <5mm - weak bitumen on fract - 117.6 - clay-sand gouge ≈5cm greyish clay	WEAK			STRONG			
.9 120	100	91	7	∢40° S_2 ∠25° ∢50° ∢50° ∢55°	117.8m U/C Manitou Falls - Bsmt 117.8 - 139.3m - mod. serecit, mod-str hemat mod. chloritized (ie strongly altered regolith) qtz-(fdsp)-mylonite - visible array of local text from less foliated gneissic to protomylonic-mylonitic ← 60cps SRAT h fract 119.4-119.6 fault breccia c/w gouge - crush breccia with chloritic greenish white clay matrix followed by 5cm clay gouge 123.0-124.0 - v. strong red hematiz		MODERATE	MODERATE		MODERATE			MR-64-9 MR-64-10 MR-64-11
.1								STRONG	STRONG			

GAMMA LOG (CPS/DIV) 10

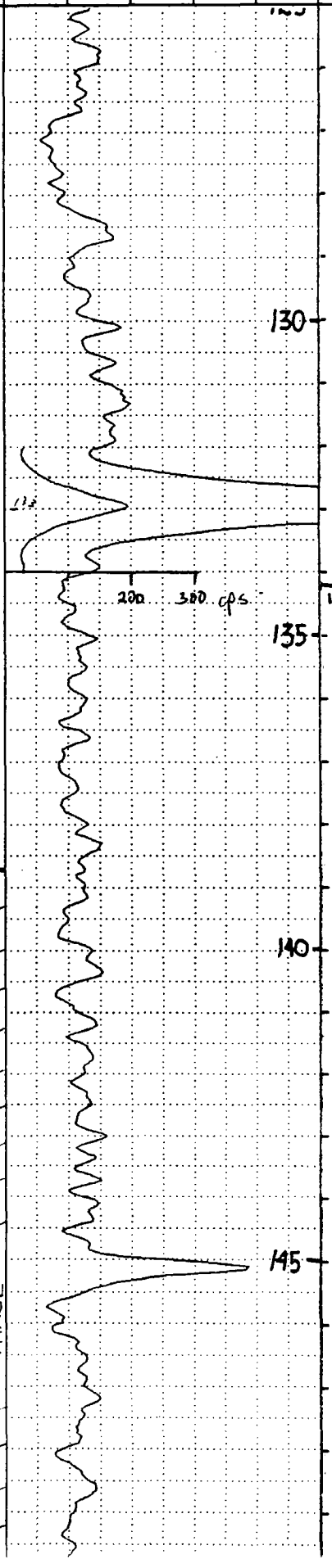
20 40 60 80



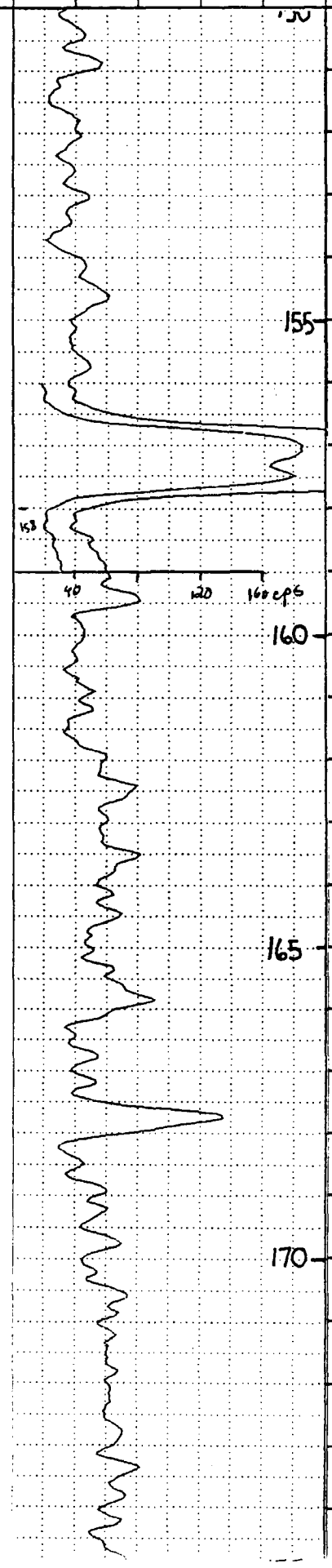
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GRAPHITE
125	98	73	>30	∠45°	125.0 - 133.0 - gen overprinted 'gneissic texture 126.0 - 126.6 'str. fract zone' str. chloritized 'rubble', greenish clay	MODERATE	MODERATE	WEAK-MOD	S	
.1	100	76	9	∠50° 25° ∠45° ∠45°	← 128.8 - str chlorit - greenish clay lined fract				MODERATE	
130	100	79	12	15° ∠35°	- 130.2 - 130.4 m - stroungly silicif interval with trace pyrite & euhedral qtz in vug (qtz matrix)					
.1	100	82	7	∠20°	- 133.0 - 133.9 m. - str chloritiz & str seretic with protomylonitic-mylonitic texture ← green clay 134.3 - 90 cps SRAT - str. hemat maroon altern.				S	
135					- 136.5 - 136.7 - str. hemat fault breccia					
.2	98	76	730	∠30° ∠30°	- 137.6 - 138.0 - fault breccia, fractured, hemat. greenish-white clay matrix.				MODERATE	
					139.3 - 167.8 m - graphitic (trace) - qt - (fdsp) mylonite = graphite is ∠ 1% disseem, - lamin. texture varying from protomylonitic - to mylonitic		MODERATE	MODERATE		
.2	100	76	8	∠35° ∠30°						
140					139.5 - clay lined fract (1-2cm) containing greenish-white clay					
.3	100	91	7	∠45°	- mod sericit, mod → strong hemat (red & maroon) weak → mod chloritiz.	MODERATE				TRACE
145	100	82	12	∠30° ∠40° ∠40°						

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #



m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIC
150	100	88	7	45°						
.4	98	91	730	45°	← trace pyrite 151.4-151.8 - str. silicified with maj. qtz surr. by hemat, chloritic matrix 'crush breccia'	WEAK	MODERATE	MODERATE	WEAK	S
					- 153.5-154.0 - silicif 'crush breccia'					S
.5				40°	- 154.3-156.6 - strong red: maroon hemat alter.					
155	100	85	730				S			
				30°						
.5					- 157.2-157.3 - clay gouge - str hemat clay - faint As smell' 157.3-158.0 - strong silicif 'crush breccia' - 'breccia' - maj qtz surr. by hemat c. rock					S
	100	73	730	45°	← 158.3 - 100cps SERAT					
160					- 159.0-163.5 - mylonite with - frequ. intervals of str silicification (ie. total qtz replacement) = 2-5 cm width					S
.6	100	88	6	30°		MOD		WEAK		S
				30°						S
				45°	163.6-167.4 - str. seretic prod strong clay replac, mod-str red hematite produces blotchy red staining.					S
.6				30°						
165	100	94	4					MOD-STRONG		
				35°						
.7	100	94	5	20° 35°	167.8-194.6 m - mylonitic texture well develop with local sect of ultramylonite, - strg sericitiz, trace graphite still evident					
				35°						
.7				40°						
170	100	88	8	35° 35°	graphitic (tr) - [illegible] - possib. relic garnets? in local coarse gt interv.		MODERATE		MODERATE	
				30°						
.8	100	88	7	40°						



DDH No. MR-64

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIC	GAMMA LOG (CPS/DIV) 10	SAM #
175					-yellowish white clay - sericit more predomin as bleaching increases with depth							
.8	100	94	7	≠35° ≠25° 20° ≠35°								
.9					178.3-180.7 - strongly silicified 'fault breccia' - str altered fdsp (large yellow blems) within qtz matrix.					S		
180	100	88	6	≠30°								
.9				≠50°	181.6-181.8 - 'fault gouge' & 'breccia' ← chloritic (green) - white clay on fract.							
	100	94	8	≠40°								
185	100	91	5		186.8-186.9 - 'fault breccia' - c rock in greenish-white clay matrix							
	100	85	6	30° ap ≠20°	188.6 - trace graphite & yellow-white clay on fract.							
190					- 188.10-190.1 - strong sericit. - fdsp highly alt & form majority of rock mass - appear as large yellowish blems					S		
.1	100	97	6		-190.3-190.4 - hematized 'crush breccia'							
195	100	97	6	≠40° ≠25° 20° 20°	- 194.6-206.4 (garnetif)? graphitic (tr) qtz- (fdsp) mylonite - appears to be relic garnets visible, graphite becoming more common							
	100	94	8	≠40° ≠45° 20°	- strongly silicified locally in bands 2-10 cm - strong alterat, varying text protomy - mylonite							

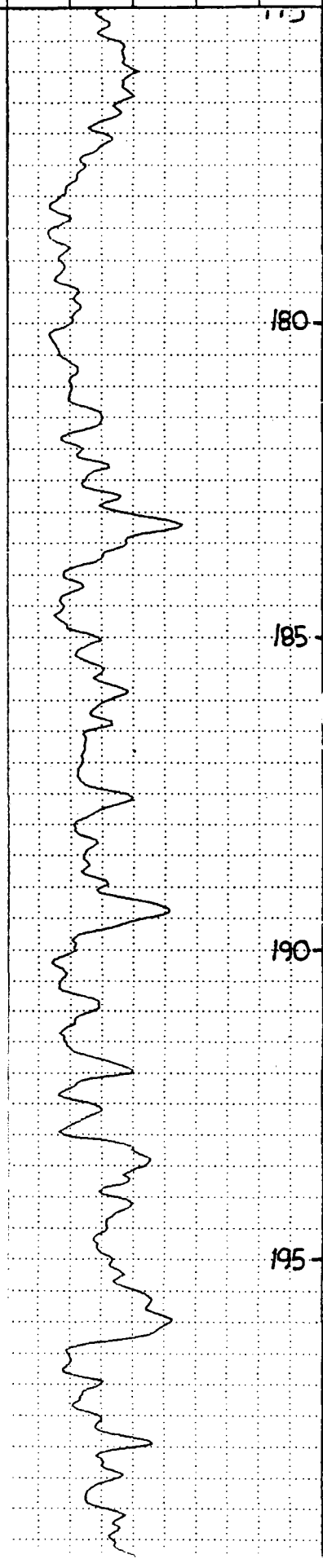
BLEACHING: MODERATE - STRONG; STRONG

MAROON HEM.: MODERATE; WEAK - MOD (locally)

RED HEM.: WEAK; WEAK

GREEN ALT.: MODERATE; WEAK - MODERATE (locally)

GAMMA LOG (CPS/DIV) 10: 20 40 60 80



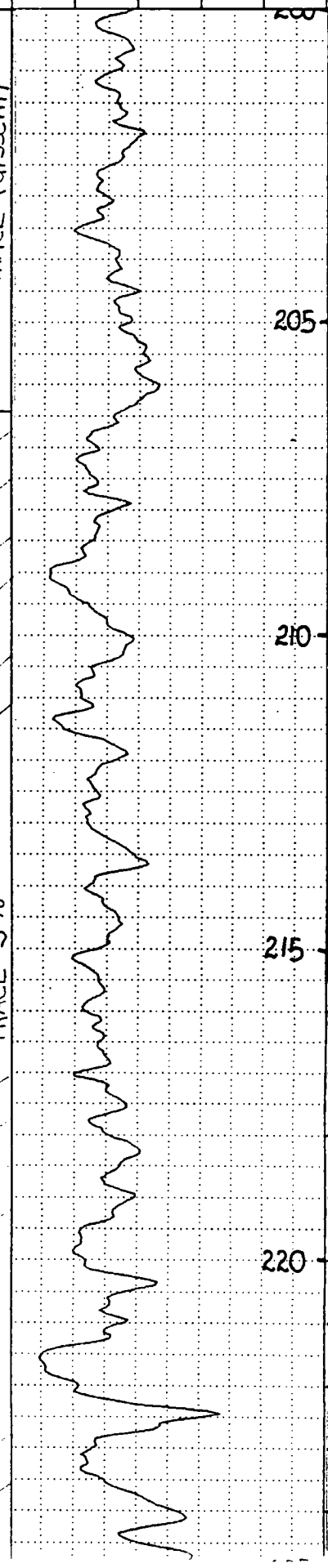
DDH No. MR-67

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GRAPHITE
200	100	94	8	20°	- 200.0 - 206.4 -red hemat. circular dots common (relic garnets) within mylonite. - v. strong sericit., mylonite to ultra-mylonit texture - tr graphite	STRONG	V WEAK (locally)	V WEAK	MOD	TRACE (dissem)
.3	100	79	12	35° 25°						
205				30° 30°						
.3	100	97	6	45°	206.4 - 227.5 m -Strongly chlorit, massive to weakly foliated, f gr (garnetif) - pyritic (trace-1%) graphitic (tr-3%) - qtz-(fdsp) (biot-pyroxene) gneiss - pelite				STRONG	TRACE - 3%
210	100	88	14	35°	← 209.6 - 210.6 - 'crush breccia' large altered fdsp in siliceous mafic matrix - 'pegmatoid text' 211.6 - 112.9 -crush breccia - fault rock					
.4	100	94	12	20° 15° 25°	- mafic content consist of (biot) - (pyroxene) ?>60% - graphite appears as dissemenated (tr-3%) massive along shears					
215	100	88	8	10° 40° 15°	- sulfides (pyrite) dissem (trace - 1%) throughout - 214.8 - 214.9 - 7.10% graphite					
.5				30°	- 217.8 - 218.3 'crush "pegmat" breccia'					
220	100	88	12	45°	- 219.0 - 227.6 - 'fault breccia' - quart filled vuges and vien-fillin in healed fractures common between strong chlor mafic c. rock - sulfides (pyrite) dissem throughout (tr)					
.6	100	88	8		- 224.3 - small vugs filled with cubic pyrite & euhedral qtz					

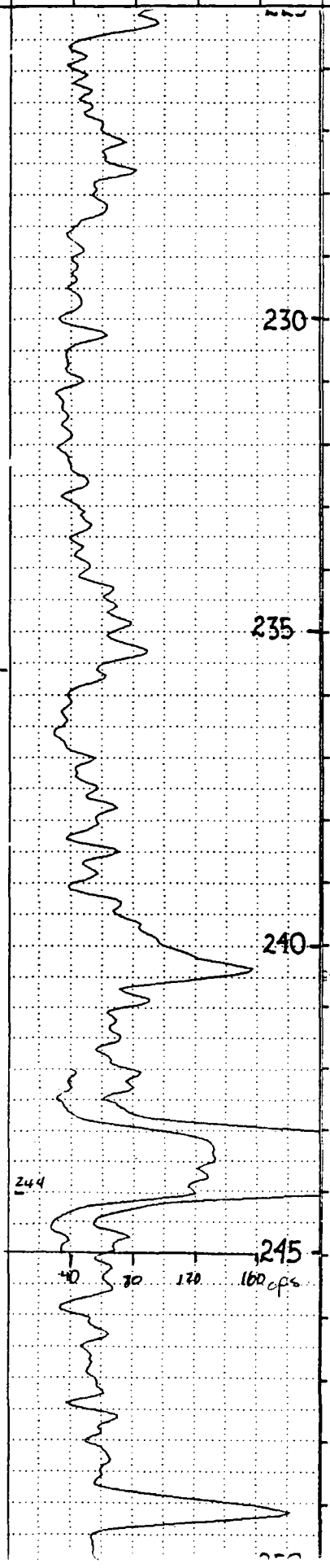
fault gouge

GAMMA LOG (CPS/DIV) 10 — 20 40 60 80

SAM #



m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GRAPHITE
225	100	69	20	20° 60° 45°	- 226.4 - 227.4 - pyrite (massive >3%) - graphite >3%, massive on fract					>3%
.6	100	91	7	45°	227.5 - 235.7 - 'pegmatoidal' (felsic) fault breccia - large globular pinkish (fdsp) c/w mafic viens and matrix - dissem pyrite (trace-1%) & assoc with mafic viens - str sericit, fract (fsp) - trace graphite (tr) - graphitic (tr) - pyrite (tr-1%) qtz - (fdsp) 'pegmatoid' fault breccia' (mostly felsic)	STRONG			MOD	TRACE
230	100	94	8	50° 60°						
.7	100	66	>30	35°						
235				40						
.8	98	33	>30	20° 30° 40°	235.7 - 242.9 - mylonitic 'crush breccia' zone (shear zone) - strongly chloritized, pyritic (1-2%), graphitic (5-10%, massive along shears) mylonitic crush breccia - predomin quartz-veining along healed fractures (visib c rock frag rafted) - 236.8 - massive graphite along shear c/w slickenslides - 240.8 - 241.2 - fault gouge - mafic - (pelitic) bands comm				STRONG	5-10% - massive along shears
				fault gouge						
.8				45° 50°						
240	96	33	>30	45°						
				fault gouge						
				30						
.9	100	88	14	45°	242.9 - 259.0 m - strongly chloritized, laminated pyritic (tr-3%) - graphitic (5-10%) - (biot-pyroxene) - qtz - (fdsp) 'graphitic mylonite' - laminated texture is gneissic → mylonitic, wkly foliated, banded locally - 244.8 - 80 cps - SRAT					5-10% massive on fract
				80 cps SERAT						
				30°						
	100	91	10	35°						
				16°						
250				30°						

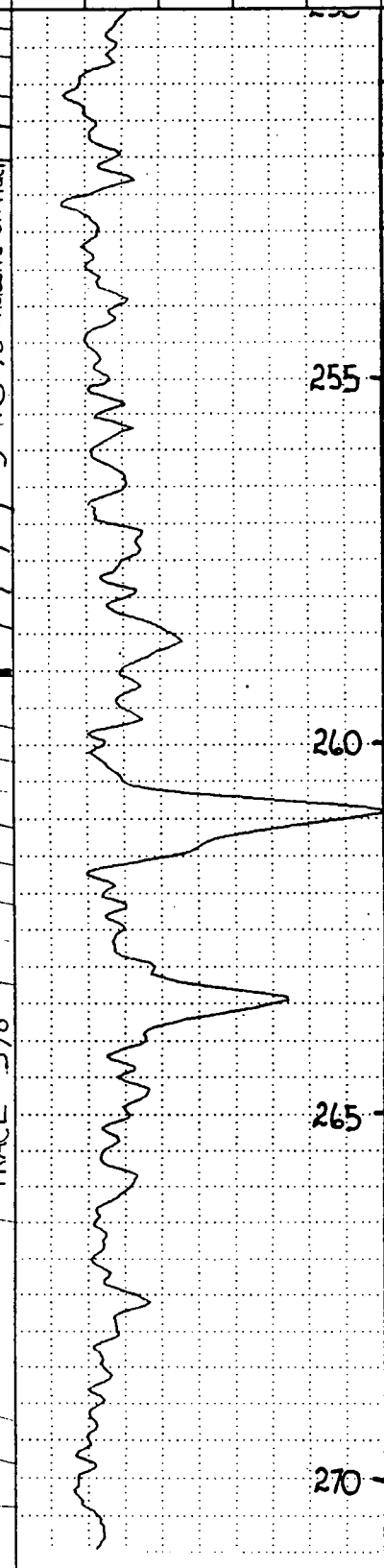


SAM #

64-15

DDH No. MR-[illegible]

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GRAPHITE
250	100	97	4		← 250.5 - 75 cps SRAT. - dissem pyrite (tr-3%) common throughout					
.1	100	97	3	∡30°					MOD - STRONG	5-10% massive on fract
				∠20°						
.1 / 255	100	97	3	∡40° ∠20°						
.1	100	97	4	∡30° ∠25°	259.0 - 270.3 m - mod-strong chlorit, laminated graphitic (tr-3%) - pyritic (tr-3%) (biot-pyroxene) - fsp - qtz "graphitic mylonite". - laminated texture remains gneissic to mylonitic					
260 / .2	100	97	3	∡60°	- 262.1 - 65 cps SRAT 2 cm courser grained interval				MODERATE	TRACE - 5%
				∠25°						
				∡20°	- 264.8 - weak bitumen on fract					
265	100	97	2							
.3	100	97	3	∡35°	- 267.7 - weak bitumen, pyrite (tr) graphite (tr) on fract					
270					270.3 m. E.O.H					



SAM #

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR64

PAGE 13 OF 13

COORDINATE X: L128 +00N

COORDINATE Y: 165+60E

ELEVATION Z: 328m.

INCLINATION: -60°

AZIMUTH: 225°

BOREHOLE Ø: NQ

CASING DEPTH: 43.3m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: - Mar 2/89.

TOTAL DEPTH: 270.3m

LOGGED THROUGH: OPEN HOLE | PLASTIC PIPE | RODS

INSTRUMENT: Mt Sopris 2500 SN 79.

PROBE GAMMA: G375/A SN 442

PROBE NEUTRON: /

DATE of LOGGING: Mar. 2/89

TIME of LOGGING: 01:00 - 03:00

TOTAL DEPTH: 271.0

OPERATOR: B. Lacey

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0							
271.0							

REMARKS: Digitally Logged with Acquire as MR64.GRØ
D.T. Corrected MR64.GDØ

FORM 32

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR 67

AREA: Maybelle River	DISPOSITION: 688412 0001 PROJECT NO.: 7142	PAGE 1 OF 6 DRILLED BY: Advance
COORDINATES: LINE 128 N 164+95 E	PLASTIC PIPE: yes (no) DEPTH: — CASING REMOVED: (yes) no DEPTH: 15.2	COMMENCED: March 30, 1989 COMPLETED: April 2, 1989.
TOTAL DEPTH (m): 75.2m ELEVATION (m A.S.L.): 315 (est.) DIP/AZIMUTH: -90°/-	GEOLOGY BY: B. Lacey CORE STORED AT: Jas Lake DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 6	CORE SIZE: NQ CASING SIZE: NW DOWN-HOLE PULSE-EM yes (no)

DIP TEST: —

TEST AT(m)															
DIP															
AZIMUTH															

UNIT		FROM - TO	SUMMARY OF OBSERVATIONS
		0 - 8.5m	Overburden
Devonian		8.5 - 45.4m	Devonian. - Dolomite with interbedded calcareous sandstone, numerous intervals of soft dark green clay, str. fractured.
ATHABASCA GROUP	Manitou Falls	45.4 - 55.0m	Mod - strongly bleached, mod. silicified sandstone, weak red hem. stain, dark green stain (clay?) along some fractures, mod - str. fractured, tr. Py along fractures.
	Fair Point Fm.	55.0 - 66.0m	Mod- str. bleached, coarse grained, pebbly to conglomeratic sandstone, white clay matrix, local clay enrichment (alter.), mottled red hematite, minor clay gouge, pyrite along fractures.
BASEMENT		66 - 75.2m	Mod. hematized, light green chloritized, locally strongly silicified, quartz - feldspar-gneiss, with strong mylonitic texture, locally fractured and brecciated.
		E.O.H @ 75.2m	

INVESTIGATIONS: (DOWN-HOLE GAMMA-LOG, GEOCHEMISTRY, MINERALOGY, OTHERS)

Downhole Radiometric Peaks
No anomalous radioactivity

Samples For Lithogeochem:
MR67 -1 15-25m Devonian
-2 25-35m "
-3 35-45m "
-4 45.4-55m Manitou Falls
-5 55-66m Fair Point

DDH No. MR67

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
0													
5													
					Devonian bedrock top from gamma log.								
10												10	
15					Casing to 15.2m								
	100	1	1	massive py	15.2 – 45.4m. Pale to dark green dolomite with interbedded calcareous sandstone numerous intervals of soft dark green clay (alteration) Sandstone layers moderately to strongly friable and fractured, vuggy bitumen in dolomitic rock, porous bitumen in sandstone. spheroidal pyrite common	py					Weak (vuggy)		
3	79	1	1										
20						py						20	
4	97	1	1		15.2 – 22.5m. dark green clay-rich dolomite 17.0m massive pyrite filling vugs. 19.7m spher. py ~1cm diameter 20.0 – 20.2m spheroidal py								
4	100	1	1										
25													

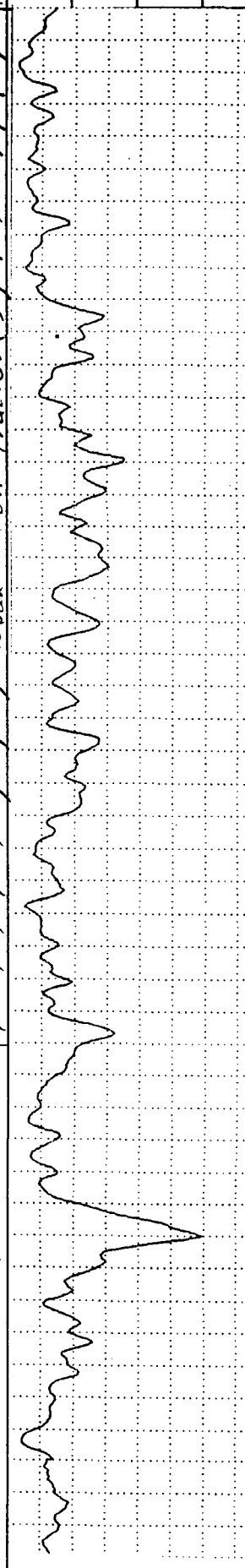
DDH No. MR67

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Fractures	GAMMA LOG (CPS/DIV) 20 40 60 70	SAM #
25	100	1	1		22.5 – 29.9m pale green dolomite.								
30	67	1	1		29.9 – 39.7m calcareous sandstone, mod - strongly friable - clay rich friable zones, spheroidal py common							30	
35	98	1	1		py py py py								
40	79	1	1		37.7 - 39.7m relatively competent porous/permeable sandstone, strong bitumen stain.						Strong		
45	82	1	1		39.7 - 45.4 dark green soft clay + minor friable sandstone, clay zones of >50% dark green clay.							40	
	79	1	1										
	94	21	>30		45.4 – 55.0m Manitou Falls Formation.								
50	100	39	>30		Mod - strongly bleached, mod. silicified sandstone, weak red hem. stain, dark green stain along some fractures + in porous sst., mod - str. fractured. - dk. green clays (not chlor.) probably from Devonian.	Mod.		wk		Mod	wk (along fractures)		

DDH No. MR67

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	SAM #
50					clay clasts common, trace pyrite along some fractures							
	100	82	21	5°	tr. py	Moderate		Weak		Mod. (on fractures)		
				5°	trace py							
55	100	94	8		55-66.0m FAIR POINT FM. Moderately to strongly bleached coarse grained pebbly to conglomeratic sandstone, white clay matrix with some clay enriched zones, mod. fractured, wk. red hem. mottles, tr. pyrite							
	94	76	16	10°	56.8-57.2m light green clay enrichment in matrix (friable sst)	qtz						
				50°	58.1-58.3m light green sandy/clay gouge along fracture	Strong				Weak		
60	100	88	14		60.6-61.2m white clay enriched matrix - fractured, trace pyrite, friable.	py						60
				0°	62-62.8 - clay enriched matrix, fractured, wk. friable, pyrite	py						
					62.6-66.0m - red ("brick red") hem mottles.							
	100	94	6	20°		py		Weak (mottles)				
65				10°		py						
					∠ unconformity (~70° CA)	py						
	20	33	>30		66-75.2m Altered Mylonite Mod hematized, light green chloritized, locally strongly silicified, quartz-(feld) gneiss with mylonite texture, locally fractured and brecciated					Strong		
70	100	88	15	25°	66-66.3 - light green chloritic f. gouge		Mod		Mod (light green)			70
					66.3-69 silicified mylonite strongly fractured in part							
					69-70.6m coarse crush breccia (~20° CA)							
					70.6-75.2 mylonitic texture ~20° CA							
75	100	85	24+	28								

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80



DDH No. MR67

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.			GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
15													
					E.O.H. @ 75.2m								
30													

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR67

PAGE 6 OF 6

COORDINATE X: L128N

COORDINATE Y: 164+95E

ELEVATION Z: 315m (est by topo map).

INCLINATION: -90

AZIMUTH: —

BOREHOLE Ø: NQ

CASING DEPTH: 15.2m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL: —

DATE of DRILLING: Mar 31 – April 2/89

TOTAL DEPTH: 75.8m

LOGGED THROUGH: OPEN HOLE | PLASTIC PIPE | (RODS)

INSTRUMENT: MT Sports 2000 SN 79

PROBE GAMMA: G375/A SN 442

PROBE NEUTRON: —

DATE of LOGGING: April 2/89

TIME of LOGGING: 7:00 – 8:30 am

TOTAL DEPTH: 74m

OPERATOR: B. Lacey

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0	10cps/div	5m/min	100/1				
74							

REMARKS: Digitally Logged using Aquire – MR67.GRØ (Raw counts)
MR67.GDØ (Dead time corrected)

FORM 32

Appendix 2:

Drillcore Lithogeochemical and XRD Clay Analyses

Appendix 2

Lithogeochemical and XRD CLay Sample Description

DDHNo	SaNo	From	To m	Length	Lithology
MR 61	1	172.0	182.0	10.00	Fair Point Fm.
MR 61	2	166.0	172.0	6.00	Fair Point Fm.
MR 61	3	155.0	165.0	10.00	Manitou Falls Fm.
MR 61	4	145.0	155.0	10.00	Manitou Falls Fm.
MR 61	5	135.0	145.0	10.00	Manitou Falls Fm.
MR 61	6	125.0	135.0	10.00	Manitou Falls Fm.
MR 61	7	115.0	125.0	10.00	Manitou Falls Fm.
MR 61	8	105.0	115.0	10.00	Manitou Falls Fm.
MR 61	9	95.0	105.0	10.00	Manitou Falls Fm.
MR 61	10	85.0	95.0	10.00	Manitou Falls Fm.
MR 61	11	75.0	85.0	10.00	Manitou Falls Fm.
MR 61	12	71.0	75.0	4.00	Manitou Falls Fm.
MR 63	1	49.0	61.0	12.00	Manitou Falls Fm.
MR 63	2	62.0	65.0	3.00	Fair Point Fm.
MR 63	3	65.0	75.0	10.00	Fair Point Fm.
MR 63	4	65.6	66.6	1.00	Fair Point Fm.
MR 63	5	81.5	82.5	1.00	Basement
MR 63	6	114.3	115.3	1.00	Basement
MR 63	7	139.8	140.8	1.00	Basement
MR 64	1	44.0	47.0	3.00	Manitou Falls Fm.
MR 64	2	47.0	57.0	10.00	Manitou Falls Fm.
MR 64	3	57.0	67.0	10.00	Manitou Falls Fm.
MR 64	4	67.0	77.0	10.00	Manitou Falls Fm.
MR 64	5	77.0	87.0	10.00	Manitou Falls Fm.
MR 64	6	87.0	97.0	10.00	Manitou Falls Fm.
MR 64	7	97.0	107.0	10.00	Manitou Falls Fm.
MR 64	8	107.0	117.0	10.00	Manitou Falls Fm.
MR 64	9	117.8	118.8	1.00	Basement
MR 64	10	118.8	119.8	1.00	Basement
MR 64	11	119.8	120.8	1.00	Basement
MR 64	12	120.6	120.7	0.10	Basement
MR 64	13	134.2	134.3	0.10	Basement
MR 64	14	158.0	159.0	1.00	Basement
MR 64	15	244.4	245.4	1.00	Basement
MR 67	1	15.0	25.0	10.00	Devonian
MR 67	2	25.0	35.0	10.00	Devonian
MR 67	3	35.0	45.0	10.00	Devonian
MR 67	4	45.4	55.0	9.60	Manitou Falls Fm.
MR 67	5	55.0	66.0	11.00	Fair Point Fm.

