MAR 19900003: MAYBELLE RIVER

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19900003

URANERZ EXPLORATION AND MINING LIMITED

ASSESSMENT REPORT FOR MINERAL EXPLORATION PERMITS

6884100001, 6884100002, 6884120001, 6886050004, 6886050005, 6886050006, 6887090002, 6888030001, 6888030002, 6888030003, 6888030004, 6888030005, 6888040001, 6888040002, 6888040003, 6888040004, 6888040005, 6888040006, 6888040007, 6888040008.

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FOR ALL UN-REPORTED WORK UP TO

DECEMBER 31, 1990.

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1. INTRODUCTION

1.1 Time of Investigations

This report covers various periods of exploration work on most of the permits held in Alberta by Uranerz Exploration and Mining Ltd. and includes all work, that is not already filed for assessment, up to December 31, 1990. The interval of reporting periods for each individual permit is listed in Table 1.

Table 1: Assessment Reporting Period for Each Permit

Permit 6884100001	October 1, 1989 to December 31, 1990.
Permit 6884100002	October 1, 1989 to December 31, 1990.
Permit 6884120001	October 1, 1989 to December 31, 1990.
Permit 6886050004	January 1, 1989 to December 31, 1990.
Permit 6886050005	January 1, 1989 to December 31, 1990.
Permit 6886050006	January 1, 1989 to December 31, 1990.
Permit 6887090002	January 1, 1989 to December 31, 1990.
Permit 6888030001	March 25, 1988 to December 31, 1990.
Permit 6888030002	March 25, 1988 to December 31, 1990.
Permit 6888030003	March 25, 1988 to December 31, 1990.
Permit 6888030004	March 25, 1988 to December 31, 1990.
Permit 6888030005	March 25, 1988 to December 31, 1990.
Permit 6888040001	March 25, 1988 to December 31, 1990.
Permit 6888040002	March 25, 1988 to December 31, 1990.
Permit 6888040003	March 25, 1988 to December 31, 1990.
Permit 6888040004	March 25, 1988 to December 31, 1990.
Permit 6888040005	March 25, 1988 to December 31, 1990.
Permit 6888040006	March 25, 1988 to December 31, 1990.
Permit 6888040007	March 25, 1988 to December 31, 1990.
Permit 6888040008	March 25, 1988 to December 31, 1990.

1.2 Area

The Maybelle River project area is situated within northeastern Alberta, to the south of Lake Athabasca (Figure 1). Geologically, this is within the southwestern portion of the Athabasca Basin. The overall project area falls between latitudes 58°00'N and 58°35'N, and longitudes 109°55'W and 110°50'W. This report includes those permits listed in Table 1 (Figures 2a and 2b).

Reductions for a number of permits were submitted to the Alberta government on March 20, a list of which is compiled in Table 1 (Figures 2a and 2b).

Table 2: Land Status Summary, Maybelle River Project, 31-Mar-90

Permit No.	Recording Date	Term No.	Term End	Current Size,ha	Required Spending	Reduced Size,ha	Required Spending
6884100001	16-Oct-84	3	Oct-90	6,384	$287,280	n o	c h a n g e
6884100002	16-Oct-84	3	Oct-90	1,744	$94,800	n o	c h a n g e
6884120001	13-Dec-84	3	Dec-90	6,704	$301,680	n o	c h a n g e
6886050006	30-May-86	2	May-91	9,216	$276,480	n o	c h a n g e
6886050005	30-May-86	2	May-91	9,088	$272,640	n o	c h a n g e
6886050004	30-May-86	2	May-91	8,896	$266,880	n o	c h a n g e
6886050003	30-May-86	2	May-91	720	$105,440	n o	c h a n g e
6886050002	30-May-86	2	May-91	1,408	$120,320	n o	c h a n g e
6887090002	02-Sep-87	1	Sep-90	9,216	$92,160	2,816	$28,160
6888030001	25-Mar-88	1	Mar-91	5,632	$56,320	16	$160
6888030002	25-Mar-88	1	Mar-91	8,704	$87,040	16	$160
6888030003	25-Mar-88	1	Mar-91	8,448	$84,480	16	$160
6888030004	25-Mar-88	1	Mar-91	6,912	$69,120	16	$160
6888030005	25-Mar-88	1	Mar-91	7,936	$79,360	16	$160
6888040001	19-Apr-88	1	Apr-91	4,608	$46,080	1,792	$17,920
6888040002	19-Apr-88	1	Apr-91	8,448	$84,480	16	$160
6888040003	19-Apr-88	1	Apr-91	8,704	$87,040	16	$160
6888040004	19-Apr-88	1	Apr-91	8,192	$81,920	16	$160
6888040005	19-Apr-88	1	Apr-91	6,912	$69,120	3,584	$35,840
6888040006	19-Apr-88	1	Apr-91	9,216	$92,160	16	$160
6888040007	19-Apr-88	1	Apr-91	9,216	$92,160	16	$160
6888040008	19-Apr-88	1	Apr-91	7,616	$76,160	16	$160
				153,920	$2,823,120	52,528	$1,809,200

2. GENERAL GEOLOGY

The Maybelle River project area is on the southwestern margin of the Athabasca Basin. This is on the western edge of the Churchill Structural Province, near the northwestern edge of the Canadian Shield (Figure 2). As there is no known outcrop within the area, its lithostructural setting remains conjectural.

The basement has been mapped by government geologists both to the north and south of the project area as: 1) banded granite gneisses which show evidences of both an earlier granulite facies metamorphism and a later amphibolite facies overprinting, which are likely to be of pre-Kenoran age; 2) high-grade, layered to banded metasediments of probable Archean age, found principally

within the granite gneisses; 3) a series of Aphebian-aged intrusive, massive to foliated amphibolite facies anatectic granitoids, which formed mantled gneiss domes, and which now show several phases of related (Hudsonian?) deformation; and 4) 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.

There are no evidences of Aphebian supracrustal rocks in outcrop, but Burwash (1978), in a study of the subsurface extension of the basement rocks beneath the Phanerozoic cover rocks of the Interior Platform did recognize metasedimentary rocks, but suggested that perhaps only the keels of infolded Aphebian sediments remain.

Drilling within the project area has intersected aluminous metasedimentary rocks which are in part graphite-bearing. These are tentatively correlated with Aphebian-aged metasedimentary units of the Wollaston Domain and/or the Peter River gneisses of Cluff Lake. Other basement lithologies intersected include charnockitic gneisses and anatexites, both of which are similar to those at Cluff Lake.

Unconformably overlying the basement are sandstones belonging to the Helikian-aged Athabasca Group. Locally present are the following formations: the basal Fair Point, the Manitou Falls, the Lazenby Lake (?) and, in the Brander Lake area, the lower Wolverine Point (Wilson, 1985). These are in turn locally overlain by outliers and/or embayments of Phanerozoic sediments of probable Devonian age. Glacial drift, outwash, and lacustrine sands cover the whole of the project area, resulting in a complete lack of outcrop.

2.1 Economic Geology

The uranium potential of the Maybelle River area lies in:

1) its interpreted similarities to several features associated with the Key Lake-type of unconformity-related uranium deposits (notably Cigar Lake and Midwest Lake); and,

2) a very good potential for the finding of economic concentrations of the type of high grade uranium intersections made in several drillholes during 1988.

The basement geology has been shown by EM coverage and subsequent drilling to contain aluminous and locally graphitic metasediments of the type commonly found to be associated with the deposits within both the Wollaston

Domain and the Cluff Lake area. The presence of the Athabasca Group sandstone cover rocks is also an important factor in the formation of the high grade mineralization. Its moderate thickness facilitates exploration and possible mining.

The nearby (80 km to the east) Cluff Lake deposits represent a subtype of the unconformity-related uranium deposits which, given the similarities in basement geology, should also be considered within this project area. Important metallotects there are: 1) the association of a flat-lying, mylonitic, transitional lithology which separates the older, domal, Earl River granitoid complex from the overlying metasedimentary Peter River gneisses; 2) late, steeply-dipping faults; and, 3) the Helikian unconformity. A potential for associated gold mineralization also exists; a limited recovery of which was made from the D Zone orebody at Cluff Lake.

2.2 Non-Uranium Potential

Within the Maybelle River project area there are no known non-uranium mineral occurrences. Fort McMurray, 165 km to southwest, is the site of commercially exploited oil sands deposits within the Lower Cretaceous McMurray Formation. Frequently the rocks (both Phanerozoic and Precambrian alike) of the project area also contain traces of bitumen within porous horizons and especially along open fractures. Rocks of post-Devonian age have not been noted within the project area and the local bitumen occurrences are unlikely to attain sufficient size or grade to be considered as economic targets.

The Devonian units within the project area (Muskeg and Methy formations) are the time-stratigraphic equivalents of the Pine Point Formation. The type of lead-zinc bearing barrier reef structure which hosts the Pine Point deposits has not been recognized within the project area however. Wilson (1985) reports the occurrence of galena and sphalerite within fractures in the Manitou Falls Formation in a hole drilled near the south shore of Lake Athabasca. No potential is thought to exist for economic occurrences of sulphide mineralization.

As noted under Section 2.1, unconformity-related uranium deposits can host other metals in potentially economic grades. These include nickel and gold. Molybdenum is also now recovered at Key Lake, although in the ore it occurs only in the ppm range.

3. TARGETS

The general exploration target within this project area is the Key Lake-type of unconformity-related uranium deposit. Exploration activities have so far been focused upon the follow-up of EM responses which are interpreted to represent

graphitic metasedimentary lithologies. In addition to unconformity-related deposits (*sensu stricto*), the intersections of these formational conductors with the numerous cross faults in the area are also targets for structurally controlled mineralization of the Cluff Lake style.

4. INVESTIGATIONS AND RESULTS

Exploration work conducted during the reporting period is summarized in Table 3.

Table 3: Investigations

ACTIVITY	PERMIT	PRODUCTION
Diamond Drilling	6888040005	1 dh, 282.0 m
	6887090002	1 dh, 419.7 m
	6886050006	4 dh, 1,822.7 m
	6886050005	4 dh, 1,400.4 m
	6888040001	1 dh, 182.0 m
	6886050004	2 dh, 517.0 m
	6884100001	5 dh, 1,193.0 m
	6884100002	1 dh, 259.0 m
	6884120001	2 dh, 220.0 m
		22 dh, 6,295.8 m
Drillcore Lithogeochemistry (29 element ICP/AA package)	6888040005	19 samples
	6887090002	31 samples
	6886050006	163 samples
	6886050005	97 samples
	6886050004	45 samples
	6888040001	12 samples
	6884100001	96 samples
	6884100002	12 samples
	6884120001	6 samples
		481 samples
Drillcore XRD Clay Determinations	6887090002	31 samples
	6886050006	119 samples
	6886050005	48 samples
		198 samples
Linecutting	6888040008	9.2 km
	6888040007	9.4 km
	6888040005	7.2 km
	6887090002	1.8 km
	6886050006	7.8 km
	6886050005	6.8 km
	6886050004	6.2 km
	6888040001	4.6 km
	6884100001	5.7 km
	6884120001	6.8 km
		65.5 km

Rechaining	6887090002	3.3 km
	6886050006	6.2 km
	6886050005	9.0 km
	6886050004	8.0 km
	6884100001	8.4 km
	6884120001	3.2 km
		38.1 km
Moving Loop Time Domain EM	6888040008	3.0 days
	6888040007	3.0 days
	6888040005	3.0 days
	6887090002	3.0 days
	6886050006	5.8 days
	6886050005	11.2 days
	6886050004	4.0 days
	6888040001	4.0 days
	6884100001	7.0 days
	6884120001	5.0 days
		49.0 days
Helicopter For EM Surveys (1990)	6888040008	12.0 hrs
	6888040007	10.0 hrs
	6888040005	9.9 hrs
	6888040006	13.1 hrs
		45.0 hrs
Petrological Studies	6888040001	1 samples
	6886050004	22 samples
	6884100001	3 samples
		26 samples
Track Etch Survey	6886050004	51 cups
Access Roads For Drilling (1989 only)	6886050006	9.5 km
	6886050005	4.0 km
	6887090002	4.5 km
	6886050004	12.0 km
		30.0 km
Geotem Airborne EM/Mag Survey	6888040008	129 km
	6888040007	112 km
	6888040006	128 km
	6888040004	93 km
	6888040005	131 km

Lake Bottom Sediment Sampling	6887090002	211 km
	6886050006	36 km
	6888030005	35 km
	6888030004	5 km
		880 km
Air Photo Coverage (Prorated by percentage of permit area flown from total area of coverage)	6888030001	11 samples
	6888030002	3 samples
	6888030003	3 samples
	6888030004	8 samples
	6888030005	47 samples
	6888040004	1 sample
	6888040006	14 samples
	6888040007	4 samples
		91 samples
Ground Prospecting / Lake Sediment Sampling Follow-up	6888030001	3.1% of total
	6888030002	4.8% of total
	6888030003	4.7% of total
	6888030004	3.8% of total
	6888030005	4.4% of total
	6888040001	2.6% of total
	6888040002	4.7% of total
	6888040003	4.8% of total
	6888040004	4.5% of total
	6888040005	3.8% of total
	6888040006	5.1% of total
	6888040007	5.1% of total
	6888040008	4.2% of total
		55.6% of total
Soil Sampling	6888030001	0.75 days
	6888030002	2.00 days
	6888030005	1.00 days
	6888040003	0.50 days
	6886040004	0.25 days
	6886040006	0.75 days
	6886040007	0.50 days
		5.75 days
Boulder Sampling	6888030005	16 samples
	6888030004	10 samples
	6888030001	6 samples
	6888040006	8 samples

Stream Sediment Sampling	6886040007	4 samples
		44 samples
Stream Water Sampling	6888030005	5 samples
	6888030004	1 sample
	6888030003	1 sample
Sonic (Overburden) Drilling	6888030002	21 samples
	6888030001	7 samples
Sonic Drill Sample Geochemistry	6888040003	4 samples
	6888040004	1 sample
Consultants Report on Lake Sediments Brander Lake Area		40 samples
	6888030004	1 samples
	6888030005	15 samples
	6886030004	1 samples
	6888030005	15 samples
	6886030005	104.9 m
	6886030005	54 samples
	6886030005	6.5 days

4.01 Diamond Drilling

A total of 6,295.8 m (22 ddh) of NQ-sized drilling are reported herein (Map 1). Digital downhole (total count) radiometric probing (Mt. Sopris 2500 recorder with G375A probe) was routinely performed through the rods. The output was captured both digitally and on an analog strip chart. These data are contained on the geological logs found in Appendix 1, and are displayed on the composite geological logs (Maps 2-22).

Permit 6888040005

MT02: L500+00N/106+00E, -90° (Maps 1 & 2). This drilling target was defined by TDEM as a 15 siemens conductor, the axis of which was estimated at 260m indicated from a nearby reconnaissance hole drilled by BP minerals in 1978. Because of some uncertainty with this estimation however, a vertical drillhole was undertaken. This EM anomaly possibly represents the northern strike continuation of a strike-extensive conductor which extends into this project area from the south.

MT02 was the first testing of this conductor within the Maybelle River II project. The detailed geological and radiometric log is found on Appendix 1.

The Athabasca Group section cored in MT02 consists of a moderately bleached but generally unaltered and unfaulted sandstone. A moderate degree of fracturing exists throughout along with is the presence of clays as coatings and in-fillings. In addition is a more pervasive greenish coloured clay which occurs in the basal Manitou Falls rocks and through the entire Fair Point section. From the calculated clay contents (Appendix 2), kaolinite is clearly anomalous relative to illite and kaolinite. Other potential alteration minerals noted include minor quantities of siderite within the matrix. There were no radiometric anomalies through the Athabasca section. The lithogeochemistry data for this hole, while indicating a number of weak to moderate anomalies, do not suggest a potential for nearby mineralization. No follow-up is warranted based on these results.

The unconformity in MT02 was intersected some 30 metres higher than had been targeted. The basement rocks consist entirely of pyritiferous, pyroxene-bearing, biotitic quartzo-feldspathic granitoids and gneisses. No explanation of the EM anomaly could be determined from the forty metres of cored basement rocks. No radiometric anomalies of any significance were recorded.

Permit 6887090002

One diamond drillhole, MT01, was completed in order to test the on strike extension of the prospective C6/C6a, or Dragon Lake Lithostructural Zone (DLLZ). This relatively discrete unit is strike-extensive throughout the project immediately to the south, and within which ore-grade uranium-nickel mineralization has been intersected. The results of MT01 were negative in terms of mineralization, however, the characteristic basement rocks of the DLLZ are present.

Digitally-recorded downhole (total count) radiometric probing was performed through the rods. The radiometric logging equipment consisted of a modified Mt. Sopris 2500 recorder and winch with a G375A. Together with the core descriptions, this data is contained in Appendix 1.

MT01: L70+00N/45+00E, -90° (Maps 1 & 3). This target, having been defined geophysically during the winter, was tested with a vertical hole because of the uncertainty in both the depth estimate and dip of the conductor. The axis tested was interpreted as a 25 siemens "late-time nugget" within a 500 metre-wide EM response of low resistivity. The estimated depth ranged between 350 and 400 metres vertically.

For the most part, the Athabasca Group sandstone in this hole is unaltered and untectonized, with only short, local fracture zones present. Minor silicification accompanies these fractures, as noted by the presence of euhedral quartz (± pyrite). Veinlets of dravite are also related to these fractures, this being confirmed by anomalous boron found in samples taken over those intervals. Within the Fair Point Formation, minor local clay alterations within the matrix impart a faint greenish colour. No radiometric anomalies were recorded through the sandstone sequence. A few minor geochemical anomalies are found within the sandstone. A 10 cm split sample with traces of sooty pitchblende along a fracture yielded uranium values of 12 ppm (U_{tot}) and 7.2 ppm (U_{ptl}). Arsenic values of 10 ppm and 2.1 ppm are found within fractured sandstone in the two uppermost 10 metre bench samples of the Manitou Falls Formation.

The basement was intersected at a depth of 327.6 metres, approximately 50 metres sooner than anticipated. The upper 18 metres is strongly overprinted by the typical red-zone type of regolithic alteration. The basement consists predominantly of a chloritized and weakly graphitic quartz-feldspar augen gneiss. Local, ½ to 1 metre-wide intervals of granitoid/pegmatoid were also present. The general fault-related fabric of the rock varies from the more common augens to local mylonites and cataclasites. The graphite occurs mainly as trace disseminations (± trace to minor disseminated pyrite), but also as minor accumulations along shears. It is not believed that the main conductive EM response was intersected. The chloritic alteration of the entire basement interval is evidenced by its generally green coloration. The probable metasedimentary origin of these rocks is indicated not only by their graphitic nature but also by the fairly abundant presence of relict garnets. Minor quartz veining (veinlets) is commonly present. Foliation along the hole is typically variable, but indicates an overall sub-vertical to vertical dip.

There are no anomalous radiometric intervals through this hole, the maximum being 144 cps (3-4 x background) at 353 metres; corresponding to a zone of abundant fractures. The basement geology in MT01 is considered favourable, being similar in nature to that seen within the Dragon Lake area in the project to the south where unconformity-related, ore-grade mineralization is spatially associated to graphitic gneiss. It is interpreted that this hole has overdrilled somewhat the main graphite package (i.e., that it may lie further east).

Permit 6886050006

MR68: L484+00N/332+18E, 262°/-60° (Maps 1 & 4). The objective of this hole was to test the northwards continuation of the C6a lithostructural horizon. MR68 is 1,600 metres north of MR38, the northernmost hole drilled to date along this zone. The axis of this 20 siemens, EM-37 defined target, was at 330+30E, with

an interpreted vertical depth to basement of 320 metres. The flanking western conductor on this line was a 10 siemens response, 280 metres to the west.

The Athabasca Group rocks in MR68 displayed only moderate and local zones of alteration related to fracturing, being for the most part relatively normal sandstone with some interbedded siltstone. Where fractured, the rock became silicified (1% to 2% clay), with minor euhedral quartz, pyrite and strong bitumen along the fracture faces. Zones of clay fault gouge and related hydrothermal alteration were locally present within the basal portion of the Fair Point Fm. No radiometric anomalies were recorded through the Athabasca Group.

The unconformity was intersected 12 metres deeper than expected, at 332.3 metres vertically. The usual regolithic alteration was absent in this hole, only a narrow (1-2 m) bleached section being present just below the unconformity. The rock then became a strongly chloritized and faulted graphite-quartz-feldspar gneiss. The graphite occurred mainly as 1% to 5% accumulations within a generally sheared rock. This more massive style contrasts with the usual occurrence as breccias and coatings on fracture planes. The entire sequence has undergone polyphase (brittle and ductile) deformation, with intervals of strong cataclastic rocks alternating with mylonites and sections of very strong shearing. As is usual, metre-wide intervals of brecciated pegmatoid were commonly associated with the fault zones. The final 15 metres of the basement appeared to be the more plagioclasic variety of graphitic gneiss. It was still chloritized, with pyrite, garnets, biotite(?), and amphiboles and/or pyroxenes present within a generally plastically deformed sequence.

Few positive lithogeochemical indications were obtained in MR68 from the composite samples collected through the Athabasca Group. Within the Manitou Falls sequence, one 10-metre sample returned a distinctly anomalous 1.4 ppm bismuth (7 x bkgd.). A 10-metre Fair Point sample containing an otherwise anomalous 3.1 total uranium, had no corresponding U partial values but did have anomalous thorium and zirconium, indicating a detrital origin.

A one-metre sample collected five metres beneath the unconformity contained 35 ppm and 25 ppm total and partial uranium respectively, plus 160 ppm nickel, 9.6 ppm bismuth, and 23 ppm lead. This corresponds to a sheared graphitic interval which had a minor radiometric peak of 100 cps on the downhole log.

MR69: L476+00N/328+56E, 262°/-60° (Maps 1 & 5). The target of this hole was an 8 siemens EM-37 moving loop response on the C6 (western) conductor, the axis being at 326+50E. The estimated vertical depth to the unconformity was 350 m. MR69 marks the northernmost drill testing of the C6 conductor; it being 13.1 km north of the only other hole on it (MR28). (MR71 was subsequently drilled on

this same conductor, 4.8 km south of MR69, see below.) The 4 siemens eastern (C6a) conductor axis lies 350 metres away from MR69.

Typical of many of the holes drilled along the Dragon Lake lithostructural zone, MR69 displayed a very strongly faulted section within the middle of the Manitou Falls Formation. Associated with the fractures in this interval are strong bleaching and bitumen, minor clay gouge, and local traces of pyrite, euhedral quartz and silicification (1% clay). Away from this fault zone, the sandstone was only weakly to moderately bleached. Local minor fractures also contained traces of bitumen and euhedral quartz. Similar, although of less wide extent, faulting was noted within the Fair Point intersection. There, trace to minor amounts of dark green clays were seen within the matrix of the sandstone and within the clay gouge related to the faulting. A series of one-metre samples collected through this fault zone returned anomalous values in boron, zinc, and molybdenum. A high degree of silicification (1% clay) was present beneath this zone. Anomalous arsenic (5.4 ppm) and weak chlorite (1-2%) values were obtained through one 10-metre sample from the Fair Point. Boron (max. 150 ppm), vanadium (46 ppm), and arsenic (5.5 ppm) anomalies were also obtained from a one metre sample within the faulted Fair Point intersection. A minor radiometric peak of 100 cps (5 x background) was recorded on the downhole log, one metre above the unconformity.

The unconformity, intersected along the hole at 421.3 metres, was 30 metres deeper vertically than expected. The stratigraphy along this particular conductor has not yet been established, and it is uncertain where the graphitic gneisses lie within the sequence. EM modelling suggests that the conductor was underdrilled. Traces of graphite seen within the lower portions of the basement intersection would tend to confirm this interpretation. The bulk of the basement rocks were an assemblage of relatively fresh biotite-amphibole-quartz-feldspar gneisses and pegmatoids. A six metre interval of a fresh amphibolite occurs within this assemblage.

Several minor radiometric anomalies on the downhole log occurred within the basement intersection. The maximum interval extended for 10 metres, beginning three metres below the unconformity. Ranging from 100 cps to 400 cps on the downhole log, this had anomalous values over 1 metre of 87 ppm total uranium (92 ppm partial U). There were no other anomalies associated with this interval.

There are several indications of hydrothermal alteration and geochemical halos suggestive of a potential for mineralization within the vicinity of MR69.

MR72: L468+00E/330+70E, 262°/-62° (Maps 1 & 6). This hole was a follow-up of MR38, which had intersected a significant fault zone within the Athabasca Group

and varying degrees of anomalous geochemical indicator elements (U, As, MgO, Ni, Cu, and Mo). These were of an order of magnitude comparable to the halo in MR29 at Dragon Lake. Given the strong faulting within the sandstone and the lack of graphite in the basement, it was interpreted that MR38 had overdrilled the target. MR72 was spotted 60 metres grid east of MR38 and drilled parallel to it.

Through the sandstone intersection, much of MR72 closely duplicates the geology of the original drillhole on this section, MR38. Similar faulting (breccias, clay gouge, and rotated blocks) and strong to intense secondary hematization (both brick-red and specularite varieties) characterize both holes. Other fault-related alteration features in MR72 include minor silicification and dravite veinlets. These were noted within both the Manitou Falls and Fair Point formations, with some of the more intense features noted within the latter. This differs somewhat from MR38, where very little disruption had been present within the Fair Point. As such, it is interpreted that the fault and unconformity intersection target was again likely overdrilled.

There was no offset of the unconformity between these two holes, it being at 385.2 metres along the hole. The basement consisted of an assemblage of quartzo-feldspathic gneisses, anatectic pegmatoids, and a banded plagioclase gneiss (biotite-amphibole/pyroxene-quartz-feldspar gneiss). As in MR38, no explanation for the EM conductor was seen in this hole.

No major radiometric anomalies were recorded on the downhole gamma-log. A peak of 120 cps was recorded within the upper Manitou Falls sandstone while, in the Fair Point, values of from two to three times background (including a peak of 110 cps) were present through a strongly hematized fault gouge.

Coincident with these radiometric peaks were a number of geochemically significant enrichments in uranium (max. 5.4 ppm total, 4.3 ppm partial). In all, five separate benches contained anomalous uranium (both total and partial). Of equal importance (vis a vis a Dragon Lake-type geochemical halo) was the presence of strongly anomalous arsenic across a continuous interval of 70 metres. Values here ranged from 2.6 ppm to 11 ppm and averaged 5.3 ppm As/70 m. The arsenic threshold is 2.2 ppm (2 x median) within the Manitou Falls. Other anomalous arsenic values were present through both the Manitou and Fair Point formations, as were vanadium (35 ppm V/130 m, max 114 ppm, vs. threshold of 30 ppm), bismuth (max. 0.6 ppm Bi/10 m, vs. threshold of 0.4 ppm), boron (max. 110 ppm B/10 m, vs. threshold 80 ppm, molybdenum (max. 53 ppm Mo/10 m, vs. threshold of 10 ppm), and zinc (max. 40 ppm Zn/10 m, vs. threshold of 10 ppm). Strongly anomalous MgO values (max. 0.404%, vs. threshold of 0.220%) were paralleled by a number of anomalous XRD chlorite values (max 10%).

Taken together, the anomalous geochemical halo and strong faulting intersected by MR72 (and MR38) are interpreted as potentially indicative of nearby mineralization. Evidences of cross-faulting are suggested from the longitudinal section drawn along the Paxton Lake grid area (Figure 9). It is suggested that a nearby cross fault and its intersection with the graphitic lithostructural horizon represent a potential target for follow-up.

MR84: L468+50N/327+25E, -/-90° (Maps 1 & 7). The objective of this hole was to follow-up the positive lithogeochemical results obtained in drillholes MR38 and MR72, both of which also had intersected a zone of intense faulting within the Athabasca Group sandstones. MR84 was collared on the intersection of a moving loop TDEM-defined conductor and a mag-defined cross fault, both surveys having been performed this winter.

Save for a single, narrow (2.6 m) zone of strongly hematitic fault rock near the top of the Manitou Falls sandstone, there is little evidence of the impressive faulting seen in MR38 and MR72. Associated with this faulted zone in MR84 however is relatively strong chloritization, present both as coatings on fracture faces and as cross cutting veinlets. Moderate silicification occurs through the uppermost 110 metres of the Manitou Falls. A weak to moderate bleaching of the rock is locally visible, the bulk of it retaining its primary liesegang-type hematitic colouring. Within the Fair Point sandstone, there are localized minor fractures with which are associated traces of greenish clays, euhedral quartz and moderate bleaching. No radiometric anomalies were recorded through the Athabasca Group interval. Although neither the broad range nor the intensity of lithogeochemical anomalies seen in holes MR38 and MR72 are present in MR84, indications of a weak geochemical halo may be surmised. Notably, there is an weak arsenic anomaly present throughout the Manitou Falls section, which ranges between 2.5 and 4.9 ppm. The degree of scatter in the remaining elements and their overall low values do not offer additional encouragement.

The entire basement section in MR84 consists of a coarse anatectic garnetiferous, biotitic, quartzo-feldspathic pegmatoid. No effects of hydrothermal alteration were noted, the rock showing a normal, 12 metre-wide, red zone paleoweathering profile, beyond which it is primarily fresh. As in the sandstone, there was no evidence of the mag-interpreted cross fault. No explanation for the EM conductor was seen in the core. No radiometric anomalies of any significance were recorded.

Based upon the results of MR84, and the strong lithogeochemical values and the degree of faulting seen in MR38 and MR72, it is interpreted that a potential target remains to be tested to the east of holes MR38 and MR72, i.e. that these holes have overdrilled the target.

Permit 6886050005

MR70: L451+95E/331+10E, 262°/-60° (Maps 1 & 8). The target of this hole was a 20 siemens EM-37 moving loop response on the C6a (eastern) conductor, the axis being at 329+30E. The estimated vertical depth was 310 metres. MR70 is 800 metres north of MR37 and 1,600 metres south of MR38.

The Athabasca Group sandstone in MR70 was atypically untectonized as compared with most holes drilled to date along the C6a conductor. This is likely explained by having intersected the graphitic rocks and their spatially associated fault zone precisely at the unconformity. A single fault zone midway through the Manitou Falls Fm. (195-217 m) had correspondingly low clay contents (2%). Of note was a 100 metre interval extending above and below this fault zone through which anomalously high chlorite (5%-24%; 12%/100 m) was present. A slightly anomalous bismuth value of 0.5 ppm was obtained in one 10-metre composite also within this alteration zone. The basal composite sample from the Fair Point Fm. also contained very anomalous chlorite (36%), together with a very minor enrichments in total uranium (1.9 ppm) and nickel (14 ppm), and very high MgO (0.699%) and vanadium (125 ppm).

Although the unconformity occurred 20 metres higher than expected, this hole entered into very strongly sheared and brecciated graphitic rocks within 1.8 metres of the top of the basement intersection. No regolithic alteration was present. Several other graphitic intervals of from one to four metres thickness were intersected within a strongly sheared sequence of (±quartz±feldspar) graphite-sericite-chlorite rock. Interlayers of brecciated pegmatoidal rocks were present beneath each of the more strongly graphitic sections. The fabric varied from weakly gneissic through laminated and lenticular gneisses, augen textures, and cataclasites. Foliations were highly variable, ranging from 0° CA through 80° CA.

Apart from minor peaks on either side of the unconformity, there were no significant radiometric anomalies through either the sandstone or the basement in this hole. While having intersected very interesting geology and some indications of hydrothermal alteration, unfortunately the typically indicative metals were present in only minor anomalies.

MR71: L428+00E/324+15E, 262°/-60° (Maps 1 & 9). The target in MR71 was a30 siemens EM-37 moving loop response on the C6 (western) conductor, the axis being at 322+75E. The estimated vertical depth of the conductor was 255 m. This hole is 4.8 km south of MR69 and 8.3 km north of the next hole to the south on conductor C6, MR28. The 17 siemens eastern (C6a) conductor axis lies 250 metres away from MR71.

While virtually no alteration or tectonism of any significance was noted within the Manitou Falls intersection, the Fair Point Formation was substantially tectonized. This was in the form of strong fault gouge and breccia, with the resultant locally strong core loss. A moderate to strong degree of silicification has overprinted the normally clay-rich Fair Point (1% clay vs. average of 8%). Several moderately anomalous geochemical indicators were present in a number of composite samples from throughout the Athabasca sandstone interval. Most notable were total and partial uranium (max. 4.4 total U, 2.5 partial U). Coincident with this were a series of anomalous chlorite values (8-19%, 14%/50 m) spread significantly across an interval of 50 metres length. Moderate boron anomalies were indicated in both the chemical (max. 110 ppm) and XRD accessory mineral analyses (minor).

MR71 is distinguished by the presence of a steep contraction (reverse) fault which has apparently resulted in a small wedge of basement rocks having moved over the sandstone at the unconformity. This 9.3 metres-long interval of suspected basement consisted completely of a whitish clay gouge containing 1-3% streaks of greenish (chloritic) colour. The underlying five metres-long wedge of sandstone was bleached and contained intervals of clay fault gouge. Intensely faulted and strongly bleached mylonite and greenish clay (sericite?, chlorite?) persisted for some 20 metres beneath this lower sandstone section. A more plastically deformed plagioclasic gneiss was recognized following this brittly deformed interval.

While no significantly anomalous radiometric responses were recorded through this hole, a slightly higher background was present for some 13 metres on either side of the unconformity.

The combination of very strong faulting (including the overthrusting of the basement onto the Athabasca sandstone), slightly to moderately anomalous geochemical indicators, and strong hydrothermal overprinting suggests that MR71 lies within an area influenced by mineralizing solutions.

MR85: L356+00N/205+87E, 087°/-60° (Maps 1 & 10). The objective of MR85 was the testing of a moving loop TDEM response on the C6 (western) conductor. This hole is 2.8 km south of MR71, the closest existing hole drilled along this axis. The estimated vertical depth to the unconformity was 220 metres.

The Athabasca Group sandstone intersected in MR85 contains numerous fractures and fault zones containing clay gouge. Bleaching of the Manitou Falls ranges from moderate to the more dominantly strong overprinting. Relict hematitic liesegang rings are still evident through certain intervals. Alteration minerals associated with the faults and fractures consist primarily of pyrite, with much lesser amounts of euhedral quartz. The Fair Point rocks display moderate bleaching

throughout. Frequent fault zones of varying but mostly strong intensity and ranging up to two metres in width occur. A light green coloured alteration clay occurs both as clay gouge and as trace disseminations through the rock matrix. There are no radiometric anomalies within the Athabasca Group rocks. The lithogeochemical data for MR85 offer some slight encouragement. Moderately anomalous values for lead (max. 8 ppm/10 m), arsenic (max. 3.3 ppm/10 m), and partial uranium (max. 0.7 ppm/10 m) are present throughout the Manitou Falls Formation. Within the Fair Point, of potential interest are the presence of weakly anomalous boron (max. 110 ppm/10 m) and illitic ±chloritic clays. The overall degree of the lithogeochemical responses through MR85 is interpreted as not warranting further follow-up at his time.

The unconformity in MR85 is a fault contact along which is a 15 cm-wide zone of strongly reworked sandstone and basement lithologies. This strong to intense deformation pattern continues through all of the basement cored in MR85. A narrow interval (5.2 m) of a moderately altered graphitic (5-10% disseminations) mylonitic gneiss occurs 12 metres beneath the unconformity (10 m vertically). This is followed by 20 metre interval of coarse grained pegmatoidal crush breccia and in turn by a second narrow graphitic mylonite. MR85 is the first hole which has successfully intersected graphite on the western (C6) conductor.

It is interpreted that the pegmatoids intruded the graphitic rocks along a spatially associated and lithologically controlled fault zone, along which repeated deformation created the crush breccia. When the graphitic package is projected ± vertically to the unconformity, it is interpreted that MR85 underdrilled the target zone on the unconformity by an estimated 15 metres.

If this crush breccia/pegmatoid is evidence of polyphase deformation, then it is possible that a post-Athabascan phase could have created a potential metallotect within the sandstone for unconformity-related type uranium mineralization. Several narrow zones of minor radiometric anomalies (max. 325 cps, 0.01% eU_3O_8/0.8 m) were recorded during the down hole gamma logging, both immediately above and within this breccia zone.

MR86: L428+00N/324+15E, 082°/-65° (Maps 1 & 11). The objective of MR86 was the testing of a 17 siemens moving loop TDEM target along the northern extension of the C6a conductor. This hole is mid-way (1.6 km) along this axis between holes MR36 (to the south) and MR37 (to the north). The estimated vertical depth to the unconformity was 255 metres. MR86 was a test of the eastern conductor of the north-south trending C6/C6a pair. DDH MR71 unsuccessfully tested the western (C6) conductor on this line (L428N); wherein a contraction (reverse) fault has placed basement rocks over Athabasca Group lithologies (figure 5).

Most notable through the Manitou Falls portion of the Athabasca Group section in MR86 is the presence of strong faulting through several separate intervals of up to 15 metres in width. Indicated mainly by crosscutting bitumen-filled fractures, other features noted include rotated bedding, incohesive and friable rubble, and core loss. The sandstone throughout is moderately to strongly bleached. No radiometric anomalies were recorded. The lithogeochemistry for MR86 indicates a number of moderately anomalous intervals within the Manitou Falls Formation, most notably in nickel (max. 25 ppm/10 m), partial uranium (max. 0.6 ppm/10 m), and boron (max. 150 ppm/10 m). Other indicative elements which returned weakly anomalous values are arsenic, molybdenum, and vanadium. As does the degree of structural disruption, so does the level of geochemical anomalies drop off markedly once into the Fair Point Formation. The intensity and variety of the anomalous elements within MR86 are interpreted as possibly indicative of a halo which is related to an as yet unknown mineralized source.

While the basement likely contains aluminous metasedimentary gneisses (garnet-biotite-plagioclasic gneisses), there was no sign of graphitic lithologies. Narrow (cm-scale) fracture zones are present which contain clay gouge and crush breccia, sometimes chlorite-filled. Calcite is also commonly present as fracture filling. No explanation of the EM anomaly was noted, nor were there any radiometric anomalies recorded.

Permit 6888040001

MR83: L238+00N/136+30E, -/-90° (Maps 1 & 12). The objective of MR83 was the testing of a ±15 siemens moving loop TDEM response along the possible northern extension of the C2 conductor. This hole is 2.7 km north of MR10, the northernmost hole drilled on C2 prior to MR83. The estimated vertical depth to the unconformity was 160 metres. A vertical hole was collared because of the degree of uncertainty in this depth estimate and the relative distance from existing drillholes.

The Athabasca Group rocks in MR83 are moderately bleached but generally massive and unfaulted, with some localized fractures. A moderate degree of silicification is present. Trace amounts of sooty pyrite occur as disseminations throughout. The level of bleaching increases to strong within the Fair Point sandstones, but the number of fractures decreases. There were no radiometric anomalies within the Athabasca rocks. The lithogeochemical data indicates a number of minor anomalies distributed primarily through the basal 30 metres of the Manitou Falls Formation. While potentially indicative of uranium mineralization, these values are interpreted as being neither sufficiently strong nor pervasive to be considered as warranting follow-up at this time.

The unconformity in MR83 was intersected some 32 metres shallower than had been estimated (at 117.8 m). The entire basement section consists of generally fresh and unaltered, massive to locally foliated, granitoidal rocks which are in part mylonitic. Save for trace amounts of disseminated graphite, no further encouragement was visible in this core. No explanation could be determined for the EM anomaly. There were no radiometric anomalies recorded through this hole.

Permit 6886050004

MR80: L318+00N/218+80E, 267°/-60° (Maps 1 & 13). The objective of MR80 was to test the prospective on-strike extension of the Dragon Lake lithostructural horizon (C6a conductor) midway between existing drillholes in which uranium mineralization (MR53, L320N, 200 m north; 1.29% U_3O_8/1 m, 0.26% U_3O_8/8.2 m) and very anomalous lithogeochemistry, (MR56, L316N, 200 m south; 75 ppm partial U/3 m) had been intersected. While the target zone (i.e., the intersection of the graphitic horizon with the unconformity) had been tested with MR53 (and found to be mineralized), ddh MR56 had underdrilled the target by an estimated 25 metres. MR80 was collared on a moving loop TDEM-defined conductor axis.

The upper levels of the Athabasca Group sandstone in MR80 are generally only moderately bleached, but this intensifies to strong within the basal Manitou Falls and through the entire Fair Point formations. Similarly, the number of fractures increases downwards from weak, through moderate, to locally very strong. Minor amounts of euhedral quartz fill some fractures, mostly in the middle section of the zone. While the more intensely fractured zones were generally incohesive and friable, there was no core loss. There were no radiometric anomalies through the Athabasca Group in MR80. The lithogeochemical data indicates that the Fair Point samples are moderately enriched in both total and partial uranium through the basal 30 metres (average 5.2 ppm total).

Chloritized plagioclasic gneisses were intersected at the unconformity, the red zone paleoweathering profile having been overprinted. Strongly chloritized graphitic (to 15%) and pyritic cataclastic rocks were intersected in MR80, starting some 14 metres along the hole (12 m vertically) beneath the unconformity. Foliations through the sequence indicate a subvertical dip. Although there is no graphite in those rocks seen immediately beneath the unconformity, similar textures are present. It is interpreted that MR80 has successfully tested this target, albeit with negative results. Several minor radiometric peaks (maximum 228 cps) were recorded on the downhole gamma log, the maximum corresponding to a strongly brecciated interval.

MR82: L322+00N/218+72E, 267°/-60° (Maps 1 & 14). The objective of MR82 was the testing of the on-strike extension of the Dragon Lake lithostructural horizon (C6a conductor) mid-way between existing drillholes MR58 (L324N, 200 m north) and the profile containing MR52/53/55 (L320N, 200 m south). MR58 is interpreted as having overdrilled its target by an estimated 30 metres, as based upon the high degree of faulting within the overlying sandstone and the basement stratigraphy. As noted under the description of MR80, MR53 contained uranium mineralization. MR82 was collared using moving loop TDEM data.

The Athabasca Group intersected in MR82 is generally moderately to well bleached and silicified. Fracturing is prominent throughout, ranging from narrow, localized structures to zones having several metres width. Associated are the usual in-fillings and coatings of the fracture faces by euhedral quartz, bitumen and clay gouge. Zones of incohesive fractures were also noted, through which some core loss occurred. These structures persist down into the Fair Point as well, with the unconformity also being a faulted contact. Atypical silicification is present in the Fair Point, and it is also moderately to locally strongly bleached. No radiometric anomalies are present within the Athabasca Group in MR82. The lithogeochemical data for this hole are negative.

The unconformity was encountered ca. four metres below its expected depth which, together with a steepening of the hole to -65°, resulted in the graphitic assemblage being intersected approximately 19 metres below the unconformity (=17 m vertically). Nonetheless this corresponded with the position of the TDEM-defined axis. These rocks are the typical graphite, ±pyrite, biotitic, plagioclasic gneisses and interlayered pegmatoids. The graphite level varies from trace to 20% within a generally well, but variably, foliated rock continuing to the end of the hole. Using an average of ±50° to core axis for the foliation and projecting this upwards to the unconformity, it is estimated that MR82 may have underdrilled the centre of an assumed ±30 metre-wide target by nearly 30 metres laterally along the unconformity. There were no radiometric anomalies in this hole.

Permit 6884100001

MR73: L164+14N/179+76E, 257°/-60° (Maps 1 & 15). The target of this angled hole was to test the C6a conductor which is approximately 50 m east of MR22, as based on the 1989 moving loop TDEM survey. The conductor axis is at an anticipated depth of 160 metres vertically (185 m along the hole). This target is 2.5 km south of MR54 and two km north of MR61, the closest existing holes along this conductor.

Both the Manitou Falls and Fair Point formations in MR73 show only very local deviations from the normal reddish (primary hematite) and thickly-crossbedded sandstone. Minor very small-scaled fracturing was noted, as was

some local bleaching of the well developed hematitic liesegang rings. Trace amounts of secondary minerals such as pyrite and siderite were noted usually along minor fractures, as was some euhedral quartz. The overall degree of hydrothermally-related alteration was poor. There were no radiometric anomalies through the Athabasca Group in this hole. Minor geochemical anomalies were most evident within the two lowermost 10 metre benches of the Manitou Falls Formation and, to a lesser degree, in the two Fair Point composite samples. Moderately anomalous values in nickel (max. 25 ppm, ca. 2 x bkgd.), total uranium (max. 2.4 ppm, 1.5 x bkgd.), vanadium (max. 15 ppm, ca. 2 x bkgd.), yttrium (max. 13 ppm, 1.6 x bkgd.), and boron (max. 190 ppm, ca. 2.4 x bkgd.) were noted, as were definitely anomalous quantities of chlorite (max. 40%, calculated). While none of these values are considered to be top priority, they confirm the locally high backgrounds already noted in several nearby holes (e.g. MR22).

The unconformity (intersected at 195.3 m) and the Manitou Falls/Fair Point contact were both deeper than estimated from MR22 by approximately 10 metres. A well developed red-zone paleoweathering profile strongly overprinted the sericitized quartzo-feldspathic ± locally pegmatoidal gneisses. Some 20 metres beneath the unconformity, the rock was less altered and through to the end of the hole was slightly graphitic (trace disseminations). Locally faulted, one strongly tectonized 1.2 metres interval contained minor veinlets of pyrite and possibly a nickeliferous mineral, as well as trace amounts of graphite. Foliations through the basement are generally ±40° to core axis.

Minor radiometric peaks within the basement were recorded at 203.1-203.6 metres (average 120 cps, = 3 x background) and from 216.2 to 219.3 metres (average 225 cps, = 5 x background. The uppermost is coincident with a pegmatoid interval. The lower, stronger intersection is related to the above noted strongly altered and faulted zone with which are associated the metallic minerals. Lithogeochemical data from the lower anomaly indicates the presence of moderately elevated values in uranium (139 ppm total & 93 ppm partial /1 m, 75 ppm total & 51 partial /4 m), nickel (200 ppm/2 m), and arsenic (141 ppm/2 m).

MR75: L314+00N/219+28E, 270°/-55° (Maps 1 & 16). This hole was to test the on-strike extension of anomalous geochemical data obtained from hole MR57 (200 m south) and holes MR54 and MR56 (200 m north). MR75 is along strike of the Dragon Lake mineralized zone, and is 1,300 metres to the south of holes MR34/39. This collar location was spotted using moving loop TDEM which was acquired this winter.

Whereas the Manitou Falls Formation in MR75 displayed only minor structural disruption and alteration, the underlying Fair Point was atypically strongly disturbed. Numerous zones of up to three metres wide showed strong fracturing together with the attendant friable core and clay gouge. Some core loss had

occurred through these zones. Related hydrothermal alteration consisted of quartz dissolution, argillization, and a strong bleaching of the normally reddish rock. There were no radiometric anomalies through the Athabasca Group interval however. The lithogeochemical data from MR75 composite samples indicate slightly anomalous values in the basal two benches of the Fair Point (6.2 ppm arsenic /10 m, 3 ppm total uranium /20 m, 12 ppm yttrium /20 m, & 145 ppm boron /20 m). The calculated clay values also indicated strongly illitic clays through the Fair Point, an indication of hydrothermal alteration which is typical of the mineralization process in the Dragon Lake area.

The unconformity displayed a fault contact at 8° C.A., with clay-filled veinlets extending from the basement up into the overlying sandstone. The basement lithologies appear to be strongly altered quartzo-feldspathic gneisses, which now contain clay alteration products and quartz. Starting ~20 metres beneath the unconformity the rock is still strongly altered, but traces of graphite and pyrite become increasingly visible. This strongly faulted crush breccia becomes strongly graphitic, ranging from 10% to nearly massive. Where unfaulted, the rock is a banded graphitic gneiss, with 2-5% graphite and disseminated pyrite.

Several narrow (1-3 m-wide) radiometric peaks were recorded through the basement intersection but, with maximum values of 150 and 170 cps (3-5 x background), these are not significant.

The lack of uranium mineralization in MR75 which is directly associated with the intersection of the graphitic gneisses and the unconformity, together with the presence of albeit weak lithogeochemistry results is interpreted to suggest that a Dragon Lake-type of target remains to be tested within the hanging wall of the graphitic assemblage.

MR77: L142+00N/174+27E, 049°/-70° (Maps 1 & 17). The objective of this hole was the testing of a ±10 siemens moving loop TDEM response on the C6a conductor horizon. This target had an estimated vertical depth of 125 metres. MR77 is 700 metres south of MR20/21 and 1.5 km north of MR25. Difficult overburden forced the moving of the hole 27 metres to grid east and steepening it by 10° to -70°.

The Athabasca Group sandstone intersected in MR77 is predominantly undisturbed and, apart from intervals of moderately strong bleaching within the upper portions, is also unaltered. Only very localized fractures were noted, along which are trace amounts of euhedral quartz, siderite, and pyrite. There were no radiometric anomalies through this section. Strongly anomalous MgO (± twice the threshold of 0.096%, to a maximum of 0.209%) is present through the lower 90 metres of the Manitou Falls Formation (10 metre composite benches 1-9). Clay values, as calculated from the lithogeochemistry data for this section, corroborate

these MgO anomalies. The average equivalent chlorite contents is 30% across 100 metres. This data also correlates with a local chlorite anomaly which extends along the C6a horizon for some four km, from L128N (MR30-32) north to L164N (MR73). Within MR77, the Fair Point Formation is anomalously illitic (100%). This also correlates with a similar anomaly in MR21, 700 metres to the north.

Most of the basement intersection consists of an assemblage of ±mylonitic garnetiferous, quartzo-feldspathic gneisses. A narrow, cross-cutting, diabase dyke occurs at the end of this hole.

The lack of explanation of the EM response is interpreted to be a result of the target having been overdrilled due to the unconformity being 19 metres deeper (vertically) than expected. The prominent chlorite anomaly which is present through the sandstone also suggests this. The lack of associated structure and a geochemical halo in MR75 however would indicate that uranium mineralization is not locally present.

MR79: L298+00N/221+27E, 267°/-60° (Maps 1 & 18). The objective of MR79 was the testing of a 35 siemens moving loop TDEM response along the C6a conductor horizon between the existing holes MR22/73 (700 m south) and MR27 (600 m north). Positive geochemical results from these existing holes and the failures in both MR27 (overdrilled ?) and in MR22 (underdrilled) to adequately test the conductor warranted the testing of the conductor at this location.

The Athabasca Group sandstone in MR79 displays moderate to strong bleaching throughout and, while being for the most part relatively undisturbed, is also locally fractured. Trace to minor amounts of pyrite commonly in-fill these fractures, as do minor quantities of bitumen. Apart from the bleaching of the primary hematite, no strong evidence of hydrothermal alteration was observed. No radiometric anomalies were recorded and no anomalies of any significance were obtained in the lithogeochemical data.

Strongly graphitic, aluminous metasedimentary rocks were intersected 63 metres along the hole beneath the unconformity (55 m vertically). Foliations within this unit are variable, ranging between 10° and 60° to core axis, but average at around 35° C.A. which would result in a subvertical dip for the package. This would displace the centre of the unit some 20-25 metres west of the EM target.

Together with the unconformity being 16 metres shallower than anticipated, MR79 has underdrilled the target by an estimated 35 metres. There were no radiometric anomalies within the basement. This target has not been completely tested by drillhole MR79.

MR81: L154+00N/178+50E, 229°/-60° (Maps 1 & 19). The objective of MR81 was to test the C6a conductor between the existing holes MR20 (650 m south) and MR22 (1.1 km north). A 40 siemens strong moving loop TDEM response was targeted at an estimated vertical depth of 160 metres.

Within a generally bleached (moderate to strong), massive (i.e., only local minor fractures) sandstone section is a strongly faulted interval, mid-way down through the Manitou Falls Formation. Clay gouge together with trace amounts of pyrite and euhedral quartz characterize this zone. Unlike similar fault zones in the Dragon Lake area however, there is no appreciable bitumen staining of the fracture faces. Other alteration products noted here (usually associated with minor fractures) were traces of dravite, chlorite, and sooty pyrite. There were no radiometric anomalies present through the sandstone section. The composite sample lithogeochemical data for MR81 offers only limited encouragement. Apart from weak partial uranium values (0.4 ppm) and illitic clays through the entire Fair Point Formation, there were no values of significance.

A narrow, "reworked", paleoweathering red zone was present at the unconformity, with a greenish chloritic overprinting replacing much of the original hematitic colouring. The basement in MR81 consists mainly of mylonitic and garnetiferous quartzo-feldspathic rocks with interlayers of pegmatoid. Trace quantities of graphite were seen towards the end of the hole (40 m below the unconformity), possibly indicating that the more graphitic metasediments lie west of MR81. It is interpreted from the basement stratigraphy that the target has been underdrilled by as much as 100 metres laterally along the unconformity. No significantly anomalous radioactivity was recorded. The target was not tested by MR81 and, if the estimate of the degree of under drilling is correct, this hole was too far off of the target zone to have intersected any associated geochemical halo.

Permit 6884100002

MR74: L92+00N/164+00E, -/-90° (Maps 1 & 20). A follow-up of MR64 which had underdrilled the intersection of the unconformity and a substantial package of graphitic rocks by some 75 metres. It was planned to test these graphitic rocks at the unconformity which, from MR64, had an expected depth of 103 m. The EM-37 anomaly in this location had indicated a 16 siemens conductivity-thickness at a vertical depth of 190 m.

Two efforts were required for this hole, the first attempt having been lost after 71 metres. The second effort (MR74X) was successfully completed.

This hole was drilled vertically in order to intersect the up-dip extension of the graphitic rocks seen in MR64. As a result, MR74 intersected strongly faulted rocks along its entire length, the basement fault zone associated with the graphite-

bearing gneisses having been reactivated in post-Athabasca times. The Athabasca rocks are very strongly disrupted, displaying intense cohesive and non-cohesive brecciation. Sections of core indicate polyphase faulting, with breccia clasts themselves showing earlier signs of brecciation. Other signs of deformation are: rotated bedding, intervals of clay fault gouge, anastomosing bitumen-, clay- , or silica-filled fractures and, most notably, the condition of the core itself which, for intervals of up to 10 metres, is entirely broken into pieces of cm-scale sizes. Evidences of hydrothermal alteration in the Athabasca Group sandstone include strong bleaching and silicification (both pervasive and fracture-fillings).

The unconformity was intersected at the expected depth (103.7 m). Graphite was not visible in the core however until some 53 metres deeper, the upper interval having been very strongly overprinted by both fault- and hydrothermally-related clay alteration. A variety of cohesive, non-foliated cataclastic fault rocks were seen. Occurring above the start of the graphitic interval in this hole was a 10 metre-wide section of anomalous radioactivity, between 135 and 145 metres, with values ranging between 120 and 240 cps on the hand held scintillometer. The host rock here was virtually indistinguishable, having been entirely clay altered.

The maximum value on the downhole radiometrics was 2,582 cps, with a narrow 2 cm-wide zone averaging 2029 cps (133 ppm total & 112 ppm partial uranium/2 m). The source mineralogy of the radioactivity could not be seen in the strong clay overprinting, with only several very fine hematitic fractures being noted. The graphitic rocks beneath this were the same package as had been intersected in MR64, they being very strongly brecciated with local faint foliation (protomylonitization?).

The lack of coincident radiometric anomalies in MR64 would suggest that the zone intersected in MR74 is structurally rather than stratigraphically controlled. The lithogeochemical response within the overlying sandstone, while not striking, does suggest some potential for nearby uranium mineralization. The five lowermost (out of a total of six) 10-metre benches returned moderately anomalous partial uranium values (max. 0.6 ppm, 1.5 x bkgd.). Coincident with this was a single total uranium anomaly (1.8 ppm), and three benches with anomalous boron (max. 240 ppm, 3 x bkgd.)

These slightly elevated values in the MR74 sandstone lithogeochemistry (relative to MR64 to the east being negative), when combined with the fact that the western (footwall) side of the graphitic package has not yet been tested, suggests a Dragon Lake-type of target may warrant follow-up in this locale.

Permit 6884120001

MR76: L108+00N/163+64E, 045°/-60° (Maps 1 & 21). The objective of MR76 was a steep, westerly dipping, 4 siemens conductor. This falls along an untested portion of the C6a conductor horizon; 1.6 km north of MR64/74, and 1.3 km south of the planned drillhole, MR78. This moving loop TDEM response had an estimated vertical depth of 75 metres.

Beneath a 15 metre-thick layer of Devonian sediments, the Athabasca Group in MR76 consists of massive (i.e., relatively unfractured and unaltered) Manitou Falls Formation sandstone. (As in all other holes within the southeastern corner of the project area, no Fair Point Formation occurs.) This sandstone is moderately bleached, with prominent primary hematization still evident. Minor open fractures, where present, are coated with bitumen and traces of pyrite.

There were no radiometric anomalies recorded in this hole. The composite sandstone lithogeochemical samples returned background values for all elements save for boron which had up to two times threshold (100 ppm) in the two basal 5-metre and the lowermost 10-metre composites.

The unconformity was intersected some 13 metres vertically above where it had been interpreted (at 71.3 m vs. 87 m along the hole). The underlying basement is characterized by a normal, strongly hematitic, red zone paleoweathering profile (±15 m true thickness). Beneath this, the basement lithology consists throughout of a weakly altered (chloritized) biotite-quartz-feldspar granitoidal gneiss with thin and sporadic pegmatoidal interlayers. No explanation for this conductor could be determined from these rocks. Because of their massive nature, it was thought that they might represent an overthrusted wedge of basement which then masked the underlying graphitic metasediments. None were seen however, and this hole was stopped after having cored 66 metres of granitoids.

Given the lack of encouragement in this hole, no follow-up is warranted at this time even though the target was neither explained nor tested.

MR78: L120+00N/167+78E, 229°/-60° (Maps 1 & 22). The objective of MR78 was the testing of the C6a conductor horizon in the vicinity of a northeasterly trending cross fault. Along strike, this hole is 800 metres south of MR35 and 1,200 metres north of MR76. Four hundred metres to the east, ddh MR23 tested a flanking conductor. MR78 was spotted using moving loop TDEM data.

The unconformity in MR78 was intersected 13 metres vertically above where it had been interpreted from the adjacent drillholes. As a result, only three metres (true thickness) of Athabasca Group rocks are present. These consist of strongly

bleached and moderately fractured Manitou Falls Formation. The one composite sandstone sample did not contain any lithogeochemical anomalies.

The basement consists of a moderately to strongly altered, mylonitic, garnetiferous, quartzo-feldspathic gneiss. Only 23.5 metres of basement had been cored however when the rods were broken off and lost in the hole. The hole was then abandoned and, given the generally negative results, no attempt was made to redrill this target. Because the core barrel remained in the hole, it could not be logged radiometrically. There was no anomalous radioactivity detected by the hand held scintillometer.

4.02 Drillcore Lithogeochemistry Semi-Quantitative XRD Analyses

Permit 6888040005

A total of 19 core samples from ddh MT02 have been submitted for chemical analyses. Each sample consists of successive 10-metre composites (ie. 1 chip sample every 1.5m over 10 metres) 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). These data are contained in Appendix 2.

During 1990, for the first time, rather than submit samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

Permit 6887090002

A total of 31 core samples were collected from ddh MT01 and submitted for chemical analyses. Samples were taken as 10-metre composites (ie. one piece of core every 1.5 metres) through each of the Athabasca Group formations and 10-centimetre split samples where suspected mineralization or other anomalies were encountered. 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, bismuth, and partial lead (Table 4). The geochemical data is contained in Appendix 2. The results are noted under the individual drillhole descriptions in Section 4.01.

A total of 31 Athabasca Group sandstone samples were submitted for semi-quantitative XRD clay determinations (illite, chlorite, kaolinite, plus % clay, illite crystallinity, and accessory mineral determinations). The material analyzed was taken from both the 10-metre composite and 10 centimetre split samples submitted for chemistry. The objective of these analyses is to outline an alteration halo extending into the sandstone host rock. This data forms part of Appendix 2.

Permit 6886050006

A total of 163 core samples from ddh's MR68, 69, 72, and 84 have been 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). These data are contained in Appendix 2.

During 1989 a total of 119 Athabasca Group sandstone samples were collected from ddh's MR69, and 72 and submitted for semi-quantitative XRD clay determinations (illite, chlorite, kaolinite, plus % clay, illite crystallinity, and accessory mineral determinations). The material analyzed was taken from both the 10-metre composite and 10 centimetre split samples submitted for chemistry. The objective of these analyses is to outline an alteration halo extending into the sandstone host rock. This data forms part of Appendix 2.

For drillhole MR84 (drilled in 1990) rather than submit sandstone samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

Table 4: Routine Lithogeochemical Analyses

Element or Oxide	Detection Limit[1]	Accuracy[2]	Sample 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
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	±0.02	$HF/HNO_3/HClO_4$	AA hyd.
B	10	±0.2	$HF/HNO_3/HClO_4$	ICP

[1] oxides in % trace elements in ppm.
[2] at background levels.

Permit 6886050005

A total of 97 core samples from ddh's MR70, 71, 85, and 86 have been 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). These data are contained in Appendix 2.

During 1989 a total of 48 Athabasca Group sandstone samples were collected from ddh's MR70, and 71 and submitted for semi-quantitative XRD clay determinations (illite, chlorite, kaolinite, plus % clay, illite crystallinity, and accessory mineral determinations). The material analyzed was taken from both the 10-metre composite and 10 centimetre split samples submitted for chemistry. The objective of these analyses is to outline an alteration halo extending into the sandstone host rock. This data forms part of Appendix 2.

For drillholes MR85, and 86 (drilled in 1990) rather than submit sandstone samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

Permit 6886050004

A total of 45 core samples from ddh MR80, and 82 have been 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). These data are contained in Appendix 2.

During 1990, for the first time, rather than submit samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are

less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

Permit 6888040001

A total of 12 core samples from ddh MR83 have been 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). These data are contained in Appendix 2.

During 1990, for the first time, rather than submit samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

Permit 6884100001

A total of 96 core samples from ddh MR73, 75, 77, 79, and 81 have been 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). These data are contained in Appendix 2.

This year, for the first time, rather than submit samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

Permit 6884100002

A total of 12 core samples from ddh MR74 have been 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). These data are contained in Appendix 2.

This year, for the first time, rather than submit samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

Permit 6884120001

A total of 6 core samples from ddh MR76 and MR78 have been 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). These data are contained in Appendix 2.

This year, for the first time, rather than submit samples for XRD determination of clays, the lithogeochemical data were used to calculate the amounts of illite, chlorite, kaolinite, and total percentage of clays present. When the calculated data are compared to the XRD data for all samples analyzed to date, the following systematic differences appear: calculated illite and chlorite are less than their respective XRD values, while the calculated kaolinite and %clays are both greater. These data are also contained in Appendix 2.

4.03 Petrological Studies

Permit 6886050004

A total of 22 samples were collected from the Athabasca Group sandstones and crystalline basement rocks of ddh MR52, 53 and 55 and a petrological study was undertaken by a Uranerz Petrologist. The study was aimed at differentiating the basement lithologies and the nature of the graphite-bearing metasedimentary rocks within this drill-hole profile along line 320 N. Microscopic analysis of the uranium mineralization encountered in these holes also was described in this report (Appendix 3).

Permit 6884100001

A total of 3 samples were collected from the crystalline basement rocks of ddh MR77 and 81 to discern different basement lithologies encountered. The samples were analyzed by Vancouver Petrographics Ltd. of Fort Langely and the petrographic descriptions are contained in a report in Appendix 3.

Permit 6888040001

One sample was collected from the crystalline basement rocks of ddh MR83 to discern different basement lithologies encountered. The sample was analyzed by Vancouver Petrographics Ltd. of Fort Langely and the petrographic description is contained in a report in Appendix 3.

4.04 Time Domain EM Surveys

Permit 6888040005

Line 500 N

The moving loop survey in the Henrietta Lake area (Figures 4 & 5) located a significant basement EM response in the vicinity of 10605 E. Modelling (using the 2-D MultiLoop package by Lamontagne Geophysics) indicates a dominant basement conductor at a depth of approximately 260 m below surface, dipping steeply towards the west. The calculated conductance value is 20 siemens (Figure 6). Weaker EM responses are noted to the east of the major conductor, extending as far as 10850 E, suggesting a package of conductive horizons extending over a width of perhaps 250 m.

Permit 6888040007

Line 600 N

The fixed loop TEM profile on line 600 N is shown in Figures 4 & 7. A broad basement EM response occurs in the vicinity of 12600 E. The depth of burial of the basement target appears to be at least 500 m, although this could be inflated by the influence of multiple conductor horizons, if present. The anomaly decay curve (Figure 8) indicates a conductance value of approximately 10 siemens for this zone. The late time TEM channel values are building at the western end of line 600 N, which suggests a second basement conductor is located further to the west (perhaps between 9200 E and 9400 E).

Permit 6888040008

Line 632 N

On line 632 N the fixed loop TEM profile (Figures 4 & 9) indicates a basement conductive zone in the vicinity of 4600 W. This location is unfortunately too far from loop A and too close to the western edge of loop B to allow a conductance value or depth to be estimated.

Permits 6888040005, 6888040007, and 6888040008

Combining the basement conductor indications on lines 600 N and 632 N, it seems the most likely basement strike direction is a north-northeasterly trend, rather than north-south towards the Scot Lake area. As shown in Map 1, the conductor identified close to 4600 W on line 632 N might be a continuation of the Henrietta Lake horizon, while the Dragon Lake - Scot Lake conductor system may be still further to the east of the present survey coverage. In light of the uncertainty in basement conductor trends and the failure of the fixed loop TEM work to provide suitably resolved conductor targets on these profiles, drilling in this area was deferred pending further geophysical clarification.

Permit 6887090002

Line 70 N

During the 1989 winter season, a total of 1 km of moving loop TDEM was completed on L70N, this being the entire planned program (Figures 10 & 11). The objective of this work was to define a target along the northern extension of the C6/C6a conductor for later drill testing. Uranium mineralization is known to be spatially associated with this lithostructural zone to the south of this permit.

The TDEM surveying successfully defined a drilling target based on the northwards strike extension of the C6/C6a conductor horizon. A 25 siemens conductor was located at 45+00E at an estimated depth of 375 metres below surface (figure 6).

Permits 6886050006, 6886050005,6886050004, 6888040001, 6884100001, and 6884120001

Eighteen moving loop (1989 and winter 1990) and two fixed loop (winter 1989) profiles were completed in eleven locations, as shown in figures ~~4 and 5~~. To accommodate the various sandstone thicknesses, transmitter loop sizes ranged from 100 m x 100 m in the south to 300 m x 300 m in the north, with corresponding transmitter - receiver offsets of 200 m to 400 m. Horizontal and vertical component EM measurements were taken at 50 m intervals on each profile. The winter 1989 work was performed under contract by JVX Ltd. of Toronto, with the summer 1989 and winter 1990 work being performed under contract by Geo-Physi-Con Co. Ltd. of Calgary. Both contractors used a Geonics EM-37 time domain EM unit. In all, 25.35 km of moving loop, and 15.45 km of fixed loop TEM profiles were obtained.

TEM interpretations have been assisted in detail by 2-D modelling using the Lamontagne Multiloop software package. Conductance values for the various EM targets have been obtained from horizontal component decay plots.

Permit 6884120001

Line 108 N

The moving loop TEM profile on line 108 N was intended to provide improved definition of a weak conductor axis which had previously been identified in the 1985 systematic horizontal loop EM coverage and in a 1986 fixed loop TEM profile. The present survey results (Figures 12 & 13) indicate a steeply dipping basement conductor in the vicinity of 16410 E at an estimated depth of 75 m. The conductance value for this target is 4 siemens. A significantly conductive half space or shallow flat-lying conductive horizon is required to model the TEM responses here. A likely cause of this conductance is the Fair Point basal sandstone unit, which is relatively rich in clays. In the line 108 N profile, this layer would have a conductance of 2 siemens. The high amplitude TEM responses towards the west end of the line are caused by a weaker basement conductor in the vicinity of 15850 E.

Line 120 N

The horizontal component TEM profile is shown in Figures 12 & 14 and is grossly similar to that of line 108 E. The most significant basement conductive feature is interpreted to lie in the vicinity of 16735 E, at an estimated depth of 65 m. A conductance value of 1 siemen is estimated for this target. The TEM anomaly decay curve, Figure 15, suggests that the conductance value could be significantly higher if weak, late time amplitudes were used. However, these have systematically not been used in conductance estimates when below a reasonable system noise level. The overlying conductive sheet (Fair Point Formation sandstone) appears to be less conductive here (perhaps thinner) than for line 108 N, with a conductance value of 1 siemen.

This basement target was not identified in a 1985 horizontal loop EM survey or by 1985 fixed loop TEM profiles (Crone PEM system), but lies immediately on strike with a strong conductor (36 to 39 siemens) located on lines 124 N and 128 N by a 1986 fixed loop TEM survey (MPH, EM-37 system). The target on line 128 N has subsequently been drilled; the target on line 124 N lies under a small lake.

Line 132 N

The moving loop TEM coverage of line 132 N (Figures 12 & 16) failed to identify a significant basement target for drill testing. The northeastern half of the coverage shown in figure 27 was repeated and extended to the northeast using a larger receiver-transmitter offset (300 m) to improve the sensitivity of the survey to deeper conductors. This extra work also failed to identify a basement conductor. Similar to line 120 N, this location is only 400 m along strike from a previously indicated strong TEM conductor (on line 128 E). A weak 1985 horizontal loop EM response at 17100 N (approx. 500 m northeast of the expected conductor horizon) is now thought to be of surficial origin.

Permit 6884100001

Line 142 N

A strong basement conductor was located by the moving loop TEM profile on line 142 N (Figures 12 & 17). The conductor axis, at 17475 E, is at the northeast end of the profile coverage and is actually 500 m to the northeast of the projected target conductor horizon. The anticipated target zone is probably represented by weak, broad TEM responses in the vicinity of 16900 to 17000 E, which are not sufficiently resolved to provide a target for drilling. The strong conductor horizon at 17475 E appears to be at a depth of 150 m below surface, with an estimated conductance value of 20 siemens. This basement conductor is thought to dip steeply towards the southwest, and is located immediately adjacent

to a conductor axis mapped by the 1985 horizontal loop coverage, on line 144 E. The conductor axis does not appear along strike to the southeast on the next adjacent line (140 E) of the horizontal loop EM survey, and must have a maximum strike length of the order of 400 m. The conductive half-space or horizontal thin sheet effects (Fair Point Formation ?) have been modelled using a thin sheet conductance of 2 siemens in this case.

Line 154 N

The moving loop TEM profile of line 154 N (Figures 12 & 18) is similar in many respects to that of line 142 N. A dominant basement conductor horizon occurs near the northeastern end of the profile (at 17700 E), with a weak, broad, possible multiple conductor horizon further to the southwest. The weaker EM conductor axis (at 17340 E) seems to represent the strike- extensive C6a conductor horizon, whereas the locally dominant conductor at 17700 E is a segment of the C6b horizon. Neither of these conductors were detected by the 1985 horizontal loop EM survey (too deep), and only the C6a horizon was detected by fixed loop TEM work in 1986 (due to inappropriate loop placement).

In modelling the 17700 E EM anomaly, similarities were noted with Paxton Lake area targets, where (in deeper sandstone cover) superimposed EM responses from basement and an overlying conductive halo (alteration and/or faulting in sandstone) seemed to be present. This led to the construction of a 2 component model, shown in figure 18, where a major conductor (40 siemens conductor) is flanked by a weaker conductive zone (fault ?) extending into the overlying sandstone. The model predicts the major basement conductor may be displaced by as much as 50 m from the TEM anomaly centre. In light of negative drilling results (ddh MR81) it seems that the major conductor axis most likely lies closer to 17700 E, and that the shallower component of the TEM anomaly may be unrelated to the basement target. The TEM anomaly decay curve for station 17700 E is shown in figure 30.

Permit 6888040001

Lines 236 N & 238 N

These profiles traverse the projected extensions of basement conductors C2 and C3 to the west of Jas Lake. No previous work had been undertaken in this area. On line 236 N (Figures 12 & 20), two multiple conductor systems are evident, centred in the vicinity of 13600 E and 14200 E. The dominant basement conductor is located in the vicinity of 13640 E (within conductor system C2), displaying a conductance value of 15 siemens (Figure 21). This target seems to be part of a 200 m wide zone of multiple conductive horizons, the southwestern segment of which is interpreted as a weaker (8 siemens) conductor in the vicinity

of 13490 E. Towards the northeast, a weaker flanking zone extends as far as 13700 E (although this may be wholly or partly surficial). The entire package is thought to dip steeply towards the southwest. The C3 conductor package is represented by a weak anomaly at 14200 E, where a conductance value of 4 siemens is calculated. Evidence of a broad conductive block or multiple conductor horizons are also noted at this location, although over lesser width. The depth to the basement conductors is estimated to be 160 m. A comparatively strongly conductive overlying layer is interpreted in this case, with an estimated conductance value of 5 siemens.

. When the preferred target location on line 236 N proved to be unsuitable for drilling, a segment of the adjacent line 238 N was completed with identical survey parameters and closely comparable results.

Permits 6884100001 and 6886050004

Lines 298 N, 314 N, 318 N & 322 N

Four moving loop profiles were completed over the Dragon Lake zone main conductor horizon (Figure 12). The survey parameters in each case were; transmitter loops of size 200 m x 200 m, and receiver-transmitter offsets of 300 m. The TEM results for line 318 N are shown in Figures 22, 23 and 24. The coverage of the remaining lines provided similar results and is not presented. Previous TEM work in this grid area consisted of a reconnaissance style (large fixed loops) survey during the winter of 1987 (Quantech, EM-37 system).

Figure 22 displays the horizontal component TEM response of the major Dragon Lake zone conductor horizon (C6a). The target at 21780 E lies at an estimated depth of 170 m. The conductance value is calculated to be 40 siemens (figure 24). A shallow conductive component of the anomaly is thought to be caused by overlying faulting and possible alteration, represented in the EM model by a short, vertical conductor segment extending through the sandstone column to a depth of 50 m below surface. An overlying horizontal conductive feature (the clay-rich Fair Point Formation) is also required by the Multiloop model. In this case the flat-lying conductance value is moderate (2 siemens). The corresponding vertical component anomaly for line 318 N is shown in Figure 23. In this presentation (data plotted at the receiver location), the vertical component anomaly centre needs to be moved by half the receiver-transmitter offset distance (150 m) to obtain the conductor location.

Interpretations for the four Dragon Lake zone profiles are summarized as follows:

Permit 6884100001

Line 298 N: Conductor location 22020 E
Depth 175 m, Conductance 35 S
Dip sub-vertical or steeply east.

Line 314 N: Conductor location 21805 E
Depth 175 m, Conductance 25 S
Dip sub-vertical or steeply east.

Permit 6886050004

Line 318 N: Conductor location 21780 E
Depth 170 m, Conductance 40 S
Dip steeply to the east.

Line 322 N: Conductor location 21770 E
Depth 170 m, Conductance 40 S
Dip vertical.

Permit 6886050005

Line 50 N

The objective of this survey was to better define a broad, weak response noted in 1987 reconnaissance work (EM-37 survey by Quantech, Inc.). The conductive feature is coincident with a NNE-trending magnetic lineation which is believed to represent a major structure. Two fixed loops (800 m x 600 m) were used for the present TEM survey, as shown in Map 23.

The horizontal component data for line 50N are shown in Figure 25. There is no single, dominant conductor axis. The responses are indicative of a broad, weakly conductive block or zone of multiple, weak conductors extending from 12+00E to 17+00E. The overall conductance value of the zone is over 17 S (decay time constant 5.6 msecs), but any confined conductor horizons, if present, are not resolved by the fixed loop coverage. A sharp, early time response in the vicinity of 12+00E (in the western loop data) is likely to be a sandstone feature (faulting and/or alteration) at the western flank of the zone.

This target is likely to be similar in nature to the broad, sparsely graphitic structural zone outlined by drilling in the MR25 area, except in this case under deeper sandstone cover. The depth to basement on line 50N is likely to be approximately 300 m although this cannot be confirmed from the TEM coverage. Perhaps discrete targets, if present, might be identifiable within the 500 m-wide

zone using a moving loop survey technique, which should provide better resolution at this depth range.

Line 452 N

The TEM profile data and interpreted model for line 452N are shown in Figures 26 & 27. Here the eastern basement conductor is clearly the dominant horizon (20 S at 329+50E). A weak western conductor horizon (conductance 2 S?) is thought to lie in the vicinity of 325+00E, 450 m to the west. The interpreted depth to the eastern basement conductor is 300 m, and its dip appears to be close to vertical. As in previous examples a flat conductive sheet is also included in the model (in this case 2 S conductance) to simulate the low resistivity Fair Point Formation, etc. The centre loop TEM profile of line 453+50N (shown on Map 7) indicates a significant late time Hx crossover at 329+50E, which is coincident with the interpreted major conductor axis. The eastern basement target was investigated by drillhole MR70, which intersected graphitic gneisses at a vertical depth of 290 m.

Line 428 N

Figures 26 & 28 contain the interpreted conductor model for line 428N and the corresponding late time model and field data profiles. The western basement conductor horizon is the more strongly conductive in this case (30 S at 322+90E). The eastern basement conductor is located at 325+30E and has a conductance of 17 S. Both basement conductors are estimated to be sub-vertical and to lie at a depth of 250 m below surface. The third conductor component of the model is an extensive flat lying sheet, which in this case shows a conductance of 1.5 S. From north to south, the diminishing conductance value for the model's flat lying sheet is in accordance with decreasing thicknesses of the Fair Point Formation sandstone unit (approx 37 m on line 428N). All the TEM profiles are truncated by a lake at the west end of the profile. This particularly affects the Hz moving loop profile and the centre loop profile (shown on Map 7) due to the asymmetry of the array (400 m spacing receiver to the west). The centre loop profile data does not traverse either conductor location. The strong western basement conductor was the target of drillhole MR71, and appears to have been very narrowly overdrilled. The vertical depth to basement is slightly less than 250 m.

Line 356 N

The conductor model for line 356N is shown in Figures 26 & 29, together with the related late time model and field data profiles. The western basement conductor horizon is again seen to be the stronger, with an estimated conductance value of 30 S (at 207+50E). The eastern basement conductor is located at 211+65E and has a conductance of 12 S. Both conductors are thought to be

near-vertical and at an estimated depth of 200 m. A comparatively minor flat lying conductor (0.2 S conductance) forms the third component of this model. This implies a very thin or absent Fair Point Formation sandstone unit. No drilling was undertaken on these targets.

During the course of the moving loop TEM survey, extra centre loop measurements were obtained at the east and west ends of most profiles to obtain sounding information. This data has been interpreted (inverted) by Geo-Physi-Con and is the subject of a separate interpretive report. In summary, an acceptable model fit was obtained at each of the nine sounding sites using a 6-layer horizontally stratified model. All nine models are quite similar. There are apparently no strong variations in basement resistivity values; eight of the soundings yield lower layer (half-space) resistivity values in the range 4300 to 5050 ohm-metres, the ninth sounding is degraded by the proximity of a basement conductor. Resistivity layering in sandstone (eg. Manitou Falls vs. Fair Point) is not well resolved by the present data and would require earlier time measurements. An apparently deep conductive feature seen on all profiles may be caused by the lateral proximity of the Jas Lake - Scot Lake conductor horizons, and may not represent a discrete layer at depth.

Permit 6886050006

Line 68 N

Fixed loop profiles were obtained from two 600 m x 600 m transmitter loops as shown in Map 23. The horizontal component profile data are shown in Figure 30. This target appears to be another example of a broad, weakly conductive block (or multiple weak basement conductors). The conductive zone extends from 209+00E to 214+00E, with some evidence of a superimposed shallow (sandstone hosted) conductive feature at 209+00E. There appears to be a stable mid time current concentration in the vicinity of 210+00E, which may represent the location of a relatively dominant conductor horizon within the zone. The overall conductance value of the zone is 6.7 S, so only minor graphitic conductor horizons can be expected. Meaningful depth to basement values cannot be extracted from the TEM data.

The late time TEM responses of the eastern transmitter loop profile indicate the proximity of a more strongly conductive basement horizon further to the west. This is the C6a horizon which would fall at approximately 200+00E on line 68N, and which has a conductance value of approximately 12 S.

Lines 468 N & 471 N

In the Scot Lake area, two moving loop TEM profiles were completed (Figure 31). This work was a follow-up to a 1988 reconnaissance style fixed loop survey (Quantech, EM-37 system). Some additional moving loop TEM profiles had been obtained in this grid area during the summer of '89 (Geo-Physi-Con, EM-37 system). Two distinct N-S trending basement conductor horizons, approximately 200 m apart, have been mapped. An E-W trending dislocation in an adjacent mag high (granite unit ?) can be traced in aeromagnetic coverage, implying that a major basement fault zone intersects and probably dislocates the basement conductors in this vicinity.

Figure 32 shows the horizontal component TEM profile data for line 471 N. The profile displays a significant late time response (indicative of strongly conductive basement material) over a 400 m wide section of the profile (32600 E to 33000 E). The overall width of this feature is evidence of structural deformation of the conductor system by the suspected cross cutting fault. The conductor axes here are likely to be broken, with multiple fragments and possible repetitions. The TEM responses are likely to be derived from conductive segments to the north and south of the profile. An attempt has been made, though, to identify the major conductive components for drilling. In figure 32, three conductor axes have been interpreted within the broad conductive response, the most significant being a 20 siemens conductor at 32730 E. No dip information can be derived from the profile data. The depth to basement (345 m) used in the model is in accordance with information from nearby drilling. The overlying thin sheet or half space TEM response over this profile segment has been approximated by a moderately conductive (2 siemens) thin sheet. The TEM profile on the nearby line 468 N provided similar information. The major conductor axis in this case was found to be located at 32725 E, with similar conductance and depth values.

Line 476 N

The TEM model profiles and interpreted section for line 476N are shown in Figures 26 & 33. The two sub-vertical basement conductors in this case appear to be separated by 350 m (at 326+25E and 329+75E) and are thought to lie at a depth of approximately 350 m. Both horizons are weaker in conductance (8 S and 4 S, respectively) than on line 484N. This might be attributable to breaks in electrical continuity at possible cross faults (interpreted nearby from mag coverage). As on line 484N, an extensive horizontal conductive sheet must be introduced as part of the TEM model to simulate the overall low resistivity environment and particularly the conductive lower sandstone unit (Fair Point Formation). The centre loop profile Hx data (line 474+50N) indicates a sharp cross-over (in mid time channels) in the vicinity of 327+00E, which may be associated with the nearby basement conductor axis or possibly with some

overlying sandstone feature (faulting?). Drillhole MR69 was designed to evaluate the stronger western conductor horizon (8 S) on line 476N and appears to have underdrilled the target.

Line 484 N

The moving loop coverage of line 484N is shown on Figure 26. Interpreted conductor locations, derived from 2D modelling with the Multiloop package, are shown in Figure 34. Also in Figure 10, seven late time channels (14 to 20) of modelled profile data (bold profiles) are shown superimposed on the corresponding field data.

A sub-vertical, 20 S conductor axis is interpreted at 330+30E on line 484N; this being the dominant (eastern) conductor horizon in this location. A poorly resolved 10 S conductor is interpreted some 280 m to west, in the vicinity of 327+50E. Modelling suggests a depth below surface of approximately 320 m for the basement conductors. A third conductive component of the model is an extensive horizontal sheet of conductance 5 S overlying the basement conductors. This is a necessary feature of the model to account for elevated background responses, which are particularly evident in early times. The horizontal sheet attempts to simulate a low resistivity half space environment and the presence of the more conductive Fair Point Formation, a clay-rich lower member of the Athabasca Group sandstones. Due to the depth of the basement conductors (comparable to the 400 m receiver-transmitter spacing) and the low resistivity environment, the TEM anomalies are well defined only in late time channels. Drilling on line 484N (DDH MR68) was intended to investigate the 20 S western conductor at the sub-Athabasca unconformity and was successful in intersecting strongly graphitic basement sections below the sub-Athabasca unconformity at a vertical depth of 337 m, overlain by a thickness of approximately 90 m of Fair Point Formation sandstone.

4.05 Track Etch Survey

Permit 6886050004

In June 1989, an additional 51 Track Etch cups were placed across the Dragon Lake area in order to extend the coverage of the survey initiated in 1988 (Section 7.3). These additional cups were placed on three lines (L324N, L326N, L332N), the objective being to further define the anomalous values which are open to the east on each of these lines. Portions of the new coverage on each line overlapped the old data so as to both confirm certain anomalies and to be able to be able to tie-in the new data. These additional cups were collected for analysis

prior to freeze-up this Fall, after having been left exposed for two months, with all 51 being recovered. The data for these surveys are contained in Appendix 5.

The results from both Track Etch radon soil gas surveys on six lines across the Dragon Lake mineralized zone are compiled on Figure 35.

A simple statistical estimation of the threshold was taken as approximately 2 times the median (2 times 20 = 40 pCi/L). Contours on Figure 35 are at 20 pCi/L (background), and 40 pCi/L, while values greater than or approximately equal to 60 pCi/L are indicated as being first-order anomalies. The values range from 1.9 pCi/L to 85.0 pCi/L, with an arithmetic mean of 25.3 pCi/L. The unexposed cup returned a value of 1.2 pCi/L; the minimum value recorded.

As indicated on Figure 35, the trend of the above background values (>20 pCi/L) closely parallels that of the Dragon Lake lithostructural zone, at least within the limits of the coverage. The first-order anomaly values (60 pCi/L) appear spatially associated with the known mineralization in holes MR34/39 and MR42. The above background trend extends eastwards on L326N beyond the extent of the survey coverage. Sporadic above-background values also occur towards the eastern limit of L332N and on L320N around the mineralization of MR53. The expected groundwater flow direction is to the northwest (based on the general topography). The surface drainage is locally controlled (disrupted) by the esker which cuts diagonally from northeast to southwest across the test area.