Appendix 2

Lithogeochemical Analyses - Oxides

DDHNo	SaNo	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	P2O5	TiO2	MnO
MR 61	1	7.15	0.8	0.032	0.084	1.137	0.015	0.18	0.25	0.001
MR 61	2	3.68	0.9	0.032	0.097	1.011	0.012	0.06	0.1	0.002
MR 61	3	1.17	0.36	0.022	0.163	0.185	0.011	0.02	0.02	0.001
MR 61	4	0.79	0.33	0.023	0.123	0.097	0.015	0.02	0.02	0.001
MR 61	5	1.03	0.46	0.03	0.147	0.16	0.015	0.02	0.03	0.002
MR 61	6	0.91	0.3	0.02	0.149	0.112	0.012	0.04	0.03	0.001
MR 61	7	0.88	0.38	0.017	0.098	0.149	0.011	0.02	0.02	0.002
MR 61	8	0.81	0.28	0.014	0.065	0.13	0.013	0.02	0.02	0.001
MR 61	9	0.78	0.28	0.015	0.063	0.123	0.012	0.02	0.02	0.002
MR 61	10	0.96	0.34	0.017	0.063	0.178	0.012	0.06	0.02	0.001
MR 61	11	0.95	0.28	0.015	0.057	0.203	0.013	0.02	0.02	0.002
MR 61	12	1.25	0.4	0.016	0.09	0.298	0.011	0.05	0.03	0.002
MR 63	1	1.44	0.36	0.01	0.153	0.297	0.012	0.02	0.01	0.002
MR 63	2	4.41	0.33	0.01	0.152	0.92	0.014	0.05	0.11	0.002
MR 63	3	4.96	0.68	0.027	0.853	0.532	0.011	0.07	0.14	0.002
MR 63	4	3.05	0.42	0.117	0.081	0.336	0.018	0.27	0.11	0.002
MR 63	5	12.4	2.16	0.073	1.861	1.087	0.022	0.19	0.27	0.006
MR 63	6	14.9	1.13	0.037	2.89	2.4	0.041	0.09	0.26	0.005
MR 63	7	12.4	1.52	1.326	5.83	0.876	0.047	1.39	0.21	0.011
MR 64	1	0.89	0.64	0.018	0.054	0.245	0.011	0.02	0.02	0.001
MR 64	2	0.53	0.37	0.014	0.072	0.111	0.009	0.02	0.02	0.002
MR 64	3	0.52	0.43	0.012	0.049	0.072	0.01	0.02	0.02	0.002
MR 64	4	1.23	0.5	0.016	0.105	0.306	0.01	0.02	0.03	0.002
MR 64	5	0.76	0.41	0.013	0.037	0.187	0.008	0.02	0.02	0.002
MR 64	6	0.64	0.37	0.016	0.05	0.143	0.009	0.02	0.02	0.001
MR 64	7	0.65	0.39	0.014	0.053	0.157	0.009	0.02	0.02	0.001
MR 64	8	1.19	0.43	0.015	0.074	0.29	0.012	0.02	0.04	0.002
MR 64	9	23.2	1.06	0.052	2.63	1.488	0.314	0.29	0.81	0.002
MR 64	10	19.3	1.57	0.07	3.87	0.71	0.213	0.38	0.77	0.003
MR 64	11	12.6	1.38	0.062	5.21	0.315	0.129	0.07	0.59	0.002
MR 64	12	13.5	2.03	0.077	5.04	0.338	0.118	0.23	0.21	0.001
MR 64	13	25.5	3.34	0.076	3.87	5.12	0.408	0.36	0.81	0.002
MR 64	14	20	3.19	0.025	0.684	1.63	0.212	0.16	0.81	0.003
MR 64	15	21.2	6.26	0.048	10.02	1.011	0.362	0.07	0.45	0.011
MR 67	1	4.22	2.26	9.97	6.53	1.256	0.206	0.05	0.17	0.027
MR 67	2	6.23	2.96	10.82	9.27	1.96	0.241	0.08	0.24	0.032
MR 67	3	2.57	3.22	8.63	6.37	0.531	0.039	0.03	0.09	0.022
MR 67	4	1.49	0.41	0.06	0.133	0.2	0.023	0.02	0.04	0.001
MR 67	5	3.08	0.4	0.052	0.408	0.583	0.058	0.05	0.11	0.001

Appendix 2

Lithogeochemical Analyses - Trace Elements

DDHNo	SaNo	Ni	Pb	Pbptl	As	Bi	U tot	U ptl	Mo	Zn	Cd	Co
MR 61	2	5	2	1.8	3.2	0.2	0.9	0.2	5	2	1	2
MR 61	3	4	2	0.4	0.8	0.2	0.6	0.2	5	5	1	2
MR 61	4	2	2	0.5	0.8	0.2	0.5	0.2	5	1	1	2
MR 61	5	3	3	0.4	0.8	0.2	0.5	0.2	5	1	1	2
MR 61	6	3	2	0.8	0.5	0.2	0.7	0.2	5	1	1	2
MR 61	7	2	2	0.6	0.3	0.2	0.5	0.2	5	1	1	2
MR 61	8	2	2	0.6	0.3	0.2	0.6	0.2	5	1	1	2
MR 61	9	2	2	0.3	0.3	0.2	0.4	0.2	5	1	1	2
MR 61	10	2	2	0.9	0.8	0.2	0.9	0.2	5	1	1	3
MR 61	11	2	2	0.6	0.3	0.5	1.0	0.2	5	1	1	3
MR 61	12	3	253	164.8	0.8	0.5	1.1	0.2	5	79	1	3
MR 63	1	2	13	2.6	1.1	1.1	1.7	0.2	5	3	1	2
MR 63	2	3	27	4.8	2.4	3.3	5.9	0.8	5	9	1	3
MR 63	3	14	40	10.2	1.6	7.5	7.6	1.5	7	8	1	3
MR 63	4	3	295	168.3	2.1	75.0	35.0	9.3	5	11	5	4
MR 63	5	36	121	19.1	6.3	20.0	61.0	13.0	11	39	1	29
MR 63	6	25	7	3.6	1.3	1.1	5.7	2.4	5	18	1	10
MR 63	7	18	2	1.4	1.1	0.5	6.0	2.3	5	8	1	8
MR 64	1	6	6	1.7	0.5	0.3	0.8	0.2	5	7	1	2
MR 64	2	5	4	0.7	0.7	0.2	0.6	0.3	5	6	1	2
MR 64	3	7	5	0.6	0.5	0.2	0.9	0.2	8	7	1	2
MR 64	4	7	7	2.3	0.7	0.2	1.8	0.2	5	8	1	2
MR 64	5	5	5	0.5	0.7	0.2	0.7	0.5	6	6	1	2
MR 64	6	6	3	0.6	0.7	0.2	0.7	0.5	7	5	1	2
MR 64	7	6	3	0.2	0.7	0.2	1.1	0.2	6	8	1	2
MR 64	8	5	4	0.3	0.9	0.2	1.2	0.2	9	7	1	2
MR 64	9	92	36	4.8	74.0	1.0	7.1	0.3	19	17	1	10
MR 64	10	136	32	3.8	61.0	0.7	6.5	0.4	5	24	1	11
MR 64	11	102	15	4.2	3.2	0.3	7.2	0.4	5	12	1	8
MR 64	12	90	37	7.3	5.4	0.5	3.3	0.5	6	7	1	4
MR 64	13	31	35	12.9	3.8	1.0	10.0	1.8	5	10	1	14
MR 64	14	26	18	6.0	4.9	0.5	2.9	0.8	8	13	1	8
MR 64	15	48	6	1.3	2.5	1.4	4.7	0.8	14	49	1	15
MR 67	1	23	2	3.3	2.4	0.2	1.7	0.9	5	28	1	5
MR 67	2	28	2	3.5	2.8	0.3	1.9	0.9	5	25	1	10
MR 67	3	22	2	1.4	1.3	0.2	1.2	0.5	5	21	1	4
MR 67	4	6	18	5.3	1.3	0.5	3.7	0.4	5	9	1	2
MR 67	5	12	3	1.9	1.3	0.2	3.0	0.5	5	5	1	3

Appendix 2

Lithogeochemical Analyses - Trace Elements

DDHNo	SaNo	Cr	V	Be	Cu	Zr	Y	La	Th	Sr	Ba	B
MR 61	2	319	12	1	6	86	4	19	15	248	24	50
MR 61	3	229	5	1	5	88	5	7	4	62	9	60
MR 61	4	166	3	1	4	85	3	9	6	56	11	50
MR 61	5	190	6	1	4	105	3	10	7	57	12	40
MR 61	6	194	4	1	3	153	4	8	5	58	12	30
MR 61	7	237	4	1	3	82	3	11	5	54	9	30
MR 61	8	269	5	1	4	90	4	10	5	55	10	30
MR 61	9	265	6	1	4	83	3	11	7	57	10	50
MR 61	10	269	27	1	6	67	3	16	4	78	12	30
MR 61	11	255	15	1	5	115	6	12	6	68	11	30
MR 61	12	323	26	1	26	123	6	13	7	62	12	30
MR 63	1	251	4	1	2	40	3	9	3	27	4	60
MR 63	2	225	63	1	5	88	8	20	14	156	41	140
MR 63	3	303	45	1	12	122	12	22	38	224	47	70
MR 63	4	226	185	2	15	202	34	46	137	848	76	50
MR 63	5	354	462	8	68	211	44	149	42	888	84	190
MR 63	6	237	88	3	2	195	15	54	52	137	628	10
MR 63	7	111	30	3	1	125	32	67	170	73	89	60
MR 64	1	290	6	1	3	50	3	14	3	50	10	20
MR 64	2	279	6	1	4	48	1	9	3	57	6	20
MR 64	3	332	6	1	3	75	2	4	5	51	6	20
MR 64	4	170	5	1	5	101	2	4	8	61	7	30
MR 64	5	333	5	1	3	57	1	1	7	51	6	30
MR 64	6	287	4	1	2	58	1	1	3	46	5	60
MR 64	7	307	4	1	2	92	1	1	6	30	4	80
MR 64	8	302	5	1	3	120	3	3	3	40	6	150
MR 64	9	231	94	3	7	443	25	182	50	1455	173	190
MR 64	10	184	110	2	8	286	48	275	143	1570	352	60
MR 64	11	237	124	2	9	183	17	86	45	259	67	40
MR 64	12	171	120	3	4	107	15	284	271	684	133	40
MR 64	13	113	149	5	5	563	20	383	320	1090	448	150
MR 64	14	120	32	3	7	83	8	264	257	501	104	90
MR 64	15	28	91	3	144	307	18	194	182	161	46	60
MR 67	1	211	31	1	7	75	7	25	8	89	92	30
MR 67	2	176	45	1	7	72	9	26	15	82	121	60
MR 67	3	248	19	1	4	54	6	19	9	59	53	60
MR 67	4	289	11	1	5	86	7	17	4	90	9	140
MR 67	5	244	24	1	5	63	6	21	13	132	33	110

Lithogeochemical Analyses - XRD Clay Analyses

Clay Proportion Data[1]						Accessory Mineral Listing[2]				
DDHNo	SaNo	I	C	K	%Clay	Hem	Sid	Phos	Dra	MLC
MR 61	1	57	0	43	7			1		1
MR 61	2	96	0	4	7	1		1		
MR 61	3	70	30	0	5				2	1
MR 61	4	57	43	0	2				2	
MR 61	5	75	25	0	4				2	
MR 61	6	64	36	0	4			1	2	
MR 61	7	77	23	0	4				2	
MR 61	8	82	18	0	4				2	
MR 61	9	87	13	0	5				2	2
MR 61	10	91	9	0	4			1	2	
MR 61	11	95	5	0	4				1	
MR 61	12	95	5	0	4					
MR 63	1	96	4	0	5				2	
MR 63	2	79	0	21	6				2	
MR 63	3	44	40	16	10				1	
MR 63	4	59	0	41	3			2		
MR 64	1	99	0	1	5	1				1
MR 64	2	83	0	17	3					
MR 64	3	78	4	18	3				1	
MR 64	4	94	6	0	5				1	
MR 64	5	100	0	0	5				1	
MR 64	6	96	0	4	5	1		1	1	
MR 64	7	99	0	1	5				2	
MR 64	8	100	0	0	6	1			3	
MR 67	1	43	6	50	10					
MR 67	2	61	39	0	14					
MR 67	3	38	4	58	6		3			
MR 67	4	51	0	49	3				2	
MR 67	5	71	29	0	8					

[1] I = Illite, C = Chlorite, K = Kaolinite.
[2] Hem = Hematite, Sid = Siderite, Phos = Phosphate, Dra = Dravite, MLC = Mixed Layer Clay.
1 = trace, 2 = minor, 3 = moderate, 4 = strong, 5 = very strong, 6 = extremely strong.

Part 2

19890004

URANERZ EXPLORATION AND MINING LIMITED

ASSESSMENT REPORT FOR MINERAL EXPLORATION PERMITS

6886050002 and 6886050003.

LOCATED IN TOWNSHIPS 104 and 105,

RANGES 2 THROUGH 4 INCLUSIVE, W4M.

FOR WORK COMPLETED DURING THE PERIOD OF

JANUARY 1, 1989 TO APRIL 30, 1989.

SUBMITTED TO THE ALBERTA DEPARTMENT OF

ENERGY AND NATURAL RESOURCES

Compiled By: Rodney G. Orr
Project Geologist

Date: 24 May, 1989

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2. Lithogeochemical and XRD Semi-Quantitative Clay Analytical Data from Drillcore
3. Contractor's Report on Time Domain EM Survey
4. Contractor's Report on Petrological Investigations

1. INTRODUCTION

1.1 Time of Investigations

This report contains work performed by, and on behalf of, Uranerz Exploration and Mining Limited during the period of January 1, 1989 to April 30, 1989.

1.2 Area

The Maybelle River project area is situated within northeastern Alberta, and lies to the south of Lake Athabasca. This is within N.T.S. area 74L, and is between latitudes 57°45'N and 58°30'N, and longitudes 110°00'W and 111°00'W (figure 1).

This report encompasses the exploration activities within Mineral Exploration Permits 6886050002 and 6886050003, located in Twps. 104 through 105 inclusive, Rngs. 2 through 4 inclusive, W4M (Table 1, figure 2).

2. REGIONAL GEOLOGY

The Maybelle River area is situated near the northwestern edge of the Canadian Shield, on the western margin of the Athabasca Basin. This is within a portion of the Churchill Structural province which remains little understood due primarily to the lack of outcrop. As a result, there has been relatively limited activity by both exploration companies and government agencies.

According to the lithostructural subdivision which has been developed by workers within the adjacent portion of Saskatchewan, the project area falls within the Firebag Domain of the Western Craton (Lewry and Sibbald, 1980). A more recent paper by Lewry et al. (1985) describes a new series of regional lithostructural subdivisions for the western Churchill Province. Within this scheme, the area which is bounded on the east by the Virgin River-Black Lake Shear Zone and to the west by the Macdonald Fault is called the Amer Lake Zone (figure 3, inset). It is projected to extend southwesterly to the Cordillera beneath the Interior Platform. To the north it extends northeasterly through to the eastern Arctic and probably beyond. This zone is somewhat synonymous with the former Western Craton, but now encompasses the geology of the entire western shield region.

Table 1: Summary of Dispositions

No.	Province	Permit	Date of Recording	Area ha
1	Alberta	6884100001	October 16, 1984	6,384
2	Alberta	6884100002	October 16, 1984	1,764[1]
3	Alberta	6884120001	December 13, 1984	6,704
4	Alberta	6886050002	May 30, 1986	9,216
5	Alberta	6886050003	May 30, 1986	9,104
6	Alberta	6886050004	May 30, 1986	8,896
7	Alberta	6886050005	May 30, 1986	9,088
8	Alberta	6886050006	May 30, 1986	9,216
9	Alberta	6887090002	September 2, 1987	9,216
10	Alberta	6888030001	March 25, 1988	5,632
11	Alberta	6888030002	March 25, 1988	8,704
12	Alberta	6888030003	March 25, 1988	8,448
13	Alberta	6888030004	March 25, 1988	6,912
14	Alberta	6888030005	March 25, 1988	7,936
15	Alberta	6888040001	April 19, 1988	4,608
16	Alberta	6888040002	April 19, 1988	8,448
17	Alberta	6888040003	April 19, 1988	8,704
18	Alberta	6888040004	April 19, 1988	8,192
19	Alberta	6888040005	April 19, 1988	6,912
20	Alberta	6888040006	April 19, 1988	9,216
21	Alberta	6888040007	April 19, 1988	9,216
22	Alberta	6888040008	April 19, 1988	7,616
			Alberta Total	170,132

Notes: [1] reduced from 3,376 ha at end of first term.

Lewry et al. (1985) characterize the Amer Lake Zone as a semicratonic foreland which consists of an Archean basement with isolated remnants of Aphebian cover rocks. The overall level of Hudsonian overprinting is low but variable, with restricted brittle to plastic zonal reworking, huge shear zones, extensive Hudsonian granite plutonism and isotopic resetting. The outliers of Aphebian supracrustals are thought to include both passive marginal platformal to miogeoclinal assemblages and local foreland basin sequences, the ages of which may be widely differing and difficult to correlate.

Within both northern Alberta and Saskatchewan, much of the Amer Lake Zone is comprised of Archean cratonic domains in which the upper amphibolite to pyroxene granulite facies paragneisses and Archean structures are mildly retrograded and refoliated.

As there is no known outcrop within the project area, its lithostructural setting remains conjectural. The basement has been mapped both to the north and south of the project area as: i) probable pre-Kenoran aged banded granite gneisses which show evidence of both an earlier granulite facies metamorphism and a later amphibolite facies overprinting; ii) high grade, layered to banded metasediments of probable Archean age, found principally within the granite gneisses; iii) a series of Aphebian-aged intrusive, massive to foliated, amphibolite facies anatectic granitoids, which formed mantled gneiss domes and which show several phases of related (Hudsonian?) deformation; and iv) isolated outliers of low grade metasedimentary and metavolcanic rocks which lie in apparent unconformity upon the Archean granite gneisses, but which are in an uncertain position relative to the Aphebian granitoids (Langenberg and Nielsen, 1982; Godfrey, 1969; Godfrey and Langenberg, 1978). There are no evidences of metamorphosed Aphebian supracrustal rocks in outcrop. Burwash (1978) however, in a study of the subsurface extension of the basement beneath the Phanerozoic cover rocks of the Interior Platform did recognize metasedimentary rocks, and suggests that perhaps only the keels of infolded Aphebian sediments remain.

Unconformably overlying the basement are sandstones which belong to the Helikian-aged Athabasca Group. The western margin of the basin has been reinterpreted westwards a number of times, most recently by Wilson (1985), who places it as nearly coincident with the Richardson River, 12 to 15 km west of the centre of the project area (figure 3). Drilling has indicated the presence of a basement inlier within the south-central portion of the project area.

The irregular, eastern border of the Phanerozoic sediments is also interpreted as lying for the most part to the west of the project area. However, some drillholes within the project area intersected what may be embayments or outliers of Devonian-aged Methy Formation dolomites.

Extensive glacial drift and outwash cover the whole of the project area. Of note is a small area of active sand dunes which lies immediately to the west of the project area.

3. INVESTIGATIONS

Exploration work conducted during the reporting period is summarized in Table 2.

Table 2: 1989 Field Program Activities

Activity	Production
Diamond drilling	963.1 m (2 drillholes)
Drillcore lithogeochemistry (29 element ICP/AA package)	104 samples
Drillcore XRD clay analyses	79 samples
Linecutting	10.55 km
Petrological study	6 samples
Time domain EM	10 days
Access road construction	15 km

3.1 Diamond Drilling

A total of 963.1 metres (2 holes, ddh MR65 & MR66) of NQ-sized drilling was completed (map 1).

Downhole (total count) radiometric probing (Mt. Sopris 2500 with G375A, GF375A, or ST-22 probes) was routinely performed through the rods. The output was captured both digitally and on a analog strip chart. The geological and radiometric logs are contained in Appendix 1.

3.2 Lithogeochemistry - Drillcore

A total of 104 core samples were submitted for chemical analyses. In addition to the 1 metre split core samples collected through mineralized or anomalous sections, successive 10-metre composites through each of the Athabasca Group formations were routinely collected in each hole. The composited material consisted of a piece of core collected every 1.5 metres. All samples were analyzed for 25 major, minor, and trace elements by an I.C.P./A.A. package, plus total and partial uranium, boron, arsenic, and bismuth (Table 3). The data is contained in Appendix 2.

Table 3: Routine Lithogeochemical Analyses

Element (or oxide)	Detection Limit	Accuracy at background levels	Digestion	Method
Al_2O_3	0.1	± 0.2	$HF/HNO_3/HClO_4$	AA
Fe_2O_3	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
CaO	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
MgO	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
K_2O	0.01	± 0.025	$HF/HNO_3/HClO_4$	AA
Na_2O	0.01	± 0.01	$HF/HNO_3/HClO_4$	AA
Ni	1	± 1	$HF/HNO_3/HClO_4$	AA
Pb total	2	± 2	$HF/HNO_3/HClO_4$	AA
Pb partial				
Mo	5	± 2.5	$HF/HNO_3/HClO_4$	ICP
P_2O_5	0.01	± 0.01	$HF/HNO_3/HClO_4$	ICP
Zn	1	± 1	$HF/HNO_3/HClO_4$	ICP
Cd	1	± 1	$HF/HNO_3/HClO_4$	ICP
Co	2	± 1.5	$HF/HNO_3/HClO_4$	ICP
MnO	0.001	± 0.001	$HF/HNO_3/HClO_4$	ICP
Cr	1	± 30	$HF/HNO_3/HClO_4$	ICP
V	1	± 1	$HF/HNO_3/HClO_4$	ICP
Be	1	± 1	$HF/HNO_3/HClO_4$	ICP
Cu	1	± 1	$HF/HNO_3/HClO_4$	ICP
TiO_2	0.01	± 0.01	$HF/HNO_3/HClO_4$	ICP
Zr	1	± 5	$HF/HNO_3/HClO_4$	ICP
Y	1	± 1	$HF/HNO_3/HClO_4$	ICP
La	1	± 2	$HF/HNO_3/HClO_4$	ICP
Th	3	± 3	$HF/HNO_3/HClO_4$	ICP
Sr	1	± 5	$HF/HNO_3/HClO_4$	ICP
Ba	1	± 4	$HF/HNO_3/HClO_4$	ICP
U total	0.2	± 0.2	$HF/HNO_3/HClO_4$	Fluor.
U partial	0.1	-	4N HNO_3 70°C	Fluor.
As	0.2	± 0.2	$HF/HNO_3/HClO_4$	AA(Hyd.)
B	10	± 0.2	KOH Fusion	ICP
Bi				

3.3 Drillcore Semi-Quantitative XRD Clay Analyses

Seventy-nine Athabasca Group sandstone samples were submitted for quantitative XRD clay determinations (illite, chlorite, kaolinite, plus % clay, illite crystallinity and accessory mineral determinations). The material for these was taken from the 10-metre composite samples submitted for chemistry. The objective of these analyses is to outline anomalous clays (typically chlorite) related to U mineralization. This data forms part of Appendix 2.

7. STATEMENT OF EXPENDITURES

The Summary of Expenditures is given in Table 23, while the breakdown by individual permits forms Appendix 14.

TABLE 23: STATEMENT OF EXPENDITURES FOR URANERZ EXPLORATION AND MINING LIMITED; SUMMARY OF EXPENDITURES vs. COMMITMENTS TO THE END OF 1988, FOR THE REPORTING PERIOD OF JULY 1, 1986 TO DECEMBER 31, 1988.

	1 Permit No.	2 Term No.	3 End of current term	4 Permit Size, ha	5 Required Spending(1)	6 Assessment Credits (2)	7 Expenditures for Period(3)	8 Excess Credits(4)
1	6884100001	2	Oct-89	6,384	$191,520	$159,054	$350,586	$318,119
2	6884100002	2	Oct-89	1,744	$68,640	$38,787	$1,696	($28,158)
3	6884120001	2	Dec-89	6,704	$201,120	$921,931	$307,101	$1,027,912
4	6886050006	1	May-89	9,216	$92,160	$0	$193,821	$101,661
5	6886050005	1	May-89	9,088	$90,880	$0	$359,230	$268,350
6	6886050004	1	May-89	8,896	$88,960	$0	$1,136,236	$1,047,276
7	6886050003	1	May-89	9,104	$91,040	$0	$68,637	($22,403)
8	6886050002	1	May-89	9,216	$92,160	$0	$83,754	($8,406)
9	6887090002	1	Sep-90	9,216	$92,160	$0	$36,868	($55,292)
				sum =	$1,008,640	$1,119,771	$2,537,927	$2,649,058

NOTES:

1. Assessment requirements for the current term (column 3). Rates during the initial 3-year term are $10/ha; during the first 2-year renewal, $20/ha; and for each of the two subsequent 1-year renewals, $15/ha. Beyond this, the permits go to lease, with assessment rates of $10/ha/yr. An annual rental of $2.50/ha is not included.

   N.B.: Permit 6884100002 was reduced from 3,376 ha to 1,744 ha at the end of the first term.

2. Included are the following assessment credits which have already been established with the filing of an assessment report in July 1986: permit 6884100001 = $159,053.60; permit 6884100002 = $38,786.50; and permit 6884120001 = $921,931.23; for a total of $1,119,771.33.

3. Expenditures for the reporting period of July 1, 1986-December 31, 1988.

4. Excess credits = Assessment Credits (col. 6) + Expenditures for Period (col.7) - Required Spending (col. 5).

5. Total of all expenditures to date from year-end statements. (N.B.: 1984 = Oct. 16 to Dec. 31).

Declared before me this 24th day of May, 1989 at Saskatoon, Saskatchewan:

R. Loewer

Roland Loewer

A Commissioner for oaths in and for Saskatchewan

My appointment expires Dec. 31, 1989.

I certify that the above statement of expenditures is correct.

[redacted]

Rodney G. Orr
Project Geologist

3.4 Time Domain EM Surveying

A total of 10 days of time domain EM surveying was used to define drilling targets for the 1989 season. The contractor's report is contained in Appendix 3.

3.5 Petrological Study

A research petrologist had been contracted to undertake mineralogical and petrological investigations on representative lithologies using drillcore. Six samples from holes drilled in 1989 have been investigated in this study. The contractor's report is contained in Appendix 4.

4. STATEMENT OF EXPENDITURES

Table 4: 1989 Year to Date Direct Expenditures by Permit, to 30-Apr-89.

Permit 6886050003

1989:	Line cutting:	7.8 km @	$400.00	$3,120
	Diamond drill:	448.9 m @	$89.00	$39,952
	Lithogeochem.:	49 sa @	$34.06	$1,669
	XRD clay:	37 sa @	$22.00	$814
	Petrology:	4 sa @	$86.08	$344
	Time domain EM:	4 days @	$1,880.00	$7,520
	Access roads:	8 km @	$995.00	$7,960
			subtotal =	$61,379
	+ 10% Overhead:			$6,138
			Total =	$67,517

Permit 6886050002

1989:	Line cutting:	2.75 km @	$400.00	$1,100
	Rechaining:	3 km @	$300.00	$900
	Diamond drill:	514.2 m @	$89.00	$45,764
	Lithogeochem.:	55 sa @	$34.06	$1,873
	XRD clay:	42 sa @	$22.00	$924
	Petrology:	2 sa @	$86.08	$172
	Time domain EM:	6 days @	$1,880.00	$11,280
	Access roads:	7 km @	$995.00	$6,965
			subtotal =	$68,978
	+ 10% Overhead:			$6,898
			Total =	$75,876

Declared before me this 29th day of May, 1989 at Saskatoon, Saskatchewan:

R. Loewer

Roland Loewer

A Commissioner for oaths in and for Saskatchewan

My appointment expires Dec. 31, 1989.

I certify that the above statement of expenditures is correct.

[redacted]

Rodney G. Orr
Project Geologist

5. REFERENCES AND SELECTED BIBLIOGRAPHY

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Telecopier (306) 652-3731

May 29, 1989

DECLARATION

I, James D. Murphy, Senior Geologist of Uranerz Exploration and Mining Limited and as a registered Professional Geologist in Alberta, do hereby declare, that I have reviewed the assessment submission made by Rodney G. Orr for Mineral Exploration Permits 6886050002 and 6886050003 and hereby attest to its veracity.

[redacted]

James D. Murphy
P. Geol. Alberta

:sc

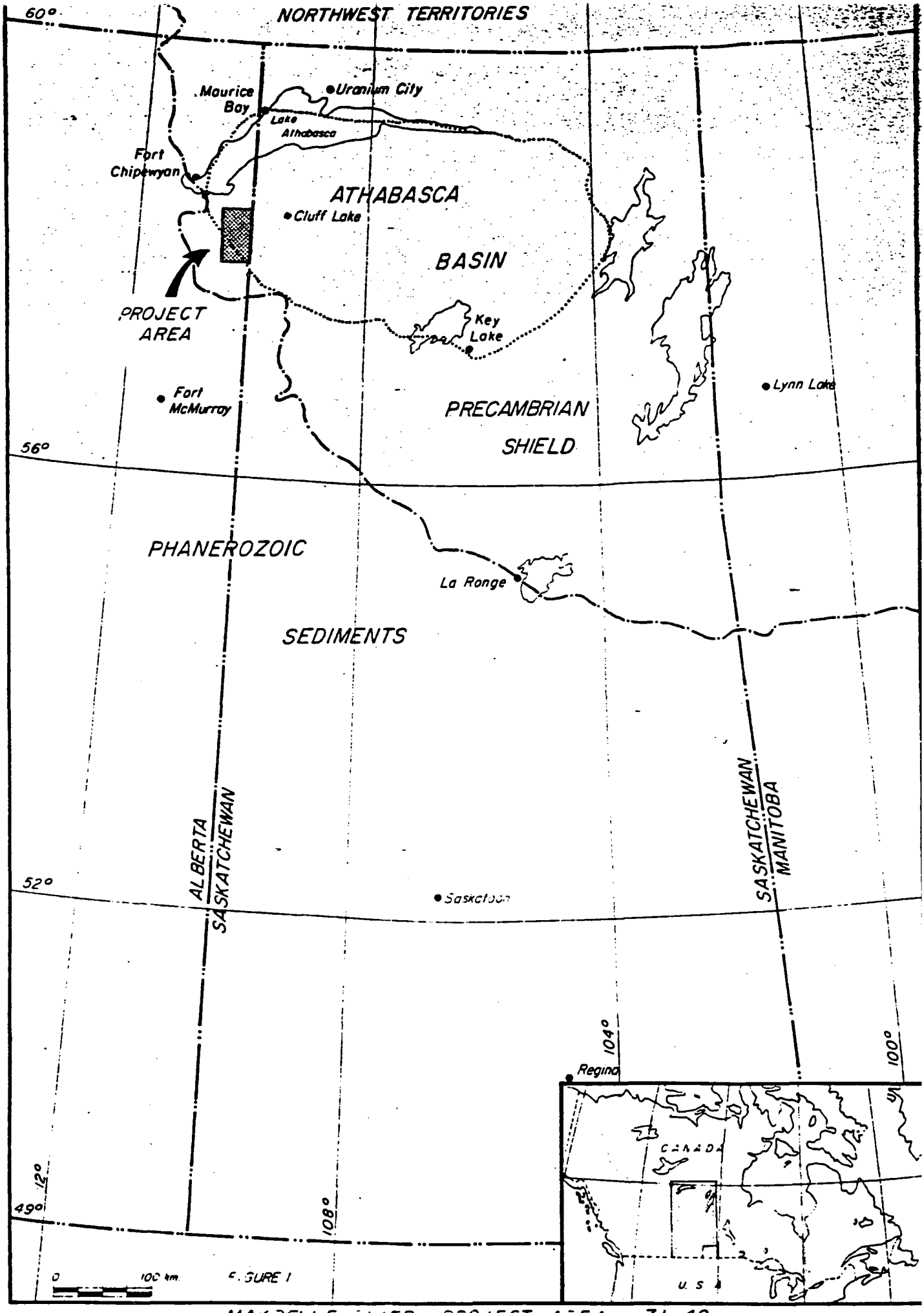
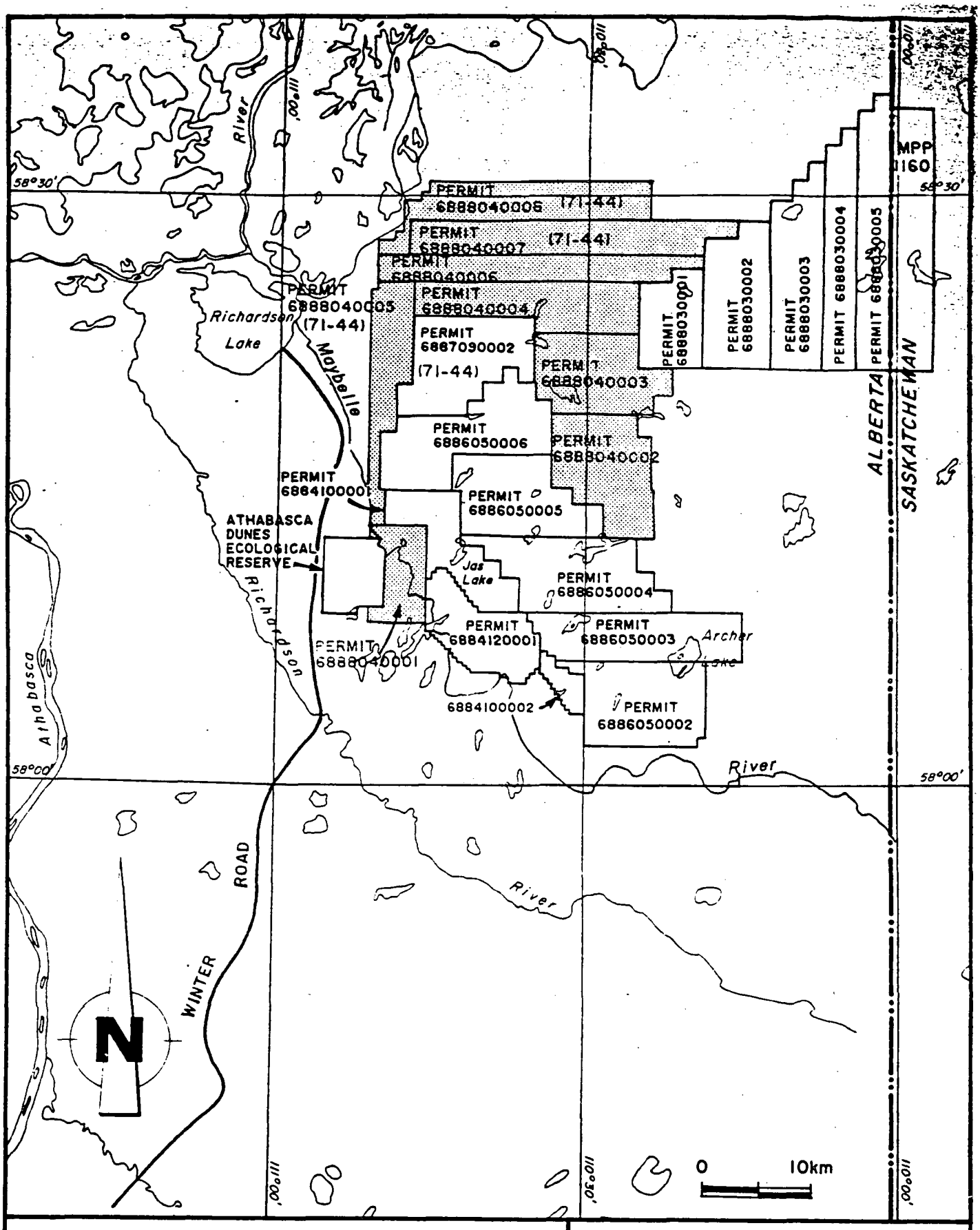


FIGURE 1

MAYBELLE RIVER PROJECT AREA 71-42



MAY 1988

PERMITS ACQUIRED APRIL 19, 1988

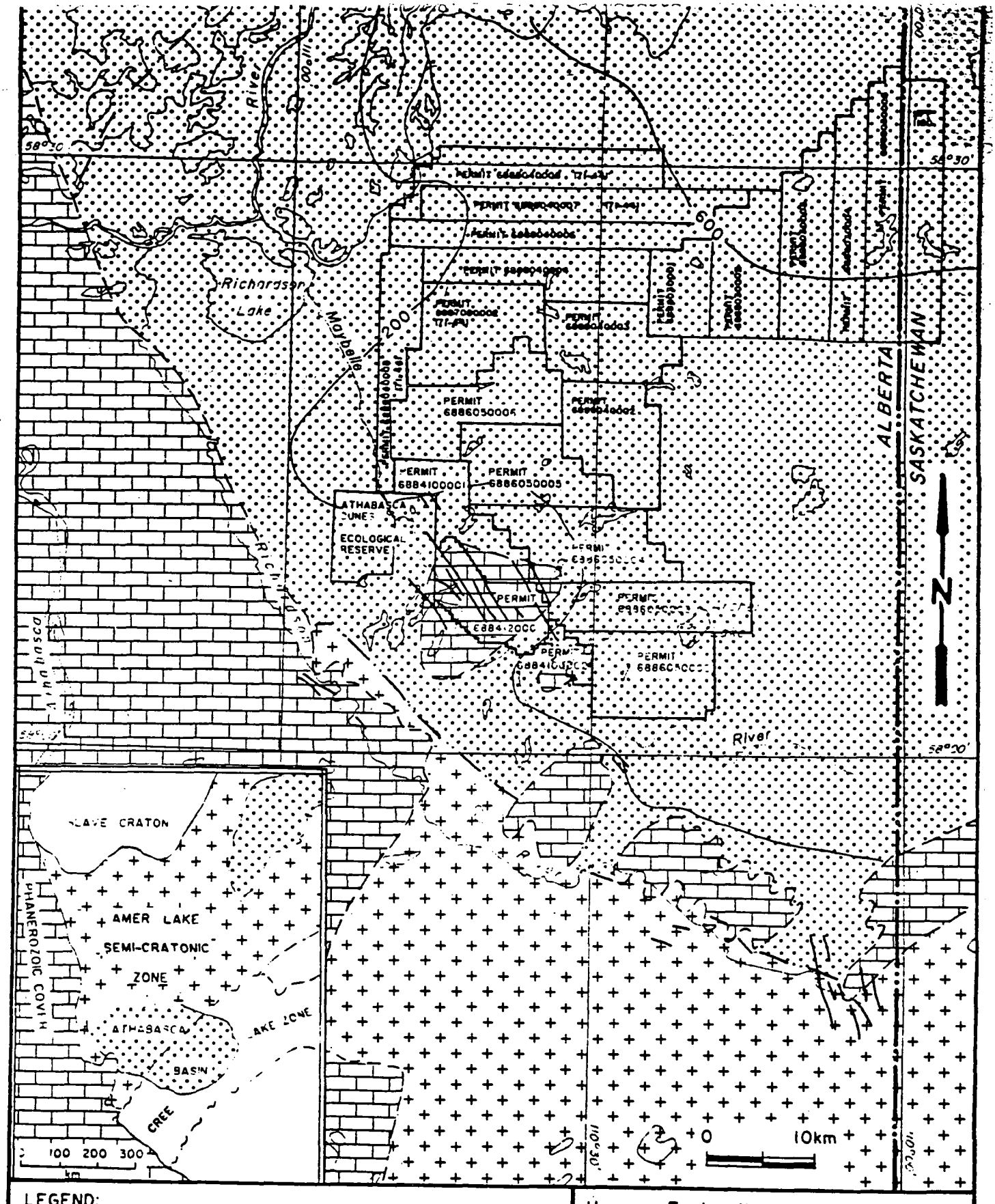
PERMITS ACQUIRED PRIOR TO APRIL 19, 1988

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
Maybelle River II Project 71-44

LAND STATUS

SCALE 1:500,000

FIGURE 2



LEGEND:

- EM CONDUCTOR AXIS
- PHANEROZOIC SEDIMENTS
- ATHABASCA GROUP SANDSTONE (HELIKIAN)
- UNDIFFERENTIATED PRECAMBRIAN BASEMENT
- 200 ATHABASCA GROUP ISOPACH

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42

GENERAL GEOLOGY

SCALE 1:500,000

FIGURE 3

Appendix 1: Diamond Drilling Geological Logs

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR65

AREA: Maybelle River	DISPOSITION: 688605000 2 PROJECT NO.: 7142	PAGE 1 OF 23 DRILLED BY: Advance
COORDINATES: Line 28 N 104+20 E	PLASTIC PIPE: yes (no) DEPTH: — CASING REMOVED: yes (no) DEPTH: 14m	COMMENCED: Mar. 6/89 COMPLETED: Mar. 20/89
TOTAL DEPTH (m): 514.2m ELEVATION (m A.S.L.): 347 (est) DIP/AZIMUTH: -90/—	GEOLOGY BY: B. Lacey CORE STORED AT: Jas Lake	CORE SIZE: NQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 23	DOWN-HOLE PULSE-EM yes (no)

DIP TEST: Pajari

TEST AT(m)	514.2															
DIP	-89															
AZIMUTH	—															

UNIT		FROM - TO	SUMMARY OF OBSERVATIONS
		0 - 15 m	Overburden
Athabasca Group	Lazenby Lk. Formation	15 - 169m	Weakly to moderately bleached, medium to coarse grained, bedded sandstone, gritty layers and interbeds of siltstone with strong maroon hematite, weakly fractured with spheroidal pyrite along some, bitumen stain in porous sst.
	Manitou Falls Fm.	169 - 421 m	Weakly to moderately bleached, medium grained, sandstone, moderate to strong maroon hematite stain and liesegang rings, weakly fractured
	Fair Pt. Fm	421 - 424.8m	Coarse grained sandstone with clay cement (white), 423.6 - 424.8m - conglomeratic sandstone
Basement		424.8 - 454.7	Strongly hematized, weakly chloritized, weakly sericitized, (biotite) - quartz - (feldspar) - gneiss, gneissic to laminated. 441.4 - 454.7m, weakly hem., mod. chlor, mod ser.
		454.7 - 464.4m	Moderately sericitized, mod. chloritized, wkly hematized, (garnet) - quartz - (feldspar) - granitoid, protomylonitic texture, garnet relicts only
		464.4m - 514.2m	Fresh to moderately chloritized, weakly sericitized, garnetiferous - biotite - quartz - feldspar - gneiss with pegmatoid intervals, locally fractured.
		E.O.H. @ 514.2m	

INVESTIGATIONS: (DOWN-HOLE GAMMA-LOG, GEOCHEMISTRY, MINERALOGY, OTHERS)

Downhole γ log Peaks.

515.2m 132 cps
514.5m 116 cps
498.8m 242 cps
467.6m 109 cps

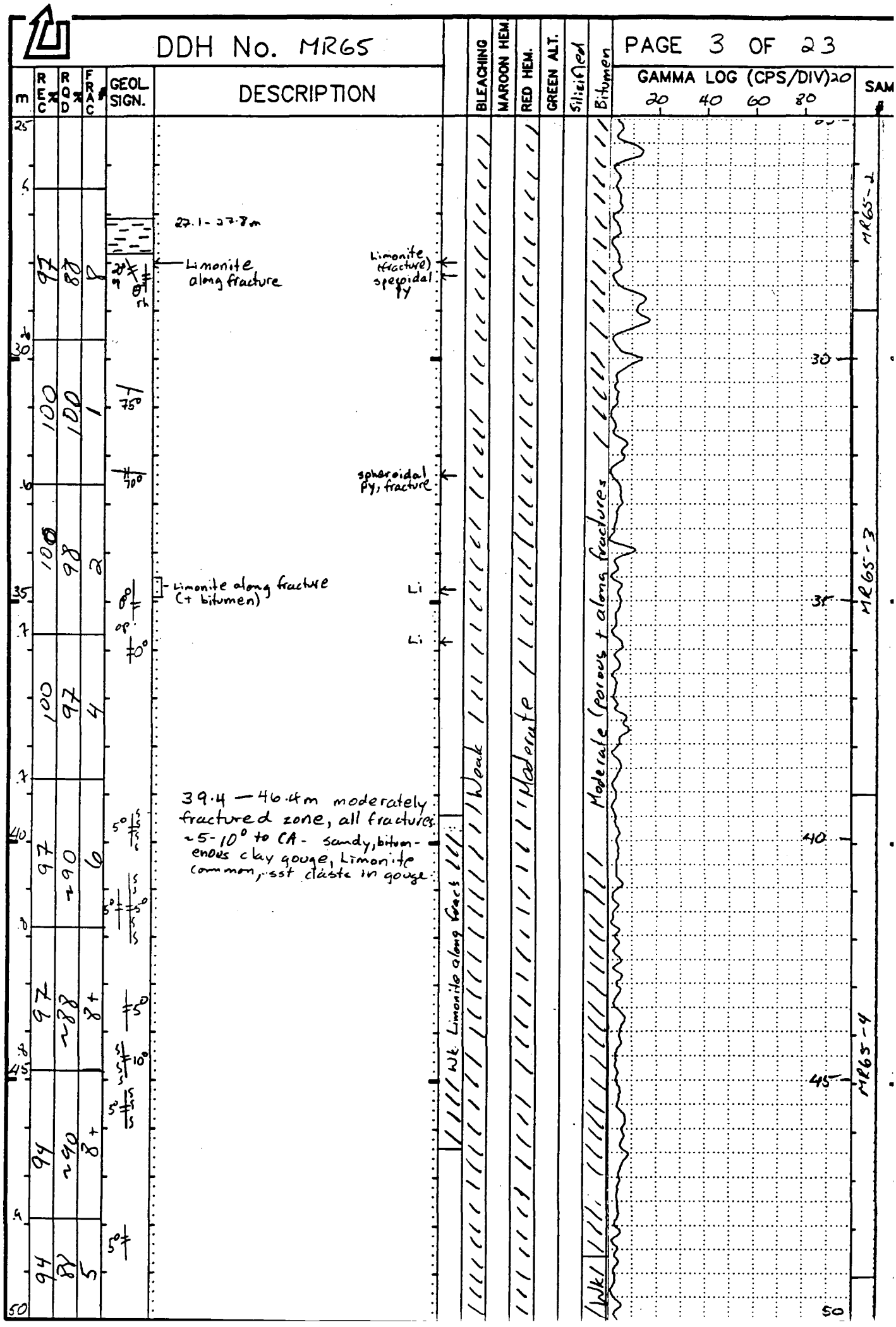
Samples for Lithogeochem:

MR65-1 15-19m L2Lk
-2 19-29m "
-3 29-39m "
-4 39-49m "
-5 49-59m "
-6 59-69m "
-7 69-79m "
-8 79-89m "
-9 89-99m "
-10 99-109m "
MR65-11 109-119 L2Lk
-12 119-129 "
-13 129-139 "
-14 139-149 "
-15 149-159 "
-16 159-169 "
-17 169-179 MF
-18 179-189 "
-19 189-199 "
-20 199-209 "
MR65-21 209-219 MF
22 219-229 "
23 229-239
24 239-249 "
25 249-259 "
26 259-269 "
27 269-279 "
28 279-289 "
29 289-299 "
30 299-309 "
31 309-319 "
32 319-329 "
33 329-339 "
34 339-349 "
35 349-359 "

(over)

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicification	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
0												0	
5					OVERBURDEN							5	
10					Casing to 14m - still in OB Casing to 16.1m ~ in Bedrock.							10	
					Overburden (core)								
15					15-169m LAZENBY LAKE FM. weakly to moderately bleached, medium to coarse-grained, bedded sandstone, gritty layers (cm's), and interbeds of siltstone with strong maroon hematite, weak maroon and moderate red hematite throughout, weak to moderate bitumen stain in porous layers as well as sandy-bituminous gouge along some fractures, weakly fractured. spheroidal py common, stylolites common	Weak		Moderate		Moderate (porous + fractures)	15	MR65-1
20	75	78	6	10°								20	
				25°									
	94	85	18	30°									
				40°	py clay clast 20.9 spheroidal py crystal cluster on fracture (1cm diameter)								
	100	88	14	10°	22.4-22.8m sandy-bitumenous clay gouge along fracture - sandstone clasts (~1cm) within gouge.								MR65-2
25	100	100											


DDH No. MR65
PAGE 3 OF 23
m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON HEM.
RED HEM.
GREEN ALT.
Silicified
Bitumen
GAMMA LOG (CPS/DIV)
20
40
60
80
SAM
25
30
35
40
45
50
97
88
8
100
100
1
100
98
2
100
97
4
97
~90
6
97
~88
8+
94
~90
8+
94
88
5
27.1 - 27.8m
Limonite along fracture
Limonite (fracture) spheroidal py
spheroidal py, fracture
Limonite along fracture (+ bitumen)
Li
Li
39.4 — 46.4m moderately fractured zone, all fractures ~5-10° to CA - sandy, bitumenous clay gouge, Limonite common, sst clasts in gouge
Wk Limonite along fracs
Weak
Moderate
Moderate (porous + along fractures
Wk
MR65-2
MR65-3
MR65-4

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
50				5°	py; 50.50.9m spheroidal py on fracture	py							
.9	100	100	0										
.9				15°									
55	100	97	6	90°								55	MR65-5
	100	100	0								Wk (porous-minor along fractures		
60	100	97	2		60.3-60.9m (gritty/c. grained sst)	Weak	Weak (mottled)	Moderate				60	
				15°									
.1	100	95	6	5°	90cm fracture (open) with ~2mm sandy bitumenous, clay, gouge								
65				60°								65	MR65-6
.1	100	100	2	85° 90° 80° 70°									
70	94	97	2		70.4-70.7m - silty sandstone (strong purple hematite)							70	MR65-7
.2	100	98	1	90°	x-bedding								
75												75	

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
75 .3	100	85	8	5° op ≠ 70°	76.6-77.5 - 90cm fracture	Weak	W / S / Weak						MR65-7
.3 80	100	100	2									80	
.4	97	100	0		clay clast (silt)	Weak	Moderate	Moderate					MR65-8
.4 85	100	97	2	10° ≠	trace py on fracture; clay/silt clast							85	
.5 90	100	100	1	85°								90	
.5	100	94	4	0° ≠ 5° ≠	91.3-91.5 fracture ∥ to CA; tr. spherodal pyrite	Moderate	Weak (liesegangs)	Weak (liesegangs)					MR65-9
.6 95	100	97	6	20° op ≠								95	
.6	100	97	5	≠ 0° ≠ 0° rh 20° ≠ 90° 70° ≠	trace spheroidal pyrite	Weak	Weak	Moderate (liesegangs)					
.7 100												100	-10

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
100	100	94	7	0.5	clay/silt clast 101.5-102.8 (1.3m) fractures sub. ⊥ to core axis with bitumen and trace spheroidal pyrite. (some sooty pyrite)	tr. pyrite					w/		
105	100	97	3									105	MR65-10
					tr. spher. py.		Weak						
	100	93	7		spher. py.								
110	100	95	3	15° op	spher. py.	Weak		Moderate				110	
				20°	spher. py.								
	100	98	2		clay/silt clast + qtz pebbles.								MR65-11
115				85°									
	100	95	4	40° op			Moderate					115	
					118.9-122.9m Mod. bleached sandstone (weakly silicified - less clay cement, rel. more qtz overgrowth).								
120	100	100	14		120-120.8m sub-parallel fractures with tr. pyrite + limonite stain along fracture.							120	
					tr. spher. py. + limonite								
	100	94	7	0° op	abundant spher. pyrite	Moderate		Weak	Weak				MR65-12
125				10° op	123.5-124.2m abundant spher. pyrite (sooty + crystalline) and associated limonite stain along fracture.								
					py + limonite								
				15° op	py							125	

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
125	100	96	7	0° ‡ 5°	tr. spher. py.	Weak	Mod.						MR65-12
.1	100	97	5	10° ‡ ‡ 5°	py	Mod							
130						W	M						
.1	100	98	6	‡ 5° rh		Mod		Weak		Weak		130	
				10° ‡ rh			M						
.2	100	99	1	10° ‡	132.9 - 144.6 m Strongly bleached fine-medium grained sst. locally mod. silicified - weakly silicified throughout med. grained sst gradually decr. to finegr. sst (down), coarse grained (gritty) layers still occur.	tr. py.							MR65-13
135												135	
.2	100	100	1	70°		Strong				Moderate			
.3													
140	100	100	0									140	
.3	100	100	1	5° ‡ rh	143.8 - 144.3 spher. py + evh. qtz along 50cm fracture								MR65-14
145					144.6 m - 169 m weakly bleached, mod - str maroon hematite, mod. red hem (liesegang rings) - med. to coarse grained sandstone							145	
.4	100	100	3	‡ 0°	silty sandstone.	Weak	Moderate	Weak					
.4	100	100	1										
150												150	

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen.	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
150				15°	trace sooty sphar. py. on fracture.								
.5	100	98	1	70°			Mod	Weak					
.5													
155	100	98	2	65°								155	MR65-15
.6	100	100	1	90° 60°									
160												160	
.6	100	97	5	60°		Weak	Strong	Moderate					MR65-16
.7	100	100	0									165	
.7	100	100	3	85°	last qtz pebble band of Lzby Lk. Fm.								
170	100	100	3	30°	169–421m MANITOU FALLS FORMATION Weakly to moderately bleached medium grained wellsorted sandstone; moderate to strong maroon hematite stain and liesegangs, mod. red hematite, weakly fractured, clay clasts common.		Mod					170	MR65-17
.8	100	100	1				Strong						
175													

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
175				75°	5cm "brick" red hematite along fracture
.4	100	97	4	5° th	clay clasts.
.9					
180	100	100	0	90°	large clay clasts (~2cm diameter
	100	100	0		
185	100	100	1	85°	med. grained gritty sst. laminae with interstitial pyrite (trace)
.1	100	100	2		
190				65°	
.1	100	100	1		clay clast
.2				5° th.	
195	100	100	4		
.2	100	100	1		
200					clay clast

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen
Weak	Strong	Moderate			
Moderate					

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80

SAM #: MR65-17, MR65-18, MR65-19, -20

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
200												200	
3	100	100	2	10°	trace py on fracture								
3	100	97	2	30°	tr. py							205	MR65-20
3	100	100	1		clay clast								
4	100	97	4									210	
4	100	100	0	86°	clay clast	Weak	Moderate	Moderate			Weak (porous sst + minor on fractures)		MR65-21
215												215	
5	100	100	1	90°									
5	100	100	0									220	
6	100	97	2	30°			Strong						MR65-22
6												225	
225													

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
225	100	97	4		
.7				70°	clay clast
	100	100	0		
230					
.7	100	100	0		
.8					
235	100	100	0		
.8	100	100	0		20cm brick red hematite (stain)
240					
.9	100	100	0	90°	clay clast
.9					
245	100	100	0		
	100	97	2	40°	
250					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen
Weak	Strong	Moderate (liesegangs)		Weak (in pores + along fractures)	
Strong	Moderate				

GAMMA LOG (CPS/DIV) 20 40 60 80

230 235 240 245

SAM #: MR65-22, MR65-23, MR65-24, -25

DDH No. MR65

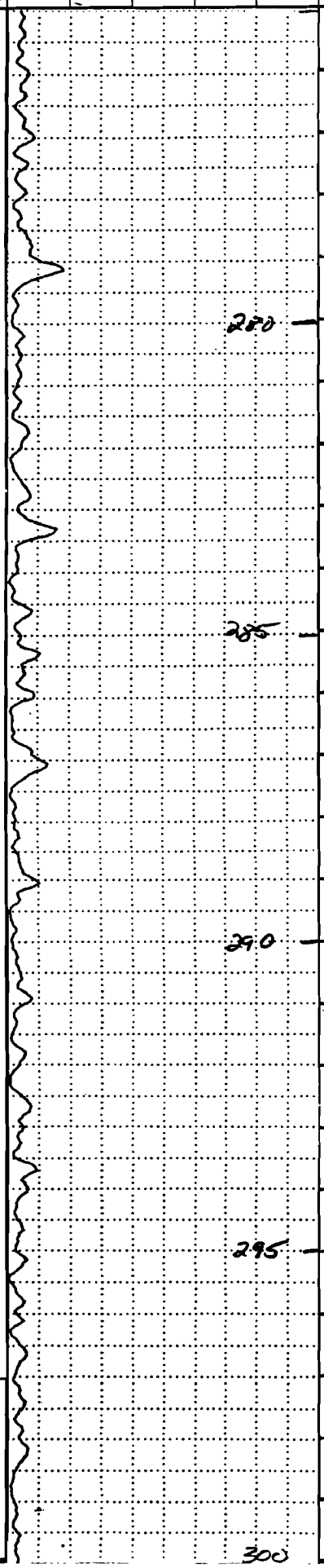
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
250	100	100	2	90°									
.1	100	100	0		clay clast.						←		
255	100	100	2	0° ‡ rh.			Strong					255	MR65-25
.2	100	97	7		clay clast.								
260					10cm fracture zone, with bitumen + silty gouge.						←	260	
.2	100	100	1	0° ‡ rh.	clay clast								
.3	100	100	1		clay clast	Weak	Moderate	Moderate (liesegangs)				265	MR65-26
265				80° op									
.3	100	100	0	80°									
270												270	
.4	100	100	1	10° ‡ rh.	gritty layer (~2cm thick) qtz. pebbles ~ 2-3mm dia.								
.4	100	99	2	90°									MR65-27
275												275	

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
275					thin laminae of dark green siltstone
.5	100	100	8		277.3m - 5cm dark green siltstone.
					clay clast.
280	100	100	8	88°	281 ~ 294m coarse grained sst
					20cm dark green siltstone
					clay clast
.5	100	100	1		
285				60°	10cm dark green siltstone.
.6	100	98	8		
				20°	
290	100	100	0		
					clay clasts.
.7	100	95	7		
				30°	clay clast
295				90°	clay clast
	100	97	4	35°	
.8					clay clast
	100	100	3	80°	
300					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen
Weak	Moderate	Moderate (liesegang rings)			
Strong					
M	W				

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80



SAM #

MR65-27

MR65-28

MR65-29

-30

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV)>0 20 40 60 80	SAM #
300													
.8	100	98	2	10° ∓ 20° ∓	clay clast.			Moderate					MR65-30
					euhed qtz qtz								
.9													
305	100	100	1	0° ∓ rh			Weak					305	
					limonite stain								
.9	100	100	1		2cm dark green siltstone								
310						Mod						310	
	100	98	4	25° ∓ ∓0°	light green clay along fracture								MR65-31
315	100	100	0							Weak (porous - along fractures)		315	
.1				85°		Weak		Weak					
	100	100	0				Moderate						
.1				X 40°									
320	100	100	0	0° ∓	clay clast	Mod						320	
.2						Weak							MR65-32
	100	100	1		euhed qtz in gritty sst layer. qtz	Strong							
325												325	

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
325 .2	100	100	8	25°	Brick red hematite (2cm) near fracture
					Brick red hem. (~2cm) — bl hem
.3	100	95	11	20°, 30°	~329.5 - weakly fractured, sub ⊥ fractures ~20-30° CA with bitumen + py (local). — tr. py
330 .3	100	97	3	30°, 35°	
.4	100	95	11	30°	335.4~369.3 red hematite not as lieseganges but as stain (consistent) minor mottling — euhed qtz; qtz; euhed qtz
335 .4	100	97	6	20°, 20°, 15°	
340 .5	100	100	8	30°	
.5	100	98	4	25°	euhedral qtz.
345 .6	100	97	5	20°	euhedral quartz
.6 350				5° rh	Weak limonite stain along rehealed fracture

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen
Strong		Weak			Weak (porous + along fractures)
Moderate		Moderate			

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80

330 335 340 345 350

SAM #: MR65-32, MR65-33, MR65-34, 35

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
350	100	100	0	90°									
.7	100	100	2	5° ≠ rh.	euhedral quartz	Mod		Mod			Weak (porous + along fractures)		MR65-35
355												355	
.7	100	97	2		356.9-363.3m - strong red hematite mainly as stain - to a lesser extent as liesegang rings and mottles.								
.7				5° ≠									
360	100	98	4	35° ✗		Weak		Strong				360	
.8	100	100	1				S						MR65-36
.8				5° ≠									
365	100	100	0	90°		Moderate		Mod				365	
.9	100	82	20+		368.4 - 383.4 strongly bleached, moderately silicified sandstone, local moderate fracturing with tarry bitumen.								
370												370	
.9	100	65	>30		greyish-grey clay along fracture.	Strong				Moderate	Weak (fractures)		MR65-37
				20° ≠									
375												375	

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
375	100	97	15	30°									MR65-37
	100	97	6	40° 5°		Strong				Moderate	Weak along fractures		
380	100	85	15									380	
	100	98	4	30°									MR65-38
385					½cm dark green siltstone. trace green clay in matrix (dark green) around rehealed fractures (+ euhed. qtz)	Moderate		Weak				385	
	100	100	2										
390	100	98	2	55°		Weak	Weak	Moderate				390	MR65-39
	100	98	2	35°									
395	100	90	9	10° 30°	euhed. qtz on fracture	Moderate		Weak			on fractures	395	
400	97	100	2									400	-40