While the second survey's repeat values were only moderately correlated with the first order anomalies of the first survey, the apparent cross-cutting trend noted on L326N was extended. Lines to either side (L324N and L327N) were both within background levels. While the absolute validity of these anomalous values remains inconclusive, it can be interpreted that this exploration method does respond within this environment and may be used to screen more promising areas along the graphitic lithostructural targets.

4.06 Geotem Airborne EM and Magnetometery Survey

During the summer of 1990, Geoterrex Ltd. of Ottawa was contracted to fly an airborne electromagnetic and magnetic survey in order to discern the general geological nature of the basement rocks in these northern permit areas. A total of 880 line kilometres were flown over the select blocks, the actual flight lines of which are seen on Map 25. Due to the delays in completing this survey, the logistics report form the contractor and subsequent interpretation by Uranerz' Geophysical staff is pending and will be submitted as appendix 6 of this report at some later date.

4.07 Lake Bottom Sediment Sampling

During the summer of 1988 a total of 91 organic, centre lake sediment samples were collected as a follow-up to the anomalous values obtained in 1987. These consisted of the re-sampling of certain anomalous lakes, sampling further up-ice of the last lakes tested in 1987, and detailed sampling of three adjoining lakes from which the most anomalous values were obtained. Twenty-five stream sediments (mostly clastic material) were collected from streams connecting these three lakes. The data are in Appendix 7.

Maps 26, 26a, 26b, and 26c display the total lake sediment coverage during 1988 for the permit areas showing sample locations and corresponding uranium, nickel, and arsenic values respectively. All the 1988 data are presented in table format in Appendix 7.

The 91 samples collected in 1988 were concentrated in the Brander Lake-Old Fort River area, the objective being the follow-up and more precise delineation of uranium and arsenic anomalies obtained in 1987.

Threshold estimates were taken as the median of the total sample population (1985-1988 surveys, n = 1,197). Three times this value was considered anomalous. As a result, 20% of the total population or 244 samples, were anomalous for U ($\geq$ 3 ppm). While this appears to be a disproportionately high number of anomalous values, the population is strongly biased by the concentration of sampling within a known area of high values. By the same token, As has 361 anomalous values of $\geq$ 2.1 ppm (30% of the total population), while Ni has only 5 values of $\geq$ 21 ppm (1% of the total, n = 987).

The results of the 1988 sampling confirmed and better defined the 1987 anomalies in the Brander Lake-Old Fort River area of northeastern Alberta. The high values (max. 55.5 ppm U) are centred around three lakes which straddle the Alberta-Saskatchewan border. There is a very good correlation of arsenic with uranium in this area, but they also trend somewhat further up-ice.

The anomalies are effectively closed to the east, and their source is interpreted to be within the area lying between Brander Lake and the Old Fort River. Detailed lake sediment sampling in these three lakes further confirmed these findings. The local drainage is from east to west, following an inverted U-shape direction, ending at the Old Fort River. Lakes immediately east of the three most anomalous quickly drop to background. Soil samples collected in four traverses across the area did not return any anomalous values. This was to be expected given the character of the material (outwash).

4.08 Air Photo Coverage

During the summer of 1988 an airphoto survey was flown covering 4100 km^2 of the existing permits (Map 27). The permits covered in this report account for 55.6% of that total and the percentage for each particular permit is listed in Table 3. The calculations are based on area of each permit covered and expressed as a percentage of the original 4100 km^2.

4.09 Ground Prospecting / Lake Sediment Sampling Follow-up

During the summer of 1988, a total of 5.75 mandays (Table 3) were spent prospecting and collecting surface samples as a follow-up to the anomalous lake sediment samples taken to date.

A number of prospecting traverses across the Brander Lake area resulted in the collecting of 40 composite boulder chip samples and 44 soil samples (Map 28). All have been analyzed chemically: the boulders for 29 major, minor, and trace elements (Table 4); and the soils for U, As, and Ni. Scintillometers were used during all traverses.

The objective of this program was to rapidly examine the area around the Brander Lake anomalies for possible indications (either radiometric and/or geochemical) of related mineralization.

No anomalous radioactive boulders were found in the course of these surveys.

4.10 Soil and Boulder Sample Geochemistry

Of the 44 soil samples collected in the summer of 1988, none proved to be significantly anomalous with only a few samples showing indications of elevated path-finder elements.

Map 28 shows the distribution of the 40 composite boulder sampling within the general area of the lake sediment anomalies. They are spatially restricted to relatively small till windows within the ubiquitous outwash sands. None were available within the area immediately adjacent to the main Brander Lake grouping of lake sediment anomalies.

The most obviously anomalous boulder sample (RO88-10a) was from an area of drumlinoid ridges some 12 km northwest of the anomalous lakes. This sample, of a single boulder which was also included within composite sample (RO88-10), which was itself not anomalous. This sandstone boulder was anomalous in virtually every important indicator element tested, most notably: 1.070% MgO, 0.40 K/Al, 8 ppm Ni, 2 ppm total U, 15 ppm Zn, 9 ppm Co, 28 ppm Zn, and 0.22% TiO_2. Potentially troublesome elements such as Th, P_2O_5, and Zr were not especially enhanced. The significance, however, of this one boulder located significantly off of ice direction from any anomalous lake sediment anomalies is problematic.

Four other composite boulder samples returned slightly anomalous total uranium values ranging from 1.2 to 1.4 ppm. All are in the general down-ice direction from the anomalous lakes. The uniform lack of associated anomalous values for any of these samples tends to downgrade their value. A complete table of lithogeochemical data is contained in Appendix 8.

4.11 Stream Sediment and Water Sampling

During the summer of 1988, in addition to the lake sediment sampling, eighteen stream bottom sediment and corresponding stream water samples were collected from within the immediate drainage area of the known lake sediment U/Ni/As anomaly in the Brander Lake Area (Maps 26, 26a,26b, 26c, and Table 3). The purpose of this survey was to further define the nature and extent of the anomaly and to give possible new insight as to the source of the uranium.

None of the samples returned significantly anomalous values and no further study was conducted based on the results of this survey. The sample listing and corresponding analysis is contained in Appendix 7.

4.12 Sonic (Overburden) Drilling

During the 1989 winter field season a total of four sonic drillholes (104.9 metres) were completed in the Brander Lake area (Figure 36). The four holes were on a 6.5 km long profile extending across glacial ice direction south of Border Lake, traversing the main area of the anomalous lakes. Two other holes, intended to test a highly anomalous lake and up-ice of the suspected dyke, could not be completed.

The primary objective of the sonic program was to effectively sample the overburden (outwash sands and underlying till) and, if possible, also the underlying Athabasca Group sandstone.The program successfully sampled overburden in four

holes across ice direction along the 6.5 km profile. Sample recoveries were generally very good through all horizons intersected, down to a depth of ±30 metres. The sonic drill was unable to proceed beyond this depth however, due to insufficient power.

Sampling of all the materials recovered was undertaken for lithogeochemistry, heavy minerals, and petrography. Procedures for these samples were as follows: a) the sands were sieved to -80 mesh, and analyses for U, Cu, Ni, Pb, Zn, Co, Mo, and As were performed on total extractions, and also a partial extraction analysis for U; b) $^1/_2$ of each till sample received the same treatment as the sand samples, while the second half had the full ICP/AA package of 28 elements analyzed on the heavy mineral fraction. The data is presented in Appendix 9.

The outwash sand samples are not evidently anomalous in any of the elements tested although some individual samples are obviously greater than the mean (total U = 1.0 ppm, Ni = 7 ppm, As = 3.1 ppm). (These values are very similar to those for the sand samples which were collected on surface.)

Overall, given the relative broadness of the area containing anomalous lake sediments, if the outwash sands were the source for these metals, then more consistently anomalous values should have been obtained from a greater number of outwash sand samples.

The till samples have not provided any conclusive indication of having been a source of metals for the lake sediments. Neither the -80 mesh size fraction nor the heavy mineral separates from the 10 till samples showed any significant increased metals values. None of the possible indicators of refractory minerals which might be uranium-bearing were indicated geochemically.

4.13 Consultant's Report: Lake Sediment Geochemistry

A geochemist was contracted to conduct further interpretational studies on both the overburden and boulder samples and the anomalous lake sediment samples collected in 1988 from the morainal area west of Brander Lake. This was to complement a study previously completed on the Brander Lake area anomalous lake sediments. The detailed report for this study is found in Appendix 10.

The following conclusions (interpretations) were arrived at:

1) the uranium present in heavy mineral separates from till samples collected south of Brander Lake is probably derived from zircon grains. The presence of up to 7.5% zircon in the H.M. fraction is sufficient to account for the U present. Other possible minerals present as suggested by

elevated chemistry include ilmenite and/or rutile and/or sphene (TiO_2), magnetite and/or hematite (Fe_2O_3); as well apatite (P_2O_5), monazite and xenotime (P_2O_5, Y, La, and Th).

2) there are no significant differences in the U, As and Ni geochemistry of sandy overburden samples collected on the moraine versus those collected in the Brander Lake area.

3) boulder samples from the moraine and from adjacent drumlins are also consistently low in U, Ni and As, but they do show significant variability in other constituents (Fe_2O_3, P_2O_5, Y, La, B, illite, and chlorite), which suggests that they represent bedrock sources of at least three quite different lithologies.

4) although there is no obvious explanation for the moraine area lake sediment anomalies, some of the probable controlling factors are: (a) the rugged topography, (b) variations in lake depth, (c) variations in Fe and Mn levels in the lake sediments, and (d) local differences in the composition and texture of the moraine material.

5) although, because of their wide extent and lack of focus, the moraine lake sediment anomalies do not constitute a follow-up exploration target at present, if investigations in the Brander Lake area give positive results, then further work would be required in the moraine area.

5. CONCLUSIONS AND ASSESSMENT

Permits 6888040005 6888040007 and 6888040008

Preliminary exploration during the winter of 1990 on these primarily untested permits provided mainly inconclusive results. The TDEM surveys successfully located one viable EM drilling target which was subsequently drill tested (MT02). The basement lithologies in this hole, however, do not explain the geophysical anomaly. Within the two northernmost permits, the TDEM coverage was unable to locate any significant EM anomalies for drilling.

Based on the 1990 program results, a proper evaluation of the project area cannot be completed. Aside from one other hole drilled on the property, very little is understood about the basement geology given the highly reconnaissance nature of exploration to date. In most of the permits TDEM surveys, to date, have been successful in finding anomalies, however, their attitude and lateral extents are highly speculative. The most prospective area remains to be in the MT01 area where faulted graphitic metasediments are present. This lithostructural unit is

known to be strike continuous into the project to the south and probably extends somewhat to the north. Continued exploration on this property will require both EM and Magnetometer airborne surveys in order to properly assess the general subsurface geology as to it's prospectivity for a Key Lake type deposit.

Permits 6886050005 and 6886050006

Drill testing of the northern extension of the C6 and C6a lithostructural horizon in the Paxton to Scot lakes area has resulted in several potentially significant indications of unconformity-related uranium mineralization. Substantial intersections of graphitic metasedimentary lithologies were intersected along the eastern C6a trend, but not in the two holes drilled on the western, C6, conductor. Considerable faulting within the Athabasca Group and basement rocks was intersected in most of the holes on both conductors.

This combination of strong faulting and favourable geochemical indicators was most notable within MR72 (and in the previously drilled hole on this section, MR38). The geochemical halo intersected in these holes is especially significant given the presence of anomalous uranium and arsenic, as well as bismuth, vanadium, and the occurrence of chloritic alteration. The geochemical values obtained in MR72 are very comparable to those of MR29, the hole which led to the discovery of the ore grade Dragon Lake mineralization. The arsenic anomaly is interpreted as most favourable given both its size and nearly universal association with the known mineralization. The target consisting of the intersection of graphitic metasediments and the unconformity remains to be tested on this two-hole section (L468N). Another potential target lies along strike between holes MR38/72 and MR68. There, the target would be a mag- and drill-indicated cross fault and its intersection with the graphitic horizon. The exact location of this intersection requires additional defining prior to its drill testing.

Similar but weaker geochemical anomalies were also noted in drillholes MR70 and MR71. Cross faults have also been interpreted to transect the graphitic horizon near to these holes. While the remaining drillholes of this program (MR68 & MR69) offered somewhat lesser geochemical encouragement, significant structural features were present.

Other favourable indications from drilling were potential metallotects in the form of fault structures. These are of several types: (1) cross cutting faults, oblique to the northerly trending graphite-hosting lithostructural horizon, and (2) contraction (reverse) faults which possibly parallel the conductor axes. Both of these types of structural trap are known to host unconformity-type uranium mineralization elsewhere in the Athabasca Basin.

The moving loop TEM method was first applied on this property during the winter of 1989 and expanded during June for drill target definition as part of the summer program. The moving loop coverage has proved to be beneficial in resolving the multiple basement conductor horizons which are common in this area. The existing fixed loop TEM coverage, which is considered to be cost effective in reconnaissance of the large grid areas, is seen to be inferior in conductor discrimination as a consequence of the low resistivity environment (and attendant TEM migration effects) which are typical of this property (in contrast to the eastern Athabasca Basin).

The apparent uniformity in basement resistivity values obtained from the TEM sounding data is surprising given the strong differentiation in magnetic properties from east to west of the C6/C6a lithostructural horizon. Significant resistivity variations would encourage the use of MT or CSAMT to aid in mapping basement morphology.

Permit 6887090002

Results of the TDEM survey and the subsequent diamond drilling of the most prospective conductor, has confirmed that the C6/C6a (DLLZ) geological trend is strike continuous within this project area. The subsurface geology, mainly the graphitic basement rocks, can be correlated with the aforementioned lithostructural units seen in the Maybelle River Project to the south. The geochemical response within the sandstone of MT01 has some subtle path-finder element anomalies as well as a trace of uranium mineralization along a fracture.

Initial results from the reconnaissance type of exploration on Permit 6887090002 indicate that graphitic basement lithologies occur within the project area of the type with which uranium mineralization is known to be associated to the south. Apart from the one drillhole and limited ground geophysics, little is known about the subsurface geology within the remainder of the project's area. More preliminary work (mainly airborne EM and Mag.) is needed to evaluate the potential for additional drilling targets and/or reduce the permit's areas.

Permits 6884100001, 6884100002 and 6884120001

The 1990 winter drilling program failed in its attempt to discover additional unconformity-related uranium mineralization along the Dragon Lake lithostructural horizon. The low number of holes (3) which successfully tested the targeted intersection of the graphitic gneisses and the unconformity however, precludes a conclusive interpretation of the potential along much of this horizon however. Within the series of follow-up, fill-in, and reconnaissance diamond-drill holes, several contained lithogeochemical indications of haloes which are possibly related

to mineralization. In the case where the target was successfully tested and mineralization was not intersected, lithogeochemical indicators frequently suggest that a potentially mineralization-related halo exists. It is interpreted here that the source of these haloes may be a form of the Dragon Lake-type of structurally-controlled mineralization which, while spatially associated with the graphitic gneisses, occurs a some distance (± several $10^{'s}$ of metres) laterally away within the hanging wall (?) assemblage.

Permit 6886050004

The two drillholes completed during the winter of 1990 successfully identified the graphitic basement rocks which are spatially associated with the high grade uranium mineralization to the north in the Dragon Lake area. The two holes were intended as fill-in holes along the strike-extensive Dragon Lake Lithostructural Zone where sporadic mineralization and favourable geology has been encountered. Neither hole, however, intersected any significant mineralization or encouraging geochemistry.

The conclusion which may be drawn from the Track Etch surveys conducted in the Dragon and Brander lakes areas, is that the method appears to provide indirect indications of potential uranium mineralization. This empirical interpretation is based on: (1) the spatial association of the anomalies obtained in both areas with either known or suspected mineralization and, (2) the presence of background values in the remainder of the areas surveyed.

Permits 6888030005, 6888030004, 68880310003, 6888030002, 6888030001, 6888040003, 6888040004, 6888040006, and 6888040007 (1988 results)

Results of the lake sediment follow-up work undertaken during the summer of 1988 in the Brander Lake area were not entirely conclusive. The source of the anomalies, while narrowed down to the Brander Lake-Old Fort River area, was not identified. Neither was the possibility that the metals entered the lakes from either the tills or the overlying outwash is not resolved either, and further work (overburden drilling) will be necessary. Encouragement was received from the positive correlations between the uranium anomalies and other metals (As, V, Mo, and Ni) frequently associated with unconformity-related deposits. The size of the anomaly (>15 km^2), and its lack of a well-defined point source are problematic, possibly suggesting a formational rather than a mineralized source.

The validity of these lake sediment anomalies remains to be confirmed. Several alternatives exist as to potential sources, principally either 1) a mineralized occurrence, 2) a non-mineralized source which, if (1) is disproved, becomes academic. Conflicting evidence now exists as to what the source might be. The

metals associated with the anomalies are indicative of a mineralized source, but their areal extent would point to perhaps a formational source.

As to whether or not the metals were introduced into the lakes from the tills or the outwash, this must be resolved before further work concerning the source is undertaken. If the metals come out of the outwash, then no matter what the source, finding it would be virtually impossible.

Work must therefore progress to identify whether the tills or the outwash contain the metals. This would also provide a sample from which it should be possible to ascertain the source, be it mineralization or otherwise.

The 1989 winter's sonic overburden drilling program has served as an orientative study of the outwash sands and tills which are found within the area of the anomalous lake sediments southeast of Brander Lake. The geochemical results so far were not entirely conclusive, in that neither the sands nor the tills were the obvious source of the metals for the anomalies. Further studies of these materials will be undertaken (e.g., heavy mineral separates of the outwash sands) to examine other possible sources beyond those already tested for.

The hypothesis that a diabase dyke which crosscuts the Athabasca Group sandstones immediately north of the lake sediment anomalies appears to have been confirmed by reconnaissance ground mag surveying. That such a structure may be present at the up-ice juncture of the lake sediment anomalies, suggests that it may have served as a conduit for the metals which are reflected in the anomalies. Overburden samples obtained from the sonic drilling program have so far not confirmed this dyke. Further sampling of the material will be undertaken to this end.

Any assessment of the validity and potential of the Brander Lake area's lake sediment anomalies must be based on conclusive evidence of the metals immediate source. The material sampled by the sonic drilling program has not yet provided this information. Additional study of both the material on hand is recommended. The additional analyses should be made on different size fractions (e.g., the heavy minerals in the outwash sands). Further investigation of the diabase dyke and its related structure is recommended, and to this end, ground mag surveying should be run.

6. REFERENCES and SELECTED BIBLIOGRAPHY

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7. STATEMENT OF EXPENDITURES

The following summarizes, by permit and year, the expenditures related to the above described investigations.

Permit 6884100001						
1990:	Diamond drilling:	1,193	metres @	$95.30	$113,693	
	Linecutting:	5.7	km @	$503.00	$2,867	
	Rechaining:	8.4	km @	$258.00	$2,167	
	TDEM moving loop:	7	days @	$2,381.25	$16,669	
	Petrology:	3	samples @	$85.00	$255	
	Lithogeochemistry:	96	samples @	$35.00	$3,360	
				subtotal =	$139,011	
	Prorated costs:				$98,058	
					subtotal =	$237,069
Permit 6884100002						
1990:	Diamond drilling:	259	metres @	$95.30	$24,683	
	Lithogeochemistry:	12	samples @	$35.00	$420	
				subtotal =	$25,103	
	Prorated costs:				$17,707	
					subtotal =	$42,810
Permit 6884120001						
1990:	Diamond drilling:	220	metres @	$95.30	$20,966	
	Linecutting:	6.8	km @	$503.00	$3,420	
	Rechaining:	3.2	km @	$258.00	$826	
	TDEM moving loop:	5	days @	$2,381.25	$11,906	
	Lithogeochem:	6	samples @	$35.00	$210	
				subtotal =	$37,328	
	Prorated costs:				$26,331	
					subtotal =	$63,659
Permit 6886050004						
1989:	Petrology:	22	sa @	$85.00	$1,870	
	Track Etch:	50	cups @	$43.00	$2,150	
	Access roads:	12	km @	$995.00	$11,940	
			subtotal =		$15,960	
	Prorated costs:				$15,444	
					subtotal =	$31,404
1990:	Diamond drilling:	517	metres @	$95.30	$49,270	
	Linecutting:	6.2	km @	$503.00	$3,119	
	Rechaining:	8	km @	$258.00	$2,064	
	TDEM moving loop:	4	days @	$2,381.25	$9,525	
	Lithogeochemistry:	45	samples @	$35.00	$1,575	
				subtotal =	$65,553	
	Prorated costs:				$46,241	
					subtotal =	$111,793
					TOTAL =	$143,197

Permit 6886050005

1989:	Line cutting:	6.8	km @	$400.00	$2,720	
	Rechaining:	9	km @	$200.00	$1,800	
	Diamond drilling:	767.5	m @	$106.00	$81,355	
	Lithogeochemistry:	49	sa @	$39.63	$1,942	
	XRD clay:	48	sa @	$22.00	$1,056	
	Time domain EM:	3	days @	$1,880.00	$5,640	(winter)
	Time domain EM:	8.2	days @	$1,762.20	$14,450	(summer)
	Access roads:	4	km @	$995.00	$3,980	
			subtotal =		$112,943	
	Prorated costs:				$109,290	
					subtotal =	$222,233
1990:	Diamond drilling:	633	metres @	$95.30	$60,315	
	Lithogeochemistry:	48	samples @	$35.00	$1,680	
				subtotal =	$61,995	
	Prorated costs:				$43,731	
					subtotal =	$105,727
					TOTAL =	$327,960

Permit 6886050006

1989:	Line cutting:	6.2	km @	$400.00	$2,480	
	Rechaining:	6.2	km @	$200.00	$1,240	
	Diamond drilling:	1433.7	metres @	$106.00	$151,972	
	Lithogeochem:	130	sa @	$39.63	$5,152	
	XRD clay:	119	sa @	$22.00	$2,618	
	Time domain EM:	3	days @	$1,880.00	$5,640	(winter)
	Time domain EM:	5.8	days @	$1,762.20	$10,221	(summer)
	Access roads:	9.5	km @	$995.00	$9,453	
			subtotal =		$188,775	
	Prorated costs:				$182,669	
					subtotal =	$371,445
1990:	Diamond drilling:	389	metres @	$95.30	$37,072	
	Linecutting:	1.6	km @	$503.00	$805	
	TDEM moving loop:	3	days @	$2,381.25	$7,144	
	Helicop. for TDEM:	13.1	hours @	$621.46	$8,141	
	Lithogeochemistry:	33	samples @	$35.00	$1,155	
				subtotal =	$54,316	
	Prorated costs:				$38,314	
	Geotem airborne EM:	36	km @	$74.60	$2,686	
					subtotal =	$95,317
					TOTAL =	$466,762

Permit 6888030001						
1988:	Lake sediments:	11	samples @	$76.00	$836	
	Ground follow-up:	0.75	days @	$850.00	$638	
	Air photos:	3.1	% of total		$356	
			subtotal =		$1,829	
	Prorated costs:				$1,529	
					subtotal =	$3,358
Permit 6888030002						
1988:	Lake sediments:	3	samples @	$76.00	$228	
	Ground follow-up:	2	days @	$850.00	$1,700	
	Air photos:	4.8	% of total		$551	
			subtotal =		$2,479	
	Prorated costs:				$2,072	
					subtotal =	$4,551
Permit 6888030003						
1988:	Lake sediments:	3	samples @	$76.00	$228	
	Air photos:	4.7	% of total		$539	
			subtotal =		$767	
	Prorated costs:				$641	
					subtotal =	$1,408
Permit 6888030004						
1988:	Lake sediments:	8	samples @	$76.00	$608	
	Air photos:	3.8	% of total		$436	
			subtotal =		$1,044	
	Prorated costs:				$873	
					subtotal =	$1,917
1990:	Geotem airborne EM:	5	km @	$74.60	$373	
					subtotal =	$373
					TOTAL =	$2,290

Permit 6888030005

1988:	Lake sediments:	72	samples @	$76.00	$5,472	
	Ground follow-up:	1	day @	$850.00	$850	
	Soil samples:	26	samples @	$76.00	$1,976	
	Stream sediments:	18	samples @	$76.00	$1,368	
	Water samples:	18	samples @	$62.00	$1,116	
	Air photos:	4.4	% of total		$505	
			subtotal =		$11,287	
	Prorated costs:				$9,436	
					subtotal =	$20,723
1989:	Sonic drilling:	104.9	metres @	$124.71	$13,082	
	Geochemistry:	50	samples @	$32.09	$1,605	
	Geochem. consult.	6.5	days @	$340.00	$2,210	
			subtotal =		$16,897	
	Prorated costs:				$16,350	
					subtotal =	$33,247
1990:	Geotem airborne EM:	35	km @	$74.60	$2,611	
					subtotal =	$2,611
					TOTAL =	$56,581

Permit 6888040001

1988:	Air photos:	2.6	% of total		$298	
			subtotal =		$298	
	Prorated costs:				$249	
					subtotal =	$548
1990:	Diamond drilling:	182	metres @	$95.30	$17,345	
	Linecutting:	4.6	km @	$503.00	$2,314	
	TDEM moving loop:	4	days @	$2,381.25	$9,525	
	Petrology:	1	samples @	$85.00	$85	
	Lithogeochemistry:	12	samples @	$35.00	$420	
				subtotal =	$29,688	
	Prorated costs:				$20,942	
					subtotal =	$50,630
					TOTAL =	$51,178

Permit 6888040002

1988:	Air photos:	4.7	% of total		$539	
			subtotal =		$539	
	Prorated costs:				$451	
					subtotal =	$990

Permit 6888040003

1988:	Ground follow-up:	0.5	days @	$850.00	$425	
	Air photos:	4.8	% of total		$551	
			subtotal =		$976	
	Prorated costs:				$816	
				subtotal =		$1,791

Permit 6888040004

1988:	Lake sediments:	1	sample @	$76.00	$76	
	Ground follow-up:	0.25	days @	$850.00	$213	
	Air photos:	4.5	% of total		$516	
			subtotal =		$805	
	Prorated costs:				$673	
				subtotal =		$1,477
1990:	Geotem airborne EM:	93	km @	$74.60	$6,938	
				subtotal =		$6,938
				TOTAL =		$8,415

Permit 6888040005

1988:	Air photos:	3.8	% of total		$436	
			subtotal =		$436	
	Prorated costs:				$364	
				subtotal		$800
1990:	Diamond drilling:	282	metres @	$95.30	$26,875	
	Linecutting:	7.2	km @	$503.00	$3,622	
	TDEM moving loop:	3	days @	$2,381.25	$7,144	
	Helicopter for TDEM:	9.9	hours @	$621.46	$6,152	
	Lithogeochemistry:	19	samples @	$35.00	$665	
				subtotal =	$44,457	
	Prorated costs:				$25,752	
	Geotem airborne EM:	131	km @	$74.60	$9,773	
				subtotal		$79,982
				TOTAL		$80,782

Permit 6888040006

1988:	Lake sediments:	14	samples @	$76.00	$1,064	
	Ground follow-up:	0.75	days	$850.00	$638	
	Air photos:	5.1	% of total		$585	
			subtotal =		$2,286	
	Prorated costs:				$1,912	
				subtotal =		$4,198
1990:	Geotem airborne EM:	128	km @	$74.60	$9,549	
				subtotal =		$9,549
				TOTAL =		$13,747

Permit 6888040007

1988:	Lake sediments:	4	samples @	$76.00	$304	
	Ground follow-up:	0.5	days @	$850.00	$425	
	Air photos:	5.1	% of total		$585	
			subtotal =		$1,314	
	Prorated costs:				$1,098	
					subtotal	$2,412
1990:	Linecutting:	9.4	km @	$503.00	$4,728	
	TDEM fixed loop:	3	days @	$2,381.25	$7,144	
	Helicopter for TDEM:	10	hours @	$621.46	$6,215	
				subtotal =	$18,087	
	Prorated costs:				$10,477	
	Geotem airborne EM:	112	km @	$74.60	$8,355	
					subtotal	$36,919
					TOTAL	$39,331

Permit 6888040008

1988:	Air photos:	4.2	% of total		$482	
			subtotal =		$482	
	Prorated costs:				$403	
					subtotal	$884
1990:	Linecutting:	9.2	km @	$503.00	$4,628	
	TDEM fixed loop:	3	days @	$2,381.25	$7,144	
	Helicopter for TDEM:	12	hours @	$621.46	$7,458	
				subtotal =	$19,229	
	Prorated costs:				$11,138	
	Geotem airborne EM:	129	km @	$74.60	$9,624	
					subtotal	$39,991
					TOTAL	$40,875

Permit 6887090002

1989:	Line cutting:	1.8	km @	$400.00	$720	
	Rechaining:	3.3	km @	$200.00	$660	
	Diamond drilling:	419.7	metres @	$106.00	$44,488	
	Lithogeochemistry:	31	samples @	$39.63	$1,229	
	XRD clay:	31	samples @	$22.00	$682	
	Time domain EM:	3	days @	$1,880.00	$5,640	
	Access roads:	4.5	km @	$995.00	$4,478	
			subtotal =		$57,896	
	Prorated costs:				$59,283	
					subtotal =	$117,180
1990:	Geotem airborne EM:	211	km @	$74.60	$15,741	
					subtotal =	$15,741
					TOTAL =	$132,921

Declared before me this 14th day of March, 1991 at Saskatoon, Saskatchewan:

R. Loewer

Roland Loewer

I certify that the above statement of expenditures is correct.

[redacted]

Rodney G. Orr, Project Geologist

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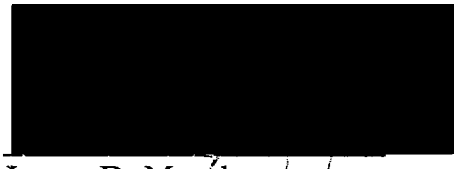
March 14, 1991

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, 6884120001, 6886050004 to 6886050006, 6887090002, 6888030001 to 6888030005, 6888040001 to 6888040008 and hereby attest to its veracity.



James D. Murphy
P. Geol. Alberta

/dew

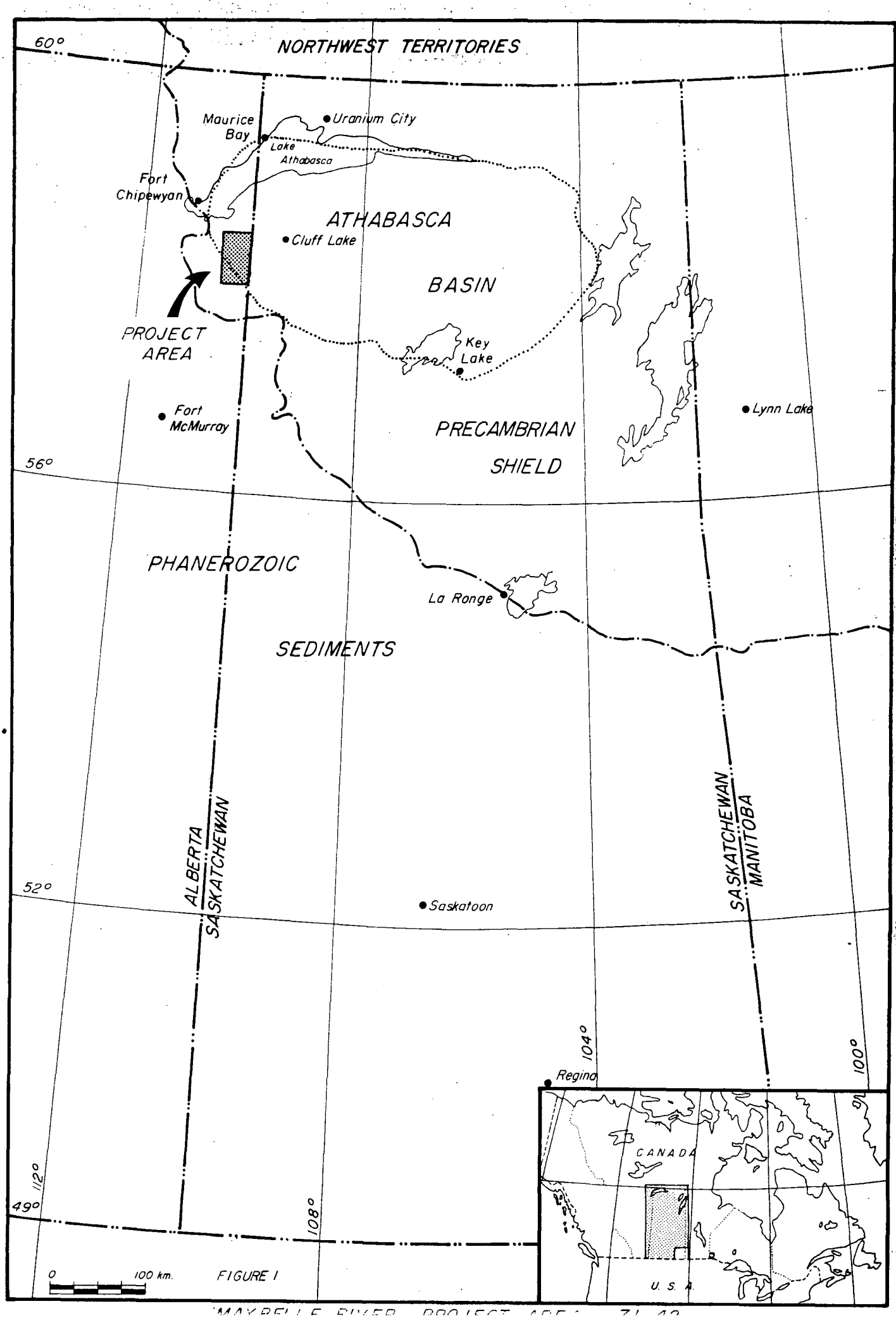
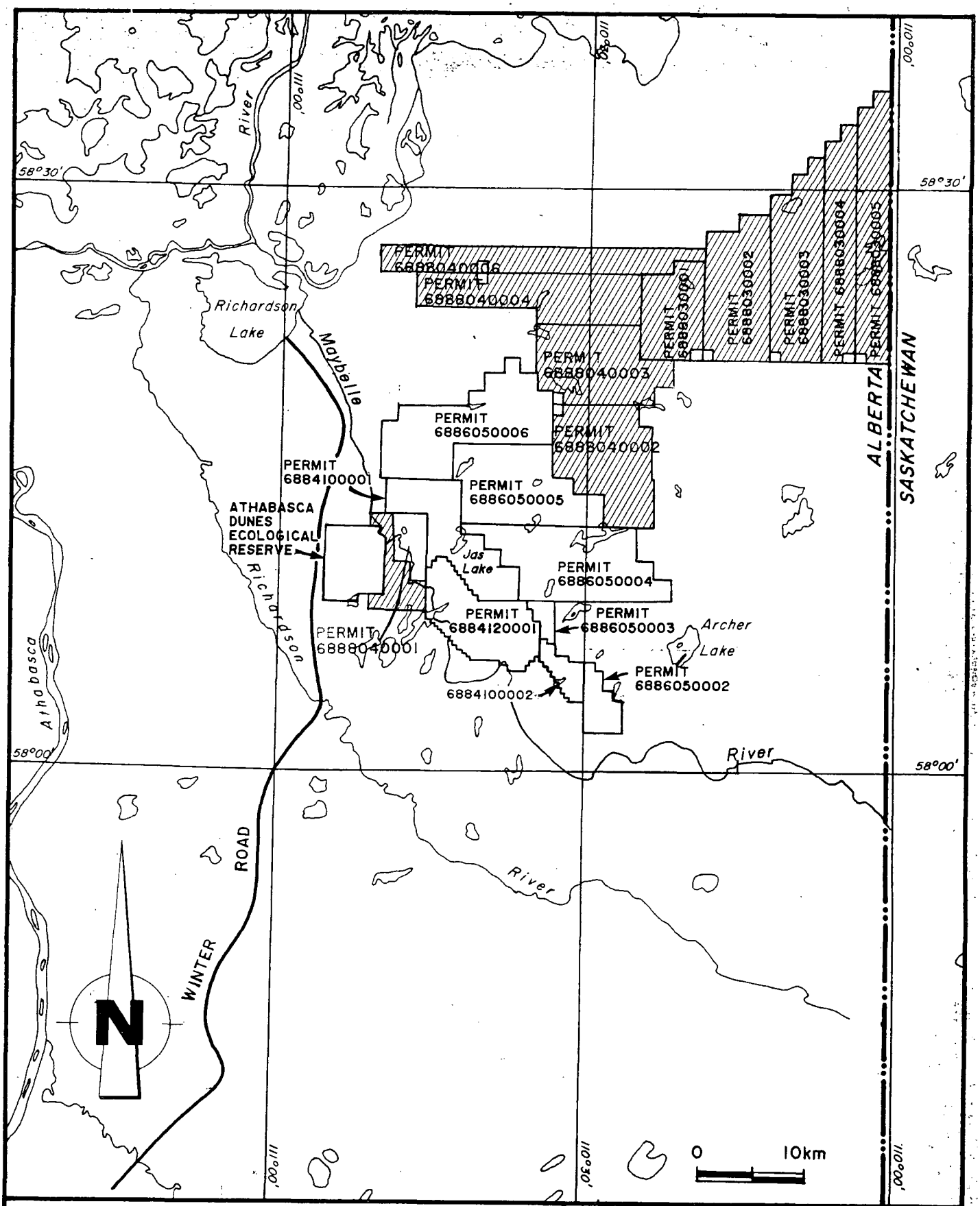
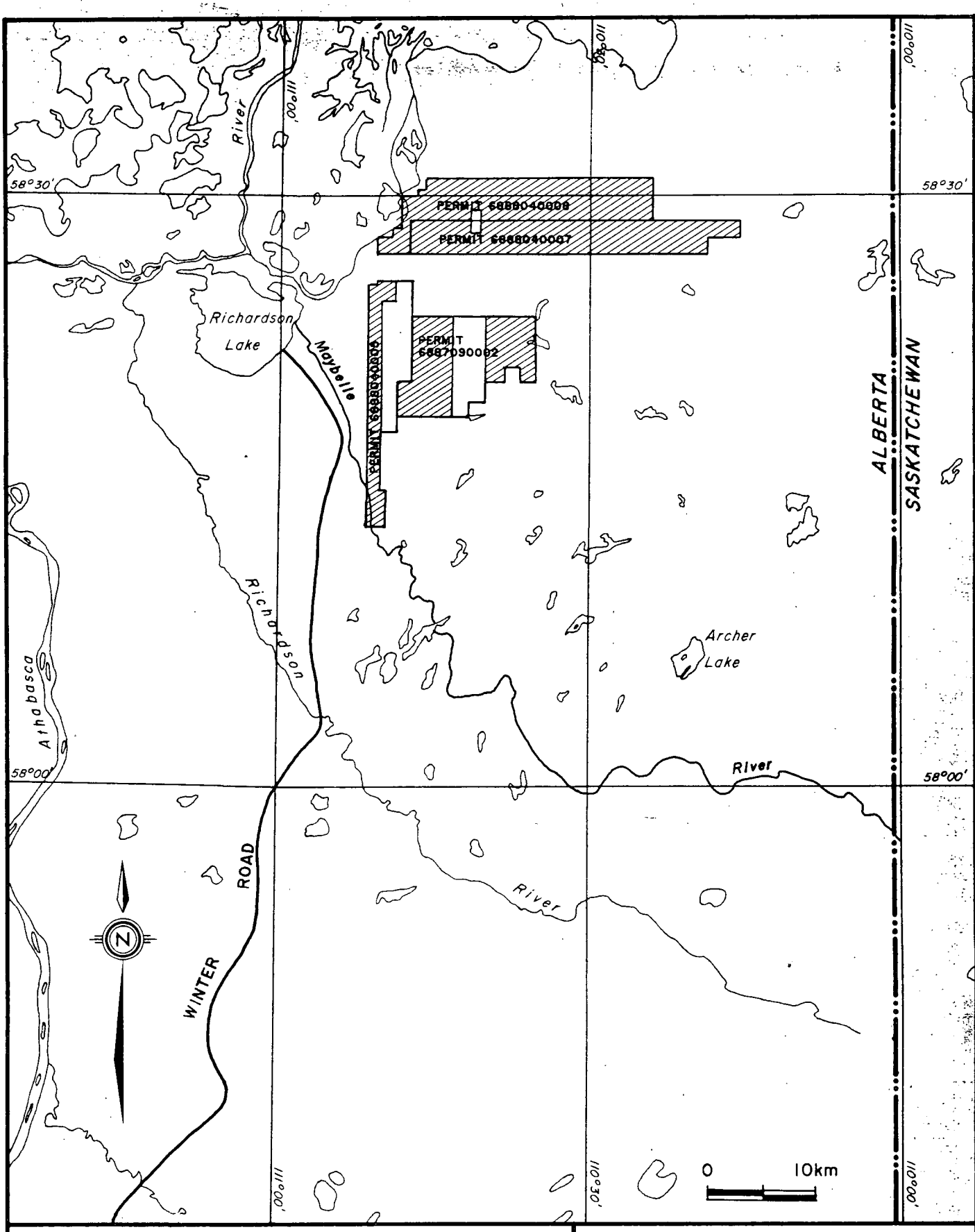


FIGURE 1

MAXBELL RIVER PROJECT AREA - 71-42


River
58°30'
Richardson Lake
Maybelle River
PERMIT 6888040006
PERMIT 6888040004
PERMIT 6888030001
PERMIT 6888030002
PERMIT 6888030003
PERMIT 6888030004
PERMIT 6888030005
PERMIT 6888040003
PERMIT 6886050006
PERMIT 6888040002
PERMIT 6884100001
PERMIT 6886050005
ATHABASCA DUNES ECOLOGICAL RESERVE
Jas Lake
PERMIT 6886050004
PERMIT 6884120001
PERMIT 6886050003
Archer Lake
PERMIT 6888040001
PERMIT 6886050002
6884100002
ALBERTA
SASKATCHEWAN
Athabasca
Richardson
58°00'
River
ROAD
WINTER
N
0
10km
MARCH 1990
AREA ABANDONED
AREA RETAINED
Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LAND STATUS
SCALE 1:500,000
FIGURE 2A



MARCH 1990

AREA ABANDONED

AREA RETAINED

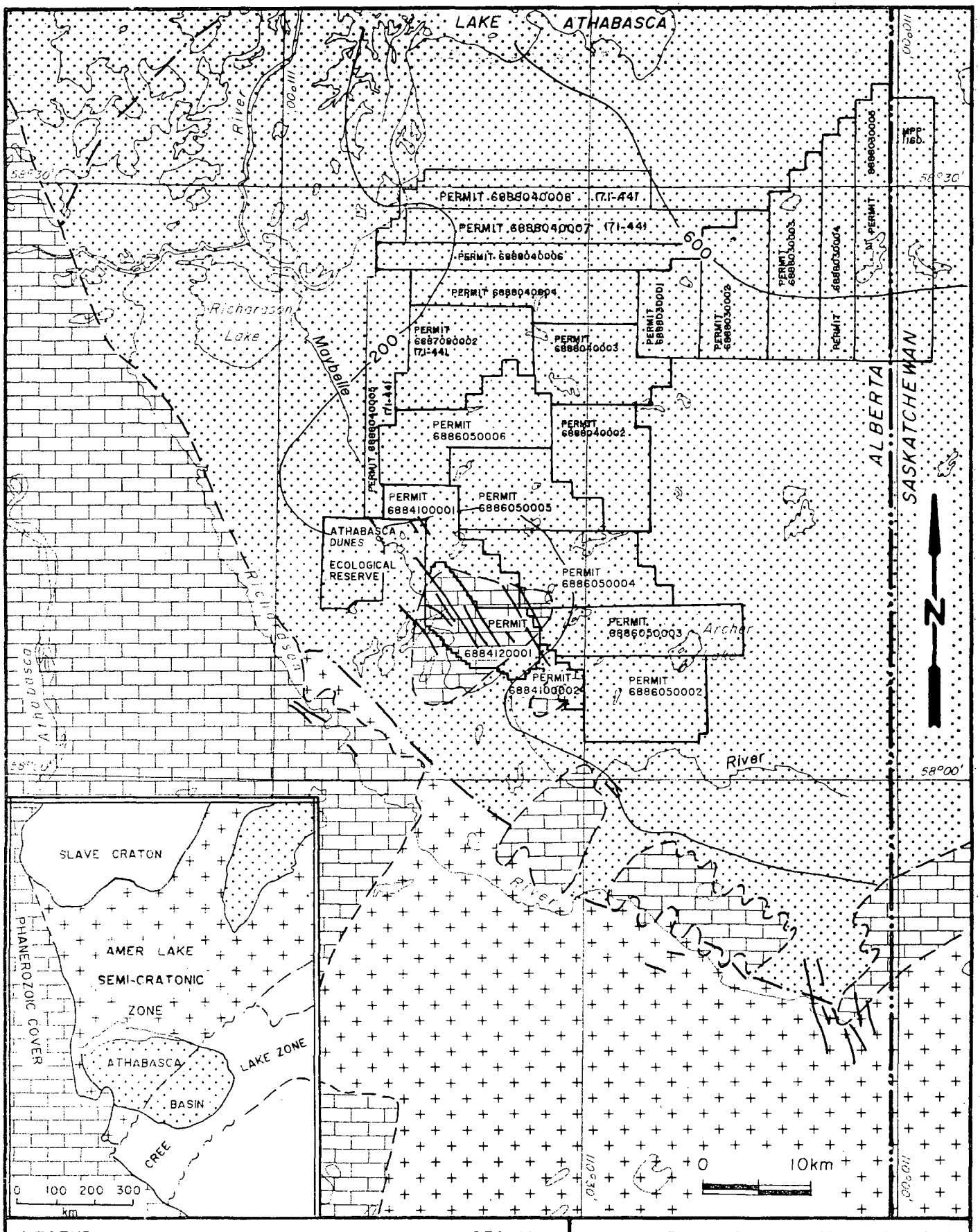
Uranerz Exploration and Mining Limited

Maybelle River II Project 71-44

LAND STATUS

SCALE 1:500,000

FIGURE 2B



LEGEND:

DEC. 1988

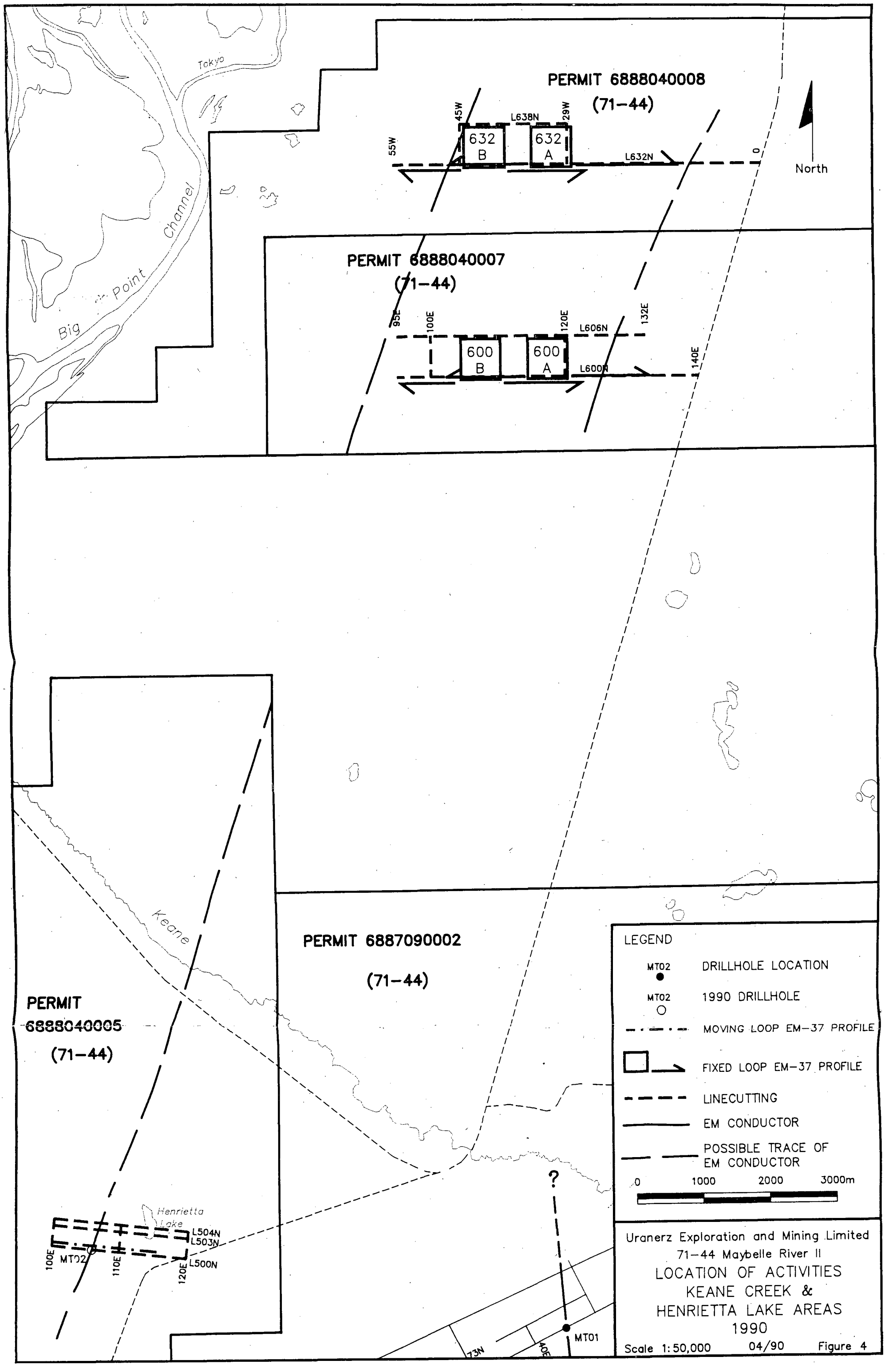
- EM CONDUCTOR AXIS
- PHANEROZOIC SEDIMENTS
- ATHABASCA GROUP SANDSTONE (HELIKIAN)
- UNDIFFERENTIATED PRECAMBRIAN BASEMENT
- 200 ATHABASCA GROUP ISOPACH

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42

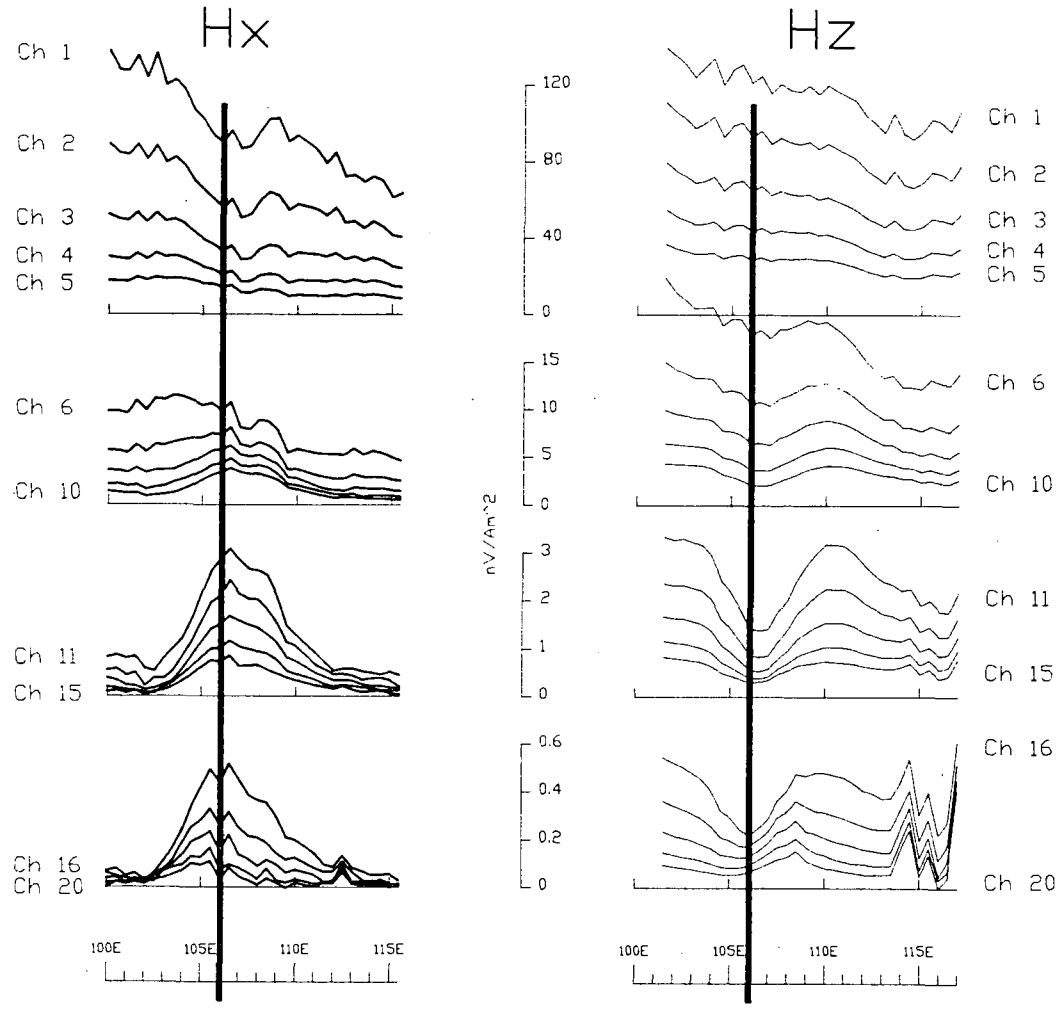
GENERAL GEOLOGY

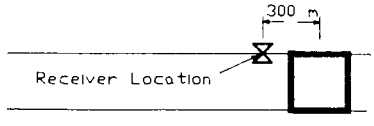
SCALE 1:500,000 FIGURE 3

HENRI-50


Tokyo
Big
Point
Channel
PERMIT 6888040008
(71-44)
45W
29W
L638N
632
B
632
A
55W
L632N
0
North
PERMIT 6888040007
(71-44)
95E
100E
120E
132E
L606N
600
B
600
A
L600N
140E
Keane
PERMIT 6887090002
(71-44)
PERMIT
6888040005
(71-44)
Henrietta
Lake
L504N
L503N
100E
MT02
110E
120E
L500N
?
MT01
73N
40E
LEGEND
MT02
DRILLHOLE LOCATION
MT02
1990 DRILLHOLE
MOVING LOOP EM-37 PROFILE
FIXED LOOP EM-37 PROFILE
LINECUTTING
EM CONDUCTOR
POSSIBLE TRACE OF
EM CONDUCTOR
0
1000
2000
3000m
Uranerz Exploration and Mining Limited
71-44 Maybelle River II
LOCATION OF ACTIVITIES
KEANE CREEK &
HENRIETTA LAKE AREAS
1990
Scale 1:50,000
04/90
Figure 4

LINE 500N



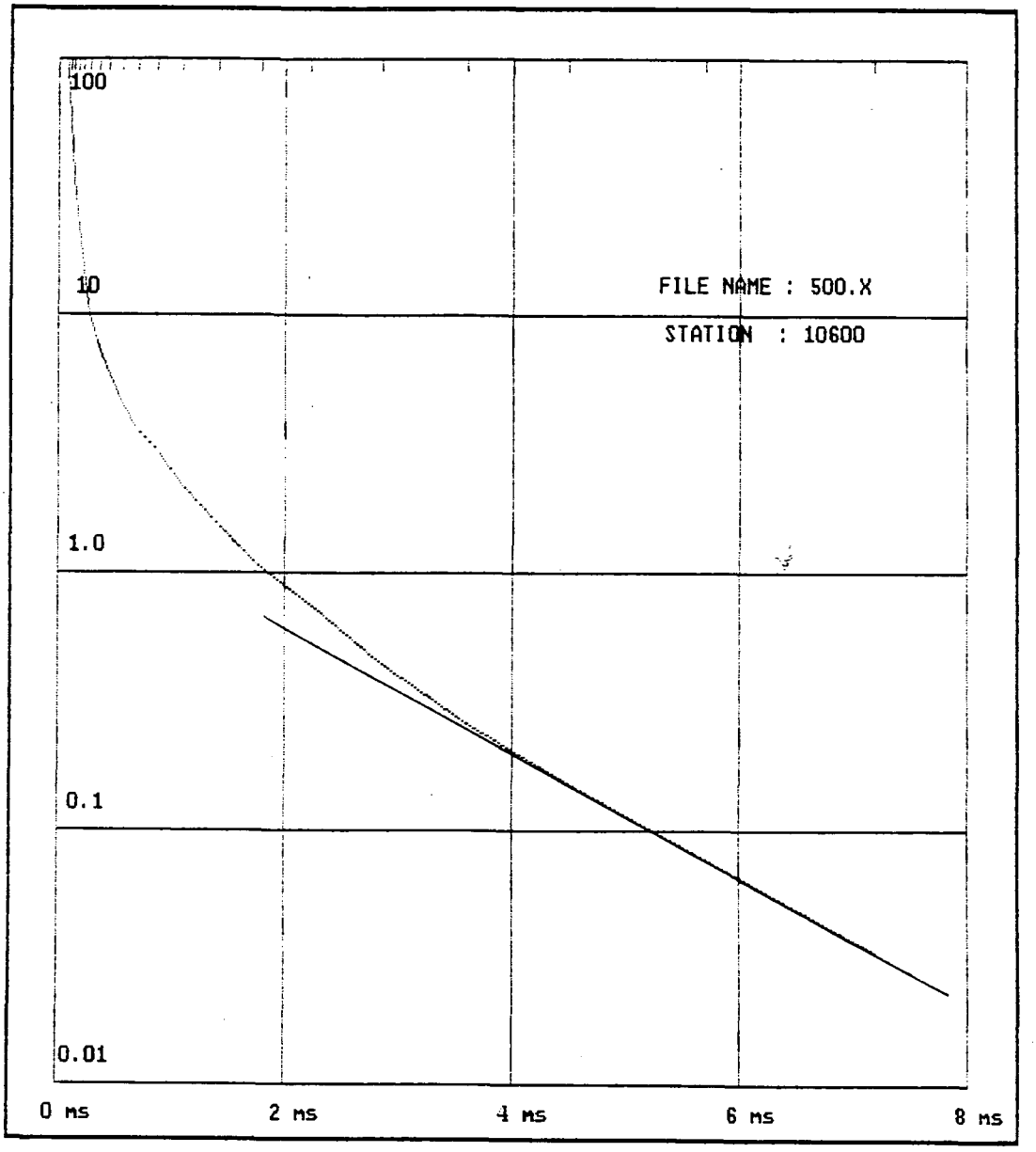


Transmitter Loop Size : 300 m x 300 m

Receiver - Transmitter Separation : 300 m

Interpreted Basement Conductor Location

Uranerz Exploration and Mining Limited
MAYBELLE RIVER II PROJECT 71-44
MOVING LOOP TEM SURVEY
HENRIETTA LAKE AREA
LINE 500N
GEO-PHYSI-CON FEB, 1990
Scale 1:40 000 PR 08/90 Figure 5



$\tau_{1/5}$ = 2.8msecs

σt = 20S

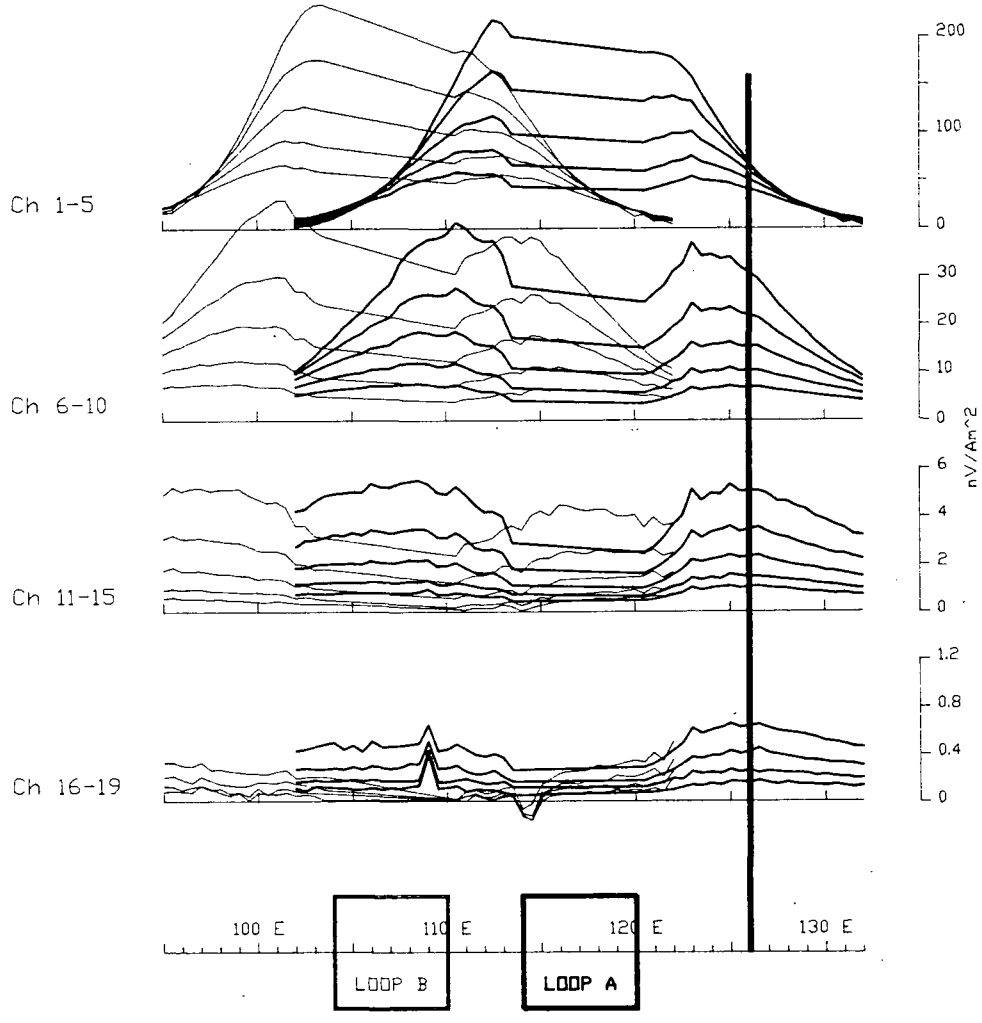
Uranerz Exploration and Mining Limited
Maybelle River II Project 71-44

TEM Anomaly Decay Curve
Line 500N, Station 10600E

Scale P.R. 08/90 Figure 6

LINE 600N

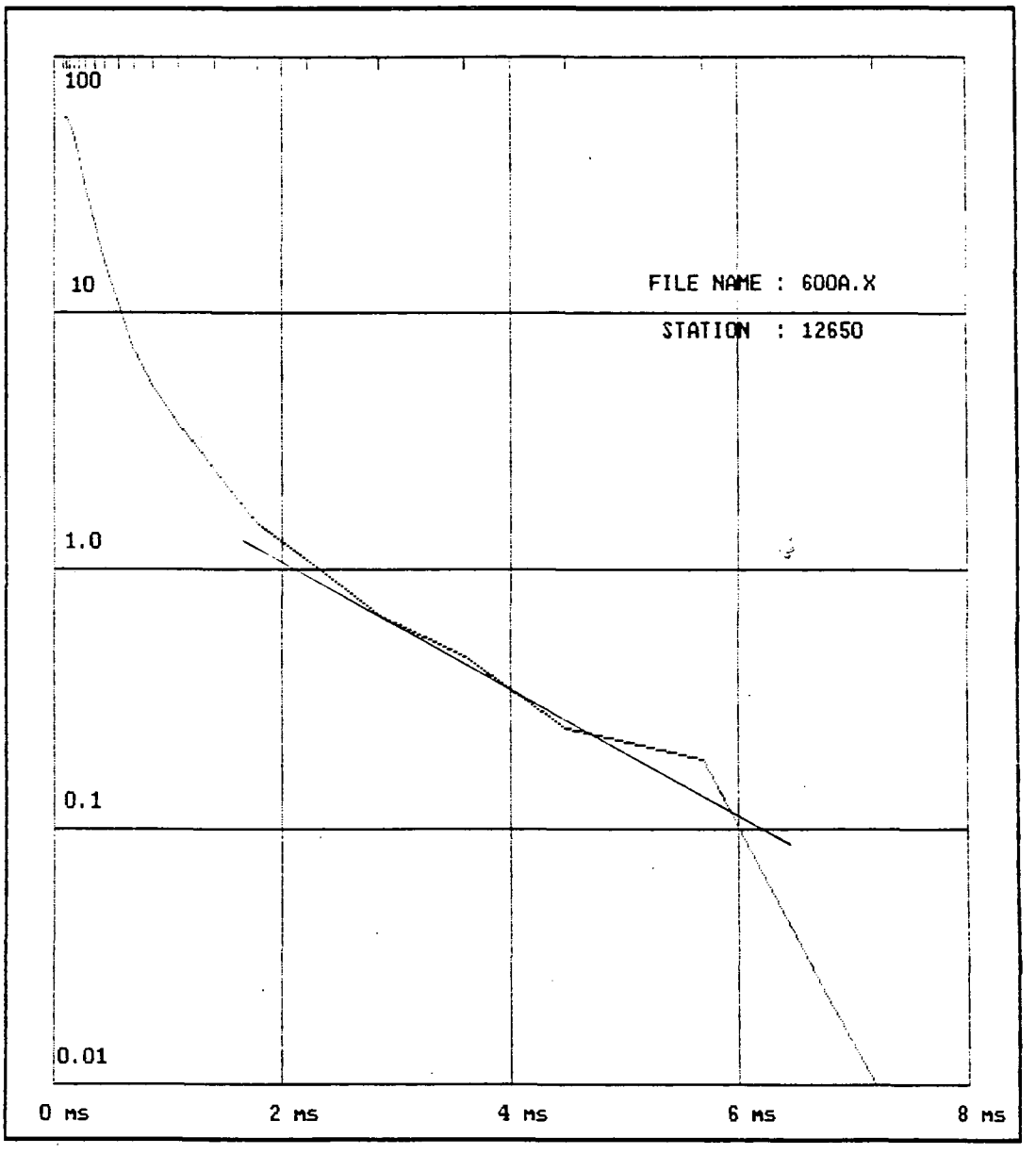
HORIZONTAL COMPONENT (Hx)



Interpreted Basement Conductor Location (Approx.)

Transmitter Loop Sizes : 600 m x 600 m

Uranerz Exploration and Mining Limited
MAYBELLE RIVER II PROJECT 71-44
FIXED LOOP TEM SURVEY
PERMIT 6888040007
LINE 600N
GEO-PHYSI-CON FEB, 1990
Scale 1: 40 000 PR 08/90 Figure 7



$T_{1/5}$ = 2.8msecs

σt = 10S

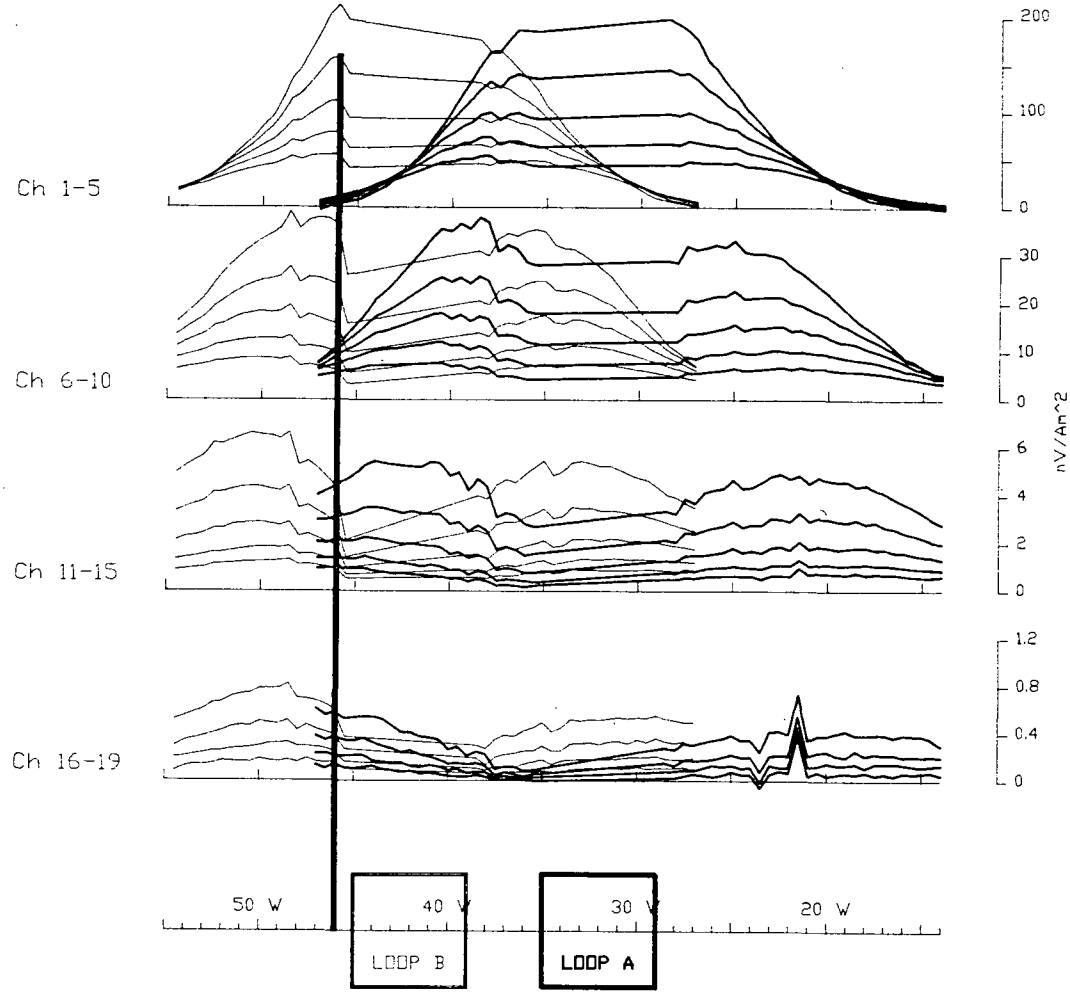
Uranerz Exploration and Mining Limited
Maybelle River II Project 71–44

TEM Anomaly Decay Curve
Line 600N, Station 12650E

Scale P.R. 08/90 Figure 8

LINE 632N

HORIZONTAL COMPONENT (Hx)



Interpreted Basement Conductor Location (Approx.)

Transmitter Loop Sizes : 600 m x 600 m

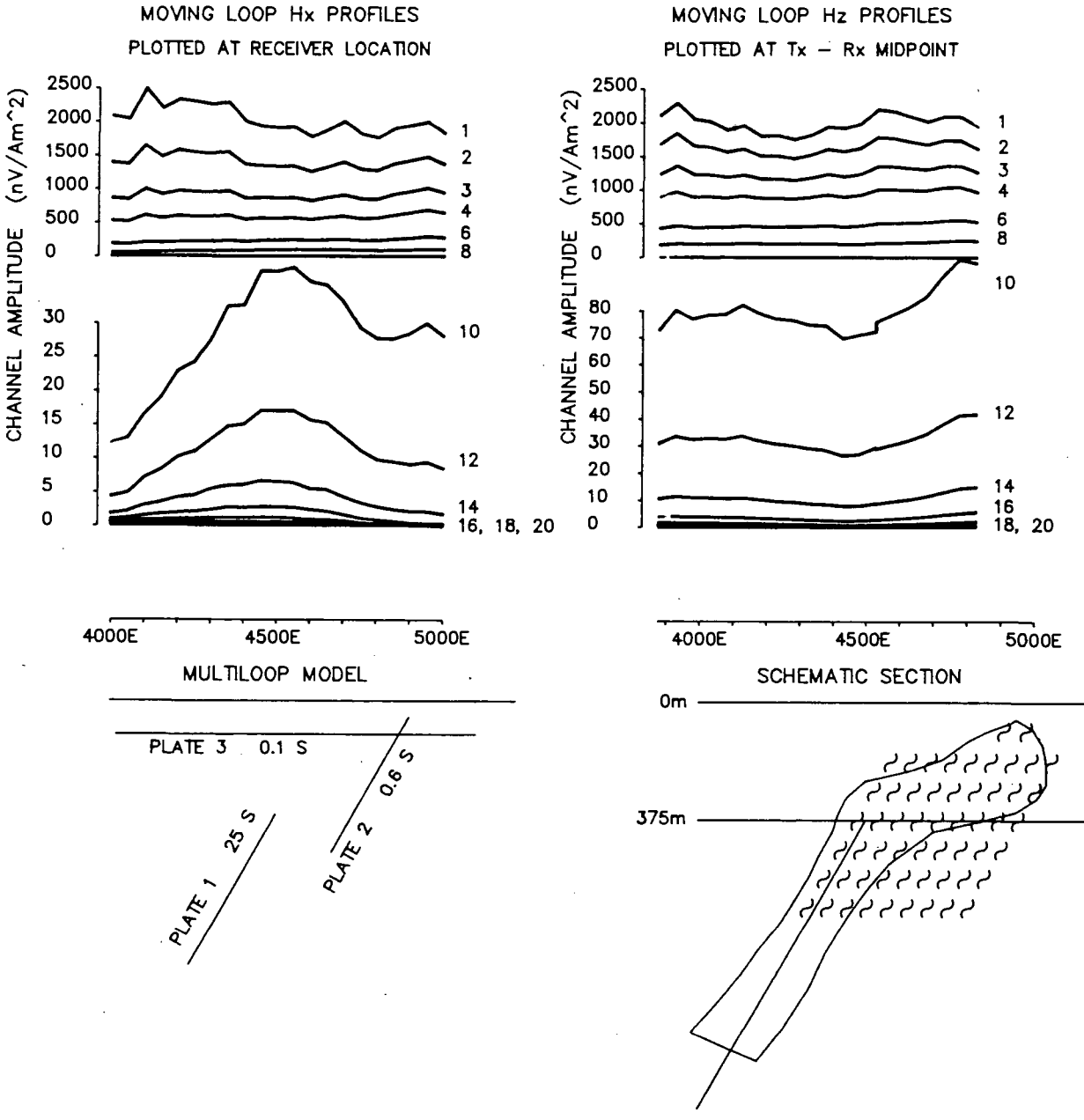
Uranerz Exploration and Mining Limited
MAYBELLE RIVER II PROJECT 71-44
FIXED LOOP TEM SURVEY
PERMIT 6888040008
LINE 632N
GEO-PHYSI-CON FEB, 1990
Scale 1:40 000 PR 08/90 Figure 9

Moving Loop Profile :
Receiver Locations

Uranerz Exploration and Mining Limited
Maybelle II Project 71–44

1989 TEM SURVEY
By JVX Ltd.

Scale 1:10000 PR 03/89 Figure 10



Uranerz Exploration and Mining Limited
Maybelle River 11 Project 71–44
MOVING LOOP EM–37 SURVEY
AND INTERPRETATION
LINE 70N
Keane Creek Area
Scale 1:20,000 P.R. 05/89 Figure 11

F–44TEM

PERMIT 6888040001

PERMIT 6886050005

DRAGON LAKE AREA

Dragon Lake

Jas Lake

River

Net Lake

L234N
L36N
150E
140E
130E
150E
212N
140E
200N
120E
110E
320N
300N
200E
210E
220E
340N
320N
MR75
310N
300N
160N
MR73
140N
120N
100N
180E
80N
180N
160N

CORE STORAGE AREA

PERMIT 6886050004

PERMIT 6886050003

PERMIT 6884120001

North

LEGEND

- LINECUTTING
- RECHAINING
- MOVING LOOP EM-37 PROFILE
- DRILLHOLE

0 1000 2000 3000m

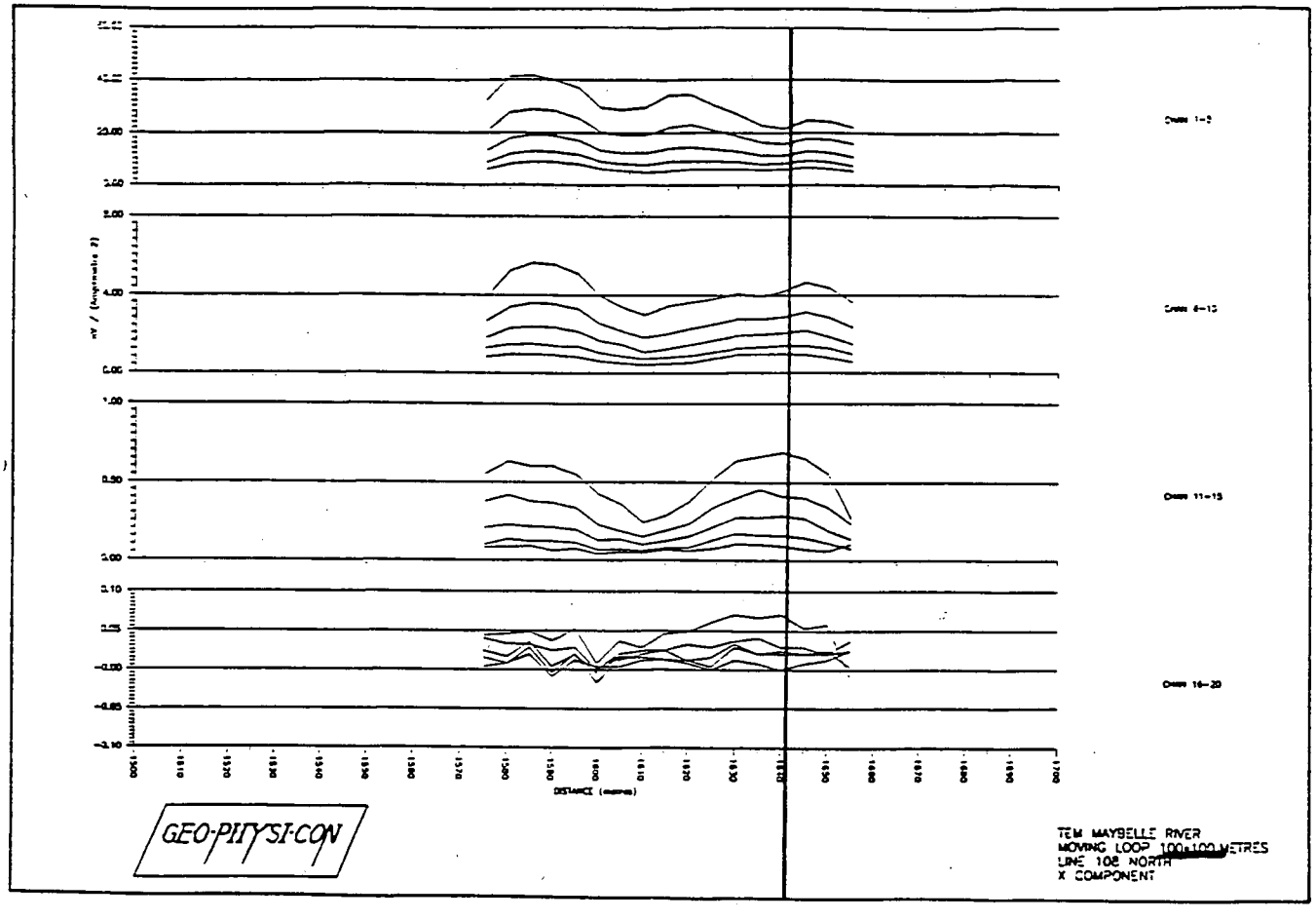
Uranerz Exploration and Mining Limited
Maybelle River Project 71-42

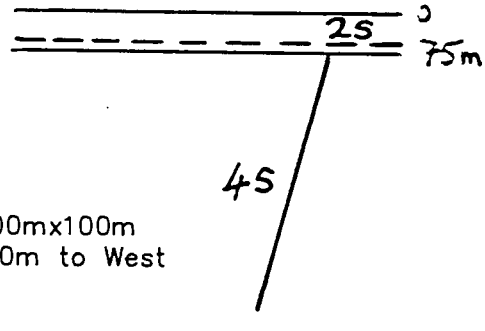
Jas Lake Area
Activities, January 1990

Scale 1:50,000 Figure 12

F0942-
JAS-50

LINE 108N

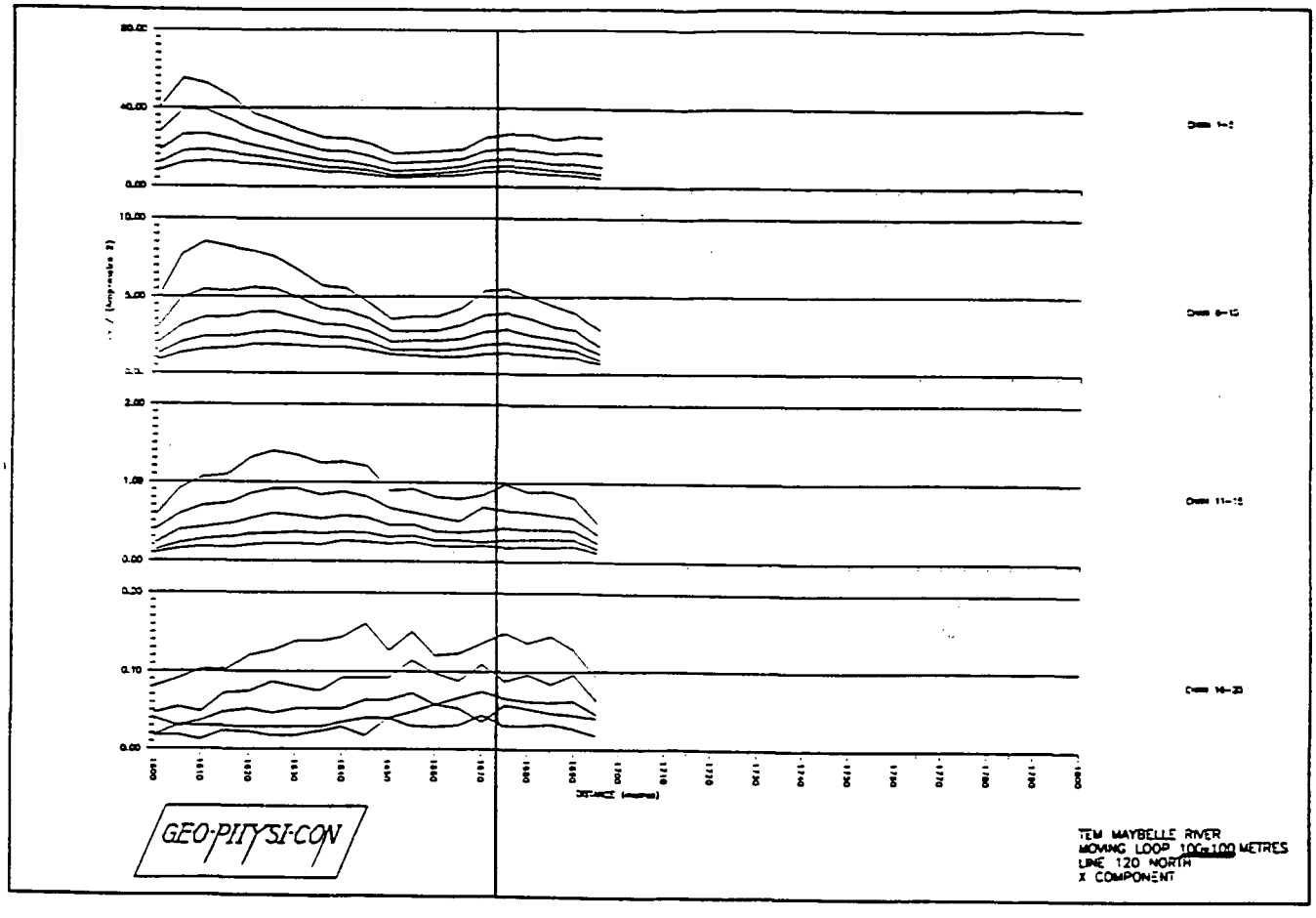


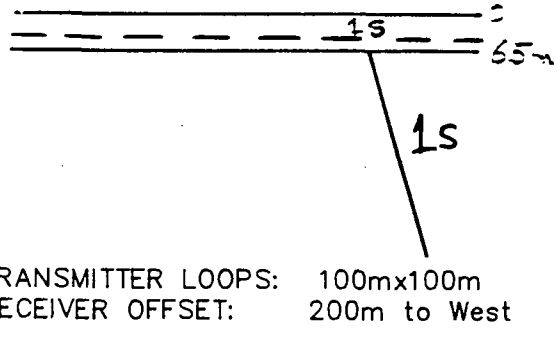


TRANSMITTER LOOPS: 100mx100m
RECEIVER OFFSET: 200m to West

Uranerz Exploration and Mining Limited
Maybelle River Project 71–42
LINE 108N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO–PHYSI–CON, JAN/FEB, 1990)
Scale 07/90 Figure 13

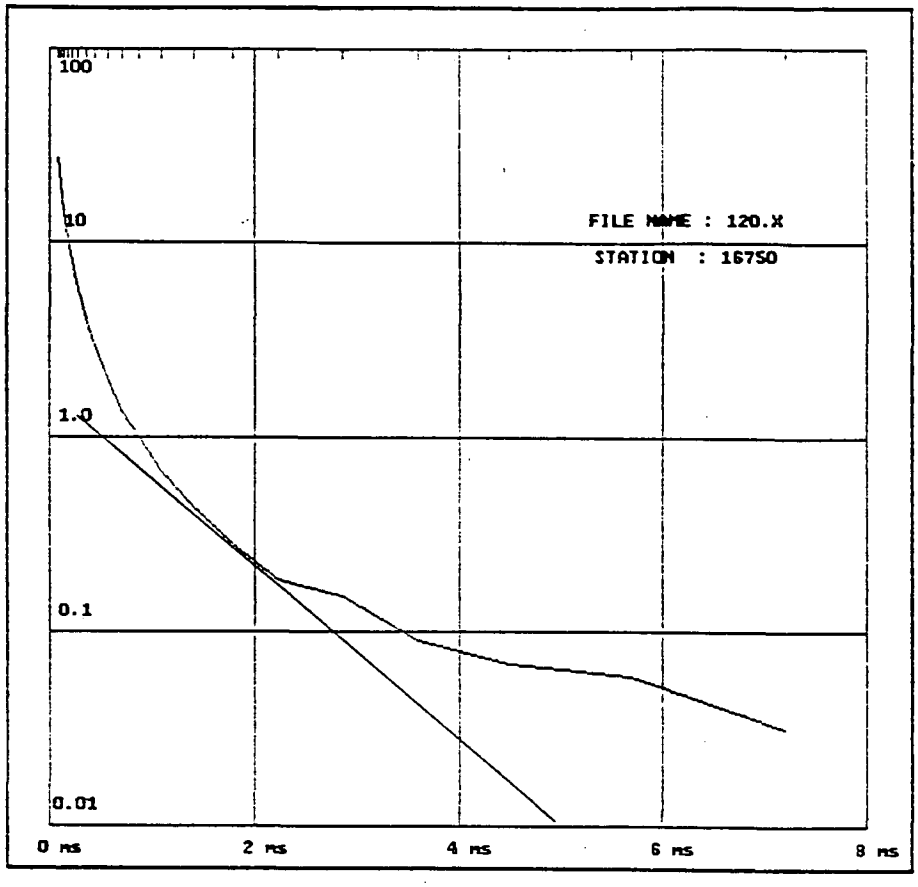
LINE 120N





TRANSMITTER LOOPS: 100mx100m
RECEIVER OFFSET: 200m to West

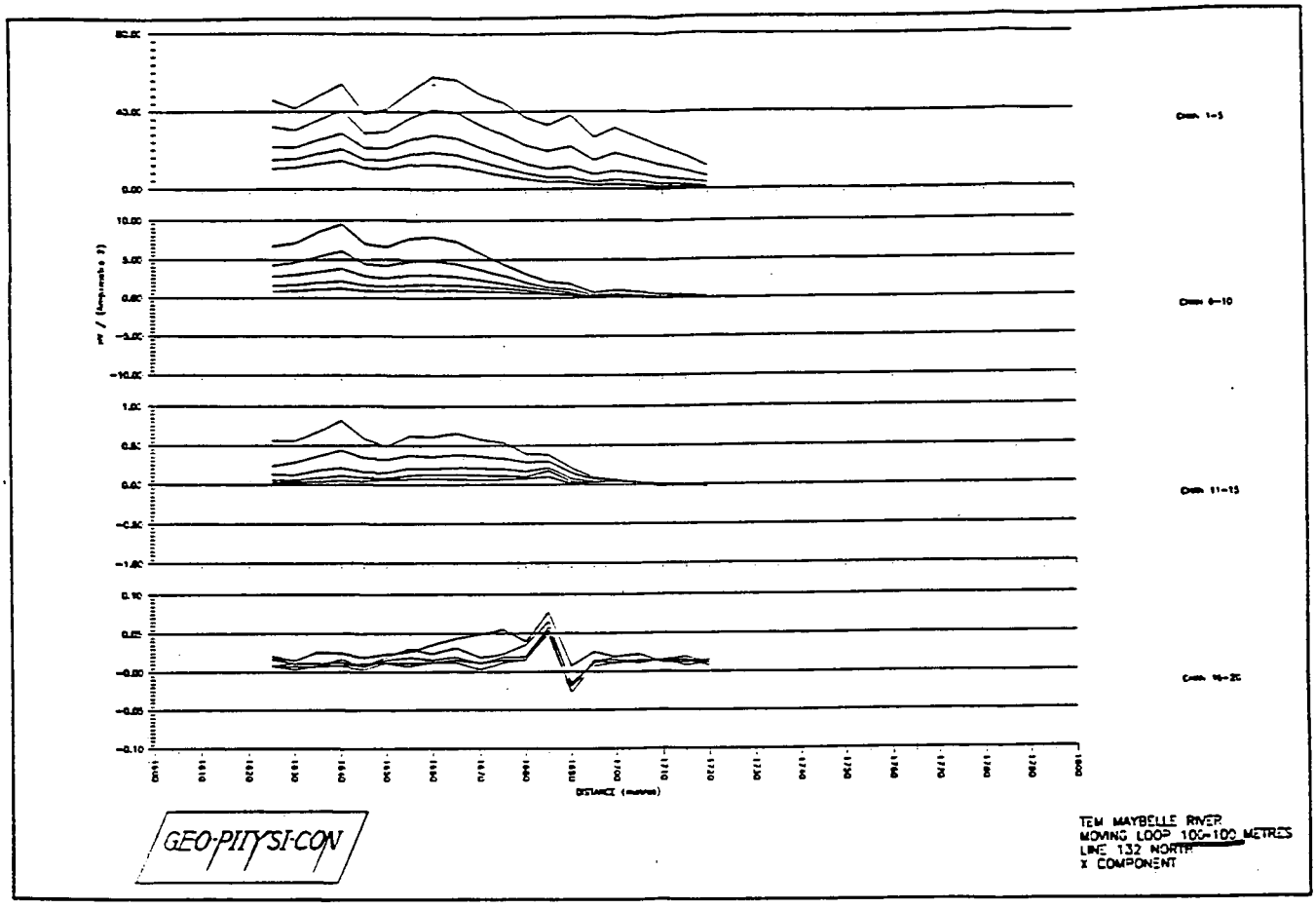
Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LINE 120N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO-PHYSI-CON, JAN/FEB, 1990)
Scale 07/90 Figure 14



$\sigma t = 1S$

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
TEM ANOMALY DECAY CURVE
LINE 120N
STATION 16750E
X COMPONENT
Scale 07/90 Figure 15

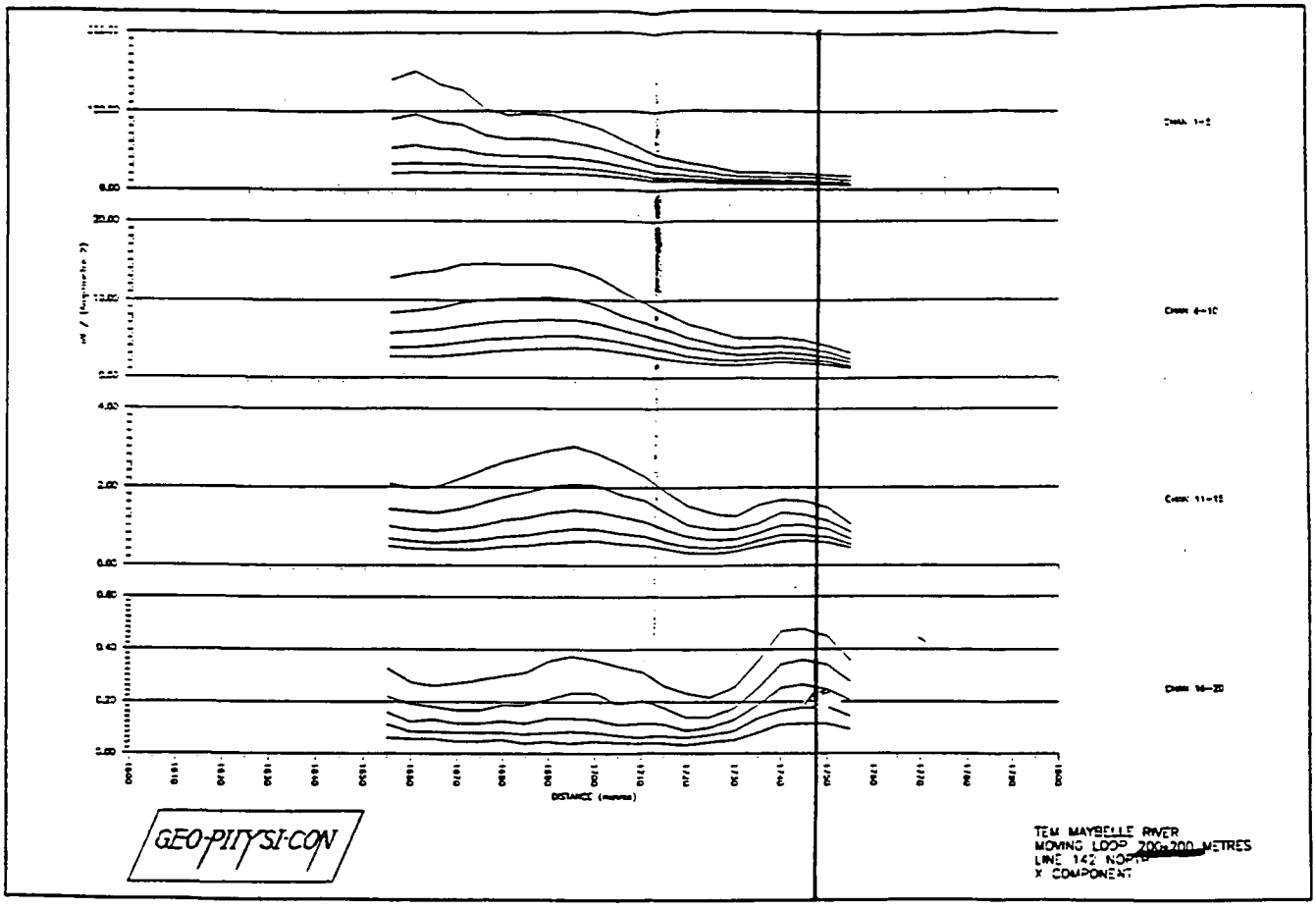
LINE 132N

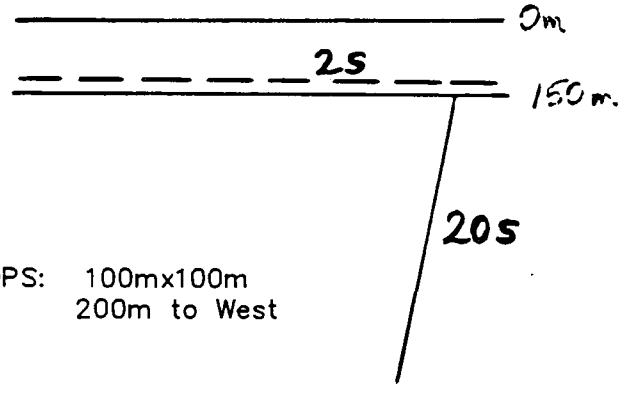


TRANSMITTER LOOPS: 100mx100m
RECEIVER OFFSET: 200m to West

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LINE 132N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO-PHYSI-CON, JAN/FEB, 1990)
Scale 07/90 Figure 16

LINE 142N

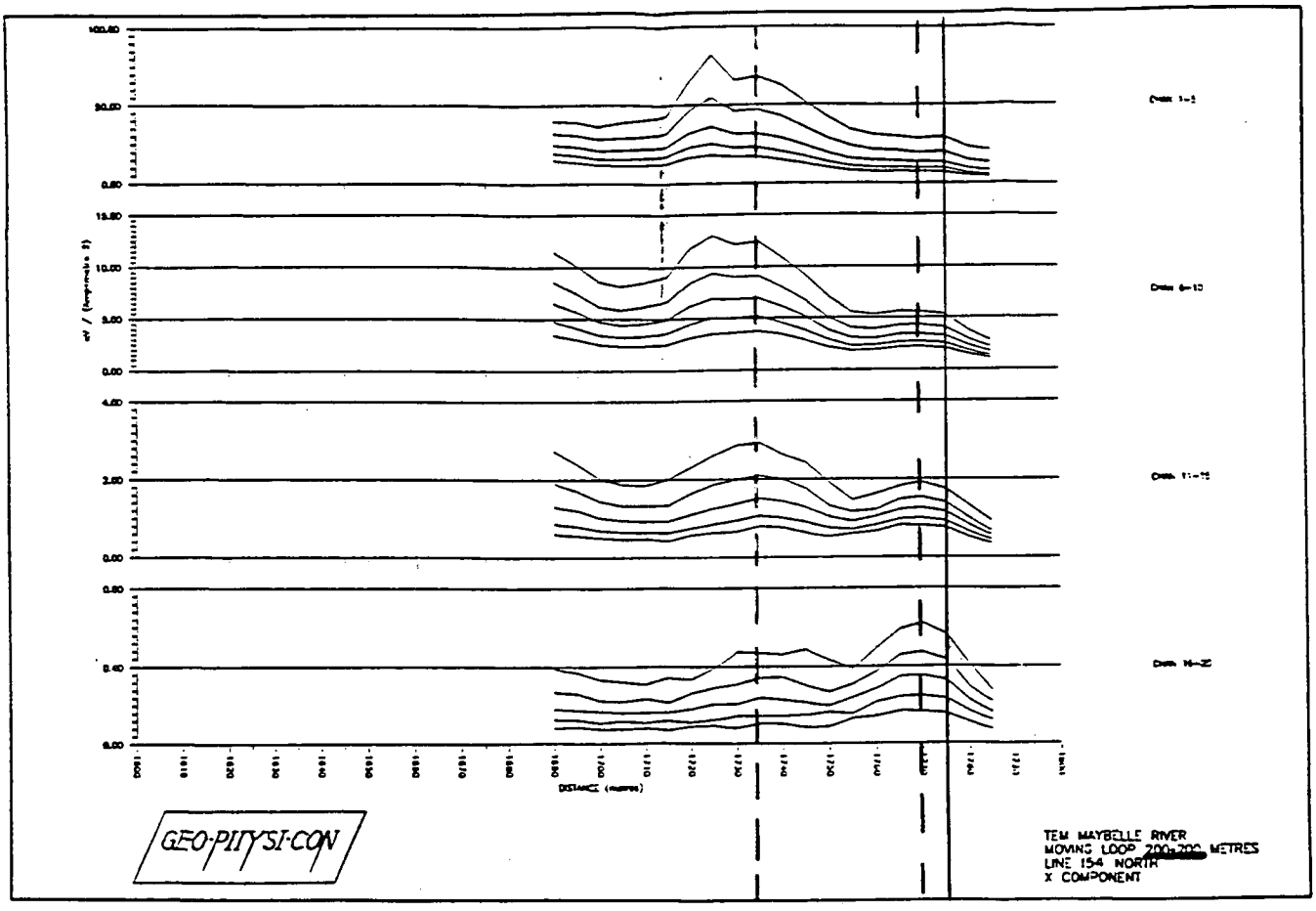


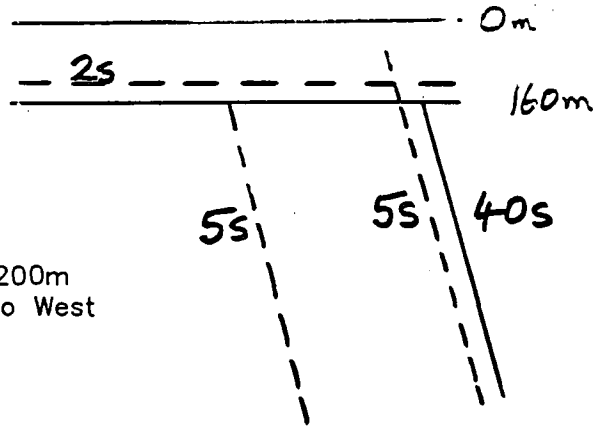


TRANSMITTER LOOPS: 100mx100m
RECEIVER OFFSET: 200m to West

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LINE 142N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO-PHYSI-CON, JAN/FEB, 1990)
Scale 07/90 Figure 17

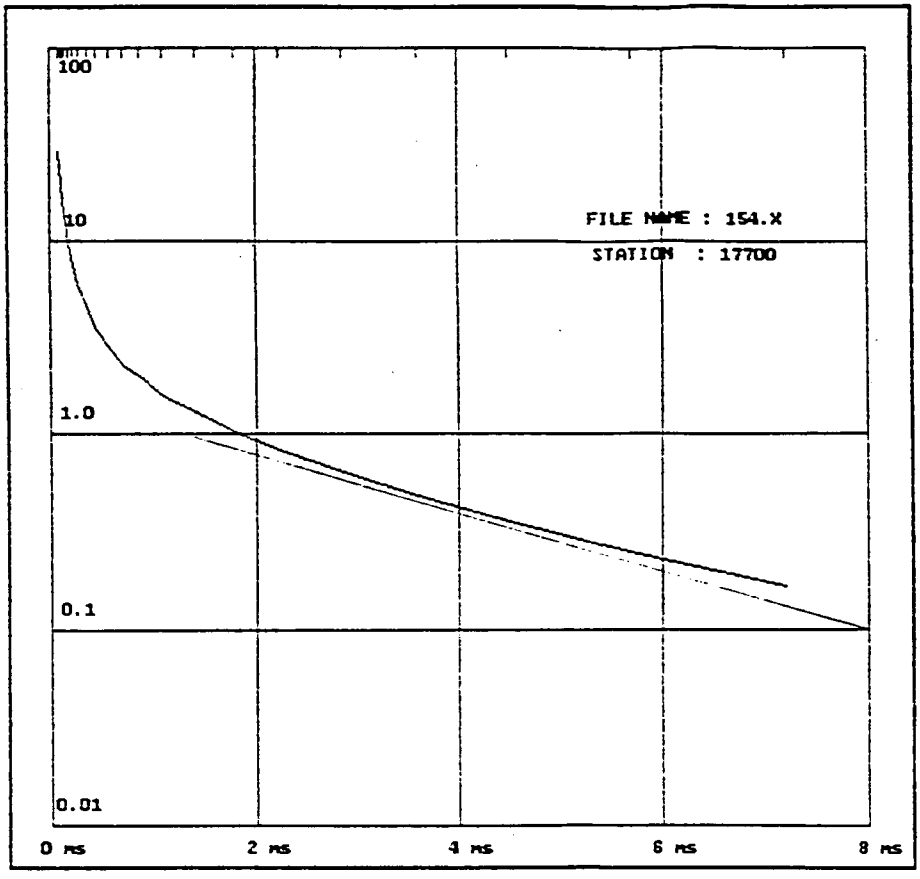
LINE 154N





TRANSMITTER LOOPS: 200mx200m
RECEIVER OFFSET 300m to West

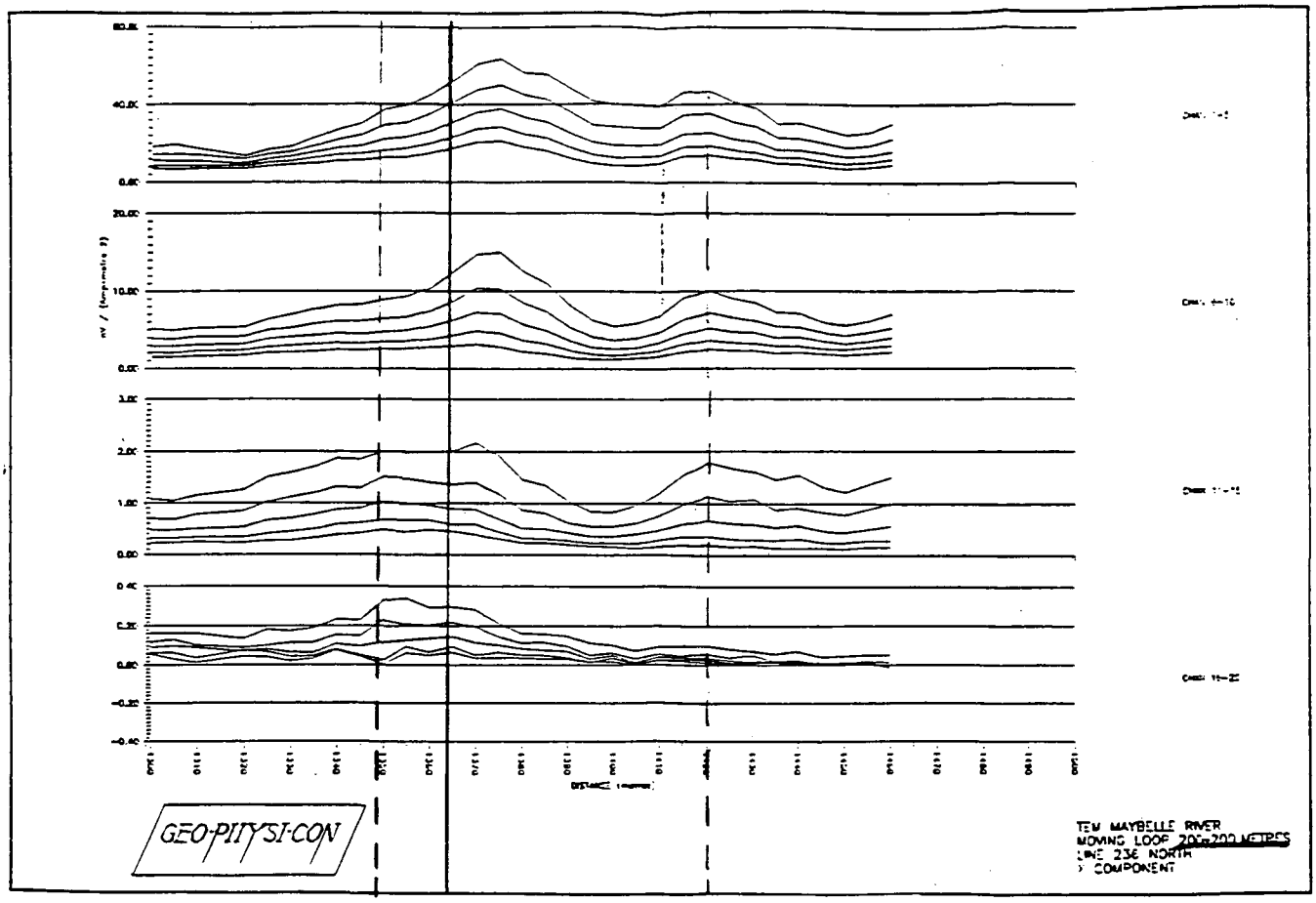
Uranerz Exploration and Mining Limited
Maybelle River Project 71–42
LINE 154N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO–PHYSI–CON, JAN/FEB, 1990)
Scale 07/90 Figure 18

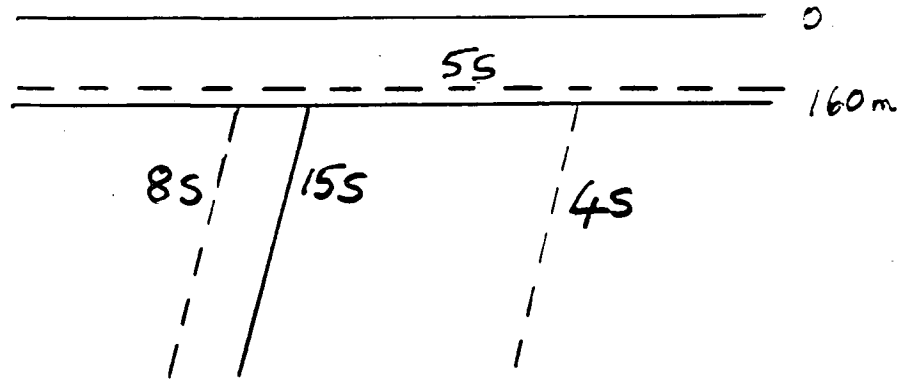


$\sigma t = 40S$

Uranerz Exploration and Mining Limited
Maybelle River Project 71–42
TEM ANOMALY DECAY CURVE
LINE 154N
STATION 17700E
X COMPONENT
Scale 07/90 Figure 19

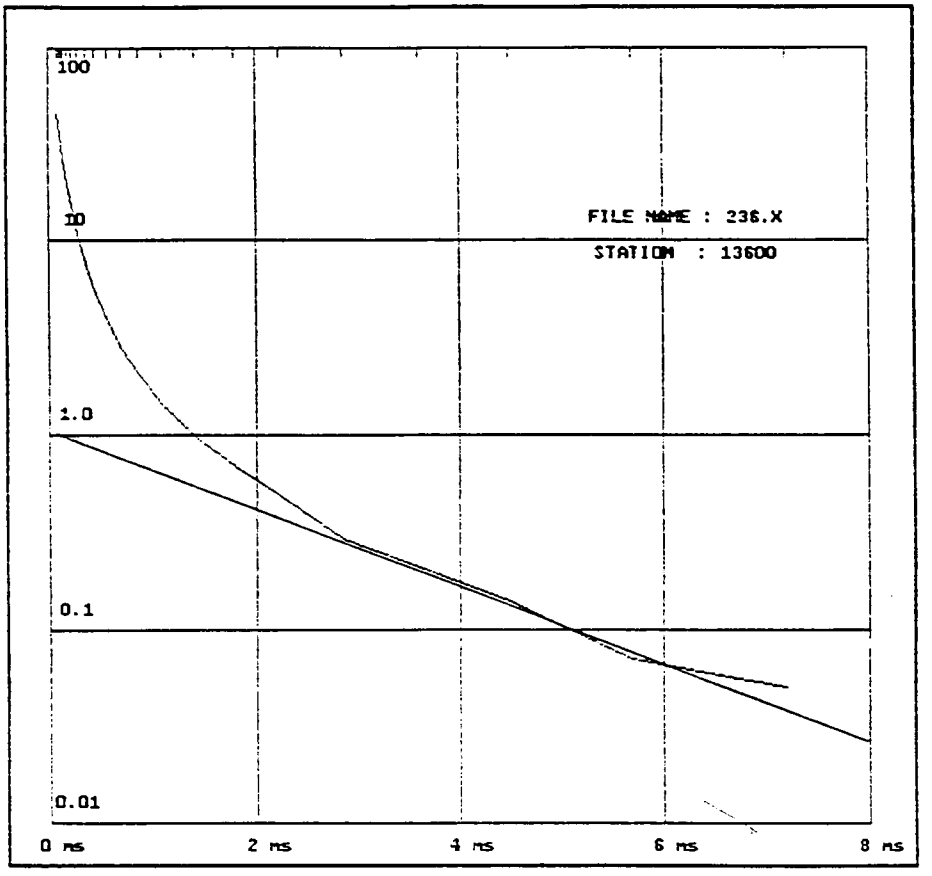
LINE 236





TRANSMITTER LOOPS: 200mx 200m
RECEIVER OFFSET: 300m to West

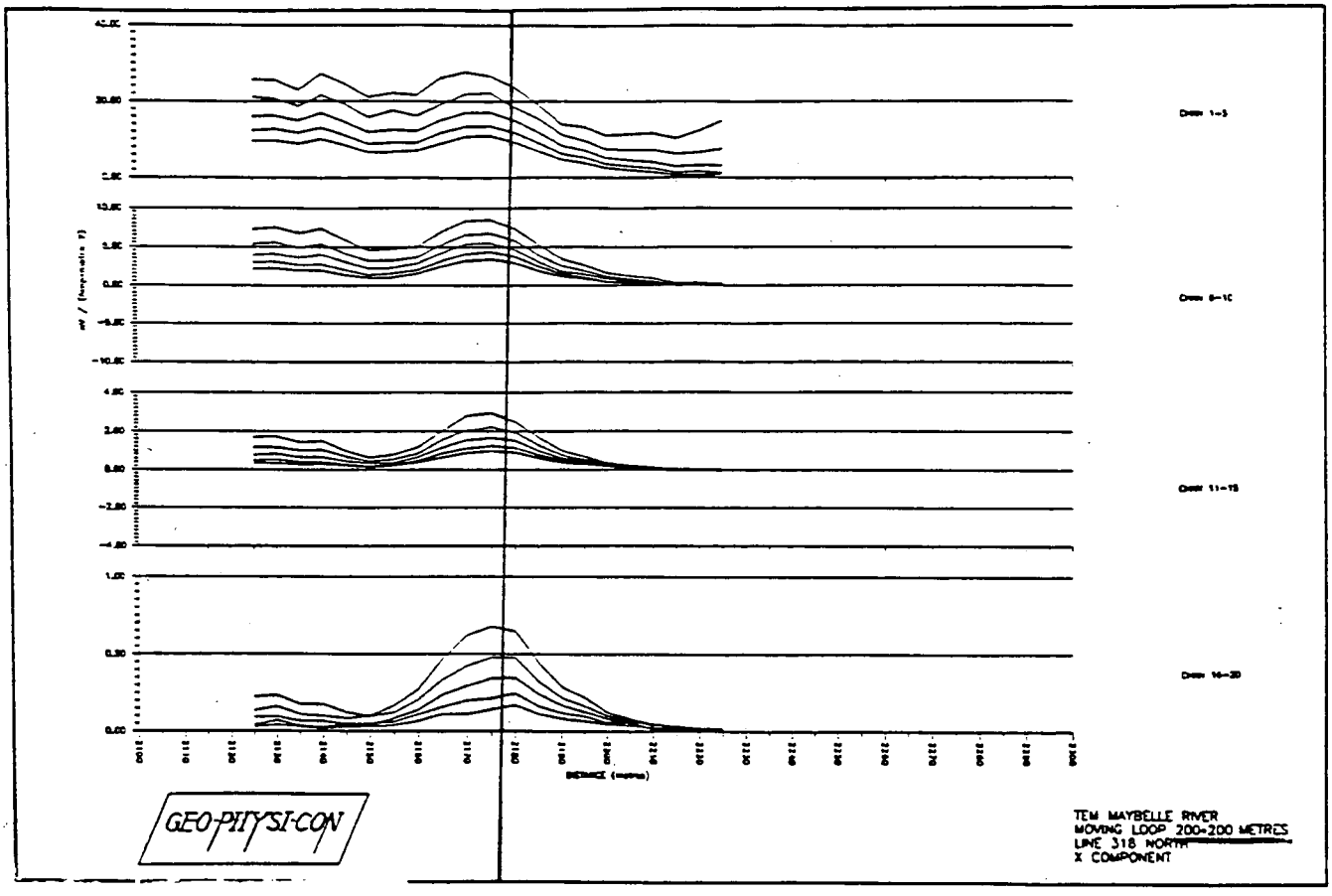
Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LINE 236N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO-PHYSI-CON, JAN/FEB, 1990)
Scale 07/90 Figure 20

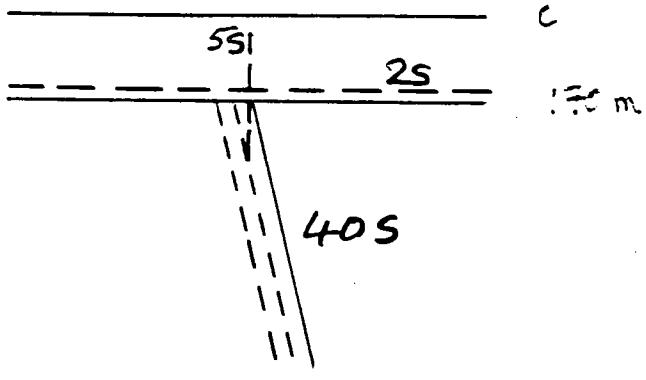


σt = 15S

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
TEM ANOMALY DECAY CURVE
LINE 236N
STATION 13600E
X COMPONENT
Scale 07/90 Figure 21

LINE 318N

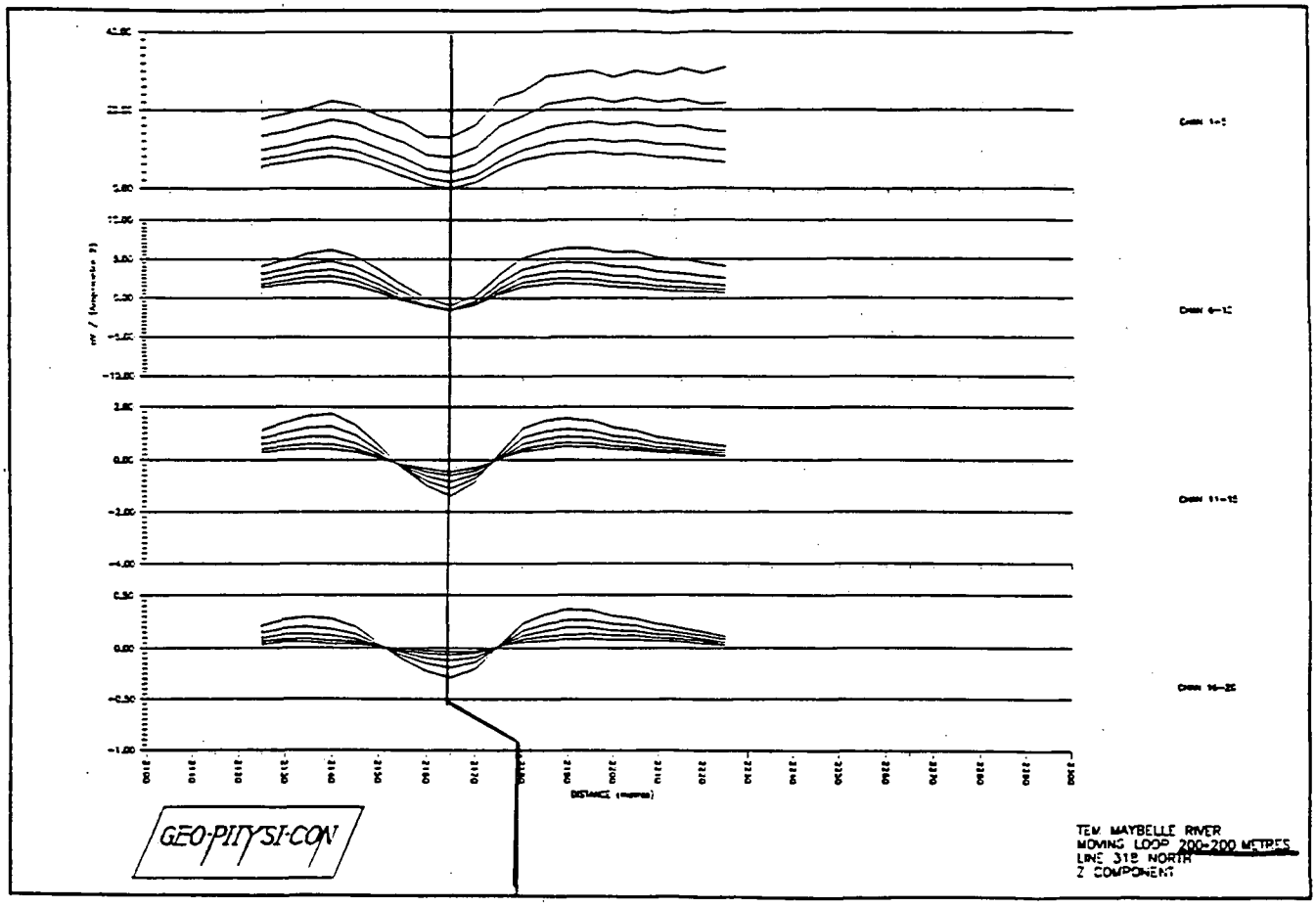




TRANSMITTER LOOPS: 200mx200m
RECEIVER OFFSET: 300m to West

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LINE 318N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO-PHYSI-CON, JAN/FEB, 1990)
Scale 07/90 Figure 22

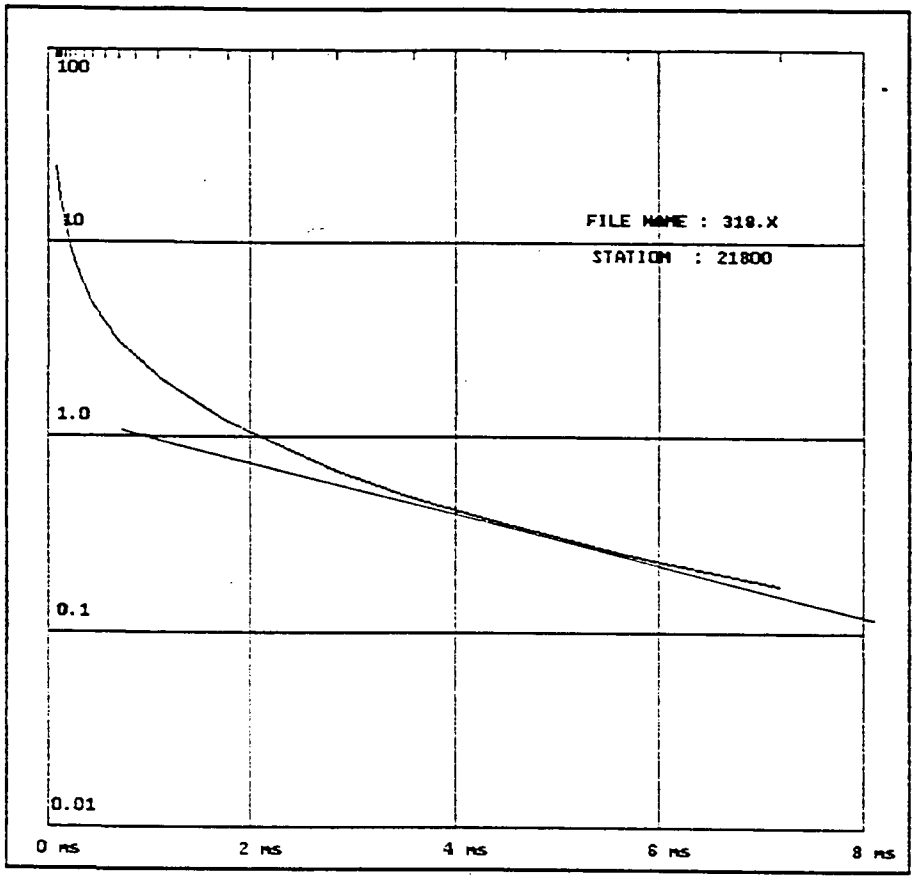
LINE 318N



TRANSMITTER LOOPS: 200mx200m
RECEIVER OFFSET 300m to West

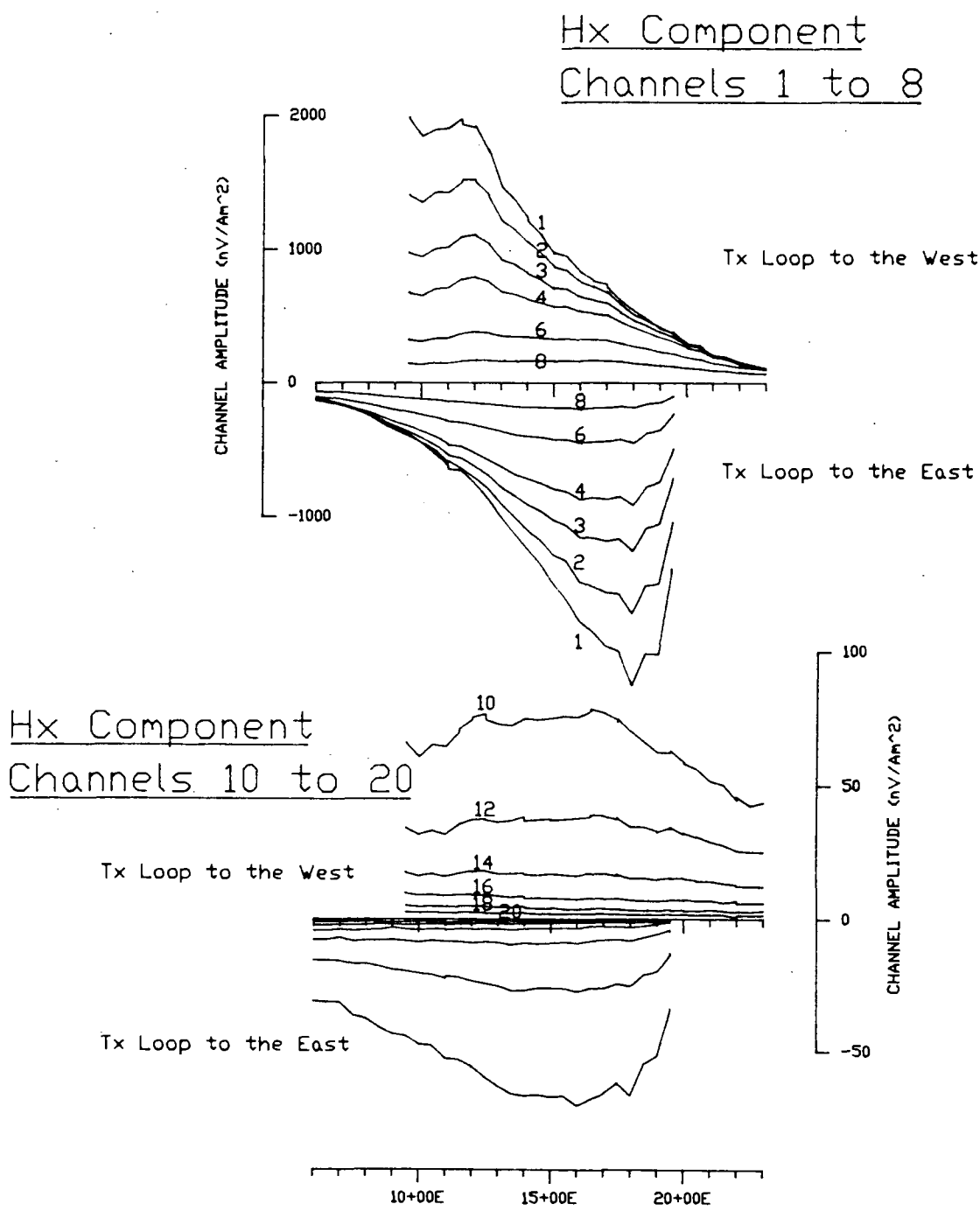
Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LINE 318N
MOVING LOOP TEM PROFILE
VERTICAL (Z) COMPONENT
(GEO-PHYSICON, JAN/FEB, 1990)
Scale 07/90 Figure 23

42-358



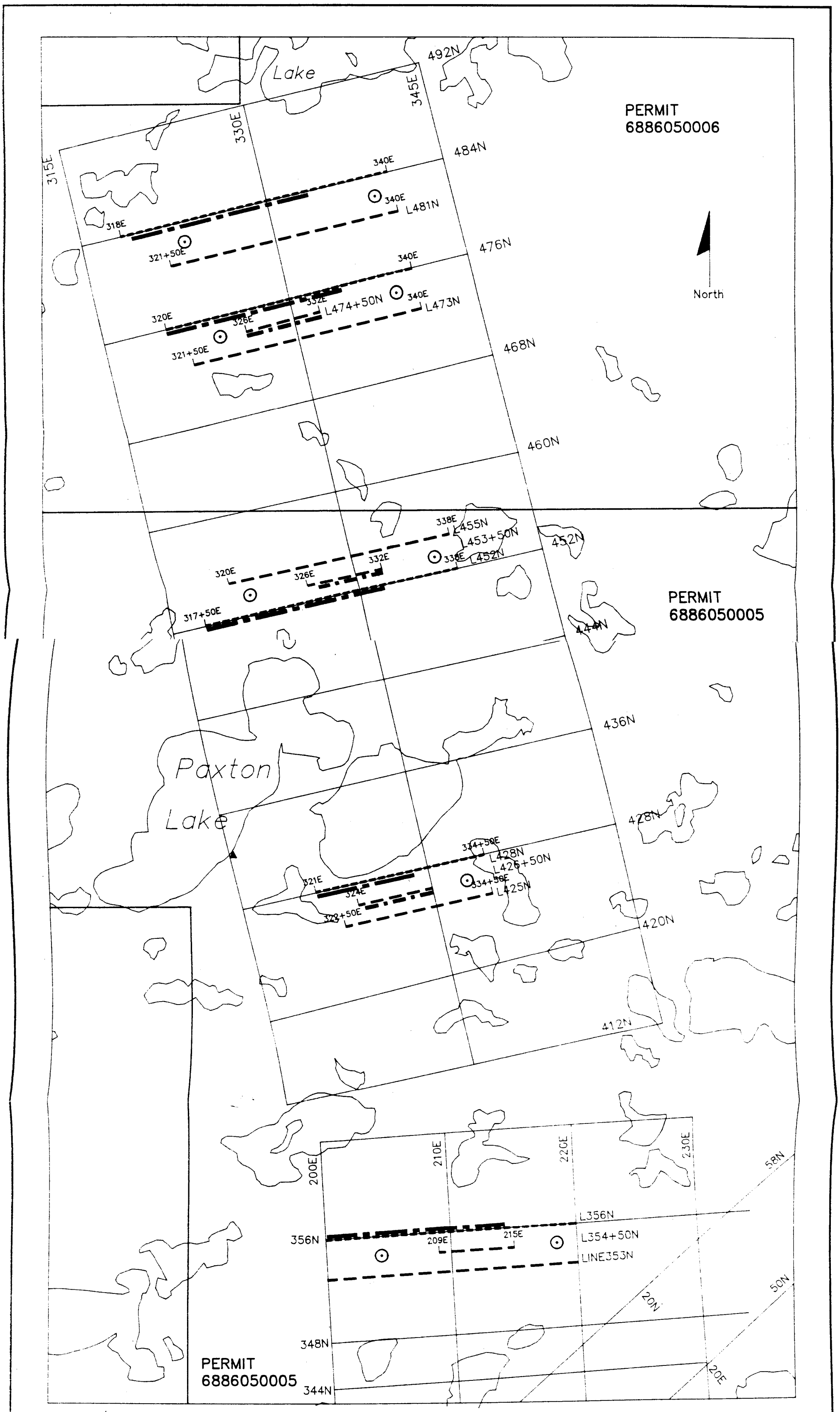
$\sigma t = 40S$

Uranerz Exploration and Mining Limited
Maybelle River Project 71–42
TEM ANOMALY DECAY CURVE
LINE 318N
STATION 21800E
X COMPONENT
Scale 07/90 Figure 24



Transmitter Loop Sizes : 600 m x 800 m

Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
EM-37 FIXED LOOP SURVEY
LINE 50N
Hx COMPONENT DATA
Survey by JVX Inc., 1989
Scale 1:25000 PR 05/89 Figure 25



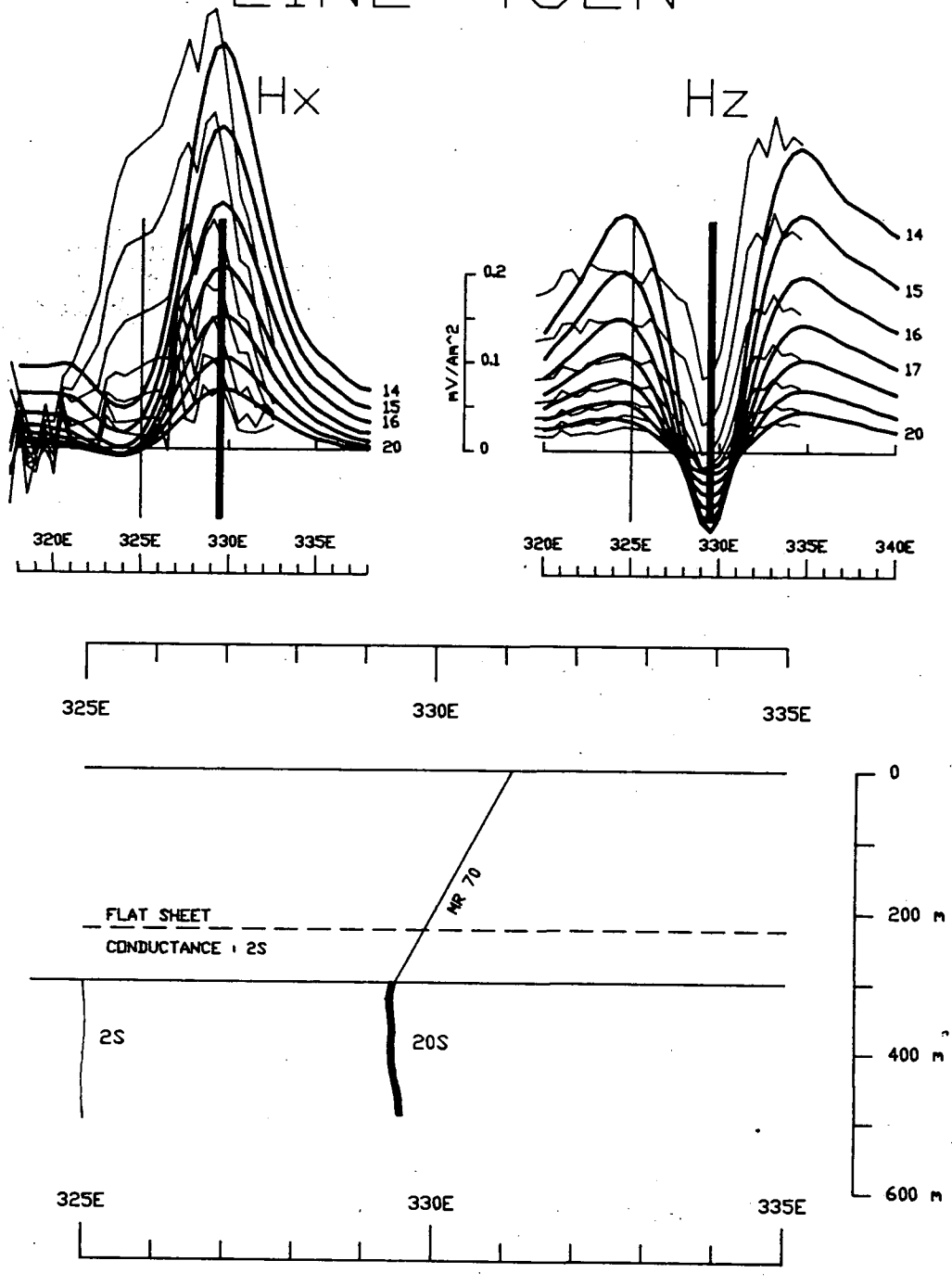
LEGEND

- LINECUTTING
- RECHAINING
- MOVING LOOP TEM PROFILE: 400m Rx–Tx SEPARATION
- MOVING LOOP TEM PROFILE: Rx AT CENTRE OF TRANSMITTER LOOP
- CENTRE LOOP SOUNDING

1000m

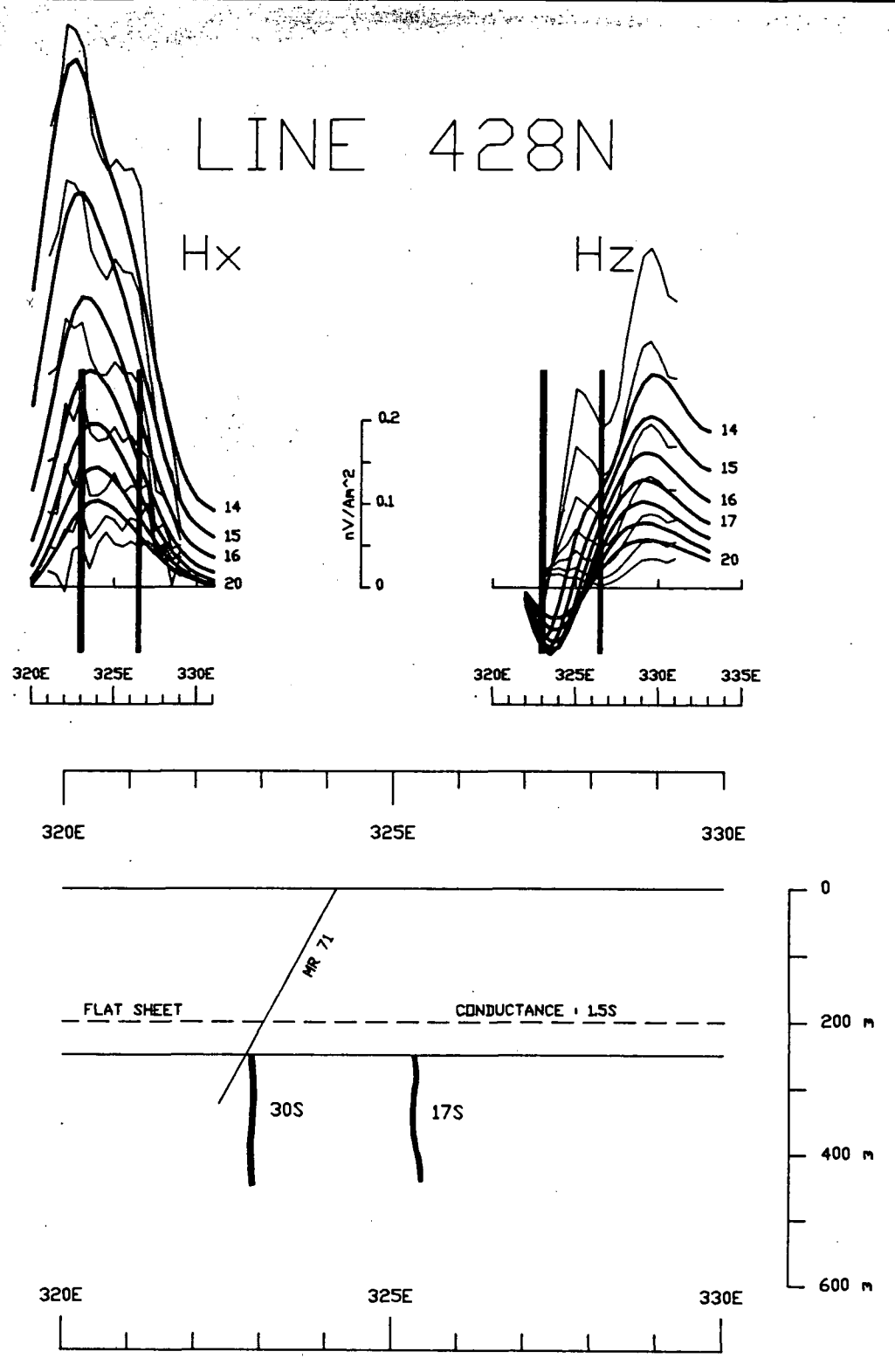
Uranerz Exploration and Mining Limited
Maybelle River Project 71–42
MOVING LOOP TEM SURVEY
PAXTON LAKE AREA
GEO–PHYSI–CON CO. LTD.
JUNE, 1989
Scale 1:25,000 PR 06/89 Figure 26

LINE 452N



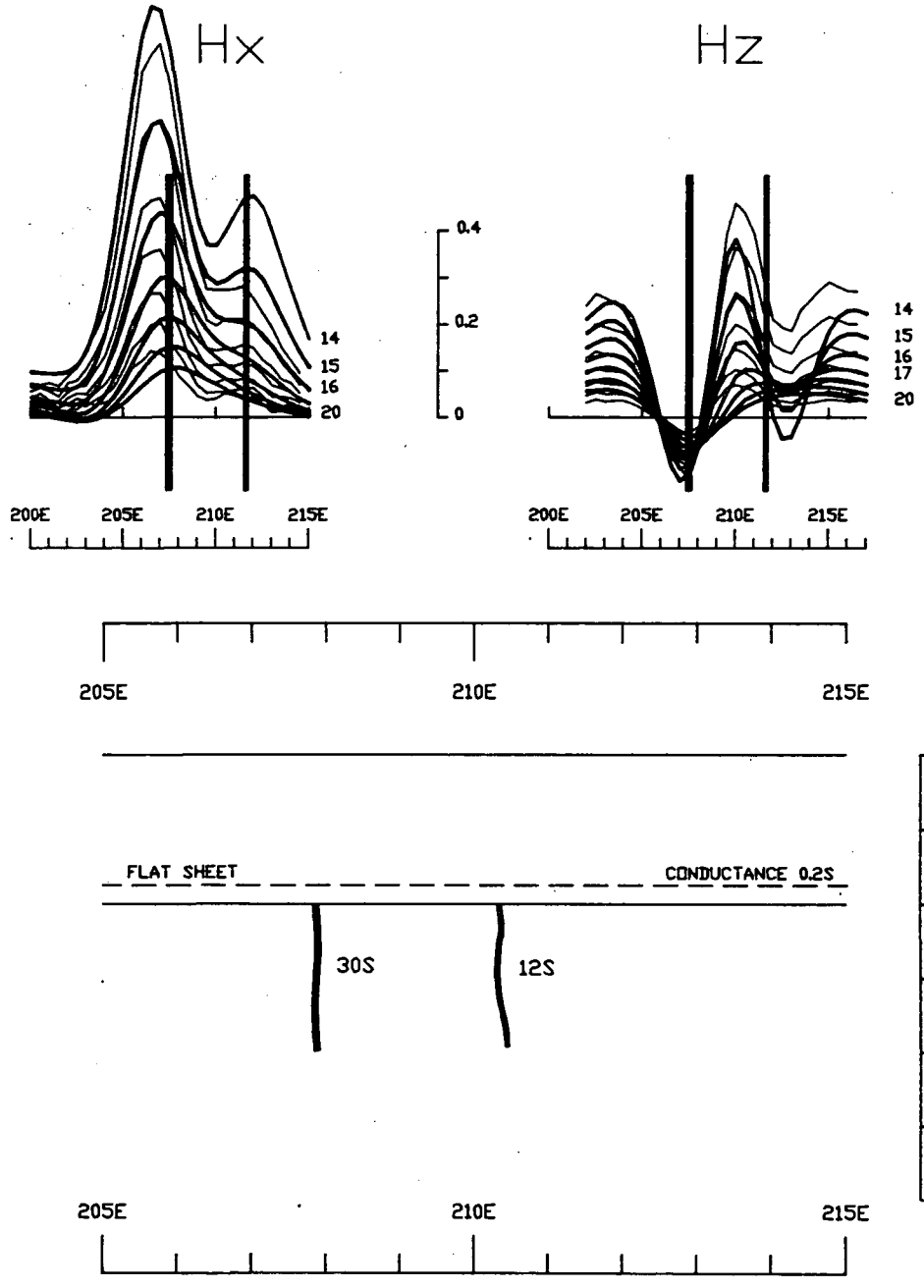
Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
MOVING LOOP TEM SURVEY
MULTILOOP MODEL
LINE 452N
JUNE '89
PR 11/89 Figure 27

42-320



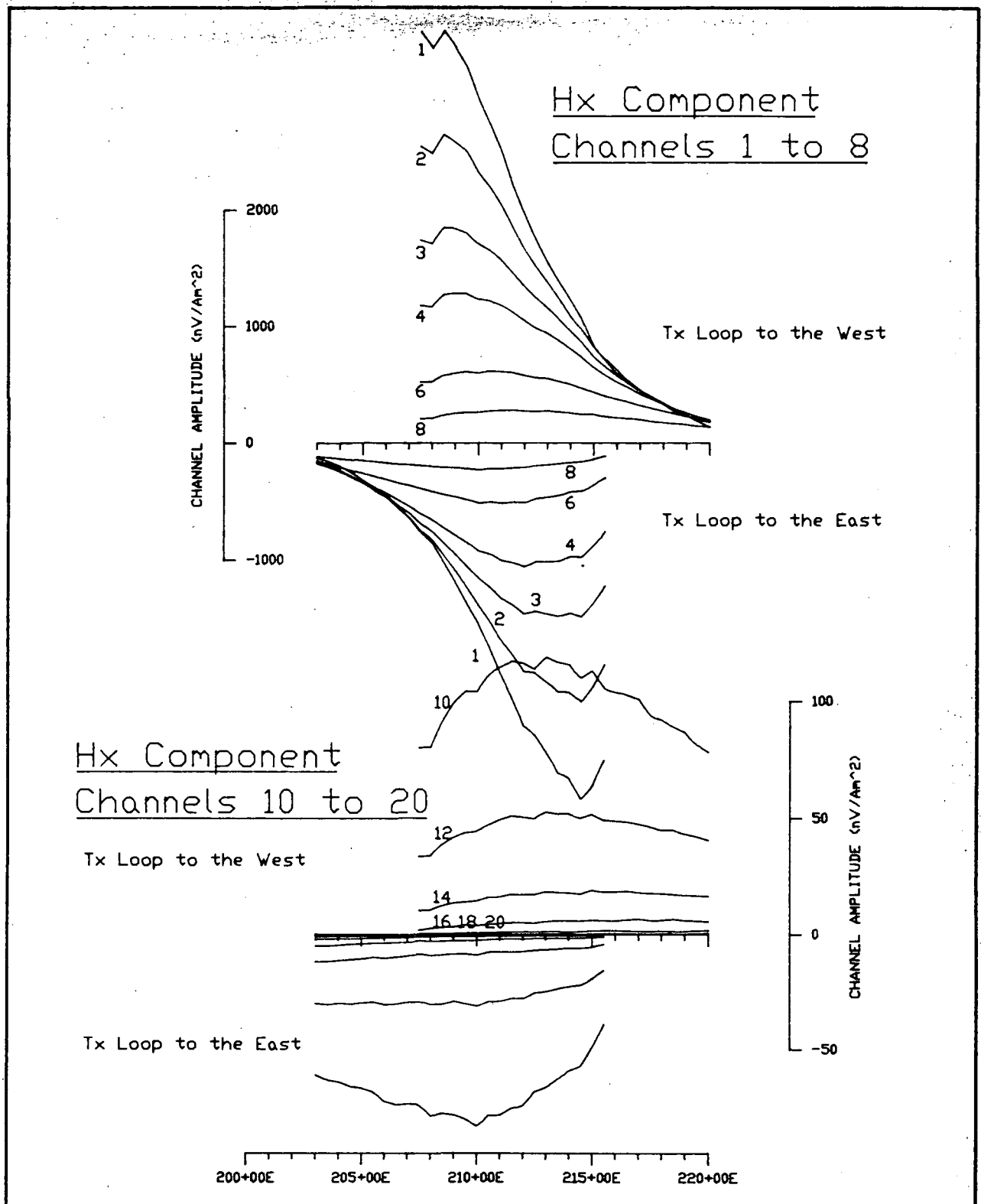
Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
MOVING LOOP TEM SURVEY
MULTILOOP MODEL
LINE 428N
JUNE '89
PR 11/89 Figure 28

LINE 356N



Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
MOVING LOOP TEM SURVEY
MULTILOOP MODEL
LINE 356N
JUNE '89
PR 11/89 Figure 29

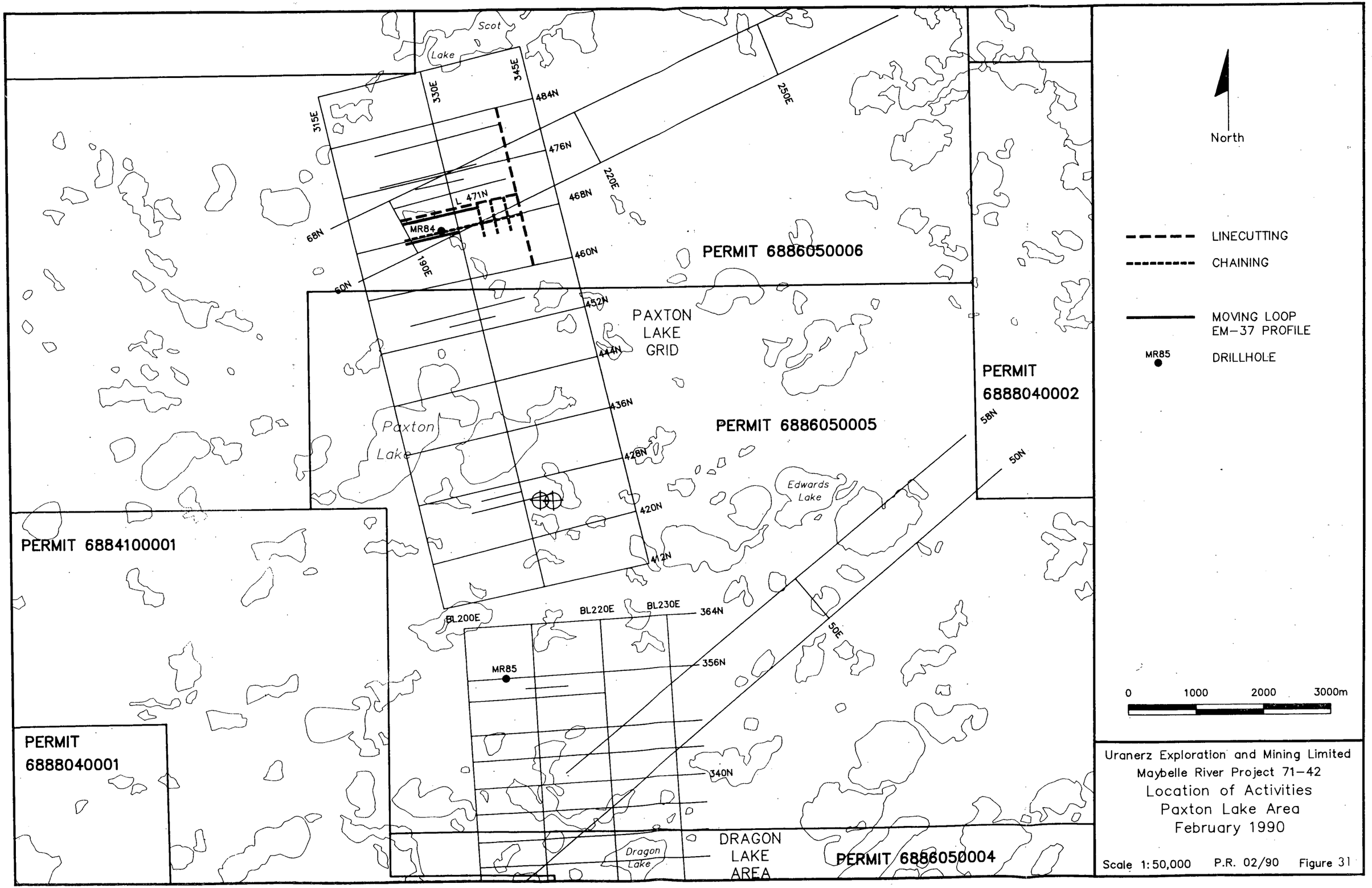
47-316



Transmitter Loop Sizes : 600 m x 600 m

Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
EM-37 FIXED LOOP SURVEY
LINE 68N
Hx COMPONENT DATA
Survey by JVX Inc., 1989
Scale 1:25000 PR 05/89 Figure 30

42-502

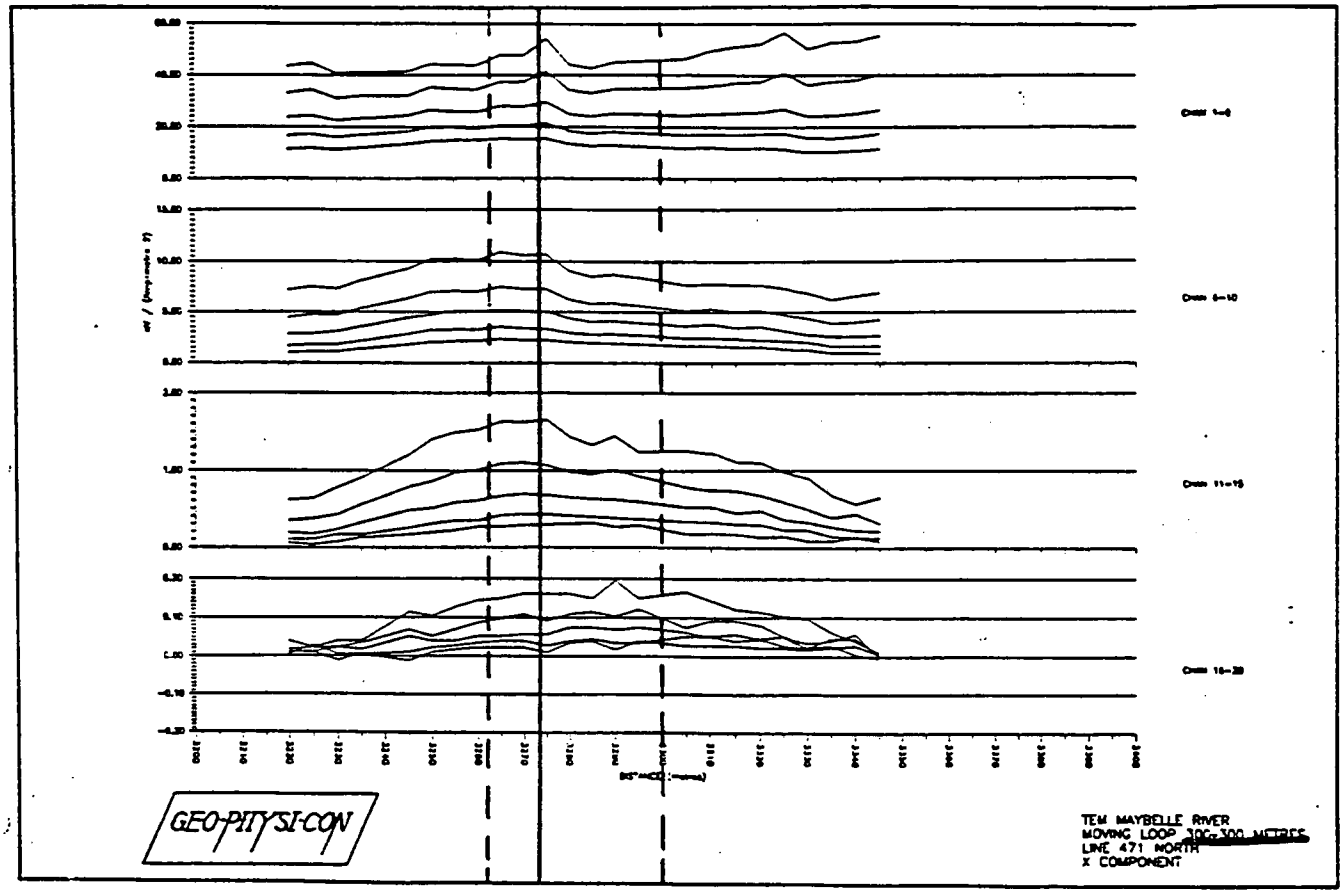


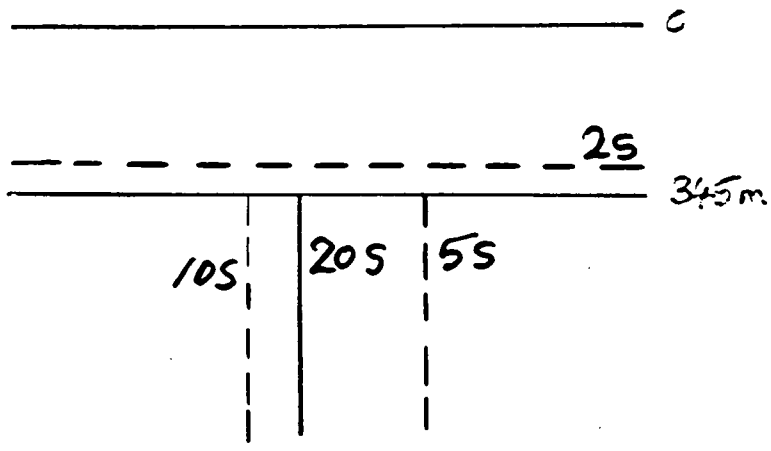
Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
Location of Activities
Paxton Lake Area
February 1990

Scale 1:50,000 P.R. 02/90 Figure 31

SCOT-50

LINE 471N

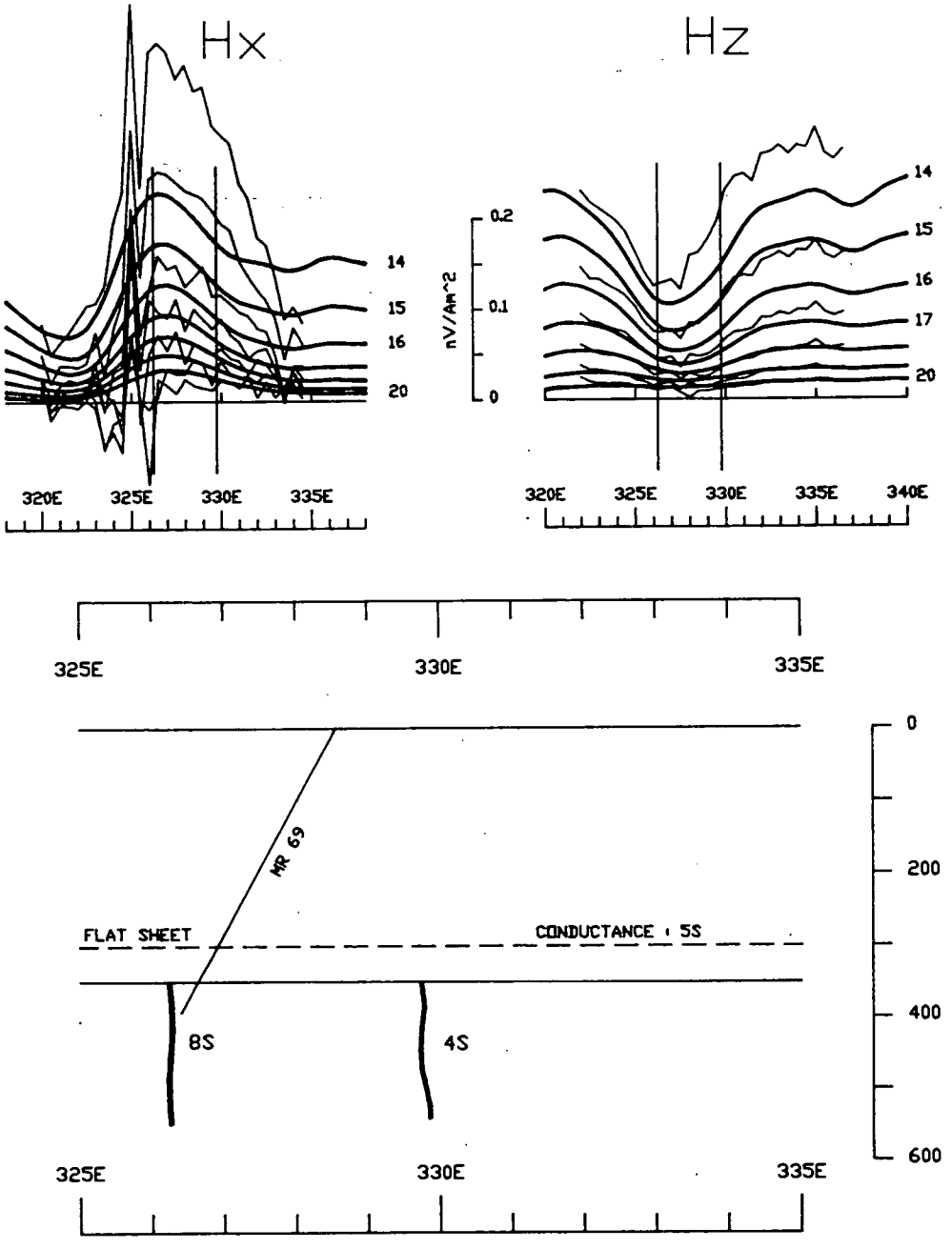




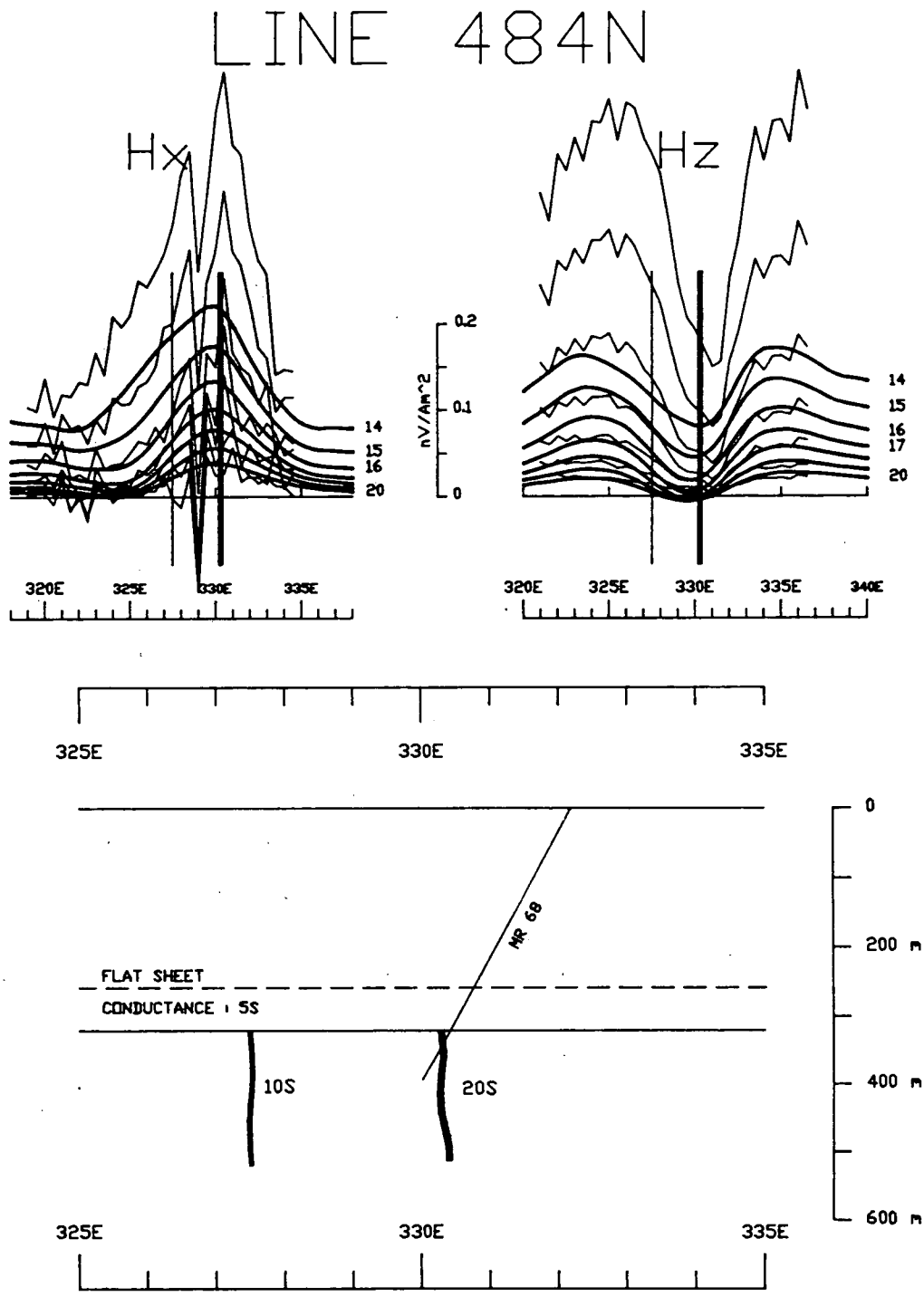
TRANSMITTER LOOPS: 300mx 300m
RECEIVER OFFSET: 400m to West

Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
LINE 471N
MOVING LOOP TEM PROFILE
HORIZONTAL (X) COMPONENT
(GEO-PHYSI-CON, JAN/FEB, 1990)
Scale 07/90 Figure 32

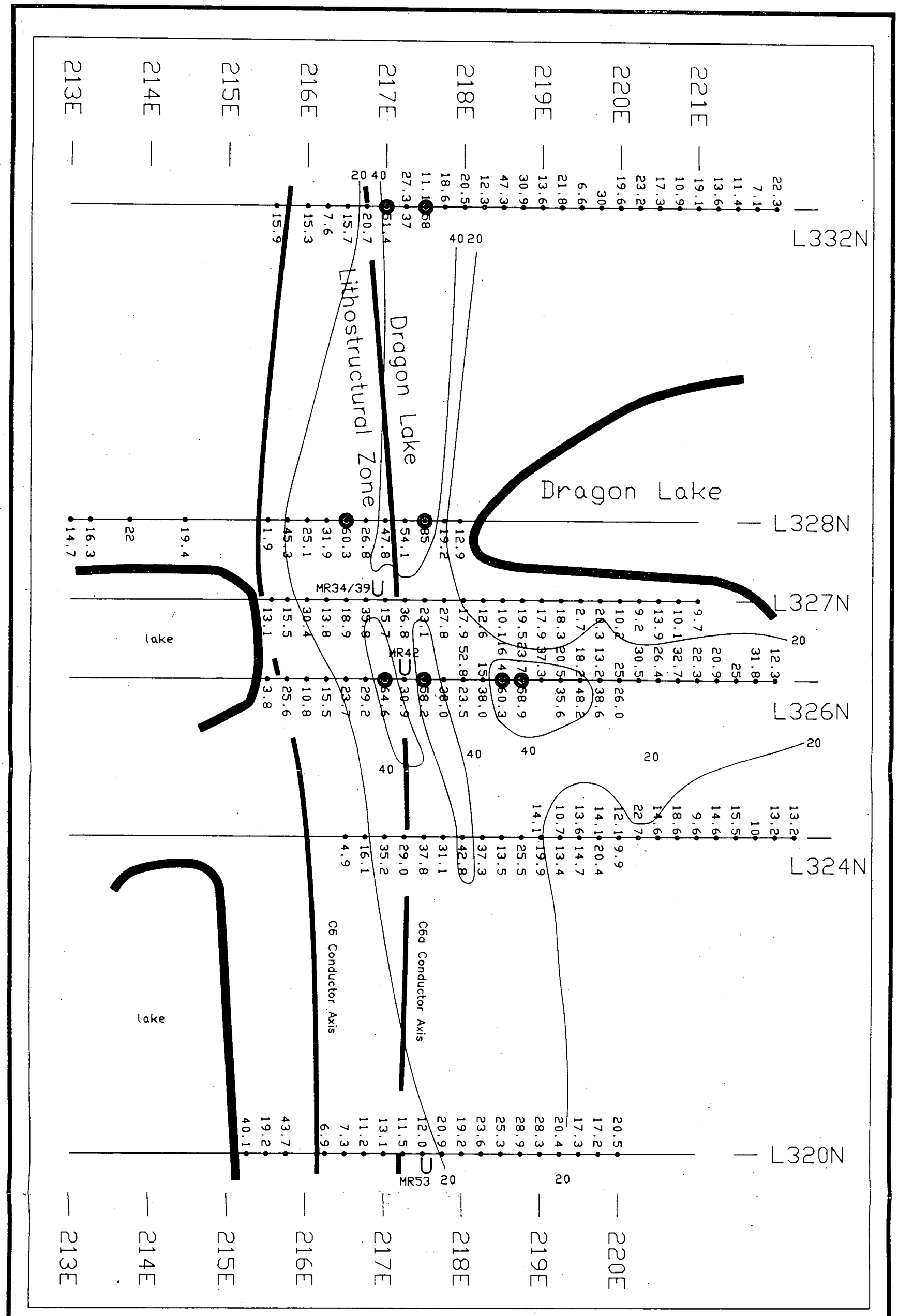
LINE 476N



Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71–42
MOVING LOOP TEM SURVEY
MULTILOOP MODEL
LINE 476N
JUNE '89
PR 11/89 Figure 3 3



Uranerz Exploration and Mining Limited
MAYBELLE RIVER PROJECT 71-42
MOVING LOOP TEM SURVEY
MULTILOOP MODEL
LINE 484N
JUNE '89
PR 11/89 Figure 34



DLTETCH4.DWG

LEGEND

- First Order Anomaly > 50 avg. radon conc. pCi/l
- 25 Sample Location Avg. Radon Conc. pCi/l
- U DDH Intersected Uranium

Uranerz Exploration and Mining Limited

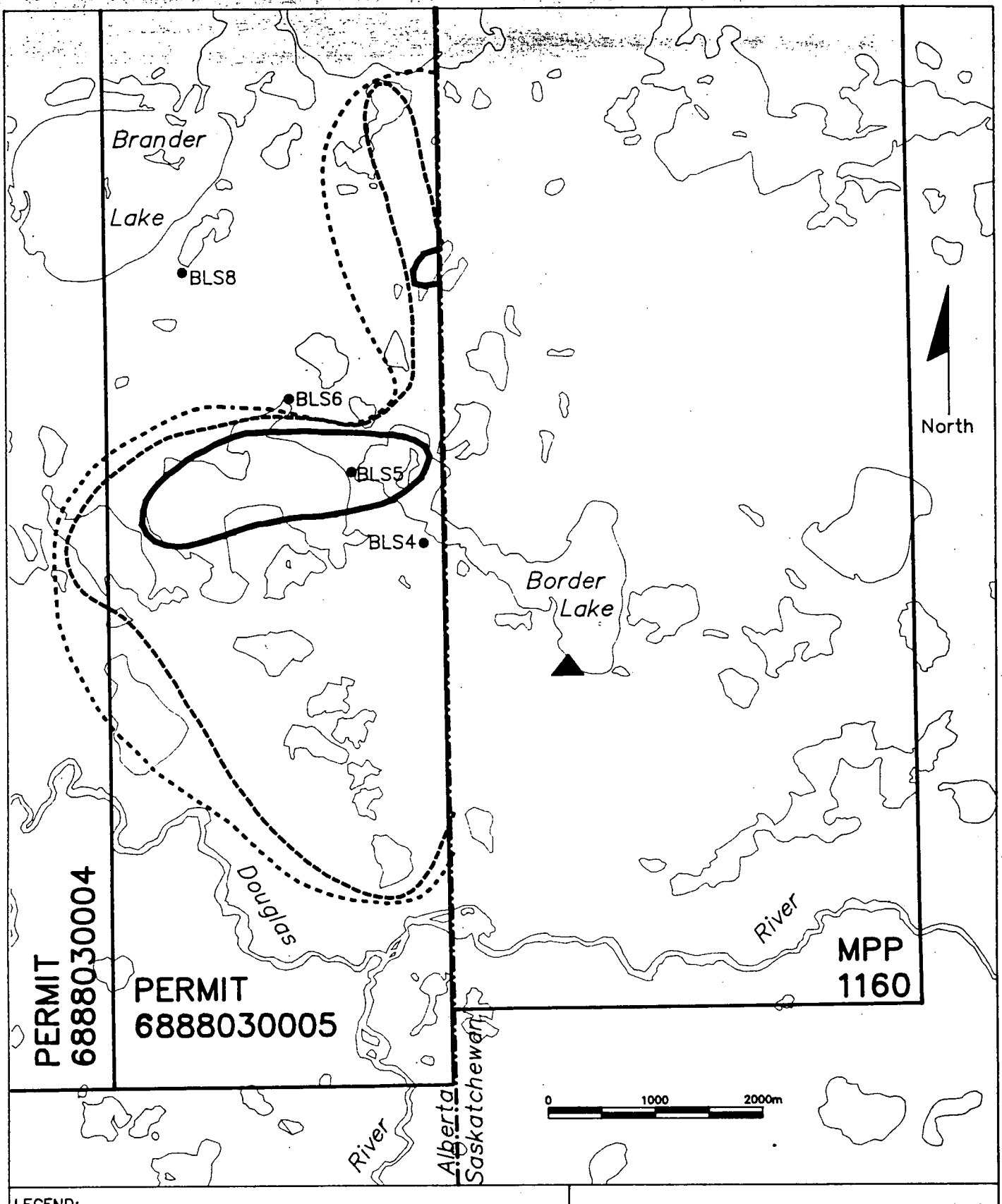
Maybelle River Project 71–42

TRACK ETCH SURVEY
DRAGON LAKE AREA

Scale 1 : 5000

R.O./B.L. Oct 89

Figure 35



LEGEND:

- >25ppm U Lake Sed.
- >10ppm U Lake Sed.
- >5ppm U Lake Sed.
- ACCESS TRAIL
- PROPOSED ROUTE
- MAG INTERPRETED DYKE
- CAMP
- SONIC DRILLHOLE
- BLS1

Uranerz Exploration and Mining Limited
Maybelle River Project 71–42

BRANDER LAKE AREA
SONIC DRILLHOLE PROGRAM

Scale 1:50,000 08/89 Figure 36

42-SONIC

APPENDIX 1: Geological Logs, DDH MR73-MR86, MT01 and MT02.