DDH No. MR65

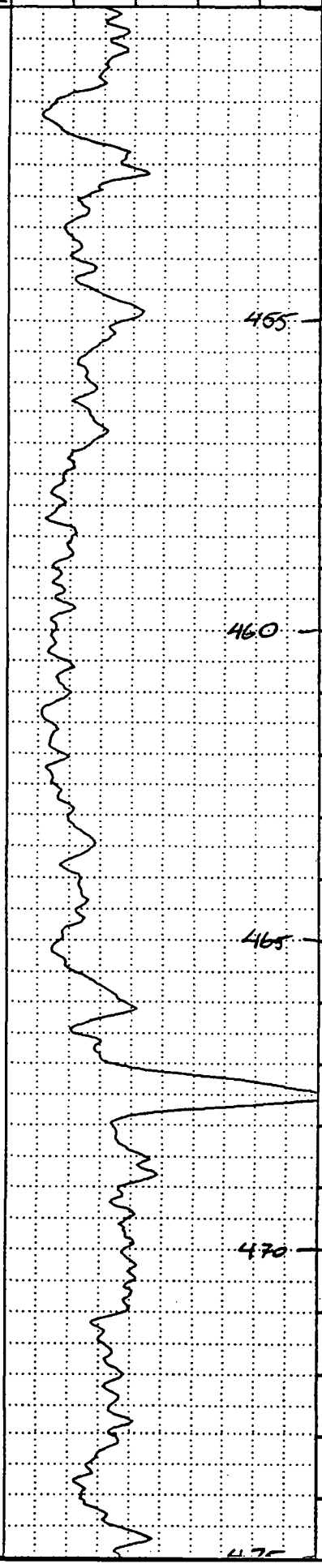
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
400						M	W	W				20 40 60 80	
.4	100	76	>30		30 cm siltstone - maroon hem.								MR65-40
					friable sandstone								
.5 405	100	96	6	5								405	
.5					light green clays in sst matrix				W				
	100	96	8	25° 25° op.	409.0- weak dk green clay in sst matrix chlorite?	Moderate	Weak	Weak					
410												410	
.6	100	98	4	10°	3cm dk. green siltstone						Weak (along fractures)		
.6													MR65-41
415	100	98	7	35°	5cm dk. green siltstone							415	
					minor green sltst								
.7	100	96	9	15° 20°	minor green sltst.								
.7 420												420	
	100	97	7	30° 0°	? ? ? ? 421 - 424.8m Fair Point? generally coarser grained sandstone with higher clay content in matrix (compared to MF).	Weak	Moderate	Moderate					
.8	100	94	8		423.6 - 424.8m Conglomeratic sandstone, qtz pebbles to ~5cm diameter.								MR65-42
425													

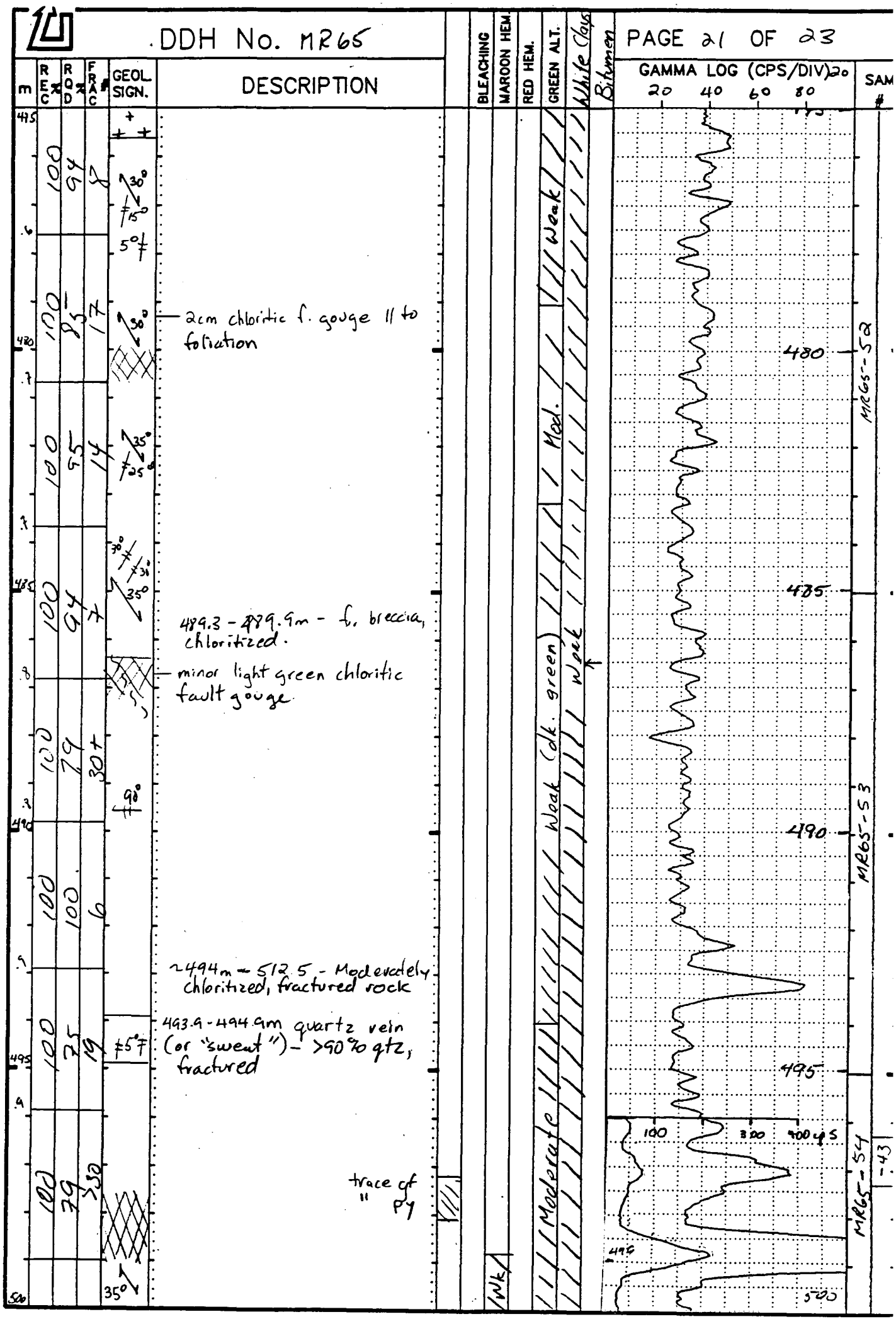
DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Clays	Bitumen	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
425	100	98	7	20°	424.8 - 441.4m Strongly hematized, weakly chlor, wkly ser, (biotite)-quartz-(feldspar)-gneiss, gneissic to laminated texture, weak to local moderate fracturing "red zone" of paleo-weathering. possible garnet relicts, intervals of coarser grained quartz-feldspar sweat.	strong			weak (dk green)	weak			MR65-47
430	100	96	10	50° 55°								430	
	100	100	7	45°									
435	100	97	6	60°	436.4 - 438.4 - coarser grained "granitoid"							435	
440	100	98	4	40°								440	MR65-48
	100	88	8	50°	441.4 - 464.4m Weakly hematized, moderately chloritized, mod. sericitized (white clay alteration, sericite mainly in form of yellow clay alt to feldspars	Peak			Mod. dk. green	Mod.			
445	100	97	6									445	MR65-49
	100	97	6	40°									
450												450	

DDH No. MR65

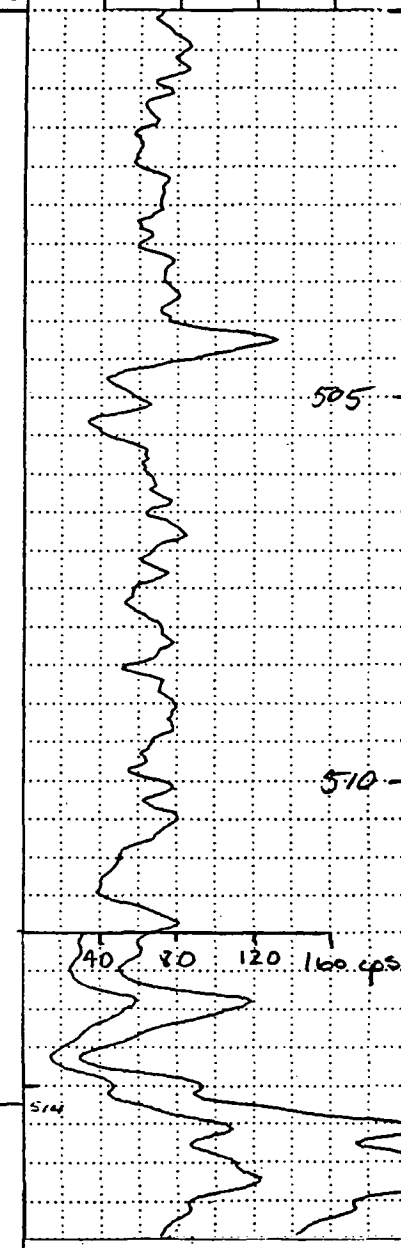
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Chys	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
450.2	100	94	11	40°	garnet relicts in coarser grained "sweat"								MR65-49
.2					30cm coarse crush breccia								
455	100	94	6	35°	454.7 - 464.4 m Moderately sericitized, mod. chloritized, wkly hematized, (garnet)-quartz-(feldspar) granitoid-feldspar altered to yellow sericite, massive to protomylonitic texture. garnet relicts only							455	
.3	100	88	18	40°			Weak		Moderate	Moderate			
.3				10°									MR65-50
460	100	97	10									460	
.4	100	79	19										
465					464.4 - 514.2m Fresh to weakly chlor. and weakly sericitized garnetiferous-biotite-quartz-feldspar-gneiss with pegmatoid intervals, locally fractured.							465	
.4	100	97	12	20°									
.5													MR65-51
470	100	85	11	35° 10°	carbonates along fractures				Weak	Weak		470	
.5	100	98	5	20°									
.6				20°	cubic py on fracture								
475												475	




DDH No. MR65
PAGE 21 OF 23
m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON HEM.
RED HEM.
GREEN ALT.
White Clays
Bitumen
GAMMA LOG (CPS/DIV) 20
20 40 60 80
SAM #
475
480
485
490
495
500
100 94 8
100 85 17
100 95 14
100 94 7
100 79 30+
100 100 6
100 75 19
100 79 >30
30°
15°
5°
30°
35°
25°
30°
31°
35°
90°
5°
35°
2cm chloritic f. gouge ∥ to foliation
489.3 - 489.9m - f. breccia, chloritized.
minor light green chloritic fault gouge
~494m - 512.5 - Moderately chloritized, fractured rock
493.9 - 494.9m quartz vein (or "sweat") - >90% qtz, fractured
trace of " py
Weak
Mod.
Weak (dk. green)
Weak
Moderate
Wk
480
485
490
495
100
300
400 cps
495
500
MR65-52
MR65-53
MR65-54
-43

DDH No. MR65

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Clay	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
500	100	91	14		~5-10cm leucocratic (qtz-feld) sweat within more mafic gneiss		Weak						
	100	91	14	40°									MR65-54
505					trace chalcopyrite							505	-46
	100	79	>30		strongly fractured zone (f. breccia) with minor chloritic gouge.				Mod. (dark green)	Weak			
	100	82	22+	30°									MR65-55
510												510	
					511.5-512.1m quartz segregation (sweat								
	100	88	20										-44
					fresh qtz-fsp-gneiss								
515					E.O.H @ 514.2m							514	



URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR65

PAGE OF

COORDINATE X: Line 28 N.

COORDINATE Y: 104 + 20 E

ELEVATION Z: 347m

INCLINATION: – 90°

AZIMUTH: —

BOREHOLE Ø: NQ

CASING DEPTH: 14.0 m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL: —

DATE of DRILLING: March 6 – March 20 / 89

TOTAL DEPTH: 516.0 m

LOGGED THROUGH:
OPEN HOLE | PLASTIC PIPE | (RODS)

INSTRUMENT: Mt Sopris 2500 # AI-5-8 #79, Winch AI-4-3

PROBE GAMMA: G375/A SN # 442

PROBE NEUTRON: —

DATE of LOGGING: March 20, 1989

TIME of LOGGING: 12:00 pm

TOTAL DEPTH: 516.0 m

OPERATOR: David Mitchell

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
516	10c.p.s.	5m/min.	100:1				
0							

REMARKS: Aquire File # MR65.GR2

RM 32

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR66

AREA: Maybelle River	DISPOSITION: 6886050003 PROJECT NO.: 7142	PAGE 1 OF 20 DRILLED BY: Advance
COORDINATES: Line 10 N 14+75 E	PLASTIC PIPE: yes (no) DEPTH: – CASING REMOVED: yes (no) DEPTH: 19m	COMMENCED: Mar. 21/89 COMPLETED: Mar. 30/89
TOTAL DEPTH (m): 449 m ELEVATION (m A.S.L.): 350 (est) DIP/AZIMUTH: -90°/–	GEOLOGY BY: D. Mitchell / B. Lacey CORE STORED AT: Jas Lake DOWN-HOLE GAMMA-LOG: (yes) no PAGE:	CORE SIZE: NQ CASING SIZE: NW DOWN-HOLE PULSE-EM yes (no)

DIP TEST: Pajari

TEST AT(m)	449															
DIP	-89															
AZIMUTH	–															

UNIT		FROM - TO	SUMMARY OF OBSERVATIONS
		0 - 18.2	Overburden - (boulders - radioactive anomalies)
ATHABASCA GROUP.	Lazy Lake	18.2 - 94.6m	Weak to mod. bleached, med-coarse gr. sandstone with siltstone interbeds, weakly fractured, weak bitumen stain
	Manitou Falls	94.6 - 352.2m	Weak to mod. bleached, fine-med. grained sandstone, clay intraclasts, red and maroon hematite, weakly fractured, locally silicified, py along some fractures
	Fair Point	352 - 375.1m	Weakly bleached, coarse grained sandstone, pebbly layers, conglomeratic layers, strong hematite
Basement		375.1 - 380 m	Mod. hem., mod. chlor., (bio)-qtz-(feld)-pegmatoid/anatexite, paleoweathering.
		380 - 422.8m	Hem., chlor, w. ser, (qt)-(biotite)-qtz-(feld)-gneiss, "plagioclase-gneiss", coarse grained pegmatoid intervals
		422.8 - 437 m	Fresh to weakly hematized, quartz-feldspar-anatexic pegmatoid, minor gneissic zones
		437 - 449m	Weakly chlor, biotite-quartz-feldspar-gneiss relict garnet locally "plagioclase gneiss"
		E.O.H. @ 449m	

INVESTIGATIONS: (DOWN-HOLE GAMMA-LOG, GEOCHEMISTRY, MINERALOGY, OTHERS)

Downhole Radiometric Peaks:

High background · 120cps through most of overburden (40x normal background)

427 ~ 436m - anomalous - background in pegmatoid ~90cps, highest 178 cps at 433.55m.

Samples

MR66-1	17.2-22	L2Lk	MR66-12	122-132	MF	MR66-25	252-262	MF	MR66-39	385-395	CBSMT
-2	22-32	"	-13	132-142	"	-26	262-272	"	-40	395-405	" "
-3	32-42	"	-14	142-152	"	-27	272-282	"	-41	405-415	" "
-4	42-52	"	-15	152-162	"	-28	282-292	"	-42	415-425	" "
-5	52-62	"	-16	162-172	"	-29	292-302	"	-43	425-435	" "
-6	62-72	"	-17	172-182	"	-30	302-312	"	-44	435-449	" "
-7	72-82	"	-18	182-192	"	-31	312-322	"	-45	417-417.1	Petr. 25
-8	82-92	"	-19	192-202	"	-32	322-332	"	-46	434-434.1	"
-9	92-102	L2/MF	-20	202-212	"	-33	332-342	"	-47	434-434.1	"
-10	102-112	MF	-21	212-222	"	-34	342-352	"	-48	449-449.1	"
-11	112-122	"	-22	222-232	"	-35	353-355	"	-49	434.6-435.6	BSMT
			-23	232-242	"	-36	355-365	"			
			-24	242-252	"	-37	365-375	"			
						-38	375.2-385	C BSMT			

DDH No. MR-66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BITUMEN
5					OVERBURDEN					
10					(Boulders)					
15					CASING TO 18.2 m					
20	100	100	–	h ≯10° / ≯60° / ≯50°	btu; white clay; gritty layer			WEAK	WEAK	

GAMMA LOG (CPS/DIV) 20

20 40 60 80

10

40 80 120 160 cps

20

SAM #

MR66-1

MR66-2

18.2 – 94.6 LAZENBY LK FM

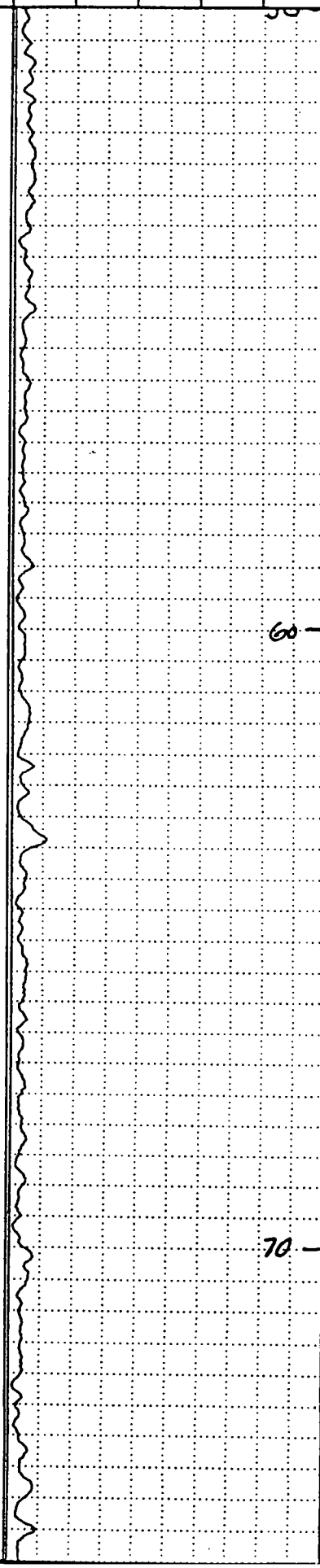
Weakly fractured, moderatly to strongly maroon hematite, medium to course grained sandstone with frequ. gritty (c.g.) qtz pebble layers, and freq. siltstone interbedding (m). Moder. bleached, weak to moderate red hematite locally. Weak to mod. bitumen predom. interst. in more permeable layers, occas. along fract. Leisgang rings common throughout

DDH No. MR-66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BITUMEN	SILICIF	GAMMA LOG (CPS/DIV) 20	SAM #
25	100	100	0		24.8-25.2 - liesgang rings c/w maroon h.			W		W			
					gritty layer 25.6-28.5 mod red hemat and mod bitumen interstitially prod. dk staining.								
.5	100	31	3	≠2° ≠0°	wk btu 26.8-28.2 - long vertical 5° CA fracture with wk bitumen & yellow staining on fract surf (siderite?)		WEAK	MOD		MOD			MR66-2
					28.8-29.8 - vert fract. 0°-5° CA mod btu								
.5				≠0°	mod btu 29.8-31.6 - vert. fract 0° CA with strg. btu						MOD		
30	100	31	3	≠0° ≠45°	str btu							30	
					32.6-32.2 - siltstone interbed with str. maroon hemat, c/w thin (mm's) mudstone layers								
.6	100	94	2	70° CA ≠5° ≠0°	wk btu 32.0-39.2 strg maroon hematite, wk btu in cm bands porous layer								
35				≠50°			STRONG						
	100	88	m	≠10°	wk btu								MR66-3
.7										WEAK			
40	100	97	0		39.2-43.2 strg pervasive red hematite throughout c/w bands maroon h., weak btu striping		MOD					40	
.7	100	97	0					STRONG					
					43.2- strg. maroon hematite throughout interupted by bleached white banding (2-20cm) of f. grained layers								
.7						MOD (bands ~2-20cm)							
45	100	91	1	≠10°	43.9-44.0 - bleached interval c/w maroon leisgang rings. mod btu.								MR66-4
.8	100	97	0		48.8-49.4 - promin leisgang rings		STRONG	WEAK					
50												50	

DDH No. MR66

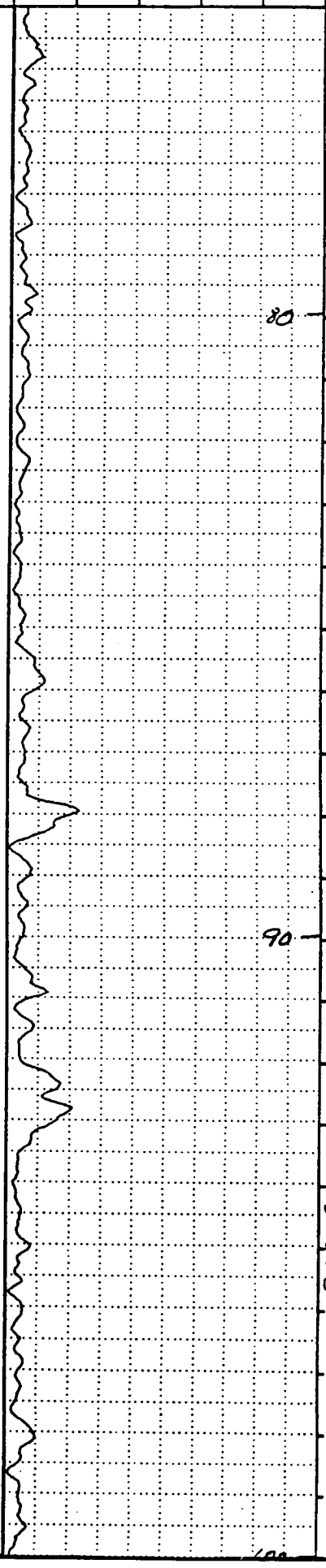
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BITUMEN	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
50												
.9	100	100	0			MOD (banding - locally)						MR66-4
.9				siltst.	53.6-57.9 bleaching more pronounced. (more frequ; wider intervals			WEAK		WEAK (occass. in porous lay)		
55	100	100	–	≠50°								
.9	100	100	–	≠60°	57.9-61.3 - mod. btu insitu. with courser grained, more permeable unit		STRONG			MOD		MR66-5
60	100	100	0								60	
.1	100	100	0	pebble band	63.0-69.1 - leisgang rings (maroon) v. prominent forming fine laminated rings							
65				siltst								
.1	100	100	0			(banding cm - 10's cm locally)		WEAK				MR66-6
.1					69.1-72.2 - maroon hemat. less prominent, moderate bleached interval		STRONG					
70	100	100	0								70	
.2	100	100	0		72.6-72.9 - bleached siltstone layers 1-2 cm's., 3cm pebble band at base	WEAK						MR66-7
75												



DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
75	100	100	0		
	100	94	2	∠40°	79.4-79.5 - strongly red hemat pebble band
80 .3				∠20° wk btu	
	100	100	0	T 85° CA	
.4					
85	100	97	0		85.4 - str red hemat pebble band ≈ 2 cm width
					87.0-87.4 - str hemat interbedded sst-siltstone layer
.4	100	97	1	∠50°	89.2-89.4 - siltst layer (st mar)
					89.5-89.7 - siltst layer (st mar)
90 .5	100	97	2		92.2-92.3 - siltstone layer
				∠85°	93.5-94.6 strong red hemat interbedded siltstone & sst (mm's - 2+cm's)
.5				∠10°	MF? 94.6 MF? MANITOU FALLS FM
95	100	94	3	∠65°	94.6-105.7 maroon hematite less pronounced, appearing as bands (mm's - 10's cm); mod weak-mod red hematite throughout prod pink color, weak bleaching locally.
.6				T 80° CA clay chips	
	100	100	0		97.5 - promin leisgang rings
.6 100					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
WEAK (cm bands locally)	STRONG		
		WEAK	
WEAK (bands locally)		S	
MODERATE	MODERATE		



SAM #

MR66-7

MR66-8

MR66-9

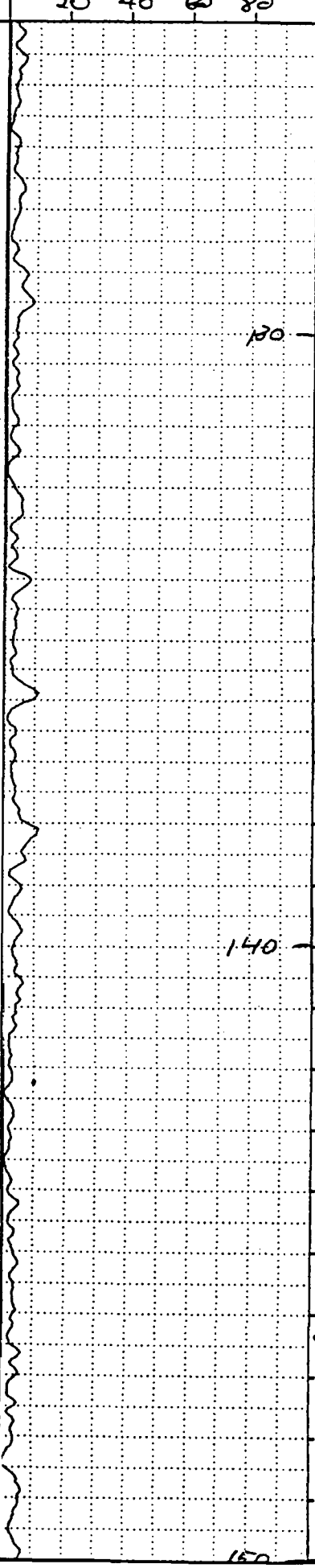
DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	SILICIF	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
100	100	97	2	85°	Manitou Falls Fm. 94.6(?) - weakly fractured, weak to moderate red and maroon hematite, fine to med gr bedded sst	WEAK	WEAK	MOD	MOD		100	MR66-9
.7	100	97	2	h 20°	- siltstone interbeds, clay chips common, qtz pebbles							
				70°	- weak btu insitu & on fract. clay chips dissem. sooty pyrite on fract - weakly silicified locally							
105 .7	100	94	3	h 25°	105.7 - 112.8 moderately bleached, weakly silicif. m. gr. sst. weakly maroon hemat as rings, weak red hemat prod. pinkish color clay clasts & pebble bands common	MODERATE	WEAK	WEAK	WEAK			MR66-10
				70°								
.8				80° CA 70°								
110	100	97	2	70°	white clay on fract						110	
				70°	111.6 - promin. maroon leisgang rings							
	100	100	0		113.0 - 113.3 - fine (mm) interbed. mud layers, clay chips.							
.9												
115	100	97	3	75°		WEAK	MODERATE					MR66-11
.9	100	94	4	90°								
120				80° CA							120	
	100	91	4	10°	123.0 - 125.5 strong maroon hemat of siltstone layers (mm) interbedded with sst.		S	MODERATE				MR66-12
				20°	sooty pyrite on fract.							

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIF.	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SAM #
125	100	97	22		125.5 - 131.5 wkly bleached, weak red and maroon hemat med gr set						
				qtz pebbles							
				qtz pebble band	marroon hemat appears as occass rings or on bands						
.1				h 15° wk btu							
	100	91	M				WEAK	WEAK (occass bands)	WEAK		MR66-12
				30°	white clay on fract						
				20°	129.6 - sooty pyrite on fract surface						
130											
	100	97	M	h 5°	131.5 - 141.0 weakly bleached, weakly red hemat prod faint pinkish color and rings. Occass wk						
				h 20° btu	vien-filling maroon hemat blotches and rings						
				85°							
.1											
	100	97	4	75° 15°	white clay, ← wk btu, dies. sooty pyrite						
135						WEAK					
				75° CA							
				h 15°	wk btu						
.2				10°							
				h 10°							
	100	94	4		137.4 - 137.5 - mudstone interbed						MR66-13
				75° CA							
				h 30							
				5°	← sooty pyrite, wk white clay on fract						
.2					139.6 - 139.8 - mudstone interbed						
					clay chips						
140	100	88	6	10° h 30	← sooty pyrite, wk btu. on fract						
				5° h 10	← massive pyrite vien-filling & in vugs of healed fract.						
				75°	pyr						
.3				h 0°	wk btu						
				80°	← greyish white clay						
	100	88	7	5° h							
				60°							
				20°	dissm sooty pyrite						
145				20°	pyr.						
	100	100	0	80° CA	qtz pebbles common (<2mm)	MODERATE	MODERATE	V. WEAK (locally)			MR66-14
.4											
	100	100	0								
150											

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80



DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	SILICIF.	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20	SAM #
150												
.4												MR66-14
	100	100	—			MODERATE			WEAK			
.5				80° 70°	white clay							
155	100	100	2		155.8-161.0 - occas. maroon hem band & rings (relic liesgang), weak red hem. prod. pinkish color - medium gr. bedded sst, numerous qtz pebbles ≈ 1-2 mm, pebble bands (c. grain) common 159.0 - liesgang rings							
				70°	white clay		MODERATE					
.5				70°		WEAK						MR66-15
	100	100	0					WEAK				
160											160	
.6					161-171.0 - med gr. with cgr. intervals: slightly more clay in matrix occass larger (>2mm < 1cm) qtz pebbles - red hemat more pronoun but still weak → moderate							
	100	100	0									
.6												
165	100	97	—	70°	greyish white clay							
.7												MR66-16
	100	97	2	85°	grey clay							
.7				45°	weak btu.		WEAK					
170											170	
	100	100	—	75°	white clay							
					clay chips							
.8					171.0-175.0 - weakly silicif, f-m gr sst. Maroon hematite more pronoun in form of mottles & liesg. rings - pervasive pink color from red hematite							
	100	100	0			WEAK		MODERATE	MODERATE			MR66-17
175												

DDH No.