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR68

AREA: Maybelle River	DISPOSITION: 6886050005 PROJECT NO.: 7142	PAGE 1 OF 21 DRILLED BY: Advance
COORDINATES: L 484 N 332 + 18 E	PLASTIC PIPE: yes (no) DEPTH: — CASING REMOVED: (yes) no DEPTH: 80m	COMMENCED: July 11, 1989. COMPLETED: July 22, 1989.
TOTAL DEPTH (m): 474.6m ELEVATION (m A.S.L.): 308m (est) DIP/AZIMUTH: -60° / 262°	GEOLOGY BY: B. Lakey 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: Acid Acid Pajari

TEST AT(m)	80	374	4746
DIP	-63°	-63°	-63
AZIMUTH	—	—	269°

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 75.5m	Overburden (Sand, boulders, till)
ATHABASCA GROUP — Manitou Falls Fm.	75.5 - 274.4m	Weakly to moderately bleached. sandstone, medium grained with interbedded siltstone, locally moderately to strongly silicified, locally strongly fractured with strong tarry bitumen coatings, euhedral quartz and trace pyrite common along fractures
ATHABASCA GROUP — Fair Point Fm	274.4 - 379.6m	Weakly to locally moderately bleached, coarse grained sandstone, white clay matrix, moderate maroon and weak red hematite, traces of light and dark green clays in matrix, local zone of structure with soft clay fault gouge.
BASEMENT	379.6 - 381.2m	Paleoweathering, weakly hematized, chloritized
	381.2 - 387.2m	Strongly chloritized (feld) - qtz - pegmatoid, pyritic, graphitic intervals
	387.2 - 401.2	Strongly chloritized, graphitic - pyritic - (amph / pyrox) - (biotite) - quartz - (feldspar) - gneiss, laminated to gneissic texture, trace - 5% graphite, >10% to massive in shears and faults, 1-5% disseminated cubic pyrite
	401.2 - 410.6m	Fault Zone - strongly brecciated and gouged graphitic rock, >10% to massive graphite in strongest faulting, strong veining
	410.6 - 425m	Strongly chloritized, pyritic - graphitic - (biotite) - (amph / pyrox) - (feldspar) - qtz - gneiss, 5 to 10% graphite, 1-5% diss. pyrite
	425 - 459.5m	Interlayered quartz - feldspar (K spar) - gneiss / pegmatoid and chloritized pyritic - graphitic - (biotite) - (amph / pyrox) - qtz - (feld) - gneiss, K spar - rich rock massive to locally mylonitic, graphitic rock, tr - 5% diss gf, 1-5% py
	459.5 - 474.6m	chloritized, garnetiferous - pyritic - graphitic - (biotite) - (amph / pyrox) - (feldspar) - quartz - gneiss, tr - 5% gf, 1-5% pyrite,

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

UTM COORDS.
518000 E
6462475N

Downhole Radiometric Peaks.
100 cps @ 364.7m (est)
100 cps @ 387.0m (BSMT)
180 cps @ 457.5m (BSMT)

MR68-1	80-84	MR68-14	204-214	MF	MR68-26	319-329	F.P.
-2	84-94 MF	-15	214-224	"	-27	329-339	"
-3	94-104 "	-16	224-234	"	-28	339-349	"
-4	104-114 "	-17	234-244	"	-29	349-359	"
-5	114-124 "	-18	244-254	"	-30	359-369	"
-6	124-134 "	-19	254-264	"	-31	369-379	"
-7	134-144 "	-20	264-274.4	"	-32	365-366	"
-8	144-154 "	-21	274.4-279	F.P.	-33	366-367	"
-9	154-164 "	-22	279-289	"	-34	367-368	"
-10	164-174 "	-23	289-299	"	-35	385-386	BM
-11	174-184 "	-24	299-309	"	-36	456.5-457.5	BM
-12	184-194 "	-25	309-319	"	-37	399.3-399.4	BM
-13	194-204 "				-38	428.7-428.8	BM
					-39	428.4-429.5	BM

MR68-40	473.4-473.5	B	
-41	385.5-385.6	B	
-42	389.2-389.3	B	
-43	390.0-390.1	B	
-44	394.9-394.5	B	
-45	394.6-394.7	B	
-46	394.9-395.05		
-47	395.6-395.7	B	
-48	402.4-403	B	
-49	412.5-412.6	B	
-50	429.2-429.3	B	
-51	439.3-439.4	B	
-52	447.3-447.98		
-53	461.5-461.6	B	
-54	467.5-467.6	B	
-55	458.6-458.7	B	
-56	473.3-473.4	B	

(2) continued

MR68-57	390 - 395	BSMT
-58	395 - 400	"
-59	400 - 401	"
-60	401 - 402	"
-61	402 - 403	"
-62	403 - 404	"
-63	404 - 405	"
-64	405 - 406	"
-65	406 - 407	"
-66	407 - 408	"

MR68-67	408 - 409
-68	409 - 410
-69	410 - 415
-70	415 - 420
-71	420 - 425

DDH NO. 11260

PAGE 2 OF 21

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

DDH No. M1268

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HI	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
25											
30					OVERBURDEN					30	
35										35	
40										40	
45										45	

DDH No. MR68

PAGE 4 OF 21

m	REC %	ROD %	FRAC #	GEOL SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
50											
55					OVERBURDEN					55	
60										60	
65										65	
70										70	

DDH NO. MR68

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
75					Top of SST from 8-10g
					Triconed sandstone
80					Casing to 80.0 m
	100	97	7		80.0 – 274.4 weakly to moderately bleached sandstone, medium grained with siltstone interbeds, locally mod. – str. silicified, locally strongly fractured with strong tarry bitumen coatings, euhedral quartz and pyrite common along fractures, clay intraclasts common
.4	100	94	15		
85					~84m ~91.5m silty sandstone + siltstone, fractured.
	100	88	22		
.5					
	100	88	17		
90					
.5					~91 – 102.9m – moderately silicified sandstone
	97	93	10		
.6					
95					93.6 – 96.6 – run quite blocky, silicified
	9	0	>30		
.6					
	100	83	>30		
7					

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

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80

SAM #

MR68-1
MR68-2
MR68-3

DDH NO. MC68

PAGE 6 OF 21

m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	Lithology	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
100												
	100	73	>30									
105												
	100	85	20									
110												
	100	94	7									
	100	97	5									
	100	93	15									
115												
	100	97	6									
120												
	100	97	4									
	100	94	8									

MR64-3

MR64-4

MR64-5

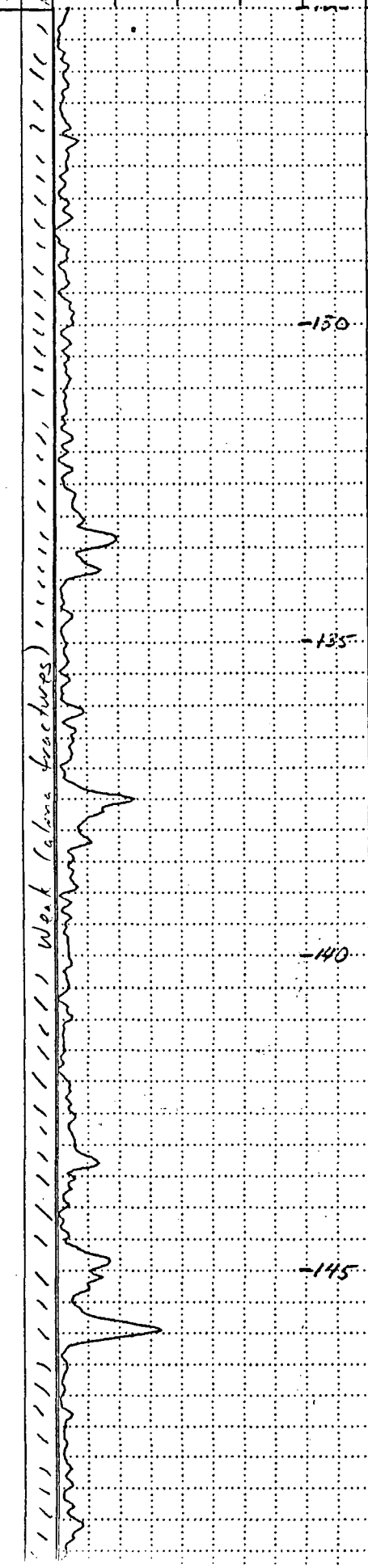
DDH No. M12-68

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
125	100	94	13		
.1	100	100	4		
130					
.1	100	100	3		
.2					
135	100	100	2		
.2	100	92	12		
.3					brick red hematite 138.8 - 147.4m: coarse grained to conglomeratic sandstone
140	100	82	25		
.3	100	100	5		
145					minor brick red hematite in silty sandstone (~10cm)
.4					fracture with spheroidal pyrite, siderite and trace limonite
	100	96	9		146.2 - 146.4m strongly fractured - large dk. green clay clast.
.4					minor silicified f. breccia
.5	100	100	7		

m	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicified	Rubble
125						
.1						
130						
.1						
.2						
135	Moderate					
.2						
.3						
140	Weak					
.3						
145	Weak				PY Sid	
.4	Weak	Mod				
.4						
.5						

GAMMA LOG (CPS/DIV) 20 40 60 80

m	SAM. #
125	
.1	
130	
.1	
.2	
135	
.2	
.3	
140	
.3	
145	
.4	
.4	
.5	



DDH No. MR68

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
150					
.5	100	90	9	10°	153.9 - 154.7m mod. fractured with tarry bitumen.
.5					
155					
	100	91	12	30°	moderately fractured with tarry bitumen
.4					
	100	98	2	40°	
160					
.6	100	100	4	20°	
.7					
165	100	100	5	25°	
.7					
	100	91	6	30°	
.9				40°	~170.m Sandstone becoming silicified.
170				25°	sandy, bituminous gouge along fracture.
	100	97	6		
.8				20°	py along fracture
	100	100	13	20°	
				18°	

BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicified	Bitumen
py					
Weak	Mod	Weak		Weak (along fractures)	
py					
py					
qtz					
py					
Mod.				Weak	
qtz					
py					

GAMMA LOG (CPS/DIV) 20 40 60 80

150 155 160 165 170

SAM #

MR68-8

MR68-9

MR68-10

DDH No. MR68 PAGE 9 OF 21

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicifie	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
175				15°									
.9	100	97	13			Mod		Mod		Weak	Wk		
.9				30° 25° 40°									
180	97	76	>30		181.4 - 192.3 m moderately to strongly fractured silicified sandstone, strong bitumen, euhedral qtz common, pyrite common, local soft clay gouge.							180	MR68-11
	95	67	>30			qtz							
185	100	79	24	35° 20° 25° 10°		py qtz py qtz				Mod.	Strong (alum fractures)	185	
.1	100	0	>30		188.3 - 191.3 strongest fracturing with strong bitumen, minor amounts of clay gouge.								
190					minor soft clay gouge.							190	MR68-12
1	100	82	29	35° 20° 20°	191.3 - 192.0m strongly silicified sst with sharp contacts with less altered sst above & below, fault at ~20° CA	qtz	Strong	Weak		Str.			
.2													
195	100	85	11		195.5 - 196 m - mod fractured with trace pyrite	py					Weak (fractures)	195	
.2	100	100	6										MR68-13

DDH No. MR68

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
200	100	97	10		Minor rehealed f. breccia in light green matrix along old fractures, bluish color to breccia matrix - dravite? ~ 10-20° CA.
205	100	100	4		
210	100	100	1		
215	100	100	0		
220	100	100	3		
	100	100	2		
	100	100	0		
	100	92	5		221.9 - Weakly bleached, moderate maroon hematite banding.

BLEACHING: Strong; Mod; Weak; Mod; Weak

MAROON HE

RED HEM.

GREEN ALT.

Silicification

Bitumen (Weak along fractures)

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

MR68-13

MR68-14

MR68-15

DDH No. MR68

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
225	100	100	4	35°	trace Limonite along rehealed fracture.
230	100	97	6	10°	
	100	87	14	XXXX	10cm dk green silty sandstone.
235	100	97	6	5° 15°	
	100	96	8		dk green silty sandstone.
240	100	94	11	30° 20° 15° 10° 5°	minor sandy clay gouge along fractures., trace green clay
245	100	95	8	20° 30°	
	100	94	12	0° 15°	

BLEACHING: Weak (along fractures)

MAROON HE

RED HEM.

GREEN ALT.

Silicific

Pyrite

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

230 235 240 245

SAM #

MR68-16

MR68-17

MR68-18

DDH NO. MR68 PAGE 12 OF 21

m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	Silicified	Bitumen	GAMMA LOG (CPS/DIV)20	SAM #
250	100	95	9		trace green clays in matrix 247.5m - 259.9m common coarse grained to gritty layers.							70 40 60 80	
.1	100	88	14										MR68-18
255 .1	100	100	3		trace dk. green clay in mtrx.							-255	
.2	100	100	3		tr. dk green clay in matrix				W				MR68-19
.2	100	100	3		tr. dk greenclay trace dk. green clay in matrix around fracture							-260	
.3	100	76	22		264.5-265.1 strongly fractured, strong btu, trace euhedral qtz	W	St.	Weak.			Weak. (along fractures)	-265	
.3	100	97	4		tr. dk green clays in matrix 10cm length, (~2cm wide) f. breccia, breccia clasts in sandy, bitumenous, clay matrix, possible siderite in matrix (~25°CA)	Mod.	Weak		W			-270	MR68-20
270 .4	100	100	1			Weak	Mod.						
.4	100	96	5										

Point Fm

DDH NO. 11K68

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicific	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
275					274.4 – 379.6 m Fair Point Fm weakly to locally moderately bleached coarse grained sandstone, no visible bedding, moderate maroon and weak red hematite, local traces of light to dark green clays in white clay matriy, weakly fractured.								
.5	100	100	3						½		Weak (along fractures)		MR68-21
.5													
280	100	97	5	≠15° ≠25°					↑ ↑			280	
.5													
	100	98	10	≠10 ≠25°	← minor light green clay gouge along fracture								MR68-22
285						Weak	Mod	Weak				285	
.6	100	88	7		← trace brick red hematite along rehealed fracture				½ ↑ ↑				
.6				≠0°	← tr. brick red hematite								
290	100	100	4	20° ≠	← rehealed f. gouge, br. red hematite. ← minor light green gouge along fracture.							290	
.7	100	100	3	≠15° 15° ≠	← minor brick red hematite along fracture.				↑				MR68-23
.7													
295	100	100	4	≠0°	← qtz vein along old fracture with younger fracture x-cutting and offsetting qtz vein.							295	
.8	100	100	1	40° ≠									24
300													

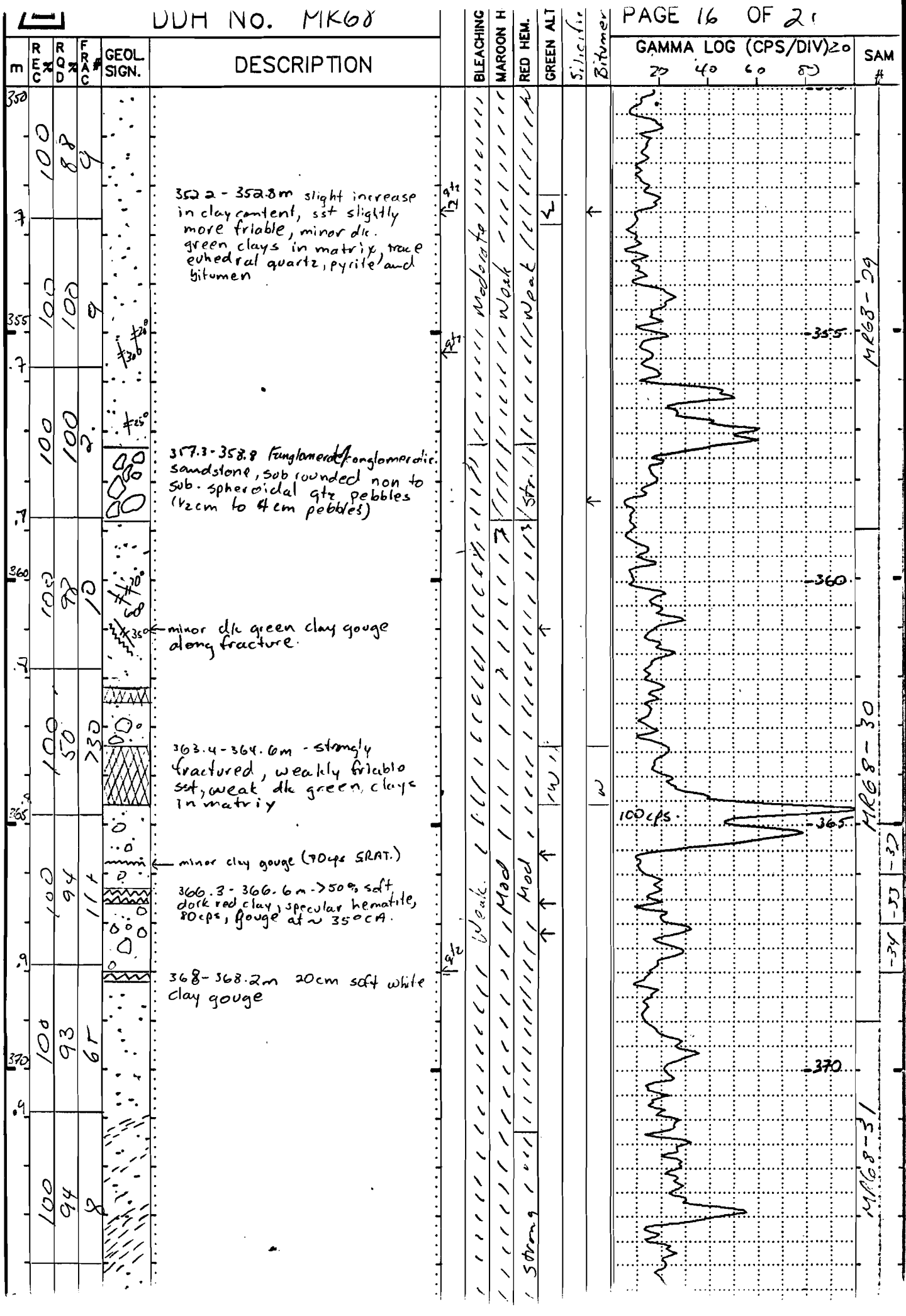
DDH NO. MR60

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	Silicification	Bitum	GAMMA LOG (CPS/DIV) 20	SAM #
300													
.8	100	98	5	40°									
.9													
305	100	98	4	60°								305	MR68-24
.9	100	100	3		← tr. dk green clays in matrix								
310	100	97	4	35°	← trace dk green clays. + ass minor brick red hematite.	Weak	Mod					310	
315	100	97	6					Weak				315	MR68-25
.1	100	95	7	45°		Mod	Weak						
.1													
320	100	100	2		322.4 - 379.6 m Sandstone more coarsely grained, gritty sandstone to locally conglomeratic, interbeds of silty sandstone							320	MR68-26
.2	100	100	1			Weak	Mod						

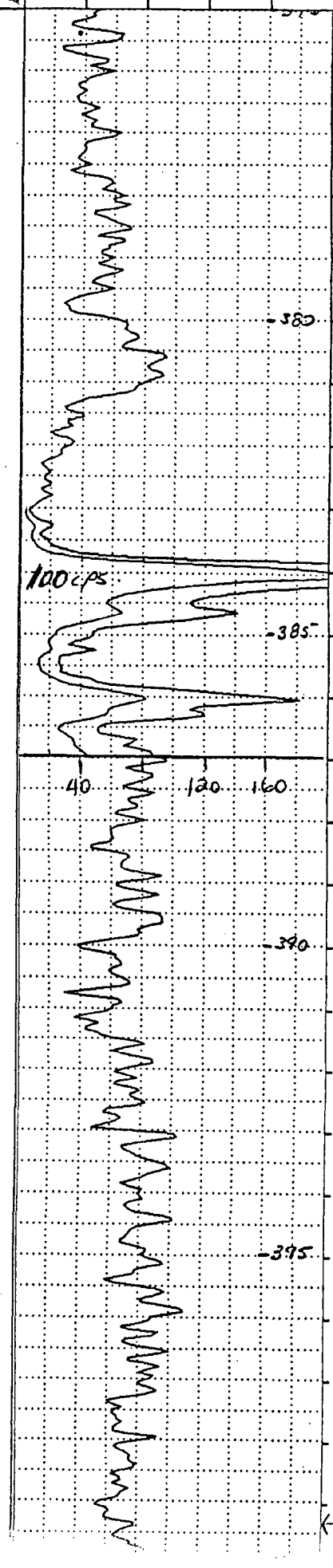
DDH No. MK68

PAGE 15 OF 21

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Siderital	Bitumen	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
335.2	100	100	1										
3	100	100	0										
330	100	98	3									-330	
4	100	100	1									-335	
335	100	98	2										
4	100	100	2									-340	
340	100	98	3									-345	
5	100	98	3		~348 - 349.7m Conglomeratic Sandstone.								
345	100	98	3										
6	100	98	3										

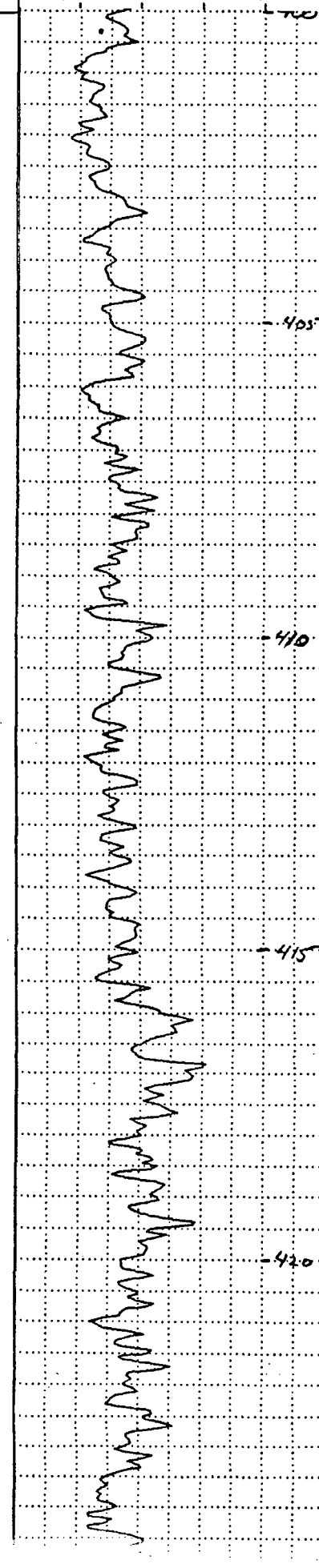

m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON H
RED HEM.
GREEN ALT
Silicific
Bitumen
GAMMA LOG (CPS/DIV)20
SAM #
352.2 - 352.8m slight increase in clay content, sst slightly more friable, minor dk. green clays in matrix, trace euhedral quartz, pyrite and bitumen
357.3 - 358.8 Fine/med/conglomeratic sandstone, sub rounded non to sub. spheroidal qtz pebbles (1/2cm to 4cm pebbles)
minor dk green clay gouge along fracture
363.4 - 364.6m - strongly fractured, weakly friable sst, weak dk green clays in matrix
minor clay gouge (70cps SGRAT.)
366.3 - 366.6m - >50% soft dark red clay, specular hematite, 80cps, gouge at ~ 350cA.
368 - 368.2m 20cm soft white clay gouge
100 cps
MK68-29
MK68-30
MK68-31

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT	Silicific	Bitumen	GAMMA LOG (CPS/DIV) 20	SAI #
375	100	97	2			Weak	Mod	Weak					MK68-31
	100	97	5		379.1 - 379.6m siltstone, strong maroon hematite Unconformity @ 379.6m		Strong			GRAPHITE			
380					379.6-381.2m Paleoweathering Weakly hematized, chloritized.		Weak		Str. light green / Mod. dk green				
.1	100	94	7		381.2 - 387.2m strongly chloritized, (py, amph) - (feld) - quartz - pegmatoid with intervals of graphitic gneiss -								
.1	100	95	6		120 cps (SRAT). 385 - 386.1 m str. chlor. gf-py gneiss - trace to massive graphite on shears.					on shear			-35
.2	100	94	8	50° 25°	387.2 - 401.2m Strongly chloritized graphitic-pyritic - (amph./pyrox.) - (biotite) - quartz - feldspar - gneiss, plastic deformation gives mainly weakly laminated gneiss texture, trace to 5% graphite, >10 to massive graphite along shears, disseminated cubic pyrite 1-5%, locally sheared and brecciated				Strong dark green, moderate light green	trace - 5% diss			
.2													
390	100	97	8	15°									
.3	100	88	20	35°	394.4 - 394.6m - 20cm fault breccia with massive graphite on shear planes, faulting at 35°-40° CA								
395													
.3	100	79	26	40°	15cm fault breccia with local massive graphite + slickensides								
.4	100	67	>30		minor shearing with graphite slickensides - fault plane ~30° CA, slicks 90° to fault indicate [illegible] movement								



DDH No. MR68 PAGE 18 OF 21

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Graphite	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
400				20° 60°						tr-5%			
.4	100	47	>30	20°	401.2 – 410.6 Fault zone includes strongly brecciated and gouged graphitic rock with massive graphite, Strongly brecciated non graphitic pegmatoid rock, strong veining of quartz and pyrite.					>10% to mass			
.5					401.2 ~ 403m massive brecciated, gouged graphite								
405	100	7	>30		403 – 407.4 brecciated gneiss and pegmatoid, massive quartz intervals (veins)					trace			
					407.4 – 410 m >10% to massive brecciated and gouged graphite + strong chlorite								
.5	100	4	>30							>10% + massive			
410													
.6	100	96	11	20° 15°	410.6 – 425m Strongly chloritized pyritic – graphitic – (biotite) – (amphibole / pyroxene) – feldspar – quartz – gneiss. 5-10% graphite (locally > 10% disseminated), 1-5% dissem. cubic pyrite, strongly veined with qtz and carbonate veinlets, short pegmatoid intervals (large brownish feldspar not completely altered)				Strong Dark green / mod. light green	1 to 5% diss			
.6													
415	100	79	19	25°	413.6 – 413.9m – crush breccia. 414.8 – Carbonate vein along old fracture.								
.7	100	76	22	30°	418.8 – 419.8m graphite slickensides (indicate dip slip movement).								
.7													
420	100	95	12		419.8 – pyrite cubes more abundant								
.8	100	97	7	40°									



DDH NO. MK68

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
425					425 – 459.5 Interlayered coarse grained quartz-feldspar (K-spar) – gneiss/pegmatoid, and chloritized, pyritic graphitic (biotite) – (amphibole/pyroxene) – quartz-(feldspar) – gneiss, plastic deformation gives laminated texture to both rock types, more proto- to mylonitic texture in the qtz-feld-rock, graphitic rock strongly veined, graphite 1 to 5%, 10%+ on shear planes, pyrite 1–5% disseminated + in veinlets.
.8	100	94	11		425 – 425.8 – qtz – kspar – peg
					425.8 – 426.2 – py-gf-gneiss
.9					426.2 – 427.8 – dominantly qtz-kspar-gneiss/peg.
430	100	91	17		427.8 – 429.9 – py-gf-malic gn.
					429.5 – gf-slickensides
					429.9 – 438.1 m – qtz-kspar-gn, protomylonite or augen gn, pyritic, abundant qtz veins.
435	100	85	21+		graphitic slickensides with dip slip movement
.9					438.1 – 443.4 m py-gf-malic gneiss – poorly foliated, extensive quartz veining (veinlets), minor carbonate veining, more massive py
440	100	100	9		strong veining in peg. (20cm)
					sid+ pyrite cubes along fracture
	100	66	>30		gf-slickensides (dip slip).
.1					443.4 – 454.2m dominantly qtz-kspar rock. coarse gr. (granitoid to pegmatoid), locally mylonitized, strongly veined.
445	100	90	16		gf slickensides, dip + strike slip
.1					
	100	85	>30		

BLEACHING | MAROON H | RED HEM. | GREEN ALT | Graphite | Bitume

GAMMA LOG (CPS/DIV) 20 40 60 80 100

SAM #

38

39

430

435

440

445

DDH No. MK68

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
450 .2	100	94	21		~451 - 451.5 protomylonite 451.5 - 452 Ultramylonite 452 - 452.8 m Protomylonite
.2	100	85	>30		453.4m chlorite slickensides (dip slip). 454.2 - 459.5 m py - gf - (bio) - (amph/pyrox.) - qtz - kspar - gneiss 454.8 m - gf - chlor slickensides = dip slip movement. 454.6 - 458.5 m Mylonitic texture (proto - to ultra -)
455 .3	100	15	>30		shearing parallel to CA, slicks ⊥ to shearing = str. slip.
.3					459.5 - 474.6 Gf - Plag - Gneiss chloritized, garnetiferous - pyritic - graphitic - (bi) - (Amph. /pyrox.) - (feld) - gneiss gneissic to laminate texture, interlayered pegmatoid. graphite tr - 5% diss + massive along shears, pyrite 1-5% cubic within gneiss, mod. - strong plastic deformation. (schlieren to nebulitic texture?) common carbonate veinlets.
460 .4	100	90	16		
.4	100	91	8		
465 .4	100	87	16		
.5	100	85	19		gf. slickensides.
470	100	100	9		Large garnets (~1cm) 473.3 - 474.6 m massive qtz vein, sharp contact with country rock, clusts of country rock in qtz, lge prismatic qtz xtals cross-cut

BLEACHING | MAROON HE | RED HEM. | GREEN ALT | Graphite | Bitumen

GREEN ALT: Str. dk green Mod light green Mod dk green, weak light green Trace - 5%

Graphite: 1-5% diss 5-10% locally (in mafic rock)

GAMMA LOG (CPS/DIV) 20 40 60 80

180 CPS

40 90 100 160 CPS

455 460 465 470 472 474

SAM. #

40

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

Acid Test @ 30m
@ 330m

HOLE NO. MR 68

COORDINATE X:

COORDINATE Y:

ELEVATION Z:

INCLINATION: -69° (Pajari)

AZIMUTH: 269° (Pajari)

BOREHOLE Ø: NQ

CASING DEPTH: 80.0

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING:

TOTAL DEPTH: 474.6m

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

INSTRUMENT: Mnt. Sopris 2500 SN: 79

PROBE GAMMA: G-375 / SN. 442

PROBE NEUTRON:

DATE of LOGGING: June 22/89

TIME of LOGGING: 12:00 - 2:30 pm

TOTAL DEPTH: 474.0m

OPERATOR: [redacted]

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
Ø	Dup/Up	5m/min	1:100
474m			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

REMARKS:

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR69.

AREA: Maybelle River	DISPOSITION: 6886050006 PROJECT NO.: 71-42	PAGE 1 OF 22 DRILLED BY: Advance
COORDINATES: Line 476 N 328+56 E	PLASTIC PIPE: (yes) no DEPTH: 493m CASING REMOVED: yes (no) DEPTH: 61.1	COMMENCED: June 22/89. COMPLETED: June 30/89
TOTAL DEPTH (m): 499.0 ELEVATION (m A.S.L.): 308 (est.) DIP/AZIMUTH: -60°/a62°	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 Pajari Pajari

TEST AT(m)	121	416.7	499	300	200												
DIP	263°	265°	269°	266°	265°												
AZIMUTH	-63°	-66°	-67°	-64°	-63°												

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 57m	Overburden (Bedrock top picked from γ-log)
ATHABASCA GROUP. Manitou Falls formation	57 - 312.3m	Weakly to moderately bleached medium grained sandstone, moderate maroon and red hematite as bands and liesegang rings, clay intraclasts and silty interbeds common, tr. pyrite and euhed. qtz. along some fractures, tarry bitumen in porous sst and along fractures 160.5-225m Strongly fractured, strongly bleached, str. bitumen, minor clay gouge, minor pyr euh. qtz locally silicified.
Fair Point formation	312.3 - 421.3m	Weakly to locally moderately bleached coarse grained sandstone, maroon and red hematite (partly "brick red"), clay matrix, 312.3 - 315.0m - strong hematite in siltstone (also 320-324.2m) 360.5 - 371.9m ⇒ tectonized/faulted sst, fractured, fault gouge, strong dark green clays enhancing and replacing F.P. original clay matrix. 382.5 - 388m ⇒ fractured and faulted, clay gouge, light green clay.
BASEMENT	421.3 - 432.2m	Paleoweathering (saprolite), strongly hem. gneiss/pegmatoid.
	432.2 - 444.9m	Moderately chloritized, to fresh, moderately hematized, biotite-(amphibole/pyrox.)-qtz-feld-gneiss, intervals of pegmatoid, trace pyrite, fresh biotite.
	444.9 - 458.9m	Weakly chlor to fresh coarse gr. pyritic-garnetiferous-(pyroxfamph) quartz-feld-anatectic pegmatoid
	458.9 - 465m	Weakly chlor., pyritic-cordierite?-quartz-plagioclase-biotite-horn blende-amphibolite/gneiss,
	465 - 499m	Fresh to weakly chloritized, pyritic-garnetiferous-amphibole-biotite-quartz-feldspar anatectic pegmatoid with gneissic intervals, Plagioclase Gneiss?, trace graphite locally
	E.O.H @ 499m	

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

UTM COORDS
6461600N
517850E

Down hole γ Peaks.
100cps - 420.2m sst
100cps - 425.4m BSMT
400cps - 431m BSMT
270cps - 4148.6m BSMT
120cps - 201.0m BSMT

Samples.

MR69-1	61.1-62	MF
-2	62-72	"
-3	72-82	"
-4	82-92	"
-5	92-102	"
-6	102-112	"
-7	112-122	"
-8	122-132	"
-9	132-142	"
-10	142-152	"
-11	152-162	"
-12	162-172	"
MR69-13	172-182	MF
-14	182-192	"
-15	192-202	"
-16	202-212	"
-17	212-222	"
-18	222-232	"
-19	232-242	"
-20	242-252	"
-21	252-262	"
-22	262-272	"
-23	272-282	"
-24	282-292	"
-25	292-302	"
MR69-26	302-312.2	MF
-27	312.2-321	F.P.
-28	321-331	"
-29	331-341	"
-30	341-351	"
-31	351-361	"
-32	361-371	"
-33	371-381	"
-34	381-391	"
-35	391-401	"
-36	401-411	"
-37	411-421	"
-38	360.5-361.5	?
-39	361.5-362.5	"
MR69-41	362.5-364.5	FP
-42	364.5-365.5	"
-43	365.5-366.5	"
-44	366.5-367.5	"
-45	367.5-368.5	"
-46	368.5-369.5	"
-47	369.5-370.5	"
-48	370.5-371.9	"
-49	382.5-383.5	"
-50	383.5-384.5	"
-51	384.5-385.5	"
-52	385.5-386.5	"
-53	386.5-387.5	"
-54	387.5-388	"
-55	461.2-461.3	BM
MR69-57	444.2-444.5m	BM
-58	432-433	BM

DDH No. MR69

PAGE 2 OF 22

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
0					OVERBURDEN						
5										05	
10										10	
15										15	
20										20	

DDH No. MR69

PAGE 3 OF 22

m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
25											
30					OVERBURDEN					30	
35										35	
40										40	
45										45	

DDH No. MR69

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 #
50					OVERBURDEN								
55												55	
					Top of Bedrock from γ-Log								
					Triconed Sandstone								
60					Casing to 61.1m							60	
	100	94	7	30° py btu	61.1 - 312.3m Weakly bleached, medium to coarse grained sandstone, moderate to strong red and maroon hematite, clay intraclasts common, silty interbeds, trace pyrite and euhedral quartz along some fractures, bitumen common with in more porous sst and along fractures.	34 Li 14							-1
65	100	94	7	40°		Li						65	
	100	100	1	20° ch	silicified fracture								MR69-2
70	100	100	8	20° 25°	70.1 - 70.3 silicified joints with py along fracture faces.	Weak		Moderate			Wk lin sst pores + along fractures	70	
	100	100	1										MR69-3

DDH No. MR69

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	SA
75 .3	100	100	0		spheroidal pyrite in sst matrix	py							
.3													MR69-3
80	100	91	24	0° 20° 25° 20°	79.3-81.7m moderately fractured sst, mostly rehealed joints (silicified), bitumen + pyrite common along open fractures	py + bitumen		Moderate					
.4					nodular siderite along healed fracture								
	100	97	7	28		py							
.4				25°	wa nodular siderite along fracture (open void between fracture faces)	sid							
85	100	88	10	0° 15°	85-85.4m moderately fractured, open fractures with bitumen								
.5					spheroidal py in matrix	py							MR69-4
	100	93	5	28			Weak				Weak - along fractures		
90 .5	100	100	0										
.6					93.8-160.6m weakly to moderately silicified sst, many rehealed fractures		Moderate						
95	100	94	12	30° 20°	94.8-95.8m rehealed (silicified) fractures								
.6				45°	trace py and nodular siderite along fracture	py sid							MR69-5
	88	62	730		96.4-98.4 strongly fractured core loss due to washout?				Weak				
					... breccia in								

DDH No. MR69

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 #
100	100	91	21		100 – 105m moderately fractured sst, mostly rehealed or silicified fractures, partly open fractures								MR69-5
.7	100	91	11										
105												105	
.8	100	92	9	0° 26°	trace spheroidal py along fracture	Py							MR69-6
.8				25°	trace py along fracture	Py							
110	94	79	22	15°	trace py along fracture	Py						110	
					111.2 – 112.4m strongly fractured, bitumenous.	Li							
.9	100	85	12	40°	py (trace)	Py	Weak	Mod		Weak	Weak (along fractures)		
.9													
115	100	92	10	0° 25° 15° 0°								115	MR69-7
120	100	94	9	30°	10cm silicified joints							120	
				10°	nodular siderite along open fracture (minor euhed. qtz).	qtz sid							
	100	94	14		120.9 – 121.4 rehealed (silicified) joints								
					123.1 – 123.5m rehealed (silicified) joints thin clay veinlets along rehealed fractures.								MR69-8
1													

DDH No. MRG9

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
125	98	96	7		
.1	100	94	20+		128.8 - 129.9m moderately fractured zone with rehealed and open fractures; rehealed fractures with open voids containing bitumen + traces of euhedral qtz and siderite (fractures 20-30° CA)
130					
.1	100	98	8		← trace py (sooty py) on fracture
.2	102	93	12		
135					
.2	100	96	14		
.3					
140	100	100	4		
.3	100	85	19		143.1 - 143.7 m rehealed (silicified) fracture/joint zone
145					← slickensides in sst (indicate strike slip movement)
.4	120	74	28		145.3 - 145.9m healed fractures minor white clay gouge (20° CA)
					147.6 - 148.9m - moderate open + healed fracturing
.4					

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

DDH No. MR69 PAGE 8 OF 22

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	SAM #
150	100	97	16	20°	150.9-151.7m and 152.8-154.5m strong dark red/maroon hematite (brick red?), specular hematite, moderately to strongly fractured, minor soft clay gouge (dark red)	M3	W2					MR69-10
.5	100	42	>30		clay gouge	W1	W1	Str				
.5					dark green clay (chlorite) (intraformational)	W1	W1	Str				
155	100	93	11		156.4-157.0m dark red, "brick Red" hematite	Mod	Weak			Weak	Weak (along some fractures)	MR69-11
.6	100	100	8			W1		Str				
160					160.5~225m Moderately to strongly fractured sandstone, strongly bleached, weak red hematite, moderate to strong bitumen along fractures and within porous sandstone adjacent to fractures, trace pyrite and euhedral quartz along fractures, locally silicified.	Mod	Weak					
.6	100	88	14	15°	161.9-162.1m - crush breccia							
.7	100	88	11	15°								
165	100	82	20	30°		Strong		Weak		Moderate (along fractures + in pores)		MR69-12
.7				50°								
170	100	79	24		euhedral qtz							
.8	100	76	>30									MR69-13

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

DDH No. MR69

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 #
175													
.9	100	82	>30		trace euhedral qtz (qtz)								
.9					179.1-179.7 crush breccia (silicified joints), silicified, dark green clays in and around breccia fragments.				W	S			MR69-13
180	100	88	22									180	
	100	88	13	30°	slickensides along fracture dip + strike slip movement								
185	100	96	5	25°								185	MR69-14
.1	100	66	>30		10cm silicified crush breccia	Strong		Weak			Moderate		
190					40cm silicified crush breccia					S			
.1	100	94	13										
.2				5°									
195	100	97	16	20°								195	
.2	100	80	28										MR69-15

DDH No. MR69

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 #
200	100	85	>30		199.5m - 201.8 mod-str. silicified fracturing to crush breccia, mod-str silicified, associated tr. pyrite along fractures (open) (fractures 20-30° CA)	py	S		N		Str			MR69-15
					friable sst (5cm)									
205	100	100	10	5°										
	100	97	8											MR69-16
210	100	93	9	55°										
	100	97	12	30°	212.5 - 212.9m strongly silicified crush breccia, associated bitumen + trace pyrite. fault contact (lower) at 20°/CA mod. silicified 212.9 - 213.9m	py	Strong		Weak		S Mod	Moderate		
215	100	61	>30		pyritic slip linears (smeared py) indicate strike slip movement silicified around joint.	py								MR69-17
					217.3 - 217.7m fault breccia strong bitumen holding clasts together.									
220	100	90	16		219.6 - 220.1m crush breccia, cm size sst clasts in silicified matrix (10° CA)						S			
					221 - 221.6 silicified crush breccia ~ 2cm wide at 10° CA, minor light green clay gouge along one fracture.						S			
	100	100	9	10° 10°										MR69-12

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
225	100	92	18		225 - 252.3 Weakly bleached, moderate maroon, weak red hematite
					trace limonite + green clays
230	100	97	11		tr. pyrite
	100	97	8		green siltstone layer (1cm wide)
					233.8 - 234.7 Rehealed (silicified) joints / breccia
235	100	94	12+		10cm silicified crush breccia. slickensides, smeared py - strike slip movement, trace limonite
	100	94	9		
240	100	94	10		
245	96	100	4		
	100	100	0		2cm band dark green siltstone

BLEACHING: Weak | Moderate | Weak

MAROON H

RED HEM.

GREEN ALT

Silicified

Bitumen (weak veining fractures)

GAMMA LOG (CPS/DIV) 20 | 20 | 40 | 60 | 80

SAM #

MRC69-18

MRC67-13

MRC69-20

DDH No. MR69

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	Silicifie	Bitum	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
250	100	100	5	10°			Mod						MR69-20
.1	100	100	5	20° 20°	253.2-268.6m Mod "Brick red" or Dark red hematite wk. dk green clay around rehealed fractures								
255 .1	100	94	16		256.5-275.2 intervals of moderate to strong fracturing and crush breccia. 256.5-256.9 Crush breccia 257.5-257.8m healed joints (silicified)								MR69-21
.2	100	91	18		259.9-260.7m fractured sandstone rehealed + open, minor brecciation trace dk. green clays. 20°CA								
.2	100	97	13	10° 15° 0°	261.3-267.2m - sub parallel fractures mostly healed (silicified) or bound by bitumen, minor zones of crush breccia, traces of dark green clays (chlorite) ~10-15°CA	Weak	Strong	Weak			Weak (along fractures)		
.3	100	100	15	10° 5°	264.8-266.2 Strong "brick red" hematite + crush breccia. (10-15°CA)								MR69-22
.3	100	96	6										
270 .4					269.6-270 minor fracturing + gouge, trace py, sid, euhedral qtz + green clay dk green sltst	qtz sid py							
.4	100	48	>30		270.4-272.6m = fault zone, crush breccia, silicification, sandy clay gouge, trace dk. green clays (chlor?) ~15°CA 272.6-278.6 Moderately fractured.		Mod		Weak	Weak			MR69-23

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	Silicific	Bitum	GAMMA LOG (CPS/DIV) 20	SAM #
275	100	88	13		273.4 - 280 m traces of dk green clays in sst matrix (chlor?)								
.5	100	85	14						weak				MR69-23
.5													
280	100	100	4	≠0°	← healed fracture, yellow brown "plate-like" mineral, - siderite.	sid ←						282	
.5				≠20°									
	100	97	10		283.7 - 284 - fractured with green clays surrounding (weak)								
285				≠5°	285.3 - 285.7 - fracture, healed but with open voids containing euhedral qtz + siderite. (5° CA)							285	
.6	100	97	6	20°									MR69-24
.6													
290	100	100	2									290	
.7	100	98	6										
.7				≠0°	← " parallel fractures with bitumen + siderite + dk green clays								
295	100	100	2									295	
.8													MR69-25
	100	97	4	≠15° ≠20°	← 10cm dk green clays in sst matrix (parallel to bedding)								

Weak | Mod. | Weak | Strong | Weak (along fractures)

DDH NO. MR69

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
300					
	100	100	2		
					← dk green clays + traces of limonite along fracture
305	100	100	1		
	100	100	0		~307.1 - 310.4m weak, dark green clays indurated into sst. matrix
310	100	91	15+		MF/FP Contact
					312.3-315m Strong dark red/brown hematite in siltstone and silty sandstone (locally massive f.gr. hematite + minor specularite)
					312.3-321.3m FAIR POINT FM
315	100	91	14		Weakly to locally moderately bleached, coarse grained sandstone, moderate to strong maroon hematite, locally tectonized (fractured faulted).
			10+		-314.2m - siderite veinlet
	100	96	5		319.9-324.2m strong dark red/brown hematite in siltstone, moderate maroon hem + minor "brick red" hem.
320	100	91	7		
	100	76	>30		Weak to mod dk green clay/siltstone
					Strong "brick red" hematite

BLEACHING	MAROON H	RED HEM.	GREEN ALT	Siliceous	Bitum
Weak	Strong				
Moderate to	Moderate	Weak			
			Weak		
Weak	Wk	Strong			
Weak	Wk	Strong	W		

GAMMA LOG (CPS/DIV) 20

20 40 60 80

SAM

MR69-25

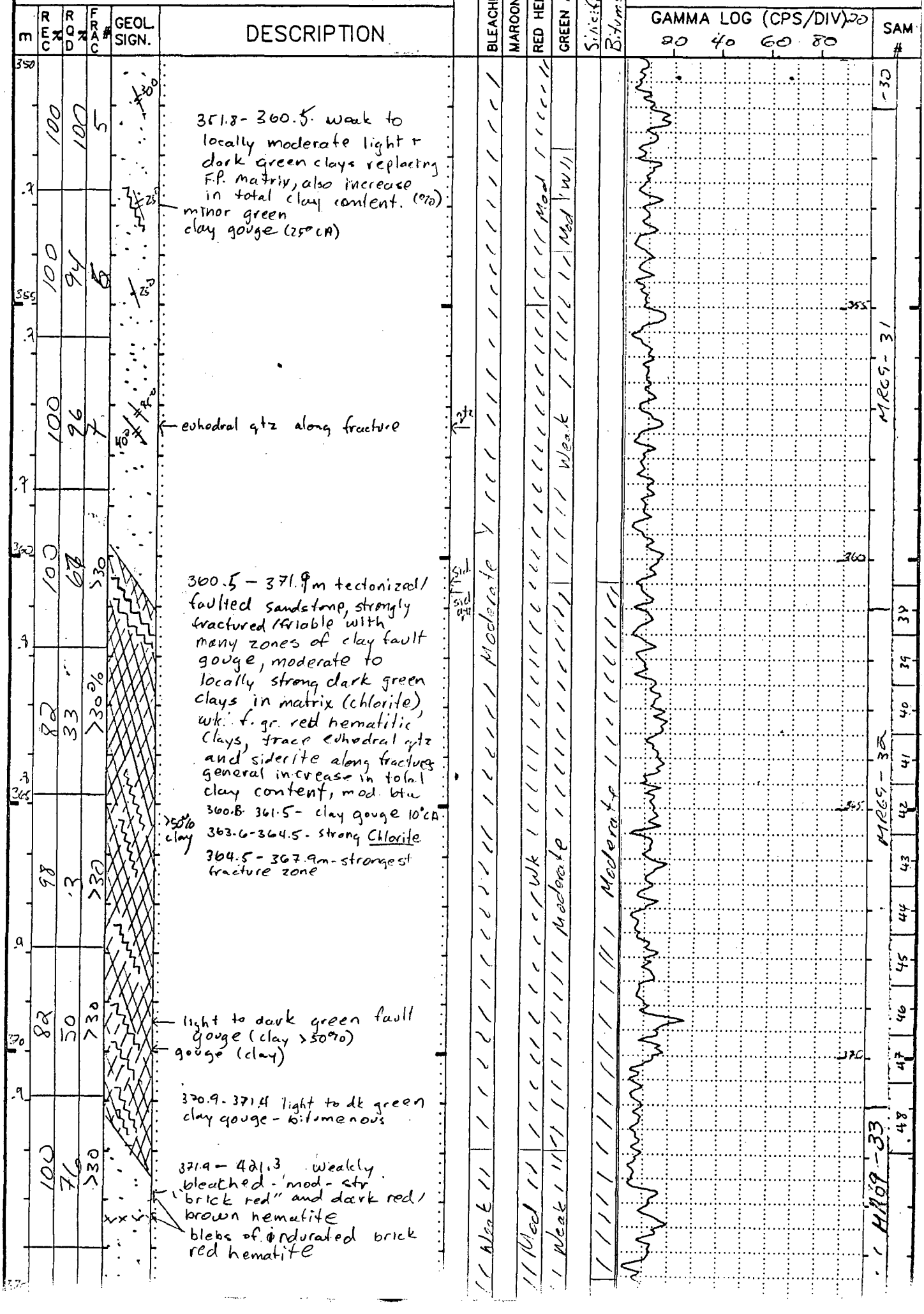
MR69-26

MR69-27

MR69-28

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
325 .2	100	100	3	≠25°	325-360.5 Typical unbedded coarse grained F.P. Fm.								
.3	100	94	7	≠30°									MRG9-28
330 .3	100	97	6					Weak				330	
.4	100	100	3	38°≠	strong dark red hematite.	Weak	Strong	S				335	MRG9-27
.4	100	97	4										
340 .5	98	100	3	≠35°	slicken sides in hematitic clays indicate dip slip movement			Weak				340	
.5	97	94	10	20°≠	343-360.5 moderately bleached, weak "red hematite" and weak green clays in matrix				E				
345 .6	100	88	15+	≠10° ≠20°	10-20cm soft light green clay gouge (bitumenous)	Moderate		Mod.	Wk (light + Dk)			345	MRG9-30
.6					strong clay gouge, hematitic (red) + light green clays								

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	Silicific	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
350	100	100	5	30°	351.8 - 360.5 weak to locally moderate light + dark green clays replacing F.P. matrix, also increase in total clay content. (%)			Mod	Wk				-30
.7	100	94	6	25°	minor green clay gouge (25° CA)			Mod	Mod				
355				25°								355	MR69-31
.7	100	96	7	45° 40°	← euhedral qtz along fracture	qtz			Weak				
.7													
360	100	67	>30		360.5 - 371.9m tectonized/faulted sandstone, strongly fractured/friable with many zones of clay fault gouge, moderate to locally strong dark green clays in matrix (chlorite), wk. f. gr. red hematitic clays, trace euhedral qtz and siderite along fractures general increase in total clay content, mod. btw	Sid. Sid qtz	Moderate					360	38
.8	82	33	>30%										39 40 41
.8													MR69-32
365	98	3	>30		>50% clay 360.8 - 361.5 - clay gouge 10° CA 363.6 - 364.5 - strong Chlorite 364.5 - 367.9m - strongest fracture zone			Wk	Moderate		Moderate	365	42 43 44
.9	82	50	>30		← light to dark green fault gouge (clay >50%) ← gouge (clay)								45 46
370												370	47
.9					370.9 - 371.4 light to dk green clay gouge - bitumenous								48
	100	76	>30		371.9 - 421.3 weakly bleached - mod - str "brick red" and dark red/brown hematite blebs of indurated brick red hematite	Weak		Mod	Weak				MR69-33



DDH No. MR69 PAGE 17 OF 22

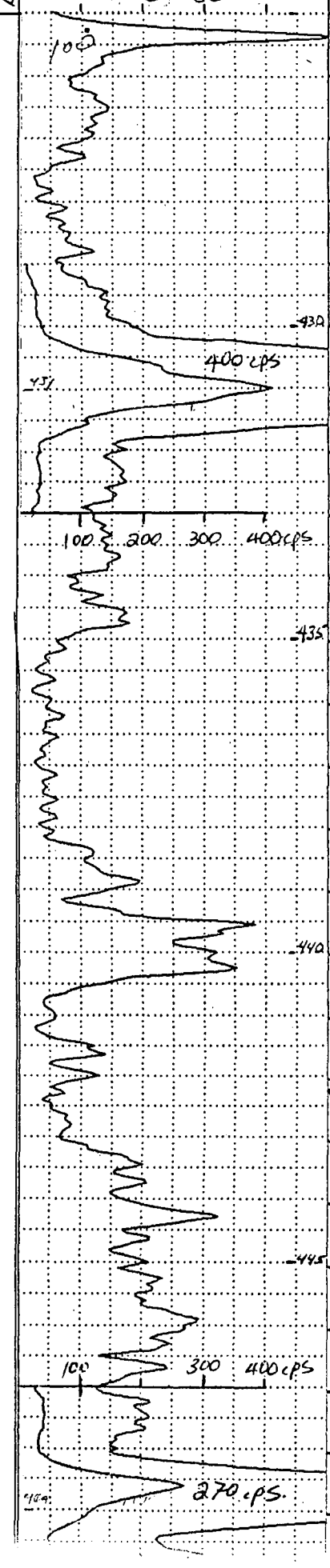
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicific	Bitumen	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
375	100	100	8		374.6 - 417 conglomeratic to gritty sst 376.2 - 377.1 strong "brick red" hem 377.1 - str. red/brown hem	W		Mod S.	W				
	100	100	0				Mod						MR69-33
380	100	94	7									380	
	100	12	>30		382.5 - 388m - Tectonized / Faulted sandstone, moderately fractured, strong clay alteration and enhancement; increase in clay in matrix, zones of clay fault gouge, dark green clay gouge and light green clay in sst matrix, strong red hem, tr. euhedral qtz, minor btu, friable			Strong	Mod (gouge & matrix)		Weak		49 50 51 52 53 54
385	100	46	>30		384.2 - 387.3 mostly clay gouge, strong dark green clay gouge	qtz qtz Weak						385	MR69-34
390	100	94	9				Wk		Weak (matrix)			390	
395	100	97	5									395	MR69-35
	97	91	4		minor dk. green gouge along joints			Mod					
	100	100	2										

DDH No. MR69 PAGE 18 OF 22

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
400						Wk	Wk						-35
.4	100	100	1				Weak	Mod	Wk				
405	100	100	3	35°								405	MR69-36
.5	100	97	3		407.5 - 416.6 m moderate to strong "brick red" earthy hematite, indurating sst matriy			Strong	Wk				
410												410	
.6	100	100	4	40°	10 cm clay gouge, strong brick red hem, minor dk green clay	Weak		Strong					
.6				25°									
415	100	100	2		414.1 - 416.7 m wk light green clays in sst matriy				Wk			415	MR69-37
.7	100	97	3		417.5 - 421.3 inter bedded siltstone, silty sandstone		Mod	Mod					
.7													
420	100	100	3		Unconformity at 421.3 m			Mod				420	
.8	100	100	5		423.8 - 432.2 m Paleoweathering (saprolite) strongly hematized; moderate light green altered; quartz-feldspar-gneiss/anatexite, strongly reworked gneisses + pegmatoids - hematite similar to "brick red"				Mod (lt. green)				

DDH No. MR69 PAGE 19 OF 22

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	White Clay	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
425													
.8	91	91	3	≠10°				Strong	Mod (light green)				
.9													
430	100	85	13										
.9	100	98	3	35°	432.2-444.9m Moderately chloritized, moderately hematized, biotite - (amphibole/pyrox) - qtz-feldspar gneiss with intervals of anatectic pegmatoid, "mafic-gneiss trace pyrite in gneissic zones, relatively unaltered biotite, minor qtz veins.			Mod	Weak (Dk & Lt. green)				58
435	100	94	9	≠30°									
440	100	94	8		440.3-441.7 mafic rock with quartz veins								
	100	100	4										57
.1				30°	← qtz vein								
445					← chlorite slickensides.								
	100	100	6		444.9-458.9m Weakly chloritized to fresh coarse grained, pyritic - garnetiferous - (pyrox/Amph) - Quartz-feldspar-pegmatoid pyrite as trace disseminated and more massive (~1-2cm) crystallization.								
.1	100	97	7		449.4-449.8m massive qtz [illegible]								



DDH No. MR69

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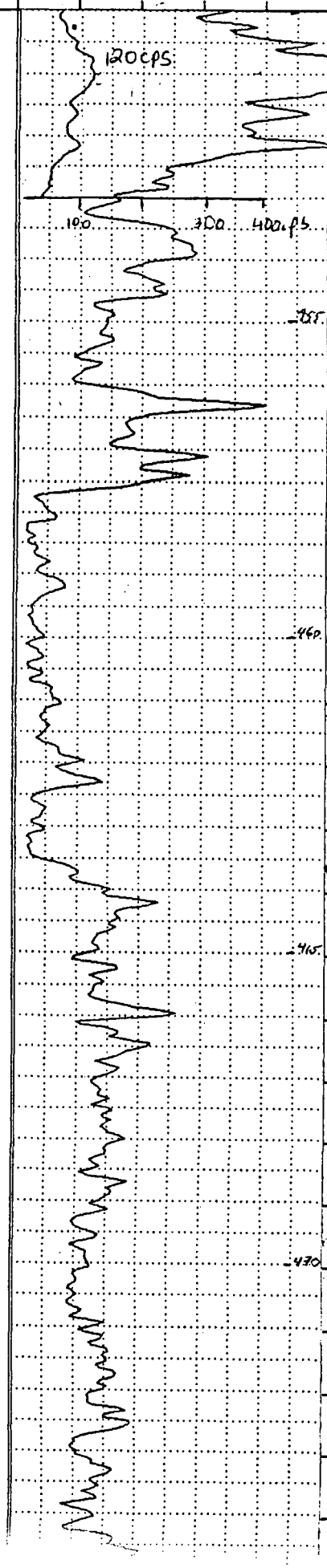
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20	SAM #
450 .2	100	88	14		450.8 – 451.3 – mafic rock chloritized. ← massive pyrite (inter-xtalline) ← large relatively fresh garnet in peg.						
.2 455	100	91	12	20°	453.2 – 454.5 m proto-mylonitic texture with 15cm mylonite zone at 453.8m – tectonic reduction of minerals.						
.2	100	87	11	40°	457 – 457.4m – massive quartz "sweat"/vein						
.3 460	100	94	5	20°	458.9 – 465m Weakly chloritized, pyritic-cordierite?-quartz-plagioclase-biotite-hornblende-amphibolite/gneiss massive to weakly foliated (ie banded) ← carbonates along fracture.				Weak		
.3 465	100	100	4								
.4	100	96	3		465 – 499.0m, Fresh to weakly chloritized. pyritic-garnetiferous-amphibole-biotite-quartz-feldspar-anatectic pegmatoid, interlayered pegmatite and infrequent more mafic banded plagioclase? gneiss, traces of graphite locally in mafic bands.						
.4 470	100	97	4	40°							
.5	100	94	8	40°	← trace graphite.						



DDH No. MR69

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
480	100	100	2		
	100	97	4		
					480.4 - 484m, weakly to moderately chloritized.
	100	94	5		
485	100	86	12		485 - 485.8m minor fault zone, fractured minor light grey gouge (graphitic ?) along fractur planes (~15-20°CA)
					485.4 - 485.8m crush breccia.
	100	95	6		
490	100	88	12		491.7 - 492 m chlor. plagioclase gneiss - pyrite veinlet.
	100	95	9		~493 - 499m abundant garnet
495	100	100	4		~496 - 499 trace graphite
					E.O.H. @ 499m

BLEACHING | MAROON HI | RED HEM. | GREEN ALT

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR70

AREA: Maybelle River	DISPOSITION: 6886050005 PROJECT NO.: 7142	PAGE 1 OF 19 DRILLED BY: Advance
COORDINATES: L 451+95 N 331+10 E	PLASTIC PIPE: yes (no) DEPTH: — CASING REMOVED: (yes) no DEPTH: 78.4	COMMENCED: June 30/89 COMPLETED: 7 July 89
TOTAL DEPTH (m): 417.9 ELEVATION (m A.S.L.): 297 (est.) DIP/AZIMUTH: -60°/262°	GEOLOGY BY: R. ORR CORE STORED AT: Jas Lake DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 19	CORE SIZE: NQ, BQ CASING SIZE: NW, N DOWN-HOLE PULSE-EM yes (no)

DIP TEST: ACID ACID ACID

TEST AT(m)	200	339	EOH
DIP (CORR.)	-58°	-56°	-57°
AZIMUTH	—	—	—

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
Overburden	Ø - 64 m	casing to 78.4 m; top of bedrock picked on γ-log.
Athabasca Group sandstone — Manitou Falls Formation	78.4 - 245.6	medium to fine-grained sandstone; only weakly bleached; generally massive and unfractured; typical maroon colour, liesegang rings; local coarse grained to conglomeratic intervals; minor siltstone interbeds; 190.5-217.5 moderate to strong fault zone with moderate bitumen on fractures
Athabasca Group sandstone — Fair Point Fm.	245.6-339.4	typical, massive, clay-rich sandstone; coarse grained to conglomeratic and fanglomeratic locally; only weak fracturing.
Basement	339.4-341.2	ultracataclasite / pseudotachylite
	341.2-343.3	massive, f-g graphite mylonite
	343.3-396.8	interbedded sericite-chlorite-graphite gneiss and pegmatoid breccia; locally laminated to augen gneiss.
	396.8 - EOH	fine-grained, grey laminated gneiss (q-ser-gf-chl-rock)
	417.9	EOH

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

UTM coords
6459350 N
518650 E

Downhole & Peaks
110 cps - 329.7 m sst
164 cps - 331.2 m sst
116 cps - 338.4 m sst
136 cps - 339.6 m BSMT

MR70-1	78.4-85	MF	MR70-17	215-245.6 m	MF	MR70-33	358-359	BM
-2	85-95	"	18	245.6-249	FP	-34	363.2-364.2	"
-3	95-105	"	19	249-259	"	-35	364.2-365.2	"
-4	105-115	"	20	259-269	"	-36	370-375	"
-5	115-125	"	21	269-279	"	-37	375-380	"
-6	125-135	"	22	279-289	"			
-7	135-145	"	23	289-299	"			
-8	145-155	"	24	299-309	"			
-9	155-165	"	25	309-319	"			
-10	165-175	"	26	319-329	"			
-11	175-185	"	27	329-339.4	"			
-12	185-195	"	28	341.3-342.3	BM			
-13	195-205	"	29	342.3-343.3	"			
-14	205-215	"	30	355-356	"			
-15	215-225	"	31	356-357	"			

DDH No. MR70

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 #
Ø					Overburden Ø - 79.4 m (casing)								
5													
10													
15													
20													

DDH No. MR70

PAGE 3 OF 19

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20	SAM #
25					Overburden						
30											
35											
40											
45											

DDH No. ME10

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 #
50					Overburden								
55													
60													
					~64 m								
65					top of sandstone bedrock from γ-log								
					Micaceous sandstone								
70													

DDH No. MR70-3

PAGE 5 OF 19

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Altered	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
					Casing to 78.4 m								
	?		6	$\#_{15°}$	78.4 - 245.6 m Manitou Falls Fm. Athabasca Gp. ss.	M							
.9	?												
			8		weakly to moderately bleached m-g ss, pale reddish primary horn colour; weakly fractured with local tan coatings on faces.						tr		
.4	50		4		local tr. py (rusted) as diss. 80.7: 15 mm pebble band 82.5: 10 mm pebble band 82.7: clay chip								MR70-1
.4	100		4	$\#_{15°}$	local traces bit. on frac & rare as impregnation - minor re healed fractures 78.4-104.0: predominantly f-g ss						tr tr		
.5	100		4		80.3 clay chip								MR70-2
.5	100		—										
.6	100		3	$\#_{20°}$		M to S							
.6	100		5	$\#_{20°}$ $\#_{40°}$ jt 30°	99.7-100.2 alt. intb., 50-60° CA jt 30° CA						W W		MR70-3

DDH No. MR70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Sulfide	Bitumen	SAM #
100	100		2	∓20°	104.0-113.0 m-g to c-g ss local pebble bands	W	M					
.7	100		3	∓30°	104.1: 5 cm pebble band 104.3: hairline, calcite filled fractures 104-106.8 mod. along brick-red hem. through c-g ss			S			tr	MR70-3
105												
.8	100		10		107.2: 5 mm rebreaked fault w/ rotated bedding; unknown offset 30°CA 108.4-108.5: str. brick red hem. in c-g pebble band			S				
.8												
110	100		7		110.5-112 - str. primary hem.		S					MR70-4
.9	100		5		112.3-112.9: c-g ss 112.7: pebble band 113.0-205: f-g to m-g ss, minor clay chips; mod. bleached; locally fractured; local mino. bitumen as in pyrite [illegible] fractures; locally well bleached	M		S				
115 .9	100		0									
.0	100		2	∓30°	118.1 Clay chip 118.15 minor bitumen along bedding parallel to 60°CA 119.9 parallel hairline fractures minor bitumen	M					tr	MR70-5
.0	100		2	∓30° ∓20°							tr	
.1												

GAMMA LOG (CPS/DIV) 20 40 60 80

DDH No. MR70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION		BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicate	Rotation	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
125							W							
	100		7		126.0: sericite on fracture face		M							
.1														
							W	M						
	100		6	∓20° ∓20°								tr tr		MR70-6
130 .1														
	100		1											
.2														
135	100		1											
				∓20°	135.9: tr py as diss. along fracture face	py								
.2														
	100		1											
.3														
140				∓25°	140.3: tr py, sericite along fracture face	py								MR70-7
	100		8											
.3				∓30° ∓30°								tr tr		
	100		3											
145 .4														
					146.3: 2.5 cm green siltstone interbed; So 65°CA									
	100		0											MR70-8
.4														
			0											

DDH No. MR70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	[illegible]	[illegible]	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
150	100												
.5													MR70-8
	100		0		153.1: 15mm intb. green slt-sh. 153.8: 2cm intb. green shale 153.85 start of weak to moderate bitumen, mostly as cm wide impregnation - weakly fractured - mostly closed						W		
.5													
155	100		6	∓30° ∓50° ∓40°									
.6				∓30°									
	100		6										MR70-9
160													
.6													
	100		0										
.7													
165	100		6										
.7													
	100		0										
.8													MR70-10
170	100		3										
.8				∓30° ∓60°									
	100		11	∓30° ∓30°	174.4: 2cm green slt intercalated								

DDH No. MR 70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Rotation	GAMMA LOG (CPS/DIV) 20 (20 40 60 80)	SAM #
.9	97				1784-178.9: ground core	E					E		
.9													MR70-11
140	100		4										
.0	97												
185						3 to 5							
.0	100		9	1/30 1/30°									
.1			730	20°	tr. silicate on fracture								MR70-12
190					190.5-190.9: ground core						M		
.1			730		190-217.5: zone of moderate to strong fracturing with mod. to strong bitumen along faces & impregnated along porous bands; mod. to well bleached								
.2			730										
.2			730										MR70-13

DDH No. MR70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Sil. alt.	Bt.	SAM #
3	100		>30			M					M	MR70-13
3	100		>30		203.2: 2cm slt. interbed - green 205-245.6: m-g to c-g ss, coarsening downwards. 205.9: 4cm red slt. interbed bsl So 50°CA; up. contact irregular 206 - 10 cm rehealed bx; weakly silicified					w		
3	100		>30									
4	100		>30		210-35-210-6: bx - rehealed but friable. 211.1-211.5 bx 211.5-217.5: fracture intensity decreases to moderate 211.9: 1 cm green slt. interbed						M to S	MR70-14
4	100		>30		213.6, 213.8: 1cm green slt. interbeds. 214: tr silicification + v/g enhedral q on hairline frac.					tr		
5			20		217.5 - 10 cm rehealed bx.							
5			13	∓25° ∓40° ∓45° ∓15°						tr		MR70-15
6			10	∓50° 25° ∓	221.4 hairline frac w/ enhedral q 221.5-223.6: minor light green colour (reduction?) mostly ∥ So + along fracs. 222.2: hairline fault (2mm) rehealed, with bedding rotated either side of it; 25°CA	M to S			M	tr		

GAMMA LOG (CPS/DIV) 20

20 40 60 80

DDH No. MR70

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 #
	100		3		C-g ss with minor f-g intervals, poorly bleached & weakly fractured; minor tar along fractures + rare porous intervals.	m			W		W		
7						W	In						
	100		0										MR70-16
7					230.15: 1cm interbed green slt. So 70°CA								
	100		0	≠30°									
8													
	100		1										
8													
	100		2		238.7: 5cm interbed green slt. So 60°CA								
9													MR70-17
	100		7	≠20° ≠20° ≠20°	241.6: 5cm interbed green slt.						tr tr tr		
9													
	100		10	≠30°							tr		
0					245.6 - 339.4 m Fair Point 5 m. - disconformable contact at 70°CA - massive C-g, clay-rich ss; minor local fractures; weakly bleached; pebbly to conglomeratic in pool								MR70-18
0													

DDH No. MR-20

PAGE 12 OF 19

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	Silicified	Bituminous	GAMMA LOG (CPS/DIV) 20	SAM #
					red mottled c-g ss	W	W					20 40 60 80	
1	100		0										
2	100		2										
	100		2	∓10°									
					261.3: 2cm reddish silt into bed So 60° CA									
	100		2	∓20°									
				∓20°									
3					264.3: 15 cm reddish slt. interbed So 65° CA								
	100		2										
				∓35°									
4	100		0										
	100		1										
5	100												

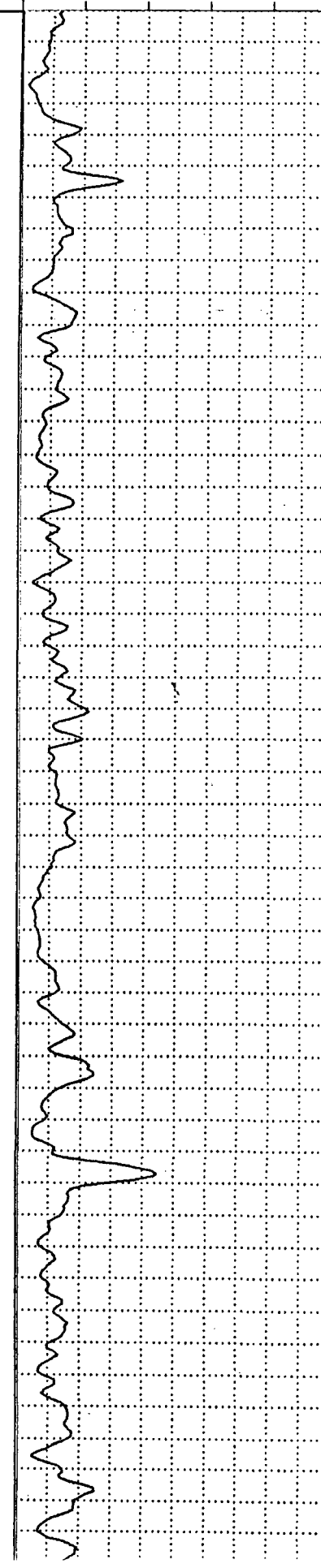
MR20-19

MR20-20

MR20-21

DDH No. [illegible]

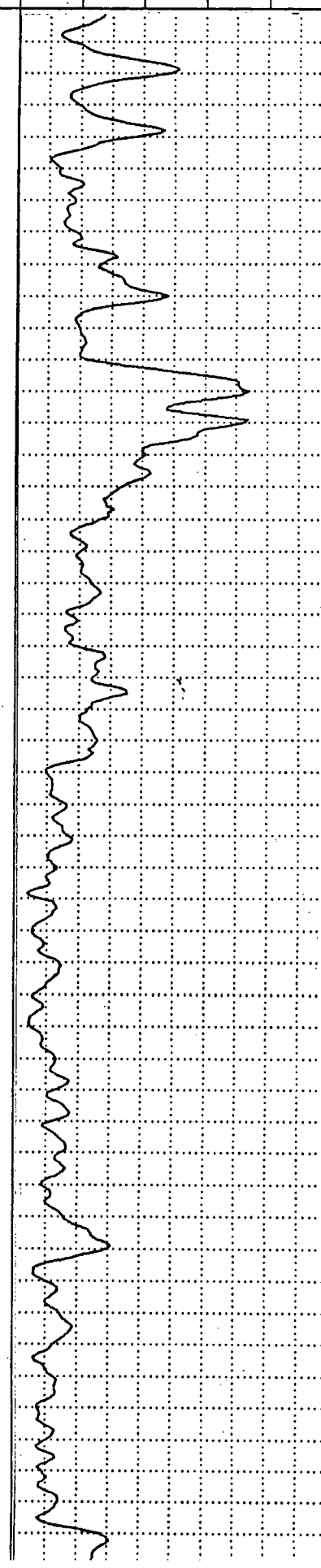
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Altered	GAMMA LOG (CPS/DIV) 20	SAM #
					275.6: 18 cm reddish alt. interbed. So 50°CA	W	W						
.5	100		0		278.4-281.0 C-g to conglomeratic ss								MR70-21
.5	100		0										
.5	100		0										MR70-22
.6	100		0		287.6-300.9 Conglomeratic ss coarse grained, oligomictic matrix supported; predominantly angular to subangular q pebbles; generally massively bedded; local unconformable contacts; graded bedding shows tops up.								
.6	100		0										
.7	100		1										MR70-23
.7	100		0										
.8													



DDH No. MR 70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.			SAM #
300					300.9-311.7 fanglomerate reverse graded bedding across unit - cobbles to ca. 10 cm grade downwards to pebbles + c-g ss; dark red primary hem. colour		m to S					
8	100		0									
9												
303	100		0									MR70-24
9												
			5									
310												
0	100		4		311.7-339.4 c-g to conglomerate ss, with slt-sh interbeds towards base	W	W					
0												
315	100		5									MR70-25
1												
	100		3									
1												
320	100		2		320.0-320.7 Conglomerate interbed. 320.5: minor fault ~5 mm wide; gouge + bx							
2												
	100		0									MR70-26

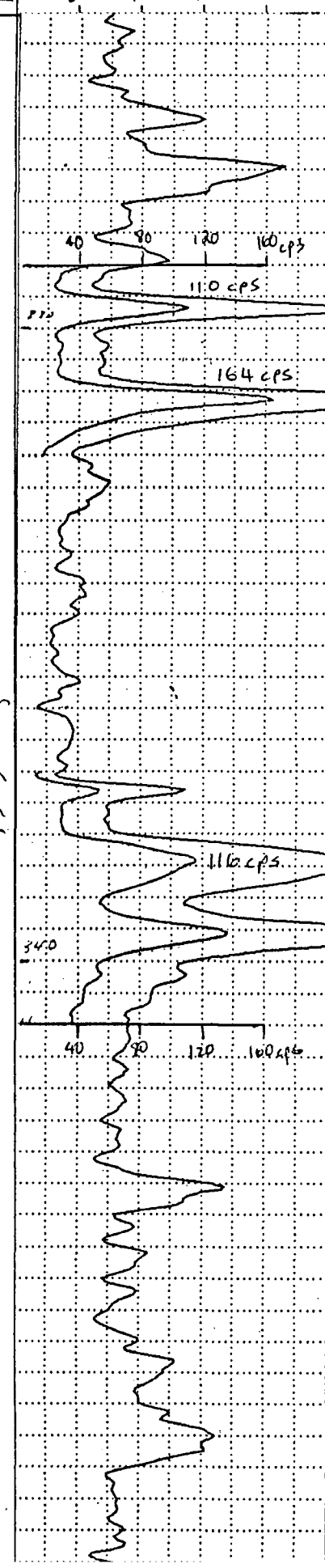
GAMMA LOG (CPS/DIV) 20



DDH No. MR70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	Silicified	Rt.
325	100		0								
330	100		1		329.4-329.7: red slt-sh interbed vertical fracture (10° Cd) with North up relative to South						
	100		0		331.6-331.9: red sh-slt interbed						
335	100		1	∓40° ∓60° ∓5°	338.5-339.4 fanglomerate mod. fractured with bitumen on faces						ts
	100		15	∓20°	Unconformity at 339.4 m						ts ts ts
340	100		4		339.4-341.2 ultracataclasite/pseudotachylite; black, massive, aphanitic matrix with 0-5% vfg to mg [illegible] fragments. Strongly [illegible]						
					341.2-343.3 massive gf mylonite, vfg-% foliated, >50% gf. [illegible] fragments						
345	100		+10		343.3-~355 highly altered (fs-q) sericite-chlorite bx; texture varies from bx through augen-laminated gr; th gb; foliation [illegible] developed above 348 m						
	100		4	∓20°	348 - well fol. 11CA						

GAMMA LOG (CPS/DIV) 20



SAM #

MR70-26

MR70-27

28

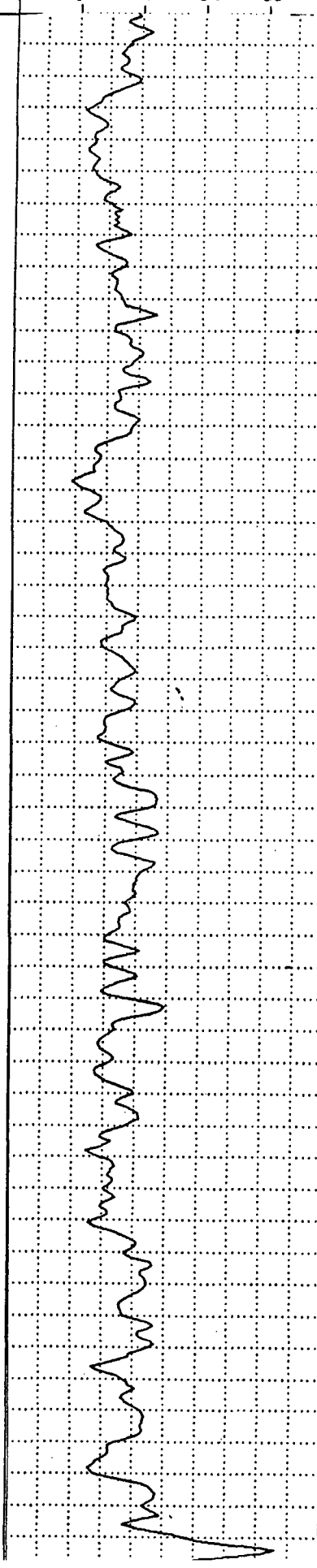
29

DDH No. MR70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	SAM #
350			4	S ≠ 0°								
7				10°								
			3									
355					~355-358.8 gf bx; similar to above but with 1-5% gf as foliated dissemination							
7												30
			6									31
				≠ 20° ≠ 0°	358.8-363.2 pegmatoidal bx. Alternate green colour with relict & slightly f-m k spar fragments; locally mylonitic; weakly bleached							32
7												33
360			5	≠ 30° ≠ 10°		W						
8												
			4		363.2-365.3: gf bx; fg q-sericite chlorite gf rock							34
				≠ 30° ≠ 5°								
365												35
			4		365.3-369.9: pegmatoidal bx coarse fs frags (to 2 cm) in m-g sericite + chlorite matrix							
9												
370					369.9-382.6 sericite chlorite gf rock as above; mixture of bx and laminated fabric 1-10% gf mainly as foliated dissemination; minor peg bx intervals							
9												MR70-36
0												

GAMMA LOG (CPS/DIV) 20

20 40 60 80



DDH No. MR70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	Silicified	Bitumen
375	100		9	≠20°							
0	100		8	≠0°							
380				≠15° ≠20° ✓0-20° ≠20°							
	100		8								
					382.6-384.0 pegmatoid bx qtz sericite; relict fs (cracked)						
385	100		6	≠30°	384-385: gf bx; 5-10% gf foliated lens; massive on shears; minor py blebs.	py					
					385.0-386.2: coarse pegmatoid bx as above;						
	100		16		386.2-388.2: gf bx; upper 30cm massive gf; to 10% after						
					388.2-396.8: mixed pegmatoid bx and lenticular to augen gneiss; trace to 1% gf mostly along shears; foliation widely variable						
390	100		8	≠50° ✓45°							
				✓80°							
	100		11	≠30° ✓50° ≠0°							
395				≠15° ✓60°							
	100		4		396.8-417.9 (EOH) grey, f-g, laminated gn, tr to 1% gf; local blebs to 5 cm of disrupted vq; variable foliation, generally [illegible]						
	100		2	✓45°							

GAMMA LOG (CPS/DIV) 20

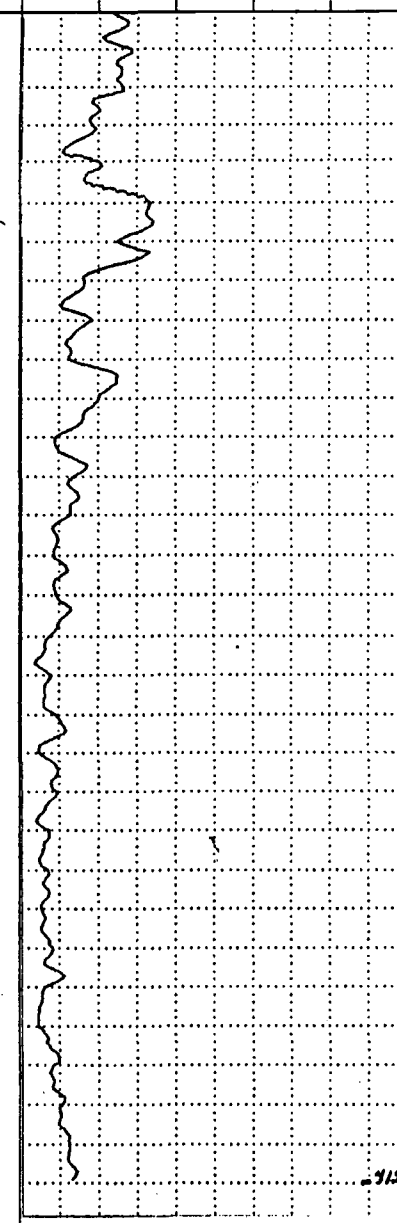
20 40 60 80

SAM #

MR70-37

DDH No. MP70

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	Silicified	Rotated	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
400					[illegible] overall, [illegible] appearance of an intermediate [illegible] volcanic								
.4	100		5								h		
.5													
405	100		4										
				‡20°									
.5													
	100		11			py cp?							
410				‡20°	410.6: increasing quantity of veins which is sheared and brecciated traces of py and cp?								
.6	100		3	‡30°									
.6													
				‡20°									
415	100		3										
.7					416.4-EOH: white veins with selvages of fine chlorite ribbons								
					417.9 EOH								



URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

H - 405m = 62°
339.268°
200m = 64

PROJECT NO. MR70

HOLE NO. MR70

COORDINATE X:

COORDINATE Y:

ELEVATION Z:

INCLINATION: -60°

AZIMUTH: 262°

BOREHOLE Ø: BQ

CASING DEPTH:

CASING WALL THICKNESS: NQ

WATER or MUD LEVEL:

DATE of DRILLING:

TOTAL DEPTH:

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

INSTRUMENT: Mt. Sopris SN: 79

PROBE GAMMA: 4142

PROBE NEUTRON:

DATE of LOGGING: 7/19

TIME of LOGGING: 10:30 PM - 3:00 AM (Head TEST 9:00 PM - 10:30 PM)

TOTAL DEPTH:

OPERATOR: [redacted]

REMARKS:

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0	10 cps/div	5 m/min	100/1
415			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHAR SCAL

FORM 32

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR71

AREA: Maybelle River	DISPOSITION: 6286050005 PROJECT NO.: GB 7142	PAGE 1 OF 16	
COORDINATES: Line 428 N 324+15 E	PLASTIC PIPE: (yes) no DEPTH: ~275 CASING REMOVED: yes (no) DEPTH: 58.1	DRILLED BY: Advance COMMENCED: 8 July 89 COMPLETED: 13 July 89	
TOTAL DEPTH (m): 349.6 ELEVATION (m A.S.L.): 297 est. DIP/AZIMUTH: -60°/262°	GEOLOGY BY: R. Orr / 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: ACID ACID PARAB

TEST AT(m)	150	250	EOH
DIP	63	-64°	-63°
AZIMUTH	—	—	268°

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 51 m	Overburden (top picked from γ log.
ATHABASCA GROUP — MF formation	51 - 224.2 m	Weakly to locally moderately bleached, fine-medium grained sandstone, moderate maroon hematite, only weakly fractured, bitumen along fractures
ATHABASCA GROUP — FP Formation	224.2 - 261.2 m	Coarse grained, moderately bleached sandstone, mostly fractured with zones of clay gouge, locally strong core loss, bitumen common
AG (BSMT)	261.2 - 270.5 m	Basement thrust/fault zone, intense clay alteration (>90% white and green clay), heavy core loss
AG (FP Fm)	270.5 - 275.5	Coarse grained, bleached sandstone with zones of clay gouge.
BASEMENT	275.5 - 291.7 m	Intensely altered and faulted quartz feldspar mylonite, strong white clay alteration with zones of dark green aphanitic rock, locally strongly fractured,
	291.7 - 326.7 m	Less altered qtz-fsp-mylonite/gneiss, moderate white clay alteration, weakly hematized, intervals of pegmatoid.
	326.7 - 349.6 m	Chloritized, garnetiferous (biotite)-(amphibole/pyroxene)-quartz-feldspar-gneiss, (mafic-plagioclase gneiss), locally hematized, gneissic to mylonitic texture due to ductile deformation, fractured, locally veined, large garnet (~1-2cm) to small (few mm's) porphyroblasts, small scale folding evident.
	E.O.H. @ 349.6m	

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

UTM-E: 518475
UTM-N: 6456450
Downhole β Peaks anomalous background 258m - 271m 50-100 cps.

samples.
MR71-1 57.1-64 MF
-2 64-74 "
-3 74-84 "
-4 84-94 "
-5 94-104 "
-6 104-114 "
-7 114-124 "
-8 124-134 "
-9 134-144 "
-10 144-154 "
-11 154-164 "
-12 164-174 "
-13 174-184 "
-14 184-194 "
-15 194-204 "
-16 204-214 "

MR71-17 214-224.2
-18 224.2-231
-19 231-241 "
-20 241-251 "
-21 251-261.2 "
-22 344.5-346 BSMT

DDH NO. MK 11

PAGE 2 OF 10

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	GAMMA LOG (CPS/DIV) 20	SAM #
0					0 - 58.1 m casing						
					0 - 51 m Dual						
5											
10											
15											
20											



Disclaimer

This page was inserted by the Coal and Minerals Development Branch, to provide a reference that the pages three to sixteen associated with this report is not contained in the assessment report on file.