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIF.	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
175					175.0-186.4							
.8	100	94	3	1° 10° 80° 70°	mud layer, clay chips, sooty pyr, diss. pyr, wk btu, wk sooty pyrite. 175.0-186.4 - weakly silicif, strong maroon hemat, moderate red hemat prod reddish, maroon color - maroon liesg rings - weak fract along bedding planes.	WEAK						MR66-17
.9					179.7-179.8 - fine (mm's) interbe. silt layers.							
180	100	94	3	80° 10° 15° 0° 10°	strong btu, btu				MODERATE		180	
.9	100	94	5		- promin maroon liesgang rings			STRONG				
185	100	94	2	80° 10°	white clay, wk btu. 186.4-198.0 - strong red & mod maroon hematite resulting dk red color with wide maroon bands (10's cm), prom. rings - mod silicified, leisg't				S			MR66-18
	100	100	0									
190								MOD			190	
.1	100	100	0		clay chips	MOD			STRONG			
.1												
195	100	97	1	80°	wk btu, white clay							MR66-19
					196.3-196.4 mudstone interbed							
.2	100	100	0	85° CA	198.0 → weak red hematized, weakly bleached med gr. sst		WEAK		S WEAK			
200												

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIF	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
200	100	100	0	75° ca	- weak bleached, weak red hemat f-m gr sst weak silicif., abund clay chips, very competent leisg rings common, occass. weak bitumen						200	MR66-19
.3	100	100	1			WEAK						
205				85°	white clay wk btu.		WEAK		WEAK			
.3	100	97	1	25°	weak btu, sooty pyrite							MR66-20
.3				10°								
210	100	97	3	90°	white clay						240	
				80°	clay chips							
				80°	white clay							
.4				70° ca								
	100	94	5	75°	euh qtz. (?)							
				80°	white clay (Kaolin?)							
				70°	sooty pyrite, wk btu.							
215	100	97	3		clay chips							MR66-21
				70°								
				90°	white clay							
.5	100	97	2	90°	grey clay							
220					clay chip						220	
.5	100	97	3	80° ca								
				90°	greenish (faint) white clay on fractures							
				80°								
				80°	greenish white clay wk btu.							MR66-22
225									MOD			

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	S	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
225	100	97	2	70°	clay chips - sooty pyrite, wk btu, white clay on fract - promin red h. liesgang rings		WEAK		MOD			MR66-22
.6	100	88	4	85° 55 75°	greenish clay on fract wk btu white clay large empty vug						230	
230 .7	100	61	7	10° 15° 0° 15°	large vug contain cubic pyrite 231.0 - 233.0 weak fract zone of subvert fract c/w spheroidal pyrite, strong btu							
.7 235	100	97	2	70°	234.0 - 246.6 weak red hematite, weakly bleached, med gr sst. Weak pinkish color throughout white clay clay chips							MR66-23
.8	100	97	1	25° 75° 0° h	white clay							
.8 240	100	97	1	75° CA	clay chip vug		WEAK		WEAK		240	
.9	100	94	3	90°	greyish-white clay							
245 .9	100	61	8	75° 80°	wk btu clay chip white clay 246.4 - 247.2 - weak fract zone of subvertical fractures (mod. btu)							MR66-24
250				15° 10° btu euh qtz 5°	246.6 - moderate red hematite, weak maroon bands & mottles wk bleached bands locally leisgang rings common weak btu fine → med gr. sst with occass thin (1-2cm) mud layers		WEAK		MOD			

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
250	100	94	2	85° 75°	btu. whiteclay 251.1-253.0 strong red hemat prod bright red color		E				MR66-24
.1	100	97	2					S			
255	100	97	4	80° 80° 90° 70°	white clay wk btu wk btu white clay	WEAK (loc		MODERATE			MR66-25
.1	100	94	7	75° h 70° h 70°	white clay, wk btu						
260				90°	greenish-white clay (Kaolinite?) 260.7- mudstone layer = 1cm greenish color		WEAK (local mottling)			260	
.2	100	94	7	h 70° h 75°	btu						
					262.2- greenish (dull) mustone layer ≈ 2cm thick						
				30° 80°	wk btu sooty pyrite 263.7- gr mudstone = 2cm						
.2				90°	wk btu 264.2- 270.0						
265	100	97	4	70° 25°	weak red hematite, more bleached bands, weak silicif btu.						MR66-26
.3				80° 90°	white clay. 267.7 greenish mudstone (5cm)	WEAK		WEAK			
	100	97	2								
270	100	97	3	h 75° 70° 75° CA 80°	271.3 → courser grained & num. small qtz pebble layers. (<1cm)			MOD		270	
.4	100	97	2		274.2 green mudstone layer (3-4cm)						MR66-27
275				90°							

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BITUMEN	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
275				80°	greenish white clay (Kaolin) 275.0 → - unhematized fine gr bands have v. faint greenish coloration, maroon hematite more evident but still weak among mod red hemat mass		W	M	W	W		
.4	100	100	2					MODERATE	WEAK (greenish tinge of unhemat f.gr bands)			MR66-27
.4												
280	100	100	1		-maroon hemat liesgang rings						280	
				90°	greenish clay (Kaolin?)							
.5	100	100	0		282.9 - str. hemat mudstone (2cm)							
					284.3 - green mudstone (1cm)							
285	100	100	0		285.5 - 289.0 strong red hem. wk btu in course gr layers, numerous qtz pebbles (< 1cm)			S STRONG		WEAK (along fractures; insitu in permeab layers)		MR66-28
.6	100	100	m	h ≠ 0°	289.0 - 302.0 mod red hematite, weak maroon bands relic liesgang, wk btu insitu			M	WEAK (greenish color of unhemat bands)			
290											290	
.6	100	97	3	h ≠ 0°, h ≠ 10°, 0	wk btu		WEAK					
				≠ 10°	292.6 - mudstone (dull green) ≃ 3cm thick; mod btu.							
.7	100	88	5	≠ 10°, ≠ 0°, h ≠ 0°	wk btu euh. qtz			MODERATE				MR66-29
295												
.7	100	100	1									
300												

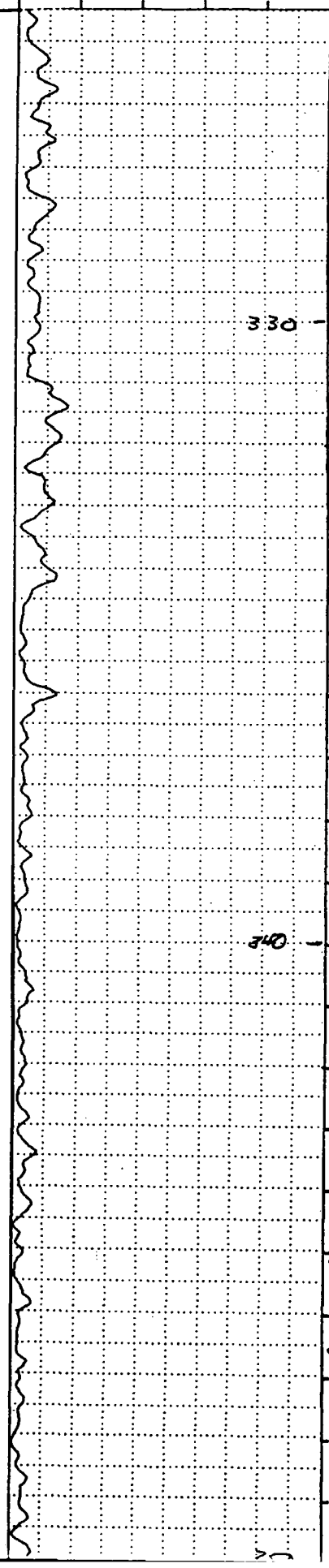
DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BITUMEN	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
300 .8				60°	btu		WEAK	MOD	WEAK			MR66-29
	100	100	2	80°	btu 302.0-316.0- moderatly bleached, weak red hemat (loc) medium gr sst. Moderate green alter of f gr bleached zones. Numerous vertical-subvertical fractures with strong bitumen staining							
.8 305	100	85	5	10° 5° 10° 5°	304.2-313.6 weak vertical-subvertical fracturing with strong bitumen.							
.9	100	88	5	10° 5°								MR66-30
.9 310	100	66	15	5° 10° 5° 10° 5° 10°		MOD	WEAK (local cm wide bands)		MODERATE (green color of f gr bleached)	STRONG (on subvertical fractures)	310	
	100	71	6									
315	100	97	2	75°	316.0-322.0 weakly (loc) bleached, moderate maroon hematite, weak red hemat							MR66-31
320	100	97	2	mudstone (green)	322.0-336.0 strongly red hemat courser grained		MOD		WEAK		320	
	100	100	2	75°						WEAK		MR66-32
325								STRONG				

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
325	100	97	3		325.4 - green mudstone ≈ 2cm - hemat clay chips 327.5 - 327.6 - weakly hemat mudstone.
.2	100	100	0	h/10°	
330					330.0 - 330.1 - qtz pebble conglom with pebbles mm's - 3cm 330.9 - 331.2 pebble conglom with qtz pebbles mm's - 3 cms.
.3	100	97	2	h/75°	hemat clay
.3					334.3 - pebble band
335	100	100	0		336.0 - 341.5 mod red & maroon hemat weak btu (insitu), f-gr sst
.4	100	97	2	h/80°	
340					
.4	100	97	1	h/20°	wk btu 341.5 - 353.5 mod maroon, weak red hemat, locally weakly bleached bands, wk btu f-med gr. sst. - occass maroon leisg. rings.
.5	100	100	0		
345					
.5	100	100	0		

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BITUMEN
		STRONG		WEAK
		MOD		
MOD				WEAK
		WEAK		



m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIF.	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
350	100	91	6		wk btu btu course gr pebble layer			MOD	WEAK	
.6	100	100	0		352.2-375.1 FAIR POINT FM. 352.2-352.8 - qtz pebble conglom (< 1cm) green mudstone 353.1-353.5 - qtz pebble conglomerate av. size red mudstone < 1cm					
355 .7	100	97	m		353.5 - strongly red hemat med-course gr sst FAIR POINT FM 352.2-374.0 strongly red hemat - course grained sandstone with conglomerate and fanglomerate intervals - occas hemat mudstone (≈1-2cm) - wk btu on occass fractures				STRONG	
.7	100	97	2							
360 .7	100	97	2							
.8	100	97	2							
365 .8	100	100	1		hemat mudstone					
.8	100	97	2		368.8-369.6 - strongly silicified fanglomerate (breccia) with silicified clasts (mm's-5cm) in sst or silified matrix.	S				
370 .9					370.1-370.3 - qtz pebble conglom (mm's-2cm)					
	96	97	2				WEAK			
.9					374.9-375.1 - fanglom of sst. basment fragments					

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

MR66-34

MR66-35

MR66-36

MR66-37

360

370

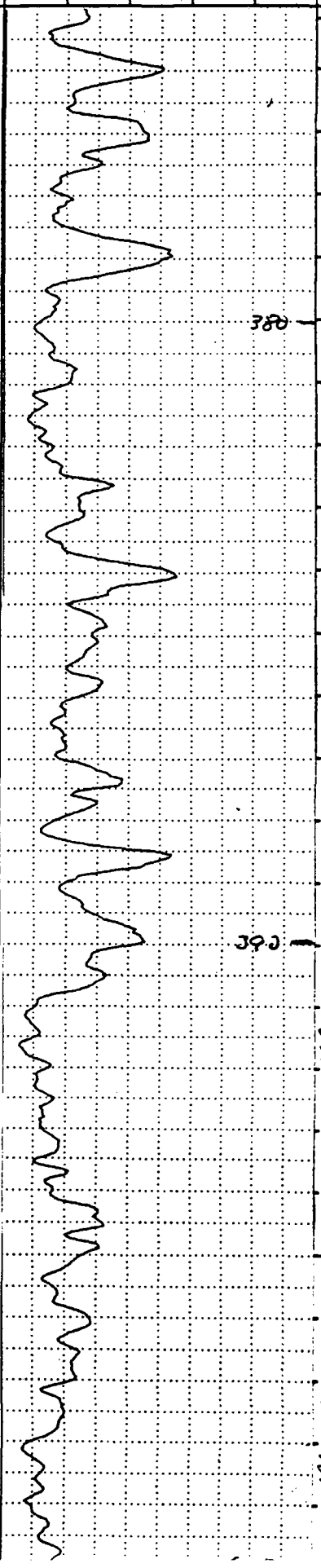
1/c 375.1m

DDH No. M266

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
375	100	97	5	26°	375.1 – 380m Moderately hematized, moderately chloritized, local white clay alt., (bio) – qtz – feld – pegmatoid / anatexite, fractured paleoweathering.
	100	98	3	20°	
380	100	94	7	15°, 60°	380.0 – 422.8m Hematized, chloritized, weakly sericitized, (gt.) – (biotite) – qtz – (fsp) – gneiss with coarse grained pegmatoid intervals, weakly fractured.
				55	
385	100	98	2	25°	
					10cm qtz sweat.
	100	95	7	5°, 70°	
390	100	95	11	25°, 40°, 60°	
					392.1 – 395.5m c. grained pegmatoid / anatexite (qtz – fsp).
395	100	95	7	15°	
	100	94	8	60°, 30°	
					398.4 – 401.4m. coarse grained pegmatoid / anatexite – garnet relicts, hem garnet
400	100	91	9	15°	

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Clay	Bitumen
	Mod				
	Strong		Mod. (dark green)	Weak	
	Moderate				

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80



SAM #

M266 – 38

M266 – 39

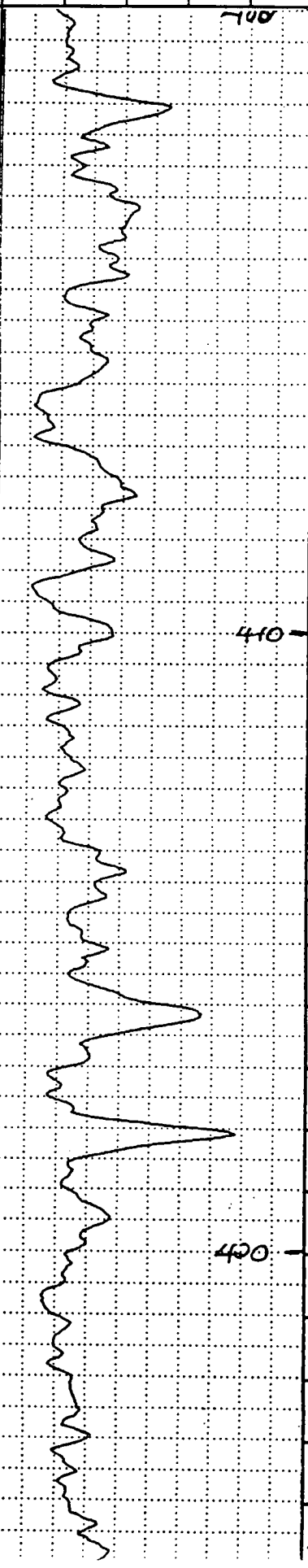
M266 – 40

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
400					
	100	85	22		garnet relicts.
					402.9 - 404 m - strongly fractured
405	100	67	30		
					406.9 - 408.7 m - massive (granitoid) texture.
	100	72	28	5°	
410				60°	
	100	97	11	60°	410.7 - E.O.H. Rock generally less altered, locally chlor., hem
					minor (~5cm) chloritic + hematitic f. gouge.
415	100	83	11	10° 40°	fresh biotite at ~416 m.
	100	94	16	40°	
420	100	95	13	20° 60°	
	100	79	26		422.8 - 437 m Fresh to wkly hematized quartz - feldspar pegmatoid - minor zones of biotite - qtz - fsp - gneiss
425					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Alt.	Bitumen
	M		M	W	
	Mod.		Mod. (dark green)		trace along fractures
	Weak		Weak	Weak	

GAMMA LOG (CPS/DIV) 20 40 60 80



SAM #

MR66-40

MR66-41

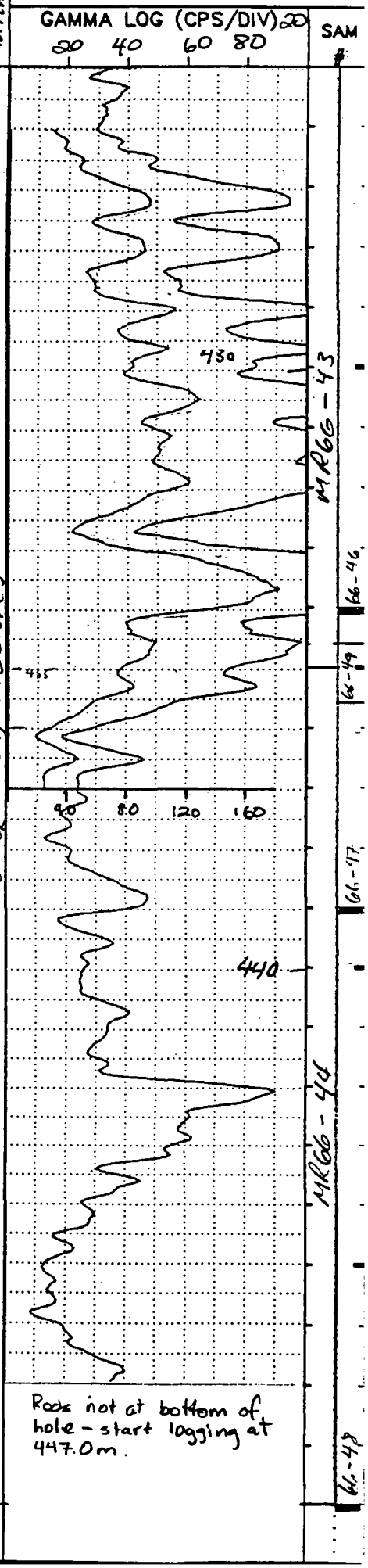
CC-45

MR66-42

DDH No. MR66

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Clay	Bitumen
425					garnet relicts throughout pegmatoid						
.8	100	80	89	55° 5°	426.3-427.1m - gneissic. (biot)-qtz-fsp. chloritized.						
.9	100	98	12	60°							
430											
.9	100	95	9	25°			Weak				
435											
.9	100	91	16								
				25°	437 - 449m. weakly chlor., wk. white clay altered, biotite-quartz-feldspar-gneiss, locally garnet relicts, locally faulted.						
440	100	85	18		438.3-440.5m - fresh and relict garnet.					Weak	
	100	88	22	50°	440.4-440.9m - silicified coarse-crush breccia garnetiferous						
				30°					Weak		
.1					2cm wide calcite vein vuggy with calcite crystals + siderite xtals. + pyrite						
445	100	88	15	0°							
				45°							
449					E.O.H @ 449.m						

weak along Fractures



Rods not at bottom of hole - start logging at 447.0m.

URANERZ EXPLORATION & MINING LTD.

296.30

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR66

PAGE 20 OF 20.

COORDINATE X: LINE 10 N (N Archer Lake)

COORDINATE Y: 14+75 E

ELEVATION Z:

INCLINATION: -90°

AZIMUTH: —

BOREHOLE Ø: NQ

CASING DEPTH: 19 m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL: —

DATE of DRILLING: - Mar 29/89

TOTAL DEPTH: 448.9 m

LOGGED THROUGH:
OPEN HOLE | PLASTIC PIPE | (RODS)

INSTRUMENT: Mt. Sopris 2500 SN 79

PROBE GAMMA: G375/A SN 442

PROBE NEUTRON: —

DATE of LOGGING: Mar 29/89

TIME of LOGGING: 10:30 pm - 200 am (Mar 30)

TOTAL DEPTH: 449 m

OPERATOR: B. Lacey

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0	10cps/div	5m/min	100/1				
449							

REMARKS: Digitally Logged as MR66.GRØ
Dead Time Corrected MR66.GDØ
Lost power at 296.30m - relogged 447 to 296.3 digitally

FORM 32

APPENDIX 2

Lithogeochemical and XRD Semi-Quantitative
Clay Analytical Data from Drillcore

DDH	NSa No	From	To m	Length	Lithology	Al2O3	Fe2O3	CaO
MR65	1	15.0	19.0	4.0	Lzl.L. Fm	0.52	2.20	0.151
MR65	2	19.0	29.0	10.0	Lzl.L. Fm	1.14	2.92	0.202
MR65	3	29.0	39.0	10.0	Lzl.L. Fm	0.45	2.30	0.148
MR65	4	39.0	49.0	10.0	Lzl.L. Fm	0.45	1.56	0.074
MR65	5	49.0	59.0	10.0	Lzl.L. Fm	0.51	1.24	0.065
MR65	6	59.0	69.0	10.0	Lzl.L. Fm	0.47	1.13	0.064
MR65	7	69.0	79.0	10.0	Lzl.L. Fm	0.78	1.44	0.085
MR65	8	79.0	89.0	10.0	Lzl.L. Fm	0.86	1.72	0.067
MR65	9	89.0	99.0	10.0	Lzl.L. Fm	1.02	0.79	0.044
MR65	10	99.0	109.0	10.0	Lzl.L. Fm	0.83	0.90	0.040
MR65	11	109.0	119.0	10.0	Lzl.L. Fm	1.16	1.54	0.072
MR65	12	119.0	129.0	10.0	Lzl.L. Fm	0.63	0.59	0.019
MR65	13	129.0	139.0	10.0	Lzl.L. Fm	0.51	0.46	0.013
MR65	14	139.0	149.0	10.0	Lzl.L. Fm	0.62	0.72	0.028
MR65	15	149.0	159.0	10.0	Lzl.L. Fm	0.83	1.23	0.032
MR65	16	159.0	169.0	10.0	Lzl.L. Fm	0.61	1.08	0.025
MR65	17	169.0	179.0	10.0	M.F. Fm.	0.78	0.70	0.014
MR65	18	179.0	189.0	10.0	M.F. Fm.	0.74	1.26	0.021
MR65	19	189.0	199.0	10.0	M.F. Fm.	0.89	0.81	0.025
MR65	20	199.0	209.0	10.0	M.F. Fm.	0.74	0.63	0.014
MR65	21	209.0	219.0	10.0	M.F. Fm.	0.63	0.66	0.023
MR65	22	219.0	229.0	10.0	M.F. Fm.	0.69	0.77	0.022
MR65	23	229.0	239.0	10.0	M.F. Fm.	0.71	0.65	0.051
MR65	24	239.0	249.0	10.0	M.F. Fm.	0.68	0.72	0.014
MR65	25	249.0	259.0	10.0	M.F. Fm.	0.74	0.61	0.020
MR65	26	259.0	269.0	10.0	M.F. Fm.	0.90	0.55	0.021
MR65	27	269.0	279.0	10.0	M.F. Fm.	1.01	0.74	0.018
MR65	28	279.0	289.0	10.0	M.F. Fm.	1.41	0.61	0.019
MR65	29	289.0	299.0	10.0	M.F. Fm.	1.65	0.64	0.018
MR65	30	299.0	309.0	10.0	M.F. Fm.	1.12	0.51	0.023
MR65	31	309.0	319.0	10.0	M.F. Fm.	1.02	0.51	0.017
MR65	32	319.0	329.0	10.0	M.F. Fm.	0.97	0.41	0.013
MR65	33	329.0	339.0	10.0	M.F. Fm.	0.58	0.38	0.011
MR65	34	339.0	349.0	10.0	M.F. Fm.	0.55	0.32	0.013
MR65	35	349.0	359.0	10.0	M.F. Fm.	0.51	0.42	0.014
MR65	36	359.0	369.0	10.0	M.F. Fm.	0.54	0.33	0.012
MR65	37	369.0	379.0	10.0	M.F. Fm.	0.49	0.34	0.012
MR65	38	379.0	389.0	10.0	M.F. Fm.	1.37	0.47	0.010
MR65	39	389.0	399.0	10.0	M.F. Fm.	2.92	0.79	0.015
MR65	40	399.0	409.0	10.0	M.F. Fm.	2.27	0.64	0.022
MR65	41	409.0	421.0	12.0	M.F. Fm.	2.13	0.95	0.016
MR65	42	421.0	424.0	3.0	F.P. Fm.	1.35	0.59	0.023
MR65	43	496.3	497.3	1.0	Basement	15.11	2.56	0.169
MR65	44	512.3	513.3	1.0	Basement	8.97	2.93	0.260
MR65	45	469.0	469.1	0.1	Basement	12.90	2.16	1.080
MR65	46	506.0	506.1	0.1	Basement	17.20	3.75	0.100
MR65	47	425.0	435.0	10.0	Basement	15.90	2.52	0.016
MR65	48	435.0	445.0	10.0	Basement	14.50	1.95	0.033
MR65	49	445.0	455.0	10.0	Basement	13.30	2.08	0.160
MR65	50	455.0	465.0	10.0	Basement	13.60	1.15	0.089

DDH	NSa No	From	To m	Length	Lithology	Al2O3	Fe2O3	CaO
MR65	51	465.0	475.0	10.0	Basement	12.30	4.16	0.324
MR65	52	475.0	485.0	10.0	Basement	13.30	2.38	0.230
MR65	53	485.0	495.0	10.0	Basement	12.00	2.92	0.273
MR65	54	495.0	505.0	10.0	Basement	18.30	4.64	0.062
MR65	55	505.0	515.0	10.0	Basement	20.00	4.84	0.094
MR66	1	18.2	22.0	3.8	Lzl.L. Fm	0.58	2.69	0.161
MR66	2	22.0	32.0	10.0	Lzl.L. Fm	0.69	1.26	0.057
MR66	3	32.0	42.0	10.0	Lzl.L. Fm	0.67	2.32	0.086
MR66	4	42.0	52.0	10.0	Lzl.L. Fm	0.52	1.23	0.045
MR66	5	52.0	62.0	10.0	Lzl.L. Fm	0.60	1.16	0.037
MR66	6	62.0	72.0	10.0	Lzl.L. Fm	1.15	1.12	0.068
MR66	7	72.0	82.0	10.0	Lzl.L. Fm	0.44	1.02	0.113
MR66	8	82.0	92.0	10.0	Lzl.L. Fm	1.72	1.44	0.036
MR66	9	92.0	102.0	10.0	M.F. Fm.	2.30	1.37	0.041
MR66	10	102.0	112.0	10.0	M.F. Fm.	0.83	0.81	0.043
MR66	11	112.0	122.0	10.0	M.F. Fm.	1.64	0.84	0.020
MR66	12	122.0	132.0	10.0	M.F. Fm.	0.62	0.98	0.037
MR66	13	132.0	142.0	10.0	M.F. Fm.	0.84	0.47	0.017
MR66	14	142.0	152.0	10.0	M.F. Fm.	0.50	0.52	0.019
MR66	15	152.0	162.0	10.0	M.F. Fm.	0.65	0.52	0.022
MR66	16	162.0	172.0	10.0	M.F. Fm.	0.77	0.63	0.099
MR66	17	172.0	182.0	10.0	M.F. Fm.	1.01	0.67	0.019
MR66	18	182.0	192.0	10.0	M.F. Fm.	0.95	0.96	0.035
MR66	19	192.0	202.0	10.0	M.F. Fm.	0.59	0.60	0.026
MR66	20	202.0	212.0	10.0	M.F. Fm.	0.99	0.46	0.015
MR66	21	212.0	222.0	10.0	M.F. Fm.	0.77	0.45	0.012
MR66	22	222.0	232.0	10.0	M.F. Fm.	0.75	0.62	0.024
MR66	23	232.0	242.0	10.0	M.F. Fm.	0.96	0.36	0.010
MR66	24	242.0	252.0	10.0	M.F. Fm.	0.90	0.49	0.018
MR66	25	252.0	262.0	10.0	M.F. Fm.	0.74	0.54	0.015
MR66	26	262.0	272.0	10.0	M.F. Fm.	0.99	0.44	0.008
MR66	27	272.0	282.0	10.0	M.F. Fm.	0.97	0.82	0.033
MR66	28	282.0	292.0	10.0	M.F. Fm.	1.07	1.28	0.021
MR66	29	292.0	302.0	10.0	M.F. Fm.	1.90	0.83	0.011
MR66	30	302.0	312.0	10.0	M.F. Fm.	1.35	0.49	0.017
MR66	31	312.0	322.0	10.0	M.F. Fm.	2.16	1.03	0.014
MR66	32	322.0	332.0	10.0	M.F. Fm.	2.51	1.13	0.009
MR66	33	332.0	342.0	10.0	M.F. Fm.	2.18	1.47	0.015
MR66	34	342.0	352.0	10.0	M.F. Fm.	1.12	0.85	0.012
MR66	35	353.0	355.0	2.0	F.P. Fm.	2.78	0.82	0.011
MR66	36	355.0	365.0	10.0	F.P. Fm.	10.05	5.40	0.010
MR66	37	365.0	375.0	10.0	F.P. Fm.	8.59	4.54	0.009
MR66	38	375.2	385.0	9.8	Basement	16.50	2.27	0.017
MR66	39	385.0	395.0	10.0	Basement	17.80	4.96	0.016
MR66	40	395.0	405.0	10.0	Basement	14.30	1.77	0.057
MR66	41	405.0	415.0	10.0	Basement	13.40	3.42	0.791
MR66	42	415.0	425.0	10.0	Basement	15.60	4.55	2.350
MR66	43	425.0	435.0	10.0	Basement	13.80	0.78	0.310
MR66	44	435.0	449.0	14.0	Basement	15.10	5.60	3.900
MR66	45	417.0	417.1	0.1	Basement	13.40	2.32	0.800

DDH	NSa No	From	To m	Length	Lithology	Al2O3	Fe2O3	CaO
MR66	46	434.0	434.1	0.1	Basement	13.00	6.08	4.490
MR66	47	439.0	439.1	0.1	Basement	15.90	5.66	4.090
MR66	48	449.0	449.1	0.1	Basement	12.40	0.95	0.410
MR66	49	434.6	435.6	1.0	Basement	13.30	0.92	0.286

DDH	NSa No	MgO	K2O	Na2O	P2O5	TiO2	MnO	U tot
MR65	1	0.189	0.131	0.007	0.02	0.02	0.009	1.2
MR65	2	0.253	0.316	0.009	0.02	0.03	0.005	0.8
MR65	3	0.160	0.107	0.008	0.02	0.02	0.004	0.6
MR65	4	0.083	0.112	0.007	0.02	0.03	0.004	3.0
MR65	5	0.080	0.129	0.008	0.02	0.04	0.003	0.5
MR65	6	0.063	0.104	0.007	0.02	0.03	0.002	0.4
MR65	7	0.071	0.205	0.007	0.02	0.04	0.002	0.5
MR65	8	0.062	0.206	0.009	0.02	0.03	0.003	0.4
MR65	9	0.051	0.262	0.008	0.02	0.04	0.002	0.4
MR65	10	0.053	0.216	0.008	0.02	0.04	0.002	0.6
MR65	11	0.083	0.216	0.011	0.02	0.03	0.003	0.5
MR65	12	0.032	0.142	0.008	0.02	0.04	0.002	0.2
MR65	13	0.021	0.108	0.009	0.02	0.03	0.002	0.4
MR65	14	0.025	0.136	0.009	0.02	0.03	0.002	0.3
MR65	15	0.033	0.202	0.010	0.02	0.03	0.003	0.2
MR65	16	0.031	0.133	0.009	0.02	0.04	0.003	0.7
MR65	17	0.023	0.193	0.010	0.02	0.05	0.002	0.2
MR65	18	0.025	0.171	0.009	0.02	0.03	0.003	0.3
MR65	19	0.027	0.197	0.009	0.02	0.04	0.003	0.8
MR65	20	0.016	0.180	0.008	0.02	0.04	0.002	0.2
MR65	21	0.018	0.144	0.007	0.02	0.02	0.002	0.2
MR65	22	0.026	0.161	0.008	0.02	0.02	0.003	0.2
MR65	23	0.028	0.155	0.008	0.02	0.04	0.002	1.1
MR65	24	0.027	0.183	0.011	0.02	0.02	0.003	0.3
MR65	25	0.019	0.198	0.008	0.02	0.03	0.002	0.4
MR65	26	0.023	0.240	0.007	0.02	0.02	0.002	1.4
MR65	27	0.025	0.277	0.009	0.02	0.04	0.002	0.8
MR65	28	0.061	0.382	0.008	0.02	0.05	0.002	0.9
MR65	29	0.046	0.466	0.007	0.02	0.04	0.002	0.4
MR65	30	0.036	0.298	0.006	0.02	0.04	0.002	0.5
MR65	31	0.034	0.272	0.007	0.02	0.05	0.002	0.5
MR65	32	0.033	0.239	0.006	0.02	0.02	0.002	0.3
MR65	33	0.018	0.128	0.006	0.02	0.02	0.002	0.4
MR65	34	0.016	0.109	0.006	0.02	0.03	0.001	0.4
MR65	35	0.018	0.094	0.006	0.02	0.02	0.002	0.3
MR65	36	0.021	0.110	0.010	0.02	0.03	0.001	0.3
MR65	37	0.021	0.093	0.008	0.02	0.03	0.002	0.7
MR65	38	0.045	0.347	0.010	0.02	0.05	0.002	0.9
MR65	39	0.085	0.849	0.013	0.02	0.13	0.002	1.4
MR65	40	0.082	0.633	0.018	0.02	0.06	0.002	0.6
MR65	41	0.064	0.572	0.015	0.02	0.11	0.002	0.7
MR65	42	0.062	0.362	0.015	0.02	0.06	0.002	0.6