APPENDIX 2: Lithogeochemical Data, DDH MR73-MR86, MT01, and MT02.

All oxide data in %, trace element data in ppm.

Clay data is either in the form of calculated clay from chemical values (MR73-MR86 and MT02) or as XRD clays (MR68-MR72 and MT01.)

Summer 1989 Lithogeochemical Results

DD H No	Sa N	From	To m	Length	Lithology	Al2O3 %	Fe2O3 %	CaO %	MgO %	K2O %	Na2O %	P2O5 %	TiO2 %	MnO %	Ni ppm	Pb ppm	Pb ppm	As ppm	Bi ppm	U ppm	U ppm	Lab
MR 68	1	80.0	84.0	4.00	M.F. Fm.	1.44	1.10	0.048	0.075	0.294	0.010	0.02	0.06	0.007	9	3	1.0	1.1	0.2	1.3	0.2	SRC
MR 68	2	84.0	94.0	10.00	M.F. Fm.	3.03	1.14	0.040	0.075	0.410	0.016	0.02	0.10	0.007	8	2	1.0	1.5	0.2	1.7	0.2	SRC
MR 68	3	94.0	104.0	10.00	M.F. Fm.	2.94	0.56	0.021	0.048	0.460	0.027	0.03	0.08	0.003	9	5	1.3	1.3	0.2	1.1	0.2	SRC
MR 68	4	104.0	114.0	10.00	M.F. Fm.	4.44	0.95	0.024	0.060	0.442	0.025	0.03	0.20	0.008	9	4	1.6	1.3	0.2	1.9	0.4	SRC
MR 68	5	114.0	124.0	10.00	M.F. Fm.	0.39	1.04	0.041	0.052	0.091	0.005	0.02	0.02	0.007	9	2	0.5	0.5	0.2	0.9	0.2	SRC
MR 68	6	124.0	134.0	10.00	M.F. Fm.	0.47	0.55	0.021	0.025	0.106	0.005	0.02	0.03	0.003	9	2	0.6	0.6	0.2	1.0	0.2	SRC
MR 68	7	134.0	144.0	10.00	M.F. Fm.	0.78	1.43	0.083	0.110	0.184	0.007	0.02	0.10	0.011	9	2	1.2	1.3	0.2	1.1	0.2	SRC
MR 68	8	144.0	154.0	10.00	M.F. Fm.	0.82	0.94	0.042	0.054	0.204	0.006	0.03	0.04	0.005	9	2	0.7	0.8	0.2	1.0	0.2	SRC
MR 68	9	164.0	164.0	10.00	M.F. Fm.	1.15	1.04	0.041	0.063	0.300	0.006	0.01	0.06	0.006	7	2	0.6	1.0	0.2	0.8	0.2	SRC
MR 68	10	164.0	174.0	10.00	M.F. Fm.	0.78	0.59	0.017	0.031	0.213	0.003	0.01	0.03	0.002	10	2	0.7	0.5	0.2	0.8	0.2	SRC
MR 68	11	174.0	184.0	10.00	M.F. Fm.	0.81	0.54	0.011	0.028	0.207	0.004	0.01	0.04	0.002	11	2	0.6	0.5	0.2	0.8	0.2	SRC
MR 68	12	184.0	194.0	10.00	M.F. Fm.	1.20	0.46	0.016	0.040	0.320	0.004	0.02	0.04	0.002	9	2	0.9	0.5	1.4	1.2	0.2	SRC
MR 68	13	194.0	204.0	10.00	M.F. Fm.	0.73	0.53	0.012	0.021	0.161	0.001	0.02	0.04	0.002	9	2	0.5	0.5	0.2	0.4	0.2	SRC
MR 68	14	204.0	214.0	10.00	M.F. Fm.	0.66	0.67	0.021	0.035	0.148	0.004	0.02	0.02	0.005	7	9	1.2	0.5	0.2	0.2	0.2	SRC
MR 68	15	214.0	224.0	10.00	M.F. Fm.	0.77	0.44	0.011	0.021	0.172	0.001	0.02	0.02	0.001	8	2	0.5	0.6	0.2	0.5	0.2	SRC
MR 68	16	224.0	234.0	10.00	M.F. Fm.	0.75	0.66	0.023	0.023	0.161	0.001	0.02	0.03	0.003	8	2	0.3	0.6	0.2	0.5	0.2	SRC
MR 68	17	234.0	244.0	10.00	M.F. Fm.	0.64	0.73	0.010	0.019	0.141	0.001	0.02	0.02	0.002	9	2	0.4	0.8	0.2	0.6	0.2	SRC
MR 68	18	244.0	254.0	10.00	M.F. Fm.	1.47	0.60	0.016	0.040	0.349	0.001	0.01	0.04	0.001	9	2	0.7	0.6	0.2	0.4	0.2	SRC
MR 68	19	254.0	264.0	10.00	M.F. Fm.	1.12	0.62	0.015	0.031	0.249	0.001	0.02	0.05	0.002	10	2	0.3	0.6	0.2	0.6	0.2	SRC
MR 68	20	264.0	274.4	10.40	M.F. Fm.	1.21	0.67	0.015	0.039	0.276	0.001	0.01	0.04	0.004	7	2	0.3	0.5	0.2	0.5	0.2	SRC
MR 68	21	274.4	279.0	4.60	F.P. Fm.	4.12	3.62	0.021	0.076	0.711	0.007	0.05	0.32	0.012	9	2	0.8	1.8	0.2	1.6	0.2	SRC
MR 68	22	279.0	289.0	10.00	F.P. Fm.	4.17	1.95	0.016	0.043	0.456	0.033	0.03	0.18	0.006	10	5	6.5	1.1	0.2	0.4	0.2	SRC
MR 68	23	289.0	299.0	10.00	F.P. Fm.	5.33	1.18	0.023	0.046	0.606	0.005	0.04	0.11	0.004	8	2	0.4	1.3	0.2	1.7	0.3	SRC
MR 68	24	299.0	309.0	10.00	F.P. Fm.	6.17	1.15	0.023	0.047	0.601	0.014	0.07	0.12	0.006	8	2	0.4	1.3	0.2	0.9	0.2	SRC
MR 68	25	309.0	319.0	10.00	F.P. Fm.	4.72	1.92	0.015	0.047	0.473	0.012	0.03	0.09	0.007	8	2	0.3	1.5	0.2	2.0	0.2	SRC
MR 68	26	319.0	329.0	10.00	F.P. Fm.	3.44	2.21	0.021	0.049	0.474	0.014	0.04	0.09	0.017	8	2	0.2	2.1	0.2	1.6	0.2	SRC
MR 68	27	329.0	339.0	10.00	F.P. Fm.	3.09	1.82	0.020	0.037	0.362	0.018	0.05	0.08	0.014	9	2	0.3	2.5	0.2	0.9	0.2	SRC
MR 68	28	339.0	349.0	10.00	F.P. Fm.	4.61	1.93	0.028	0.039	0.373	0.017	0.09	0.13	0.011	9	2	0.2	2.6	0.2	1.2	0.2	SRC
MR 68	29	349.0	359.0	10.00	F.P. Fm.	4.78	1.73	0.017	0.049	0.379	0.014	0.07	0.33	0.006	10	2	0.2	2.6	0.2	1.3	0.2	SRC
MR 68	30	359.0	369.0	10.00	F.P. Fm.	7.60	5.05	0.046	0.048	0.355	0.076	0.14	0.89	0.009	9	2	2.1	2.6	0.2	3.1	0.2	SRC
MR 68	31	369.0	379.6	10.60	F.P. Fm.	9.60	3.06	0.091	0.096	0.986	0.061	0.11	0.27	0.003	11	2	0.6	1.1	0.2	1.7	0.2	SRC
MR 68	32	365.0	366.0	1.00	F.P. Fm.	7.40	4.91	0.032	0.047	0.377	0.021	0.14	0.53	0.007	10	2	1.5	2.6	0.2	2.0	0.2	SRC
MR 68	33	366.0	367.0	1.00	F.P. Fm.	9.00	12.39	0.096	0.174	1.590	0.059	0.15	0.49	0.035	8	16	14.1	3.8	0.2	2.2	0.2	SRC
MR 68	34	367.0	368.0	1.00	F.P. Fm.	7.10	1.13	0.017	0.048	0.494	0.027	0.06	0.14	0.001	8	2	0.2	1.1	0.2	1.5	0.2	SRC
MR 68	35	385.0	386.0	1.00	Basement	19.10	3.30	0.137	6.840	1.634	0.241	0.05	0.70	0.024	160	23	20.8	0.6	9.6	35.0	25.0	SRC
MR 68	36	456.5	457.5	1.00	Basement	19.00	8.89	0.950	6.380	2.820	2.502	0.09	0.55	0.084	33	15	2.4	0.3	0.2	6.0	1.6	SRC
MR 68	37	399.3	399.4	0.10	Basement	18.50	9.22	0.120	2.470	4.570	0.298	0.06	0.53	0.084	97	7	7.0	0.6	1.8	3.8	0.6	SRC
MR 68	38	428.7	428.8	0.10	Basement	9.20	12.02	0.191	2.670	2.241	0.126	0.10	0.45	0.073	93	3	5.5	0.5	0.8	1.5	0.7	SRC
MR 68	39	429.4	429.5	0.10	Basement	12.20	17.05	0.400	6.450	1.520	0.230	0.25	0.71	0.091	169	12	12.1	0.3	1.3	3.2	0.9	SRC
MR 68	40	473.4	473.5	0.10	Basement	11.30	7.62	0.110	3.150	1.650	0.180	0.06	0.65	0.048	60	5	7.9	0.3	0.6	4.3	0.7	SRC
MR 69	1	61.1	62.0	0.90	M.F. Fm.	0.36	5.33	0.226	0.175	0.071	0.001	0.05	0.03	0.021	8	2	3.1	2.3	0.3	0.6	0.2	SRC
MR 69	2	62.0	72.0	10.00	M.F. Fm.	0.63	1.15	0.108	0.080	0.140	0.003	0.04	0.02	0.005	5	4	1.2	0.7	0.2	1.0	0.2	SRC
MR 69	3	72.0	82.0	10.00	M.F. Fm.	0.49	1.15	0.090	0.071	0.104	0.001	0.05	0.02	0.006	7	4	1.7	1.0	0.2	0.7	0.2	SRC
MR 69	4	82.0	92.0	10.00	M.F. Fm.	3.72	1.45	0.080	0.088	0.347	0.007	0.14	0.15	0.009	7	6	2.3	2.9	0.2	1.1	0.2	SRC
MR 69	5	92.0	102.0	10.00	M.F. Fm.	2.39	1.66	0.080	0.074	0.342	0.002	0.03	0.03	0.016	6	2	0.3	2.0	0.2	0.6	0.2	SRC
MR 69	6	102.0	112.0	10.00	M.F. Fm.	2.04	1.07	0.030	0.056	0.314	0.002	0.03	0.02	0.007	7	2	0.6	1.2	0.2	0.5	0.2	SRC
MR 69	7	112.0	122.0	10.00	M.F. Fm.	2.62	0.83	0.021	0.046	0.316	0.006	0.03	0.05	0.004	6	5	0.5	1.0	0.2	0.7	0.2	SRC
MR 69	8	122.0	132.0	10.00	M.F. Fm.	0.65	0.70	0.025	0.033	0.127	0.001	0.03	0.02	0.005	7	4	0.6	0.7	0.2	0.2	0.2	SRC
MR 69	9	132.0	142.0	10.00	M.F. Fm.	0.89	0.65	0.018	0.032	0.184	0.001	0.03	0.03	0.002	6	2	0.8	0.9	0.2	0.2	0.2	SRC

Summer 1989 Lithogeochemical Results

DD H No	Sa N	From	To m	Length	Lithology	Al2O3 %	Fe2O3 %	CaO %	MgO %	K2O %	Na2O %	P2O5 %	TiO2 %	MnO %	Ni ppm	Pb ppm	Pb ppm	As ppm	Bi ppm	U ppm	U ppm	Lab
MR 69	10	142.0	152.0	10.00	M.F. Fm.	1.92	1.03	0.024	0.055	0.377	0.001	0.04	0.05	0.005	8	6	0.7	1.2	0.2	0.3	0.2	SRC
MR 69	11	152.0	162.0	10.00	M.F. Fm.	1.08	2.64	0.104	0.155	0.208	0.001	0.06	0.02	0.010	7	2	1.0	1.4	0.2	0.6	0.2	SRC
MR 69	12	162.0	172.0	10.00	M.F. Fm.	0.83	0.55	0.019	0.035	0.170	0.002	0.04	0.06	0.002	7	2	0.4	0.7	0.2	0.5	0.2	SRC
MR 69	13	172.0	182.0	10.00	M.F. Fm.	0.66	0.33	0.014	0.022	0.128	0.009	0.02	0.03	0.001	4	4	0.6	0.5	0.2	0.2	0.2	SRC
MR 69	14	182.0	192.0	10.00	M.F. Fm.	0.72	0.45	0.016	0.029	0.178	0.005	0.02	0.02	0.001	5	2	0.7	0.5	0.2	0.3	0.2	SRC
MR 69	15	192.0	202.0	10.00	M.F. Fm.	0.99	0.49	0.016	0.035	0.236	0.007	0.03	0.06	0.002	8	3	0.8	1.0	0.2	0.6	0.2	SRC
MR 69	16	202.0	212.0	10.00	M.F. Fm.	0.82	0.56	0.014	0.032	0.192	0.006	0.02	0.02	0.002	8	3	0.2	0.9	0.2	0.7	0.2	SRC
MR 69	17	212.0	222.0	10.00	M.F. Fm.	1.09	0.67	0.016	0.037	0.268	0.005	0.03	0.03	0.003	8	2	0.3	1.2	0.2	0.3	0.2	SRC
MR 69	18	222.0	232.0	10.00	M.F. Fm.	1.66	0.95	0.021	0.059	0.448	0.005	0.03	0.05	0.008	5	5	0.8	1.4	0.2	0.6	0.2	SRC
MR 69	19	232.0	242.0	10.00	M.F. Fm.	0.69	0.87	0.021	0.036	0.131	0.005	0.03	0.03	0.006	8	3	0.4	1.2	0.2	0.2	0.2	SRC
MR 69	20	242.0	252.0	10.00	M.F. Fm.	0.74	0.49	0.136	0.025	0.174	0.004	0.12	0.02	0.001	6	2	0.7	1.4	0.2	0.2	0.2	SRC
MR 69	21	252.0	262.0	10.00	M.F. Fm.	1.00	3.75	0.440	0.159	0.234	0.007	0.32	0.05	0.045	6	3	1.3	2.1	0.2	0.2	0.3	SRC
MR 69	22	262.0	272.0	10.00	M.F. Fm.	0.87	2.20	0.089	0.089	0.205	0.004	0.06	0.02	0.023	8	4	0.3	1.4	0.2	0.5	0.3	SRC
MR 69	23	272.0	282.0	10.00	M.F. Fm.	1.17	1.09	0.017	0.048	0.281	0.005	0.03	0.03	0.004	6	3	0.4	1.6	0.2	0.5	0.2	SRC
MR 69	24	282.0	292.0	10.00	M.F. Fm.	1.60	1.57	0.078	0.056	0.369	0.004	0.07	0.03	0.007	5	2	0.4	1.6	0.2	0.5	0.2	SRC
MR 69	25	292.0	302.0	10.00	M.F. Fm.	1.56	1.31	0.023	0.051	0.397	0.004	0.03	0.02	0.007	6	3	0.6	1.4	0.2	0.2	0.2	SRC
MR 69	26	302.0	312.2	10.20	M.F. Fm.	1.07	1.81	0.081	0.048	0.252	0.008	0.07	0.11	0.004	6	3	0.8	1.4	0.2	1.3	0.2	SRC
MR 69	27	312.2	321.0	8.80	F.P. Fm.	7.60	2.01	0.029	0.068	0.535	0.024	0.10	0.30	0.006	8	8	1.5	4.5	0.3	1.5	0.2	SRC
MR 69	28	321.0	331.0	10.00	F.P. Fm.	5.19	3.60	0.032	0.094	1.036	0.018	0.05	0.09	0.026	6	3	0.6	3.6	0.2	1.0	0.2	SRC
MR 69	29	331.0	341.0	10.00	F.P. Fm.	6.69	2.42	0.036	0.120	1.443	0.029	0.08	0.14	0.020	8	5	0.6	5.4	0.2	0.6	0.2	SRC
MR 69	30	341.0	351.0	10.00	F.P. Fm.	3.92	1.58	0.028	0.071	0.765	0.012	0.05	0.05	0.004	5	2	0.4	2.7	0.2	0.5	0.3	SRC
MR 69	31	351.0	361.0	10.00	F.P. Fm.	5.90	1.92	0.042	0.088	0.878	0.021	0.07	0.06	0.004	8	2	0.6	2.1	0.2	0.6	0.2	SRC
MR 69	32	361.0	371.0	10.00	F.P. Fm.	6.82	0.88	0.034	0.069	0.637	0.043	0.09	0.06	0.002	7	5	1.1	1.8	0.2	0.7	0.2	SRC
MR 69	33	371.0	381.0	10.00	F.P. Fm.	5.38	1.72	0.053	0.044	0.292	0.027	0.08	0.11	0.005	6	7	1.3	2.1	0.2	0.6	0.2	SRC
MR 69	34	381.0	391.0	10.00	F.P. Fm.	7.93	3.40	0.061	0.080	0.741	0.026	0.12	0.10	0.009	7	3	1.4	3.8	0.2	1.3	0.2	SRC
MR 69	35	391.0	401.0	10.00	F.P. Fm.	5.86	1.72	0.024	0.066	0.635	0.020	0.09	0.16	0.006	7	2	0.2	2.5	0.2	1.3	0.2	SRC
MR 69	36	401.0	411.0	10.00	F.P. Fm.	4.02	2.13	0.037	0.055	0.556	0.018	0.09	0.06	0.017	6	2	0.2	2.1	0.2	0.5	0.2	SRC
MR 69	37	411.0	421.3	10.30	F.P. Fm.	8.60	1.67	0.063	0.182	1.720	0.036	0.11	0.23	0.001	6	4	0.5	1.6	0.2	1.3	0.5	SRC
MR 69	38	360.5	361.5	1.00	F.P. Fm.	8.26	0.96	0.066	0.134	1.508	0.047	0.11	0.12	0.002	7	5	1.3	1.8	0.3	1.7	0.2	SRC
MR 69	39	361.5	362.5	1.00	F.P. Fm.	5.53	1.11	0.066	0.062	0.438	0.009	0.11	0.09	0.012	6	2	1.0	1.6	0.3	0.3	0.2	SRC
MR 69	40	362.5	363.5	1.00	F.P. Fm.	6.65	1.25	0.050	0.077	0.714	0.013	0.11	0.10	0.007	6	2	1.1	1.8	0.2	0.9	0.2	SRC
MR 69	41	363.5	364.5	1.00	F.P. Fm.	6.96	1.35	0.052	0.113	1.046	0.017	0.13	0.14	0.006	7	2	1.7	2.0	0.4	1.5	0.2	SRC
MR 69	42	364.5	365.5	1.00	F.P. Fm.	7.29	0.89	0.064	0.133	1.280	0.019	0.14	0.18	0.004	8	3	1.7	1.6	0.4	1.3	0.2	SRC
MR 69	43	365.5	366.5	1.00	F.P. Fm.	6.15	0.82	0.083	0.063	0.480	0.011	0.11	0.10	0.003	6	2	0.9	1.6	0.2	1.1	0.2	SRC
MR 69	44	366.5	367.5	1.00	F.P. Fm.	6.65	1.04	0.103	0.093	0.695	0.019	0.09	0.19	0.005	10	5	2.2	2.0	0.3	1.4	0.2	SRC
MR 69	45	367.5	368.5	1.00	F.P. Fm.	6.73	1.13	0.210	0.102	0.476	0.024	0.10	0.14	0.005	5	4	1.4	1.4	0.4	1.2	0.2	SRC
MR 69	46	368.5	369.5	1.00	F.P. Fm.	6.72	1.08	0.427	0.158	0.664	0.039	0.08	0.11	0.003	8	3	0.8	1.4	0.3	0.7	0.2	SRC
MR 69	47	369.5	370.5	1.00	F.P. Fm.	7.36	1.24	0.362	0.145	0.725	0.038	0.09	0.13	0.003	6	2	0.8	2.2	0.2	1.1	0.2	SRC
MR 69	48	370.5	371.9	1.40	F.P. Fm.	6.43	0.99	0.077	0.064	0.491	0.021	0.11	0.11	0.002	10	2	0.4	1.8	0.2	1.3	0.2	SRC
MR 69	49	382.5	383.5	1.00	F.P. Fm.	2.31	11.24	0.194	0.101	0.264	0.014	0.21	0.09	0.131	7	2	0.1	3.7	0.2	0.3	0.3	SRC
MR 69	50	383.5	384.5	1.00	F.P. Fm.	8.32	3.86	0.173	0.103	0.972	0.024	0.27	0.16	0.011	8	2	1.3	4.2	0.4	1.4	0.2	SRC
MR 69	51	384.5	385.5	1.00	F.P. Fm.	5.50	1.83	0.182	0.149	1.434	0.024	0.21	0.14	0.004	8	2	0.6	3.1	0.2	1.1	0.2	SRC
MR 69	52	385.5	386.5	1.00	F.P. Fm.	9.91	7.04	0.204	0.235	2.370	0.034	0.30	0.21	0.041	9	2	1.0	5.5	0.2	2.3	0.2	SRC
MR 69	53	386.5	387.5	1.00	F.P. Fm.	7.15	4.29	0.247	0.094	0.801	0.017	0.24	0.11	0.014	10	2	0.6	4.4	0.3	1.7	0.2	SRC
MR 69	54	387.5	388.0	0.50	F.P. Fm.	4.93	6.90	0.171	0.114	0.496	0.016	0.13	0.11	0.097	8	2	0.2	2.7	0.2	1.6	0.2	SRC
MR 69	56	463.6	463.8	0.20	Basement	14.73	14.46	5.541	4.574	2.650	0.941	0.07	1.13	0.189	74	2	1.3	0.9	0.6	2.4	0.9	SRC
MR 69	58	432.0	433.0	1.00	Basement	12.64	2.55	1.236	4.573	0.447	0.142	0.69	0.17	0.011	184	7	7.5	1.7	0.8	87.0	92.0	SRC
MR 70	1	78.4	85.0	6.60	M.F. Fm.	0.58	0.54	0.020	0.035	0.122	0.006	0.02	0.04	0.003	6	11	7.8	0.9	0.2	0.6	0.2	SRC
MR 70	2	85.0	95.0	10.00	M.F. Fm.	0.44	0.86	0.032	0.048	0.095	0.003	0.01	0.02	0.004	5	4	0.9	0.8	0.2	0.2	0.2	SRC

Summer 1989 Lithogeochemical Results

DD H No	Sa N	From	To m	Length	Lithology	Al2O3 %	Fe2O3 %	CaO %	MgO %	K2O %	Na2O %	P2O5 %	TiO2 %	MnO %	Ni ppm	Pb ppm	Pb ppm	As ppm	Bi ppm	U ppm	U ppm	Lab
MR 70	3	95.0	105.0	10.00	M.F. Fm.	0.44	0.57	0.024	0.027	0.087	0.003	0.03	0.03	0.002	4	5	0.7	0.8	0.2	0.3	0.2	SRC
MR 70	4	105.0	115.0	10.00	M.F. Fm.	0.79	1.51	0.069	0.103	0.179	0.007	0.01	0.03	0.007	7	6	7.1	0.6	0.2	0.3	0.2	SRC
MR 70	5	115.0	125.0	10.00	M.F. Fm.	0.86	0.43	0.016	0.036	0.206	0.002	0.01	0.05	0.002	4	5	0.6	0.6	0.2	0.5	0.2	SRC
MR 70	6	125.0	135.0	10.00	M.F. Fm.	0.96	0.49	0.023	0.070	0.217	0.009	0.01	0.05	0.002	5	5	0.8	0.6	0.2	0.5	0.2	SRC
MR 70	7	135.0	145.0	10.00	M.F. Fm.	1.01	0.58	0.189	0.099	0.206	0.007	0.01	0.05	0.002	7	3	1.0	0.6	0.5	0.4	0.2	SRC
MR 70	8	145.0	155.0	10.00	M.F. Fm.	1.77	0.47	0.022	0.124	0.452	0.007	0.01	0.03	0.002	5	4	1.5	0.6	0.2	0.4	0.2	SRC
MR 70	9	155.0	165.0	10.00	M.F. Fm.	1.03	0.75	0.020	0.116	0.199	0.002	0.01	0.03	0.002	8	2	1.8	0.6	0.2	0.3	0.2	SRC
MR 70	10	165.0	175.0	10.00	M.F. Fm.	1.92	0.61	0.026	0.143	0.465	0.001	0.01	0.07	0.002	6	3	0.6	0.9	0.3	0.5	0.2	SRC
MR 70	11	175.0	185.0	10.00	M.F. Fm.	0.83	0.48	0.014	0.063	0.178	0.002	0.01	0.04	0.002	5	3	0.7	0.8	0.2	0.3	0.2	SRC
MR 70	12	185.0	195.0	10.00	M.F. Fm.	0.75	0.44	0.015	0.051	0.164	0.002	0.01	0.02	0.002	6	4	1.4	0.8	0.2	0.2	0.2	SRC
MR 70	13	195.0	205.0	10.00	M.F. Fm.	1.04	0.47	0.014	0.052	0.248	0.001	0.01	0.04	0.002	6	5	1.6	0.4	0.2	0.3	0.2	SRC
MR 70	14	205.0	215.0	10.00	M.F. Fm.	0.65	0.42	0.012	0.043	0.152	0.004	0.01	0.03	0.002	7	7	1.2	0.4	0.2	0.4	0.2	SRC
MR 70	15	215.0	225.0	10.00	M.F. Fm.	1.03	0.53	0.015	0.070	0.238	0.005	0.01	0.08	0.002	7	9	0.9	0.6	0.2	0.7	0.2	SRC
MR 70	16	225.0	235.0	10.00	M.F. Fm.	1.13	0.68	0.020	0.053	0.288	0.008	0.01	0.07	0.003	7	6	1.0	0.8	0.2	0.7	0.2	SRC
MR 70	17	235.0	245.6	10.60	M.F. Fm.	0.62	0.78	0.033	0.046	0.146	0.002	0.01	0.05	0.005	8	2	0.4	0.6	0.2	0.5	0.2	SRC
MR 70	18	245.6	249.0	3.40	F.P. Fm.	3.74	2.36	0.026	0.081	0.950	0.008	0.03	0.09	0.019	7	3	1.8	2.0	0.2	0.8	0.2	SRC
MR 70	19	249.0	259.0	10.00	F.P. Fm.	3.90	1.41	0.023	0.060	0.625	0.008	0.03	0.12	0.008	6	2	1.1	1.7	0.2	0.5	0.2	SRC
MR 70	20	259.0	269.0	10.00	F.P. Fm.	5.15	1.29	0.019	0.028	0.257	0.015	0.03	0.10	0.009	4	2	0.6	1.9	0.2	0.8	0.2	SRC
MR 70	21	269.0	279.0	10.00	F.P. Fm.	4.37	1.64	0.018	0.025	0.232	0.005	0.03	0.17	0.008	6	3	0.4	1.9	0.2	0.7	0.2	SRC
MR 70	22	279.0	289.0	10.00	F.P. Fm.	5.64	1.77	0.023	0.045	0.609	0.012	0.05	0.18	0.006	5	2	0.9	3.3	0.2	1.5	0.2	SRC
MR 70	23	289.0	299.0	10.00	F.P. Fm.	3.35	1.47	0.015	0.026	0.205	0.007	0.02	0.10	0.008	5	2	0.3	1.7	0.2	0.7	0.3	SRC
MR 70	24	299.0	309.0	10.00	F.P. Fm.	7.16	3.05	0.024	0.074	0.648	0.019	0.05	0.41	0.015	6	2	1.1	4.3	0.2	1.5	0.4	SRC
MR 70	25	309.0	319.0	10.00	F.P. Fm.	4.86	1.84	0.015	0.034	0.292	0.010	0.02	0.18	0.008	5	2	0.6	1.4	0.2	0.7	0.2	SRC
MR 70	26	319.0	329.0	10.00	F.P. Fm.	6.25	0.73	0.016	0.035	0.298	0.012	0.01	0.10	0.002	5	2	0.3	0.9	0.2	0.7	0.2	SRC
MR 70	27	329.0	339.4	10.40	F.P. Fm.	7.79	1.09	0.108	0.699	1.879	0.033	0.09	0.25	0.002	14	2	0.9	0.9	0.2	1.9	0.3	SRC
MR 71	1	58.1	64.0	5.90	M.F. Fm.	0.54	0.72	0.039	0.074	0.102	0.009	0.02	0.02	0.003	8	12	12.5	1.7	0.2	0.9	0.2	SRC
MR 71	2	64.0	74.0	10.00	M.F. Fm.	0.65	0.69	0.027	0.038	0.136	0.007	0.01	0.02	0.003	6	5	1.0	1.9	0.2	0.7	0.2	SRC
MR 71	3	74.0	84.0	10.00	M.F. Fm.	0.65	2.02	0.103	0.118	0.119	0.001	0.02	0.02	0.013	5	7	0.9	2.1	0.2	0.7	0.2	SRC
MR 71	4	84.0	94.0	10.00	M.F. Fm.	1.26	0.63	0.033	0.050	0.305	0.003	0.01	0.05	0.002	4	3	0.9	1.4	0.2	1.0	0.2	SRC
MR 71	5	94.0	104.0	10.00	M.F. Fm.	1.14	0.64	0.049	0.041	0.268	0.006	0.01	0.04	0.002	4	2	0.7	1.1	0.2	0.6	0.2	SRC
MR 71	6	104.0	114.0	10.00	M.F. Fm.	0.99	0.69	0.020	0.028	0.226	0.010	0.01	0.03	0.003	4	2	1.3	1.3	0.2	4.4	2.5	SRC
MR 71	7	114.0	124.0	10.00	M.F. Fm.	1.17	0.57	0.086	0.044	0.282	0.006	0.01	0.02	0.002	4	4	0.8	1.3	0.3	0.8	0.3	SRC
MR 71	8	124.0	134.0	10.00	M.F. Fm.	1.12	0.64	0.159	0.041	0.264	0.001	0.01	0.03	0.002	5	3	1.4	1.3	0.2	0.9	0.3	SRC
MR 71	9	134.0	144.0	10.00	M.F. Fm.	0.74	0.56	0.614	0.056	0.170	0.006	0.01	0.02	0.002	3	8	0.8	0.9	0.2	0.5	0.2	SRC
MR 71	10	144.0	154.0	10.00	M.F. Fm.	0.78	0.44	0.057	0.063	0.169	0.001	0.01	0.02	0.001	4	4	0.6	1.1	0.2	0.7	0.7	SRC
MR 71	11	154.0	164.0	10.00	M.F. Fm.	0.80	0.66	0.052	0.104	0.168	0.001	0.01	0.02	0.002	4	3	0.7	1.3	0.2	1.0	1.0	SRC
MR 71	12	164.0	174.0	10.00	M.F. Fm.	0.59	0.61	0.023	0.064	0.112	0.004	0.01	0.01	0.002	5	2	1.4	1.1	0.2	0.6	0.7	SRC
MR 71	13	174.0	184.0	10.00	M.F. Fm.	1.28	0.61	0.053	0.106	0.286	0.004	0.01	0.02	0.002	4	5	3.3	1.3	0.2	0.3	0.2	SRC
MR 71	14	184.0	194.0	10.00	M.F. Fm.	0.79	0.63	0.033	0.040	0.174	0.001	0.01	0.02	0.002	6	2	0.3	1.3	0.2	0.5	0.5	SRC
MR 71	15	194.0	204.0	10.00	M.F. Fm.	0.87	0.62	0.031	0.047	0.194	0.001	0.01	0.02	0.002	3	2	0.9	1.3	0.2	0.7	0.4	SRC
MR 71	16	204.0	214.0	10.00	M.F. Fm.	1.06	0.94	0.075	0.105	0.253	0.004	0.01	0.04	0.005	3	2	0.4	1.4	0.2	1.1	0.6	SRC
MR 71	17	214.0	224.2	10.20	M.F. Fm.	2.68	0.83	0.060	0.117	0.705	0.004	0.02	0.07	0.004	4	5	2.1	1.7	0.2	1.1	0.2	SRC
MR 71	18	224.2	231.0	6.80	F.P. Fm.	4.34	1.25	0.059	0.136	1.014	0.022	0.02	0.09	0.008	4	7	3.0	1.6	0.2	1.0	0.2	SRC
MR 71	19	231.0	241.0	10.00	F.P. Fm.	6.20	1.60	0.091	0.211	0.982	0.051	0.05	0.11	0.008	6	5	2.4	2.2	0.2	1.3	0.2	SRC
MR 71	20	241.0	251.0	10.00	F.P. Fm.	4.69	1.31	0.083	0.148	0.656	0.028	0.03	0.07	0.006	6	5	1.6	1.6	0.2	1.0	0.2	SRC
MR 71	21	251.0	261.0	10.00	F.P. Fm.	4.76	0.95	0.052	0.168	1.137	0.012	0.06	0.31	0.003	5	15	7.4	1.7	0.2	2.0	0.2	SRC
MR 71	22	344.5	344.6	0.10	Basement	16.08	8.36	0.222	2.760	3.220	0.807	0.01	0.77	0.074	82	12	0.2	0.3	0.2	2.6	0.2	SRC,VP
MR 72	1	48.8	55.0	6.20	M.F. Fm.	1.12	2.16	0.053	0.085	0.270	0.012	0.03	0.06	0.016	4	6	3.1	1.3	0.2	1.1	0.4	SRC
MR 72	2	65.0	65.0	10.00	M.F. Fm.	1.18	1.43	0.060	0.070	0.238	0.006	0.02	0.07	0.013	4	6	1.4	1.4	0.2	0.7	0.2	SRC

Summer 1989 Lithogeochemical Results

DD	H No	Sa N	From	To m	Length	Lithology	Al2O3 %	Fe2O3 %	CaO %	MgO %	K2O %	Na2O %	P2O5 %	TiO2 %	MnO %	Ni ppm	Pb ppm	Pb ppm	As ppm	Bi ppm	U ppm	U ppm	Lab
MR	72	3	65.0	75.0	10.00	M.F. Fm.	2.49	1.69	0.061	0.077	0.384	0.007	0.02	0.06	0.015	5	3	0.3	0.9	0.2	0.5	0.2	SRC
MR	72	4	75.0	85.0	10.00	M.F. Fm.	2.56	5.83	0.888	0.228	0.489	0.007	0.02	0.06	0.019	3	2	0.3	1.4	0.2	1.1	0.2	SRC
MR	72	5	85.0	95.0	10.00	M.F. Fm.	1.34	1.46	0.065	0.090	0.269	0.007	0.01	0.05	0.010	3	4	1.6	0.9	0.2	0.7	0.2	SRC
MR	72	6	95.0	105.0	10.00	M.F. Fm.	5.17	0.99	0.043	0.099	0.763	0.026	0.02	0.22	0.008	5	5	1.0	1.3	0.2	0.7	0.2	SRC
MR	72	7	105.0	115.0	10.00	M.F. Fm.	0.70	0.84	0.046	0.049	0.141	0.003	0.01	0.03	0.006	4	7	2.0	0.8	0.2	0.2	0.2	SRC
MR	72	8	115.0	125.0	10.00	M.F. Fm.	0.99	1.25	0.043	0.066	0.225	0.006	0.01	0.03	0.010	5	4	0.5	1.1	0.2	0.4	0.2	SRC
MR	72	9	125.0	135.0	10.00	M.F. Fm.	0.40	0.98	0.991	0.039	0.070	0.005	0.81	0.03	0.007	5	3	2.0	3.4	0.2	3.2	3.1	SRC
MR	72	10	135.0	145.0	10.00	M.F. Fm.	1.12	1.81	0.072	0.066	0.265	0.007	0.03	0.05	0.014	5	2	1.2	1.1	0.2	0.2	0.2	SRC
MR	72	11	145.0	155.0	10.00	M.F. Fm.	0.46	1.05	0.728	0.023	0.084	0.001	0.57	0.02	0.007	5	2	1.1	0.9	0.2	1.3	1.1	SRC
MR	72	12	155.0	165.0	10.00	M.F. Fm.	1.21	3.38	0.806	0.044	0.289	0.002	0.61	0.04	0.037	3	3	1.7	2.7	0.2	4.5	2.3	SRC
MR	72	13	165.0	175.0	10.00	M.F. Fm.	0.72	2.75	0.117	0.030	0.155	0.003	0.06	0.03	0.030	6	2	1.2	2.6	0.2	0.5	0.4	SRC
MR	72	14	175.0	185.0	10.00	M.F. Fm.	0.64	5.73	0.268	0.030	0.133	0.014	0.17	0.03	0.075	4	5	1.1	5.1	0.6	1.6	0.2	SRC
MR	72	15	185.0	195.0	10.00	M.F. Fm.	0.75	7.84	0.524	0.039	0.155	0.008	0.38	0.04	0.122	3	2	0.9	10.0	0.2	1.5	0.7	SRC
MR	72	16	195.0	205.0	10.00	M.F. Fm.	0.67	12.32	1.057	0.039	0.132	0.012	0.74	0.03	0.185	5	2	1.6	11.0	0.5	3.5	2.5	SRC
MR	72	17	205.0	215.0	10.00	M.F. Fm.	0.61	3.38	0.170	0.029	0.109	0.016	0.10	0.03	0.052	5	2	1.0	3.4	0.2	1.1	0.4	SRC
MR	72	18	215.0	225.0	10.00	M.F. Fm.	0.92	2.70	0.157	0.048	0.217	0.017	0.10	0.04	0.042	7	5	1.2	2.6	0.2	0.9	0.2	SRC
MR	72	19	225.0	235.0	10.00	M.F. Fm.	1.13	1.61	1.320	0.041	0.277	0.015	0.96	0.03	0.018	3	3	2.2	1.9	0.2	5.4	4.3	SRC
MR	72	20	235.0	245.0	10.00	M.F. Fm.	1.03	1.52	0.059	0.041	0.239	0.012	0.04	0.03	0.010	4	3	0.7	1.6	0.2	0.3	0.2	SRC
MR	72	21	245.0	255.0	10.00	M.F. Fm.	1.92	1.76	0.042	0.062	0.504	0.015	0.02	0.06	0.009	4	2	0.9	1.9	0.2	0.4	0.2	SRC
MR	72	22	255.0	265.0	10.00	M.F. Fm.	0.98	12.25	0.516	0.063	0.200	0.014	0.34	0.05	0.126	4	2	0.1	6.9	0.2	0.4	0.4	SRC
MR	72	23	265.0	276.3	10.30	M.F. Fm.	2.63	12.04	0.138	0.093	0.186	0.018	0.17	0.13	0.035	5	2	0.6	10.0	0.2	1.5	0.2	SRC
MR	72	24	276.3	285.0	9.70	F.P. Fm.	5.13	8.39	0.049	0.251	0.406	0.018	0.05	0.11	0.044	5	2	1.2	4.2	0.2	1.6	0.4	SRC
MR	72	25	285.0	295.0	10.00	F.P. Fm.	4.85	2.23	0.057	0.047	0.208	0.020	0.05	0.08	0.010	6	3	0.7	2.9	0.2	0.8	0.3	SRC
MR	72	26	295.0	305.0	10.00	F.P. Fm.	4.44	1.66	0.031	0.037	0.197	0.019	0.03	0.07	0.010	5	3	0.5	2.3	0.2	0.6	0.2	SRC
MR	72	27	305.0	315.0	10.00	F.P. Fm.	5.58	2.44	0.044	0.124	0.632	0.030	0.05	0.14	0.018	6	3	1.7	3.6	0.2	1.0	0.2	SRC
MR	72	28	315.0	325.0	10.00	F.P. Fm.	5.42	1.18	0.102	0.154	1.093	0.037	0.10	0.09	0.005	6	5	1.5	3.7	0.2	1.5	0.3	SRC
MR	72	29	325.0	335.0	10.00	F.P. Fm.	9.15	8.30	0.840	0.404	0.992	0.052	0.65	0.21	0.047	14	3	1.7	7.2	0.2	3.3	0.9	SRC
MR	72	30	335.0	345.0	10.00	F.P. Fm.	4.55	1.12	0.044	0.154	1.246	0.033	0.04	0.10	0.010	9	5	1.6	2.9	0.2	0.6	0.2	SRC
MR	72	31	345.0	355.0	10.00	F.P. Fm.	3.16	1.56	0.094	0.116	0.440	0.024	0.07	0.10	0.007	6	2	0.5	2.3	0.2	0.9	0.2	SRC
MR	72	32	355.0	365.0	10.00	F.P. Fm.	3.99	1.87	0.166	0.182	0.590	0.023	0.13	0.13	0.012	9	5	0.9	2.8	0.2	0.7	0.3	SRC
MR	72	33	365.0	375.0	10.00	F.P. Fm.	4.04	1.56	0.054	0.140	0.677	0.012	0.05	0.13	0.011	8	2	0.7	2.6	0.2	1.0	0.2	SRC
MR	72	34	375.0	385.2	10.20	F.P. Fm.	7.01	1.91	0.047	0.123	1.104	0.017	0.04	0.18	0.011	8	2	0.1	1.8	0.3	0.8	0.2	SRC
MT	1	1	130.3	130.4	0.10	M.F. Fm.	1.18	0.49	0.032	0.080	0.236	0.018	0.01	0.07	0.002	5	2	0.8	1.0	0.2	1.9	0.3	SRC
MT	1	2	140.4	140.5	0.10	M.F. Fm.	1.27	0.45	0.026	0.099	0.263	0.018	0.01	0.03	0.001	3	2	0.2	1.0	0.2	0.9	0.2	SRC
MT	1	3	232.2	232.3	0.10	F.P. Fm.	7.66	0.41	0.022	0.111	0.423	0.080	0.04	0.11	0.001	8	2	0.2	2.0	0.2	1.3	0.3	SRC
MT	1	4	280.6	280.7	0.10	F.P. Fm.	9.79	0.36	0.024	0.028	0.213	0.018	0.07	0.20	0.001	6	4	3.8	2.0	0.2	12.0	7.2	SRC
MT	1	5	296.8	296.9	0.10	F.P. Fm.	6.67	0.87	0.029	0.039	0.345	0.018	0.13	0.12	0.002	6	2	0.2	2.5	0.2	0.8	0.2	SRC
MT	1	6	70.1	79.0	8.90	M.F. Fm.	7.25	0.89	0.037	0.090	0.711	0.023	0.03	0.26	0.006	4	3	0.9	10.0	0.2	1.2	0.4	SRC
MT	1	7	79.0	89.0	10.00	M.F. Fm.	0.79	0.66	0.032	0.037	0.190	0.012	0.01	0.03	0.053	5	2	0.4	2.1	0.2	0.4	0.2	SRC
MT	1	8	89.0	99.0	10.00	M.F. Fm.	0.46	1.02	0.050	0.038	0.120	0.022	0.01	0.02	0.008	5	2	0.2	0.8	0.2	0.5	0.3	SRC
MT	1	9	99.0	109.0	10.00	M.F. Fm.	1.62	0.67	0.023	0.054	0.422	0.015	0.02	0.07	0.003	4	2	1.4	1.6	0.2	0.5	0.2	SRC
MT	1	10	109.0	119.0	10.00	M.F. Fm.	0.43	0.48	0.020	0.024	0.099	0.013	0.01	0.02	0.002	7	2	0.3	1.6	0.2	0.5	0.2	SRC
MT	1	11	119.0	129.0	10.00	M.F. Fm.	0.71	0.48	0.020	0.031	0.166	0.011	0.01	0.06	0.002	5	2	0.2	2.0	0.2	0.9	0.2	SRC
MT	1	12	129.0	139.0	10.00	M.F. Fm.	0.98	0.67	0.028	0.042	0.236	0.013	0.01	0.05	0.004	3	2	0.2	0.8	0.2	0.9	0.3	SRC
MT	1	13	139.0	149.0	10.00	M.F. Fm.	0.72	0.98	0.033	0.044	0.196	0.013	0.01	0.03	0.007	6	2	0.2	0.8	0.2	1.2	0.2	SRC
MT	1	14	149.0	159.0	10.00	M.F. Fm.	0.77	0.56	0.020	0.028	0.186	0.011	0.01	0.02	0.002	2	2	0.2	1.1	0.2	0.7	0.3	SRC
MT	1	15	159.0	169.0	10.00	M.F. Fm.	0.68	0.82	0.031	0.022	0.176	0.011	0.01	0.01	0.002	5	2	0.2	0.8	0.2	0.6	0.3	SRC
MT	1	16	169.0	179.0	10.00	M.F. Fm.	0.59	1.02	0.017	0.020	0.151	0.018	0.01	0.02	0.004	5	2	0.2	0.8	0.2	0.8	0.4	SRC
MT	1	17	179.0	189.0	10.00	M.F. Fm.	0.77	0.81	0.016	0.027	0.180	0.014	0.01	0.02	0.003	5	2	0.3	1.1	0.2	0.5	0.2	SRC

Summer 1989 Lithogeochemical Results

DD H No	Sa N	From	To m	Length	Lithology	Al2O3 %	Fe2O3 %	CaO %	MgO %	K2O %	Na2O %	P2O5 %	TiO2 %	MnO %	Ni ppm	Pb ppm	Pb ppm	As ppm	Bi ppm	U ppm	U ppm	Lab
MT 1	18	189.0	199.0	10.00	M.F. Fm.	0.71	0.80	0.024	0.050	0.137	0.017	0.01	0.05	0.007	6	4	1.4	1.0	0.2	1.1	0.3	SRC
MT 1	19	199.0	209.0	10.00	M.F. Fm.	0.98	1.06	0.034	0.034	0.233	0.014	0.07	0.05	0.005	8	2	0.4	1.1	0.2	0.5	0.2	SRC
MT 1	20	209.0	219.0	10.00	M.F. Fm.	1.98	0.75	0.026	0.054	0.568	0.016	0.03	0.06	0.004	5	3	0.5	1.3	0.2	0.7	0.2	SRC
MT 1	21	219.0	229.2	10.20	M.F. Fm.	1.29	1.10	0.022	0.042	0.291	0.016	0.01	0.04	0.006	4	2	0.2	1.1	0.2	0.5	0.2	SRC
MT 1	22	229.2	237.0	7.80	F.P. Fm.	5.57	1.13	0.026	0.041	0.458	0.015	0.08	0.07	0.004	5	2	0.2	2.5	0.2	1.4	0.2	SRC
MT 1	23	237.0	247.0	10.00	F.P. Fm.	3.18	1.14	0.027	0.037	0.396	0.016	0.07	0.05	0.004	6	3	0.5	2.6	0.2	0.9	0.2	SRC
MT 1	24	247.0	257.0	10.00	F.P. Fm.	4.06	1.89	0.026	0.037	0.473	0.017	0.08	0.10	0.007	5	2	0.2	2.8	0.2	1.0	0.2	SRC
MT 1	25	257.0	267.0	10.00	F.P. Fm.	3.23	1.42	0.020	0.022	0.276	0.016	0.05	0.06	0.004	6	2	0.4	2.0	0.2	0.8	0.2	SRC
MT 1	26	267.0	277.0	10.00	F.P. Fm.	3.93	1.14	0.047	0.020	0.166	0.012	0.06	0.06	0.004	6	2	0.2	1.3	0.2	1.0	0.2	SRC
MT 1	27	277.0	287.0	10.00	F.P. Fm.	5.17	1.31	0.023	0.021	0.100	0.014	0.06	0.08	0.005	7	2	1.3	2.1	0.2	1.9	0.8	SRC
MT 1	28	287.0	297.0	10.00	F.P. Fm.	5.41	2.77	0.027	0.022	0.108	0.018	0.11	0.15	0.009	7	2	0.2	3.3	0.2	1.5	0.3	SRC
MT 1	29	297.0	307.0	10.00	F.P. Fm.	5.46	1.81	0.020	0.021	0.136	0.015	0.03	0.10	0.004	7	2	0.2	2.1	0.2	1.0	0.4	SRC
MT 1	30	307.0	317.0	10.00	F.P. Fm.	5.40	2.66	0.026	0.031	0.305	0.018	0.09	0.14	0.004	6	2	0.2	2.6	0.2	1.1	0.3	SRC
MT 1	31	317.0	327.0	10.00	F.P. Fm.	5.85	2.26	0.032	0.129	1.057	0.022	0.06	0.15	0.005	8	2	0.2	2.8	0.2	1.1	0.2	SRC

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DD H No	Sa N	From	To m	Length	Lithology	Mo ppm	Zn ppm	Cd ppm	Co ppm	Cr ppm	V ppm	Be ppm	Cu ppm	Zr ppm	Y ppm	La ppm	Th ppm	Sr ppm	Ba ppm	B ppm	Au ppb	XRD Il %	XRD Chlor %	XRD Kaol %	XRD %Clay	Lab
MR 68	1	80.0	84.0	4.00	M.F. Fm.	6	15	1	3	306	7	0.1	10	103	3	15	3	82	17	60	-	88	0	13	5	SRC
MR 68	2	84.0	94.0	10.00	M.F. Fm.	5	9	1	2	265	9	0.1	7	224	7	15	4	114	22	50	-	60	0	40	6	SRC
MR 68	3	94.0	104.0	10.00	M.F. Fm.	5	9	1	1	353	10	0.2	10	128	7	21	3	132	25	60	-	69	1	30	5	SRC
MR 68	4	104.0	114.0	10.00	M.F. Fm.	7	5	1	1	327	11	0.3	13	248	10	25	10	126	36	40	-	38	1	61	5	SRC
MR 68	5	114.0	124.0	10.00	M.F. Fm.	5	3	1	1	361	5	0.1	4	44	2	13	3	62	13	30	-	100	0	0	4	SRC
MR 68	6	124.0	134.0	10.00	M.F. Fm.	5	3	1	1	356	4	0.1	5	53	3	13	3	77	14	20	-	100	0	0	3	SRC
MR 68	7	134.0	144.0	10.00	M.F. Fm.	5	7	1	1	294	12	0.1	7	235	6	16	3	135	15	50	-	94	0	6	5	SRC
MR 68	8	144.0	154.0	10.00	M.F. Fm.	5	9	1	1	328	10	0.1	11	78	3	9	3	236	11	20	-	96	0	4	6	SRC
MR 68	9	154.0	164.0	10.00	M.F. Fm.	6	7	1	1	215	11	0.1	9	170	4	8	3	55	11	30	-	99	0	1	4	SRC
MR 68	10	164.0	174.0	10.00	M.F. Fm.	7	4	1	2	369	9	0.1	2	95	4	8	3	38	9	10	-	100	0	0	2	SRC
MR 68	11	174.0	184.0	10.00	M.F. Fm.	6	3	1	1	455	9	0.1	4	125	4	8	3	43	8	10	-	98	0	2	2	SRC
MR 68	12	184.0	194.0	10.00	M.F. Fm.	10	4	1	1	383	12	0.1	2	122	8	7	3	108	8	30	-	100	0	0	1	SRC
MR 68	13	194.0	204.0	10.00	M.F. Fm.	5	5	1	2	458	6	0.1	6	120	5	8	3	111	7	20	-	100	0	0	2	SRC
MR 68	14	204.0	214.0	10.00	M.F. Fm.	6	4	1	1	347	7	0.1	3	36	3	7	3	103	6	20	-	99	0	1	5	SRC
MR 68	15	214.0	224.0	10.00	M.F. Fm.	8	4	1	1	352	4	0.1	6	62	3	9	3	99	6	20	-	99	0	1	4	SRC
MR 68	16	224.0	234.0	10.00	M.F. Fm.	5	3	1	1	316	6	0.1	4	63	2	9	3	98	5	20	-	98	0	2	2	SRC
MR 68	17	234.0	244.0	10.00	M.F. Fm.	9	3	1	1	499	6	0.1	5	69	2	6	3	114	5	10	-	99	0	1	3	SRC
MR 68	18	244.0	254.0	10.00	M.F. Fm.	5	3	1	1	366	7	0.1	2	126	2	8	3	56	6	40	-	99	0	1	2	SRC
MR 68	19	254.0	254.0	10.00	M.F. Fm.	6	5	1	3	519	8	0.1	5	137	4	6	3	136	6	20	-	100	0	0	3	SRC
MR 68	20	264.0	274.4	10.40	M.F. Fm.	5	5	1	1	311	6	0.1	3	78	3	6	3	53	7	40	-	98	0	2	2	SRC
MR 68	21	274.4	279.0	4.60	F.P. Fm.	6	6	1	6	329	17	0.3	7	129	7	28	28	312	28	40	-	58	0	42	8	SRC
MR 68	22	279.0	289.0	10.00	F.P. Fm.	5	5	1	1	339	14	0.1	3	91	2	16	18	212	22	30	-	54	0	46	4	SRC
MR 68	23	289.0	299.0	10.00	F.P. Fm.	6	9	1	2	341	7	0.1	3	79	2	20	11	314	21	40	-	48	0	52	8	SRC
MR 68	24	299.0	309.0	10.00	F.P. Fm.	6	5	1	2	282	9	0.2	2	78	3	19	11	465	21	40	-	54	0	46	7	SRC
MR 68	25	309.0	319.0	10.00	F.P. Fm.	5	6	1	1	344	10	0.1	4	61	2	17	8	228	17	30	-	56	0	44	7	SRC
MR 68	26	319.0	329.0	10.00	F.P. Fm.	5	7	1	1	273	13	0.1	3	81	2	14	9	302	25	30	-	60	0	40	6	SRC
MR 68	27	329.0	339.0	10.00	F.P. Fm.	5	7	1	1	304	11	0.1	4	61	3	16	9	350	21	40	-	54	0	46	5	SRC
MR 68	28	339.0	349.0	10.00	F.P. Fm.	5	16	1	1	366	14	0.1	5	118	5	30	14	644	55	40	-	53	0	47	6	SRC
MR 68	29	349.0	359.0	10.00	F.P. Fm.	8	7	1	6	438	15	0.2	5	143	12	43	27	393	60	20	-	42	0	58	6	SRC
MR 68	30	359.0	369.0	10.00	F.P. Fm.	7	13	1	10	246	42	0.8	8	984	8	71	122	687	40	30	-	32	0	68	4	SRC
MR 68	31	369.0	379.6	10.60	F.P. Fm.	5	8	1	2	371	24	0.6	9	128	4	37	20	272	35	40	-	42	0	58	5	SRC
MR 68	32	365.0	366.0	1.00	F.P. Fm.	5	10	1	7	313	36	0.7	5	523	5	69	99	657	36	30	-					SRC
MR 68	33	366.0	367.0	1.00	F.P. Fm.	5	13	3	7	223	85	0.9	9	276	5	85	102	895	40	60	-					SRC
MR 68	34	367.0	368.0	1.00	F.P. Fm.	5	7	1	3	290	6	0.2	2	96	2	34	15	349	15	30	-					SRC
MR 68	35	385.0	386.0	1.00	Basement	5	124	1	39	176	272	4.1	20	200	5	48	17	86	62	70	12					SRC
MR 68	36	456.5	457.6	1.00	Basement	20	105	2	19	84	116	2.6	8	658	29	137	124	85	426	70	11					SRC
MR 68	37	399.3	399.4	0.10	Basement	23	45	2	57	181	228	2.0	42	151	12	85	20	57	815	20	13					SRC
MR 68	38	428.7	428.8	0.10	Basement	32	98	3	32	259	162	0.9	61	150	16	44	10	10	429	20	6					SRC
MR 68	39	429.4	429.5	0.10	Basement	54	184	5	52	196	219	2.2	33	184	16	62	20	17	137	50	8					SRC
MR 68	40	473.4	473.5	0.10	Basement	34	83	2	26	325	166	2.2	26	168	17	133	30	17	78	40	6					SRC
MR 69	1	61.1	62.0	0.90	M.F. Fm.	5	10	3	6	410	13	1.0	6	38	1	13	3	88	9	30	-	88	0	12	4	SRC
MR 69	2	62.0	72.0	10.00	M.F. Fm.	5	2	1	2	340	8	1.0	5	81	3	14	12	108	17	40	-	94	0	6	5	SRC
MR 69	3	72.0	82.0	10.00	M.F. Fm.	5	4	1	2	397	4	1.0	5	83	2	14	3	200	15	40	-	98	0	2	1	SRC
MR 69	4	82.0	92.0	10.00	M.F. Fm.	5	9	1	2	289	12	1.0	4	176	8	23	3	764	31	50	-	48	0	52	4	SRC
MR 69	5	92.0	102.0	10.00	M.F. Fm.	5	2	1	2	363	8	1.0	4	74	2	16	5	102	16	50	-	67	0	33	5	SRC
MR 69	6	102.0	112.0	10.00	M.F. Fm.	5	3	1	2	396	3	1.0	3	61	3	14	3	88	17	50	-	82	0	18	6	SRC
MR 69	7	112.0	122.0	10.00	M.F. Fm.	5	2	1	2	316	4	1.0	4	283	5	12	3	83	21	40	-	67	1	32	4	SRC
MR 69	8	122.0	132.0	10.00	M.F. Fm.	5	11	1	2	380	1	1.0	7	55	1	16	3	79	13	40	-	99	0	1	5	SRC

Summer 1989 Lithogeochemical Results

DD H No	Sa N	From	To m	Length	Lithology	Mo ppm	Zn ppm	Cd ppm	Co ppm	Cr ppm	V ppm	Be ppm	Cu ppm	Zr ppm	Y ppm	La ppm	Th ppm	Sr ppm	Ba ppm	B ppm	Au ppb	XRD Il %	XRD Chlor %	XRD Kaol %	XRD %Clay	Lab
MR 69	9	132.0	142.0	10.00	M.F. Fm.	5	3	1	2	345	4	1.0	5	59	2	13	3	78	15	50	-	96	0	4	5	SRC
MR 69	10	142.0	152.0	10.00	M.F. Fm.	5	4	1	2	428	6	1.0	4	137	4	13	4	136	17	60	-	84	0	16	7	SRC
MR 69	11	152.0	162.0	10.00	M.F. Fm.	5	1	1	2	422	10	1.0	4	83	7	14	3	119	14	40	-	75	0	25	2	SRC
MR 69	12	162.0	172.0	10.00	M.F. Fm.	5	2	1	2	410	6	1.0	3	106	3	11	3	126	15	50	-	99	0	1	2	SRC
MR 69	13	172.0	182.0	10.00	M.F. Fm.	5	4	1	2	294	3	1.0	5	66	1	10	3	53	9	30	-	99	0	1	3	SRC
MR 69	14	182.0	192.0	10.00	M.F. Fm.	5	4	1	2	376	6	1.0	7	95	2	8	3	48	9	30	-	99	0	1	4	SRC
MR 69	15	192.0	202.0	10.00	M.F. Fm.	5	8	1	2	434	4	1.0	8	207	5	10	3	58	9	40	-	99	0	1	1	SRC
MR 69	16	202.0	212.0	10.00	M.F. Fm.	5	4	1	2	403	5	1.0	6	137	2	8	3	62	8	40	-	99	0	1	2	SRC
MR 69	17	212.0	222.0	10.00	M.F. Fm.	5	5	1	3	605	8	1.0	2	176	3	9	3	79	7	50	-	99	0	1	1	SRC
MR 69	18	222.0	232.0	10.00	M.F. Fm.	5	1	1	2	346	6	1.0	2	186	3	9	3	93	11	40	-	100	0	0	6	SRC
MR 69	19	232.0	242.0	10.00	M.F. Fm.	5	15	1	2	406	5	1.0	8	77	1	9	3	71	6	40	-	98	0	2	1	SRC
MR 69	20	242.0	252.0	10.00	M.F. Fm.	5	3	1	2	365	4	1.0	6	42	4	11	5	92	5	40	-	97	0	3	4	SRC
MR 69	21	252.0	262.0	10.00	M.F. Fm.	5	13	2	2	400	18	1.0	8	122	6	15	5	78	6	50	-	85	0	15	2	SRC
MR 69	22	262.0	272.0	10.00	M.F. Fm.	6	3	1	2	468	14	1.0	5	61	3	13	6	57	2	40	-	91	0	9	1	SRC
MR 69	23	272.0	282.0	10.00	M.F. Fm.	5	2	1	2	459	10	1.0	4	98	4	13	8	85	4	40	-	90	0	10	1	SRC
MR 69	24	282.0	292.0	10.00	M.F. Fm.	5	5	1	2	357	7	1.0	3	122	5	14	3	81	6	50	-	92	0	8	6	SRC
MR 69	26	292.0	302.0	10.00	M.F. Fm.	5	2	1	2	410	10	1.0	7	125	3	8	8	60	3	70	-	94	0	6	4	SRC
MR 69	26	302.0	312.2	10.20	M.F. Fm.	5	14	1	2	395	10	1.0	14	376	5	8	12	45	2	80	-	88	0	12	4	SRC
MR 69	27	312.2	321.0	8.80	F.P. Fm.	5	14	1	2	317	19	1.0	9	122	10	41	16	351	70	80	-	33	0	67	9	SRC
MR 69	28	321.0	331.0	10.00	F.P. Fm.	5	3	1	2	328	21	1.0	5	70	4	17	12	225	23	60	-	74	1	25	8	SRC
MR 69	29	331.0	341.0	10.00	F.P. Fm.	6	3	1	2	473	19	1.0	5	99	4	22	16	417	25	60	-	71	2	27	10	SRC
MR 69	30	341.0	351.0	10.00	F.P. Fm.	5	3	1	2	316	14	1.0	4	48	1	13	11	227	12	70	-	68	1	31	7	SRC
MR 69	31	351.0	361.0	10.00	F.P. Fm.	6	8	1	2	460	11	1.0	8	67	5	20	11	268	12	70	-	61	0	39	3	SRC
MR 69	32	361.0	371.0	10.00	F.P. Fm.	8	7	1	2	362	7	1.0	10	90	6	29	11	395	18	70	-	61	0	39	2	SRC
MR 69	33	371.0	381.0	10.00	F.P. Fm.	5	12	1	2	342	17	1.0	9	89	3	23	11	296	13	70	-	54	0	46	1	SRC
MR 69	34	381.0	391.0	10.00	F.P. Fm.	6	4	1	2	302	22	1.0	4	108	4	38	16	566	21	60	-	49	0	51	8	SRC
MR 69	35	391.0	401.0	10.00	F.P. Fm.	5	3	1	2	300	13	1.0	7	92	3	33	22	626	27	70	-	59	0	41	7	SRC
MR 69	36	401.0	411.0	10.00	F.P. Fm.	5	3	1	2	274	13	1.0	4	70	3	23	15	601	27	50	-	75	0	25	7	SRC
MR 69	37	411.0	421.3	10.30	F.P. Fm.	5	5	1	2	253	26	1.0	10	161	4	40	29	491	49	90	-	72	3	25	11	SRC
MR 69	38	360.5	361.5	1.00	F.P. Fm.	5	5	1	2	282	17	1.0	11	115	7	37	11	568	20	90	-	87	0	13	3	SRC
MR 69	39	361.5	362.5	1.00	F.P. Fm.	5	13	2	2	334	10	1.0	7	100	3	34	10	275	15	70	-	61	0	39	2	SRC
MR 69	40	362.5	363.5	1.00	F.P. Fm.	14	6	1	8	411	11	1.0	5	83	4	24	13	354	17	70	-	63	0	37	3	SRC
MR 69	41	363.5	364.5	1.00	F.P. Fm.	21	12	1	11	624	16	1.0	5	111	5	28	9	396	16	110	-	76	0	24	2	SRC
MR 69	42	364.5	365.5	1.00	F.P. Fm.	17	14	1	2	496	17	1.0	4	133	7	35	17	407	22	110	-	80	0	20	2	SRC
MR 69	43	365.5	366.5	1.00	F.P. Fm.	19	18	1	2	400	15	1.0	10	81	3	19	17	266	13	60	-	59	0	41	4	SRC
MR 69	44	366.5	367.5	1.00	F.P. Fm.	17	17	1	3	589	23	1.0	13	107	4	28	16	299	19	70	-	63	0	37	4	SRC
MR 69	45	367.5	368.5	1.00	F.P. Fm.	9	25	1	2	447	23	1.0	9	95	4	25	15	311	15	80	-	52	0	48	1	SRC
MR 69	46	368.5	369.5	1.00	F.P. Fm.	5	10	1	2	446	14	1.0	3	81	4	20	20	268	14	70	-	47	0	53	1	SRC
MR 69	47	369.5	370.5	1.00	F.P. Fm.	8	8	1	7	443	11	1.0	4	80	3	26	17	349	18	70	-	63	0	37	2	SRC
MR 69	48	370.5	371.9	1.40	F.P. Fm.	5	19	3	2	468	13	1.0	4	95	3	27	10	300	16	70	-	47	0	53	2	SRC
MR 69	49	382.5	383.5	1.00	F.P. Fm.	5	22	2	3	408	38	1.0	9	71	1	21	8	493	24	50	-	55	0	45	2	SRC
MR 69	50	383.5	384.5	1.00	F.P. Fm.	5	7	6	3	317	24	1.0	9	104	4	47	14	798	23	80	-	51	0	49	7	SRC
MR 69	51	384.5	385.5	1.00	F.P. Fm.	5	7	3	2	305	20	1.0	9	137	4	35	14	530	25	120	-	81	0	19	5	SRC
MR 69	52	385.5	386.5	1.00	F.P. Fm.	5	11	3	2	294	46	1.0	5	193	6	71	25	1286	50	150	-	81	0	19	2	SRC
MR 69	53	386.5	387.5	1.00	F.P. Fm.	5	8	4	2	419	20	1.0	4	103	1	28	10	490	19	70	-	70	0	30	2	SRC
MR 69	54	387.5	388.0	0.50	F.P. Fm.	5	5	10	7	292	25	1.0	1	93	1	23	13	298	578	50	-	56	0	44	2	SRC
MR 69	56	463.6	463.8	0.20	Basement	5	106	3	59	135	327	1.3	26	46	18	4	3	122	150	30	-					SRC
MR 69	58	432.0	433.0	1.00	Basement	5	76	1	95	220	604	6.0	24	116	64	51	14	112	28	70	-					SRC

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DD H No	Sa N	From	To m	Length	Lithology	Mo ppm	Zn ppm	Cd ppm	Co ppm	Cr ppm	V ppm	Be ppm	Cu ppm	Zr ppm	Y ppm	La ppm	Th ppm	Sr ppm	Ba ppm	B ppm	Au ppb	XRD Il %	XRD Chlor %	XRD Kaol %	XRD %Clay	Lab
MR 70	1	78.4	85.0	6.60	M.F. Fm.	9	4	1	1	400	3	0.2	6	86	4	12	6	94	18	40						SRC
MR 70	2	85.0	95.0	10.00	M.F. Fm.	5	3	1	1	291	2	0.1	8	35	3	5	3	65	13	20						SRC
MR 70	3	95.0	105.0	10.00	M.F. Fm.	5	2	1	1	270	4	0.2	6	46	4	13	4	132	16	10						SRC
MR 70	4	105.0	115.0	10.00	M.F. Fm.	5	6	1	1	383	7	0.1	8	61	2	5	3	66	11	30						SRC
MR 70	5	115.0	125.0	10.00	M.F. Fm.	5	3	1	1	243	3	0.1	4	168	3	4	3	50	11	30						SRC
MR 70	6	125.0	135.0	10.00	M.F. Fm.	5	4	1	1	297	4	0.1	3	140	5	6	3	79	12	50						SRC
MR 70	7	135.0	145.0	10.00	M.F. Fm.	5	4	1	1	349	1	0.1	8	145	3	9	3	53	11	30						SRC
MR 70	8	145.0	155.0	10.00	M.F. Fm.	5	4	1	1	253	6	0.1	9	102	2	5	3	44	11	30						SRC
MR 70	9	155.0	165.0	10.00	M.F. Fm.	5	8	1	1	354	3	0.1	11	109	2	4	3	43	9	20						SRC
MR 70	10	165.0	175.0	10.00	M.F. Fm.	5	3	1	1	382	5	0.1	4	82	10	9	4	73	14	30						SRC
MR 70	11	175.0	185.0	10.00	M.F. Fm.	7	3	1	1	415	3	0.1	8	89	4	6	4	50	8	30						SRC
MR 70	12	185.0	195.0	10.00	M.F. Fm.	5	3	1	1	365	4	0.1	4	66	3	8	3	54	7	10						SRC
MR 70	13	195.0	205.0	10.00	M.F. Fm.	7	5	1	1	492	5	0.2	4	70	4	4	3	48	8	20						SRC
MR 70	14	205.0	215.0	10.00	M.F. Fm.	5	6	1	1	403	3	0.1	7	60	4	3	3	43	7	20						SRC
MR 70	15	215.0	225.0	10.00	M.F. Fm.	7	5	1	1	480	6	0.1	9	136	5	4	9	60	9	20						SRC
MR 70	16	225.0	235.0	10.00	M.F. Fm.	5	5	1	2	459	4	0.1	13	208	5	4	8	64	8	30						SRC
MR 70	17	235.0	245.6	10.60	M.F. Fm.	8	3	1	1	420	5	0.1	6	135	4	3	3	54	6	20						SRC
MR 70	18	245.6	249.0	3.40	F.P. Fm.	7	8	1	5	412	7	0.2	9	65	3	14	12	274	18	40						SRC
MR 70	19	249.0	259.0	10.00	F.P. Fm.	9	2	1	3	354	6	0.2	5	74	4	14	11	275	19	30						SRC
MR 70	20	259.0	269.0	10.00	F.P. Fm.	6	3	1	3	231	9	0.1	5	75	3	11	8	288	14	20						SRC
MR 70	21	269.0	279.0	10.00	F.P. Fm.	5	4	1	6	274	13	0.1	5	96	3	16	15	277	14	10						SRC
MR 70	22	279.0	289.0	10.00	F.P. Fm.	6	3	1	4	293	17	0.2	6	112	3	24	20	404	23	20						SRC
MR 70	23	289.0	299.0	10.00	F.P. Fm.	9	4	1	5	309	8	0.1	7	82	3	16	10	138	15	20						SRC
MR 70	24	299.0	309.0	10.00	F.P. Fm.	8	8	1	5	290	27	0.5	8	138	2	50	39	278	108	10						SRC
MR 70	25	309.0	319.0	10.00	F.P. Fm.	11	6	1	3	295	12	0.2	8	98	1	20	20	134	39	10						SRC
MR 70	26	319.0	329.0	10.00	F.P. Fm.	8	7	1	4	221	6	0.2	4	66	1	18	15	107	21	30						SRC
MR 70	27	329.0	339.4	10.40	F.P. Fm.	5	7	1	4	269	125	1.3	8	104	11	19	16	207	127	80						SRC
MR 71	1	58.1	64.0	5.90	M.F. Fm.	5				394	7	0.1	108	50	2	4	3	65	13	10						SRC
MR 71	2	64.0	74.0	10.00	M.F. Fm.	5				294	5	0.1	4	48	3	8	3	76	14	30						SRC
MR 71	3	74.0	84.0	10.00	M.F. Fm.	5				338	14	0.2	3	57	3	7	7	68	11	20						SRC
MR 71	4	84.0	94.0	10.00	M.F. Fm.	5				246	9	0.1	3	136	3	6	4	61	11	30						SRC
MR 71	5	94.0	104.0	10.00	M.F. Fm.	5				188	7	0.1	2	151	2	5	3	62	11	40						SRC
MR 71	6	104.0	114.0	10.00	M.F. Fm.	5				232	6	0.1	6	86	2	5	3	52	10	30						SRC
MR 71	7	114.0	124.0	10.00	M.F. Fm.	5				275	5	0.1	3	75	1	5	3	51	9	30						SRC
MR 71	8	124.0	134.0	10.00	M.F. Fm.	5				301	6	0.1	3	100	2	6	3	49	9	10						SRC
MR 71	9	134.0	144.0	10.00	M.F. Fm.	5				235	4	0.1	1	51	1	3	3	43	6	30						SRC
MR 71	10	144.0	154.0	10.00	M.F. Fm.	6				313	4	0.1	5	52	1	7	3	49	7	20						SRC
MR 71	11	154.0	164.0	10.00	M.F. Fm.	5				245	9	0.2	4	49	1	7	4	47	6	30						SRC
MR 71	12	164.0	174.0	10.00	M.F. Fm.	5				340	6	0.1	4	44	1	5	3	35	4	30						SRC
MR 71	13	174.0	184.0	10.00	M.F. Fm.	5				252	4	0.1	2	57	1	6	5	48	7	40						SRC
MR 71	14	184.0	194.0	10.00	M.F. Fm.	5				364	41	0.1	3	82	1	3	3	41	5	20						SRC
MR 71	15	194.0	204.0	10.00	M.F. Fm.	5				291	3	0.1	4	66	1	2	3	50	5	30						SRC
MR 71	16	204.0	214.0	10.00	M.F. Fm.	5				242	5	0.1	3	235	5	3	3	59	6	70						SRC
MR 71	17	214.0	224.2	10.20	M.F. Fm.	6				282	7	0.2	5	240	9	8	5	170	12	100						SRC
MR 71	18	224.2	231.0	6.80	F.P. Fm.	5				303	11	0.2	5	81	5	8	10	173	15	90						SRC
MR 71	19	231.0	241.0	10.00	F.P. Fm.	5				297	15	0.4	3	99	3	17	4	347	24	110						SRC
MR 71	20	241.0	251.0	10.00	F.P. Fm.	5				409	15	0.2	5	75	5	9	10	180	15	60						SRC
MR 71	21	251.0	261.0	10.00	F.P. Fm.	5				289	22	0.6	9	275	23	24	80	359	41	70						SRC

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DD H No	Sa N	From	To m	Length	Lithology	Mo ppm	Zn ppm	Cd ppm	Co ppm	Cr ppm	V ppm	Be ppm	Cu ppm	Zr ppm	Y ppm	La ppm	Th ppm	Sr ppm	Ba ppm	B ppm	Au ppb	XRD Il %	XRD Chlor %	XRD Kaol %	XRD %Clay	Lab
MR 71	22	344.5	344.6	0.10	Basement	7				301	84	0.6	96	227	47	26	6	76	665	60						SRC,VP
MR 72	1	48.8	55.0	6.20	M.F. Fm	5	10	1	1	267	7	0.2	6	181	7	8	6	162	18	30						SRC
MR 72	2	55.0	65.0	10.00	M.F. Fm	5	24	1	2	258	9	0.2	3	163	6	7	5	120	17	50						SRC
MR 72	3	65.0	75.0	10.00	M.F. Fm	6	3	1	1	331	7	0.2	3	92	5	8	3	101	21	40						SRC
MR 72	4	75.0	85.0	10.00	M.F. Fm	5	4	1	1	230	42	0.3	2	120	12	6	7	111	20	60						SRC
MR 72	5	85.0	95.0	10.00	M.F. Fm	5	5	1	1	242	3	0.2	8	124	4	6	3	74	16	110						SRC
MR 72	6	95.0	105.0	10.00	M.F. Fm	5	7	1	1	250	8	0.3	8	176	7	16	8	114	35	30						SRC
MR 72	7	105.0	115.0	10.00	M.F. Fm	5	5	1	1	278	2	0.1	8	52	3	6	3	68	13	50						SRC
MR 72	8	115.0	125.0	10.00	M.F. Fm	5	2	1	1	314	5	0.1	8	67	3	7	3	76	15	20						SRC
MR 72	9	125.0	135.0	10.00	M.F. Fm	5	2	1	1	298	3	0.1	3	45	6	2	3	87	9	60						SRC
MR 72	10	135.0	145.0	10.00	M.F. Fm	5	4	1	2	419	7	0.2	3	102	3	9	7	56	11	50						SRC
MR 72	11	145.0	155.0	10.00	M.F. Fm	5	4	1	1	313	12	0.1	8	35	4	1	4	42	6	50						SRC
MR 72	12	155.0	165.0	10.00	M.F. Fm	5	5	1	1	222	54	0.4	8	53	4	6	4	30	10	30						SRC
MR 72	13	165.0	175.0	10.00	M.F. Fm	5	3	1	1	309	30	0.2	5	88	1	3	3	19	6	30						SRC
MR 72	14	175.0	185.0	10.00	M.F. Fm	5	6	1	1	294	21	0.2	4	72	3	5	3	15	7	30						SRC
MR 72	15	185.0	195.0	10.00	M.F. Fm	5	2	1	1	316	27	0.3	3	103	4	9	3	72	7	30						SRC
MR 72	16	195.0	205.0	10.00	M.F. Fm	5	9	1	1	214	54	0.5	4	73	6	7	3	43	7	30						SRC
MR 72	17	205.0	215.0	10.00	M.F. Fm	5	4	1	3	343	25	0.2	4	78	2	7	3	12	4	80						SRC
MR 72	18	215.0	225.0	10.00	M.F. Fm	5	9	1	2	358	16	0.2	12	85	1	6	3	13	6	60						SRC
MR 72	19	225.0	235.0	10.00	M.F. Fm	5	5	1	1	312	16	0.2	7	15	6	5	3	18	4	30						SRC
MR 72	20	235.0	245.0	10.00	M.F. Fm	5	4	1	2	294	12	0.2	1	96	4	5	3	47	5	50						SRC
MR 72	21	245.0	255.0	10.00	M.F. Fm	5	5	1	1	273	23	0.2	2	106	2	9	3	28	6	40						SRC
MR 72	22	255.0	265.0	10.00	M.F. Fm	5	53	1	40	247	60	0.5	4	111	5	7	3	27	9	40						SRC
MR 72	23	265.0	275.3	10.30	M.F. Fm	5	6	1	1	331	68	0.5	7	351	6	18	6	676	21	40						SRC
MR 72	24	275.3	285.0	9.70	F.P. Fm	5	11	1	1	216	51	0.5	6	98	3	16	9	188	19	60						SRC
MR 72	25	285.0	295.0	10.00	F.P. Fm	5	5	1	3	276	16	0.2	7	64	2	14	9	279	19	40						SRC
MR 72	26	295.0	305.0	10.00	F.P. Fm	5	11	1	1	308	13	0.3	3	63	2	16	6	148	21	30						SRC
MR 72	27	305.0	315.0	10.00	F.P. Fm	5	10	1	1	343	28	0.4	5	98	8	17	7	234	27	50						SRC
MR 72	28	315.0	325.0	10.00	F.P. Fm	5	5	1	2	310	14	0.3	2	72	3	10	5	266	21	80						SRC
MR 72	29	325.0	335.0	10.00	F.P. Fm	6	8	1	1	354	114	0.8	6	161	10	23	17	597	23	80						SRC
MR 72	30	335.0	345.0	10.00	F.P. Fm	5	11	1	1	354	21	0.3	10	66	3	8	6	214	28	70						SRC
MR 72	31	345.0	355.0	10.00	F.P. Fm	5	1	1	2	346	17	0.2	8	69	2	8	8	147	25	40						SRC
MR 72	32	355.0	365.0	10.00	F.P. Fm	5	12	1	1	349	25	0.3	5	73	4	7	9	138	33	100						SRC
MR 72	33	365.0	375.0	10.00	F.P. Fm	5	8	1	2	305	17	0.3	5	79	5	14	13	151	25	90						SRC
MR 72	34	375.0	385.2	10.20	F.P. Fm	9	3	1	1	308	15	0.4	6	92	4	17	9	128	28	110						SRC
MT 1	1	130.3	130.4	0.10	M.F. Fm	5	5	1	1	316	5	0.1	4	332	5	64	3	45	10	370		100	0	0	5	SRC
MT 1	2	140.4	140.5	0.10	M.F. Fm	5	3	1	1	235	3	0.1	2	88	3	8	3	43	8	400		98	0	2	6	SRC
MT 1	3	232.2	232.3	0.10	F.P. Fm	5	4	1	1	232	8	0.3	2	88	4	18	8	340	17	40		34	0	66	6	SRC
MT 1	4	280.6	280.7	0.10	F.P. Fm	5	8	4	1	172	7	0.4	4	120	3	29	11	421	21	40		11	0	89	5	SRC
MT 1	5	296.8	296.9	0.10	F.P. Fm	5	4	1	1	380	10	0.2	4	82	4	25	3	700	61	40		39	0	61	6	SRC
MT 1	6	70.1	79.0	8.90	M.F. Fm	5	4	1	1	190	13	0.4	4	297	8	20	8	138	49	70		51	1	48	7	SRC
MT 1	7	79.0	89.0	10.00	M.F. Fm	5	6	1	2	285	5	0.1	6	66	3	14	3	66	12	50		99	0	1	4	SRC
MT 1	8	89.0	99.0	10.00	M.F. Fm	5	15	1	1	311	6	0.1	5	66	4	10	3	67	12	50		100	0	0	4	SRC
MT 1	9	99.0	109.0	10.00	M.F. Fm	5	5	1	1	224	5	0.1	4	122	5	13	3	73	13	40		99	0	1	5	SRC
MT 1	10	109.0	119.0	10.00	M.F. Fm	5	5	3	1	252	2	0.1	2	43	3	9	3	63	10	40		100	0	0	3	SRC
MT 1	11	119.0	129.0	10.00	M.F. Fm	5	5	4	1	347	6	0.1	5	126	3	11	3	56	11	40		100	0	0	1	SRC
MT 1	12	129.0	139.0	10.00	M.F. Fm	5	5	1	2	312	6	0.1	3	151	3	8	3	48	10	40		99	0	1	6	SRC
MT 1	13	139.0	149.0	10.00	M.F. Fm	7	8	1	1	363	7	0.1	6	88	3	9	3	40	7	30		100	0	0	8	SRC

Summer 1989 Lithogeochemical Results

DD	H No	Sa N	From	To m	Length	Lithology	Mo ppm	Zn ppm	Cd ppm	Co ppm	Cr ppm	V ppm	Be ppm	Cu ppm	Zr ppm	Y ppm	La ppm	Th ppm	Sr ppm	Sa ppm	B ppm	Au ppb	XRD Il %	XRD Chlor %	XRD Kaol %	XRD %Clay	Lab
MT	1	14	149.0	159.0	10.00	M.F. Fm.	5	4	1	1	271	5	0.1	5	58	1	8	3	35	6	30		99	0	1	4	SRC
MT	1	15	159.0	169.0	10.00	M.F. Fm.	5	3	1	3	249	4	0.1	5	59	1	7	3	35	6	30		99	0	1	1	SRC
MT	1	16	169.0	179.0	10.00	M.F. Fm.	5	10	1	2	285	6	0.1	5	56	1	6	3	43	6	20		100	0	0	1	SRC
MT	1	17	179.0	189.0	10.00	M.F. Fm.	9	9	1	1	489	6	0.1	4	49	1	8	3	44	5	40		99	0	1	3	SRC
MT	1	18	189.0	199.0	10.00	M.F. Fm.	5	7	1	1	374	6	0.1	4	121	3	3	3	37	4	120		100	0	0	2	SRC
MT	1	19	199.0	209.0	10.00	M.F. Fm.	5	7	1	3	427	9	0.1	4	113	4	17	3	461	7	50		100	0	0	2	SRC
MT	1	20	209.0	219.0	10.00	M.F. Fm.	5	4	1	1	288	9	0.1	3	112	4	10	3	190	13	50		99	0	1	6	SRC
MT	1	21	219.0	229.2	10.20	M.F. Fm.	5	2	1	4	286	7	0.1	4	74	3	9	3	81	8	90		94	0	6	6	SRC
MT	1	22	229.2	237.0	7.80	F.P. Fm.	5	4	1	3	256	8	0.2	3	66	3	20	8	562	16	50		52	1	47	6	SRC
MT	1	23	237.0	247.0	10.00	F.P. Fm.	6	6	1	3	327	9	0.1	2	50	15	11	5	627	17	50		50	0	50	7	SRC
MT	1	24	247.0	257.0	10.00	F.P. Fm.	5	3	1	5	258	13	0.2	3	73	3	17	11	557	23	30		69	0	31	4	SRC
MT	1	25	257.0	267.0	10.00	F.P. Fm.	10	5	1	2	376	9	0.1	4	60	1	8	6	382	15	40		68	0	32	2	SRC
MT	1	26	267.0	277.0	10.00	F.P. Fm.	5	4	1	2	248	10	0.1	3	65	1	17	4	384	14	30		52	0	48	6	SRC
MT	1	27	277.0	287.0	10.00	F.P. Fm.	6	8	1	2	219	7	0.1	7	83	3	19	8	391	16	30		22	0	78	5	SRC
MT	1	28	287.0	297.0	10.00	F.P. Fm.	5	9	1	4	265	22	0.2	4	89	3	28	16	794	19	30		31	0	69	5	SRC
MT	1	29	297.0	307.0	10.00	F.P. Fm.	5	9	1	3	356	13	0.1	4	70	1	18	10	244	12	30		35	0	65	5	SRC
MT	1	30	307.0	317.0	10.00	F.P. Fm.	6	9	1	4	262	23	0.3	2	79	2	26	11	485	18	50		46	0	54	6	SRC
MT	1	31	317.0	327.0	10.00	F.P. Fm.	5	7	1	2	257	22	0.3	2	91	2	30	9	344	21	60		77	5	19	8	SRC