DDH	NSa No	MgO	K2O	Na2O	P2O5	TiO2	MnO	U tot
MR65	43	1.881	5.470	0.300	0.03	0.22	0.021	54.0
MR65	44	1.127	2.027	0.090	0.02	0.48	0.024	5.2
MR65	45	1.090	3.480	2.170	0.01	0.22	0.031	2.1
MR65	46	2.480	4.400	0.340	0.02	0.48	0.015	3.3
MR65	47	0.178	2.278	0.039	0.03	0.29	0.004	2.4
MR65	48	0.889	3.490	0.054	0.02	0.17	0.005	1.3
MR65	49	2.360	3.230	0.089	0.08	0.32	0.008	5.4
MR65	50	3.300	2.710	0.120	0.03	0.04	0.003	6.6
MR65	51	4.240	3.020	0.837	0.02	0.40	0.039	8.6
MR65	52	2.790	4.450	0.837	0.02	0.26	0.022	4.7
MR65	53	2.830	3.240	0.891	0.04	0.22	0.057	2.8
MR65	54	2.800	4.560	0.185	0.02	0.54	0.032	2.9
MR65	55	2.900	4.830	0.200	0.02	0.77	0.036	5.5
MR66	1	0.130	0.134	0.014	0.02	0.04	0.004	0.8
MR66	2	0.059	0.179	0.015	0.02	0.02	0.003	0.7
MR66	3	0.096	0.166	0.022	0.02	0.03	0.003	0.9
MR66	4	0.048	0.117	0.011	0.02	0.03	0.003	0.4
MR66	5	0.040	0.143	0.008	0.02	0.03	0.002	0.5
MR66	6	0.045	0.214	0.008	0.02	0.03	0.002	0.8
MR66	7	0.040	0.099	0.008	0.02	0.03	0.002	0.5
MR66	8	0.042	0.202	0.008	0.02	0.03	0.002	0.7
MR66	9	0.055	0.214	0.009	0.02	0.06	0.002	0.7
MR66	10	0.028	0.098	0.008	0.02	0.04	0.002	0.5
MR66	11	0.030	0.187	0.009	0.02	0.05	0.002	0.3
MR66	12	0.036	0.084	0.007	0.02	0.02	0.003	0.2
MR66	13	0.020	0.115	0.009	0.02	0.03	0.002	0.2
MR66	14	0.020	0.089	0.007	0.02	0.03	0.002	0.2
MR66	15	0.026	0.124	0.011	0.02	0.03	0.002	0.5
MR66	16	0.027	0.155	0.007	0.02	0.03	0.003	0.3
MR66	17	0.032	0.226	0.014	0.02	0.04	0.002	0.3
MR66	18	0.037	0.188	0.008	0.02	0.04	0.002	0.5
MR66	19	0.025	0.126	0.008	0.02	0.02	0.001	0.2
MR66	20	0.025	0.217	0.008	0.02	0.03	0.002	0.3
MR66	21	0.020	0.172	0.011	0.02	0.03	0.002	0.4
MR66	22	0.026	0.110	0.006	0.02	0.02	0.002	0.2
MR66	23	0.017	0.134	0.008	0.02	0.04	0.001	0.2
MR66	24	0.021	0.139	0.007	0.02	0.03	0.002	0.2
MR66	25	0.018	0.100	0.007	0.02	0.02	0.002	0.4
MR66	26	0.010	0.116	0.008	0.02	0.02	0.001	0.2
MR66	27	0.034	0.106	0.009	0.02	0.06	0.004	0.6
MR66	28	0.023	0.116	0.008	0.02	0.08	0.004	0.7
MR66	29	0.024	0.135	0.014	0.02	0.02	0.002	0.2
MR66	30	0.037	0.154	0.011	0.02	0.05	0.001	0.7
MR66	31	0.041	0.299	0.028	0.02	0.10	0.002	1.0
MR66	32	0.034	0.426	0.034	0.02	0.07	0.002	0.8
MR66	33	0.039	0.395	0.024	0.02	0.09	0.004	0.6
MR66	34	0.021	0.292	0.009	0.02	0.05	0.002	0.4
MR66	35	0.038	0.584	0.035	0.02	0.07	0.002	0.8
MR66	36	0.058	0.557	0.064	0.06	0.48	0.006	2.3
MR66	37	0.050	0.597	0.047	0.06	0.43	0.012	2.1

Appendix 2

DDH	NSa No	MgO	K2O	Na2O	P2O5	TiO2	MnO	U tot
MR66	38	0.079	0.680	0.097	0.03	0.46	0.017	3.3
MR66	39	0.405	1.501	0.186	0.03	0.60	0.022	2.6
MR66	40	1.353	3.100	0.215	0.05	0.29	0.005	2.4
MR66	41	3.550	3.450	0.696	0.56	0.29	0.020	5.2
MR66	42	2.350	2.500	3.470	0.13	0.52	0.033	2.9
MR66	43	0.797	7.100	2.390	0.03	0.06	0.022	19.0
MR66	44	2.120	2.220	3.920	0.11	0.67	0.093	3.7
MR66	45	0.670	5.630	2.530	0.03	0.16	0.008	3.8
MR66	46	1.920	1.400	2.800	0.25	0.76	0.090	3.1
MR66	47	1.760	1.340	4.610	0.13	0.64	0.078	3.6
MR66	48	0.360	6.330	2.990	0.02	0.08	0.016	82.0
MR66	49	0.592	7.160	2.450	0.03	0.10	0.017	62.0

DDH	NSa No	U ptl	Ni	Pb tot	Pb ptl	As	Bi	Mo	Zn
MR65	1	0.5	5	6	0.3	1.8	0.2	7	6
MR65	2	0.2	5	7	0.2	1.8	0.2	5	5
MR65	3	0.2	8	6	0.2	1.6	0.2	9	6
MR65	4	0.2	6	6	0.3	1.6	0.2	5	7
MR65	5	0.2	8	5	0.9	0.9	0.2	5	5
MR65	6	0.2	6	5	0.8	1.0	0.2	5	7
MR65	7	0.2	6	6	0.3	1.2	0.2	5	6
MR65	8	0.2	7	6	0.3	1.0	0.2	5	10
MR65	9	0.2	5	7	0.4	0.9	0.2	5	8
MR65	10	0.2	6	6	0.4	1.0	0.2	5	6
MR65	11	0.2	7	4	0.1	0.9	0.2	5	6
MR65	12	0.2	6	6	0.6	0.9	0.2	5	6
MR65	13	0.2	6	8	0.4	0.9	0.2	5	14
MR65	14	0.2	7	7	0.9	1.0	0.2	5	6
MR65	15	0.2	6	3	0.4	0.9	0.2	5	8
MR65	16	0.2	7	4	0.4	1.0	0.2	5	6
MR65	17	0.2	6	10	4.7	0.9	0.2	5	7
MR65	18	0.2	8	3	0.8	0.7	0.2	5	9
MR65	19	0.3	7	5	1.4	0.7	0.2	5	7
MR65	20	0.2	6	4	0.1	0.7	0.2	5	5
MR65	21	0.2	8	5	0.1	0.5	0.2	5	5
MR65	22	0.2	7	4	0.2	0.7	0.2	5	6
MR65	23	0.2	7	4	0.2	0.5	0.2	5	7
MR65	24	0.2	7	5	0.1	0.8	0.2	7	4
MR65	25	0.2	7	13	6.0	0.7	0.2	9	6
MR65	26	0.2	5	5	1.9	0.7	0.2	5	4
MR65	27	0.2	8	3	0.5	0.5	0.2	8	7
MR65	28	0.3	7	6	0.4	0.7	0.2	5	8
MR65	29	0.2	5	6	0.5	0.5	0.2	7	8
MR65	30	0.2	6	2	0.3	0.5	0.2	10	6
MR65	31	0.2	6	3	0.6	0.7	0.2	5	10
MR65	32	0.2	5	2	0.1	0.7	0.2	5	5
MR65	33	0.2	7	2	0.2	0.7	0.2	5	4

DDH	NSa No	U ptl	Ni	Pb tot	Pb ptl	As	Bi	Mo	Zn
MR65	34	0.5	5	5	0.3	0.5	0.2	5	4
MR65	35	0.2	6	4	0.1	0.7	0.2	8	6
MR65	36	0.2	5	4	0.6	0.5	0.2	5	5
MR65	37	0.2	4	3	0.7	0.5	0.2	5	6
MR65	38	0.2	5	5	0.2	0.7	0.2	6	4
MR65	39	0.2	8	8	0.6	0.8	0.2	6	9
MR65	40	0.2	6	7	1.5	1.0	0.2	5	9
MR65	41	0.2	6	5	0.4	0.8	0.2	5	6
MR65	42	0.2	6	4	0.2	3.0	0.2	8	7
MR65	43	45.0	16	31	3.4	0.5	0.2	9	27
MR65	44	2.6	19	12	5.2	0.5	0.3	5	30
MR65	45	0.3	6	9	1.8	0.2	0.2	5	22
MR65	46	0.2	27	1	1.6	0.3	0.2	6	42
MR65	47	0.2	5	8	3.1	2.2	0.2	5	9
MR65	48	0.2	10	2	1.3	0.7	0.2	5	9
MR65	49	0.9	22	2	1.0	0.7	0.2	5	28
MR65	50	3.4	6	2	0.8	0.5	0.3	9	12
MR65	51	2.8	25	12	5.0	0.7	0.3	5	49
MR65	52	0.6	13	12	1.6	0.7	0.5	5	25
MR65	53	0.4	7	4	1.3	0.7	0.2	7	29
MR65	54	0.8	34	2	1.4	0.7	1.1	6	49
MR65	55	1.3	34	2	2.3	0.9	0.3	9	60
MR66	1	0.2	5	2	1.0	1.8	0.2	5	2
MR66	2	0.2	7	2	0.8	1.8	0.2	5	3
MR66	3	0.2	6	2	0.8	1.6	0.2	5	2
MR66	4	0.2	5	2	0.8	1.6	0.2	5	1
MR66	5	0.2	6	3	0.8	1.4	0.2	5	1
MR66	6	0.2	6	2	1.0	1.8	0.2	5	1
MR66	7	0.2	4	2	1.3	1.8	0.2	5	1
MR66	8	0.2	6	2	0.8	1.6	0.2	5	1
MR66	9	0.2	4	2	0.7	1.4	0.2	5	1
MR66	10	0.2	6	2	1.1	1.2	0.2	5	3
MR66	11	0.2	4	3	0.8	1.2	0.2	5	4
MR66	12	0.2	6	2	0.7	0.9	0.2	5	1
MR66	13	0.2	4	2	0.8	1.2	0.2	5	1
MR66	14	0.2	6	2	0.9	1.2	0.2	5	2
MR66	15	0.2	6	3	1.0	1.4	0.2	5	3
MR66	16	0.4	5	2	0.4	0.9	0.2	5	1
MR66	17	0.2	6	2	0.6	1.1	0.2	5	17
MR66	18	0.2	6	2	0.4	0.9	0.2	5	1
MR66	19	0.2	4	2	0.4	0.7	0.2	5	2
MR66	20	0.2	5	2	0.5	0.7	0.2	5	4
MR66	21	0.2	5	2	0.7	0.5	0.2	5	2
MR66	22	0.2	4	2	0.7	0.9	0.2	5	7
MR66	23	0.2	4	2	0.4	0.9	0.2	5	22
MR66	24	0.2	5	2	0.4	0.3	0.2	5	12
MR66	25	0.2	4	2	0.6	0.7	0.2	5	2
MR66	26	0.2	4	2	0.6	0.7	0.2	5	2
MR66	27	0.2	6	2	0.7	1.2	0.2	5	4
MR66	28	0.2	7	2	0.5	0.9	0.2	5	5

DDH	NSa No	U ptl	Ni	Pb tot	Pb ptl	As	Bi	Mo	Zn
MR66	29	0.2	9	2	1.2	0.9	0.2	5	2
MR66	30	0.2	4	2	0.3	0.5	0.2	5	1
MR66	31	0.2	8	2	0.6	1.1	0.2	5	2
MR66	32	0.2	8	2	0.6	0.9	0.2	5	3
MR66	33	0.2	9	2	0.4	0.7	0.2	5	3
MR66	34	0.2	12	2	0.4	0.9	0.2	5	2
MR66	35	0.2	7	2	0.6	0.9	0.2	5	2
MR66	36	0.4	7	3	0.9	3.2	0.2	5	6
MR66	37	0.2	8	3	0.9	4.9	0.2	5	7
MR66	38	0.3	9	2	2.3	1.9	0.2	7	9
MR66	39	0.2	12	2	1.3	1.3	0.3	5	40
MR66	40	0.2	15	2	2.2	0.7	0.3	5	21
MR66	41	1.0	20	2	1.5	0.5	0.3	7	23
MR66	42	0.7	13	6	0.7	0.7	0.3	15	39
MR66	43	18.0	6	28	6.1	0.5	0.3	5	12
MR66	44	1.0	25	10	2.5	0.5	0.7	36	75
MR66	45	0.4	10	23	3.3	0.7	0.2	9	13
MR66	46	0.5	20	7	0.7	0.7	0.2	9	65
MR66	47	0.9	7	8	0.8	0.3	0.3	11	78
MR66	48	78.0	4	36	14.9	0.3	0.2	12	12
MR66	49	49.0	5	33	12.1	0.5	0.2	5	13

DDH	NSa No	Cd	Co	Cr	V	Be	Cu	Zr
MR65	1	1	2	347	9	1	3	44
MR65	2	1	2	304	15	1	4	88
MR65	3	1	3	407	8	1	3	52
MR65	4	1	2	341	8	1	4	86
MR65	5	1	2	371	6	1	4	122
MR65	6	1	2	310	7	1	3	90
MR65	7	1	2	247	7	1	4	79
MR65	8	1	2	303	9	1	4	44
MR65	9	1	2	300	6	1	3	152
MR65	10	1	2	260	6	1	4	119
MR65	11	1	2	305	9	1	4	79
MR65	12	1	2	331	5	1	4	76
MR65	13	1	2	316	6	1	6	38
MR65	14	1	2	305	6	1	4	63
MR65	15	1	2	293	9	1	4	57
MR65	16	1	2	349	6	1	3	66
MR65	17	1	2	282	8	1	4	157
MR65	18	1	2	281	7	1	4	101
MR65	19	1	2	192	6	1	5	159
MR65	20	1	2	339	6	1	4	93
MR65	21	1	2	407	5	1	3	69
MR65	22	1	2	397	6	1	7	73
MR65	23	1	2	384	8	1	6	96
MR65	24	1	2	408	4	1	4	50

DDH	NSa No	Cd	Co	Cr	V	Be	Cu	Zr
MR65	25	1	2	439	3	1	3	69
MR65	26	1	2	308	4	1	3	81
MR65	27	1	3	379	5	1	4	84
MR65	28	1	2	311	8	1	4	87
MR65	29	1	2	300	5	1	4	96
MR65	30	1	2	345	5	1	3	103
MR65	31	1	2	312	3	1	2	124
MR65	32	1	2	288	1	1	3	65
MR65	33	1	2	359	1	1	1	57
MR65	34	1	2	268	2	1	2	56
MR65	35	1	2	377	1	1	2	58
MR65	36	1	2	232	1	1	3	58
MR65	37	1	2	244	1	1	8	112
MR65	38	1	2	296	2	1	3	188
MR65	39	1	3	346	3	1	3	353
MR65	40	1	2	314	4	1	2	142
MR65	41	1	2	264	6	1	2	123
MR65	42	1	3	312	4	1	4	70
MR65	43	1	9	139	25	2	19	103
MR65	44	1	10	268	59	1	21	624
MR65	45	1	9	123	19	1.2	11	99
MR65	46	1	11	200	66	2.2	6	232
MR65	47	1	2	132	21	1	6	123
MR65	48	1	2	195	21	1	3	108
MR65	49	1	11	175	33	2	4	121
MR65	50	1	6	107	6	1	3	44
MR65	51	1	17	167	55	2	7	132
MR65	52	1	10	156	37	1	10	125
MR65	53	1	8	134	32	1	4	117
MR65	54	1	18	133	80	2	7	192
MR65	55	1	20	159	105	3	13	332
MR66	1	1	2	279	14	1	6	98
MR66	2	1	2	369	12	1	5	70
MR66	3	1	2	260	12	1	7	62
MR66	4	1	2	250	10	1	4	76
MR66	5	1	2	320	7	1	4	81
MR66	6	1	2	310	7	1	4	71
MR66	7	1	2	247	7	1	4	94
MR66	8	1	2	267	9	1	4	100
MR66	9	1	2	201	11	1	3	129
MR66	10	1	2	258	5	1	4	80
MR66	11	1	2	275	7	1	5	137
MR66	12	1	2	289	4	1	5	40
MR66	13	1	2	305	3	1	5	51
MR66	14	1	2	345	5	1	6	68
MR66	15	1	2	336	2	1	6	85
MR66	16	1	2	280	4	1	5	56
MR66	17	1	2	280	5	1	4	128
MR66	18	1	2	276	6	1	6	150
MR66	19	1	2	235	4	1	5	54

DDH	NSa No	Cd	Co	Cr	V	Be	Cu	Zr
MR66	20	1	2	289	6	1	7	64
MR66	21	1	2	248	5	1	6	96
MR66	22	1	2	252	2	1	3	53
MR66	23	1	2	265	3	1	5	121
MR66	24	1	2	286	4	1	3	132
MR66	25	1	2	275	5	1	4	94
MR66	26	1	2	319	2	1	6	79
MR66	27	1	2	325	4	1	6	179
MR66	28	1	3	311	8	1	6	156
MR66	29	1	2	454	4	1	4	70
MR66	30	1	2	85	4	1	2	151
MR66	31	1	2	364	11	1	5	189
MR66	32	1	3	391	12	1	6	107
MR66	33	1	2	389	13	1	6	82
MR66	34	1	4	316	7	1	3	77
MR66	35	1	4	375	12	1	3	69
MR66	36	1	7	190	41	1	3	196
MR66	37	1	6	232	39	1	5	236
MR66	38	1	6	95	24	1	3	310
MR66	39	1	10	107	49	2	6	223
MR66	40	1	5	125	21	2	5	185
MR66	41	1	12	115	36	3	5	126
MR66	42	1	15	76	68	3	10	124
MR66	43	1	2	124	3	1	3	123
MR66	44	1	20	122	95	3	27	140
MR66	45	1	7	167	11	1	58	213
MR66	46	1	26	116	89	2	28	142
MR66	47	1	16	127	85	3.4	16	203
MR66	48	1	1	148	2	0.5	4	102
MR66	49	1	2	131	5	1	3	94

DDH	NSa No	Y	La	Th	Sr	Ba	B
MR65	1	3	10	4	188	18	10
MR65	2	4	11	4	179	19	10
MR65	3	2	9	6	113	16	20
MR65	4	3	8	4	116	18	10
MR65	5	3	12	3	117	18	20
MR65	6	3	11	3	121	18	10
MR65	7	3	13	3	143	20	20
MR65	8	3	14	3	166	16	20
MR65	9	3	11	4	108	17	20
MR65	10	3	10	3	107	17	20
MR65	11	2	10	3	102	17	20
MR65	12	3	12	4	108	19	20
MR65	13	2	9	3	97	16	10
MR65	14	3	11	3	126	19	10
MR65	15	3	8	3	113	14	10

Appendix 2

DDH	NSa No	Y	La	Th	Sr	Ba	B
MR65	16	2	7	5	116	14	10
MR65	17	3	6	3	86	12	20
MR65	18	2	5	3	61	10	10
MR65	19	2	5	3	63	10	20
MR65	20	1	5	3	54	10	10
MR65	21	1	5	3	54	8	10
MR65	22	1	7	3	65	8	10
MR65	23	2	7	3	58	8	10
MR65	24	1	1	3	57	5	30
MR65	25	1	1	5	53	6	30
MR65	26	1	1	3	44	6	30
MR65	27	2	1	3	50	7	30
MR65	28	3	1	7	59	8	30
MR65	29	3	1	4	56	7	40
MR65	30	2	1	3	49	5	50
MR65	31	2	1	7	37	4	40
MR65	32	2	1	3	35	3	40
MR65	33	1	1	5	26	2	30
MR65	34	2	1	6	30	3	30
MR65	35	2	1	3	31	3	50
MR65	36	1	1	4	34	3	40
MR65	37	3	1	3	41	4	40
MR65	38	3	1	4	40	5	60
MR65	39	5	2	9	75	13	50
MR65	40	2	1	3	63	9	50
MR65	41	1	1	8	40	6	70
MR65	42	1	1	5	68	5	60
MR65	43	70	55	48	62	415	40
MR65	44	17	61	149	17	292	10
MR65	45	4	61	27	145	2035	30
MR65	46	7	35	20	33	1051	30
MR65	47	4	56	20	161	42	120
MR65	48	4	37	19	122	109	150
MR65	49	11	41	23	55	127	200
MR65	50	8	12	11	33	59	120
MR65	51	6	38	22	75	1016	80
MR65	52	7	51	25	106	1326	90
MR65	53	6	46	31	79	1216	60
MR65	54	10	48	27	32	1061	60
MR65	55	10	53	47	40	1128	60
MR66	1	4	17	8	137	20	50
MR66	2	3	22	9	128	19	50
MR66	3	3	16	5	126	19	50
MR66	4	3	16	4	117	18	60
MR66	5	3	20	11	114	18	60
MR66	6	3	14	4	116	17	50
MR66	7	3	16	10	108	17	50
MR66	8	3	17	6	114	19	50
MR66	9	3	18	10	104	20	70
MR66	10	2	16	6	89	15	60

Appendix 2

DDH	NSa No	Y	La	Th	Sr	Ba	B
MR66	11	3	17	5	97	17	60
MR66	12	2	17	4	86	14	50
MR66	13	2	15	11	100	17	50
MR66	14	2	14	4	81	13	70
MR66	15	3	14	9	103	16	70
MR66	16	2	14	3	86	12	60
MR66	17	3	12	3	87	11	60
MR66	18	3	40	5	64	10	50
MR66	19	2	7	3	51	9	50
MR66	20	1	8	5	47	8	40
MR66	21	2	11	3	54	11	40
MR66	22	1	13	3	66	11	40
MR66	23	2	10	4	52	7	50
MR66	24	2	13	9	65	8	40
MR66	25	1	8	3	51	7	30
MR66	26	1	9	3	49	7	30
MR66	27	2	11	7	64	10	60
MR66	28	2	10	4	69	9	40
MR66	29	1	9	3	60	8	40
MR66	30	2	9	3	52	8	90
MR66	31	2	12	3	88	11	90
MR66	32	2	14	3	52	9	70
MR66	33	3	15	9	58	11	60
MR66	34	2	13	3	45	6	40
MR66	35	2	16	6	67	13	40
MR66	36	16	41	18	367	78	50
MR66	37	11	49	15	381	86	40
MR66	38	7	43	79	138	47	50
MR66	39	7	83	25	123	134	80
MR66	40	8	50	44	150	70	130
MR66	41	37	59	25	68	478	140
MR66	42	16	51	15	191	609	30
MR66	43	25	28	30	75	664	30
MR66	44	29	47	14	241	1149	20
MR66	45	6	148	74	146	2055	30
MR66	46	27	88	24	357	3106	20
MR66	47	26	46	19	276	604	30
MR66	48	11	29	33	90	742	20
MR66	49	10	29	29	78	724	30

DDH	NSa No	Illite	Chlorite	Kaolinite	I002	Kubler	%Clay
MR65	1						
MR65	2						
MR65	3						
MR65	4						
MR65	5						
MR65	6						

DDH	NSa No	Illite	Chlorite	Kaolinite	I002	Kubler	%Clay
MR65	7						
MR65	8						
MR65	9						
MR65	10						
MR65	11						
MR65	12						
MR65	13						
MR65	14						
MR65	15						
MR65	16						
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MR65	19						
MR65	20						
MR65	21						
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MR65	38						
MR65	39						
MR65	40						
MR65	41						
MR65	42						
MR65	43						
MR65	44						
MR65	45						
MR65	46						
MR65	47						
MR65	48						
MR65	49						
MR65	50						
MR65	51						
MR65	52						
MR65	53						
MR65	54						
MR65	55						
MR66	1						

DDH	NSa No	Illite	Chlorite	Kaolinite	I002	Kubler	%Clay
MR66	2						
MR66	3						
MR66	4						
MR66	5						
MR66	6						
MR66	7						
MR66	8						
MR66	9						
MR66	10						
MR66	11						
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MR66	39						
MR66	40						
MR66	41						
MR66	42						
MR66	43						
MR66	44						
MR66	45						
MR66	46						
MR66	47						
MR66	48						
MR66	49						

Appendix 3: Contractor's Report on Time Domain EM Survey

Appendix 4: Contractor's Report on Petrological Investigations

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cc: BT
BL
JM

Vancouver Petrographics Ltd.

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Invoice 8123
April 1989

Samples: MR- series: 62-7, 65-45, 65-46, 66-45, 66-46, 66-47, 66-48

Summary:

The samples are from a gneissic terrane, and are dominated by plagioclase, quartz, and microcline with lesser mafic minerals, consisting of one or more of biotite, hornblende, hypersthene, and garnet. Hornblende is altered completely, and its identification is tentative; some of the material identified as altered hornblende may by altered pyroxene. The plagioclase/microcline ratio varies widely.

1.0 Granitic Gneiss

coarse grained, moderately foliated, dominated by perthitic microcline and quartz, with less plagioclase and minor biotite/ chlorite and/or amphibole(?).

MR-62-7 minor amphibole (altered) and biotite (partly altered).

MR-66-46 mafic is chlorite (after biotite); moderately abundant interstitial seams and patches dominated by very fine grained plagioclase and microcline, with lesser chlorite and quartz.

2.0 Hypersthene-Bearing Gneiss

well foliated, dominated by plagioclase and quartz, with or without K-feldspar; hypersthene and biotite concentrated in thin seams parallel to foliation.

MR-66-45 contains K-feldspar, hypersthene is altered completely to secondary amphiboles; veinlets of calcite-opaque- (chlorite/sericite).

MR-66-47 no K-feldspar; biotite commonly rimming hypersthene; veinlets of actinolite adjacent to which hypersthene is altered strongly to amphibole.

LIST of PHOTOGRAPHS

Note: Length of Photographs 1.55 mm; Magnification 80X

Photo	Sample	Description
S	MR-62-7	coarse perthite, finer perthite-plagioclase-quartz-biotite/chlorite; crossed nicols.
1	MR-65-45	garnet (slightly altered to sericite on fractures) with minor leucoxene/Ti-oxide, surrounded by quartz-plagioclase-microcline (some plagioclase altered strongly to sericite).
2	MR-65-46	altered plagioclase, hornblende, garnet; less quartz and Ti-oxide/leucoxene; plane light. (over-exposed).
3	MR-65-46	same as photo 2 (proper exposure).
4	MR-66-45	bands of secondary amphibole containing minor zircon and Ti-oxide interlayered with those of microcline-(quartz-plagioclase); note veinlets of actinolite (green) extending into microcline grains; plane light.
5	MR-66-46	perthitic microcline, plagioclase and chlorite, patch of quartz; interstitial, plagioclase-microcline; crossed nicols.
6	MR-66-47	hypersthene aggregates, partly rimmed by biotite enclosed in plagioclase-(quartz); veinlets of actinolite produce strong alteration of hypersthene to secondary amphibole; plane light.
7	MR-66-48	compositional banding: plagioclase-quartz-rich layer (with zircon grain and wispy biotite/chlorite lenses) adjacent to plagioclase-hypersthene-biotite-quartz layer; note elongation of mafic grains parallel to compositional banding; plane light.

2.0 Hypersthene-bearing Gneiss (continued)

MR-66-48 similar to Sample MR-66-47; more prominent compositional banding defined mainly by strong variation in the ratio of felsic to mafic minerals; prominent foliation defined by compositional layering, and by elongation of lenses of quartz, of mafic minerals and of opaque.

3.0 Garnet-bearing Gneiss

variable composition, containing minor to abundant garnet; dominated by quartz and feldspar(s) in widely varying proportions; mafic minerals are hornblende (altered) and/or biotite.

MR-65-45 fine to medium grained, moderately foliated; dominated by quartz, plagioclase, and microcline, with lesser garnet and minor biotite.

MR-65-46 well foliated; dominated by plagioclase and quartz with less hornblende and garnet, and minor Ti-oxide/opaque, chlorite, and zircon; plagioclase is altered to sericite, garnet to chlorite-(sericite), hornblende to quartz-chlorite-sericite, and Ti-oxide partly to leucoxene.

Photographs were taken to illustrate textures; descriptions are listed on the following page. Numbers refer to numbers on negative and on back of prints. [redacted]

Sample MR-62-7 (116 m) **Granitic Gneiss**

The sample is moderately foliated gneiss dominated by perthite and quartz, with much less plagioclase, and minor amphibole (altered) and biotite (partly altered).

perthite	65-70%	(K-feldspar=microcline)
quartz	17-20	
plagioclase	7- 8	
microcline	2- 3	
amphibole	2- 3	
biotite	1	
Ti-oxide/leucoxene	0.4	
opaque	minor	
zircon	trace	
veinlets		
chlorite	minor	

Perthite forms anhedral grains averaging 0.5-1.5 mm in size, with a few up to 3 mm across. It consists of an intimate, extremely fine to very fine, lensy to sievelike intergrowth of K-feldspar and slightly to moderately less plagioclase. Locally, K-feldspar shows well developed microcline twins. A few perthite grains are dominated by K-feldspar with minor, extremely fine, lenses of plagioclase oriented in one crystallographic direction.

Quartz forms anhedral, commonly lensy grains up to a few mm long, oriented parallel to foliation. Some grains show slightly to moderately strained extinction.

Plagioclase forms a few anhedral grains averaging 0.3-0.7 mm in size. Alteration is slight to sericite, and locally slight to moderate to patches of calcite.

Interstitial to the coarser grained minerals are lenses and patches of intergrowths of plagioclase, perthite, microcline, and quartz averaging 0.05-0.2 mm in grain size. A few plagioclase grains contain minor inclusions of quartz in myrmekitic textures.

Amphibole forms several lenses parallel to foliation and patches up to 2.5 mm across. It is altered completely to irregular aggregates of very fine grained chlorite, plagioclase/quartz, muscovite/biotite, and calcite. Biotite associated with amphibole is pleochroic from pale to medium greyish-greenish brown.

Biotite forms a few flakes and clusters of flakes up to 0.1 mm in grain size. Some patches are altered slightly to completely to pseudomorphic chlorite with minor Ti-oxide inclusions. Biotite is pleochroic from pale to light or medium brown to reddish brown, and chlorite is pleochroic from pale to light green. A few biotite grains included in coarser quartz grains show pleochroism from light to dark brown. In one cluster, biotite contains tiny quartz inclusions in myrmekite-like textures, commonly oriented parallel to cleavage.

Ti-oxide/leucoxene forms a few lensy patches averaging 0.3-0.6 mm in size. Patches contain equant grains of Ti-oxide up to 0.6 mm in size surrounded by extremely fine grained to cryptocrystalline, semiopaque leucoxene.