Table 1: Oxides and XRD Clay Analysis, Summer 1989 Drilling

DDHNo	SaNo	From	To	Length	Lithology	Al2O3 (%)	Fe2O3 (%)	CaO (%)	MgO (%)	K2O (%)	Na2O (%)	P2O5 (%)	TiO2 (%)	MnO (%)	Illite Rel (%)	Chlorite Rel (%)	Kaolinite Rel (%)	I002	Kubler	%Clay (%)	Bench	Type	Comment
MT 1	1	130.3	130.4	0.10	M.F. Fa.	1.18	0.49	0.032	0.080	0.236	0.018	0.01	0.07	0.002	100	0	0	54	5.7	5	-	point	suspect dravite, siderite
MT 1	2	140.4	140.5	0.10	M.F. Fa.	1.27	0.45	0.026	0.099	0.263	0.018	0.01	0.03	0.001	98	0	2	64	5.2	6	-	point	suspect dravite, siderite
MT 1	3	232.2	232.3	0.10	F.P. Fa.	7.65	0.41	0.022	0.111	0.423	0.080	0.04	0.11	0.001	34	0	66	49	5	6	-	point	suspect chlorite in matrix
MT 1	4	280.6	280.7	0.10	F.P. Fa.	9.79	0.36	0.024	0.028	0.213	0.018	0.07	0.20	0.001	11	0	89	42	3.7	5	-	point	suspect chl. & sooty pitch.
MT 1	5	296.8	296.9	0.10	F.P. Fa.	6.67	0.87	0.029	0.039	0.345	0.018	0.13	0.12	0.002	39	0	61	46	5	6	-	point	suspect chl. in matrix
MT 1	6	70.1	79.0	8.90	M.F. Fa.	7.25	0.89	0.037	0.090	0.711	0.023	0.03	0.26	0.006	51	1	48	50	4.8	7	10-16	composite	Lzl. Fa. ?
MT 1	7	79.0	89.0	10.00	M.F. Fa.	0.79	0.66	0.032	0.037	0.190	0.012	0.01	0.03	0.053	99	0	1	52	4.8	4	10-15	composite	Lzl. Fa. ?
MT 1	8	89.0	99.0	10.00	M.F. Fa.	0.46	1.02	0.050	0.038	0.120	0.022	0.01	0.02	0.008	100	0	0	40	4.4	4	10-14	composite	Lzl. Fa. ?
MT 1	9	99.0	109.0	10.00	M.F. Fa.	1.62	0.67	0.023	0.054	0.422	0.015	0.02	0.07	0.003	99	0	1	54	5.1	5	10-13	composite	Lzl. Fa. ?
MT 1	10	109.0	119.0	10.00	M.F. Fa.	0.43	0.48	0.020	0.024	0.099	0.013	0.01	0.02	0.002	100	0	0	54	4.2	3	10-12	composite	Lzl. Fa. ?
MT 1	11	119.0	129.0	10.00	M.F. Fa.	0.71	0.48	0.020	0.031	0.166	0.011	0.01	0.06	0.002	100	0	0	37	5	1	10-11	composite	Lzl. Fa. ?
MT 1	12	129.0	139.0	10.00	M.F. Fa.	0.98	0.67	0.028	0.042	0.236	0.013	0.01	0.05	0.004	99	0	1	59	4.4	6	10-10	composite	-
MT 1	13	139.0	149.0	10.00	M.F. Fa.	0.72	0.98	0.033	0.044	0.196	0.013	0.01	0.03	0.007	100	0	0	63	5	8	10-09	composite	-
MT 1	14	149.0	159.0	10.00	M.F. Fa.	0.77	0.56	0.020	0.028	0.186	0.011	0.01	0.02	0.002	99	0	1	49	5	4	10-08	composite	-
MT 1	15	159.0	169.0	10.00	M.F. Fa.	0.68	0.82	0.031	0.022	0.176	0.011	0.01	0.01	0.002	99	0	1	32	5.7	1	10-07	composite	-
MT 1	16	169.0	179.0	10.00	M.F. Fa.	0.59	1.02	0.017	0.020	0.151	0.018	0.01	0.02	0.004	100	0	0	26	5.2	1	10-06	composite	-
MT 1	17	179.0	189.0	10.00	M.F. Fa.	0.77	0.81	0.016	0.027	0.180	0.014	0.01	0.02	0.003	99	0	1	48	5.2	3	10-05	composite	-
MT 1	18	189.0	199.0	10.00	M.F. Fa.	0.71	0.80	0.024	0.050	0.137	0.017	0.01	0.05	0.007	100	0	0	35	4.2	2	10-04	composite	-
MT 1	19	199.0	209.0	10.00	M.F. Fa.	0.98	1.06	0.034	0.034	0.233	0.014	0.07	0.05	0.005	100	0	0	34	4.8	2	10-03	composite	-
MT 1	20	209.0	219.0	10.00	M.F. Fa.	1.98	0.75	0.026	0.054	0.568	0.016	0.03	0.06	0.004	99	0	1	57	5	6	10-02	composite	-
MT 1	21	219.0	229.2	10.20	M.F. Fa.	1.29	1.10	0.022	0.042	0.291	0.016	0.01	0.04	0.006	94	0	6	48	4.8	6	10-01	composite	-
MT 1	22	229.2	237.0	7.80	F.P. Fa.	5.57	1.13	0.026	0.041	0.458	0.015	0.08	0.07	0.004	52	1	47	53	5.1	6	10-10	composite	-
MT 1	23	237.0	247.0	10.00	F.P. Fa.	3.18	1.14	0.027	0.037	0.396	0.016	0.07	0.05	0.004	50	0	50	62	5.1	7	10-09	composite	-
MT 1	24	247.0	257.0	10.00	F.P. Fa.	4.06	1.89	0.026	0.037	0.473	0.017	0.08	0.10	0.007	69	0	31	47	5.1	4	10-08	composite	-
MT 1	25	257.0	267.0	10.00	F.P. Fa.	3.23	1.42	0.020	0.022	0.276	0.016	0.05	0.06	0.004	68	0	32	37	4.4	2	10-07	composite	-
MT 1	26	267.0	277.0	10.00	F.P. Fa.	3.93	1.14	0.047	0.020	0.156	0.012	0.06	0.06	0.004	52	0	48	44	4.8	6	10-06	composite	-
MT 1	27	277.0	287.0	10.00	F.P. Fa.	5.17	1.31	0.023	0.021	0.100	0.014	0.06	0.08	0.005	22	0	78	42	5.7	5	10-05	composite	-
MT 1	28	287.0	297.0	10.00	F.P. Fa.	5.41	2.77	0.027	0.022	0.108	0.018	0.11	0.15	0.009	31	0	69	35	5.1	5	10-04	composite	-
MT 1	29	297.0	307.0	10.00	F.P. Fa.	5.46	1.81	0.020	0.021	0.136	0.015	0.03	0.10	0.004	35	0	65	39	5.1	5	10-03	composite	-
MT 1	30	307.0	317.0	10.00	F.P. Fa.	5.40	2.56	0.026	0.031	0.305	0.018	0.09	0.14	0.004	46	0	54	48	5.2	6	10-02	composite	-
MT 1	31	317.0	327.0	10.00	F.P. Fa.	5.85	2.26	0.032	0.129	1.057	0.022	0.06	0.15	0.005	77	5	19	65	3.9	8	10-01	composite	-

Table 2: Trace Elements Analysis, Summer 1989 Drilling

DDHNo	SaNo	From	To	Length	Lithology	Ni	PbO2	DPb	As	Bi	U tot	U ptl	Mo	Zn	Cd	Co	Cr	V	Be	Cu	Zr	Y	La	Th	Sr	Ba	B	Bench	Type	Comment
						ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm			
MT 1	1	130.3	130.4	0.10	M.F. Fa.	5	2	0.8	1.0	0.2	1.9	0.3	5	5	1	1	316	5	0.1	4	332	5	64	3	45	10	370	-	point	suspect dravite, siderite
MT 1	2	140.4	140.5	0.10	M.F. Fa.	3	2	0.2	1.0	0.2	0.9	0.2	5	3	1	1	235	3	0.1	2	88	3	8	3	43	8	400	-	point	suspect dravite, siderite
MT 1	3	232.2	232.3	0.10	F.P. Fa.	8	2	0.2	2.0	0.2	1.3	0.3	5	4	1	1	232	8	0.3	2	88	4	18	8	340	17	40	-	point	suspect chlorite in matrix
MT 1	4	280.6	280.7	0.10	F.P. Fa.	6	4	3.8	2.0	0.2	12.0	7.2	5	8	4	1	172	7	0.4	4	120	3	29	11	421	21	40	-	point	suspect chl. & sooty pitch.
MT 1	5	296.8	296.9	0.10	F.P. Fa.	6	2	0.2	2.5	0.2	0.8	0.2	5	4	1	1	380	10	0.2	4	82	4	25	3	700	61	40	-	point	suspect chl. in matrix
MT 1	6	70.1	79.0	8.90	M.F. Fa.	4	3	0.9	10.0	0.2	1.2	0.4	5	4	1	1	190	13	0.4	4	297	8	20	8	138	49	70	10-16	composite	Lzl. Fa. ?
MT 1	7	79.0	89.0	10.00	M.F. Fa.	5	2	0.4	2.1	0.2	0.4	0.2	5	6	1	2	285	5	0.1	6	56	3	14	3	66	12	50	10-15	composite	Lzl. Fa. ?
MT 1	8	89.0	99.0	10.00	M.F. Fa.	5	2	0.2	0.8	0.2	0.5	0.3	5	15	1	1	311	6	0.1	5	56	4	10	3	67	12	50	10-14	composite	Lzl. Fa. ?
MT 1	9	99.0	109.0	10.00	M.F. Fa.	4	2	1.4	1.6	0.2	0.5	0.2	5	5	1	1	224	5	0.1	4	122	5	13	3	73	13	40	10-13	composite	Lzl. Fa. ?
MT 1	10	109.0	119.0	10.00	M.F. Fa.	7	2	0.3	1.6	0.2	0.5	0.2	5	5	3	1	252	2	0.1	2	43	3	9	3	63	10	40	10-12	composite	Lzl. Fa. ?
MT 1	11	119.0	129.0	10.00	M.F. Fa.	5	2	0.2	2.0	0.2	0.9	0.2	5	5	4	1	347	6	0.1	5	126	3	11	3	56	11	40	10-11	composite	Lzl. Fa. ?
MT 1	12	129.0	139.0	10.00	M.F. Fa.	3	2	0.2	0.8	0.2	0.9	0.3	5	5	1	2	312	6	0.1	3	151	3	8	3	48	10	40	10-10	composite	-
MT 1	13	139.0	149.0	10.00	M.F. Fa.	6	2	0.2	0.8	0.2	1.2	0.2	7	8	1	1	363	7	0.1	6	88	3	9	3	40	7	30	10-09	composite	-
MT 1	14	149.0	159.0	10.00	M.F. Fa.	2	2	0.2	1.1	0.2	0.7	0.3	5	4	1	1	271	5	0.1	5	58	1	8	3	35	6	30	10-08	composite	-
MT 1	15	159.0	169.0	10.00	M.F. Fa.	5	2	0.2	0.6	0.2	0.6	0.3	5	3	1	3	249	4	0.1	5	59	1	7	3	35	6	30	10-07	composite	-
MT 1	16	169.0	179.0	10.00	M.F. Fa.	5	2	0.2	0.8	0.2	0.8	0.4	5	10	1	2	285	6	0.1	5	56	1	6	3	43	6	20	10-06	composite	-
MT 1	17	179.0	189.0	10.00	M.F. Fa.	5	2	0.3	1.1	0.2	0.5	0.2	9	9	1	1	489	6	0.1	4	49	1	8	3	44	5	40	10-05	composite	-
MT 1	18	189.0	199.0	10.00	M.F. Fa.	6	4	1.4	1.0	0.2	1.1	0.3	5	7	1	1	374	6	0.1	4	121	3	3	3	37	4	120	10-04	composite	-
MT 1	19	199.0	209.0	10.00	M.F. Fa.	8	2	0.4	1.1	0.2	0.5	0.2	5	7	1	3	427	9	0.1	4	113	4	17	3	461	7	50	10-03	composite	-
MT 1	20	209.0	219.0	10.00	M.F. Fa.	5	3	0.5	1.3	0.2	0.7	0.2	5	4	1	1	283	9	0.1	3	112	4	10	3	190	13	50	10-02	composite	-
MT 1	21	219.0	229.2	10.20	M.F. Fa.	4	2	0.2	1.1	0.2	0.5	0.2	5	2	1	4	286	7	0.1	4	74	3	9	3	81	8	90	10-01	composite	-
MT 1	22	229.2	237.0	7.80	F.P. Fa.	5	2	0.2	2.5	0.2	1.4	0.2	5	4	1	3	256	8	0.2	3	66	3	20	8	562	16	50	10-10	composite	-
MT 1	23	237.0	247.0	10.00	F.P. Fa.	6	3	0.5	2.6	0.2	0.9	0.2	6	6	1	3	327	9	0.1	2	50	15	11	5	527	17	50	10-09	composite	-
MT 1	24	247.0	257.0	10.00	F.P. Fa.	5	2	0.2	2.8	0.2	1.0	0.2	5	3	1	5	258	13	0.2	3	73	3	17	11	557	23	30	10-08	composite	-
MT 1	25	257.0	267.0	10.00	F.P. Fa.	6	2	0.4	2.0	0.2	0.8	0.2	10	5	1	2	376	9	0.1	4	60	1	8	6	382	15	40	10-07	composite	-
MT 1	26	267.0	277.0	10.00	F.P. Fa.	6	2	0.2	1.3	0.2	1.0	0.2	5	4	1	2	248	10	0.1	3	65	1	17	4	384	14	30	10-06	composite	-
MT 1	27	277.0	287.0	10.00	F.P. Fa.	7	2	1.3	2.1	0.2	1.9	0.8	6	8	1	2	219	7	0.1	7	83	3	19	8	391	16	30	10-05	composite	-
MT 1	28	287.0	297.0	10.00	F.P. Fa.	7	2	0.2	3.3	0.2	1.5	0.3	5	9	1	4	265	22	0.2	4	89	3	28	16	794	19	30	10-04	composite	-
MT 1	29	297.0	307.0	10.00	F.P. Fa.	7	2	0.2	2.1	0.2	1.0	0.4	5	9	1	3	356	13	0.1	4	70	1	18	10	244	12	30	10-03	composite	-
MT 1	30	307.0	317.0	10.00	F.P. Fa.	6	2	0.2	2.6	0.2	1.1	0.3	6	9	1	4	262	23	0.3	2	79	2	26	11	485	18	30	10-02	composite	-
MT 1	31	317.0	327.0	10.00	F.P. Fa.	8	2	0.2	2.8	0.2	1.1	0.2	5	7	1	2	257	22	0.3	2	91	2	30	9	344	21	60	10-01	composite	-

APPENDIX 2: Lithogeochemical Data

DDHNo	SaNo	From	To m	Lithology	Bench	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	P2O5	TiO2	MnO
MR73	2	34.0	46.0	M.F. Fm.	10-14	0.78	0.98	0.07	0.09	0.21	0.006	0.03	0.05	0.003
MR73	3	46.0	56.0	M.F. Fm.	10-13	1.38	0.51	0.04	0.09	0.36	0.006	0.02	0.06	0.002
MR73	4	56.0	66.0	M.F. Fm.	10-12	1.14	0.42	0.02	0.04	0.31	0.007	0.01	0.04	0.001
MR73	5	66.0	76.0	M.F. Fm.	10-11	0.81	0.42	0.01	0.02	0.22	0.011	0.02	0.03	0.002
MR73	6	76.0	86.0	M.F. Fm.	10-10	0.79	0.88	0.02	0.04	0.21	0.006	0.01	0.03	0.002
MR73	7	86.0	96.0	M.F. Fm.	10-09	1.49	0.75	0.07	0.11	0.34	0.023	0.02	0.06	0.004
MR73	8	96.0	106.0	M.F. Fm.	10-08	2.12	0.38	0.02	0.12	0.47	0.008	0.02	0.08	0.001
MR73	9	106.0	116.0	M.F. Fm.	10-07	0.65	0.50	0.01	0.03	0.15	0.007	0.02	0.03	0.002
MR73	10	116.0	126.0	M.F. Fm.	10-06	0.68	0.35	0.01	0.03	0.15	0.006	0.01	0.04	0.002
MR73	11	126.0	136.0	M.F. Fm.	10-05	0.59	0.26	0.01	0.04	0.14	0.010	0.02	0.02	0.001
MR73	12	136.0	146.0	M.F. Fm.	10-04	1.77	0.40	0.02	0.13	0.41	0.009	0.02	0.05	0.003
MR73	13	146.0	156.0	M.F. Fm.	10-03	1.03	0.61	0.02	0.09	0.23	0.008	0.02	0.09	0.002
MR73	14	156.0	166.0	M.F. Fm.	10-02	2.09	1.55	0.08	0.26	0.42	0.009	0.03	0.11	0.003
MR73	15	166.0	176.4	M.F. Fm.	10-01	1.09	0.83	0.08	0.24	0.05	0.004	0.07	0.10	0.002
MR73	16	176.4	185.0	F.P. Fm.	10-02	6.35	0.51	0.35	1.41	0.70	0.048	0.26	0.14	0.002
MR73	17	185.0	195.3	F.P. Fm.	10-01	7.62	0.68	0.10	1.04	1.48	0.050	0.09	0.14	0.003
MR73	18	215.0	216.0	Basement	R.A.	7.62	0.51	0.05	2.47	1.48	0.109	0.03	0.05	0.001
MR73	19	216.0	217.0	Basement	R.A.	7.67	0.49	0.09	3.39	2.03	0.117	0.17	0.17	0.001
MR73	20	217.0	218.0	Basement	R.A.	7.65	2.85	0.17	3.02	1.78	0.152	0.10	0.25	0.002
MR73	21	218.0	219.0	Basement	R.A.	7.34	1.92	0.07	3.29	0.80	0.126	0.03	0.05	0.001
MR73	22	219.0	220.0	Basement	R.A.	7.33	0.33	0.08	3.86	1.28	0.121	0.04	0.06	0.001
MR73	23	220.0	221.0	Basement	R.A.	7.33	0.33	0.06	2.67	1.91	0.086	0.02	0.07	0.001
MR74	1	94.0	104.0	M.F. Fm.	10-01	1.77	0.20	0.02	0.13	0.43	0.013	0.01	0.05	0.001
MR74	2	99.0	104.0	M.F. Fm.	5-01	1.01	0.47	0.01	0.11	0.21	0.011	0.02	0.03	0.002
MR74	3	94.0	99.0	M.F. Fm.	5-02	1.28	0.54	0.01	0.12	0.28	0.014	0.01	0.04	0.002
MR74	4	84.0	94.0	M.F. Fm.	10-02	0.94	0.56	0.01	0.10	0.14	0.016	0.02	0.04	0.003
MR74	5	74.0	84.0	M.F. Fm.	10-03	0.96	0.45	0.01	0.08	0.20	0.008	0.04	0.05	0.002
MR74	6	64.0	74.0	M.F. Fm.	10-04	1.05	0.23	0.01	0.02	0.04	0.003	0.02	0.02	0.001
MR74	7	54.0	64.0	M.F. Fm.	10-05	0.33	0.46	0.01	0.02	0.03	0.005	0.02	0.01	0.002
MR74	8	40.5	54.0	M.F. Fm.	10-06	0.57	0.24	0.02	0.04	0.05	0.008	0.01	0.02	0.001
MR74	9	162.2	162.3	Basement		6.77	6.12	0.06	3.28	1.79	0.124	0.04	0.43	0.003
MR74	10	137.5	138.5	Basement	R.A.	6.75	1.09	0.05	2.66	2.43	0.102	0.02	0.38	0.003
MR74	11	136.5	137.5	Basement	R.A.	6.76	1.02	0.03	2.62	2.70	0.117	0.02	0.40	0.003
MR74	12	138.5	139.5	Basement	R.A.	6.75	1.57	0.16	6.63	1.89	0.240	0.10	0.55	0.001
MR75	1	35.0	40.0	M.F. Fm.		1.70	1.70	0.06	0.15	0.46	0.015	0.02	0.04	0.003
MR75	2	40.0	50.0	M.F. Fm.	10-11	0.88	1.65	0.07	0.10	0.22	0.004	0.01	0.03	0.004
MR75	3	50.0	60.0	M.F. Fm.	10-10	0.99	0.85	0.05	0.07	0.27	0.003	0.01	0.04	0.002
MR75	4	60.0	70.0	M.F. Fm.	10-09	0.86	0.45	0.01	0.03	0.23	0.005	0.01	0.03	0.002
MR75	5	70.0	80.0	M.F. Fm.	10-08	0.76	0.24	0.01	0.03	0.20	0.003	0.01	0.03	0.001
MR75	6	80.0	90.0	M.F. Fm.	10-07	0.71	0.33	0.02	0.04	0.18	0.010	0.01	0.03	0.002
MR75	7	90.0	100.0	M.F. Fm.	10-06	1.02	0.50	0.01	0.04	0.27	0.005	0.01	0.02	0.002
MR75	8	100.0	110.0	M.F. Fm.	10-05	0.68	0.60	0.01	0.02	0.18	0.006	0.02	0.02	0.001
MR75	9	110.0	120.0	M.F. Fm.	10-04	0.75	0.33	0.01	0.04	0.19	0.004	0.01	0.02	0.002
MR75	10	120.0	130.0	M.F. Fm.	10-03	0.75	0.33	0.01	0.03	0.19	0.003	0.01	0.04	0.001
MR75	11	130.0	140.0	M.F. Fm.	10-02	0.97	0.49	0.01	0.05	0.25	0.006	0.02	0.02	0.002
MR75	12	140.0	150.8	M.F. Fm.	10-01	2.46	0.63	0.03	0.10	0.52	0.015	0.03	0.07	0.002
MR75	13	150.8	157.0	F.P. Fm.	10-05	3.74	0.77	0.04	0.12	1.06	0.026	0.04	0.06	0.002
MR75	14	157.0	167.0	F.P. Fm.	10-04	5.32	0.59	0.02	0.10	0.79	0.033	0.02	0.07	0.002
MR75	15	167.0	177.0	F.P. Fm.	10-03	3.75	0.76	0.04	0.13	1.09	0.025	0.02	0.10	0.003
MR75	16	177.0	187.0	F.P. Fm.	10-02	6.82	1.51	0.08	0.22	1.14	0.042	0.11	0.32	0.006
MR75	17	187.0	197.8	F.P. Fm.	10-01	6.82	0.74	0.04	0.16	1.40	0.051	0.06	0.21	0.002
MR76	1	66.0	71.3	M.F. Fm.	5-01	1.91	0.49	0.06	0.09	0.48	0.041	0.01	0.04	0.002
MR76	2	61.0	66.0	M.F. Fm.	5-02	1.88	0.37	0.03	0.07	0.41	0.035	0.03	0.04	0.002
MR76	3	61.0	71.3	M.F. Fm.	10-01	1.97	0.45	0.02	0.08	0.47	0.035	0.01	0.05	0.002
MR76	4	51.0	61.0	M.F. Fm.	10-02	1.12	0.38	0.01	0.05	0.27	0.026	0.01	0.02	0.001
MR76	5	37.5	51.0	M.F. Fm.	10-03	1.11	0.43	0.03	0.06	0.29	0.015	0.02	0.02	0.002
MR77	1	148.0	153.5	F.P. Fm.	5-01	4.37	1.08	0.04	0.14	1.21	0.047	0.08	0.17	0.002
MR77	2	143.0	148.0	F.P. Fm.	5-02	3.02	1.61	0.06	0.15	0.82	0.047	0.08	0.11	0.003
MR77	3	143.0	153.5	F.P. Fm.	10-01	3.73	1.32	0.05	0.14	1.02	0.036	0.08	0.12	0.002
MR77	4	133.0	143.0	M.F. Fm.	10-01	1.11	1.04	0.07	0.18	0.20	0.014	0.03	0.03	0.003
MR77	5	123.0	133.0	M.F. Fm.	10-02	0.75	0.50	0.02	0.18	0.09	0.012	0.01	0.02	0.002
MR77	6	113.0	123.0	M.F. Fm.	10-03	0.86	0.64	0.03	0.19	0.12	0.015	0.01	0.02	0.002
MR77	7	103.0	113.0	M.F. Fm.	10-04	0.92	0.56	0.02	0.20	0.11	0.012	0.01	0.03	0.002
MR77	8	93.0	103.0	M.F. Fm.	10-05	0.62	0.50	0.02	0.13	0.08	0.015	0.01	0.03	0.002
MR77	9	83.0	93.0	M.F. Fm.	10-06	0.76	1.10	0.08	0.21	0.11	0.013	0.01	0.02	0.002
MR77	10	73.0	83.0	M.F. Fm.	10-07	0.77	0.61	0.03	0.16	0.11	0.011	0.02	0.02	0.002
MR77	11	63.0	73.0	M.F. Fm.	10-08	0.79	0.56	0.02	0.12	0.14	0.013	0.01	0.02	0.002

DDHNo	SaNo	From	To m	Lithology	Bench	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	P2O5	TiO2	MnO
MR77	12	53.0	63.0	M.F. Fm.	10-09	0.87	0.70	0.03	0.09	0.19	0.011	0.01	0.03	0.002
MR77	13	43.0	53.0	M.F. Fm.	10-10	0.71	0.68	0.05	0.08	0.15	0.010	0.01	0.02	0.002
MR77	14	33.0	43.0	M.F. Fm.	10-11	0.96	0.55	0.02	0.06	0.24	0.014	0.01	0.03	0.002
MR77	15	23.0	33.0	M.F. Fm.	10-12	0.91	0.63	0.02	0.03	0.24	0.012	0.01	0.05	0.003
MR77	16	18.0	23.0	M.F. Fm.		0.96	5.26	0.16	0.11	0.23	0.012	0.02	0.08	0.006
MR77	17	201.5	201.6	Basement		7.57	17.74	0.65	7.44	2.30	0.366	0.20	1.01	0.053
MR77	18	203.2	203.3	Basement		7.58	7.80	2.56	7.44	2.61	1.729	0.22	1.28	0.048
MR78	1	53.0	59.5	M.F. Fm.	5-01	0.91	0.33	0.02	0.07	0.25	0.013	0.01	0.05	0.001
MR79	1	178.0	182.7	F.P. Fm.	5-01	8.77	1.58	0.10	0.08	0.76	0.096	0.47	0.24	0.003
MR79	2	173.0	178.0	F.P. Fm.	5-02	8.76	3.46	0.05	0.04	0.51	0.085	0.23	0.28	0.005
MR79	3	173.0	182.7	F.P. Fm.	10-01	8.77	2.05	0.10	0.07	0.76	0.091	0.53	0.26	0.003
MR79	4	163.0	173.0	F.P. Fm.	10-02	6.64	1.29	0.04	0.05	0.51	0.070	0.13	0.17	0.002
MR79	5	159.6	163.0	F.P. Fm.		4.38	2.56	0.03	0.05	0.41	0.036	0.06	0.21	0.003
MR79	6	155.0	159.6	M.F. Fm.	5-01	4.06	1.85	0.03	0.06	0.43	0.036	0.05	0.11	0.003
MR79	7	150.0	155.0	M.F. Fm.	5-02	3.48	1.42	0.06	0.09	0.60	0.046	0.03	0.13	0.002
MR79	8	150.0	159.6	M.F. Fm.	10-01	3.85	1.78	0.05	0.07	0.47	0.043	0.01	0.01	0.001
MR79	9	140.0	150.0	M.F. Fm.	10-02	3.11	1.95	0.08	0.15	0.69	0.043	0.01	0.01	0.001
MR79	10	130.0	140.0	M.F. Fm.	10-03	1.05	0.60	0.03	0.06	0.29	0.009	0.04	0.01	0.001
MR79	11	120.0	130.0	M.F. Fm.	10-04	0.75	0.51	0.01	0.03	0.18	0.010	0.01	0.02	0.002
MR79	12	110.0	120.0	M.F. Fm.	10-05	1.14	0.51	0.02	0.06	0.27	0.011	0.01	0.03	0.002
MR79	13	100.0	110.0	M.F. Fm.	10-06	0.68	0.32	0.01	0.03	0.15	0.007	0.01	0.02	0.001
MR79	14	90.0	100.0	M.F. Fm.	10-07	0.75	0.42	0.01	0.03	0.18	0.005	0.02	0.02	0.002
MR79	15	80.0	90.0	M.F. Fm.	10-08	0.74	0.37	0.01	0.03	0.17	0.009	0.02	0.04	0.002
MR79	16	70.0	80.0	M.F. Fm.	10-09	0.64	0.42	0.01	0.02	0.16	0.008	0.01	0.03	0.002
MR79	17	60.0	70.0	M.F. Fm.	10-10	0.69	0.22	0.01	0.02	0.17	0.009	0.01	0.02	0.001
MR79	18	50.0	60.0	M.F. Fm.	10-11	1.28	0.40	0.02	0.05	0.34	0.008	0.02	0.07	0.002
MR79	19	40.0	50.0	M.F. Fm.	10-12	0.97	0.34	0.02	0.04	0.25	0.009	0.01	0.04	0.001
MR79	20	30.5	40.0	M.F. Fm.	10-13	0.66	0.52	0.02	0.03	0.17	0.012	0.02	0.03	0.002
MR80	1	191.0	196.2	F.P. Fm.	5-01	5.33	0.44	0.03	0.09	1.03	0.067	0.05	0.13	0.001
MR80	2	186.0	191.0	F.P. Fm.	5-02	8.34	0.76	0.03	0.09	0.74	0.065	0.07	0.15	0.001
MR80	3	186.0	196.2	F.P. Fm.	10-01	6.73	0.69	0.03	0.09	0.92	0.094	0.06	0.12	0.001
MR80	4	176.0	186.0	F.P. Fm.	10-02	8.23	0.49	0.04	0.11	0.86	0.107	0.14	0.24	0.001
MR80	5	166.0	176.0	F.P. Fm.	10-03	4.66	0.39	0.04	0.17	1.26	0.083	0.04	0.08	0.001
MR80	6	157.9	166.0	F.P. Fm.	10-04	3.52	0.49	0.03	0.16	1.03	0.039	0.03	0.04	0.002
MR80	7	153.0	157.9	M.F. Fm.	5-01	1.13	0.37	0.01	0.06	0.31	0.012	0.01	0.02	0.001
MR80	8	148.0	153.0	M.F. Fm.	5-02	0.74	0.59	0.02	0.05	0.21	0.008	0.02	0.03	0.002
MR80	9	148.0	157.9	M.F. Fm.	10-01	1.02	0.44	0.01	0.05	0.27	0.009	0.02	0.03	0.002
MR80	10	138.0	148.0	M.F. Fm.	10-02	0.87	0.32	0.01	0.03	0.24	0.009	0.01	0.02	0.001
MR80	11	128.0	138.0	M.F. Fm.	10-03	0.71	0.64	0.02	0.03	0.19	0.004	0.01	0.03	0.003
MR80	12	118.0	128.0	M.F. Fm.	10-04	0.66	0.29	0.01	0.02	0.17	0.013	0.01	0.02	0.001
MR80	13	108.0	118.0	M.F. Fm.	10-05	0.68	0.29	0.01	0.02	0.18	0.008	0.02	0.02	0.001
MR80	14	98.0	108.0	M.F. Fm.	10-06	1.00	0.39	0.01	0.02	0.26	0.008	0.01	0.02	0.001
MR80	15	88.0	98.0	M.F. Fm.	10-07	1.29	0.40	0.02	0.03	0.33	0.005	0.02	0.06	0.001
MR80	16	78.0	88.0	M.F. Fm.	10-08	1.68	0.45	0.01	0.03	0.31	0.008	0.01	0.03	0.002
MR80	17	68.0	78.0	M.F. Fm.	10-09	1.01	0.37	0.01	0.03	0.28	0.009	0.01	0.03	0.001
MR80	18	58.0	68.0	M.F. Fm.	10-10	1.08	1.04	0.07	0.08	0.28	0.015	0.02	0.04	0.002
MR80	19	48.0	58.0	M.F. Fm.	10-11	0.82	1.02	0.05	0.06	0.21	0.010	0.02	0.04	0.003
MR80	20	38.0	48.0	M.F. Fm.	10-12	0.68	0.85	0.04	0.06	0.18	0.008	0.01	0.02	0.003
MR80	21	27.5	38.0	M.F. Fm.	10-13	1.03	0.59	0.04	0.06	0.25	0.011	0.03	0.04	0.002
MR80	22	228.0	229.0	Basement		7.55	2.31	1.20	5.19	3.19	0.105	0.20	0.46	0.008
MR80	23	229.0	230.0	Basement		7.60	3.07	0.48	5.33	2.80	0.144	0.18	0.40	0.007
MR80	24	230.0	231.0	Basement		7.60	3.77	0.46	5.70	0.19	0.086	0.38	0.57	0.001
MR81	1	164.0	173.9	F.P. Fm.	10-01	6.93	1.00	0.05	0.08	0.83	0.092	0.11	0.13	0.003
MR81	2	154.0	164.0	F.P. Fm.	10-02	4.11	1.50	0.05	0.09	0.89	0.108	0.07	0.09	0.002
MR81	3	148.3	154.0	F.P. Fm.	5-02	3.53	1.70	0.06	0.09	0.93	0.059	0.06	0.19	0.002
MR81	4	154.0	159.0	F.P. Fm.	5-01	3.18	0.93	0.04	0.08	0.85	0.070	0.06	0.06	0.002
MR81	5	148.3	159.0	F.P. Fm.		0.85	0.50	0.01	0.03	0.23	0.012	0.01	0.02	0.002
MR81	6	138.0	148.3	M.F. Fm.	10-01	1.03	1.14	0.06	0.09	0.28	0.027	0.01	0.04	0.003
MR81	7	143.0	148.3	M.F. Fm.	5-01	1.27	1.38	0.08	0.11	0.34	0.014	0.01	0.04	0.002
MR81	8	138.0	143.0	M.F. Fm.	5-02	0.85	0.56	0.04	0.05	0.24	0.009	0.01	0.03	0.001
MR81	9	128.0	138.0	M.F. Fm.	10-02	1.08	0.72	0.03	0.07	0.28	0.015	0.01	0.03	0.002
MR81	10	118.0	128.0	M.F. Fm.	10-03	1.37	0.48	0.03	0.07	0.35	0.021	0.02	0.04	0.002
MR81	11	108.0	118.0	M.F. Fm.	10-04	0.70	0.51	0.01	0.03	0.17	0.009	0.01	0.02	0.002
MR81	12	98.0	108.0	M.F. Fm.	10-05	0.73	0.42	0.02	0.04	0.18	0.016	0.01	0.02	0.002
MR81	13	88.0	98.0	M.F. Fm.	10-06	0.88	0.57	0.02	0.04	0.23	0.014	0.01	0.02	0.002
MR81	14	78.0	88.0	M.F. Fm.	10-07	0.88	0.40	0.01	0.04	0.22	0.009	0.01	0.03	0.001
MR81	15	68.0	78.0	M.F. Fm.	10-08	3.56	1.30	0.05	0.10	0.95	0.056	0.06	0.11	0.002

DDHNo	SaNo	From	To m	Lithology	Bench	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	P2O5	TiO2	MnO
MR81	16	58.0	68.0	M.F. Fm.	10-09	0.68	0.51	0.01	0.03	0.18	0.013	0.01	0.03	0.002
MR81	17	48.0	58.0	M.F. Fm.	10-10	0.80	0.60	0.02	0.03	0.25	0.025	0.01	0.02	0.003
MR81	18	36.6	48.0	M.F. Fm.	10-11	1.28	0.79	0.02	0.06	0.39	0.024	0.02	0.07	0.003
MR81	19	230.2	230.3	Basement		7.46	1.17	0.05	0.94	4.49	0.362	0.01	0.09	0.006
MR82	1	193.0	197.8	F.P. Fm.	5-01	7.15	1.51	0.05	0.08	0.74	0.155	0.11	0.41	0.005
MR82	2	188.0	193.0	F.P. Fm.	5-02	6.39	1.82	0.03	0.06	0.51	0.103	0.08	0.13	0.003
MR82	3	188.0	197.8	F.P. Fm.	10-01	7.17	1.86	0.03	0.06	0.49	0.149	0.09	0.28	0.003
MR82	4	178.0	188.0	F.P. Fm.	10-02	7.16	1.80	0.08	0.12	0.54	0.151	0.17	0.25	0.006
MR82	5	168.0	178.0	F.P. Fm.	10-03	4.36	2.82	0.14	0.15	0.31	0.049	0.06	0.14	0.008
MR82	6	158.0	168.0	F.P. Fm.	10-04	3.60	1.13	0.03	0.06	0.62	0.052	0.03	0.07	0.002
MR82	7	151.3	158.0	F.P. Fm.		4.06	1.22	0.03	0.07	0.61	0.071	0.03	0.21	0.002
MR82	8	146.0	151.3	M.F. Fm.	5-01	1.80	0.62	0.02	0.04	0.49	0.015	0.02	0.08	0.003
MR82	9	141.0	146.0	M.F. Fm.	5-02	0.72	0.98	0.03	0.05	0.20	0.011	0.01	0.03	0.004
MR82	10	141.0	151.3	M.F. Fm.	10-01	1.18	0.89	0.03	0.05	0.32	0.011	0.01	0.04	0.003
MR82	11	131.0	141.0	M.F. Fm.	10-02	1.17	0.61	0.02	0.05	0.32	0.013	0.01	0.04	0.003
MR82	12	121.0	131.0	M.F. Fm.	10-03	1.08	0.82	0.03	0.06	0.29	0.013	0.01	0.05	0.003
MR82	13	111.0	121.0	M.F. Fm.	10-04	0.65	0.38	0.01	0.02	0.17	0.015	0.02	0.02	0.002
MR82	14	101.0	111.0	M.F. Fm.	10-05	1.01	0.49	0.01	0.04	0.27	0.012	0.02	0.05	0.002
MR82	15	91.0	101.0	M.F. Fm.	10-06	0.92	0.65	0.02	0.04	0.25	0.012	0.01	0.03	0.002
MR82	16	81.0	91.0	M.F. Fm.	10-07	0.70	0.92	0.04	0.06	0.17	0.007	0.02	0.03	0.003
MR82	17	71.0	81.0	M.F. Fm.	10-08	0.79	0.50	0.01	0.02	0.21	0.007	0.01	0.03	0.002
MR82	18	61.0	71.0	M.F. Fm.	10-09	1.27	0.83	0.03	0.05	0.35	0.015	0.01	0.05	0.003
MR82	19	51.0	61.0	M.F. Fm.	10-10	1.36	0.64	0.04	0.04	0.37	0.016	0.02	0.09	0.003
MR82	20	41.0	51.0	M.F. Fm.	10-11	0.84	1.02	0.06	0.08	0.22	0.006	0.01	0.05	0.003
MR82	21	33.5	41.0	M.F. Fm.	10-12	0.69	0.75	0.02	0.04	0.16	0.007	0.01	0.04	0.003
MR83	1	108.0	117.9	F.P. Fm.	10-01	2.56	2.71	0.21	0.18	0.32	0.012	0.01	0.17	0.005
MR83	2	113.0	117.9	F.P. Fm.	5-01	3.75	2.00	0.12	0.13	0.42	0.018	0.01	0.14	0.004
MR83	3	108.0	113.0	F.P. Fm.	5-02	2.11	2.62	0.21	0.15	0.29	0.016	0.01	0.31	0.005
MR83	4	98.0	108.0	F.P. Fm.	10-02	3.53	0.62	0.04	0.06	0.32	0.021	0.01	0.07	0.002
MR83	5	88.0	98.0	F.P. Fm.	10-03	3.00	1.94	0.11	0.12	0.44	0.011	0.01	0.08	0.005
MR83	6	84.1	88.0	F.P. Fm.		3.92	0.45	0.03	0.08	0.97	0.026	0.08	0.08	0.002
MR83	7	74.0	84.0	M.F. Fm.	10-01	1.24	1.85	0.12	0.18	0.31	0.006	0.01	0.04	0.004
MR83	8	64.0	74.0	M.F. Fm.	10-02	2.07	0.69	0.03	0.09	0.51	0.008	0.01	0.10	0.002
MR83	9	54.0	64.0	M.F. Fm.	10-03	4.29	0.46	0.02	0.13	0.51	0.028	0.01	0.11	0.002
MR83	10	44.0	54.0	M.F. Fm.	10-04	0.75	0.66	0.04	0.10	0.14	0.005	0.02	0.04	0.002
MR83	11	34.0	44.0	M.F. Fm.	10-05	0.66	0.47	0.02	0.09	0.12	0.007	0.02	0.03	0.002
MR83	12	22.1	34.0	M.F. Fm.	10-06	0.69	0.42	0.02	0.07	0.13	0.009	0.02	0.02	0.002
MR84	1	328.0	338.0	F.P. Fm.	10-01	7.12	2.39	0.04	0.09	1.03	0.030	0.07	0.15	0.002
MR84	2	318.0	328.0	F.P. Fm.	10-02	3.99	6.50	0.05	0.06	0.43	0.019	0.07	0.13	0.043
MR84	3	308.0	318.0	F.P. Fm.	10-03	4.84	4.02	0.03	0.05	0.36	0.025	0.08	0.11	0.033
MR84	4	298.0	308.0	F.P. Fm.	10-04	4.33	2.84	0.03	0.04	0.27	0.020	0.06	0.12	0.021
MR84	5	288.0	298.0	F.P. Fm.	10-05	7.23	1.96	0.03	0.08	0.63	0.033	0.04	0.13	0.007
MR84	6	278.0	288.0	F.P. Fm.	10-06	4.19	1.38	0.02	0.05	0.40	0.014	0.04	0.09	0.005
MR84	7	268.0	278.0	F.P. Fm.	10-07	5.79	1.34	0.02	0.07	0.66	0.036	0.03	0.11	0.006
MR84	8	258.0	268.0	F.P. Fm.	10-08	3.17	1.30	0.02	0.10	0.90	0.013	0.03	0.04	0.008
MR84	9	252.6	258.0	F.P. Fm.		3.88	0.76	0.02	0.12	1.14	0.036	0.02	0.07	0.005
MR84	10	243.0	252.6	M.F. Fm.	10-01	0.93	0.84	0.01	0.04	0.24	0.012	0.01	0.04	0.003
MR84	11	233.0	243.0	M.F. Fm.	10-02	0.83	1.42	0.02	0.04	0.21	0.015	0.01	0.08	0.005
MR84	12	223.0	233.0	M.F. Fm.	10-03	1.61	2.17	0.04	0.09	0.45	0.012	0.02	0.03	0.026
MR84	13	213.0	223.0	M.F. Fm.	10-04	1.32	1.70	0.03	0.06	0.37	0.006	0.01	0.03	0.017
MR84	14	203.0	213.0	M.F. Fm.	10-05	0.81	0.63	0.02	0.03	0.22	0.006	0.01	0.02	0.003
MR84	15	193.0	203.0	M.F. Fm.	10-06	0.87	1.34	0.58	0.04	0.23	0.013	0.48	0.03	0.008
MR84	16	183.0	193.0	M.F. Fm.	10-07	1.11	1.00	0.02	0.04	0.29	0.013	0.03	0.04	0.005
MR84	17	173.0	183.0	M.F. Fm.	10-08	0.79	1.09	0.03	0.05	0.21	0.008	0.01	0.03	0.008
MR84	18	163.0	173.0	M.F. Fm.	10-09	0.68	0.57	0.02	0.03	0.18	0.007	0.01	0.03	0.003
MR84	19	153.0	163.0	M.F. Fm.	10-10	1.79	0.43	0.02	0.05	0.47	0.012	0.01	0.04	0.001
MR84	20	143.0	153.0	M.F. Fm.	10-11	0.91	0.64	0.25	0.03	0.23	0.010	0.20	0.04	0.003
MR84	21	133.0	143.0	M.F. Fm.	10-12	1.24	0.43	0.02	0.04	0.31	0.010	0.03	0.08	0.002
MR84	22	123.0	133.0	M.F. Fm.	10-13	0.73	0.44	0.02	0.03	0.18	0.010	0.02	0.03	0.002
MR84	23	113.0	123.0	M.F. Fm.	10-14	0.76	7.11	0.14	0.18	0.16	0.009	0.05	0.05	0.034
MR84	24	103.0	113.0	M.F. Fm.	10-15	0.63	0.59	0.02	0.03	0.16	0.003	0.01	0.03	0.003
MR84	25	93.0	103.0	M.F. Fm.	10-16	0.57	0.77	0.03	0.04	0.14	0.013	0.02	0.04	0.004
MR84	26	83.0	93.0	M.F. Fm.	10-17	0.78	0.67	0.02	0.04	0.21	0.010	0.01	0.04	0.004
MR84	27	73.0	83.0	M.F. Fm.	10-18	1.81	1.01	0.03	0.07	0.45	0.033	0.02	0.08	0.005
MR84	28	63.0	73.0	M.F. Fm.	10-19	1.29	1.19	0.03	0.05	0.27	0.033	0.02	0.04	0.007
MR84	29	53.0	63.0	M.F. Fm.	10-20	1.66	1.30	0.05	0.09	0.38	0.009	0.03	0.07	0.009
MR84	30	43.0	53.0	M.F. Fm.	10-21	0.48	1.11	0.06	0.07	0.12	0.006	0.02	0.03	0.006

APPENDIX 2: Lithogeochemical Data

DDHNo	SaNo	From	To m	Lithology	Bench	Al2O3	Fe2O3	CaO	MgO	K2O	Na2O	P2O5	TiO2	MnO
MR84	31	39.7	43.0	M.F. Fm.		0.53	1.58	0.08	0.11	0.14	0.007	0.02	0.02	0.010
MR84	32	333.0	338.0	F.P. Fm.	5-01	6.65	1.23	0.03	0.07	0.71	0.035	0.09	0.16	0.003
MR84	33	328.0	333.0	F.P. Fm.	5-02	7.07	2.63	0.04	0.10	1.37	0.028	0.08	0.19	0.002
MR85	1	241.0	246.0	F.P. Fm.	5-01	3.38	0.79	0.03	0.26	0.79	0.022	0.01	0.07	0.002
MR85	2	236.0	241.0	F.P. Fm.	5-02	4.65	1.16	0.08	0.29	1.13	0.034	0.01	0.22	0.005
MR85	3	236.0	246.0	F.P. Fm.	10-01	3.69	0.93	0.05	0.23	0.88	0.013	0.02	0.09	0.003
MR85	4	226.0	236.0	F.P. Fm.	10-02	2.82	0.88	0.05	0.12	0.72	0.014	0.01	0.08	0.003
MR85	5	216.0	226.0	F.P. Fm.	10-03	2.96	0.83	0.05	0.11	0.73	0.019	0.01	0.09	0.003
MR85	6	208.2	216.0	F.P. Fm.	10-04	2.71	1.16	0.08	0.14	0.67	0.013	0.01	0.05	0.003
MR85	7	198.0	208.2	M.F. Fm.	10-01	1.83	0.46	0.02	0.08	0.41	0.007	0.01	0.05	0.002
MR85	8	188.0	198.0	M.F. Fm.	10-02	1.15	0.41	0.02	0.05	0.29	0.005	0.01	0.05	0.001
MR85	9	178.0	188.0	M.F. Fm.	10-03	1.21	0.87	0.06	0.09	0.31	0.003	0.01	0.07	0.004
MR85	10	168.0	178.0	M.F. Fm.	10-04	0.62	0.41	0.01	0.02	0.16	0.006	0.01	0.02	0.002
MR85	11	158.0	168.0	M.F. Fm.	10-05	0.75	0.62	0.02	0.04	0.19	0.002	0.01	0.03	0.003
MR85	12	148.0	158.0	M.F. Fm.	10-06	0.93	0.45	0.02	0.03	0.22	0.006	0.01	0.02	0.002
MR85	13	138.0	148.0	M.F. Fm.	10-07	0.83	0.46	0.01	0.03	0.20	0.006	0.01	0.03	0.002
MR85	14	128.0	138.0	M.F. Fm.	10-08	0.82	0.47	0.02	0.03	0.19	0.008	0.01	0.02	0.002
MR85	15	118.0	128.0	M.F. Fm.	10-09	1.21	0.50	0.02	0.04	0.28	0.002	0.01	0.02	0.002
MR85	16	108.0	118.0	M.F. Fm.	10-10	0.73	0.46	0.02	0.03	0.18	0.004	0.01	0.02	0.002
MR85	17	98.0	108.0	M.F. Fm.	10-11	0.95	0.87	0.04	0.06	0.24	0.001	0.01	0.03	0.003
MR85	18	88.0	98.0	M.F. Fm.	10-12	0.79	0.91	0.04	0.06	0.19	0.001	0.01	0.04	0.003
MR85	19	78.0	88.0	M.F. Fm.	10-13	0.92	0.57	0.03	0.04	0.23	0.011	0.01	0.04	0.002
MR85	20	68.0	78.0	M.F. Fm.	10-14	0.91	0.61	0.02	0.05	0.20	0.001	0.01	0.03	0.002
MR85	21	58.0	68.0	M.F. Fm.	10-15	0.60	0.76	0.03	0.04	0.14	0.005	0.02	0.04	0.002
MR85	22	48.0	58.0	M.F. Fm.	10-16	0.61	0.43	0.02	0.03	0.14	0.001	0.01	0.04	0.002
MR85	23	38.0	48.0	M.F. Fm.	10-17	0.99	0.58	0.02	0.04	0.25	0.005	0.01	0.03	0.002
MR85	24	31.0	38.0	M.F. Fm.	10-18	1.07	0.89	0.02	0.04	0.24	0.005	0.02	0.03	0.002
MR85	25	253.6	254.6	Basement		7.64	0.88	0.14	3.64	1.67	0.035	0.03	0.11	0.002
MR85	26	252.6	253.6	Basement		7.62	0.80	0.07	2.81	1.99	0.028	0.03	0.13	0.002
MR85	27	254.6	255.6	Basement		7.59	0.72	0.26	2.52	2.77	0.038	0.16	0.10	0.002
MR86	1	52.3	64.0	M.F. Fm.	10-15	0.53	0.65	0.02	0.03	0.10	0.010	0.02	0.03	0.003
MR86	2	64.0	74.0	M.F. Fm.	10-14	0.73	0.54	0.02	0.03	0.16	0.007	0.02	0.06	0.002
MR86	3	74.0	84.0	M.F. Fm.	10-13	0.73	0.82	0.04	0.06	0.17	0.011	0.01	0.03	0.004
MR86	4	84.0	94.0	M.F. Fm.	10-12	1.02	2.25	0.08	0.13	0.24	0.012	0.01	0.04	0.009
MR86	5	94.0	104.0	M.F. Fm.	10-11	1.30	1.22	0.07	0.09	0.32	0.014	0.01	0.04	0.005
MR86	6	104.0	114.0	M.F. Fm.	10-10	0.66	0.38	0.01	0.02	0.16	0.011	0.01	0.03	0.001
MR86	7	114.0	124.0	M.F. Fm.	10-09	0.60	0.43	0.01	0.02	0.15	0.004	0.01	0.02	0.001
MR86	8	124.0	134.0	M.F. Fm.	10-08	1.03	1.06	0.01	0.04	0.25	0.019	0.01	0.03	0.003
MR86	9	134.0	144.0	M.F. Fm.	10-07	0.50	0.53	0.01	0.03	0.11	0.013	0.01	0.01	0.002
MR86	10	144.0	154.0	M.F. Fm.	10-06	0.71	0.51	0.01	0.03	0.16	0.008	0.01	0.02	0.002
MR86	11	154.0	164.0	M.F. Fm.	10-05	1.94	0.57	0.02	0.07	0.49	0.039	0.02	0.10	0.002
MR86	12	164.0	174.0	M.F. Fm.	10-04	1.05	1.01	0.04	0.08	0.25	0.016	0.01	0.03	0.006
MR86	13	174.0	184.0	M.F. Fm.	10-03	1.12	1.40	0.04	0.08	0.28	0.013	0.01	0.04	0.006
MR86	14	184.0	194.0	M.F. Fm.	10-02	3.17	0.97	0.03	0.09	0.76	0.061	0.02	0.10	0.004
MR86	15	194.0	204.5	M.F. Fm.	10-01	1.74	0.98	0.02	0.05	0.40	0.017	0.02	0.04	0.003
MR86	16	204.5	208.0	F.P. Fm.		5.53	1.58	0.03	0.06	0.55	0.056	0.03	0.18	0.006
MR86	17	208.0	218.0	F.P. Fm.	10-05	4.64	1.00	0.04	0.05	0.27	0.048	0.04	0.12	0.004
MR86	18	218.0	228.0	F.P. Fm.	10-04	4.52	1.00	0.02	0.04	0.26	0.045	0.04	0.14	0.003
MR86	19	228.0	238.0	F.P. Fm.	10-03	5.54	1.20	0.02	0.05	0.37	0.046	0.05	0.13	0.002
MR86	20	238.0	248.0	F.P. Fm.	10-02	5.10	1.07	0.04	0.05	0.39	0.055	0.07	0.15	0.003
MR86	21	248.0	258.5	F.P. Fm.	10-01	4.80	1.11	0.03	0.07	0.44	0.073	0.04	0.11	0.002

DDHNo	SaNo	Ni	Pbt	As	Utot	Uptl	Mo	Zn	Cd	Co	Cr	V	Be	Cu
MR 73	2	8	9	1.4	1.3	0.2	5	4	1	3	462	18	0.1	2
MR 73	3	6	5	1.4	0.9	0.2	5	4	1	3	285	8	0.1	3
MR 73	4	3	5	1.6	0.4	0.2	5	4	1	2	246	4	0.1	2
MR 73	5	13	3	1.2	0.9	0.2	6	9	1	3	362	3	0.1	9
MR 73	6	4	2	1.6	0.9	0.2	5	11	1	2	237	5	0.1	1
MR 73	7	18	70	1.9	1.4	0.2	5	87	1	5	205	6	0.1	66
MR 73	8	9	6	1.4	0.9	0.2	5	5	1	3	254	4	0.2	3
MR 73	9	7	6	1.7	1.0	0.2	5	4	1	2	442	4	0.1	3
MR 73	10	6	2	1.4	1.0	0.2	5	3	1	1	281	3	0.1	4
MR 73	11	4	6	1.4	0.7	0.2	5	5	1	1	257	4	0.1	3
MR 73	12	8	4	1.6	0.7	0.2	5	7	1	4	329	5	0.1	6
MR 73	13	7	4	1.4	1.5	0.2	5	5	1	5	340	6	0.1	5
MR 73	14	7	3	1.9	2.3	0.2	6	17	1	4	314	15	0.3	4
MR 73	15	14	4	1.6	2.4	0.2	5	9	1	3	400	13	0.2	11
MR 73	16	25	8	2.8	1.8	0.2	5	11	1	4	226	14	0.5	8
MR 73	17	21	7	3.3	1.5	0.3	8	10	1	5	335	23	0.6	8
MR 73	18	34	10	2.6	5.3	1.9	5	8	1	9	96	34	1.3	21
MR 73	19	79	31	9.4	139.0	93.0	9	11	1	29	158	227	4.4	25
MR 73	20	193	31	194.0	28.0	14.0	14	82	1	331	479	535	4.6	78
MR 73	21	207	29	88.0	79.0	64.0	6	51	1	199	181	504	4.6	53
MR 73	22	81	5	8.5	53.0	33.0	6	14	1	34	156	34	2.1	64
MR 73	23	26	2	2.1	1.8	0.5	5	6	1	1	160	11	1.4	40
MR 74	8	5	2	1.3	0.8	0.2	5	2	1	1	243	5	0.1	3
MR 74	7	10	6	0.8	1.5	0.6	5	5	1	4	435	5	0.1	55
MR 74	6	5	3	0.6	1.2	0.5	5	2	1	3	175	1	0.1	3
MR 74	5	8	2	1.3	1.8	0.4	11	3	1	4	451	7	0.2	4
MR 74	4	12	2	1.3	0.9	0.6	5	3	1	2	494	6	0.2	7
MR 74	1	7	2	1.0	0.6	0.4	6	3	1	4	126	10	0.2	3
MR 74	3	10	2	0.8	1.2	0.3	7	2	1	4	430	9	0.2	4
MR 74	2	7	2	1.3	1.0	0.7	5	2	1	3	384	7	0.2	4
MR 74	11	28	5	1.0	24.0	12.0	7	15	1	7	438	296	2.9	4
MR 74	10	31	14	2.9	141.0	125.0	5	14	1	7	324	386	3.6	7
MR 74	12	70	16	2.7	126.0	99.0	5	12	1	11	398	584	5.6	5
MR 74	9	69	8	0.8	3.8	0.2	5	21	1	53	288	148	1.6	35
MR 75	1	10	4	1.2	0.9	0.2	5	7	1	3	304	15	0.2	12
MR 75	2	9	2	1.2	1.1	0.2	5	3	1	3	415	9	0.1	4
MR 75	3	8	3	0.8	1.9	0.7	5	3	1	1	300	11	0.1	5
MR 75	4	10	2	1.3	0.7	0.4	5	3	1	1	383	8	0.1	5
MR 75	5	5	2	0.6	1.0	0.2	5	3	1	2	234	5	0.1	2
MR 75	6	7	2	1.0	1.9	0.5	5	4	1	2	290	6	0.1	3
MR 75	7	11	2	1.2	0.7	0.2	5	4	1	1	417	6	0.1	6
MR 75	8	4	2	0.8	1.2	0.3	5	3	1	1	219	4	0.1	3

DDHNo	SaNo	Ni	Pbt	As	Utot	Uptl	Mo	Zn	Cd	Co	Cr	V	Be	Cu
MR 75	9	7	2	1.2	1.1	0.2	5	7	1	1	239	5	0.1	6
MR 75	10	6	2	0.8	1.5	0.7	5	2	1	1	332	6	0.1	2
MR 75	11	8	2	0.6	1.3	0.3	5	1	1	1	468	5	0.1	3
MR 75	12	12	2	0.8	1.9	0.5	5	3	1	4	427	10	0.2	4
MR 75	13	9	3	1.3	0.8	0.5	5	6	1	1	468	8	0.3	6
MR 75	14	12	7	1.2	0.6	0.3	5	8	1	4	434	6	0.3	56
MR 75	15	10	5	1.5	1.7	0.3	7	8	1	4	491	12	0.3	9
MR 75	16	12	19	2.7	4.1	1.1	6	8	1	2	408	17	0.7	9
MR 75	17	12	20	6.2	2.4	0.5	5	6	1	3	412	15	0.6	4
MR 76	5	8	2	1.4	0.5	0.2	6	2	1	1	380	6	0.1	4
MR 76	4	7	2	1.4	0.2	0.2	5	2	1	1	309	7	0.1	2
MR 76	3	7	4	1.8	0.8	0.2	10	3	1	1	315	7	0.2	3
MR 76	2	7	2	1.8	0.5	0.3	8	6	1	1	244	6	0.1	9
MR 76	1	9	4	2.4	0.4	0.3	8	2	1	1	320	5	0.1	3
MR 77	16	6	2	2.6	1.5	0.2	5	6	1	1	303	12	0.2	5
MR 77	15	13	3	1.8	0.8	0.2	8	2	1	1	555	11	0.1	6
MR 77	14	9	4	1.0	0.5	0.2	5	2	1	2	341	6	0.1	2
MR 77	13	8	4	1.0	0.2	0.2	5	3	1	2	188	5	0.1	3
MR 77	12	11	3	1.8	0.2	0.2	9	2	1	3	497	7	0.1	3
MR 77	11	10	3	2.0	0.2	0.2	5	2	1	1	294	3	0.1	5
MR 77	10	12	3	1.8	0.2	0.2	5	2	1	1	347	6	0.1	2
MR 77	9	8	2	1.4	0.7	0.2	5	3	1	1	272	4	0.1	3
MR 77	8	9	2	1.0	0.3	0.2	5	2	1	1	347	5	0.1	5
MR 77	7	10	7	1.6	0.3	0.2	5	2	1	1	343	5	0.1	3
MR 77	6	8	5	1.6	0.4	0.2	7	1	1	2	311	5	0.1	2
MR 77	5	11	4	1.8	0.3	0.2	5	1	1	2	339	5	0.1	4
MR 77	4	9	2	2.0	0.5	0.2	5	3	1	5	294	7	0.1	5
MR 77	3	11	4	5.0	0.5	0.2	5	4	1	2	273	17	0.4	3
MR 77	2	9	5	1.0	0.2	0.2	5	10	1	4	302	18	0.3	4
MR 77	1	6	4	2.4	0.7	0.2	5	3	1	5	170	14	0.5	3
MR 77	17	58	2	1.4	2.1	0.2	7	56	7	29	168	167	1.4	9
MR 77	18	51	2	1.4	2.9	0.4	8	39	2	30	175	183	1.7	11
MR 78	1	6	2	2.4	1.6	0.2	10	1	1	1	278	2	0.1	1
MR 79	20	5	3	1.6	0.8	0.2	5	3	1	1	283	8	0.1	4
MR 79	19	11	2	1.3	0.6	0.3	5	2	1	2	287	2	0.1	2
MR 79	18	10	4	2.0	0.7	0.2	5	3	1	3	315	1	0.1	3
MR 79	17	5	2	1.1	0.9	0.2	5	3	1	1	140	2	0.1	3
MR 79	16	12	3	1.8	0.5	0.2	6	2	1	2	390	1	0.1	3
MR 79	15	6	3	2.2	0.9	0.2	5	3	1	1	247	2	0.1	3
MR 79	14	10	3	1.8	0.8	0.3	5	4	1	4	407	1	0.1	3
MR 79	13	7	7	1.5	0.8	0.2	5	4	1	1	253	1	0.1	1
MR 79	12	11	4	1.8	0.8	0.2	7	2	1	1	313	1	0.1	3

DDHNo	SaNo	Ni	Pbt	As	Utot	Uptl	Mo	Zn	Cd	Co	Cr	V	Be	Cu
MR 79	11	11	4	1.6	0.4	0.3	7	2	1	2	423	1	0.9	1
MR 79	10	1	4	2.0	0.2	0.3	5	1	1	1	104	1	0.1	1
MR 79	9	1	2	2.0	0.6	0.3	5	1	1	3	1	1	0.1	1
MR 79	8	1	2	2.6	0.9	0.2	5	1	1	1	1	1	0.2	6
MR 79	7	9	3	2.4	1.0	0.2	5	5	1	1	262	12	0.1	3
MR 79	6	5	2	1.6	0.7	0.4	5	4	1	1	173	13	0.2	3
MR 79	5	10	3	1.8	1.6	0.2	6	4	1	1	419	22	0.2	4
MR 79	4	8	4	2.0	0.7	0.2	5	5	1	2	255	14	0.3	4
MR 79	3	8	4	3.9	1.5	0.2	7	5	1	2	226	22	0.5	3
MR 79	2	6	5	2.4	2.3	0.4	5	9	1	4	192	28	0.4	3
MR 79	1	4	5	4.1	1.1	0.2	5	5	1	3	211	17	0.5	4
MR 80	21	5	11	1.8	0.6	0.2	5	2	1	2	180	5	0.1	3
MR 80	20	11	5	1.6	0.2	0.2	9	2	1	4	448	9	0.1	4
MR 80	19	7	5	1.2	0.9	0.2	5	2	1	1	284	8	0.1	7
MR 80	18	5	2	2.4	1.3	0.2	5	2	1	2	346	12	0.1	3
MR 80	17	5	2	1.8	0.4	0.2	10	2	1	1	263	4	0.1	3
MR 80	16	6	2	1.1	0.8	0.2	5	4	1	3	362	6	0.1	7
MR 80	15	5	2	1.3	0.9	0.2	5	2	1	1	287	6	0.1	1
MR 80	14	2	2	2.0	0.3	0.2	7	1	1	2	322	6	0.1	4
MR 80	13	4	2	1.3	1.1	0.2	7	1	1	2	252	6	0.1	2
MR 80	12	3	2	1.8	0.6	0.2	6	2	1	1	229	5	0.1	2
MR 80	11	14	2	2.2	1.1	0.5	5	3	1	3	549	5	0.1	5
MR 80	10	5	2	1.8	1.0	0.2	5	2	1	1	285	7	0.1	3
MR 80	9	4	2	2.2	1.6	0.2	5	3	1	1	314	7	0.1	2
MR 80	8	7	2	2.2	1.0	0.3	9	2	1	1	423	9	0.1	3
MR 80	7	5	2	1.5	0.8	0.2	5	2	1	1	287	6	0.1	5
MR 80	6	8	2	2.2	1.6	0.2	10	4	1	2	357	10	0.3	4
MR 80	5	7	3	1.6	3.4	0.3	5	6	1	1	279	21	0.4	4
MR 80	4	2	2	2.8	4.5	0.4	5	4	1	4	187	11	0.5	3
MR 80	3	2	2	2.2	7.7	4.5	5	3	1	2	212	14	0.3	1
MR 80	2	2	3	2.4	6.2	1.9	5	5	1	3	155	13	0.3	3
MR 80	1	1	2	2.2	8.1	5.6	5	2	1	2	163	15	0.2	2
MR 80	22	72	7	3.2	8.0	2.2	9	13	1	32	226	187	2.3	338
MR 80	23	115	16	4.2	26.0	11.0	29	12	1	48	178	205	2.9	270
MR 80	24	246	14	12.0	38.0	23.0	59	13	1	107	326	326	2.5	95
MR 81	18	9	3	1.5	1.0	0.2	5	4	1	1	453	11	0.2	3
MR 81	17	10	8	1.5	1.5	0.2	7	3	1	2	507	7	0.1	6
MR 81	16	6	5	1.3	1.0	0.3	5	3	1	1	354	5	0.1	7
MR 81	15	6	7	4.3	1.3	0.2	9	3	1	4	290	17	0.2	3
MR 81	14	8	5	1.2	1.2	0.2	5	2	1	1	366	6	0.1	3
MR 81	13	11	8	1.5	1.1	0.2	8	5	1	3	541	6	0.1	8
MR 81	12	6	4	1.3	0.7	0.2	5	3	1	1	388	8	0.1	3

DDHNo	SaNo	Ni	Pbt	As	Utot	Uptl	Mo	Zn	Cd	Co	Cr	V	Be	Cu
MR 81	11	6	3	1.3	0.5	0.2	8	2	1	2	472	5	0.1	6
MR 81	10	7	5	1.7	0.5	0.2	5	3	1	3	391	5	0.1	6
MR 81	9	9	3	1.7	1.1	0.4	5	2	1	2	356	9	0.1	4
MR 81	6	9	2	1.5	1.3	0.2	5	2	1	1	326	7	0.1	4
MR 81	8	2	4	1.5	0.4	0.2	5	2	1	1	131	4	0.1	2
MR 81	7	8	2	1.5	0.9	0.4	9	2	1	2	381	11	0.1	4
MR 81	5	9	6	1.3	0.9	0.4	5	3	1	2	457	7	0.1	3
MR 81	3	7	8	3.3	1.3	0.4	5	4	1	2	380	19	0.2	7
MR 81	2	5	3	4.7	1.4	0.4	5	4	1	3	276	12	0.2	3
MR 81	4	5	4	3.4	0.9	0.4	7	4	1	3	216	12	0.1	4
MR 81	1	7	8	2.7	1.4	0.4	6	6	1	1	344	11	0.3	5
MR 81	19	8	10	1.3	1.0	0.3	5	10	1	1	331	11	0.5	5
MR 82	21	8	6	1.5	0.9	0.2	5	7	1	2	405	6	0.1	6
MR 82	20	13	5	1.7	1.3	0.2	7	3	1	1	520	13	0.1	3
MR 82	19	9	5	1.7	1.0	0.2	5	3	1	1	420	5	0.1	3
MR 82	18	8	4	1.5	0.3	0.3	5	6	1	1	506	7	0.1	8
MR 82	17	9	5	1.5	0.2	0.2	5	3	1	1	471	7	0.1	3
MR 82	16	8	6	1.9	0.5	0.2	8	3	1	1	465	7	0.1	1
MR 82	15	8	4	1.9	1.0	0.2	5	2	1	1	564	4	0.1	1
MR 82	14	6	4	1.7	1.2	0.3	5	2	1	1	399	6	0.2	5
MR 82	13	8	6	1.5	0.3	0.2	5	2	1	1	331	5	0.1	61
MR 82	12	7	2	1.7	0.2	0.2	5	1	1	1	419	6	0.1	1
MR 82	11	7	4	1.9	0.4	0.4	7	2	1	1	299	1	0.1	5
MR 82	10	12	2	1.5	1.0	0.2	9	2	1	1	569	8	0.1	3
MR 82	9	11	15	1.5	0.2	0.2	5	4	1	1	434	6	0.1	13
MR 82	8	12	2	1.7	0.7	0.2	10	1	1	1	522	10	0.1	2
MR 82	7	11	3	1.9	0.8	0.2	5	2	1	2	439	14	0.1	3
MR 82	6	6	3	3.6	0.6	0.3	8	1	1	1	349	8	0.2	2
MR 82	5	8	2	2.2	1.2	0.2	11	4	1	1	400	15	0.2	4
MR 82	4	6	3	3.3	1.7	0.2	6	8	1	1	289	16	0.3	7
MR 82	3	6	6	2.4	1.2	0.2	8	3	1	1	253	26	0.4	4
MR 82	2	5	3	2.1	0.7	0.2	7	6	1	1	282	12	0.2	7
MR 82	1	13	7	2.2	1.7	0.2	8	3	1	3	432	24	0.5	4
MR 83	12	9	2	1.7	0.5	0.2	8	8	1	2	309	7	0.1	3
MR 83	11	9	2	1.7	0.8	0.2	17	2	1	1	344	8	0.1	6
MR 83	10	9	2	1.7	1.0	0.2	5	3	1	1	266	7	0.1	1
MR 83	9	10	4	2.2	1.3	0.4	10	5	1	4	236	9	0.4	4
MR 83	8	15	5	2.4	1.0	0.2	13	6	1	1	491	13	0.2	5
MR 83	7	7	2	1.9	1.6	0.4	11	4	1	1	269	16	0.1	2
MR 83	6	10	7	4.1	0.8	0.4	5	5	1	1	246	15	0.4	9
MR 83	5	8	2	2.6	1.4	0.2	11	5	1	1	389	13	0.2	5
MR 83	4	7	3	1.9	0.4	0.2	12	4	1	1	256	8	0.2	4

DDHNo	SaNo	Ni	Pbt	As	Utot	Uptl	Mo	Zn	Cd	Co	Cr	V	Be	Cu
MR 83	1	10	2	2.8	1.3	0.2	9	11	1	1	314	15	0.3	9
MR 83	3	9	2	3.3	1.5	0.2	16	4	1	3	363	24	0.3	6
MR 83	2	8	3	3.3	1.0	0.2	9	3	1	1	286	13	0.2	3
MR 84	31	4	5	3.4	0.7	0.2	5	4	1	1	333	9	0.1	7
MR 84	30	5	4	2.9	0.8	0.2	5	9	1	3	357	7	0.1	9
MR 84	29	7	3	3.8	1.1	0.2	5	5	1	4	469	8	0.3	9
MR 84	28	3	5	3.4	0.5	0.2	5	3	1	2	312	5	0.2	6
MR 84	27	10	4	3.1	0.7	0.3	5	3	1	1	471	8	0.2	8
MR 84	26	3	3	2.5	0.3	0.4	5	2	1	3	335	1	0.1	6
MR 84	25	5	4	2.7	1.1	0.2	5	3	1	3	411	3	0.1	6
MR 84	24	7	4	2.7	0.2	0.2	5	3	1	3	445	3	0.1	11
MR 84	23	8	2	4.9	0.2	0.2	6	4	1	2	454	34	0.3	10
MR 84	22	5	4	2.5	0.2	0.3	5	3	1	1	343	5	0.1	7
MR 84	21	3	5	2.5	0.9	0.2	5	7	1	1	287	4	0.1	9
MR 84	20	13	3	2.7	1.2	1.1	5	2	1	2	564	8	0.1	7
MR 84	19	10	3	2.7	0.5	0.2	7	11	1	1	318	9	0.1	25
MR 84	18	10	3	2.7	0.2	0.2	5	1	1	2	398	5	0.1	4
MR 84	17	11	2	2.7	0.6	0.2	19	9	1	1	594	10	0.1	5
MR 84	16	7	3	2.7	0.6	0.3	8	2	1	1	403	12	0.1	6
MR 84	15	8	2	3.1	0.9	1.0	8	1	1	1	336	12	0.1	2
MR 84	14	9	4	2.5	0.7	0.2	9	1	1	1	378	5	0.1	6
MR 84	13	5	2	2.5	0.6	0.3	11	1	1	1	260	11	0.1	3
MR 84	12	4	2	2.5	0.6	0.2	6	1	1	1	366	14	0.1	3
MR 84	11	7	2	2.7	1.5	0.2	5	1	1	2	390	10	0.1	3
MR 84	10	11	2	2.2	0.2	0.2	5	5	1	1	447	4	0.1	6
MR 84	9	7	2	2.5	0.2	0.2	5	1	1	1	315	10	0.2	2
MR 84	8	8	2	3.1	0.6	0.2	5	1	1	2	379	10	0.2	1
MR 84	7	6	3	3.1	0.2	0.3	7	1	1	1	212	10	0.3	3
MR 84	6	6	2	3.1	1.1	0.2	5	1	1	1	245	9	0.2	2
MR 84	5	6	3	4.0	1.1	0.2	5	1	1	3	259	11	0.3	1
MR 84	4	6	2	4.7	1.2	0.5	5	11	1	1	300	19	0.3	4
MR 84	3	8	2	5.4	1.2	0.5	11	2	1	1	310	17	0.4	5
MR 84	2	6	2	6.3	1.2	0.3	5	7	1	7	336	24	0.5	2
MR 84	1	7	2	3.6	1.5	0.2	5	1	1	1	294	28	0.4	2
MR 84	33	4	2	3.8	1.5	0.3	5	5	1	4	256	32	0.4	6
MR 84	32	11	4	4.3	0.8	0.4	5	4	1	5	432	15	0.3	6
MR 85	24	7	8	2.4	0.3	0.3	6	3	1	1	351	11	0.2	5
MR 85	23	8	7	2.8	0.3	0.2	5	3	1	1	462	7	0.1	5
MR 85	22	5	6	2.8	0.5	0.2	5	3	1	1	325	5	0.1	5
MR 85	21	8	7	3.3	1.2	0.2	5	7	1	2	333	8	0.1	5
MR 85	20	14	6	2.6	1.4	0.5	5	5	1	1	413	13	0.1	5
MR 85	19	7	5	2.8	0.6	0.2	5	2	1	1	346	9	0.1	6

DDHNo	SaNo	Ni	Pbt	As	Utot	Uptl	Mo	Zn	Cd	Co	Cr	V	Be	Cu
MR 85	18	4	3	2.4	0.4	0.4	5	3	1	2	246	8	0.1	3
MR 85	17	9	5	2.2	0.6	0.2	8	8	1	4	494	6	0.1	5
MR 85	16	5	4	1.9	0.5	0.3	8	5	1	1	318	3	0.1	5
MR 85	15	8	4	2.2	0.6	0.2	8	3	1	1	383	8	0.1	3
MR 85	14	8	4	2.2	0.2	0.3	5	2	1	1	332	5	0.1	3
MR 85	13	9	6	2.2	0.8	0.2	5	2	1	2	422	8	0.1	4
MR 85	12	7	7	2.4	0.4	0.7	5	2	1	1	370	8	0.1	2
MR 85	11	8	8	1.9	0.7	0.5	8	5	1	1	485	6	0.1	3
MR 85	10	7	4	1.9	0.6	0.2	5	3	1	2	348	4	0.1	4
MR 85	9	4	8	1.9	1.3	0.2	5	15	1	2	330	8	0.1	26
MR 85	8	8	4	2.4	1.7	0.6	5	2	1	1	325	9	0.1	2
MR 85	7	10	4	1.9	1.3	0.2	8	4	1	1	301	8	0.2	5
MR 85	6	11	2	1.9	1.3	0.3	9	7	1	1	368	15	0.3	8
MR 85	5	12	2	2.2	1.2	0.5	15	9	1	2	509	12	0.2	4
MR 85	4	10	2	2.4	1.2	0.3	14	4	1	2	382	15	0.3	6
MR 85	3	14	3	3.5	1.4	0.2	17	5	1	1	422	21	0.5	5
MR 85	2	10	4	2.6	2.0	0.3	9	4	1	3	338	24	0.6	4
MR 85	1	12	2	2.4	0.9	0.2	7	3	1	1	403	33	0.5	4
MR 85	26	33	6	3.2	9.4	4.5	12	15	1	5	346	79	1.9	15
MR 85	25	39	5	6.3	31.0	26.0	9	8	1	4	330	118	2.6	4
MR 85	27	32	5	2.8	22.0	13.0	5	24	1	3	344	120	2.5	20
MR 86	1	14	7	3.2	1.2	0.5	8	7	1	2	554	4	0.1	8
MR 86	2	15	3	2.7	1.2	0.6	10	2	1	2	490	5	0.1	4
MR 86	3	15	2	2.5	0.8	0.3	9	2	1	1	449	10	0.1	5
MR 86	4	11	2	1.8	0.6	0.2	5	3	1	3	402	9	0.1	6
MR 86	5	12	2	2.0	0.7	0.4	12	6	1	2	492	10	0.1	5
MR 86	6	9	3	1.8	0.9	0.5	5	4	1	1	263	2	0.1	2
MR 86	7	11	2	1.8	0.7	0.4	5	1	1	1	344	5	0.1	3
MR 86	8	25	2	2.0	1.1	0.3	9	3	1	2	793	12	0.1	7
MR 86	9	14	2	1.6	0.8	0.3	5	2	1	1	405	6	0.1	2
MR 86	10	12	4	1.6	0.6	0.2	5	3	1	2	464	4	0.1	1
MR 86	11	12	5	1.8	1.1	0.3	7	3	1	3	442	12	0.3	4
MR 86	12	10	2	1.8	0.7	0.3	5	3	1	2	379	7	0.1	2
MR 86	13	15	2	1.8	0.2	0.2	5	3	1	1	620	6	0.1	4
MR 86	14	14	2	2.0	1.0	0.6	5	3	1	1	485	8	0.1	4
MR 86	15	11	2	1.8	0.8	0.3	8	2	1	2	325	16	0.1	2
MR 86	16	11	5	2.7	1.0	0.5	6	3	1	2	362	13	0.2	3
MR 86	17	15	2	2.5	0.7	0.5	9	2	1	3	532	9	0.2	3
MR 86	18	12	2	3.2	0.5	0.2	5	1	1	1	368	7	0.2	1
MR 86	19	11	2	3.0	0.9	0.2	5	2	1	1	294	8	0.2	3
MR 86	20	15	2	4.1	1.0	0.4	5	3	1	1	548	10	0.2	4
MR 86	21	8	2	3.2	0.7	0.3	5	3	1	1	372	10	0.2	1

DD	HNo	SaNo	Zr	Y	La	Th	Sr	Ba	B	e%Cl	el	eC	eK	I/I+K
MR	73	2	109	5	16	3	146	18	50	2.8	91	9	0	100
MR	73	3	159	5	7	3	87	12	70	4.5	100	0	0	100
MR	73	4	155	3	5	3	58	11	70	3.9	100	0	0	100
MR	73	5	111	2	5	3	45	8	50	2.7	100	0	0	100
MR	73	6	128	5	6	3	59	9	60	2.6	100	0	0	100
MR	73	7	216	8	6	3	68	23	60	4.6	90	4	6	94
MR	73	8	182	4	10	3	77	15	100	6.4	91	0	9	91
MR	73	9	115	3	7	3	65	9	60	1.9	98	0	2	98
MR	73	10	112	3	6	3	51	7	60	2.0	95	0	5	95
MR	73	11	63	2	5	3	50	7	40	1.8	97	0	3	97
MR	73	12	128	3	7	3	68	13	80	5.4	92	4	4	96
MR	73	13	286	5	6	3	71	11	70	3.1	91	4	4	96
MR	73	14	306	6	8	9	118	12	190	6.2	83	13	5	95
MR	73	15	209	13	7	3	104	6	150	3.0	9	40	52	15
MR	73	16	85	10	31	9	243	21	120	20.7	35	39	26	58
MR	73	17	90	7	39	9	230	20	230	24.3	73	19	8	90
MR	73	18	59	16	28	23	123	29	80					
MR	73	19	155	14	157	117	551	98	100					
MR	73	20	134	14	23	21	80	129	130					
MR	73	21	102	7	52	28	126	34	110					
MR	73	22	110	20	44	34	118	14	140					
MR	73	23	67	11	27	31	77	11	120					
MR	74	8	76	3	17	3	80	8	30	1.6	32	8	60	35
MR	74	7	68	2	14	3	67	6	40	0.9	40	0	60	40
MR	74	6	71	2	16	3	79	7	40	2.9	4	0	96	4
MR	74	5	142	4	25	4	143	10	120	2.7	91	2	7	93
MR	74	4	138	3	16	3	84	11	230	2.2	78	0	22	78
MR	74	1	208	7	10	3	48	5	240	5.4	100	0	0	100
MR	74	3	156	4	11	4	57	5	270	3.4	100	0	0	100
MR	74	2	168	4	12	3	53	5	250	2.6	100	0	0	100
MR	74	11	169	32	59	14	109	393	100					
MR	74	10	163	30	48	12	94	440	70					
MR	74	12	279	144	86	28	162	152	400					
MR	74	9	173	16	42	11	84	325	70					
MR	75	1	97	5	14	3	140	17	50	6.1	95	5	0	100
MR	75	2	82	3	13	3	99	14	30	3.1	90	10	0	100
MR	75	3	158	4	11	3	68	11	50	3.4	99	1	0	100
MR	75	4	134	3	12	3	62	11	40	2.8	100	0	0	100
MR	75	5	158	3	12	3	56	9	30	2.5	100	0	0	100
MR	75	6	131	3	12	3	59	9	30	2.2	100	0	0	100
MR	75	7	58	2	11	3	60	9	40	3.4	100	0	0	100
MR	75	8	63	2	9	3	63	9	30	2.2	100	0	0	100
MR	75	9	58	2	10	5	58	8	40	2.3	100	0	0	100
MR	75	10	127	4	9	3	60	8	50	2.4	100	0	0	100
MR	75	11	77	2	10	3	69	9	40	3.2	100	0	0	100
MR	75	12	257	7	8	8	89	14	60	7.6	84	0	16	84
MR	75	13	68	3	16	7	237	25	80	13.2	100	0	0	100
MR	75	14	64	2	10	6	108	20	60	16.1	56	0	44	56
MR	75	15	89	4	14	8	129	15	90	13.6	100	0	0	100