Opaque forms a few anhedral grains averaging 0.05-0.12 mm in size in one cluster 0.3 mm across in quartz. Associated with opaque is less calcite and minor chlorite.

Zircon forms subhedral, stubby prismatic grains up to 0.06 mm long in perthite and associated with leucoxene.

A few veinlets up to 0.01 mm wide are of chlorite.

Sample MR-65-45 **Quartz-Plagioclase-Microcline-Garnet Gneiss**

The sample is a fine to medium grained, moderately foliated gneiss dominated by quartz, plagioclase, and microcline, with lesser garnet and minor biotite.

quartz	35-40%
plagioclase	35-40
microcline	17-20
garnet	4- 5
biotite	1- 2
leucoxene-(Ti-oxide)	0.5
opaque	0.2
zircon	trace
veinlets and patches	
muscovite/sericite	0.2

Quartz forms anhedral grains averaging 0.5-1.5 mm in size, with a few up to a few mm long. It is concentrated moderately in lenses parallel to foliation. Grains commonly show slightly to moderately strained extinction.

Plagioclase forms anhedral grains averaging 0.3-1 mm in size, with a few up to 1.5 mm across. Alteration is variable: about 2/3 of the grains are fresh to slightly altered to sericite, and about 1/3 are altered strongly to completely to sericite and locally to muscovite. One patch 3.5 mm long by up to 1 mm wide is dominated by extremely fine to locally very fine grained sericite, probably after plagioclase. Possibly two types of plagioclase are present in te rock, with the more-calcic variety being altered strongly to sericite, and the more-sodic variety being only slightly altered.

Microcline forms anhedral grains averaging 0.3-1 mm in size. Most contain minor perthitic lenses of plagioclase.

The rock contains a few interstitial patches of finer grained quartz and feldspars in intimate intergrowths.

Garnet forms ragged grains averaging 0.5-1.5 mm in size. Most are intergrown coarsely with quartz. Some are altered slightly to moderately to chlorite and/or sericite, with alteration concentrated along fractures.

Biotite forms scattered flakes and clusters of a few flakes averaging 0.2-0.3 mm in grain size. Biotite is pleochroism is from pale to medium brown. Much of the biotite is altered to pseudomorphic chlorite-(Ti-oxide). Some biotite grains contain abundant Ti-oxide needles oriented in hexagonal crystallographic directions in biotite.

Ti-oxide forms anhedral grains averaging 0.05-0.08 mm in size, mainly associated with garnet and biotite.

Opaque forms a few elongate grains up to 0.25 mm long, and irregular grains averaging 0.1 mm in size associated with garnet. Some opaque grains are rimmed by Ti-oxide, suggesting that they are ilmenite.

Zircon forms a few single grains and clusters of subrounded grains averaging 0.03-0.07 mm in size, and a few stubby, subhedral grains up to 0.04 mm long. Much of the zircon occurs in quartz.

A few late veinlets and replacement patches are of muscovite/sericite ranging from 0.1-0.3 mm in length.

Sample MR-65-46 **Altered Plagioclase-Quartz-Hornblende-Garnet Gneiss**

The sample is a well foliated gneiss dominated by plagioclase and quartz, with less hornblende and garnet, and minor Ti-oxide/opaque, chlorite, and zircon. Plagioclase is altered to sericite, garnet to chlorite-(sericite), hornblende to quartz-chlorite-sericite, and Ti-oxide partly to leucoxene.

plagioclase	50-55%
quartz	25-30
hornblende	8-10
garnet	7- 8
Ti-oxide/leucoxene	1- 2
chlorite	1- 2
opaque	0.3
muscovite	0.2
biotite	trace
zircon	trace

Plagioclase forms anhedral grains averaging 0.3-1 mm in size, with a few up to 3 mm across. It is altered strongly to completely to extremely fine grained sericite.

Quartz forms anhedral grains averaging 0.3-1 mm in size, concentrated moderately to strongly in lenses parallel to foliation. Grains show strongly strained to patchy extinction.

Hornblende forms anhedral grains averaging 0.7-1.2 mm in size. Alteration is complete to aggregates of very fine grained, interlocking quartz intergrown with patchy zones of extremely fine grained chlorite and sericite.

Garnet forms anhedral, equant grains averaging 0.5-1.5 mm in size. Alteration is complete: early-formed fractures are dominated by sericite with lesser chlorite, and the rest of the grains are dominated by extremely fine grained chlorite and lesser sericite. Grains commonly contain a few subrounded to rounded inclusions of quartz averaging 0.1-0.3 mm in size.

Ti-oxide (possibly after sphene) forms patches up to 0.6 mm in size of subhedral to locally euhedral grains averaging 0.1-0.15 mm in size. Some grains are altered slightly to strongly to opaque (leucoxene?).

Chlorite forms scattered patches up to 0.6 mm in size of very fine grained aggregates. Associated with a few of these are aggregates of muscovite flakes of similar grain size.

Opaque forms a few subhedral, equant grains up to 0.2 mm in size, and a few platy grains up to 0.3 mm long. Dusty opaque forms a few trains up to 0.1 mm wide, mainly in quartz grains.

Biotite forms scattered flakes averaging 0.05-0.15 mm in size. Alteration is complete to pseudomorphic chlorite-(Ti-oxide).

Zircon forms anhedral to subhedral grains averaging 0.05-0.07 mm in size, with a few up to 0.1 mm long.

Sample MR-66-45 (41.7 m) **Microcline-Quartz-Plagioclase-Hypersthene(?)-(Biotite) Gneiss; Veinlets of Calcite-Opaque-(Chlorite/Sericite)**

The rock is a well foliated gneiss dominated by microcline and quartz, with less plagioclase and hypersthene(?) and minor biotite. Mafic minerals are concentrated mainly in narrow seams which define the foliation. Hypersthene is altered completely to secondary amphiboles. A few veinlets are dominated by calcite and opaque, with much less chlorite/sericite.

microcline	35-40%
quartz	30-35
plagioclase	17-20
hypersthene(?)	7- 8
biotite	1- 2
opaque	1
garnet	0.5
Ti-oxide	0.1
muscovite	minor
zircon	minor
veinlets	
calcite-opaque-(chlorite/sericite)	0.3

Microcline forms anhedral grains averaging 0.3-0.7 mm in size, with a few up to 1.5 mm across. Many grains have minor to moderately abundant perthitic inclusions of plagioclase.

Quartz forms anhedral patches up to 1.5 mm in size of very fine to fine grains with slightly to moderately strained extinction. Quartz also forms a few subrounded inclusions in several larger microcline grains, and is intergrown with garnet grains.

Plagioclase forms anhedral grains averaging 0.2-0.5 mm in size. A few grains show slightly warped albite twins. Alteration is slight to strong to extremely fine grained sericite. Several grains contain myrmekitic intergrowths of quartz.

Hypersthene(?) forms anhedral grains averaging 0.2-0.5 mm in size, concentrated in seams up to 0.7 mm wide. Alteration is complete to patches of extremely fine grained, colorless amphibole (possibly anthophyllite) surrounded by patches of pale green to light bluish green actinolite, commonly in subparallel orientation perpendicular to the core of the grain. Actinolite also forms veinlets extending from the secondary amphibole lenses into surrounding microcline grains.

Biotite forms scattered flakes and clusters of flakes averaging 0.1-0.4 mm in length, with a few up to 0.7 mm long. Pleochroism is from pale/light brown to medium/dark brown. Most larger grains are fresh; some larger grains and many smaller ones are altered completely to chlorite-(Ti-oxide).

Garnet forms two irregular, equant grains from 0.5-1.5 mm in size in one corner of the section. They are intergrown with moderately abundant quartz and contain minor inclusions of zircon.

Opaque forms anhedral patches up to 0.6 mm in size.

Ti-oxide/leucoxene forms anhedral grains up to 0.3 mm in size, mainly interstitial to hypersthene(?) aggregates.

Muscovite forms scattered aggregates of a few subparallel grains averaging 0.2-0.3 mm in length.

Zircon forms anhedral grains up to 0.2 mm in size, mainly associated with hypersthene.

A few veinlets up to 0.15 mm wide are dominated by calcite with lesser opaque and minor chlorite/sericite.

Sample MR-66-46 **Granitic Gneiss: Microcline-Quartz-Plagioclase-(Chlorite)**

The sample is a moderately foliated gneiss, much of which consists of medium to coarse grained perthitic microcline and patches of quartz, with much less plagioclase and chlorite (after biotite). Moderately abundant interstitial seams and patches are dominated by very fine grained aggregates of plagioclase and microcline, with lesser chlorite and quartz.

microcline	50-55%
quartz	20-25
plagioclase	20-25
chlorite-(Ti-oxide)	2- 3
opaque	minor
ankerite	minor
zircon	trace

Perthitic microcline forms anhedral grains averaging 1-2 mm in size, with a few up to 3 mm across. It contains minor to abundant lenses to networks of exsolution plagioclase in a groundmass of microcline.

Quartz is concentrated in irregular patches up to several mm across. In these it forms strongly interlocking aggregates of very fine to fine grains, whose textures suggest that they were formed by recrystallization of coarser grains.

Plagioclase forms a few anhedral grains from 0.5-2.5 mm in size. It is concentrated in finer grained patches and lenses interstitial to coarser grained microcline and quartz. In these plagioclase forms interlocking aggregates of grains averaging 0.1-0.3 mm in size, with some patches dominated by grains averaging 0.03-0.1 mm in size. Intergrown with plagioclase is lesser microcline and minor quartz. Alteration of plagioclase is slight to locally moderate to sericite and minor ankerite. Both feldspars contain moderately abundant dusty hematite inclusions, and plagioclase contains a few irregular patches of extremely fine grained, reddish brown hematite.

Chlorite (after biotite) forms equant grains averaging 0.5-1 mm in size. It also occurs as much finer grained aggregates in several interstitial patches intergrown with plagioclase. Pleochroism is from pale to medium greyish green, and the interference color is purple to blue. Associated with chlorite is moderately abundant Ti-oxide. One patch contains abundant very fine grained lenses of quartz intergrown with and probably replacing chlorite along cleavage planes.

Opaque forms scattered, equant to elongate, anhedral grains averaging 0.1-0.2 mm in size.

Ankerite forms scattered interstitial grains averaging 0.1 mm in size.

Zircon forms a few subhedral prismatic to subrounded grains averaging 0.05-0.12 mm in size, with a few up to 0.22 mm long.

Sample MR-66-47 (439 m) **Plagioclase-Quartz-Hypersthene-Biotite Gneiss**

The sample is a well foliated, fine to medium grained gneiss dominated by plagioclase and quartz, with lesser hypersthene and much less biotite, commonly rimming hypersthene. Veinlets of actinolite cut the rock; adjacent to these, hypersthene is altered strongly to amphibole.

plagioclase	55-60%
quartz	20-25
hypersthene	10-12
biotite	5- 7
opaque	0.5
apatite	0.2
zircon	minor
veinlets	
actinolite	0.3

Plagioclase forms anhedral grains averaging 0.2-0.5 mm in size, with a few up to 1 mm across. Albite twins commonly are warped moderately. Grains are fresh to very slightly altered to sericite.

Quartz is concentrated moderately in small lenses parallel to foliation. It forms grains averaging 0.2-0.7 mm in size, many of which may have formed by recrystallization of coarser grains. Extinction commonly is slightly strained.

Moderately abundant, irregular, interstitial patches consist of much finer grained aggregates of plagioclase and lesser quartz, possibly formed by recrystallization of coarser grains.

Hypersthene forms anhedral to subhedral, mainly equant grains averaging 0.2-0.5 mm in size. Some have very irregular outlines. Pleochroism is from pink to light green. The high relief, high birefringence and strong (for hypersthene) pleochroism indicate a high Fe/Mg ratio. Many grains are altered slightly to moderately, mainly along grain borders to cryptocrystalline to extremely fine grained, pale greyish to yellowish green amphibole(?), and locally to light green actinolite. A few grains are altered strongly to secondary amphibole; alteration textures are similar to those of altered hypersthene(?) in Sample MR-66-45.

Biotite forms ragged to subhedral flakes averaging 0.1-0.5 mm in size. Pleochroism is from light to dark brown or reddish brown. Biotite commonly forms reaction(?) rims on hypersthene. A few grains surrounding hypersthene contain minor tiny quartz inclusions in sieve-like textures. Elsewhere, biotite forms disseminated grains and aggregates averaging 0.1-0.2 mm in grain size.

Opaque forms anhedral grains up to 0.5 mm long, commonly associated with biotite.

Apatite forms subhedral to euhedral, prismatic grains averaging 0.08-0.15 mm long, with a few up to 0.2 mm long.

Zircon forms anhedral to subhedral, equant grains averaging 0.02-0.07 mm in size, with a few up to 0.25 mm long. Most are included in plagioclase or quartz. A few in biotite have thin, intensely dark halos.

A few discontinuous, in part braided veinlets averaging 0.02-0.05 mm wide are of extremely fine grained, light green actinolite. Near these, hypersthene is altered strongly to extremely fine to very fine grained, pale green amphibole.

Sample MR-66-48 (449 m) **Plagioclase-Quartz-Hypersthene-Biotite Gneiss**

The sample is similar to Sample MR-66-47, but shows more prominent compositional banding defined mainly by strong variation in the ratio of felsic to mafic minerals. A prominent foliation is defined by compositional layering, and by elongation of lenses of quartz, of mafic minerals and of opaque.

plagioclase	55-60%
quartz	20-25
hypersthene	10-12
biotite	7- 8
opaque	0.4
apatite	0.2
zircon	trace

Plagioclase forms anhedral grains averaging 0.2-0.5 mm in size, with a few up to 1.5 mm in size, and a few interstitial patches in which grains average 0.05-0.1 mm. Coarser grained plagioclase is concentrated in the felsic layers. Albite twins commonly are poorly developed, and where present, one set is very thin. Commonly, albite twins are warped slightly. Alteration generally is very slight to sericite. In a very few patches up to 0.15 mm across, plagioclase is altered completely to sericite.

In most of the rock, quartz forms anhedral grains averaging 0.1-0.3 mm in size. In the felsic layers it is concentrated in lenses parallel to foliation, and grain size averages 0.2-0.8 mm.

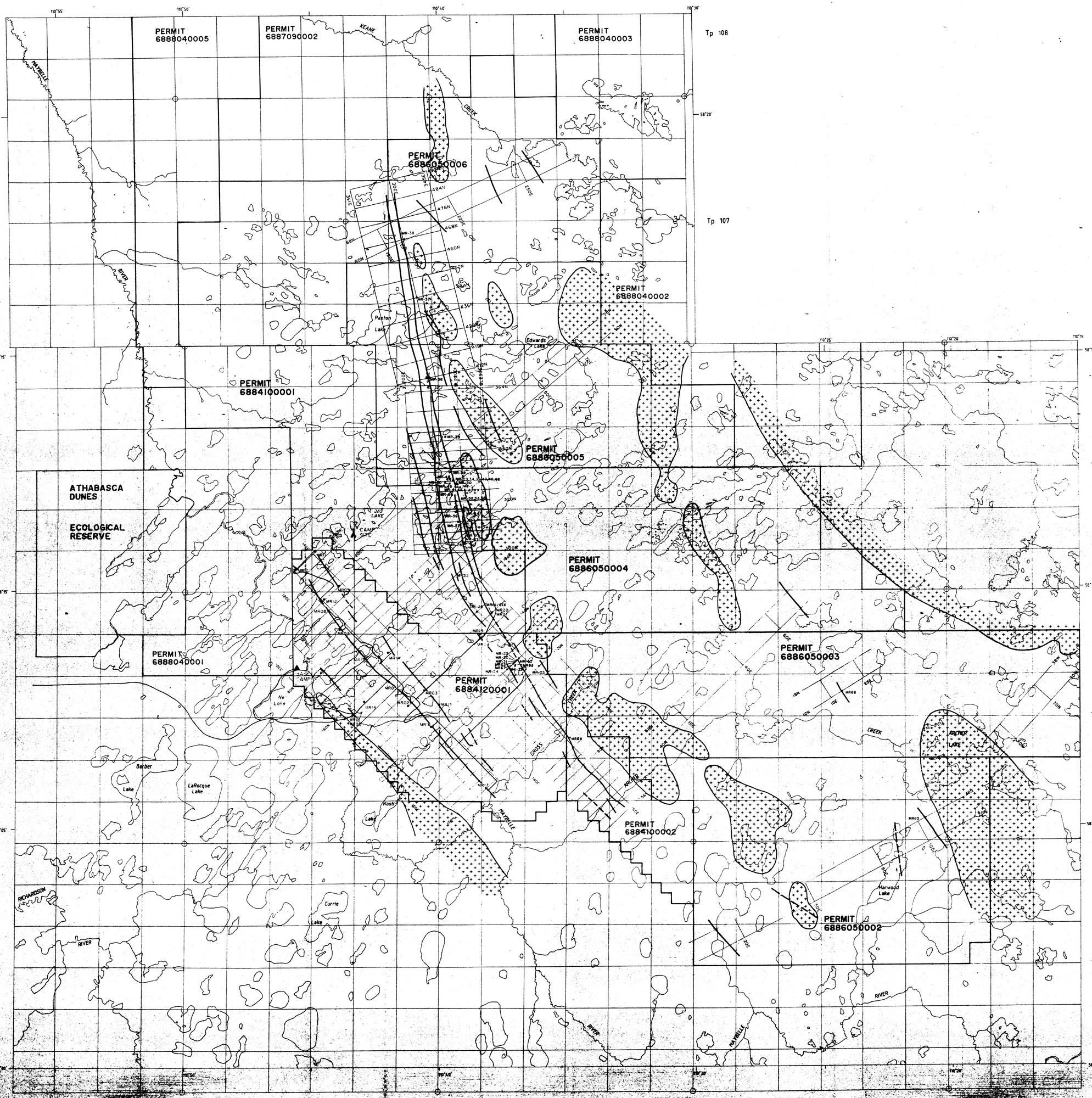
Hypersthene forms anhedral, in part ragged grains averaging 0.2-0.5 mm in size, commonly concentrated in clusters and lenses parallel to foliation. Grains are fresh to altered slightly to secondary, pale green amphibole.

Biotite forms flakes averaging 0.1-0.3 mm in size, in part rimming hypersthene, and in part disseminated. Pleochroism is from light to dark brown to reddish brown. A few grains are altered slightly to moderately to pseudomorphic chlorite.

Opaque forms anhedral lenses averaging 0.2-0.8 mm long and irregular patches averaging 0.1-0.3 mm across, commonly associated with mafic minerals.

Apatite forms subhedral, prismatic grains averaging 0.07-0.12 mm in length, with a few up to 0.22 mm long.

Zircon forms disseminated anhedral to subhedral grains averaging 0.05-0.12 mm in size.



LEGEND

OUTLINE OF PERMITS

DIAMOND DRILLHOLE LOCATION

EM CONDUCTOR-FROM GROUND GEOPHYSICS

MAG HIGH - ARCHEAN DOME ?

0 1 2 3km

No.	Date	Revision	Compiled	Drawn	Checked
4					
3	04/89	1989 DDHs ADDED	B.L.	C.H.	B.L.
2	02/89	1988 DDHs ADDED	R.O.	C.H.	R.O.
1	04/87	1987 WINTER GRID AND DDH's	R.O	E.B.	R.O.

Uranerz Exploration and Mining Ltd.

Saskatoon, Saskatchewan Canada

MAYBELLE RIVER AREA

Part 1

COMPILATION MAP AND DRILLHOLE LOCATIONS

Compiled: P.R./R.O.	Date: 12/86	[illegible]	[illegible]
Drawn: E.B.	Date: 12/86	[illegible]	[illegible]
File No.: 9K/F-1288-01		[illegible]	[illegible]

DDH: MR61

AZIMUTH/DIP : 240° / −60°
ELEVATION (m asl) : 312 (est.)
GRID COORDINATE : L 148+00 N / 173+01 E
UTM COORDINATE : 6446150 N / 521420 E
VERTICAL SCALE : 1 : 500
PROJECT : 71−42 Maybelle River
DISPOSITION : Permit 6884100001
COMPILED BY : B. Lacey
DATE (MO/YR) : 04/89

DIP TEST Azim./Dip. 75°

Elevation ..... m a.s.l.

STRUCTURE: 25 % CORE RECOVERY; 25 % ROCK QUALITY DESIGNATION (RQD); 25 % FRACTURE DENSITY (# OF FRACTURES/3m RUN); INCO-HESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHE-SIVE: FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

LITHOLOGY

ALTERATION/MINERALIZATION: Fe-OXIDES: MAROON HEMATITE, RED HEMATITE, BRICK RED HEMATITE, LIMONITE; CLAYS: HEMATITIC, DARK GREEN, LIGHT GREEN, WHITE; BLEACHING; SILICIFICATION; EUHEDRAL QUARTZ; PYRITE/SOOTY PYRITE; DRAVITE; SIDERITE/CARBONATES; U-ORE MINERALS; NICKEL MINERALS; OTHERS: GRAPHITE %; BITUMEN

GAMMA LOG CPS 0 20 40 60 80

SAMPLES

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 3 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U total and partial	Th	Zr	Ni	As	Pb	B	Bi	Al2O3	K2O/Al2O3	MgO
2 ppm	4 ppm	104 ppm	6 ppm	2.8 ppm	4 ppm	80 ppm	-	0.9 %	0.2	0.1 %
2ppm	14 ppm	88 ppm	10 ppm	13 ppm	6 ppm	100 ppm		5.0 %	0.2	0.36 %
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%		%
2 4 6 8	20 40	200 400	10 20 30	5 10 15	10 20	100 200	1 2 3	5 10 15	0.1 0.2 0.3 0.4	0.1 0.2 0.3 0.4

CLAY XRD: KAOLINITE, ILLITE, CHLORITE % (0 50 100); TOTAL CLAY % (4 8)

0 – 34.1m OVERBURDEN

Devonian top extrapolated from MR61X detailed log and MR61 gamma log

34.1 – 63.1m DEVONIAN SEDIMENTS undifferentiated interbedded dolomite and calcareous sandstone, intervals of dark green, soft clay (chlor. ?), strongly fractured

Manitou Falls top extrapolated from MR61X detailed log and MR61 gamma log

63.1 – 165.5m MANITOU FALLS FORMATION moderately to strongly bleached medium grained sandstone, intervals of strong silicification, locally strongly fractured and fault brecciated; bitumen, trace pyrite and euhedral quartz common along fractures, clay intraclasts common throughout formation

165.5 – 182.3m FAIR POINT FORMATION weakly bleached, gritty to conglomeratic sandstone with white clay matrix, weak maroon and weak red hematite

Unconformity at 182.3m

182.3 – 199.9m PLAGIOCLASE GNEISS paleoweathering, strongly hematized, moderate white clay alteration, weakly chloritized, quartz−felspar−gneiss, locally massive and protomylonitic textures

199.9 – 218.5m PLAGIOCLASE GNEISS moderately hematized, strongly chloritized, quartz−feldspar−biotite−gneiss, (red/green zone of paleoweathering)

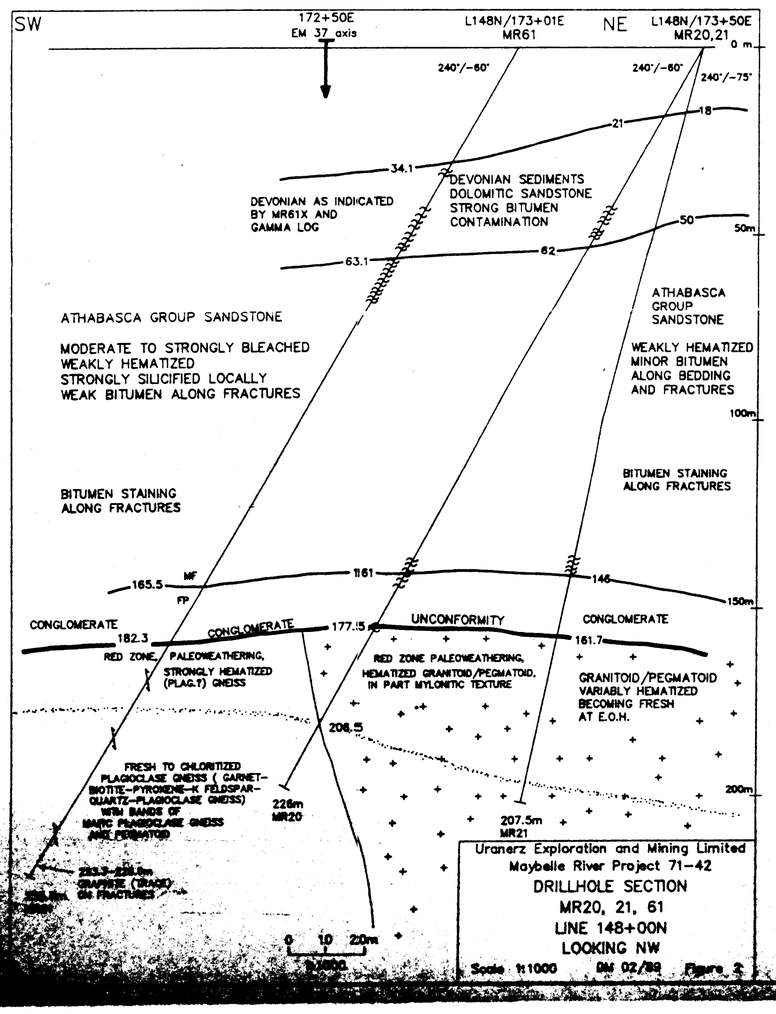
218.5 – 255.8m PLAGIOCLASE GNEISS modrately to strongly chloritized, locally fresh garnetiferous−biotite−quartz−feldspar−gneiss, chlorite alteration decreases at depth

anatectic pegmatoid

E.O.H. @ 255.8 m

PAJARI −59° 248°

MR61−1 | 61−2 | MR61−3 | MR61−4 | MR61−5 | MR61−6 | MR61−7 | MR61−8 | MR61−9 | MR61−10 | MR61−11 | 12



LEGEND

- FRACTURE / JOINT
- FIRST FOLIATION
- SECOND FOLIATION
- MYLONITE / MYLONITIC TEXTURE
- FAULT / SHEAR ZONE
- FAULT GOUGE (CLAY RICH)
- SLICKENSIDE
- STRONGLY FRACTURED ZONE

MAGNITUDE OF GEOLOGICAL FEATURE

WEAK | MODERATE | STRONG | TRACE OR SINGLE OCCURANCE

LITHOLOGY

DEVONIAN SEDIMENTS
- DOLOMITE AND CALCAROUS SANDSTONE

ATHABASCA GROUP
- SANDSTONE (LAZENBY LAKE, MANITOU FALLS, FAIR POINT)
- SILTSTONE INTERBEDS

UNCONFORMITY

BASEMENT
- GRAPHITIC GNEISS/MYLONITE
- MAFIC GNEISS (AMPHIBOLE OR PYROXENE)
- ANATECTIC PEMATOID/ GRANITOID
- PLAGIOCLASE GNEISS

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

71−42 Maybelle River

Composite Geological Log MR61
Line 148 North

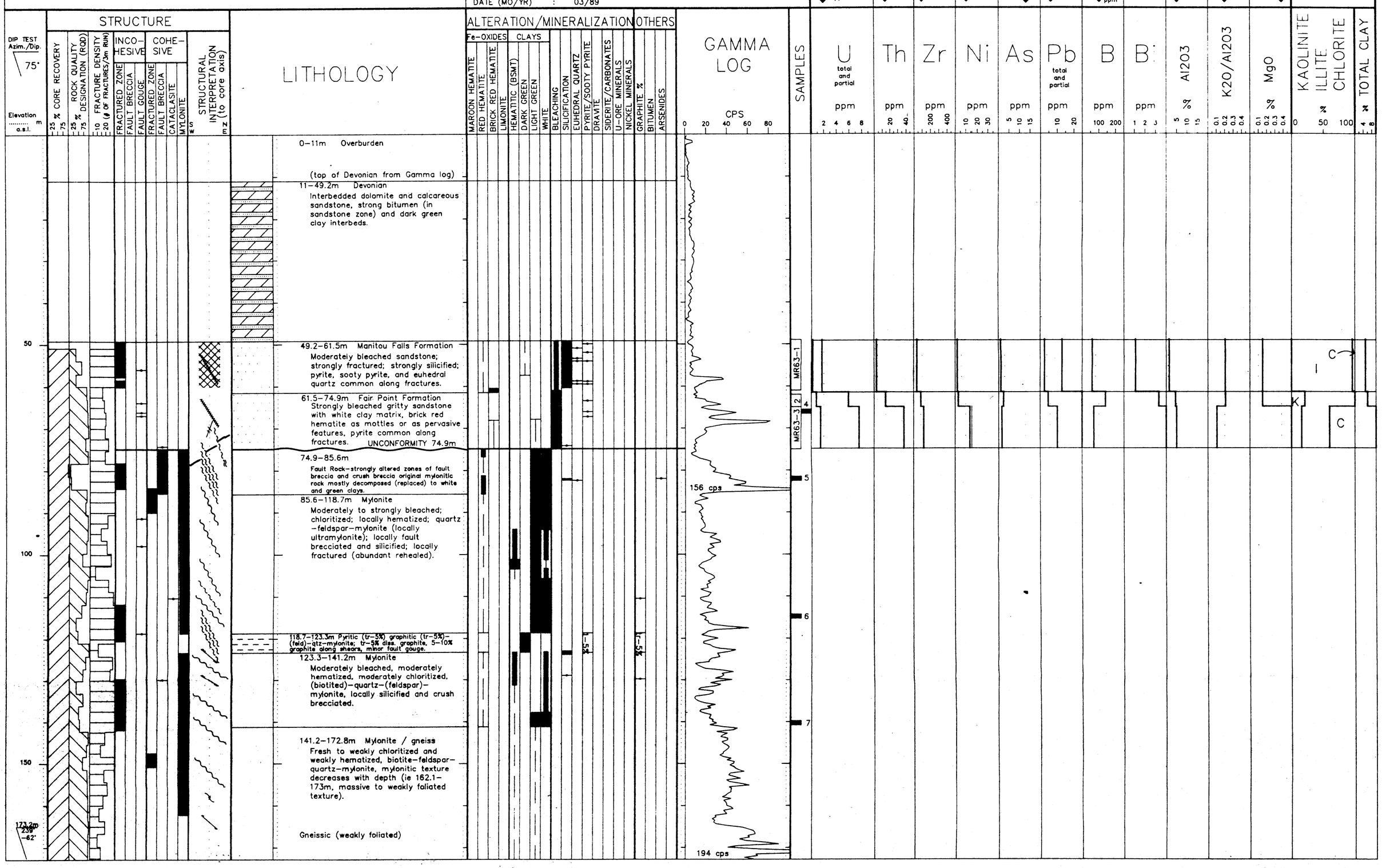
8904

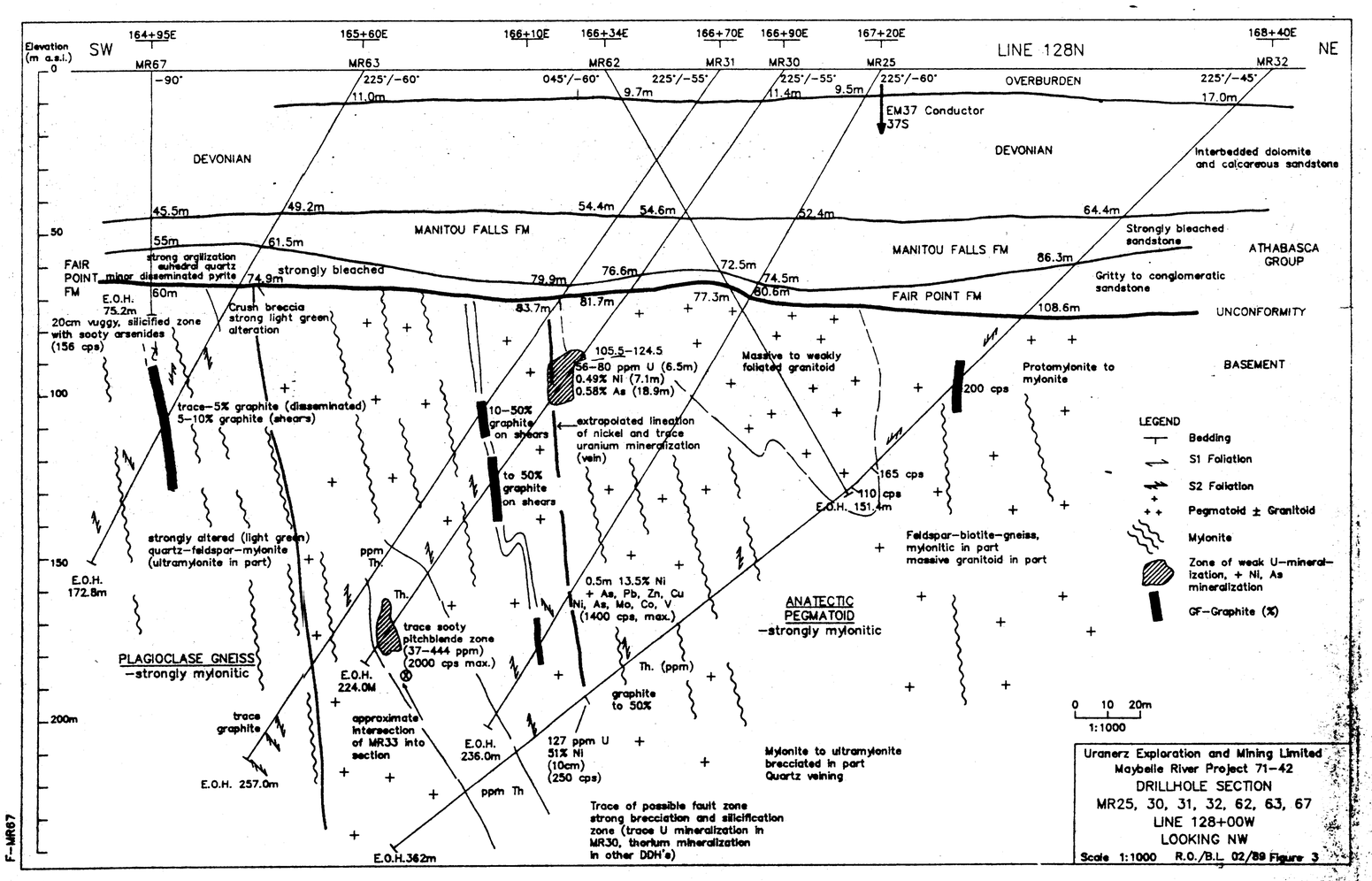
MIN [redacted]