DD	HNo	SaNo	Zr	Y	La	Th	Sr	Ba	B	e%Cl	el	eC	eK	I/I+K
MR	75	16	192	9	40	22	606	32	120	20.7	65	0	35	65
MR	75	17	171	16	32	17	353	26	170	20.9	82	0	18	82
MR	76	5	106	3	5	3	63	5	80	3.7	100	0	0	100
MR	76	4	74	2	6	3	37	4	100	3.4	100	0	0	100
MR	76	3	227	4	6	3	65	6	180	5.8	100	0	0	100
MR	76	2	131	3	7	3	98	6	130	5.6	91	0	9	91
MR	76	1	264	3	6	3	41	6	210	6.0	100	0	0	100
MR	77	16	236	19	13	10	118	16	50	3.2	91	9	0	100
MR	77	15	175	4	11	8	73	12	40	3.0	100	0	0	100
MR	77	14	135	3	7	3	62	11	30	3.0	99	0	1	99
MR	77	13	74	2	5	3	46	8	40	2.2	82	12	6	93
MR	77	12	134	2	5	3	49	9	30	2.7	84	11	5	95
MR	77	11	80	1	5	3	58	8	20	2.5	66	24	11	86
MR	77	10	97	2	10	3	61	8	20	2.5	50	35	16	76
MR	77	9	102	2	8	3	51	7	20	2.6	49	47	5	91
MR	77	8	57	2	8	3	49	6	20	2.0	47	35	19	72
MR	77	7	166	3	6	3	48	7	40	2.9	43	37	20	68
MR	77	6	113	3	4	3	46	7	40	2.7	47	37	16	75
MR	77	5	59	2	7	3	50	5	20	2.5	39	41	19	67
MR	77	4	140	7	6	3	193	7	60	3.5	70	22	7	91
MR	77	3	74	3	30	15	462	50	60	12.8	100	0	0	100
MR	77	2	75	4	15	11	507	48	50	10.2	100	0	0	100
MR	77	1	86	3	33	17	449	52	70	15.2	100	0	0	100
MR	77	17	89	16	19	3	41	546	30					
MR	77	18	100	25	30	3	264	1505	60					
MR	78	1	238	3	13	9	78	7	20	3.3	97	3	0	100
MR	79	20	130	3	18	3	112	13	40	2.2	100	0	0	100
MR	79	19	91	2	13	3	60	10	40	3.1	100	0	0	100
MR	79	18	179	3	11	4	65	12	30	4.2	100	0	0	100
MR	79	17	73	2	7	3	44	7	30	2.2	100	0	0	100
MR	79	16	69	4	11	3	73	8	40	2.0	100	0	0	100
MR	79	15	47	6	10	3	126	10	40	2.2	95	0	5	95
MR	79	14	40	2	11	3	84	8	30	2.3	95	0	5	95
MR	79	13	60	2	8	3	55	7	40	2.0	94	0	6	94
MR	79	12	72	2	8	4	73	7	70	3.4	97	0	3	97
MR	79	11	96	2	7	3	50	7	40	2.3	99	0	1	99
MR	79	10	1	1	1	3	1	1	50	3.6	100	0	0	100
MR	79	9	1	1	1	7	1	1	70	9.7	89	0	12	89
MR	79	8	1	1	1	3	1	1	30	11.5	45	0	55	45
MR	79	7	101	2	10	10	218	24	40	10.6	67	0	33	67
MR	79	6	73	2	15	6	293	27	30	12.0	37	0	63	37
MR	79	5	102	3	18	13	392	26	40	12.9	31	0	69	31
MR	79	4	95	3	22	9	790	26	50	19.3	23	0	77	23
MR	79	3	150	8	48	24	3571	49	80	25.7	28	0	72	28
MR	79	2	160	8	36	21	1576	36	40	25.3	14	0	86	14
MR	79	1	169	6	44	32	3227	45	80	25.7	28	0	72	28
MR	80	21	119	4	12	4	139	18	50	3.2	100	0	0	100
MR	80	20	60	3	9	3	83	10	30	2.3	96	4	0	100
MR	80	19	132	3	7	3	90	12	40	2.7	99	1	0	100

DD	HNo	SaNo	Zr	Y	La	Th	Sr	Ba	B	e%Cl	el	eC	eK	I/I+K
MR	80	18	147	2	13	3	77	12	30	3.6	96	4	0	100
MR	80	17	100	2	10	4	59	9	30	3.4	100	0	0	100
MR	80	16	108	3	12	5	70	10	30	5.1	73	0	27	73
MR	80	15	195	4	11	3	68	11	30	4.1	100	0	0	100
MR	80	14	60	1	13	3	70	8	30	3.2	100	0	0	100
MR	80	13	90	3	12	3	62	8	40	2.3	100	0	0	100
MR	80	12	67	4	11	3	72	7	30	2.2	100	0	0	100
MR	80	11	119	6	11	4	66	9	30	2.4	100	0	0	100
MR	80	10	107	3	8	3	54	8	30	3.0	100	0	0	100
MR	80	9	108	5	11	4	82	9	40	3.4	100	0	0	100
MR	80	8	120	5	10	3	73	8	30	2.6	100	0	0	100
MR	80	7	77	5	8	3	55	7	70	3.9	100	0	0	100
MR	80	6	75	4	15	7	132	18	60	12.9	100	0	0	100
MR	80	5	85	3	19	6	194	22	80	15.8	100	0	0	100
MR	80	4	137	5	44	18	700	38	80	24.3	36	0	64	36
MR	80	3	101	9	24	10	302	21	70	20.2	51	0	49	51
MR	80	2	113	3	29	16	355	32	70	24.4	29	0	71	29
MR	80	1	108	9	24	15	266	19	70	16.4	76	0	24	76
MR	80	22	205	16	29	28	85	446	120					
MR	80	23	166	32	82	33	216	394	160					
MR	80	24	211	40	91	25	161	36	210					
MR	81	18	145	4	18	3	78	14	80	4.8	100	0	0	100
MR	81	17	73	2	11	3	57	10	30	3.1	100	0	0	100
MR	81	16	101	3	12	3	51	8	30	2.2	100	0	0	100
MR	81	15	94	3	14	9	380	38	40	11.8	100	0	0	100
MR	81	14	65	3	15	3	60	8	50	2.8	100	0	0	100
MR	81	13	64	2	17	3	79	8	30	2.9	100	0	0	100
MR	81	12	65	3	17	3	64	8	50	2.3	100	0	0	100
MR	81	11	56	2	9	3	51	6	40	2.1	98	0	2	98
MR	81	10	130	3	11	3	64	10	30	4.4	100	0	0	100
MR	81	9	153	3	9	3	48	8	40	3.5	100	0	0	100
MR	81	6	84	2	11	3	83	8	40	3.6	96	4	0	100
MR	81	8	74	2	11	3	65	7	60	2.9	100	0	0	100
MR	81	7	74	2	11	3	86	9	50	4.5	95	5	0	100
MR	81	5	55	3	12	3	57	8	60	2.9	100	0	0	100
MR	81	3	104	4	18	13	392	41	50	11.6	100	0	0	100
MR	81	2	75	3	17	6	457	40	40	12.9	85	0	16	85
MR	81	4	52	2	8	3	344	34	50	10.6	100	0	0	100
MR	81	1	84	3	28	7	725	40	60	20.6	43	0	57	43
MR	81	19	86	8	20	18	31	444	20					
MR	82	21	74	5	16	3	132	19	60	2.0	100	0	0	100
MR	82	20	96	6	14	5	146	18	60	2.8	97	4	0	100
MR	82	19	201	7	19	3	105	15	70	4.6	100	0	0	100
MR	82	18	139	3	17	3	80	13	20	4.3	100	0	0	100
MR	82	17	146	3	14	3	59	10	30	2.6	100	0	0	100
MR	82	16	63	6	15	3	101	10	50	2.2	98	2	0	100
MR	82	15	85	4	14	3	78	10	30	3.1	100	0	0	100
MR	82	14	123	9	15	3	105	13	40	3.4	100	0	0	100
MR	82	13	58	2	19	3	84	9	30	2.1	100	0	0	100

DD	HNo	SaNo	Zr	Y	La	Th	Sr	Ba	B	e%Cl	el	eC	eK	I/I+K
MR	82	12	79	3	13	3	83	10	60	3.7	100	0	0	100
MR	82	11	113	5	13	3	66	11	50	4.0	100	0	0	100
MR	82	10	113	3	9	3	69	9	40	4.0	100	0	0	100
MR	82	9	100	3	9	3	61	8	40	2.4	100	0	0	100
MR	82	8	198	5	20	3	104	12	70	6.1	100	0	0	100
MR	82	7	137	4	18	7	171	28	40	12.3	57	0	43	57
MR	82	6	63	1	17	3	198	29	40	11.0	66	0	34	66
MR	82	5	120	3	23	8	310	25	50	12.7	21	3	77	21
MR	82	4	143	5	35	5	971	34	60	20.8	23	0	77	23
MR	82	3	154	3	51	13	478	31	50	20.8	19	0	81	19
MR	82	2	83	3	25	3	459	23	60	18.6	25	0	75	25
MR	82	1	205	4	61	19	592	38	70	21.1	36	0	64	36
MR	83	12	63	3	15	3	61	9	40	2.1	72	11	17	81
MR	83	11	80	3	14	3	54	7	40	2.0	74	16	10	89
MR	83	10	102	3	13	4	46	7	40	2.3	75	18	8	91
MR	83	9	166	5	22	6	101	18	80	12.6	43	0	57	43
MR	83	8	153	7	17	5	82	12	40	6.5	97	0	3	97
MR	83	7	97	4	7	3	65	8	60	4.4	85	15	0	100
MR	83	6	72	16	42	13	480	58	70	12.4	98	0	2	98
MR	83	5	71	2	12	3	135	16	60	9.0	56	0	44	56
MR	83	4	50	2	15	11	92	16	60	10.3	30	0	70	30
MR	83	1	102	2	18	25	136	17	60	7.7	46	8	47	49
MR	83	3	175	3	25	28	146	17	60	6.3	52	7	41	56
MR	83	2	82	3	20	19	133	21	60	11.1	40	1	60	40
MR	84	31	57	3	13	8	93	14	40	2.2	79	21	0	100
MR	84	30	76	4	10	3	87	15	50	1.7	90	11	0	100
MR	84	29	101	4	13	4	123	20	70	5.1	93	0	7	93
MR	84	28	69	4	17	3	102	19	50	3.9	83	0	17	83
MR	84	27	169	5	16	7	77	19	80	5.7	100	0	0	100
MR	84	26	70	3	14	4	79	16	50	2.6	100	0	0	100
MR	84	25	97	4	15	3	83	16	90	1.8	100	0	0	100
MR	84	24	27	4	11	4	94	14	60	2.0	100	0	0	100
MR	84	23	194	40	12	8	232	21	80	2.7	69	31	0	100
MR	84	22	71	8	8	3	84	12	60	2.3	100	0	0	100
MR	84	21	160	6	12	5	228	14	60	3.9	100	0	0	100
MR	84	20	52	4	12	6	165	12	30	2.9	100	0	0	100
MR	84	19	132	3	10	6	82	12	60	5.9	100	0	0	100
MR	84	18	108	3	11	3	52	7	60	2.2	100	0	0	100
MR	84	17	77	4	12	3	57	7	50	2.6	100	0	0	100
MR	84	16	87	7	9	5	206	10	50	3.6	100	0	0	100
MR	84	15	31	33	12	3	148	9	60	2.8	100	0	0	100
MR	84	14	75	4	11	3	63	7	60	2.8	100	0	0	100
MR	84	13	90	4	10	8	89	7	40	4.6	100	0	0	100
MR	84	12	83	3	9	3	125	7	40	5.6	100	0	0	100
MR	84	11	393	6	11	12	60	6	80	2.6	100	0	0	100
MR	84	10	155	3	8	3	38	5	100	3.0	100	0	0	100
MR	84	9	68	4	16	7	175	15	70	14.2	100	0	0	100
MR	84	8	51	3	12	7	213	13	60	11.3	100	0	0	100
MR	84	7	86	4	21	6	223	24	40	17.2	40	0	60	40

DD	HNo	SaNo	Zr	Y	La	Th	Sr	Ba	B	e%Cl	el	eC	eK	I/I+K
MR	84	6	69	3	14	11	258	14	30	12.3	32	0	68	32
MR	84	5	80	4	22	15	267	22	50	21.2	28	0	72	28
MR	84	4	83	3	16	8	395	17	30	12.5	16	0	84	16
MR	84	3	86	4	23	11	452	28	30	14.1	22	0	78	22
MR	84	2	124	3	23	9	369	64	30	11.8	37	0	63	37
MR	84	1	99	5	31	12	460	24	50	21.5	54	0	46	54
MR	84	33	101	8	28	14	468	22	90	21.8	75	0	25	75
MR	84	32	94	3	32	14	575	24	20	19.8	37	0	63	37
MR	85	24	71	4	19	4	105	20	50	3.2	92	0	9	92
MR	85	23	76	4	15	11	91	17	60	3.1	100	0	0	100
MR	85	22	59	5	14	5	93	17	60	1.8	97	0	3	97
MR	85	21	75	4	20	10	130	20	90	1.7	100	0	0	100
MR	85	20	66	4	15	7	97	15	100	2.6	94	0	6	94
MR	85	19	112	3	11	6	68	12	50	2.8	100	0	0	100
MR	85	18	81	2	9	12	61	12	60	2.4	100	0	0	100
MR	85	17	104	2	10	9	54	10	50	3.0	100	0	0	100
MR	85	16	104	2	8	7	50	9	50	2.3	100	0	0	100
MR	85	15	69	2	10	4	48	9	50	3.7	93	0	7	93
MR	85	14	68	3	10	5	60	9	50	2.5	97	0	3	97
MR	85	13	80	3	12	6	56	9	40	2.5	97	0	3	97
MR	85	12	56	2	15	11	75	8	50	2.8	95	0	5	95
MR	85	11	103	4	11	7	66	8	50	2.4	100	0	0	100
MR	85	10	81	3	10	10	56	6	50	2.0	100	0	0	100
MR	85	9	202	5	14	14	85	10	70	3.9	98	2	0	100
MR	85	8	136	5	16	8	111	9	90	3.7	100	0	0	100
MR	85	7	126	5	12	3	58	10	130	5.4	94	0	6	94
MR	85	6	55	5	13	3	149	16	70	8.5	98	0	2	98
MR	85	5	64	3	13	12	128	26	70	9.3	98	0	2	98
MR	85	4	55	5	18	9	113	22	100	9.0	100	0	0	100
MR	85	3	78	4	34	10	210	21	110	11.5	95	2	3	97
MR	85	2	93	5	31	18	168	41	100	14.7	96	2	2	98
MR	85	1	66	3	27	8	122	19	80	10.7	92	5	3	97
MR	85	26	113	9	56	30	199	61	150					
MR	85	25	121	5	62	26	199	58	170					
MR	85	27	135	10	75	37	175	158	170					
MR	86	1	63	3	11	3	82	17	150	1.2	99	0	1	99
MR	86	2	111	5	14	6	99	16	120	2.0	100	0	0	100
MR	86	3	74	3	10	4	70	11	130	2.1	100	0	0	100
MR	86	4	113	2	13	3	54	11	120	3.3	91	10	0	100
MR	86	5	101	3	12	3	61	12	120	4.0	100	0	0	100
MR	86	6	80	3	11	3	49	9	90	2.0	100	0	0	100
MR	86	7	82	2	9	4	55	8	90	1.8	100	0	0	100
MR	86	8	64	3	10	3	67	10	110	3.2	100	0	0	100
MR	86	9	34	4	10	4	64	7	70	1.4	100	0	0	100
MR	86	10	64	5	12	3	74	8	90	2.0	100	0	0	100
MR	86	11	185	7	18	4	115	18	110	6.1	100	0	0	100
MR	86	12	77	2	11	3	59	8	120	3.2	100	0	0	100
MR	86	13	100	3	9	3	54	7	90	3.5	100	0	0	100
MR	86	14	126	4	9	6	109	15	140	9.7	97	0	3	97

DD	HNo	SaNo	Zr	Y	La	Th	Sr	Ba	B	e%Cl	el	eC	eK	I/I+K
MR	86	15	68	2	6	7	97	9	120	5.2	95	0	5	95
MR	86	16	116	4	22	19	204	19	140	16.0	35	0	65	35
MR	86	17	87	3	17	8	235	16	70	13.3	15	0	85	15
MR	86	18	81	5	29	10	267	24	70	12.9	15	0	85	15
MR	86	19	78	4	29	9	261	22	90	15.9	19	0	81	19
MR	86	20	87	9	33	21	397	28	80	14.7	24	0	76	24
MR	86	21	78	2	25	14	239	16	80	14.0	31	0	69	31

GEOCHEMICAL ANALYSIS OF DRILL CORE SAMPLES, WINTER 1990

DDH No.	SaNo	From	To m	Length	Lithology	Bench	Type	Lab	Al2O3 [%]	Fe2O3 [%]	CaO [%]	MgO [%]	K2O [%]	Na2O [%]	P2O5 [%]	TiO2 [%]	MnO [%]	e%Cl [%]	el [Rel%]	eC [Rel%]	eK [Rel%]	el/el+eK
MT 2	19	58.1	68.0	9.9	M.F. Fm.	10-12	composite	SRC	4.57	0.78	0.03	0.05	0.34	0.015	0.01	0.24	0.005	13.2	22.7	0.0	77.3	22.7
MT 2	18	68.0	78.0	10.0	M.F. Fm.	10-11	composite	SRC	3.15	2.20	0.05	0.09	0.21	0.018	0.13	0.10	0.012	9.0	19.7	0.7	79.7	19.8
MT 2	17	78.0	88.0	10.0	M.F. Fm.	10-10	composite	SRC	0.85	0.56	0.01	0.02	0.08	0.012	0.01	0.02	0.003	2.3	32.5	0.0	67.5	32.5
MT 2	16	88.0	98.0	10.0	M.F. Fm.	10-09	composite	SRC	1.15	0.44	0.02	0.02	0.09	0.007	0.01	0.03	0.002	3.3	24.5	0.0	75.5	24.5
MT 2	15	98.0	108.0	10.0	M.F. Fm.	10-08	composite	SRC	0.86	0.76	0.02	0.03	0.08	0.004	0.01	0.05	0.003	2.5	34.0	1.3	64.7	34.5
MT 2	14	108.0	118.0	10.0	M.F. Fm.	10-07	composite	SRC	1.15	0.70	0.02	0.03	0.12	0.014	0.01	0.06	0.002	3.3	38.0	0.0	62.0	38.0
MT 2	13	118.0	128.0	10.0	M.F. Fm.	10-06	composite	SRC	0.72	0.55	0.01	0.02	0.08	0.006	0.01	0.02	0.002	2.1	37.9	0.0	62.1	37.9
MT 2	12	128.0	138.0	10.0	M.F. Fm.	10-05	composite	SRC	0.78	0.60	0.02	0.02	0.08	0.012	0.02	0.02	0.003	2.3	38.2	0.0	61.8	38.2
MT 2	11	138.0	148.0	10.0	M.F. Fm.	10-04	composite	SRC	0.89	0.86	0.02	0.04	0.10	0.007	0.02	0.03	0.007	2.5	43.5	0.0	56.5	43.5
MT 2	10	148.0	158.0	10.0	M.F. Fm.	10-03	composite	SRC	1.11	0.54	0.01	0.01	0.11	0.006	0.02	0.03	0.002	3.2	33.9	0.0	66.1	33.9
MT 2	9	158.0	168.0	10.0	M.F. Fm.	10-02	composite	SRC	1.02	0.56	0.01	0.01	0.12	0.010	0.02	0.05	0.002	3.0	46.0	0.0	54.0	46.0
MT 2	8	168.0	178.1	10.1	M.F. Fm.	10-01	composite	SRC	2.02	0.90	0.02	0.03	0.16	0.016	0.02	0.06	0.003	5.8	24.8	0.0	75.2	24.8
MT 2	7	178.1	190.0	11.9	F.P. Fm.	10-05	composite	SRC	5.54	0.92	0.02	0.02	0.19	0.013	0.04	0.11	0.006	15.7	3.1	0.0	96.9	3.1
MT 2	6	190.0	200.0	10.0	F.P. Fm.	10-04	composite	SRC	3.49	1.61	0.03	0.02	0.11	0.016	0.01	0.08	0.011	9.8	1.7	0.0	98.3	1.7
MT 2	5	200.0	210.0	10.0	F.P. Fm.	10-03	composite	SRC	5.90	1.09	0.03	0.03	0.22	0.019	0.01	0.10	0.009	16.8	4.4	0.0	95.6	4.4
MT 2	4	210.0	220.0	10.0	F.P. Fm.	10-02	composite	SRC	6.01	2.19	0.04	0.03	0.17	0.010	0.14	0.11	0.014	17.0	0.3	0.0	99.7	0.3
MT 2	1	220.0	229.7	9.7	F.P. Fm.	10-01	composite	SRC	8.02	2.30	0.18	0.07	0.39	0.025	0.20	0.23	0.006	22.9	10.2	0.0	89.8	10.2
MT 2	3	220.0	225.0	5.0	F.P. Fm.	5-02	composite	SRC	8.02	1.72	0.04	0.06	0.41	0.021	0.09	0.29	0.005	22.9	11.0	0.0	89.0	11.0
MT 2	2	225.0	229.7	4.7	F.P. Fm.	5-01	composite	SRC	8.03	2.86	0.04	0.11	0.65	0.021	0.09	0.28	0.004	23.4	25.3	0.0	74.7	25.3

DDH No.	SaNo	From	To m	Length	Lithology	Bench	Type	Lab	Ni ppm	As ppm	Utot ppm	Upti ppm	Th ppm	Pbt ppm	B ppm	Mo ppm	Zn ppm	Cd ppm	Co ppm	Cr ppm	V ppm	Be ppm	Cu ppm	Zr ppm	Y ppm	La ppm	Sr ppm	Ba ppm
MT 2	19	58.1	68.0	9.9	M.F. Fm.	10-12	composite	SRC	13	3.2	0.7	0.6	13	13	80	6	14	1	4	397	9	0.3	15	245	7	24	170	37
MT 2	18	68.0	78.0	10.0	M.F. Fm.	10-11	composite	SRC	11	3.0	0.8	0.2	4	3	60	7	9	1	3	287	13	0.2	14	171	5	16	854	26
MT 2	17	78.0	88.0	10.0	M.F. Fm.	10-10	composite	SRC	10	2.3	0.6	0.4	3	3	60	5	25	1	1	369	5	0.1	9	58	1	9	82	9
MT 2	16	88.0	98.0	10.0	M.F. Fm.	10-09	composite	SRC	9	2.3	0.3	0.3	3	2	30	12	3	1	1	256	5	0.1	4	91	1	11	57	9
MT 2	15	98.0	108.0	10.0	M.F. Fm.	10-08	composite	SRC	9	2.5	0.3	0.2	6	2	20	5	12	1	1	289	6	0.1	9	180	7	9	207	10
MT 2	14	108.0	118.0	10.0	M.F. Fm.	10-07	composite	SRC	8	2.3	1.0	0.2	6	2	30	11	21	1	1	309	5	0.1	14	154	3	6	177	9
MT 2	13	118.0	128.0	10.0	M.F. Fm.	10-06	composite	SRC	10	2.1	0.5	0.2	3	2	20	11	17	1	4	319	4	0.1	16	72	1	7	78	7
MT 2	12	128.0	138.0	10.0	M.F. Fm.	10-05	composite	SRC	6	2.1	0.2	0.2	4	2	20	5	1	1	1	346	8	0.1	4	84	1	8	51	6
MT 2	11	138.0	148.0	10.0	M.F. Fm.	10-04	composite	SRC	9	2.1	0.6	0.2	6	2	70	8	3	1	1	362	5	0.1	3	86	1	11	54	7
MT 2	10	148.0	158.0	10.0	M.F. Fm.	10-03	composite	SRC	8	2.1	0.6	0.4	8	2	40	5	13	1	2	360	5	0.1	5	70	1	8	56	7
MT 2	9	158.0	168.0	10.0	M.F. Fm.	10-02	composite	SRC	9	2.1	0.6	0.2	5	2	40	8	11	1	2	329	4	0.1	16	75	1	8	57	7
MT 2	8	168.0	178.1	10.1	M.F. Fm.	10-01	composite	SRC	17	2.3	0.2	0.3	9	2	60	8	3	1	2	542	7	0.1	6	84	1	5	61	7
MT 2	7	178.1	190.0	11.9	F.P. Fm.	10-05	composite	SRC	7	3.0	0.8	0.2	8	2	50	5	6	1	1	206	8	0.1	9	106	4	17	436	17
MT 2	6	190.0	200.0	10.0	F.P. Fm.	10-04	composite	SRC	11	2.8	0.6	0.3	7	2	60	5	5	1	1	431	8	0.1	8	68	2	6	203	11
MT 2	5	200.0	210.0	10.0	F.P. Fm.	10-03	composite	SRC	8	2.5	0.9	0.2	11	2	40	8	3	1	3	337	7	0.2	5	74	4	17	216	19
MT 2	4	210.0	220.0	10.0	F.P. Fm.	10-02	composite	SRC	5	2.1	1.2	0.2	10	2	50	7	3	1	1	245	8	0.1	4	85	3	14	1000	21
MT 2	1	220.0	229.7	9.7	F.P. Fm.	10-01	composite	SRC	9	3.0	1.6	0.6	14	2	100	5	4	1	1	205	11	0.9	4	129	14	46	532	41
MT 2	3	220.0	225.0	5.0	F.P. Fm.	5-02	composite	SRC	8	2.5	1.8	0.4	20	2	100	8	4	1	4	202	9	0.7	5	162	8	36	625	32
MT 2	2	225.0	229.7	4.7	F.P. Fm.	5-01	composite	SRC	12	3.5	1.9	0.5	24	3	90	6	14	1	1	207	16	1.5	24	114	13	54	533	71

DDH No. MR85

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 #
150	100	88	10	10°	weakly friable sst							150	
				25°	trace pyrite along fracture.	PY							
	100	100	8	10° 25°									MR85-12
				70° 25°	trace pyrite along fracture.	PY PY							
155	100	82	12	10°	trace pyrite along fracture.	PY							
				15°	157-158.4m moderately fractured, weakly friable sst, mostly open fractures with minor sand gouge between			Weak					
	100	94	11	65°	trace pyrite along fracture	PY							
160				10° 20°									
				10° 20°	trace pyrite and bitumen along fracture.	PY PY	Strong				Weak (coating fractures)		
	94	68	26		10cm coarse crush breccia sandy-clay matrix to breccia. 162.1-162.9 weakly to moderately friable sst due to quartz dissolution. 163.5-5cm friable sst.			Weak					MR85-11
165	100	94	19	55°	164.1-164.8 weakly friable. 165.5-166.7m weakly to moderately friable sst.								
	100	98	7	15° 20°									
170	100	94	10	80 30° 20°			Moderate						MR85-10
	100	97	7	70° 65° 10°									
175												175	

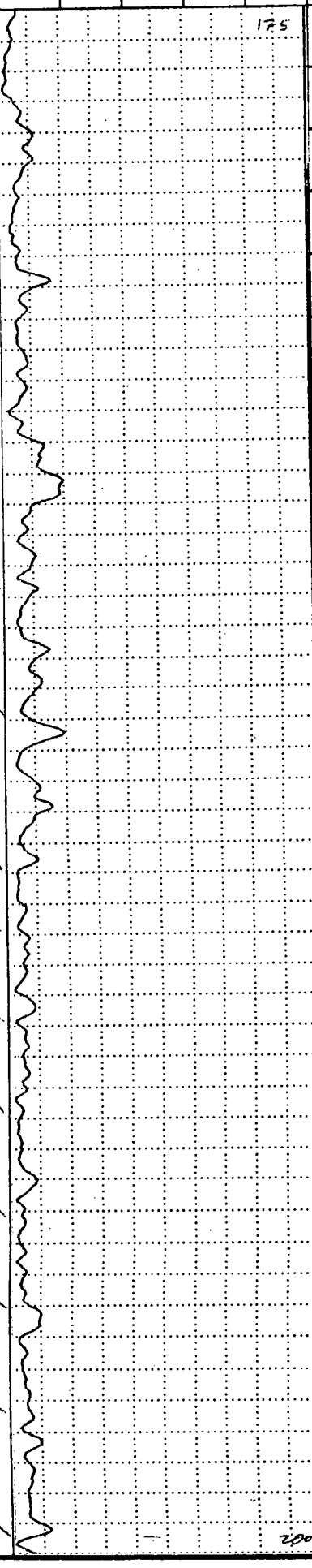
DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
175				∓15°	clay intraclast
				∓15°	trace pyrite along fracture
				∓10° ∓50°	
	84	56	>30		177.8 - 181.9m strongly friable sandstone - core loss, trace bitumen and red hematite in unconsolidated sand.
180	66	0	>30		
	88	67	28		181.9 - 185.1m moderately friable sandstone
185				∓15°	185.1 - 186.3 weakly friable.
	91	73	>30	∓50° ∓25° ∓50° ∓25°	
					187.3 - 188.1m strongly friable sandstone.
				∓5°	188.1 - 188.9m, weakly to moderately friable, friable sandstone decreasing with depth. (ie at 188.9), competent sandstone underlying.
190	98	85	17+	∓20°	
	100	100	5	5° ∓ 20° ∓ ∓5°	
195	100	96	14	∓30°	Moderately fractured zone bitumen holding sst together.
	100	100	11	20° ∓ 20° ∓ 10° ∓5°	
200					

py

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
	Moderate	Weak			Weak (coating fractures)
		Moderate			

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



SAM #

MR85-10

MR85-9

MR85-8

MR85-7

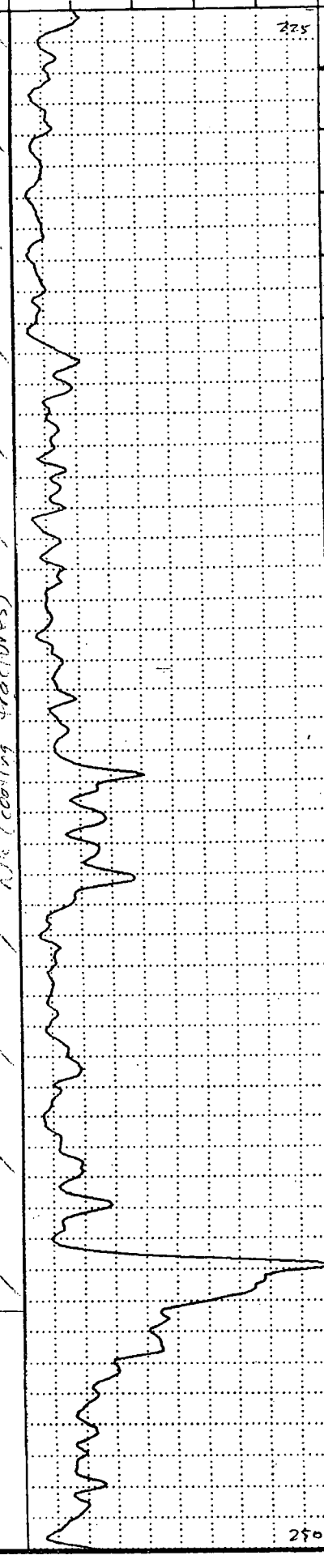
DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	SILICIFIED	GAMMA LOG (CPS/DIV) 10 (20 40 60 70)	SAM #
200	100	98	8	0° ≠ ≠20° 20° ≠		Moderate		Moderate			Weak	200	MR85-7
205	100	100	3	5° ≠									
	100	100	2	70°	sharp contact MF/FP Fms'								
210	100	100	3	5° ≠	208.2–246.1m Fair Point Fm moderately bleached, coarse grained to pebbly sandstone, unbedded, weak red hematite, light green to white (illitic and kaolinitic respectively) clay matrix., weakly fractured, traces of bitumen coating fractures. scattered quartz pebbles.	Weak	Mod						MR85-6
	100	100	5	≠10°				Weak					
215	100	100	9	≠25° ≠50° 0° ≠ 30°	← 215.5 silicified (quartz) vein 1cm wide at 25° CA; qtz pebbles	Moderate					Wk		MR85-5
					218.8–219m finer grained bedded sandstone			Weak					
220	100	100	1	80° ≠ ≠50°									
	100	97	5	≠50° ≠40°							Weak		
225												225	

DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	SAM #
225	100	94	10	80°								-5
					20 cm fracture zone - bitumen coating fractures.							
	100	96	21	60°	Moderately fractured, bitumen holding sst. together.							
230				20°								MR85-4
	100	75	>30		231.8 - 241.3 - conglomeratic sandstone - quartz pebbles 1cm to 5cm in diameter.	br						
					232.2 - 233.2m clay gouge with minor zones of sandstone 20-30% soft light green clay with sand grains, structure controlled at ~25° CA	BR HEM						
235	100	91	26		233 - 233.7 - moderate brick red hematite associated with structure and alteration	BR	Moderate	Weak			Wk (coating fractures)	
					233.9 - increase in light green clay matrix content.							
					234.5 - 235 - moderate brick red hematite + fractures with light green clay gouge.							
	100	91	14	25°	236.3 - 237.9m increase in light green clay matrix content				Wk lt. green			MR85-2
					238.3 - strong light green clay alteration (gouge)							
					5cm wide band of massive, dense brick red hematite	br						
240	100	91	13	10° 20°	240 - 240.3 - light and dark green clay matrix increse sandy clay gouge at 10° CA	br						MR85-3
				10° 30°	strong tarry bitumen along fractures							
	100	91	22		243 ~ 244.5m Moderately fractured with tarry bitumen coating fractures.							MR85-1
					244.2m - 1cm wide zone of light and dark green clay gouge							
245				20° 10°	basement pebbles							
				28°	Unconformity 246.1m							
	100	80	23	15° 30°	fault contact ~15-20° CA - strongly reworked sst and BSMT			Mod	s dk grn			
				74° 38°	246.1 - 259m strongly altered (strong light green chloritization, moderate sericitization, weakly hematized), amphibole-quartz-feldspar-mylonite, weakly to well foliated, pegmatoid intervals, moderately fractured.							
250	100	78	23		246.1 - 247.4 - Red/green regolith.			Mod	lt. lt grn/m dk grn			

GAMMA LOG (CPS/DIV) 10



DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.
250				
	100	88	10	
255	100	83	14	
	100	100	16	
260	100	94	5	
265	100	100	10	
	100	100	7	
270	100	94	16	
275				

DESCRIPTION

246.1 – 251.2 - foliation not well defined due to reworked regolith + fault breccia.

250.5 – 250.9 strongly altered crush breccia with associated red (brick red hematite)

255.9 – 256.4 m coarse-grained, silicified gneiss/mylonite, (myrmekitic texture?), mainly quartz with thin ribbony bands of matic minerals.

256.4 – 256.9m coarse crush breccia in pegmatoid, rotation and tectonic reduction of clasts.

sharp contact with graphitic rock

259 – 264.2m Moderately altered (light + dk green chlor.) graphitic (5–10% disseminated) quartz – feldspar – gneiss/myl., moderately well developed foliation (mylonitic) with graphite as ribbon-like (undulating) seams, mostly ductile deformation, little evidence of brittle faulting.

264.2 – 284m strongly altered (str. lt. green chlor, weak dk. green chlor., w. hematized), quartz – feldspar – fault rock zones of strong silicification and crush brecciation, most of zone consists of crush brecciated pegmatoid? and intervals of mylonite locally well developed foliation. Moderate to large quartz clasts (all fractured) in groundmass of light green altered feldspar.

265.2 – 272.6 m coarse crush breccia, zones of silicification – rotated clasts of silicified mylonite in ground mass of strongly chlor fsp.

270.6 – 271.5 – strongly silicified (breccia clasts) – silicified mylonite later crush brecciated.

272.6 – 284m inter layered crush breccia and mylonitic rock.

	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
250						
			wk	strong light green wk dk grn		
255						
260						
				Mod dk & light green		
265						
			Weak			
270				Str. light green, weak dk green		
					/51	
275						

GAMMA LOG (CPS/DIV)/10

20 40 60 80

250

254 330 cps

100 200 300 400 cps

264 170 cps

50 100 150 200

270 140 cps

100 150 200

275

SAM #

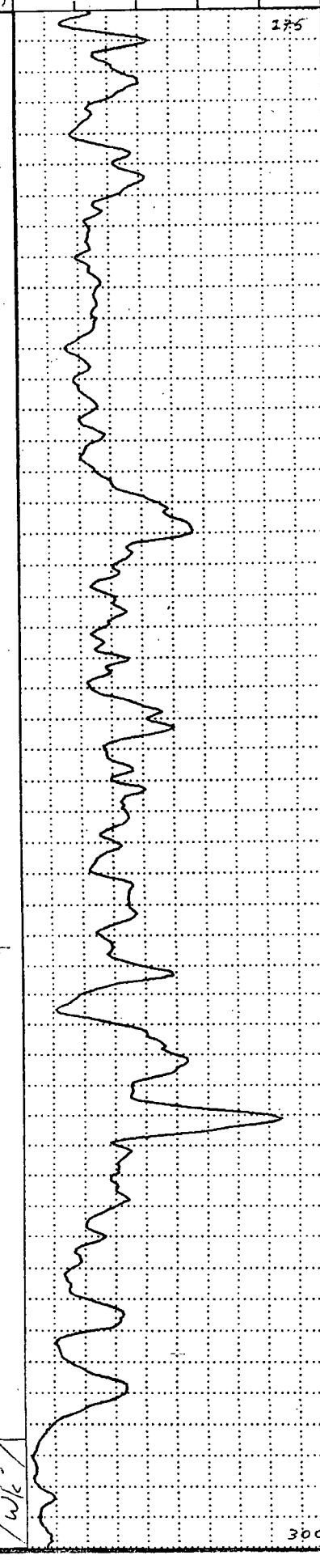
MR 85 26

90 cps MR-85 25

MR 85 27

DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicific	Bitumen	GAMMA LOG (CPS/DIV) 10	SAM #
275	100	100	13	85°	274.8 - 281.5m well developed mylonite to ultramylonite.								
.1	100	79	>30	tr. gf 20°	ultramylonite - numerous carbonate veinlets cross cutting trace graphite. 5cm graphitic fault gouge. ultramylonite	CO_3	weak		str. lt grn, wk dk green				
280	100	91	>30	15°	281.1 - 284m medium to coarse crush breccia (protomylonite) 282.5 - 284 coarse crush breccia strong hydrothermal activity (brittle/ductile deformation) carbonate veinles ∥ to fracture	CO_3 CO_3							
.2	100	91	>30	15° 50° 30°	284 - 293.6m - strongly chlor. graphitic (5-10% diss. to >10% in faults) - qtz - fsp - mylonite, zones of pegmatoid, zones of faulting with crush brecciation. 284 - fault contact with adjacent mylonite unit faulting at 15° CA with associated carbonate veinlets. 284 - 284.7m graphitic crush breccia 284.9 - 285.2m graphitic ultramylonite 287.6 - 293.6 well developed graphitic mylonite	CO_3 CO_3 CO_3			moderate light and dark green				
285	100	87	21	35° 40°									
290	100	91	24	50° 40°		CO_3							
.3	100	100	9	35°	293.6 - 298.2m strongly altered medium to coarse grained, quartz - feldspar - mylonite / protomylonite, 294.4 - 295.4m abundant garnet relicts forming "eyes" of well developed augen texture. weakly foliated pegmatoid								
295	100	97	27+		298.2 - 312.4m strongly silified, weakly chloritized, weakly hematized mylonite to ultramylonite.				Wk	Wk	Strong	Wk	
.4													
300													



DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
300	100	97	>30	50° 35° 25°	strongly fractured (mostly healed) vuggy porous zones from quartz dissolution along fractures with traces of bitumen and weak red hematite
305	100	100	>30	15° 10° 15°	
	100	91	>30		308.2 - 308.8 coarse crush breccia.
310	100	88	>30	40° 40°	
	100	88	25	30°	312.4 - 317.7m Strongly chloritized, graphitic (2-5% oxides >10% along fault planes) - amphibole-quartz-feldspar-gneiss, moderately foliated to massive; intervals of crush breccia, mostly strongly reworked
315	100	91	0		315.1 - 317.7 m crush breccia (coarse), stockwork carbonate veinlets cementing breccia clasts together
					E.O.H. @ 317.7m
320					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	STRUCTURE
		weak	weak	strong	weak
			Strong dk green		

Lim. ←

GAMMA LOG (CPS/DIV) 10 — 20 40 60 80 — 300

SAM #

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR85

COORDINATE X: 35600N

COORDINATE Y: 20587

ELEVATION Z: 302m

INCLINATION: -60°

AZIMUTH: 087

BOREHOLE Ø: NQ

CASING DEPTH: 31m

CASING WALL THICKNESS:

WATER or MUD LEVEL:

DATE of DRILLING: Feb. - Feb 26/90

TOTAL DEPTH:

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

INSTRUMENT: AI-5-8, AI-4-3

PROBE GAMMA: AI-6-500

PROBE NEUTRON: —

DATE of LOGGING: 27-FEB-90

TIME of LOGGING:

TOTAL DEPTH: 316.8

OPERATOR: R.O.

REMARKS: Analog print out NFG

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
316.8	10/DIV	5m/m	100/1
Ø			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR-86

AREA: MAYBELLE RIVER	DISPOSITION: 6[illegible]0005 PROJECT NO.: 71-42	PAGE 1 OF 14 DRILLED BY: MIDWEST DRILLING
COORDINATES: 420+00N, 324+15E UTM: 6457825N 510400E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: yes no DEPTH:	COMMENCED: MARCH 9, 1986 COMPLETED: MARCH 11, 1986
TOTAL DEPTH (m): 315.2 m ELEVATION (m A.S.L.): 305 m (EST.) DIP/AZIMUTH: -65°/082°	GEOLOGY BY: R. AVERY CORE STORED AT: JAS LAKE	CORE SIZE: NQ, BQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: (yes) no PAGE:	DOWN-HOLE PULSE-EM yes (no)

DIP TEST: ACID ACID → PAJARI TEST TO HAZARDOUS DUE TO [illegible] HOLE

TEST AT(m)	150	315																
DIP	-66°	-67°																
AZIMUTH	/	/																

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 52.3 m	SANDY DIAMICTON, OUTWASH SANDS AND GRAVELS
MANITOU FALLS FM. ATHABASCA GP. SHARP EROSIONAL CONTACT	52.3 - 204.7 m	MODERATELY TO STRONGLY BLEACHED, WEAKLY HEMATIZED, FINE TO COARSE GRAINED, MASSIVE TO CROSSBEDDED, CLAY IMPREGNATED PEBBLY SANDSTONE CONTAINING SEVERAL [illegible] INCOHESIVE BITUMEN IMPREGNATED INTERVALS. - UNIT ALSO FEATURES SILICIFIED FAULTS SURROUNDED BY BRECCIATED CLAY FILLED SOLUTION SEAMS.
FAIRPOINT FM. ATHABASCA GP. 258.6 m	204.7 - 258.6 m UNCONFORMITY?	MODERATELY BLEACHED, WEAKLY HEMATIZED, MASSIVE TO CROSSBEDDED, COARSE PEBBLY SANDSTONE CONTAINING HEMATIZED MATRIX SUPPORTED CONGLOMERATE BANDS FEATURING STRAINED, FRACTURED STRETCHED QTZ, MAFIC, & GRANITIC PEBBLES. - SILTSTONE INTERBEDS ARE COMMON THROUGHOUT THE INTERVAL. SHARP, IRREGULAR, FRACTURED CONTACT
BASEMENT PALEOWEATHERING PROFILE	258.6 - 282.8	- STRONGLY HEMATIZED RED ZONE: 258.6 - 268.4 m (WEAK CHLORITIZATION) - RED-GREEN ZONE: 268.4 - 274.2 m (STRONG HEMATIZATION, MODERATE CHLORITIZATION) - PALEOWEATHERING PROFILE GIVES WAY TO [illegible], HEMATIZED & WEAKLY CHLORITIZED, BANDED, [illegible] PLAG-GNEISS (META-SEDIMENT) WITH MINOR INTERVALS OF PLAG PORPHYRY.
KSPAR GNEISS	282.8 - 289.1 m	FRESH, UNALTERED, WELL FOLIATED, MEDIUM GRAINED, BIOT-HBL-PLAG-QTZ-KSPAR-GNEISS WITH SHARP CONTACT TO OVER & UNDERLYING GA-PLAG-BIOT-GNEISS.
GA-QTZ-BIOT-PLAG GNEISS	289.1 - 315.2 m	GREENISH-GRAY, FRESH, UNALTERED, FINE TO MEDIUM GRAINED, BANDED, MAFIC RICH, GA-QTZ-BIOT-PLAG-GNEISS (METAPELITE) CONTAINING INTERVALS OF ANATECTIC? KSPAR-QTZ-PLAG-PEGMATITE.
	315.2 m END OF HOLE	

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

GEOCHEMISTRY

MR-86-1	52.3-64	COMPOSITE SST SAMPLE
2	64-74	
3	74-84	
4	84-94	
5	94-104	
6	104-114	
7	114-124	
8	124-134	
9	134-144	
10	144-154	
11	154-164	
12	164-174	
13	174-184	
MR-86-14	184-194	COMPOSITE BQ SAMPLE
15	194-204.5	
16	204.5-208	
17	208-218	
18	218-228	
19	228-238	
20	238-248	
21	248-258.6	

GEOCHRONOLOGY

MR-86-22	294.5-297	WHOLE CORE
23	297-297.5	
24	297.5-298	
25	298-298.5	
26	298.5-299	
27	299-299.5	
28	299.5-300	
29	300-300.5	
30	300.5-301	
31	301-301.5	
32	301.5-302	
33	302-302.5	
34	302.5-303	
35	303-303.5	

DDH No. MR-86

PAGE 2 OF 14

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
0					0-52.3m OVERBURDEN: SANDY DIAMICTON, OUTWASH SANDS AND GRAVELS						
5											
10											
15											
20											
25											

DDH No. MR-136

PAGE 3 OF 14

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
25											
30											
35											
40											
45											
50											

DDH No. MR-86

PAGE 4 OF 14

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 200 400 600 800	SAM #
50											
53	100	80	22		52.3-204.7 m MANITOU FALLS FORMATION ATHABASCA MODERATELY TO STRONGLY BLEACHED, GREY WEAKLY HEMATIZED, FINE TO COARSE GRAINED MASSIVE TO CROSSBEDDED, CLAY MATRIX CLASTIC PEBBLY SANDSTONE CONTAINING SEVERAL STRONGLY FRACTURED INCOHESIVE, BITUMEN IMPREGNATED INTERVALS WEAK LIMONITE STAINING -UNIT ALSO FEATURES SPARSE MATRIX SUPPORTED PEBBLE BANDS. BITUMEN COATED FRACTURE & CLAY FILLED SOLUTION SEAMS.						MR-86 1
55											
56					CROSSCUTTING BITUMEN COATED FRACTURE BEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE. CROSSCUTTING BITUMEN COATED FRACTURE S						
58	100	82	18		CROSSBEDDING, POORLY DEFINED. BITUMEN COATED FRACTURE 58.0 - 59.7 M STRONGLY FRACTURED, COHESIVE INTERVAL WITH NUMEROUS FRACTURES FILLED BY BITUMEN & RED HEMATITIC CLAY.						
59					CROSSCUTTING FRACTURE COATED BY RED HEMATITE SUBPARALLEL BITUMEN FILLED FRACTURES.						
60	100	90	10		PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE CHANGES IN GRAIN SIZE						
62					BEDDING PARALLEL BITUMEN COATED FRACTURE PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE COARSE GRAINED INTERVALS CROSSCUTTING FRACTURE COATED BY HEMATITIC CLAY BEDDING WELL DEFINED.						
63	100	96	12		BEDDING PARALLEL BITUMEN & HEMATITIC CLAY COATED FRACTURE						
65					BEDDING WELL DEFINED BEDDING PARALLEL UNFILLED FRACTURE						
66	100	93	7		PLANAR CROSSBEDDING WELL DEFINED BY ALTERNATING FINE & COARSE GRAINED INTERVALS BEDDING PARALLEL UNFILLED FRACTURE						
68					PLANAR CROSSBEDDING WELL DEFINED CROSSCUTTING BITUMEN COATED FRACTURE						
70	100	99	9		CROSSCUTTING UNFILLED FRACTURE PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE CHANGES IN GRAIN SIZE						
71					WELL DEFINED SCOURY FILL STRUCTURE BEDDING PARALLEL BITUMEN COATED FRACTURE BEDDING WELL DEFINED BY COARSE SANDSTONE BEDS.						
72	100	94	9		BEDDING PARALLEL FRACTURE PARTIALLY COATED BY CLAY.						
74					WELL DEFINED SCOURY FILL STRUCTURE						MR-86 2
75					SUCCESSIVE PLANAR CROSSBEDS WELL DEFINED.						MR-86 3

DDH No. MR-86

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
75					75.7-75.8 MATRIX SUPPORTED PEBBLE BAND.	STRONG					
	100	93	15	75 BLt	BEDDING PARALLEL BITUMEN COATED FRACTURE						
				95	76.4m MATRIX SUPPORTED PEBBLE BAND (MAROON HEMATITE MATRIX).						
77				180	BEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE.						
				65							
					INCOHESIVE CLAY GOUGE						
					MATRIX SUPPORTED PEBBLE BAND.						
	100	100	8		78.4 - 79.3 WEAK RED HEMATITE LIGHTENING RINGS						
				20 BLt	CROSSCUTTING BITUMEN COATED FRACTURE						
80					MATRIX SUPPORTED QTZ PEBBLE BAND						
				20 BLt	CROSSCUTTING BITUMEN COATED FRACTURE						
					CLAY INTRACLAST 5'						
				75	PLANAR CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS						
	100	75	21	0°	UNFILLED FRACTURE.						
				65 Cy	BEDDING PARALLEL CLAY COATED FRACTURES						
83				70							
				70 Cy	CROSSBEDDING WELL DEFINED						
				BLt 0°	BITUMEN COATED FRACTURE						MR 86 4
					IRREGULAR CLAY FILLED SOLUTION SEAM						
	100	92	16	BLt 30 Cy	BEDDING PARALLEL FRACTURES PARTIALLY COATED BY CLAY & BITUMEN.	STRONG					
85				15° Py	CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE						
				70	85.1 - 85.4 - STRONGLY FRACTURED INCOHESIVE INTERVAL.						
86				20° Py	CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE.						
				10° Cy	CROSSCUTTING CLAY COATED FRACTURE						
				20 Py 20	86.6 - 87.2 m - STRONGLY FRACTURED INCOHESIVE INTERVAL						
				70	CROSSCUTTING FRACTURE COATED BY SOOTY PYRITE						
	100	72	20	Hem 35 Py	CROSSCUTTING FRACTURE COATED BY SOOTY PYRITE & HEMATITIC CLAY						
				Py 30	CLAY INTRACLAST						
					CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE						
89					IRREGULAR CLAY FILLED SOLUTION SEAM PYRITE.						
				80	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE						
90				75	BEDDING PARALLEL CLAY COATED FRACTURE						
	100	78	24		90.5 - 95.3m FRACTURED INTERVAL WITH NUMEROUS BEDDING PARALLEL AND CROSSCUTTING UNFILLED FRACTURES						
				20 Cy	UNFILLED FRACTURE						
				75 Cy	BEDDING PARALLEL CLAY COATED FRACTURE						
92				35	CROSSCUTTING UNFILLED FRACTURE						
					SOOTY PYRITE NOTED IN MATRIX.						
				75	CROSSBEDDING WELL DEFINED						
				20	CROSSCUTTING UNFILLED FRACTURE						
	100	79	28	75 Cy	CROSSCUTTING CLAY COATED FRACTURES						MR 86 5
				75 Cy							
95				90	BEDDING WELL DEFINED BY ALTERNATING FINER COARSE GRAINED BEDS	MODERATE	MODERATE	MODERATE			
				70	BEDDING PARALLEL UNFILLED FRACTURES.						
				80							
				130							
	100	92	11		CLAY INTRACLASTS						
				30	BITUMEN, ACCESSORY SOOTY PYRITE BEDDING PARALLEL FRACTURE						
98				70 Lim	CLAY INTRACLAST						
				165	LIMONITE, CLAY COATED BEDDING PARALLEL FRACTURE						
	100	77	28		CROSSBEDDING WELL DEFINED						
				85 Lim	LIMONITE & CLAY COATED BEDDING PARALLEL FRACTURE						
100											

DDH No. MR-85

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.		GAMMA LOG (CPS/DIV)	SAM #
108					CROSSCUTTING [illegible] FRACTURE							
					100.2 – 108.5 m FRACTURE INTERVAL [illegible]							
					CROSSCUTTING & BEDDING PARALLEL UNFILLED BITUMEN [illegible]							
					CROSSCUTTING BITUMEN COATED FRACTURE							
101					LIMONITE CLAY FILLED BEDDING PARALLEL FRACTURE							
					UNFILLED CROSSCUTTING FRACTURE							
					BEDDING PARALLEL CLAY BITUMEN COATED FRACTURE							
					CLAY INTRACLAST							
					PLANAR CROSSBEDDING WELL DEFINED							
	100	79	24		BEDDING PARALLEL BITUMEN COATED FRACTURE							
					CROSSCUTTING BITUMEN COATED FRACTURE							
					BEDDING PARALLEL RED HEMATITE FILLED FRACTURE							
104					BEDDING PARALLEL BITUMEN COATED FRACTURE							MR85 6
105					CROSSCUTTING BITUMEN COATED FRACTURE							
	100	60	>30		SUBPARALLEL BITUMEN COATED BEDDING PARALLEL FRACTURES							
					CLAY INTRACLAST							
107					CROSSCUTTING SOOTY PYRITE COATED FRACTURE							
					BEDDING PARALLEL BITUMEN & SOOTY PYRITE COATED FRACTURE							
					CROSSCUTTING BITUMEN COATED FRACTURE							
	100	74	25		SOOTY PYRITE NOTED IN MATRIX							
					BEDDING PARALLEL BITUMEN COATED FRACTURE							
					CROSSCUTTING BITUMEN COATED FRACTURE							
110					CROSSCUTTING BITUMEN COATED FRACTURE							
					SOOTY PYRITE NOTED IN MATRIX							
					BEDDING PARALLEL BITUMEN COATED FRACTURE							
					SOOTY PYRITE NOTED							
	100	47	>30		CROSSCUTTING BITUMEN COATED FRACTURE							
					111.6 – 119.0 m STRONGLY FRACTURED INCOHESIVE INTERVAL WITH NUMEROUS FRACTURE FACES COATED BY BITUMEN							
113					CROSSCUTTING BITUMEN COATED FRACTURE							
					BEDDING PARALLEL BITUMEN COATED FRACTURE							
					SOOTY PYRITE IN MATRIX							
					CROSSCUTTING BITUMEN COATED FRACTURES							MR-86 -7
	100	63	>30		CLAY INTRACLAST							
115					CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE							
					SOOTY PYRITE IN MATRIX							
116					BEDDING PARALLEL BITUMEN COATED FRACTURE							
					SOOTY PYRITE NOTED IN MATRIX							
					CROSSCUTTING BITUMEN COATED FRACTURE							
					SOOTY PYRITE IN MATRIX							
					CROSSCUTTING BITUMEN COATED FRACTURE							
	100	58	>30		PLANAR CROSS BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
119					CROSSCUTTING BITUMEN COATED FRACTURE							
120					119.9 – 120.7 m STRONGLY FRACTURED INCOHESIVE INTERVAL WITH NUMEROUS BEDDING PARALLEL & CROSSCUTTING BITUMEN COATED FRACTURES							
	90	72	25		CROSSCUTTING BITUMEN COATED FRACTURE							
					BEDDING PARALLEL HEMATITIC CLAY COATED FRACTURE							
					SOOTY PYRITE NOTED							
121					CROSSCUTTING BITUMEN COATED FRACTURE							
					BEDDING PARALLEL BITUMEN COATED FRACTURE							
	90	78	22		123.5 – 139.2 m STRONGLY FRACTURED INTERVALS CORE REDUCED TO BITUMEN IMPREGNATED FRIABLE RUBBLE							
					124.5 – 128.7 CORE STRONGLY IMPREGNATED BY BITUMEN							MR86 8
125												

MODERATE

MODERATE

WEAK

STRONG

WEAK

DDH No. MR-86

PAGE 7 OF 14

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
125					PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE						
					BEDDING PARALLEL BITUMEN CORTEX FRACTURE						
	100	32	>30								
					BEDDING PARALLEL BETWEEN CORTEX FRACTURES						
128					128'5 - 131'5m						
					5007 PYRITE OCCURS 2 - 8% OF CORE VOLUME & OCCURS AS IRREGULAR FINE & MEDIUM GRAINED SIZED NODULES.						
					PLANAR CROSSBEDDING WELL DEFINED.						
	97	50	>30		NOTE: STRUCTURAL DISRUPTION & CORE LOSS & ROTATION OF BEDDING FROM 129 - 139 m (FAULT ZONE SUSPECTED)						
130					PLANAR CROSSBEDDING WELL DEFINED.						
131					BEDDING PARALLEL BITUMEN CORTEX FRACTURE						
					PLANAR CROSSBEDDING WELL DEFINED.						
	65	50	21		NOTE CORE LOSS 131 - 149 m						
					PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE						
134					BEDDING PARALLEL BITUMEN FILLED FRACTURE						MR-86 9
					PLANAR CROSSBEDS AT LOW ANGLE TO CORE AXIS INDICATE STRUCTURAL DISRUPTION (e.g. FAULTING)						
135	47	56	22								
137					PLANAR CROSSBEDDING WELL DEFINED.						
					CROSSCUTTING BITUMEN FILLED FRACTURE						
	85	54	27		PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE						
140					BITUMEN FILLED FRACTURE						
					PLANAR CROSSBEDDING WELL DEFINED						
	77	73	16		BEDDING PARALLEL BITUMEN CORTEX FRACTURE						
					BEDDING & FRACTURE PARALLEL VARIATIONS IN GRAIN SIZE CROSSCUTTING BITUMEN FILLED FRACTURE						
143					142 - 143.5 m MASSIVE (UNCONSOLIDATED) CLAY (FAULT?) ZONE						
					CROSSCUTTING BITUMEN FILLED FRACTURE						
					IRREGULAR CLAY FILLED DISSOLUTION SEAM						MR-86 10
	100	63	27		BRECCIATED CORE BEDDING CROSSCUTTING BITUMEN FILLED FRACTURE						
145					BITUMEN CORTEX FRACTURE						
					PLANAR CROSSBEDDING WELL DEFINED						
					BEDDING PARALLEL CLAY FILLED FRACTURE						
146					146.2 - 164.4m SEVERELY FRACTURED INCOHESIVE						
					CROSSCUTTING INTERVAL WITH NUMEROUS FRACTURE PLANES FILLED BY BITUMEN						
					BITUMEN FILLED FRACTURE						
	73	70	27		BEDDING PARALLEL BITUMEN FILLED FRACTURE						
					PLANAR CROSSBEDDING WELL DEFINED						
149					CROSSCUTTING BITUMEN FILLED FRACTURE						
150					BEDDING PARALLEL CLAY FILLED FRACTURE & CLAY INTRACLAST						

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
150					CLAY INTRACLASTS BITUMEN COATED FRACTURE CROSSCUTTING BITUMEN COATED FRACTURES
	100	73	25		
152					PLANAR CROSSBEDDING, WEAKLY DEFINED BY VARIATIONS IN GRAIN SIZE CROSSCUTTING BITUMEN COATED FRACTURES PLANAR CROSSBEDDING WELL DEFINED CROSSCUTTING BITUMEN COATED FRACTURES BITUMEN COATED FRACTURE
	98	62	>30		
155					CROSSCUTTING BITUMEN COATED FRACTURE IRREGULAR CLAY FILLED SOLUTION SEAM. CROSSCUTTING BITUMEN COATED FRACTURE FRIABLE SILTSTONE INTERBED, ORIENTED AT 70° TO C.A. CLAY INTRACLAST. SILTSTONE INTERBED ORIENTED 70° TO CORE AXIS
	100	47	>30		
					IRREGULAR, CLAY FILLED SOLUTION SEAMS CROSSCUTTING BITUMEN FILLED FRACTURE PLANAR CROSSBEDDING WELL DEFINED BITUMEN FILLED FRACTURE CROSSCUTTING BITUMEN FILLED FRACTURES
160	100	62	>30		PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE CROSSCUTTING BITUMEN COATED FRACTURE
161					BEDDING PARALLEL CLAY COATED FRACTURE CLAY INTRACLASTS PLANAR CROSSBEDDING WELL DEFINED
	100	95	18		
					CROSSCUTTING BITUMEN COATED FRACTURE
164					BEDDING PARALLEL BITUMEN COATED FRACTURE CROSSCUTTING BITUMEN FILLED FRACTURE CROSSCUTTING CLAY FILLED FRACTURE PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
165					CLAY, BITUMEN FILLED FRACTURE. CROSSCUTTING BITUMEN COATED FRACTURE
	100	93	14		
					SUBPARALLEL BITUMEN FILLED FRACTURES CROSSCUTTING BEDDING. BEDDING PARALLEL CLAY COATED FRACTURE CROSSBEDDING WELL DEFINED CLAY INTRACLAST WHITISH GREEN SILTSTONE INTERBED ORIENTED AT 70° TO CORE AXIS.
167					
	100	92	15		CROSSCUTTING BITUMEN COATED FRACTURE BEDDING PARALLEL CLAY COATED FRACTURE
170					MATRIX SUPPORTED PEBBLE BAND ORIENTED AT 70° TO CORE AXIS BEDDING PARALLEL CLAY COATED FRACTURE PLANAR CROSSBEDDING WELL DEFINED.
	100	88	20		CROSSCUTTING BITUMEN COATED FRACTURE CLAY (BITUMEN) COATED BEDDING PARALLEL FRACTURE PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE. BEDDING PARALLEL BITUMEN COATED FRACTURE
173					SUBPARALLEL SETS OF BITUMEN FILLED BEDDING PARALLEL FRACTURES
	99	85	20		SILTSTONE BED (WHITISH GREEN FRIABLE CLAY) ORIENTED 90° TO C.A. CROSS BEDDING WELL DEFINED
175					

BLEACHING

MAROON HEM.

RED HEM.

GREEN ALT.

GAMMA LOG (CPS/DIV)

SAM #

MR-86 11

MR-86 12

MR-86 13

DDH No. MR-86

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
175			BL	30/ 20	SUB-PARALLEL BITUMEN-FILLED CROSS-CUTTING FRACTURES. CLAY INTRACLAST. BEDDING PARALLEL BITUMEN-FILLED FRACTURE.						
176				BLT 70	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE. CROSSCUTTING FRACTURE FILLED BY BITUMEN. CLAY INTRACLAST WITH MAROON HEMATITE ALTERATION RIM.						
	100	84	24	30/ BLT 70	WHITISH-GREEN SILTSTONE INTERBED DIPPING AT 20° TO C.A. CLAY INTRACLAST. CROSSCUTTING BITUMEN FILLED FRACTURE.						
179				20/ BLT 85	PLANAR CROSSBEDDING WELL DEFINED.						
180				20/ BLT 20/ BLT 60	BEDDING PARALLEL BITUMEN FILLED FRACTURE. CROSSCUTTING BITUMEN COATED FRACTURE. BEDDING PARALLEL CLAY COATED FRACTURE.						
	100	92	15	1cm	1cm THICK GREENISH-WHITE CLAY GOUGE.						
				40/ CY 65	CROSSCUTTING CLAY FILLED FRACTURE. BEDDING WELL DEFINED BY MINOR GRAIN SIZE VARIATIONS.						
182				20/ BLT 20/ BLT	CROSSCUTTING BITUMEN FILLED FRACTURES.						
				80	PLANAR CROSSBEDDING WELL DEFINED.						
	100	91	10	20/ BLT 15/ 19	CROSSCUTTING BITUMEN COATED FRACTURE. CROSSCUTTING CLAY COATED FRACTURE.						
185				10/ BLT 15/ BLT 85	CROSSCUTTING BITUMEN COATED FRACTURES. MAROON HEMATITE ALTERED SILTSTONE INTERBED DIPPING AT 25° TO C.A.						
				05/ BLT	BITUMEN COATED FRACTURES. CLAY INTRACLAST.						
	100	93	15	20/ BLT	CROSSCUTTING BITUMEN COATED FRACTURE.						
				70	PLANAR CROSSBEDDING WELL DEFINED.						
188				70/ BLT 75	BITUMEN COATED FRACTURE.						
					GRAVISH GREEN SILTSTONE INTERBED DIPPING 75° TO CORE AXIS.						
	100	80	28	70	SILTSTONE INTERBED WITH IRREGULAR LOWER CONTACT.						
190					CLAY INTRACLAST.						
				85	PLANAR CROSSBEDDING WELL DEFINED 188.5 - 198.0 m - FRACTURED, INCOHESIVE INTERVAL CHARACTERIZED BY NUMEROUS BEDDING PARALLEL CLAY COATED FRACTURE.						
191					IRREGULAR CLAY FILLED SOLUTION SEAM.						
				80	CLAY INTRACLASTS.						
				60/ BLT	CROSSCUTTING BITUMEN COATED FRACTURE. CROSSBEDDING WELL DEFINED.						
	100	84	22	20/ BLT 20/ PY 90	CROSSCUTTING FRACTURE PARTIALLY COATED BY BITUMEN & ACCESSORY COPPER PYRITE.						
194				90	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE.						
					BEDDING PARALLEL UNFILLED FRACTURE.						
195				95	CLAY INTRACLASTS.						
				70	SILTSTONE INTERBED DIPPING AT 65° TO CORE AXIS.						
	100	82	>30		SILTSTONE INTERBED WITH IRREGULAR LOWER CONTACT ORIENTED 70° TO CORE AXIS.						
					196.2 - 196.5 m INTERBEDDED MAROON HEMATITE ALTERED SILTSTONE & FINE SANDSTONE.						
197				70/ BLT 95	CROSSCUTTING BITUMEN FILLED FRACTURE. CLAY INTRACLASTS.						
				70	PLANAR CROSSBEDDING WELL DEFINED.						
	100	95	22	70	BEDDING PARALLEL UNFILLED FRACTURE.						
				75	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE. WEAK PATCHES OF LIMONITE STAINING NOTED. BEDDING PARALLEL UNFILLED FRACTURE.						
200											

MR-86 14

MR 86 15

DDH No. MR-36

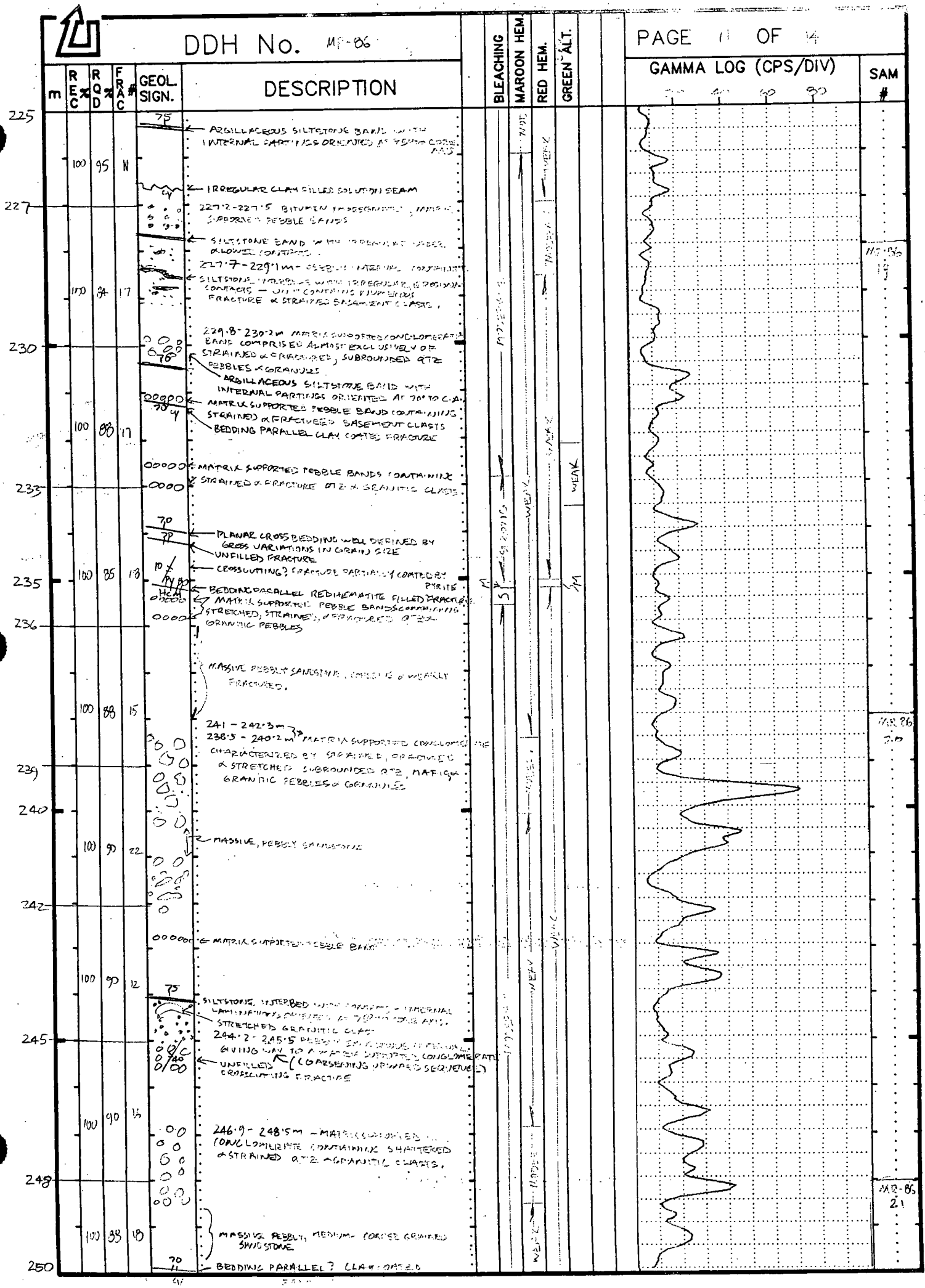
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
200				75°	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE						
				70	BEDDING PARALLEL CLAY FILLED FRACTURE						
				70 BLT	BEDDING PARALLEL BITUMEN IMPREGNATION.						
	100	85	19		SOOTY PYRITE NOTED AS RANDOM FINE SIZED NODULES .5-1.0mm INDIAMETER.						
				75	PLANAR CROSSBEDDING WELL DEFINED						
				75							
203				70	BEDDING PARALLEL UNFILLED FRACTURE						
				70	PLANAR CROSSBEDDING WELL DEFINED						
				70 BLT	BEDDING PARALLEL BITUMEN IMPREGNATION						
					204.7 m SHARP, EROSIONAL CONTACT						
205	100	92	14		204.7-258.6 m FAIR POINT TO ATHABASCA SP. MODERATELY BLEACHED, WEAKLY HEMATIZED, MASSIVE TO CROSSBEDDED, COARSE PEBBLY SANDSTONE CONTAINING HEMATIZED MATRIX SUPPORTED CONGLOMERATE BANDS FEATURING STRAINED, FRACTURED & STRETCHED QTZ, MAFIC & GRANITIC, PEBBLES & GRANULES.						MR-36 1.5
				30							
				75							
206				20 Hem	CROSSCUTTING CLAY FILLED FRACTURE						
					BEDDING PARALLEL? UNFILLED FRACTURE						
					REDHEMATITE FILLED FRACTURE						
					THROUGHOUT THE INTERVAL.						
					MATRIX SUPPORTED PEBBLE BAND, POORLY DEFINED						
	100	95	14	30° BLT 30°	CROSSCUTTING? SUBPARALLEL BITUMEN COATED FRACTURES						
					MATRIX SUPPORTED PEBBLE BAND, ROMANING CLASTS INDICATIVE OF BASEMENT LITHOLOGIES						
				70	PLANAR CROSSBEDDING WEAKLY DEFINED BY ALTERNATING MEDIUM & COARSE GRAINED INTERVALS						
209											MR-36 1.7
				70	BEDDING PARALLEL? CLAY COATED FRACTURE						
210					209.6-211.0 m - NUMEROUS BEDDING PARALLEL WHITISH GREEN CLAY (ILLITE?) PARTINGS.						
	100	97	9								
212				20 BLT	CROSSCUTTING, BITUMEN COATED FRACTURES						
				15 BLT							
				50 BLT							
	100	95	12	20	CROSSCUTTING CLAY FILLED FRACTURE						
215				70	BEDDING PARALLEL? BITUMEN COATED FRACTURE						
					MASSIVE INTERVAL, CLEAN, MEDIUM-COARSE GRAINED, STRONGLY BLEACHED, COHESIVE & WEAKLY FRACTURED.						
	100	95	10	85°							
				80	HEMATIZED SILTSTONE INTERBED; IRREGULAR LOWER CONTACT; UPPER CONTACT ORIENTED AT 85° TO CORE AXIS						
218				BLT 75 Hem	BEDDING PARALLEL? BITUMEN IMPREGNATED CORE						MR-36 1.8
					REDHEMATITE FILLED FRACTURE						
					FLOATING PEBBLE CLASTS INDICATIVE OF BASEMENT LITHOLOGIES						
				30°	CROSSCUTTING? UNFILLED FRACTURE						
				70	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE CHANGES IN GRAIN SIZE FROM BED TO BED.						
220	100	89	14	30°	CROSSCUTTING UNFILLED FRACTURE						
221				70	PLANAR CROSSBEDDING WELL DEFINED						
				70	BEDDING PARALLEL UNFILLED FRACTURE						
	100	93	15	70 Hem	BEDDING PARALLEL MAROON HEMATITE COATED FRACTURE						
224					FRACTURED & STRAINED, SUBROUNDED QTZ PEBBLE.						
225											

Bleaching: MODERATE; STRONG; MODERATE

Maroon Hem: MODERATE; WEAK; MODERATE

Red Hem.: WEAK; MOD; WEAK

Green Alt.: WEAK


DDH No. MP-86
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m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON HEM.
RED HEM.
GREEN ALT.
GAMMA LOG (CPS/DIV)
SAM #
225
227
230
233
235
236
239
240
242
245
248
250
100 95 11
100 84 17
100 88 17
100 85 18
100 88 15
100 90 22
100 90 12
100 90 16
100 88 18
ARGILLACEOUS SILTSTONE BAND WITH INTERNAL PARTINGS ORIENTED AT 75° TO CORE AXIS
IRREGULAR CLAY FILLED SOLUTION SEAM
227.2-227.5 BITUMEN IMPREGNATED, MATRIX SUPPORTED PEBBLE BANDS
SILTSTONE BAND WITH IRREGULAR UPPER & LOWER CONTACTS.
227.7-229.1m - PEBBLY INTERVAL CONTAINING
SILTSTONE INTERBEDS WITH IRREGULAR, EROSIONAL CONTACTS - UNIT CONTAINS NUMEROUS FRACTURE & STRAINED BASEMENT CLASTS.
229.8-230.2m MATRIX SUPPORTED CONGLOMERATE BAND COMPRISED ALMOST EXCLUSIVELY OF STRAINED & FRACTURED, SUBROUNDED QTZ PEBBLES & GRANULES
ARGILLACEOUS SILTSTONE BAND WITH INTERNAL PARTINGS ORIENTED AT 70° TO C.A.
MATRIX SUPPORTED PEBBLE BAND CONTAINING STRAINED & FRACTURED BASEMENT CLASTS
BEDDING PARALLEL CLAY COATED FRACTURE
MATRIX SUPPORTED PEBBLE BANDS CONTAINING STRAINED & FRACTURE QTZ & GRANITIC CLASTS
PLANAR CROSS BEDDING WELL DEFINED BY GROSS VARIATIONS IN GRAIN SIZE
UNFILLED FRACTURE
CROSSCUTTING? FRACTURE PARTIALLY COATED BY PYRITE
BEDDING PARALLEL REDHEMATITE FILLED FRACTURE
MATRIX SUPPORTED PEBBLE BANDS CONTAINING STRETCHED, STRAINED, & FRACTURED QTZ & GRANITIC PEBBLES
MASSIVE PEBBLY SANDSTONE, COARSE & WEAKLY FRACTURED.
241 - 242.3m
238.5 - 240.2m MATRIX SUPPORTED CONGLOMERATE CHARACTERIZED BY STRAINED, FRACTURED & STRETCHED SUBROUNDED QTZ, MAFIC & GRANITIC PEBBLES & GRANULES
MASSIVE, PEBBLY SANDSTONE
MATRIX SUPPORTED PEBBLE BAND
SILTSTONE INTERBED WITH CONTACTS - INTERNAL LAMINATIONS ORIENTED AT 75° TO CORE AXIS.
STRETCHED GRANITIC CLAST
244.2 - 245.5 PEBBLY SANDSTONE INTERVAL GIVING WAY TO A MATRIX SUPPORTED CONGLOMERATE (COARSENING UPWARD SEQUENCE)
UNFILLED CROSSCUTTING FRACTURE
246.9 - 248.5m - MATRIX SUPPORTED CONGLOMERATE CONTAINING SHATTERED & STRAINED QTZ & GRANITIC CLASTS.
MASSIVE PEBBLY, MEDIUM - COARSE GRAINED SANDSTONE
BEDDING PARALLEL? CLAY COATED
WEAK
MP-86 19
MP-86 20
MP-86 21

DDH No. ME 8.

PAGE 12 OF 4

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
250					MASSIVE, PEBBLY SANDSTONE						
251	100	75	22		251.6 - 252.8 MATRIX SUPPORTED PEBBLE BANDS GIVING WAY (UPWARD) TO CLAST SUPPORTED QTZ-GRANITIC PEBBLE - PEBBLE BANDS - CONGLOMERATE (COARSENING UPWARD SEQUENCE WELL DEFINED)						
254					BEDDING PARALLEL UNFILLED FRACTURE						
255	100	92	18		2 POORLY SORTED COARSE PEBBLY SANDSTONE CONTAINING RANDOM, FRACTURE BOUND GRANULES						
257					MATRIX SUPPORTED PEBBLE BAND FEATURING FLATTENED & STRAINED BASEMENT CLASTS						
					SILTSTONE INTERVAL WITH CLAST OF ORIENTED BOUDINAGED QTZ VEIN						
					MATRIX SUPPORTED BAND CONTAINED STRAINED & FRACTURED PEBBLES & GRANULES.						
					258.6 UNCONFORMITY SHARP, IRREGULAR, FRACTURED CONTACT						
	100	81	16		258.6-282.8 PALEOWEATHERING PROFILE STRONGLY HEMATIZED RED ZONE - 258.6 - 268.5 m (WEAK CHLORITIZATION) RED-GREEN ZONE (STRONG ALTERATION) 268.5 - 274.2 (INTERMEDIATE CHLORITIZATION)						
260					PALEOWEATHERING PROFILE GIVES WAY TO REDDISH MAROON), HEMATIZED & WEAKLY CHLORITIZED BANDED, MEDIUM GRAINED - MAFIC RICH GRANITE - QTZ-PLAG-GNEISS (META-SEDIMENT) WITH MINOR INTERVALS OF PLAG PORPHYRY. - UNIT CONTAINS CRUSH BRECCIAS, CLAY GOUGE & STRONGLY FRACTURED INTERVALS AS ZONES OF SMALL SCALE DEFORMATION.						
263	100	97	10								
265	100	87	18		CROSSCUTTING & HEMATITE COATED FRACTURE BANDING (GNEISSOSITY) WELL DEFINED BY ALTERNATING BANDS OF QTZ-PLAG WITH STRONGLY HEMATIZED MAFIC BANDS. FOLIATION PARALLEL BITUMEN COATED FRACTURE 265.5, 265.2-265.3 - COHESIVE STRONGLY FRACTURE BRECCIATED INTERVALS (CRUSH BRECCIA) CONTAINING ANGULAR GNEISS FRAGMENTS WITHIN A MATRIX OF CLAY & BITUMEN.						
266					FOLIATION WEAKLY DEFINED (CROSSCUTTING RED) GNEISSOSITY WELL DEFINED HEMATITE FILLED FRACTURE FOLIATION PARALLEL RED HEMATITE COATED FRACTURES						
267	100	95	18		GNEISSOSITY WELL DEFINED. FAULTED CONTACT FEATURING CHLORITIC SLICKENSIDES SENSE OF DISPLACEMENT UNKNOWN.						
269					GNEISSOSITY WELL DEFINED BY DISCRETE BANDS OF QTZ-PLAG INTERCALATIONS IN BETWEEN HEMATIZED MAFIC RICH BANDS.						
271	100	92	17		GNEISSOSITY WELL DEFINED WITH CROSSCUTTING BITUMEN COATED FRACTURE. GNEISSOSITY WELL DEFINED. CROSSCUTTING BITUMEN COATED FRACTURE						
272					271.8 - 272.1 m STRONGLY FRACTURED, COHESIVE, BRECCIATED INTERVAL FEATURING RAFTED GNEISS FRAGMENTS WITHIN A DENSE FABRIC OF CHLORITE FILLED FRACTURES						
	100	90	19		272.4 - 273.9 m - STRONGLY FRACTURED COHESIVE INTERVAL CHARACTERIZED BY A DENSE NETWORK OF SUBPARALLEL, CROSSCUTTING CLAY FILLED FRACTURES.						
275					GNEISSOSITY WELL DEFINED FRIABLE CLAY GOUGE						

DDH No. [illegible]

PAGE [illegible] OF

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
275					← CROSSCUTTING REDISHEMATITE (CHLORITE) FRACTURE						
					← GNEISSOSITY WELL DEFINED BY SEGREGATED BANDS OF QTZ-FSPR, INTERLAMINATED W/ CHLORITIZED MAFIC RICH BANDS.						
	100	95	13		277.3 – 282.2 m SOME BANDS CONTAIN RARE GRANITOID INTERVALS OF COARSE KSPAR-QTZ APLITE? PEGMATITE, WHICH IS LOCALLY FRACTURED.						
278					← BITUMEN COATED FRACTURE						
					← CALCITE COATED FRACTURE						
	100	96	13								
280					← BITUMEN COATED FRACTURES						
281					← QTZ FILLED FRACTURE						
					← GNEISSOSITY WELL DEFINED						
					← CROSSCUTTING CALCITE COATED FRACTURE						
					← CROSSCUTTING EPIDOTE COATED FRACTURE						
	100	100	13		← GNEISSOSITY WELL DEFINED 282.8 – 289.1 m, FRESH, UNALTERED, WELL FOLIATED, MEDIUM GRAINED, BIOT-HBL RICH-QTZ-KSPAR GNEISS WITH SHARP CONTACTS TO OVER & UNDERLYING GA-PLAG-BIOT GNEISS.						
284					← BITUMEN COATED FRACTURES						
					← CROSSCUTTING? CALCITE/CHLORITE FILLED FRACTURE						
285					← GNEISSOSITY WELL DEFINED						
	100	87	17		← UNFILLED FRACTURE						
					← CROSSCUTTING BITUMEN COATED FRACTURE						
287					← FOLIATION WELL DEFINED, CROSSCUTTING OPEN CHLORITE FILLED FRACTURE						
					← CROSSCUTTING CHLORITE/QTZ FILLED FRACTURE						
					← FOLIATION PARALLEL BITUMEN COATED FRACTURE						
	100	95	13		← FOLIATION WELL DEFINED BY THE PLANAR ALIGNMENT OF HBL GRAINS WITH FOLIATION PARALLEL BITUMEN COATED FRACTURE						
					← CALCITE FILLED FRACTURE, (FOLIATION) PARALLEL						
					← GNEISSOSITY WELL DEFINED BY SEGREGATED QTZ-FSPR BANDS & MAFIC BANDS						
290					289.1 – 315.2 m GREENISH GRAY, FRESH, UNALTERED, FINE TO MEDIUM GRAINED, BANDED, MAFIC RICH, GA-QTZ-BIOT-PLAG GNEISS (PELITIC PRECURSOR) CONTAINING INTERVALS OF APLITIC? KSPAR-QTZ-PLAG PEGMATITE.						
					← CROSSCUTTING CALCITE FILLED FRACTURE ARE COMMON THROUGHOUT THE INTERVAL						
	100	93	10		← FOLIATION PARALLEL BITUMEN/CLAY FILLED FRACTURE						
					← GNEISSOSITY WELL DEFINED						
295					← PYRITE NOTED AS RANDOM FINE GRAINS						
					← GNEISSOSITY WELL DEFINED						
					← CROSSCUTTING CALCITE COATED FRACTURE						
	100	90	17		← CROSSCUTTING FRACTURE COATED W/ LIMONITE & REDISHEMATITE						
296					← GNEISSOSITY WELL DEFINED BY SEGREGATED BANDS OF QTZ-FLAG & BIOT RICH BANDS.						
					← CALCITE/BITUMEN COATED FRACTURE						
					← CROSSCUTTING BITUMEN COATED FRACTURE						
					← GNEISSOSITY WELL DEFINED						
	100	87	19		← CROSSCUTTING CALCITE COATED FRACTURE						
					← GNEISSOSITY WELL DEFINED						
298					← CROSSCUTTING UNFILLED FRACTURE						
					← GNEISSOSITY, WELL DEFINED						
300											

DDH No. MR-85

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
300				70°	UNFILLED FRACTURE						
				50	GNEISSOSITY WELL DEFINED BY ALTERNATING PLAG BANDS & MEDIUM GREY QTZ BANDS.						
	100	83	20	55°	UNFILLED, FOLIATION PARALLEL FRACTURE						
				40 BCH	FOLIATION PARALLEL BITUMEN COATED FRACTURE						
302				20° BCH	CROSSCUTTING BITUMEN COATED FRACTURE						
					GNEISSOSITY WELL DEFINED						
				5 FQ	QTZ FILLED FRACTURE						
				50	GNEISSOSITY WELL DEFINED						
	100	99	12	70°	GNEISSOSITY STRONGLY FOLDED						
				22							
					304.5 - 311' PEGMATITIC INTERVAL WITH GRADATIONAL CONTACTS OVER & UNDERLYING GNEISS CHARACTERIZED BY INTERLOCKING COARSE ANHEDRAL GRAINS OF KSPAR QTZ & PLAG.						
305				20° BCH	SUBPARALLEL BITUMEN FILLED FRACTURES						
				50 CHL	SUBPARALLEL CHLORITE FILLED FRACTURES						
	100	99	12	40 CHL							
				40	BITUMEN COATED FRACTURE						
308				40	UNFILLED FRACTURE						
					GNEISS INLIER WITH SHARP IRREGULAR CONTACTS (PARTIALLY DIGESTED XENOLITH??)						
	100	80	21								
310					310.5 - 311.0 m STRONGLY FRACTURED INCOHESIVE FRIABLE MATERIAL (CRUSH BRECCIA??)						
311				80	GNEISSOSITY WELL DEFINED						
					311.5 - 312.5 ANORTHOSITE?? PEGMATITE CHARACTERIZED BY COARSE, INTERLOCKING ANHEDRAL GRAINS OF QTZ & PLAG.						
	100	50	33	75	GNEISSOSITY WELL DEFINED.						
				60							
				65 CHL	FOLIATION PARALLEL CALCITE COATED FRACTURE						
314				90	UNFILLED FRACTURE						
				150	GNEISSOSITY WELL DEFINED						
315					315.2 m END OF HOLE						
320											
325											

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-86

PAGE 1 OF 1

COORDINATE X: 428 [illegible]

COORDINATE Y: 324+15E

ELEVATION Z: 30[illegible]

INCLINATION: -65°

AZIMUTH: 082°

BOREHOLE Ø: NQ 0-144.4m BQ 144.4-315.2m

CASING DEPTH: 52.3

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: MARCH 9-11 1990

TOTAL DEPTH: 315.2

LOGGED THROUGH :
OPEN HOLE | PLASTIC PIPE | ~~RODS~~

INSTRUMENT: MOUNT SOPRIS 2500 AE-5-8-79

PROBE GAMMA: G-375 - AE-51-600

PROBE NEUTRON: WINCH - AE-4-3

DATE of LOGGING: MARCH 11 1990

TIME of LOGGING: 14:30 TO 16:30 HRS.