Compiled: B. Lacey | Date: 04/89 | NTS Ref.: 74/L | Map No.: 2
Drawn: B. Lacey | Date: 04/89 | Page No.: | ACF: C−MR61
File No.: 7142−125 | Project No.: 71−42

DDH: MR63

AZIMUTH/DIP	225°/−60°
ELEVATION (m asl)	315 (est)
GRID COORDINATE	L128N/165+60E
UTM COORDINATE	6444250N/522350E
VERTICAL SCALE	1:500
PROJECT	71−42 (MAYBELLE RIVER)
DISPOSITION	Permit 6884120001
COMPILED BY	Brent Lacey
DATE (MO/YR)	03/89





LEGEND

- FRACTURE / JOINT
- FIRST FOLIATION
- SECOND FOLIATION
- MYLONITE / MYLONITIC TEXTURE
- FAULT / SHEAR ZONE
- FAULT GOUGE (CLAY RICH)
- SLICKENSIDE
- STRONGLY FRACTURED ZONE

MAGNITUDE OF GEOLOGICAL FEATURE: WEAK, MODERATE, STRONG, TRACE OR SINGLE OCCURANCE

LITHOLOGY

DEVONIAN SEDIMENTS
- DOLOMITE AND CALCAROUS SANDSTONE

ATHABASCA GROUP
- SANDSTONE (LAZENBY LAKE, MANITOU FALLS, FAIR POINT)
- SILTSTONE INTERBEDS

UNCONFORMITY

BASEMENT
- GRAPHITIC GNEISS/MYLONITE
- MAFIC GNEISS (AMPHIBOLE OR PYROXENE)
- ANATECTIC PEMATOID/ GRANITOID
- PLAGIOCLASE GNEISS

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

71−42

Composite Geological Log MR63
Line 128 North

8904

Compiled: B. Lacey	Date: 04/89	NTS Ref.: 74/L	Map No.: 3
Drawn: B. Lacey	Date 04/89	Base No.:	ACF: C−MR63
File No.: 7142-196		Scale: 1:500	Project No.: 71−42

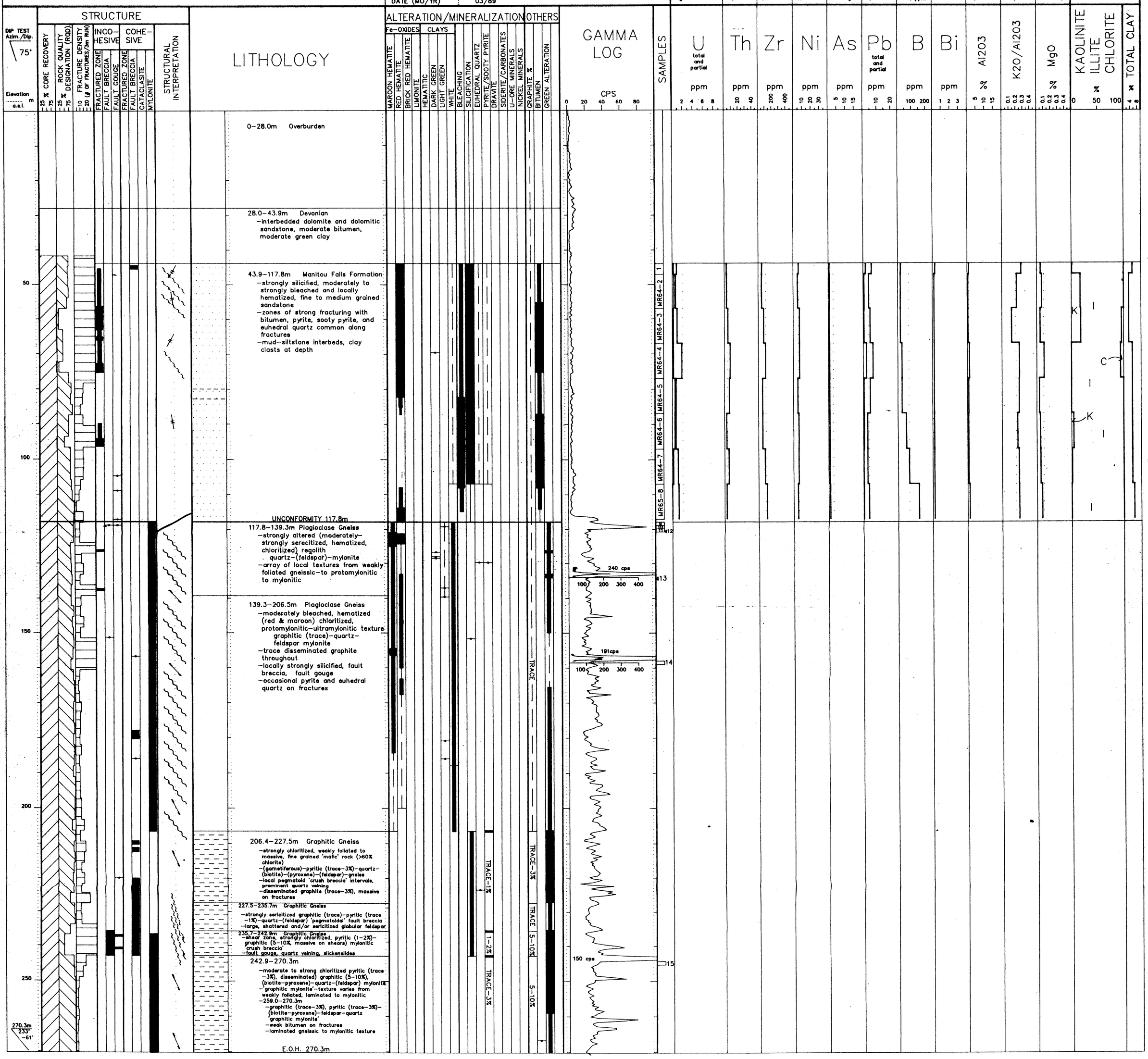
DDH: MR64

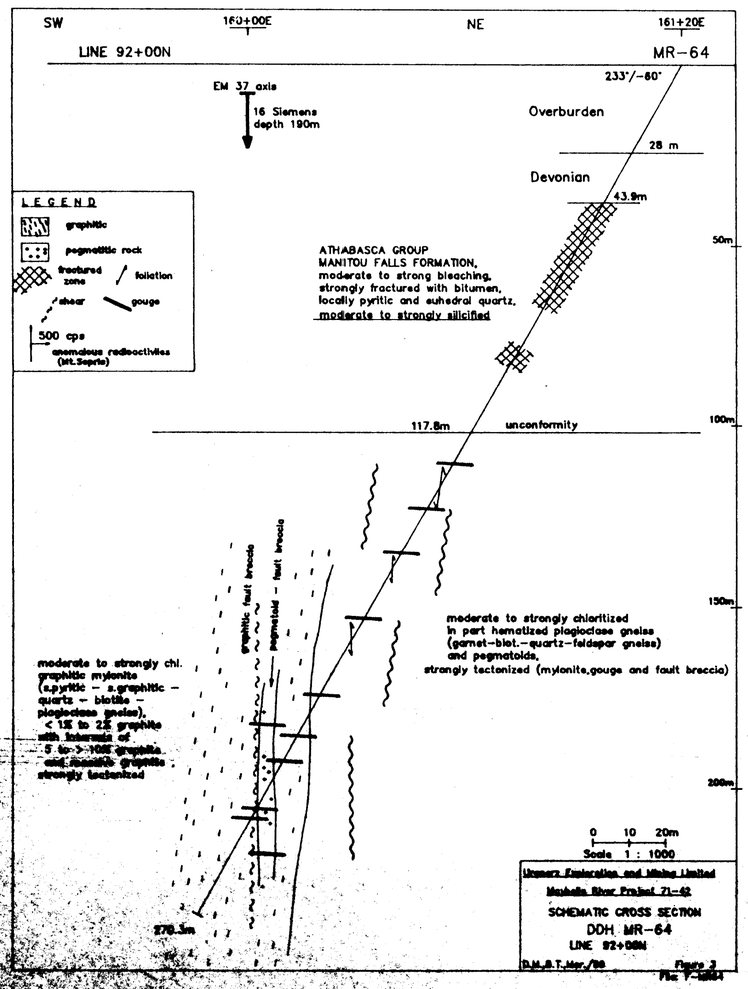
AZIMUTH/DIP	225°/−60°
ELEVATION (m asl)	328 (est.)
GRID COORDINATE	L92N/161+20E
UTM COORDINATE	6441450N/524550E
VERTICAL SCALE	1:500
PROJECT	71-42 (MAYBELLE RIVER)
DISPOSITION	Permit #6684100002
COMPILED BY	David Mitchell
DATE (MO/YR)	03/89

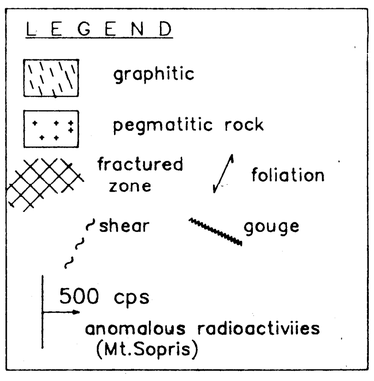
SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 3 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Bi	Al2O3	K2O/Al2O3	MgO
2 ppm	4 ppm	104 ppm	6 ppm	2.8 ppm	4 ppm	80 ppm		0.9 %	0.2	0.1 %
2ppm	14 ppm	88 ppm	10 ppm	13 ppm	6 ppm	100 ppm		5.0 %	0.2	0.38 %







No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

71–42

Composite Geological Log MR64
Line 92 North

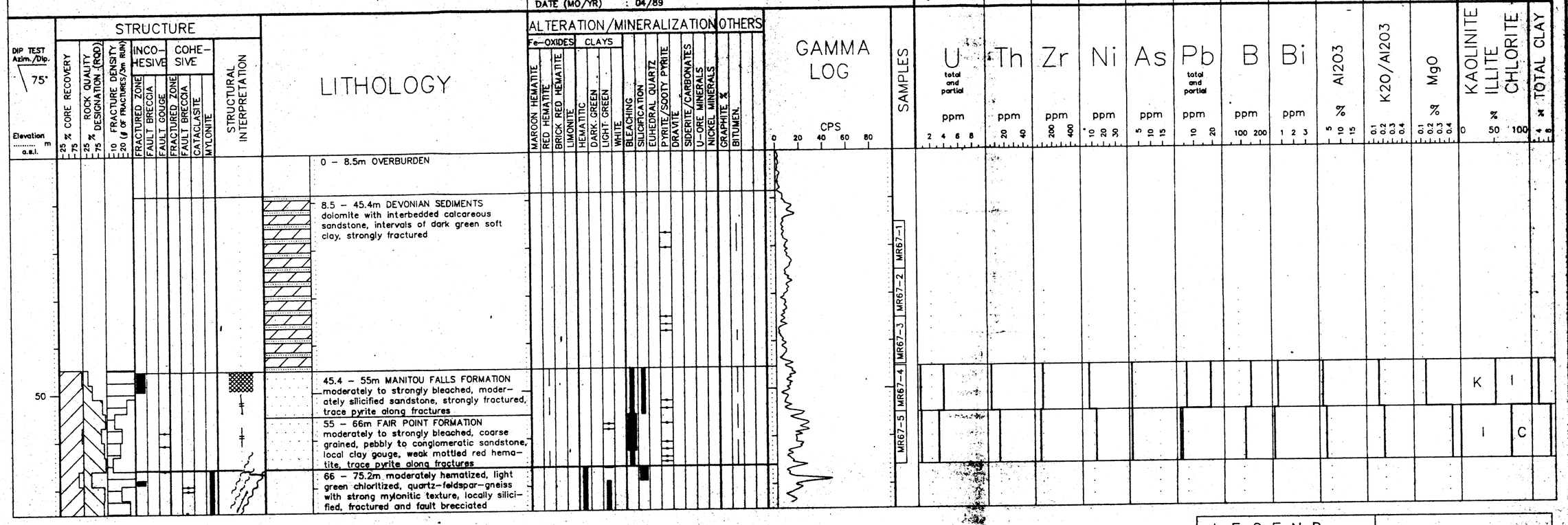
Part 1

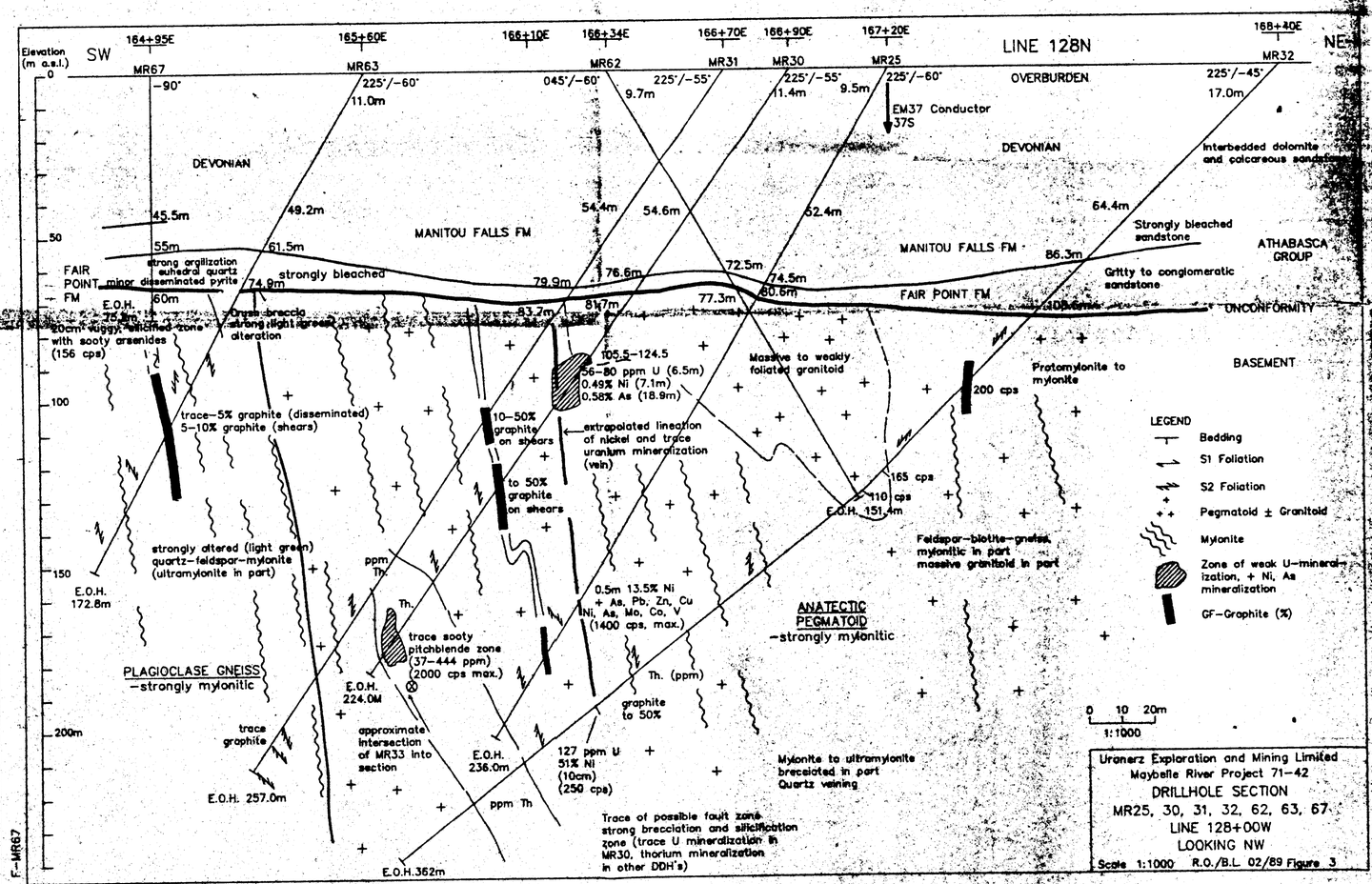
MIN [redacted]

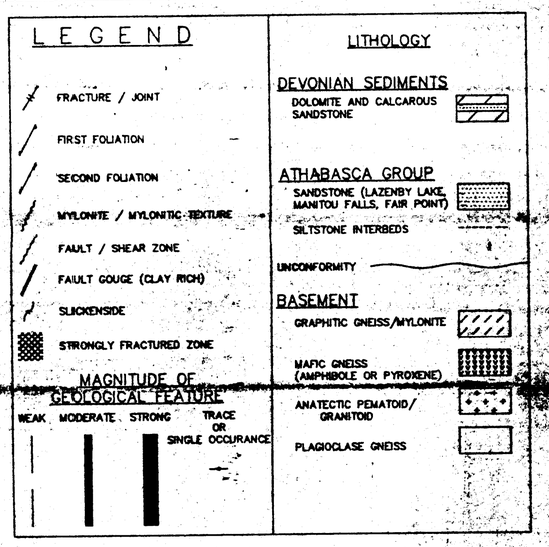
Compiled: B. Lacey	Date: 04/89	NTS Ref.: 1:500	Dwg. No.: 4
Drawn: B. Lacey	Date 04/89	Base No.:	DDH: 6 MR64
File No.: 7142-137		Scale: 1:500	Proj. No. 71-42

DDH: MR67

AZIMUTH/DIP : NA / -90°
ELEVATION (m asl) : 315 (est.)
GRID COORDINATE : L 128 N / 164+95 E
UTM COORDINATE : 6444250 N / 522350 E
VERTICAL SCALE : 1 : 500
PROJECT : 71-42 Maybelle River
DISPOSITION : 6884120001
COMPILED BY : B. Lacey
DATE (MO/YR) : 04/89







No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

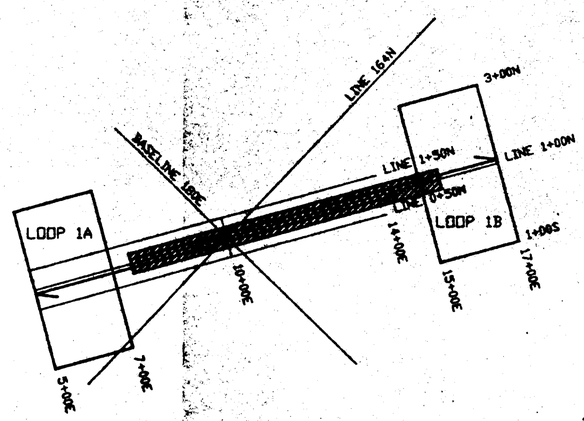
71–42 Maybelle River

Composite Geological Log MR67
Line 128 North

Compiled: B. Lacey	Date: 04/89	NTS Ref.: 74/L	Map No.: 3
Drawn: B. Lacey	Date 04/89	Base No.:	ACF: C-MR67
File No.: 7142-200		Scale: 1:500	Project No.: 71-42

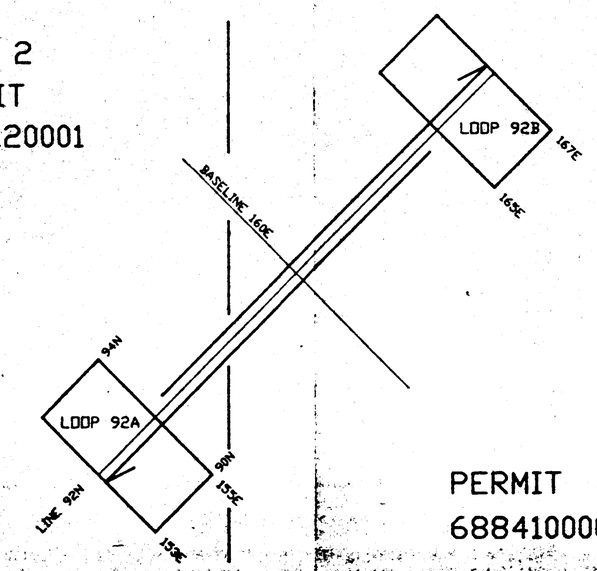
F-MR67

AREA 1
PERMIT
6884100001



Moving Loop Survey
Transmitter Loop Sizes : 100 m x 100 m
Receiver Offsets : 100 m and 200 m to the East of Transmitter Loop Center

AREA 2
PERMIT
6884120001



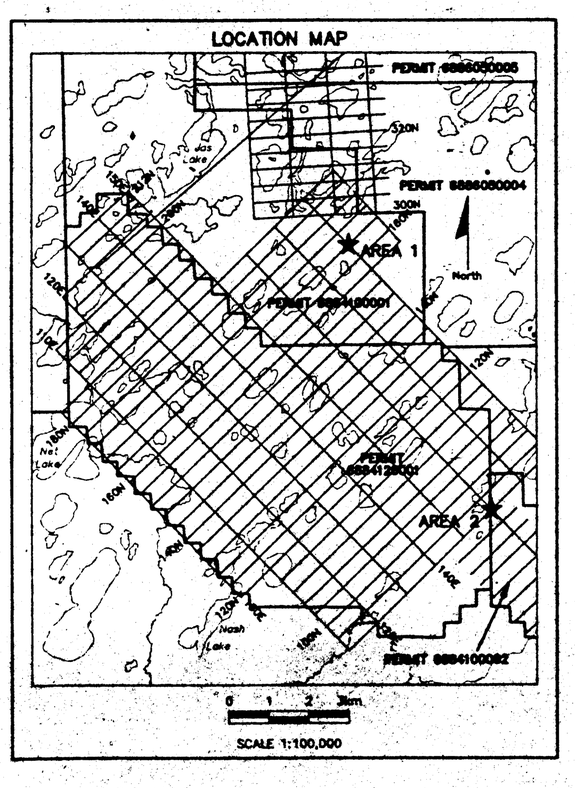
PERMIT
6884100002

LEGEND

Fixed Transmitter Loop Location and Profile Coverage

Moving Loop Profile : Receiver Locations

Receiver Location for Center Loop Sounding



No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

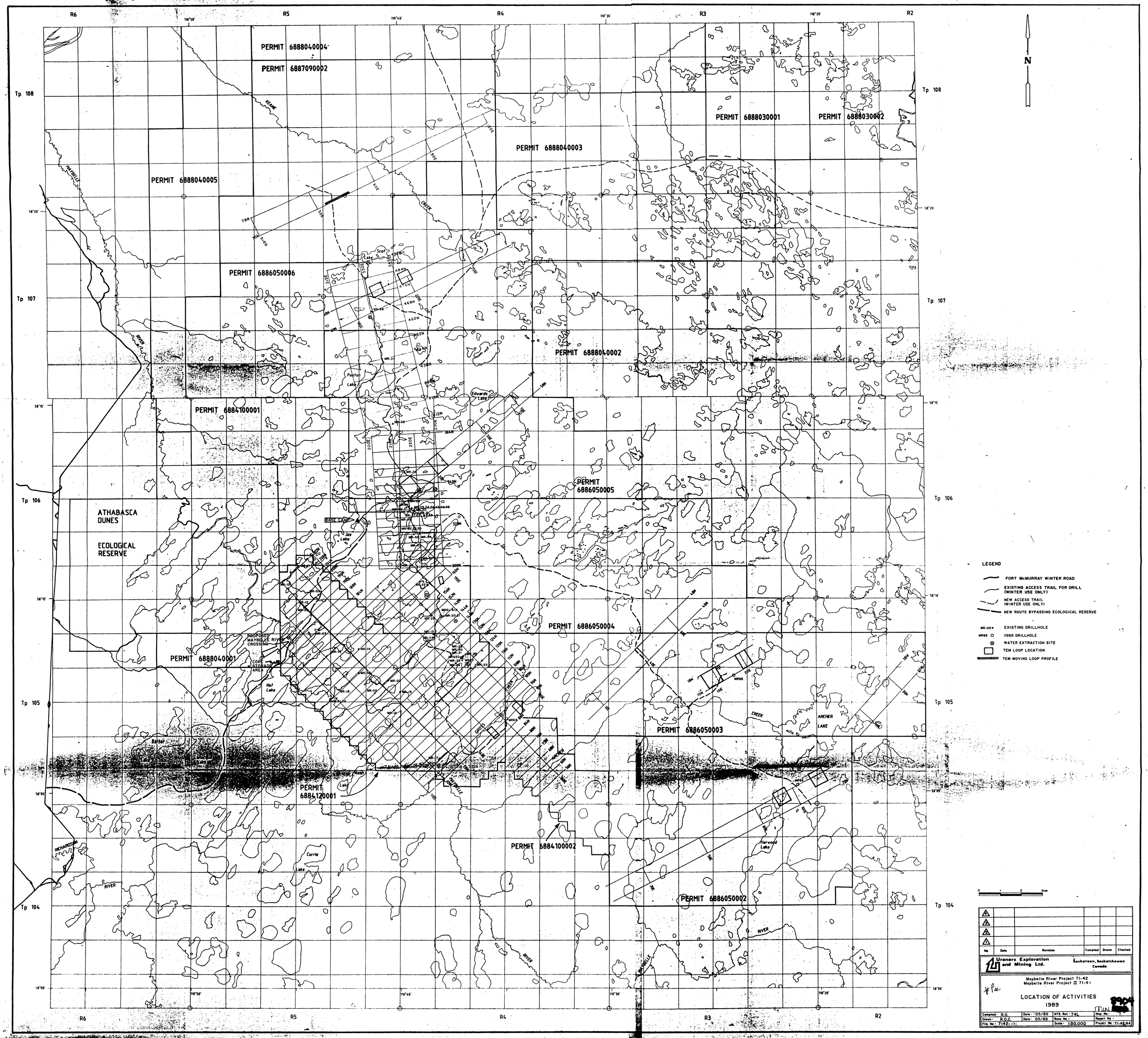
Part 1

Maybelle River Project 71-42

WINTER OF 1989 TEM COVERAGE
SURVEYS BY JVX LTD.

MINTECH

Compiled: PR	Date: 03/89	NTS Ref.:	Map No.: 6
Drawn: PR	Date 03/89	Base No.:	ACF: 42TM189
File No.: 7142-207		Scale: 1:10,000	Project No.: 71-42



R6
R5
R4
R3
R2
Tp 108
Tp 107
Tp 106
Tp 105
Tp 104
PERMIT 6888040004
PERMIT 6887090002
PERMIT 6888030001
PERMIT 6888030002
PERMIT 6888040003
PERMIT 6888040005
PERMIT 6886050006
PERMIT 6888040002
PERMIT 6884100001
PERMIT 6886050005
PERMIT 6886050004
PERMIT 6888040001
PERMIT 6886050003
PERMIT 6884120001
PERMIT 6884100002
PERMIT 6886050002
ATHABASCA DUNES
ECOLOGICAL RESERVE
PROPOSED MAYBELLE RIVER CROSSING
CORE STORAGE AREA
BASE CAMP
Scot Lake
Paxton Lake
Edwards Lake
Jas Lake
Net Lake
Barber
Currie Lake
Harwood Lake
ARCHER LAKE
KEANE
CREEK
MAYBELLE
RIVER
RICHARDSON
N
LEGEND
FORT McMURRAY WINTER ROAD
EXISTING ACCESS TRAIL FOR DRILL (WINTER USE ONLY)
NEW ACCESS TRAIL (WINTER USE ONLY)
NEW ROUTE BYPASSING ECOLOGICAL RESERVE
MR-02 EXISTING DRILLHOLE
MR65 1989 DRILLHOLE
WATER EXTRACTION SITE
TEM LOOP LOCATION
TEM MOVING LOOP PROFILE
0 1 2 3km
No. Date Revision Compiled Drawn Checked
Uranerz Exploration and Mining Ltd.
Saskatoon, Saskatchewan Canada
Maybelle River Project 71-42
Maybelle River Project II 71-44
LOCATION OF ACTIVITIES
1989
Compiled: R.O. Date: 05/89 NTS Ref.: 74L Map No.:
Drawn: R.O.C. Date: 05/89 Base No.: Report No.:
File No.: 7142-191 Scale: 1:50,000 Project No.: 71-42,44