TOTAL DEPTH: 317.10 m

OPERATOR: R. AVERY

REMARKS:

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
317.10	10 CPS/DIV	5 M/MIN	1:200
0.0			

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY — DDH No. MT01

AREA: Maybelle River II	DISPOSITION: 6887090002 PROJECT NO.: 7144	PAGE 1 OF 19 DRILLED BY: Advance
COORDINATES: LINE 70N 45+00E	PLASTIC PIPE: (yes) no DEPTH: 419.7 CASING REMOVED: yes (no) DEPTH: 70.1	COMMENCED: June 1/89 COMPLETED: June 11/89
TOTAL DEPTH (m): 419.7m ELEVATION (m A.S.L.): 293 (est) DIP/AZIMUTH: -90°/—	GEOLOGY BY: B. Lacey CORE STORED AT: Jas Lake DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 19	CORE SIZE: NQ CASING SIZE: NW DOWN-HOLE PULSE-EM yes no

DIP TEST: Acid Acid Pajari

TEST AT(m)	76.2	213.4	419.7													
DIP	-90°	-90°	-89°													
AZIMUTH	/	/	/													

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 62m	Overburden. (62-70.1m Triconed Sandstone)
ATHABASCA GROUP — Manitou Falls formation	62 - 229.1m	Moderately bleached, locally silicified, medium-coarse grained sandstone, locally moderately fractured, moderate maroon and red hematite (bands + liesegang rings), silicified fractures common, euhedral qtz, spheroidal pyrite common in upper part of sst., possible dravite veinlets along rehealed fractures,
ATHABASCA GROUP — Fair Point formation	229.1 - 327.6m	Weakly to moderately bleached, coarse grained sandstone, white clay matrix, moderate maroon hematite bands, wk. red hematite, localized intervals (cm-1m) of light and dark green clay in matrix + along fractures, weakly fractured.
BASEMENT	327.6 - 345.9m	Strongly hematized, moderately chloritized (light green), (biotite)-qtz (feldspar)-gneiss, Paleoweathering, fractured.
	345.9 - 419.7m 349.5 - 364.m	Strongly chloritized (light + dark green), (garnetiferous)-graphitic (trace)-pyritic (tr-5%)-(biotite)-quartz-(feldspar)-gneiss, short (½m) intervals of granitoid/pegmatoid rock, strong plastic deformation - gives augen-gneiss texture, graphite as tr. disseminated, abundant veinlets.
	364 - 387.7m	Moderate to strong hematization, no graphite or pyrite.
	387.7 - 404.4	Strong light green chloritization, moderate dark green chlor., trace graphite and pyrite
	4044 - 4197	Strong dark green chlor., mod. light green chlor., pyritic (veinlets + disseminated), tr-2% graphite, abundant qtz veinlets, augen-gneiss texture, garnet relicts common
	E.O.H @ 419.7m	

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

Downhole γ Peaks:
353.15m - 144 cps

Digital Files
MT01.GAM
MT01.GDB

UTM coordinates
516950E
6466350N

Samples

MT01-1 1303-1304m MF	MT01-13 139-149 MF	MT01-26 267-277 FP
-2 1404-1405 MF	-14 149-159 "	-27 277-287 "
-3 252.2-252.3 FP	-15 159-169 "	-28 287-297 "
-4 280.6-280.7 FP	-16 169-179 "	-29 297-307 "
-5 246.8-246.9 FP	-17 179-189 "	-30 307-317 "
-6 70.1-79.0 MF	-18 189-199 "	-31 317-327 "
-7 79-89 "	-19 199-209 "	
-8 89-99 "	-20 209-219 "	
-9 99-109 "	-21 219-229.2 "	
-10 109-119 "	-22 229.2-237 FP	
-11 119-129 "	-23 237-247 "	
-12 129-139 "	-24 247-257 "	
	-25 257-267 "	

DDH No. MT-01

PAGE 2 OF 19

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

DDH No. MT-01

PAGE 3 OF 19

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
25					OVERBURDEN						
30											
35											
40											
45											

DDH No. MT-01

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 #
50					OVERBURDEN								
55													
60													
					sst bedrock begins at ~62 m (inferred from γ-log)								
65					Triconed sandstone.								
70					Casing to 70.1 m								
	100	92	8	20° sid.	70.1 – 229.2 Manitou Falls Fm. Moderately bleached, locally silicified medium-coarse grained sandstone, moderately fractured, some fractures have tarry bitumen coating, rehealed fractures (silicified) common, euhedral quartz + spheroidal pyrite common along fractures, maroon + red hem. mainly as lies gang rings.	sd	Moderate	Weak			Weak	Weak (fractures)		MT01-7
2	97	91	11	20°									
75				0°									

DDH No. MT01

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
75					Siltstone interbeds common.								
.3	100	93	18		75.3-75.5 rehealed joints - silicified fractures.								MT01-6
					abundant spheroidal pyrite along fracture.								
.3					77.6-78 rehealed (silicified) joints, associated spheroidal pyrite.					M			
					78.3-78.5 - rehealed (silicified) joints with spheroidal pyrite								
80	100	97	14		80.3-80.5 // Joints with some displacement (30° CA)								
					80A-81.6m mostly rehealed (silicified) joints with bitumen along some, abundant spher. pyrite								
.4	97	84	18+		82.6-87.3m Moderately fractured, both healed and open fractures, bitumen, pyrite + euhedral qtz common								MT01-7
					euh qtz								
.4					py								
85	100	82	24		10cm healed (silicified) fractures py xtals + spheroidal py abundant								
.5					clay clast.								
	100	95	7		87.9-88.7m. trace pyrite in sst matrix + spheroidal along fractures.	Mod.	Weak			Weak (along fractures - intergranular)	Weak (along fractures)		
90													
.5	100	91	11		91.5-92m - mod fractured sub-vert. joints w bitumen + py.								
.6													
95	100	100	1										MT01-8
.6	100	100	12		98.2-99m str. fractured, silicified with euhed qtz + pyrite along faces, (brecciated?) minor movement of clasts - offsets [illegible]			Mod					
.7													

DDH No. MT01

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
100	100	100	2	25° 50° 70°	
.7	94%	97%	8	15° 15°	
105					
.8	100	94	5	0°	105.7m – 10cm f. breccia in siltstone, rehealed with clasts in V form. minor displacement of clasts. offsets maroon hematite.
.8				5°	
110	100	100	7	30° 05°	20-30 cms of silicified (healed) fractures, minor (~1cm) displacement offseting
				0°	
	100	95	3	5° 15°	
115	100	100	4	30° 20° dv	117.5-118.5m rehealed joints possibly siliceous + clay veins or drarite veins formed along fractures (light whitish green material) - bluish tinge.
				10° py dv	
120	100	97	8	20°	
	100	100	6	0° 0°	

BLEACHING: Moderate

MAROON HEM.: Weak; Mod; Mod; Weak

RED HEM.: Mod; Mod; Weak

GREEN ALT.

Silicified: Weak (along fractures, intergranular)

Bitumen: Weak (fractures); Weak

GAMMA LOG (CPS/DIV) 20 20 40 60 80 100

SAM #: MT01-9; MT01-10; MT01-11

DDH No. MTØ1

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	100	4	20° 10°	126.8m - rehealed fractures silicous/clay or dravite along fractures.	dv	Strong		Weak		Weak			MTØ1-11
.1	100	100	0	10°										MTØ1-1
130	100	97	10	10° 5°	130.2 - 130.85m - rehealed (silicified) joints, siliceous clay or dravite along fractures. (veinlets), light greenish brown mottled material in sst. matrix may be siderite	dv. sid								
.2	100	100	7	70° 0°	~131.6 - 212m weakly bleached, moderate - red and maroon hematite, mainly as secondary lieseganos, moderate to strong maroon (primary) hematite. Maroon + Red striped sandstone ← py? + light green clay along fracture.	py								MTØ1-12
135	100	100	0											
.3	100	100	8	5° 0° 30° 90°	139.3 - 140.0m sub ll joints rehealed by veinlets of siliceous clay or dravite 140.5 - 140.6 - same jointing as above	dv? dv?	Weak	Mod	Mod					MTØ1-2
140														
.4	100	100	2											MTØ1-13
145	100	100	1											
.5	20	20	5	0° 30°	← light green clay along rehealed fracture.									

DDH No. MTØ1

PAGE 8 OF 19

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
150				15° cb	light green clay along reheated fracture.
	100	100	1	10°	
				5°	clay intraclast
155					clay intraclast.
	100	100	0		
160	100	94	11	ktu 47 20° 25°	159.1 ~ 161.2 sub H joints ~20-25° CA with up to 2cm sandy, clay, bituminous gouge.
	100	97	6	15°	
165	100	100	1		dk. green siltstone.
				10°	dk green interbedded siltstone.
	100	98.	3	5°	fracture w sandy, bituminous gauge.
170				10°	dk green interbedded siltst.
	100	100	1		
175	100	96	5		10cm dk. green interbeded siltstone

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	silicified	Bitumen
Weak	Moderate	Moderate			Weak along fractures, mainly in porous layers of sst

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

SAM #

MT01-14

MT01-15

MT01-16

DDH No. MT01

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 #
175													
9	100	100	1	30°	10cm silicified fault breccia sst clasts floating in quartz matrix ~ 30° CA								MT01-16
9				30°									
180	100	97	2	20°									
	100	98	3	20°	fracture with trace py + sooty py + minor light green/white clay, trace limonite, minor ss movement shown from slickensides on sooty pyrite (streaks)	Weak	Moderate				Weak (in pores mainly, some along fractures)		MT01-17
185	100	100	0					Moderate					
1	100	94	8	5° 10° 10°	188.1 - 188.8m 11 joints with tarry bitumen coating								
190													
1	100	100	2	10° rh									MT01-18
2													
195	100	100	11	35° 10° 5° 10°	195 - 196.9 sub. 11 joints most contain tarry bitumen, minor euhedral qtz., minor light green clay along some fractures. 195.7 - minor silicified f. breccia	Mod.	Weak						
2	100	100	3	15°	199.4 - 199.6m - silicified f. breccia little reduction in size or movement	Weak	Mod						9

DDH No. MT01

m	REC %	ROD %	FRAC #	GEOL SIGN.	DESCRIPTION
200					← silicified joints with minor dark green alteration associated
.3	100	99	2		← blocky dk green clay in matrix
.3	100	97	4		← fracture w trace limonite + bitumen
.3	100	100	0		← clay intraclast
210	100	100	0		← clay intraclast.
.4	100	100	0		← dk green sltst + silty sandstone
215					215.1 – 217m numerous small clay clasts.
.5	100	100	0		
.5	100	93	15		← minor dk green clay in sst matrix
220					218.5 - 219.6 reheale joints (silicified) – minor reheated breccia
.6	100	100	12		221 – 221.6m Weakly brecciated sandstone, silicified, ass. wk dark green clay in matrix, quartz veins between clasts
.10					223.4 - 223.5m - dk green clay in sst matrix
					223.7 - 224.8m silicified joints normal fault displacement of [illegible]

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen
Moderate	Weak	Moderate			Weak (mainly in pores)
Moderate	Weak	Mod.			

GAMMA LOG (CPS/DIV) 20 — 20 40 60 80

SAM #

MT01 – 19

MT01 – 20

MT01 – 21

221.4

DDH No. MT01

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
225	100	97	13	30° 0° 5°	224.8 - 225.2m silicified joints. 225.3 - 225.5m dark green clays in sst mtrx.
7	100	100	3	40°	← qtz vein (rehealed) fracture
230					229.2 - 327.6m Fair Point Fm. Weakly to moderately bleached, coarse grained sandstone, white clay matrix, moderate maroon hematite bands, weak red hematite, local light + dark green clay in matrix, weakly fractured.
7	100	96	4	35°	229.7 - 230m - str. dk green clay (mtrx) 230.1 - 230.6m - wk " " " " + minor brick red hematite
8					232.3 - 232.6m - mod. dk green clays in sst matrix, mod. silicified.
235	100	95	7	10° rh	- dk green clays common in sandstone matrix giving greenish tinge to many intervals (30-40cm) - trace specular hematite common in sst matrix 235.5 - 236.1m dk green clay in matrix, rehealed fractures 236.9 - 237.3m wk. green clay in matrix
8	100	94	7	35° 30°	238.1 - 238.8m weak green clay in matrix, enhanced along fractures, one fracture with brick red hematite
240				20°	
9	100	100	3	30°	← 5cm vuggy sst w/ associated brick red hematite
9	100	100	1		
245				10°	
	100	100	1		
				5°	← 30-40cm rehealed fracture (qtz+clay) with associated brick red hem.

BLEACHING: Moderate

MAROON HEM.: Moderate

RED HEM.: Mod; Weak; BR

GREEN ALT.: S; W; M; E; W; W; E; BR; BR; E; BR

Silicified

Bitumen: 11W (fractures)

GAMMA LOG (CPS/DIV) 20

20 40 60 80

SAM #

MT01-21

MT01-22

MT01-3

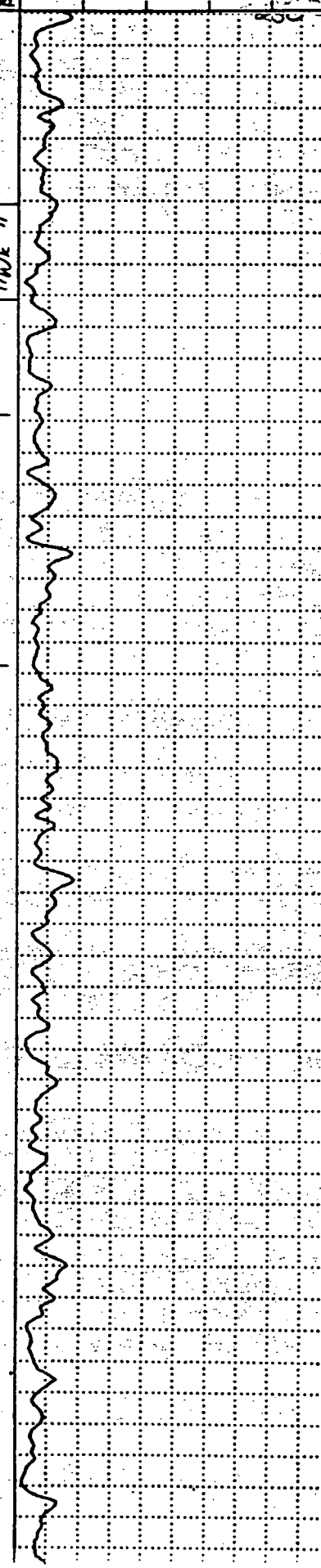
MT01-23

MT01-24

DDH No. MT01

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	SAM #
250	100	100	1									
1	100	94	8	0° 5° 0° 5°	253.1-254.6 m sub 11 joints ~ 5° CA with bitumen coatings						"Wk"	MT01-24
255 .1	100	97	2	5°	255.8-256.0 m rehealed fracture zone with wk. green clay + brick red hem. indurating 20.6 m zone							
.2	100	98	3	5° 1to								
260 .2	100	100	1	0°		Moderate	Moderate	Weak				MT01-25
.3	100	100	0									
265 .3	100	98	3	5° 5°								
270 .4	100	100	2		271.8-274.3 m slightly more strongly bleached with ass. light green clay in matrix	Str.	Wk	Wk				MT01-26
	100	100	0									

GAMMA LOG (CPS/DIV) 20



DDH No. MTØ1

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
275					
.5	100	100	1		
.5				20°	← rehealed fracture (silicified) with associated brick red hematite.
280	100	95	-5	20°	280.6 - 280.8m fracture with minor green clays + possible trace sooty pitch garlic smell (arsenides?)
.5	100	100	1		
285				25°	
.6	100	100	1		
.6					
290	100	100	2	30°	
.7	100	100	0	0	292.3 - 327.6m qtz pebbles common.
.7					
295	100	97	5	5°	295.7 - 296.4m - open fracture with ½-1 cm bitumenous silty gouge, minor clasts of sandstone in gouge
.8	100	100	0		

BLEACHING: Moderate

MAROON HEM.: Moderate

RED HEM.: Weak

GREEN ALT.: W, W, W

Silicified

Bitumen

GAMMA LOG (CPS/DIV) 20

20 40 60 80

SAM #

MTØ1-26

MTØ1-4

MTØ1-27

MTØ1-28

MTØ1-5

MTØ1-29

DDH No. MT01

PAGE 14 OF 19

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
300					
.9	100	100	0		
1				0	304.2 - 304.9m weak dk. green clays in matrix.
305	100	100	2	0	
2					
	100	100	2		
30					
	100	100	0	+100° +20° rh	
35	100	100	0		
1					
	100	100	1	25°	← weak green clays around silicified (rehealed fracture)
5					
320	100	98	1		
2				50°	
	100	99	2	40°	

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen
Weak					
Moderate			2		
	Moderate				
Weak		Weak			
		Moderate			

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

MDH-29

MDH-30

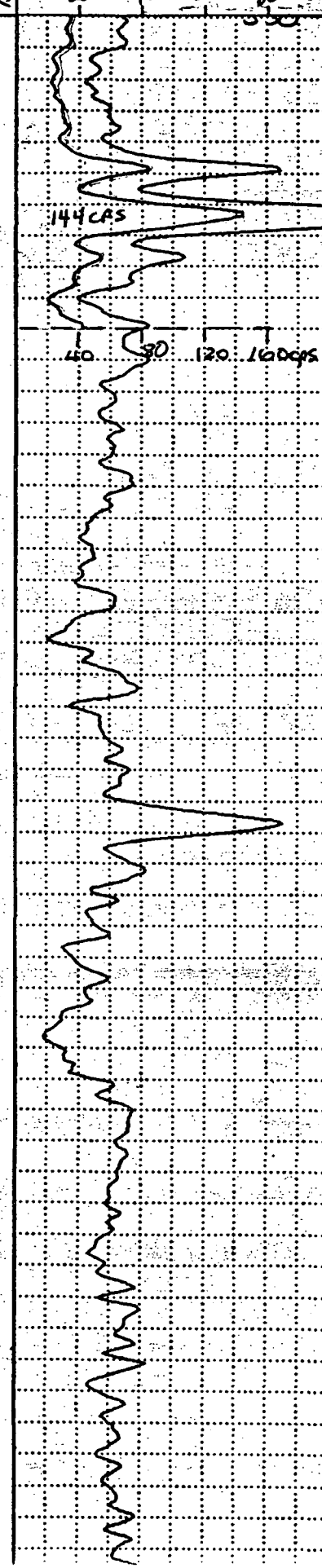
MDH-31

DDH No. MTØ1

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM
325	100	97	4		325.6 – 327.6 conglomeratic (fanglomeratic) sandstone qrtz pebbles mm to 2cm dia well to sub rounded. 1 pebble (boulder) ~20cm dia. Unconformity @ 327.6m	Weak	Mod	Weak					MTØ1-31
310	100	95	12	0° ≠ / 65°	327.6m → 345.9m strongly altered, strongly hematized, moderately chloritized (light green), bi-quartz-(feldspar)-gneiss, quartz only unaltered mineral, gneissic texture mostly overprinted by paleoweathering, fractured foliation variable (0° – 60°CA)								
	100	95	8	20° ≠									
				20° ≠ / ≠20°	slickenside in hematitic + chloritic clay minerals								
335	100	98	5	10°			strong		Mod (light green)				
	100	82	15	≠20° / 50° / ≠20°									
340	100	82	17										
345	100	88	20										
	100	76	17+	5°	345.9 – 365.0m strongly chloritized (light + dark green), (garnetiferous)-graphitic (trace)-pyritic (tr-5%)-(biotite)-quartz-(feldspar)-gneiss, short intervals of pegmatoid rock, strong plastic deformation gives predominantly augen-gneiss texture, graphite				str. dk green, Mod lt green				

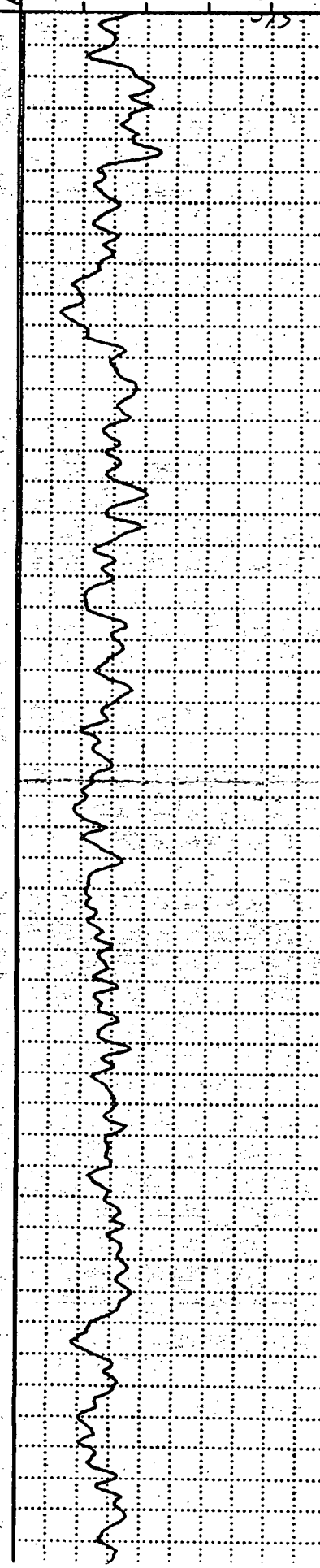
DDH No. MTØ1

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White clays	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
350	100	94	10	5° / 70°	pyrite as massive blebs, disseminated and veinlets, suspect garnets only as relicts, moderately fractured. visible foliation extremely variable, dominantly 5-20° CA abundant micro fractures with veinlets of light green clay + pyrite.								
.2	100	88	16	40°	← massive py along fracture.								
355				45° / 45°									
.7	100	90	13	5° / 5° / 0°									
.7													
360	100	94	8										
.8	100	94	13	0° / 40°									
365	100	97	8	10° / 10°	~364 ~387.7 Moderate to local strong hematization no trace of graphite or pyrite through zone		moderate		Strong Dark green, Mod. Light green				
.9	100	92	14	20° / 30° / 40° / 35°									
370													
.9	100	79	17	0° / 10° / 50°									
375													



DDH No. MT01

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.	White Alt.	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
375	100	88	19	25° 25° 30°			S						
	100	85	23	15° 30° 20°									
380 .1	100	90	14	0° 20° 20° 5°	← minor black crumbly gouge along fracture.		Strong		Str. dk green mod. light green				
.1													
385	100	91	12	18° 5 10° 5	← minor shearing ∥ to foliation		Mod.						
.2	100	95	7	5° 30° 20°	387.7 - 404.4 strong light green chloritization, mod. dk green chloritization. trace graphite, trace pyrite								
.2													
390	100	93	11	5° 10° 20° 40°									
.3	100	94	9	0°									
395 .3	100	92	7	15° 5°					Str. light green, mod. dk green				
.4	100	100	5										
400													



DDH No. MT01

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
400				15°	Garnet relicts.
1	100	98	6		401.9 - 402.6 m quartz veinlets formed along old fractures.
405	100	100	5	25°	404.4 - 419.7m strong dark green chloritization, mod. light green chlor., pyritic (veinlets + disseminated) trace to 2% graphite, abundant qtz veinlets, predominantly augen-like texture garnet relicts common
410	100	82	25	20°	
				20°	
	100	97	7	25°	412 - 412.6m strong veining qtz + qtza pyrite.
415	100	94	7	10°	
	100	97	5	15°	
420					419.7m E.O.H.

BLEACHING | MAROON HEM. | RED HEM. | GREEN ALT. | White Clays | Bitumen.

GREEN ALT.: str. lt green and dk green

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-44 HOLE NO. MT01

COORDINATE X: L 70N UTM E 516950

COORDINATE Y: 45+00E UTM N 6466350

ELEVATION Z: 293

INCLINATION: -90

AZIMUTH: —

BOREHOLE Ø: NQ

CASING DEPTH: 70.1 m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL: —

DATE of DRILLING: June 1 – June 11/89

TOTAL DEPTH: 419.7

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

INSTRUMENT: Mount Sopris 2500 SN: 79

PROBE GAMMA: G-375 A / SN: 942

PROBE NEUTRON:

DATE of LOGGING: June 11/89

TIME of LOGGING: 10:30 AM – 2:30 PM

TOTAL DEPTH: 420 m

OPERATOR: [redacted]

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
Ø	10cps/div	5m/min	100/1
420m			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
350	20cps/div	.25 m/min	100/1
455			

REMARKS: Digital Gamma files using Aquire MT01.GR0

MT01.GD0

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MT-02

AREA: MAYBELLE RIVER II	DISPOSITION: 688 804 0005 PROJECT NO.: 71-44	PAGE 1 OF 13 DRILLED BY: MIDWEST DRILLING
COORDINATES: 500+00N, 106+00E UTM: 6467375N 510550E	PLASTIC PIPE: yes no DEPTH: CASING REMOVED: yes no DEPTH: 58	COMMENCED: MARCH 3 1990 COMPLETED: MARCH 6 1990
TOTAL DEPTH (m): 282.0 ELEVATION (m A.S.L.): 265 m (EST.) DIP/AZIMUTH: -90	GEOLOGY BY: R. AVERY 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)	280.5															
DIP	-90															
AZIMUTH	328°															

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 58.1 m	SANDY DIAMICTON, OUTWASH SANDS AND GRAVELS
MANITOU FALLS FM. ATHABASCA GP.	58.1 - 178.1 m	MODERATELY BLEACHED & SILICIFIED, FINE TO MEDIUM GRAINED, MASSIVE TO CROSS BEDDED, CLEAN, WELL SORTED, CLAY INTRACLASTIC PEBBLY SANDSTONE WITH CLAY FILLED SOLUTION SEAMS, SILTSTONE INTERBEDS, & WEAK LT. GREEN CLAY (ILLITE) ALTERATION COMMON THROUGHOUT THE INTERVAL.
FAIRPOINT FM. ATHABASCA GP.	178.1 - 229.7 m	MODERATELY BLEACHED AND SILICIFIED, MASSIVE, COARSE GRAINED, POORLY SORTED, PEBBLY SANDSTONE WITH STRONGLY HEMATIZED INTERVALS. - SILTSTONE INTERBEDS & LT. GREEN CLAY ALTERATION ARE COMMON THROUGHOUT.
	229.7 m	UNCONFORMITY: SHARP, IRREGULAR CONTACT
BASEMENT PALEOWEATHERING PROFILE	229.7 - 240.3 m	STRONGLY HEMATIZED, CHLORITIZED, REDDISH BROWN, FOLIATED, QTZ-PLAG-GRANODIORITE CONTAINING STRONGLY ALTERED BIOT & PYRX. RED PALEOWEATHERING PROFILE: 229.7 - 235.2 m (WELL DEFINED) RED-GREEN ZONE: 235.2 - 240.3 m (POORLY DEFINED)
FOLIATED GRANODIORITE	240.3 - 282.0 m	FRESH, UNALTERED, WHITISH GRAY, MEDIUM TO COARSE GRAINED, FOLIATED, PY BEARING PYRX-BIOT-QTZ-PLAG-GRANODIORITE CONTAINING INTERVALS OF STRONGLY HEMATIZED PYRX-QTZ-KSPAR-ANATETIC PEGMATITE.
		282 m END OF HOLE

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

GEOCHEMISTRY

MT 02-1	229.7 - 220	COMPOSITE SST SAMPLE	MT 02 13	128 - 118	COMPOSITE SST SAMPLE
2	229.7 - 225	"	14	118 - 108	"
3	225 - 220	"	15	108 - 98	"
4	220 - 210	"	16	98 - 88	"
5	210 - 200	"	17	88 - 78	"
6	200 - 190	"	18	78 - 68	"
7	190 - 178.1	"	19	68 - 58.1	"
8	178.1 - 168	"			
9	168 - 158	"			
10	158 - 148	"			
11	148 - 138	"			
12	138 - 128	"			

DDH NO. MT-2

PAGE 2 OF

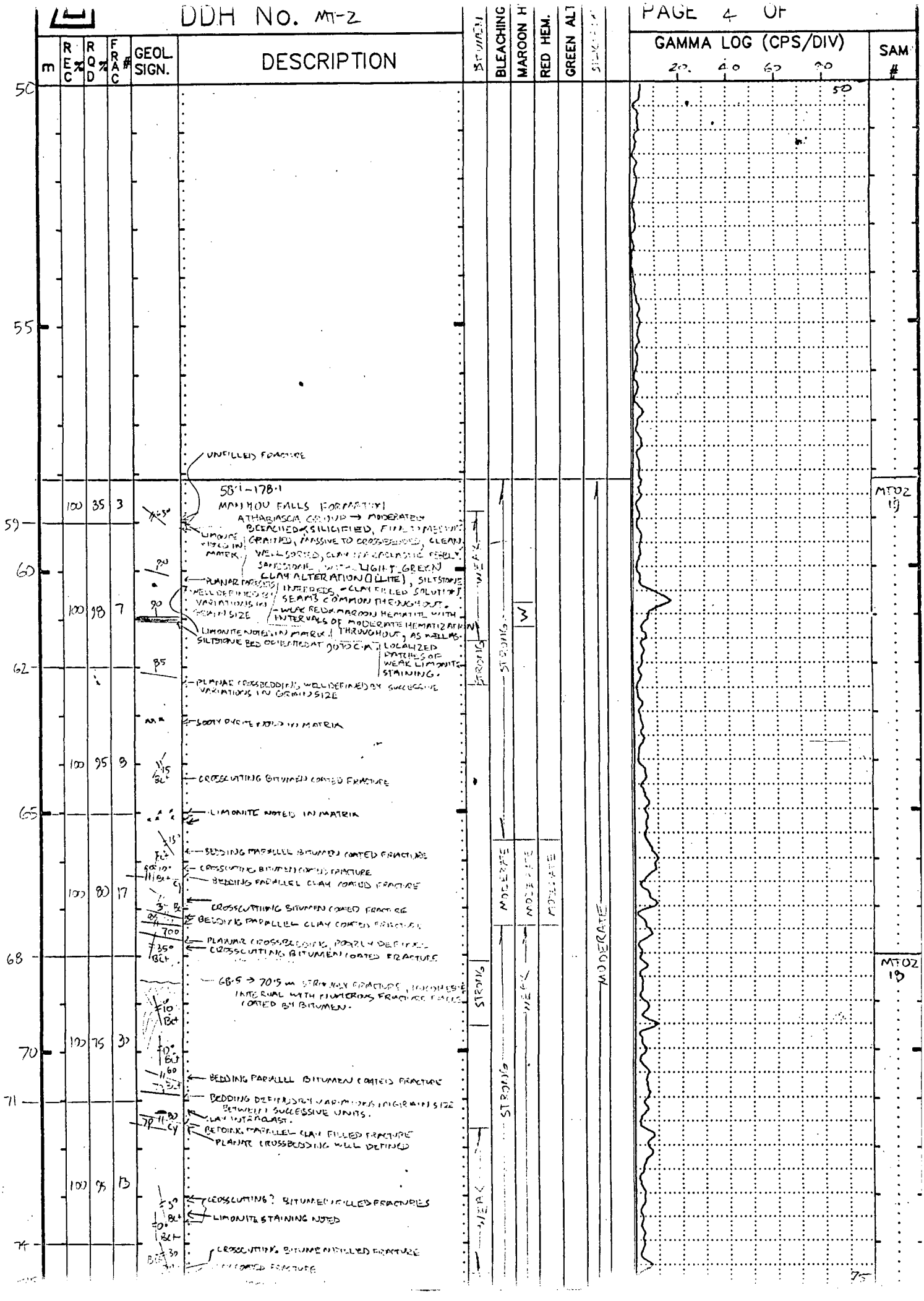
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
0					0- 58.1 m OVERBURDEN: SANDY DIAMICTON, OUTWASH SANDS & GRAVELS						
5											
10											
15											
20											

25

DDH NO. MP2

PAGE 2 OF

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
25										25	
30											
35											
40											
45											


DDH No. MT-2
PAGE 4 OF
m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BITUMEN
BLEACHING
MAROON H
RED HEM.
GREEN ALT
GAMMA LOG (CPS/DIV)
20 40 60 80
SAM #
50
55
59
60
62
65
68
70
71
74
UNFILLED FRACTURE
58.1-178.1
MANITOU FALLS FORMATION
ATHABASCA GROUP → MODERATELY BLEACHED & SILICIFIED, FINE TO MEDIUM GRAINED, MASSIVE TO CROSSBEDDED, CLEAN, WELL SORTED, CLAY INTRACLASTIC PEBBLY SANDSTONE, WITH LIGHT GREEN CLAY ALTERATION (ILLITE), SILTSTONE INTERBEDS, CLAY FILLED SOLUTION SEAMS COMMON THROUGHOUT.
WEAK RED & MAROON HEMATITE WITH INTERVALS OF MODERATE HEMATIZATION THROUGHOUT, AS WELL AS LOCALIZED PATCHES OF WEAK LIMONITE STAINING.
LIMONITE NOTED IN MATRIX
PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
SOOTY PYRITE NOTED IN MATRIX
CROSSCUTTING BITUMEN COATED FRACTURE
LIMONITE NOTED IN MATRIX
BEDDING PARALLEL BITUMEN COATED FRACTURE
CROSSCUTTING BITUMEN COATED FRACTURE
BEDDING PARALLEL CLAY COATED FRACTURE
CROSSCUTTING BITUMEN COATED FRACTURE
BEDDING PARALLEL CLAY COATED FRACTURE
PLANAR CROSSBEDDING, POORLY DEFINED
CROSSCUTTING BITUMEN COATED FRACTURE
68.5 → 70.5 m STRONGLY FRACTURE, INCOHESIVE INTERVAL WITH NUMEROUS FRACTURE FACES COATED BY BITUMEN.
BEDDING PARALLEL BITUMEN COATED FRACTURE
BEDDING DEFINED BY VARIATIONS IN GRAIN SIZE BETWEEN SUCCESSIVE UNITS.
CLAY INTRACLAST.
BEDDING PARALLEL CLAY FILLED FRACTURE
PLANAR CROSSBEDDING WELL DEFINED
CROSSCUTTING? BITUMEN FILLED FRACTURES
LIMONITE STAINING NOTED
CROSSCUTTING BITUMEN FILLED FRACTURE
CLAY COATED FRACTURE
100 35 3
100 98 7
100 95 8
100 80 17
100 75 30
100 95 13
WEAK
STRONG
MODERATE
W
MT02 19
MT02 18
75

DDH NO. MT-2 PAGE 5 OF

m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION	STAINED	BLEACHING	MAROON	RED HEM.	GREEN AL	SILICIFIC
75				90°	← CROSSBEDDING WELL DEFINED BY SUCCESSIVE CHANGES IN GRAIN SIZE						
	100	92	16		75·9 - 77·5 m MASSIVE SILTSTONE BED, STRONGLY HEMATIZED THROUGHOUT, WITH IRREGULAR LOWER CONTACT & EROSIONAL UPPER CONTACT. FINE SHALLOW, FLAME & LOAD CAST STRUCTURES VISIBLE THROUGHOUT						
77					← EROSIONAL PEBBLE LAG AT UPPER CONTACT OF SILTSTONE UNIT.						
					← SIDERITE NOTED IN MATRIX.						
				70°	← BEDDING WELL DEFINED BY GRAINSIZE VARIATIONS.						
	100	90	14		← WEAK LIMONITE STAINING						
				70°	← BITUMEN FORMED FRACTURE						
80					← WEAK LIMONITE STAINING						
					← SOOTY PYRITE NOTED IN MATRIX.						
	100	100	5		MASSIVE INTERVAL OF MEDIUM GRAINED PEBBLY SANDSTONE						
83											
				80°	← PLANAR CROSSBEDDING & BEDDING FORSETS WELL DEFINED BY VARIATIONS IN GRAINSIZE.						
				70°							
	100	88	12		← IRREGULAR, CLAY FILLED SOLUTION SEAM. CLAY INTRACLASTS						
85											
86					← IRREGULAR CLAY FILLED SOLUTION SEAM.						
					← LIMONITE STAINING NOTED.						
				30°	← BEDDING PARALLEL CLAY COATED FRACTURE						
					← IRREGULAR CLAY FILLED SOLUTION SEAM.						
				70°							
	100	97	12		PLANAR FORESETS WELL DEFINED.						
					← CLAY INTRACLASTS						
					← PERVASIVE LIMONITE						
89				90°							
					← PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE						
					← IRREGULAR CLAY FILLED SOLUTION SEAM & INTRACLASTS (ILLITE)						
90				80° CY	← BEDDING PARALLEL CLAY COATED FRACTURE						
	100	97	9	70°	← UNFILLED FRACTURE						
					← ILLITE? CLAY INTRACLAST.						
92					92·0 - 92·6 HEMATITIC LIESEGANG RINGS WELL DEFINED						
					← RANDOM FINE GRAINED LIMONITE PATCH						
					← IRREGULAR CLAY (ILLITE) FILLED SOLUTION SEAM						
	100	100	11		← WELL DEFINED PLANAR CROSSBEDDING & CLAY INTRACLAST.						
				70° CY	← BEDDING PARALLEL CLAY FILLED FRACTURE.						
95					← IRREGULAR CLAY FILLED FRACTURE						
				75	← CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE.						
				70	← CLAY (ILLITE) INTRACLASTS, CLAY FILLED (ILLITE) SOLUTION SEAM						
	100	95	13	30° 80	← CROSSBEDDING WELL DEFINED, CROSSCUTTING UNFILLED FRACTURE						
					← BEDDING PARALLEL CLAY FILLED FRACTURE						
98					← IRREGULAR, CLAY FILLED SOLUTION SEAM.						
				90°	← SILTSTONE INTERBED ORIENTED AT 90° TO C/A.						
	100	90	10	70°	← PLANAR CROSSBEDDING WELL DEFINED BY						

GAMMA LOG (CPS/DIV) 20 40 60 80 100

SAM. #

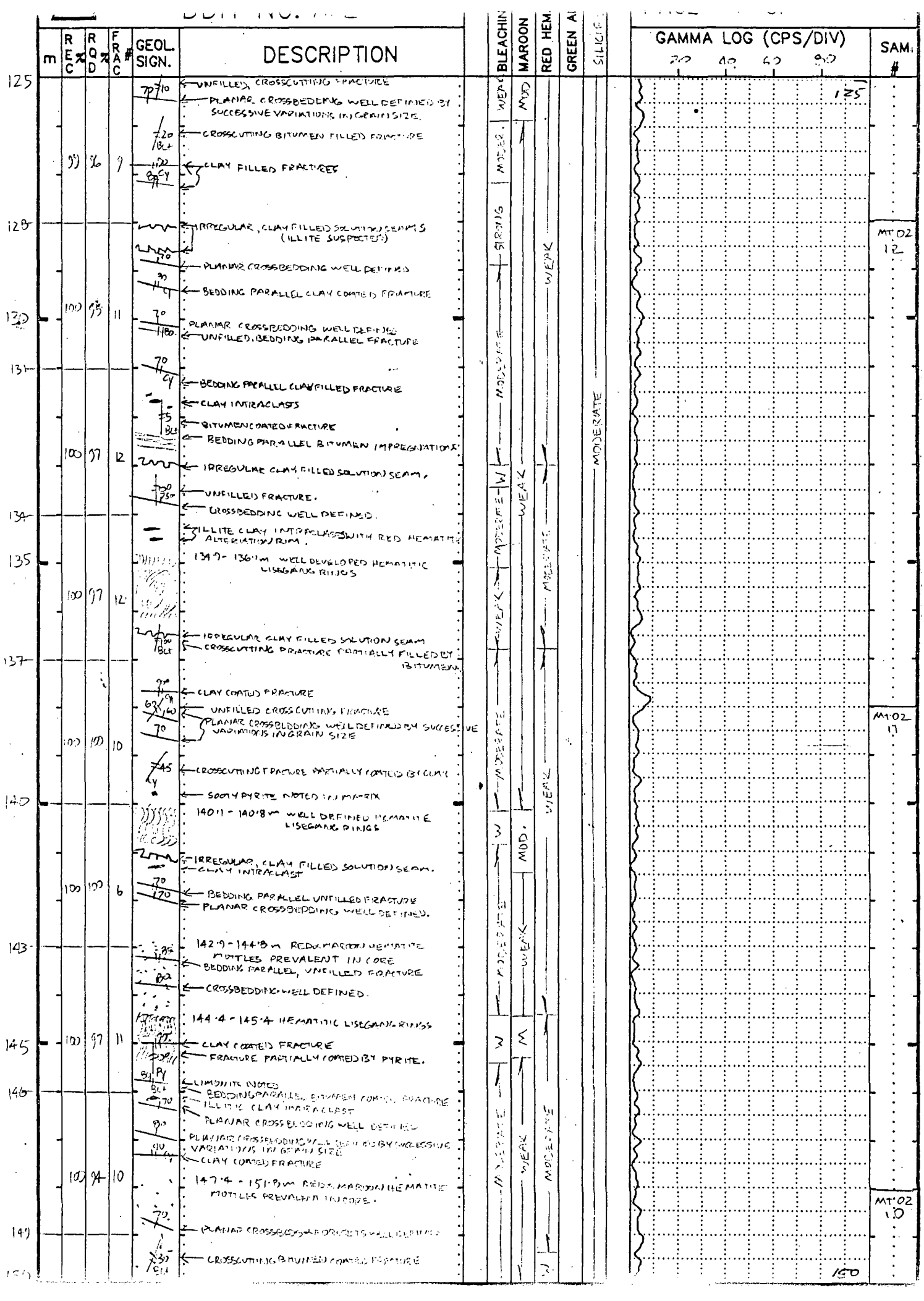
MT02 17

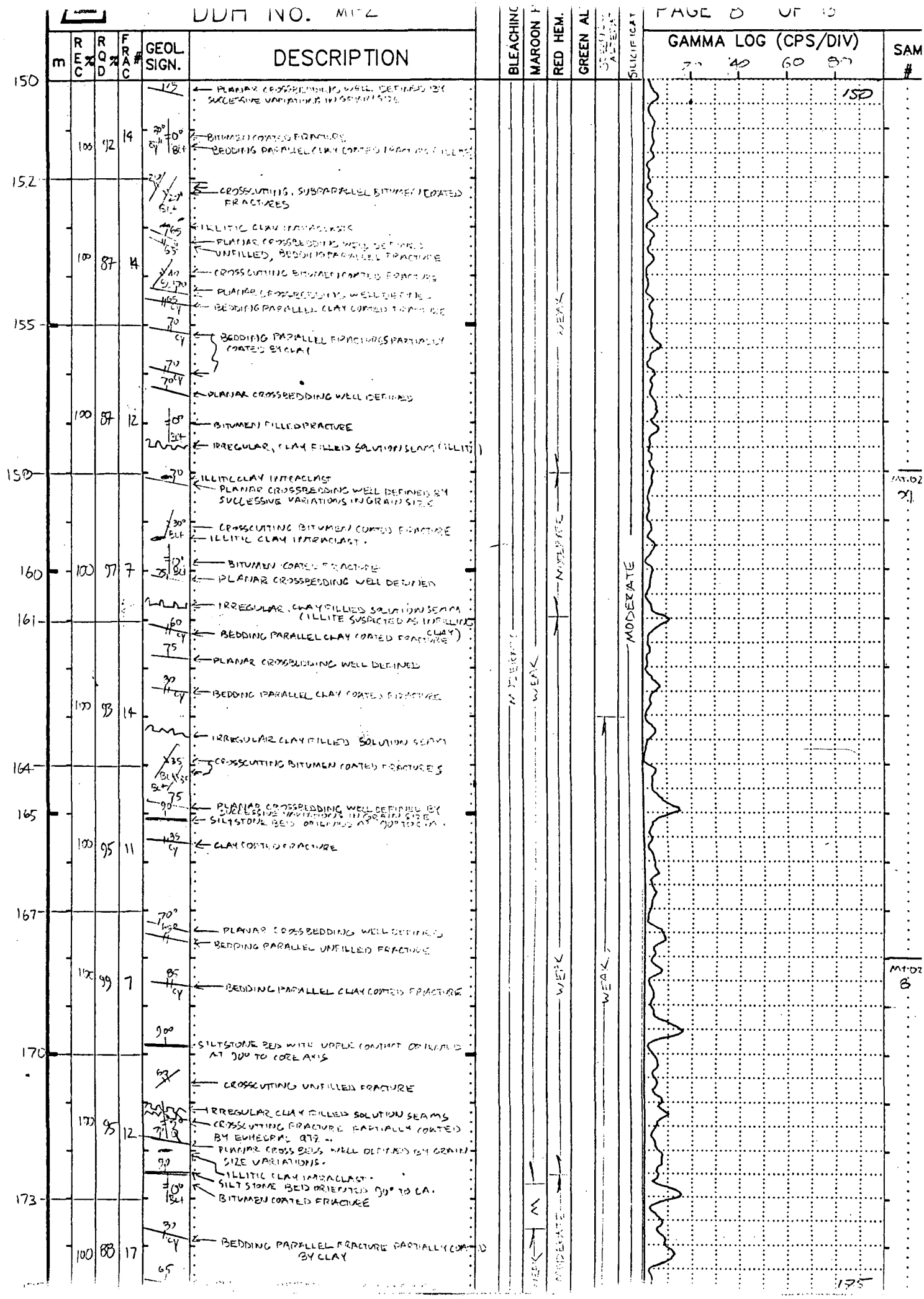
MT02 16

MT02 15

DDH NO. MT-2 PAGE 6 OF

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	STRUCTURE	BLEACHING	MAROON H	RED HEM.	GREEN AL	GREEN ALTERATION	SILICIFICATION	GAMMA LOG (CPS/DIV) 200 400 600 800	SAM #
100				70° 10 CY	BEDDING PARALLEL CLAY COATED FRACTURE								100	
101				90° 10 SU	FRACTURE PARTIALLY COATED BY BITUMEN(?)									
				90° 80	BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE									
	100	91	15		IRREGULAR CLAY FILLED FRACTURES									
				70	GREEN CLAY ALTERATION (ILLITE)									
					CROSSBEDDING WELL DEFINED									
				10	UNFILLED FRACTURE									
					IRREGULAR CLAY FILLED FRACTURES (ILLITE SUSPECTED)									
104					104·1 - 104·3m GREEN CLAY (ILLITE) ALTERATION									
					LIMONITE STAINING NOTED									
105					CLAY INTRACLASTS									
	100	100	11	170 10 CY	BEDDING PARALLEL CLAY COATED FRACTURE									
				165	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE									
107					CLAY INTRACLAST (ILLITE)									
				85°	SILTSTONE (MARKED) ORIENTED AT 85° TO C.A.									
					CLAY INTRACLAST									
				70	PLANAR CROSSBEDDING WELL DEFINED									
	100	80	16		IRREGULAR CLAY FILLED SOLUTION SEAM.									MT02 14
				10	UNFILLED FRACTURE									
110				75	PLANAR CROSSBEDDING WELL DEFINED.									
					CLAY INTRACLASTS (CLAY FILLED) SOLUTION SEAM.									
				180 CY	CLAY COATED, BEDDING PARALLEL FRACTURE									
	100	100	12		112·1 - 112·2 STRONG GREEN CLAY ALTERATION OF MATRIX (ILLITE SUSPECTED)									
				70	PLANAR CROSSBEDDING, WELL DEFINED BY VARIATIONS IN GRAIN SIZE									
113				60	UNFILLED FRACTURE									
				80 11 CY	BEDDING PARALLEL CLAY COATED FRACTURE									
				70	PLANAR CROSSBEDDING WELL DEFINED									
	100	100	13	170	CLAY INTRACLAST (ILLITE)									
115				70	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE.									
116				175 CY	CLAY COATED, BEDDING PARALLEL FRACTURE									
					116·3 - 116·5 STRONG GREEN CLAY ALTERATION OF MATRIX.									
				30	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY SOOTY PYRITE.									
	98	96	15	170 CY	BEDDING PARALLEL CLAY FILLED FRACTURE									
				85°	BEDDING PARALLEL BITUMEN COATED FRACTURE									MT02 15
				55° SU	UNFILLED FRACTURE.									
119					IRREGULAR CLAY (ILLITE?) FILLED FRACTURE									
120					UNFILLED CROSSCUTTING FRACTURE									
	100	92	10	55	121·6 - 121·9 GREEN CLAY (ILLITE) ALTERATION OF SANDSTONE MATRIX.									
122					122 - 122·8 WELL DEVELOPED HEMATITIC LIESEGANG RINGS									
				10	UNFILLED FRACTURE									
				180	CROSSBEDDING WELL DEFINED BY SUCCESSIVE GRAIN SIZE VARIATIONS.									
	100	100	12		LIMONITE NOTED IN MATRIX									
				150°	CROSSBEDDING WELL DEFINED									
				160	[illegible] FRACTURE.									
													125	

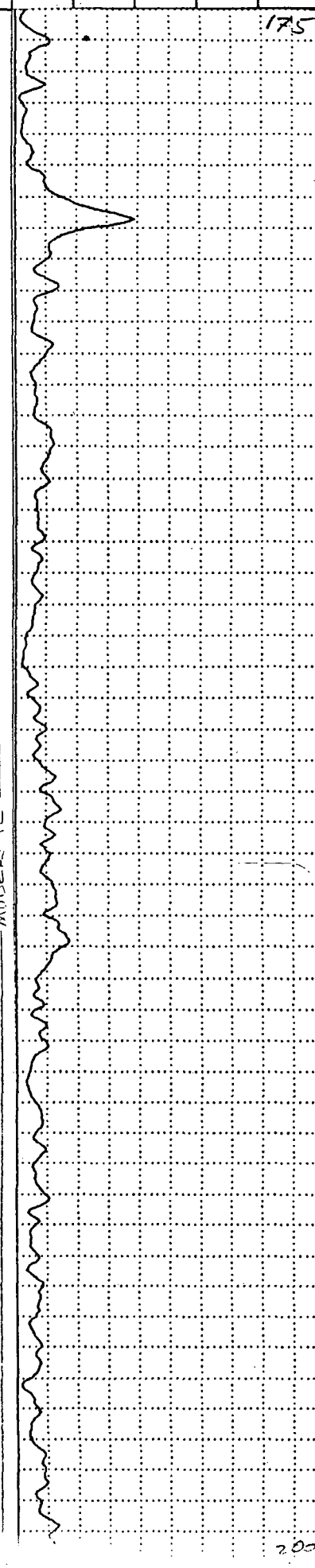

m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON
RED HEM.
GREEN
SILICIFIED
GAMMA LOG (CPS/DIV)
SAM #
125
UNFILLED, CROSSCUTTING FRACTURE
PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE.
CROSSCUTTING BITUMEN FILLED FRACTURE
CLAY FILLED FRACTURES
99
96
9
128
IRREGULAR, CLAY FILLED SOLUTION SEAMS (ILLITE SUSPECTED)
PLANAR CROSSBEDDING WELL DEFINED
BEDDING PARALLEL CLAY COATED FRACTURE
MT 02 12
100
95
11
130
PLANAR CROSSBEDDING WELL DEFINED
UNFILLED, BEDDING PARALLEL FRACTURE
131
BEDDING PARALLEL CLAY FILLED FRACTURE
CLAY INTRACLASTS
BITUMEN COATED FRACTURE
BEDDING PARALLEL BITUMEN IMPREGNATIONS
100
97
12
IRREGULAR CLAY FILLED SOLUTION SEAM,
UNFILLED FRACTURE.
CROSSBEDDING WELL DEFINED.
134
ILLITE CLAY INTRACLASTS WITH RED HEMATITE ALTERATION RIM.
135
134.9 - 136.1m WELL DEVELOPED HEMATITIC LISEGANG RINGS
100
97
12
IRREGULAR CLAY FILLED SOLUTION SEAM
CROSSCUTTING FRACTURE PARTIALLY FILLED BY BITUMEN.
137
CLAY COATED FRACTURE
UNFILLED CROSSCUTTING FRACTURE
PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
MT 02 11
100
100
10
CROSSCUTTING FRACTURE PARTIALLY COATED BY CLAY
SOOTY PYRITE NOTED IN MATRIX
140
140.1 - 140.8m WELL DEFINED HEMATITE LISEGANG RINGS
IRREGULAR, CLAY FILLED SOLUTION SEAM.
CLAY INTRACLAST
100
100
6
BEDDING PARALLEL UNFILLED FRACTURE
PLANAR CROSSBEDDING WELL DEFINED.
143
142.9 - 144.8m RED-MAROON HEMATITE MOTTLES PREVALENT IN CORE
BEDDING PARALLEL, UNFILLED FRACTURE
CROSSBEDDING WELL DEFINED.
144.4 - 145.4 HEMATITIC LISEGANG RINGS
145
100
97
11
CLAY COATED FRACTURE
FRACTURE PARTIALLY COATED BY PYRITE.
LIMONITE NOTED
146
BEDDING PARALLEL BITUMEN COATED FRACTURE
ILLITIC CLAY INTRACLAST
PLANAR CROSSBEDDING WELL DEFINED
PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
CLAY COATED FRACTURE
100
94
10
147.4 - 151.8m RED-MAROON HEMATITE MOTTLES PREVALENT IN CORE.
MT 02 10
149
PLANAR CROSSBEDDING FRACTURES WELL DEFINED
CROSSCUTTING BITUMEN COATED FRACTURE
150

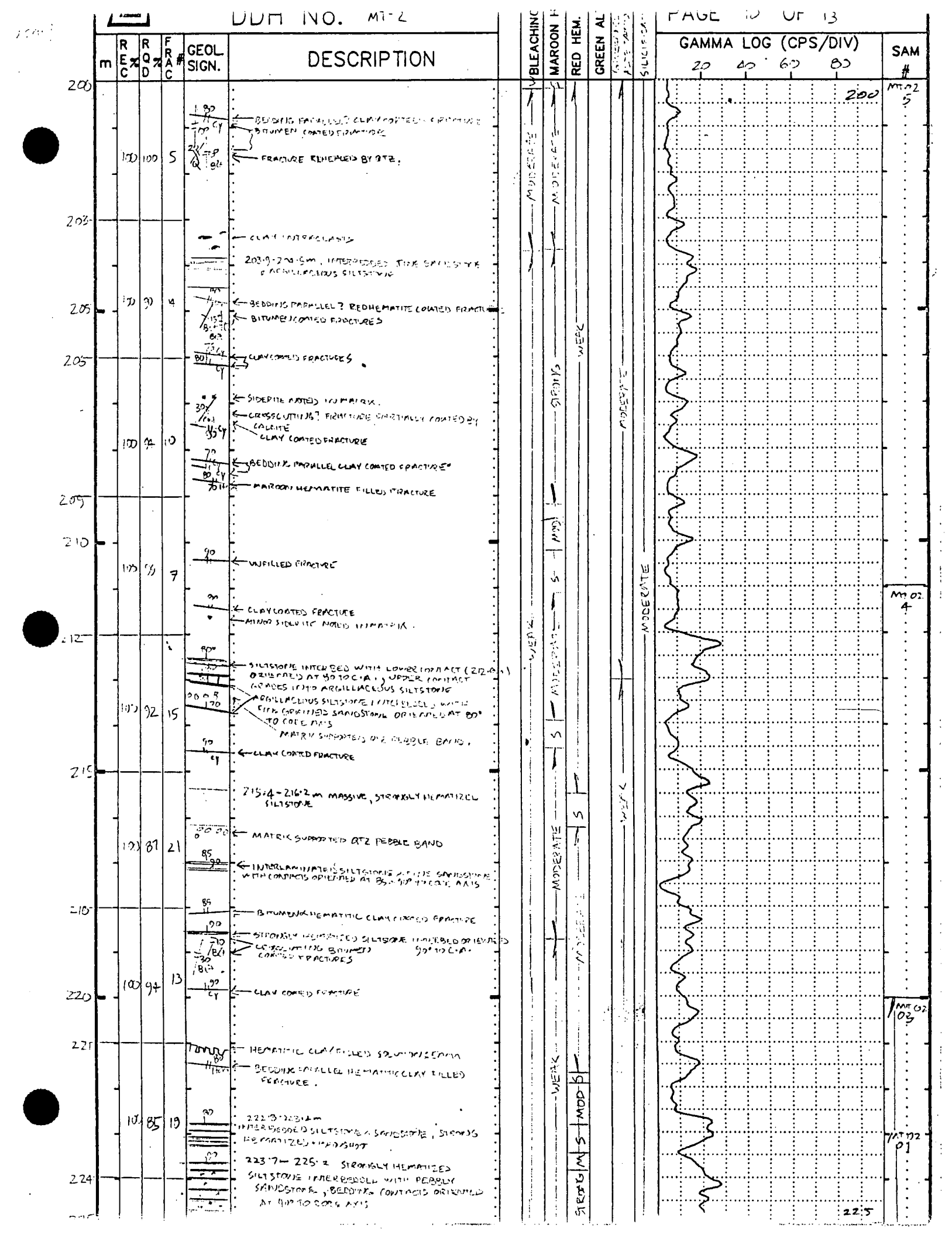

DDH NO. MT-2
PAGE 8 OF 15
m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON
RED HEM.
GREEN AL
SILICIFICAT
GAMMA LOG (CPS/DIV)
20 40 60 80
SAM #
150
152
155
160
161
164
165
167
170
173
100 92 14
100 87 14
100 87 12
100 97 7
100 93 14
100 95 11
100 99 7
100 95 12
100 88 17
PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
BITUMEN COATED FRACTURE
BEDDING PARALLEL CLAY COATED FRACTURE
CROSSCUTTING, SUBPARALLEL BITUMEN COATED FRACTURES
ILLITIC CLAY INTRACLASTS
PLANAR CROSSBEDDING WELL DEFINED
UNFILLED, BEDDING PARALLEL FRACTURE
CROSSCUTTING BITUMEN COATED FRACTURE
PLANAR CROSSBEDDING WELL DEFINED
BEDDING PARALLEL CLAY COATED FRACTURE
BEDDING PARALLEL FRACTURES PARTIALLY COATED BY CLAY
PLANAR CROSSBEDDING WELL DEFINED
BITUMEN FILLED FRACTURE
IRREGULAR, CLAY FILLED SOLUTION SEAM (ILLITE)
ILLITIC CLAY INTRACLAST
PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
CROSSCUTTING BITUMEN COATED FRACTURE
ILLITIC CLAY INTRACLAST.
BITUMEN COATED FRACTURE
PLANAR CROSSBEDDING WELL DEFINED
IRREGULAR, CLAY FILLED SOLUTION SEAM (ILLITE SUSPECTED AS INFILLING CLAY)
BEDDING PARALLEL CLAY COATED FRACTURE
PLANAR CROSSBEDDING WELL DEFINED
BEDDING PARALLEL CLAY COATED FRACTURE
IRREGULAR CLAY FILLED SOLUTION SEAM
CROSSCUTTING BITUMEN COATED FRACTURES
PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
SILTSTONE BED ORIENTED AT 90° TO C.A.
CLAY COATED FRACTURE
PLANAR CROSSBEDDING WELL DEFINED
BEDDING PARALLEL UNFILLED FRACTURE
BEDDING PARALLEL CLAY COATED FRACTURE
SILTSTONE BED WITH UPPER CONTACT ORIENTED AT 90° TO CORE AXIS
CROSSCUTTING UNFILLED FRACTURE
IRREGULAR CLAY FILLED SOLUTION SEAMS
CROSSCUTTING FRACTURE PARTIALLY COATED BY EUHEDRAL QTZ.
PLANAR CROSS BEDS WELL DEFINED BY GRAIN SIZE VARIATIONS.
ILLITIC CLAY INTRACLAST.
SILT STONE BED ORIENTED 90° TO CA.
BITUMEN COATED FRACTURE
BEDDING PARALLEL FRACTURE PARTIALLY COATED BY CLAY
WEAK
MODERATE
MODERATE
WEAK
WEAK
MODERATE
MODERATE
MT-02 9
MT-02 8
150
175

DDH No. MT-2 PAGE 9 OF 13

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	GREEN ALTERATION	SILICIFICATION	SAM #
175				80°	ILLITIC CLAY INTERCLAST.							
					SILTSTONE INTERBED ORIENTED AT 80° TO CORE AXIS							
176				25	BEDDING PARALLEL UNFILLED FRACTURE		WEAK	M				
				40	CROSSCUTTING BITUMEN COATED FRACTURE	MODERATE	MODERATE	WEAK				
				30	PLANAR CROSSBEDS WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE							
	100	85	20	30	SUBPARALLEL, BEDDING PARALLEL BITUMEN COATED FRACTURE							
				30 BU	IRREGULAR, EROSIONAL CONTACT							
					FAIRPOINT FORMATION, ATHABASCA GROUP 178.1 - 229.7m MODERATELY BLEACHED, SILICIFIED, MASSIVE, COARSE GRAINED, POORLY SORTED, PEBBLY SANDSTONE WITH INTERVALS OF STRONG HEMATIZATION. - MASSIVE SILTSTONE INTERBEDS WEAK LT. GREEN CLAY ALTERATION (ILLITE) ARE COMMON THROUGHOUT.	W						MT.02 7
179				30 LIM	LIMONITE COATED FRACTURE							
				20 CY	CLAY COATED FRACTURE	MODERATE	WEAK					
180	100	95	12	70 CY	CLAY COATED FRACTURE							
				10°	UNFILLED FRACTURE		S	S				
						WEAK	MOD					
182							S					
				60° CY	CLAY COATED FRACTURE (BEDDING PARALLEL FRACTURE??							
	100	88	15	70°	UNFILLED FRACTURE							
				70 CY	BEDDING PARALLEL CLAY COATED FRACTURE							
				80	UNFILLED FRACTURE							
185				70	PLANAR CROSSBEDDING WEAKLY DEFINED BY VARIATIONS IN GRAIN SIZE	MODERATE	WEAK			WEAK		
	98	98	7	85	UNFILLED FRACTURE							
				30 CY	BEDDING PARALLEL?? CLAY COATED FRACTURE							
188				30 CY	CLAY COATED FRACTURE, CROSSCUTTING BITUMEN FILLED FRACTURE		MODERATE					
				70	PLANAR CROSSBEDDING WELL DEFINED							
				75	MAROON HEMATITE COATED FRACTURE							
				98	ARGILLACEOUS SILTSTONE BED ORIENTED AT 90° TO CORE	WEAK		WEAK				
	100	95	15	70	POORLY DEFINE PLANAR CROSSBEDDING		STRONG					MT.02 6
191				75	UNFILLED FRACTURE							
	100	94	7									
				20°	UNFILLED FRACTURE	MODERATE	MODERATE					
194				70 CY	BEDDING PARALLEL?, CLAY COATED FRACTURE		WEAK					
195				90	UNFILLED FRACTURE							
	100	100	6	90° CY	FRACTURE PARTIALLY COATED BY CLAY							
				70	PLANAR CROSSBEDDING DEFINED BY VARIATIONS IN GRAIN SIZE							
197				85	FRACTURE PARTIALLY FILLED BY SOOTY PYRITE	WEAK	STRONG			MODERATE		
				80 PY	WEAK CROSSBEDDING							
				23	CROSSCUTTING? FRACTURE REHEALED BY QTZ.							
	100	91	7	30	UNFILLED FRACTURE							
				70	BEDDING PARALLEL CLAY COATED FRACTURE							

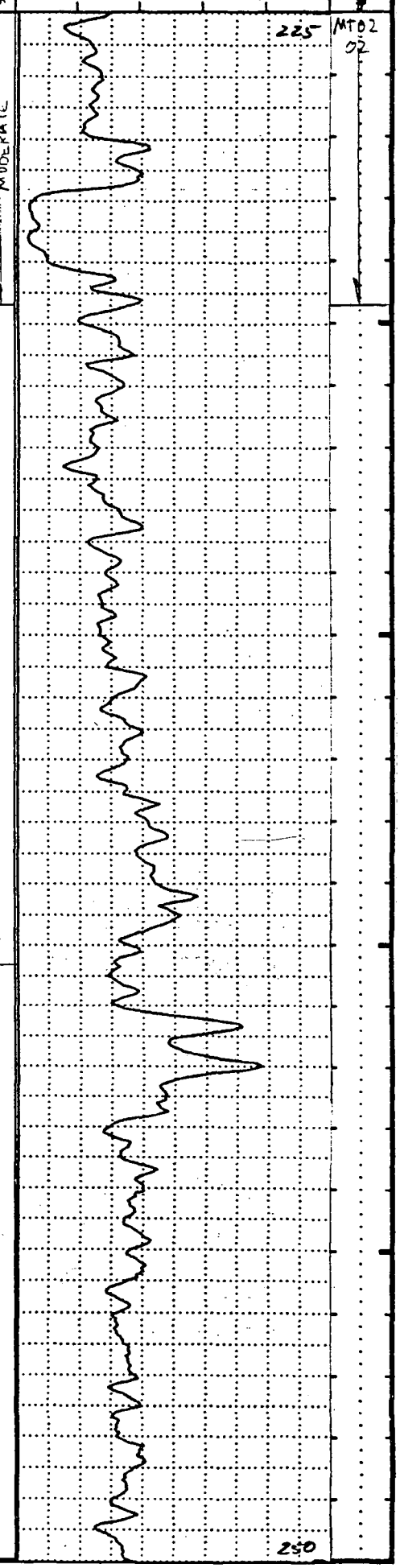
GAMMA LOG (CPS/DIV)




DDH NO. MT-2
PAGE 10 OF 13
m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON H
RED HEM.
GREEN AL
SILICIFICATION
GAMMA LOG (CPS/DIV)
20 40 60 80
SAM #
200
203
205
209
210
212
215
218
220
221
224
100 100 5
100 90 14
100 94 10
100 99 7
100 92 15
100 87 21
100 94 13
100 85 19
BEDDING PARALLEL? CLAY COATED FRACTURE
BITUMEN COATED FRACTURE
FRACTURE REHEALED BY QTZ.
CLAY INTRACLASTS
203.9-204.5m, INTERBEDDED FINE SANDSTONE & ARGILLACEOUS SILTSTONE
BEDDING PARALLEL? RED HEMATITE COATED FRACTURE
BITUMEN COATED FRACTURES
CLAY COATED FRACTURES
SIDERITE NOTED IN MATRIX.
CROSSCUTTING? FRACTURE PARTIALLY COATED BY CALCITE
CLAY COATED FRACTURE
BEDDING PARALLEL CLAY COATED FRACTURE
MAROON HEMATITE FILLED FRACTURE
UNFILLED FRACTURE
CLAY COATED FRACTURE
MINOR SIDERITE NOTED IN MATRIX.
SILTSTONE INTERBED WITH LOWER CONTACT (212.0m) ORIENTED AT 80 TO C.A., UPPER CONTACT GRADES INTO ARGILLACEOUS SILTSTONE
ARGILLACEOUS SILTSTONE INTERBEDDED WITH FINE GRAINED SANDSTONE ORIENTED AT 80° TO CORE AXIS
MATRIX SUPPORTED QTZ PEBBLE BAND.
CLAY COATED FRACTURE
215.4-216.2m MASSIVE, STRONGLY HEMATIZED SILTSTONE
MATRIX SUPPORTED QTZ PEBBLE BAND
INTERLAMINATED SILTSTONE & FINE SANDSTONE WITH CONTACTS ORIENTED AT 85-90° TO CORE AXIS
BITUMEN & HEMATITIC CLAY COATED FRACTURE
STRONGLY HEMATIZED SILTSTONE INTERBED ORIENTED 90° TO C.A.
CROSSCUTTING BITUMEN COATED FRACTURES
CLAY COATED FRACTURE
HEMATITIC CLAY FILLED SOLUTION SEAM
BEDDING PARALLEL HEMATITIC CLAY FILLED FRACTURE.
222.3-223.4m INTERBEDDED SILTSTONE & SANDSTONE, STRONG HEMATIZED + IRON SHOT
223.7-225.2 STRONGLY HEMATIZED SILTSTONE INTERBEDDED WITH PEBBLY SANDSTONE, BEDDING CONTACTS ORIENTED AT 90° TO CORE AXIS
MODERATE
WEAK
STRONG
MOD
S
M
MT 02 5
MT 02 4
MT 02 03
MT 02 01
225

DDH No. MT-2

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	LIGHT GREEN ALT.	GREEN CLAY ALTERATION	SILICIFICATION	SAM #
225	100	92	20	80, 85, 90	225.3 - 227.2 m STRONGLY HEMATIZED SILTSTONE INTERBEDDED WITH PEBBLY SANDSTONE; BEDDING CONTACTS ORIENTED AT 80°, 85° & 90° TO CORE AXIS.	WEAK	WEAK	STRONG		WEAK	MODERATE	MT02 02
227	100	90	19	80 Hem, 80 Cy	BEDDING PARALLEL RED HEMATITE COATED FRACTURE; CLAY COATED FRACTURE	MOD		M				
					229.7 m UNCONFORMITY - SHARP, IRREGULAR CONTACT	W		WEAK				
230	100	100	9	60, 60, 60, 70, 55	229.7 - 240.3 m STRONGLY HEMATIZED, CHLORITIZED, REDDISH BROWN, FOLIATED, MEDIUM GRAINED, KSPAR?? - QTZ - PLAG GRANODIORITE CONTAINING SUBPARALLEL BANDS OF STRONGLY HEMATIZED PYRX & BIOT. UNIT IS A PALEOWEATHERED EQUIVALENT OF UNDERLYING FRESH GRANITOID. → PALEOWEATHERING PROFILE ← RED ZONE 229.7 - 235.2 (WELL DEFINED) RED-GREEN ZONE 235.2 - 240.3 m (POORLY DEFINED)	RED ZONE/PALEOWEATHERING		STRONG				
233					FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF STRONGLY HEMATIZED MAFIC (PYRX) BANDS.							
235	100	94	8	80 Hem, 55	FOLIATION PARALLEL RED HEMATITE FILLED FRACTURE; FOLIATION WELL DEFINED							
236	100	98	11	35, 70 Hem, Chl, 60, 35, 40	FOLIATION PARALLEL FRACTURE PARTIALLY COATED BY RED HEMATITE; GREEN CHLORITE FILLED FRACTURE; FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF STRONGLY HEMATIZED MAFIC BANDS. CROSSCUTTING UNFILLED FRACTURE; FOLIATION WELL DEFINED	RED/GREEN ZONE		MODERATE	WEAK			
239				70, Chl, 80, Chl, 10, a/cy	FOLIATION PARALLEL CHLORITE COATED FRACTURES; CROSSCUTTING CLAY & QTZ FILLED FRACTURE			STRONG				
240	100	90	15	40	FOLIATION WELL DEFINED; RANDOM FINE PYRITE NOTES							
242	99	93	7	60, a, 55, 70	240.3 - 282.0 m FRESH, UNALTERED, WHITISH GRAY, MEDIUM TO COARSE GRAINED, FOLIATED PY BEARING - PYRX - BIOT - QTZ - PLAG - GRANODIORITE CONTAINING IRREGULAR INTERVALS OF STRONGLY HEMATIZED COARSE GRAINED, DY - PYRX - KSPAR - ANATECTIC ALKALIC GRANITOID PEGMATITE. 241.7 - 243.2 m ALKALIA GRANITE PEGMATITE CONSISTING OF COARSE ANHEDRAL KSPAR & PYRX GRAINS AS WELL AS STRINGERS OF ACCESSORY PYRITE.			FRESH				
245	100	73	21	40, 60, 60, Bit, 60, Cal, 60, 60, 55	FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF MAFICS. FOLIATION PARALLEL BITUMEN COATED FRACTURE; FOLIATION WELL DEFINED. FOLIATION PARALLEL BITUMEN & ACCESSORY PY. COATED FRACTURE; CROSSCUTTING CALCITE COATED FRACTURE; VARIABLE FOLIATION. FOLIATION WELL DEFINED BY THE ALLIGNMENT OF BIOT & PYRX GRAINS.							
248	100	100	10	100, 80, Cal	UNFILLED, CROSSCUTTING FRACTURE; CROSSCUTTING CALCITE FILLED FRACTURE			M				
250												



DDH No. MT-2

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
250					249.6-250.4 COARSE GRAINED QTZ-PYRX K SPAR-PEGMATITIC INTERVAL.				
					← CROSSCUTTING UNFILLED FRACTURE.				
251					← FOLIATION WELL DEFINED BY THE DISCONTINUOUS PLATY ALLIGNMENT OF BIOT & PYRX GRAINS				
	100	88	13		← FOLIATION PARALLEL UNFILLED FRACTURE.				
					← FOLIATION WELL DEFINED.				
					← FOLIATION PARALLEL CALCITE COATED FRACTURE				
254					← FOLIATION WELL DEFINED				
					← CROSSCUTTING BITUMEN FILLED FRACTURE				
255					← CROSSCUTTING CLAY COATED FRACTURE				
	70	93	11		255.6-255.7, 255.9-256.4: ANATECTIC? PEGMATITE INTERVALS CHARACTERIZED BY INTERLOCKING COARSE ANHEDRAL GRAINS OF QTZ-PYRX-K FSPAR				
					← FOLIATION WELL DEFINED BY THE PLATY ALLIGNMENT OF BIOT & PYRX GRAINS.				
257					← FOLIATION PARALLEL FRACTURE PARTIALLY COATED BY BITUMEN.				
					← FOLIATION WELL DEFINED				
					258.2-260 HEMATIZED & CHLORITIZED PEGMATITIC INTERVAL CHARACTERIZED BY COMPACT INTERLOCKING ANHEDRAL GRAINS OF ALTERED PYRX, BIOT & QTZ.			MODERATE	MODERATE
	90	93	18		258.3-259.2m: A DENSE NETWORK OF CHLORITE FILLED & UNFILLED COHESIVE FRACTURES.				
					259.7-259.7 m				
260					← SUBPARALLEL CHLORITE FILLED FRACTURES.				
					← FOLIATION WELL DEFINED BY THE DISCONTINUOUS SUBPARALLEL ALLIGNMENT OF MAFICS.				
	100	99	3		← CROSSCUTTING UNFILLED FRACTURE				
263					← FOLIATION WELL DEFINED				
	100	97	11						
265									
					← FOLIATION PARALLEL FRACTURE PARTIALLY COATED BY PYRITE.				
266					← UNFILLED FOLIATION PARALLEL FRACTURE				
					← CROSSCUTTING CHLORITE FILLED FRACTURES				
	100	94	15		267.5-268.1m, 270.6-272.5, 274.1-275.1: STRONGLY ALTERED INTERVALS WITH DEEP RED HEMATIZATION OF QTZ & FSPARS PREVALENT, AS WELL AS MODERATE RETROGRADE? CHLORITIZATION OF MAFICS (BIOT & PYRX).			STRONG	STRONG
268					268.5-269.0 - COHESIVE STRONGLY FRACTURED INTERVAL CHARACTERIZED BY A DENSE NETWORK OF SUBPARALLEL CHLORITE FILLED FRACTURES.				
270									
	100	97	11		← FOLIATION PARALLEL UNFILLED FRACTURE			STRONG	MODERATE
272					← FOLIATION PARALLEL CHLORITE FILLED FRACTURE				
					← FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF BIOT. GRAINS.				
	99	96	13						

GAMMA LOG (CPS/DIV)

20 40 60 80

SAM #

250

128 cps

40 80 120 160 cps

DDH No. MT-2

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
275					← FOLIATION WELL DEFINED.					275	
					← FOLIATION PARALLEL UNFILLED FRACTURE.						
	100	97	11		276.7 - 277.5 DISCRETE LENSES OF COARSE QTZ - BIOT - KSPAR - ANATECTIC?? PEGMATITE WITHIN FOLIATED GRANODIORITE. ← CROSSCUTTING PYRITE COATED FRACTURE.						
278					← FOLIATION PARALLEL UNFILLED FRACTURE						
					← FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF PLATY BIOT. GRAINS.						
280	100	97	13		← UNFILLED FRACTURE						
					280.5 - 280.7m KFSPAR - QTZ PEGMATITE POD WITH IRREGULAR, GRADATIONAL CONTACTS (ANATECTIC SWEAT??)						
281					← FOLIATION WELL DEFINED BY THE PLATY ALLIGNMENT OF BIOT GRAINS						
					282.0m END OF HOLE						
285											

```
>>ENTER DRILL HOLE I.D.:    !MT02..............!
>>ENTER DATE LOGGED:        !MARCH 6, 1989.....!
>>LOGGED BY:                !R. AVERY, B. LACEY.!
>>ENTER S.N OF PROBE:       !442...............!
>>ENTER S.N OF LOGGER:      !79................!
>>HOLE SIZE ?:              !NQ! ie. BQ OR NQ OR ??
>>LOGGED THRU ?:            !R! R OR O  RODS OR OPEN(same as plastic pipe)
>>COMMENTS:                 !.....................................!
>>NOTES:(start & end time)  !.....................................!
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URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-44

HOLE NO. MT-02

PAGE OF

COORDINATE X: 500+00N

COORDINATE Y: 106+00E

ELEVATION Z: 253m

INCLINATION: -90°

AZIMUTH: /

BOREHOLE Ø: NQ

CASING DEPTH: 58 m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: MARCH 3-6 1990

TOTAL DEPTH: 282 m

LOGGED THROUGH :
OPEN HOLE | PLASTIC PIPE | RODS

INSTRUMENT: AE-5-8-79, MOUNT SOPRIS 2500

PROBE GAMMA: G375A SN 442 WINCH-AT-4-3

PROBE NEUTRON:

DATE of LOGGING: MARCH 6-1990

TIME of LOGGING: 800PM — 930 PM

TOTAL DEPTH: 282.0

OPERATOR: R AVERY

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
282.0	10 CPS/DIV	5 m/min	100:1
0.0			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

REMARKS: ANOMALOUS RADIOACTIVITY NOTED AT 259.5 m (120 CPS D.I.C. CORRECTED)

DDH No. MR-79

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
25													
					27.5m TOP OF SANDSTONE FROM γ LOG								
30					30.5m BEDDING PARALLEL CLAY BAND 30.7m [illegible]								
	100	78	9	38 / 60° / 30° Py	30.5 - 159.6m MANITOU FALLS FORMATION - ATHABASCA GROUP MODERATE TO STRONGLY BLEACHED, LOCALIZED WEAK RED & MAROON HEMATITE; MEDIUM TO COARSE GRAINED, CLEAN, CROSSBEDDED, CLAY INTRACLASTIC, SANDSTONE CONTAINING NUMEROUS BITUMEN COATED FRACTURES THROUGHOUT.			WEAK					
32	100	100	6	50° BCE	[illegible] EUHEDRAL QTZ FILLED FRACTURE CROSSCUTTING BEDDING [illegible] FRACTURE PARTIALLY FILLED BY SOOTY BITUMEN 32.2 - CONSPICUOUS BITUMEN IN MATRIX OF WELL DEFINED BEDDING PLANES 60° 34.4m BITUMEN COATED BEDDING PARALLEL FRACTURE			MODERATE			MODERATE		MR-79 20
35	100	95	13	BCE 30 Q, Py 30° Py	35.1m FACTURE CROSSCUTTING BEDDING COATED BY BITUMEN, EUHEDRAL QTZ, PYRITE 37.0m CROSSCUTTING FRACTURE, PARTIAL COATED BY EUHEDRAL PYRITE			WEAK	WEAK				
38	100	86	26	60° Cy 45° 70° BCE 60°	BEDDING PARALLEL CLAY SEAM 38.3 - 39.0 m WELL DEVELOPED RED HEMATITE LISEGANG RINGS. PLANAR CROSS BEDDING WELL DEFINED BY ALTERNATING FINE & COARSE SANDSTONE INTERVALS BITUMEN FILLED FRACTURE SILTSTONE BAND, ORIENTED AT 60 TO AX. DEFINING BEDDING.				MODERATE				
40													
41	100	100	5	60° Cy 50° Q 15°	BEDDING PARALLEL, CLAY FILLED FRACTURE PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE CROSSCUTTING FRACTURE FILLED BY EUHEDRAL QTZ								
44	100	91	11	30° Cy 60 Q 30° BCE BCE 65° 55°	BEDDING PARALLEL, CLAY (SILTSTONE) BAND EUHEDRAL QTZ FILLED FRACTURE BEDDING PARALLEL FRACTURE PARTIALLY COATED BY BITUMEN BEDDING PARALLEL BITUMEN COATED FRACTURE PLANAR CROSS BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE			NONE	WEAK				MR-79 19
45													
47	100	90	11	60 55° BCE 60 65°	PLANAR CROSSBEDDING WELL DEFINED. BITUMEN FILLED BEDDING PARALLEL FRACTURE PLANAR CROSSBEDDING WELL DEFINED BY REPEATED [illegible]								
50													

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
50					
	100	90	9		UNFILLED FRACTURE PLANAR FRACTURES WELL DEFINED BY VARIATIONS IN GRAIN SIZE BEDDING PARALLEL FRACTURE COATED BY SOOTY PYRITE 52.5 - 53.1 m RECEMENTED - HEALING FILLING WELL DEFINED.
53					BEDDING PARALLEL FRACTURE BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE.
55	100	92	12		
56					BEDDING PARALLEL FRACTURE, ECHELON SOOTY PYRITE NOTED IN MATRIX AS PATCHES OF FINE SIZED GRAINS
	100	95	7		CLAY COATED BEDDING PARALLEL FRACTURE BANDING, FINELY SIZED SOOTY PYRITE GRAINS PLANAR CROSSBEDDING WELL DEFINED
59					BEDDING PARALLEL FRACTURE, PARTIALLY COATED BY PYRITE
60					BEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS
	100	93	7		BEDDING PARALLEL CLAY FILLED FRACTURE
62					
	100	95	10		PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE FRACTURE PARTIALLY COATED BY SOOTY PYRITE
65					64.7 - 63.9m 10cm THICK INTERVALS OF BITUMEN IMPREGNATED CORE.
	100	90	12		QTZ FILLED FRACTURE CROSSCUTTING BEDDING
68					SILTSTONE CLAST AT 60° TO CORE AXIS - DEFINED BEDDING
					PLANAR CROSSBEDDING WELL DEFINED BEDDING PARALLEL FRACTURE FILLED BY SOOTY PYRITE SOOTY PYRITE IN MATRIX. FRACTURE PARTIALLY COATED BY PYRITE.
70	100	97	10		
71					IRREGULAR, CLAY FILLED BEDDING PARALLEL FRACTURE FRACTURE PARTIALLY COATED BY SOOTY PYRITE BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE 71.5m SOOTY PYRITE COATED FRACTURE IN SANDSTONE MATRIX. 71.9 m BEDDING PARALLEL FRACTURE FILLED BY GREEN CLAY (CHLORITE?)
	100	98	11		CLAY FILLED BEDDING PARALLEL FRACTURE
74					CLAY FILLED FRACTURE BEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS.
75					

SILICIFICATION: MODERATE

BLEACHING: MODERATE

MAROON HEM.: WEAK

RED HEM.: MOD / WEAK

GREEN ALT.: MODERATE / WEAK

STRONG

FRACTURE / MOD

GAMMA LOG (CPS/DIV) 10 20 30 40

SAM #

MR-79 18

MR-79 17

MR-79 16

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
75					CLAY INTRACLAST
	100	100	7		BEDDING PARALLEL FRACTURES FORMED BY CLAY FILLED IRREGULAR FRACTURE (SOLUTION SEAM)
77					BEDDING PARALLEL FRACTURES FORMED BY SOOTY PYRITE
					PLANAR FORESETS WELL DEFINED
	100	100	7		BEDDING PARALLEL FRACTURES PARTIALLY COATED BY CLAY
					BEDDING PARALLEL CLAY FILLED FRACTURE
80					BEDDING PARALLEL CLAY FILLED FRACTURE
					PLANAR CROSSBEDS WELL DEFINED BY VARIATIONS IN GRAIN SIZE
	100	92	10		IRREGULAR CLAY FILLED FRACTURE CROSSCUTTING BEDDING (SOLUTION SEAM)
					CLAY INTRACLAST WITH RED HEMATITE ALTERATION RIM
83					CLAY FILLED SOLUTION SEAM
					WELL DEFINED PLANAR CROSSBEDS
					SILTSTONE SAND
	100	95	9		CLAY INTRACLASTS
86					CLAY FILLED SOLUTION SEAM
					PLANAR CROSSBEDS WELL DEFINED BY VARIATIONS IN GRAIN SIZE
	100	83	13		CLAY FILLED SOLUTION SEAM 87.9 m - SOOTY PYRITE CONCENTRATED RANDOM SAND GRAINS IN MATRIX.
89					CLAY FILLED SOLUTION SEAM
					RED HEMATITE ALTERED CLAY INTRACLAST
90					WELL DEFINED PLANAR CROSSBEDDING
	100	95	8		WELL DEFINED PLANAR CROSSBEDS
92					CLAY INTRACLAST
					CLAY FILLED SOLUTION SEAM
					UNFILLED FRACTURE
	98	97	12		CLAY FILLED SOLUTION SEAM
					CLAY INTRACLAST
					WELL DEFINED PLANAR CROSSBEDS.
					CLAY FILLED SOLUTION SEAM
95					PLANAR FORESETS WELL DEFINED BY VARIATIONS IN GRAIN SIZE.
					CLAY FILLED SOLUTION SEAM
	99	84	20		PLANAR CROSSBEDS WELL DEFINED.
					CLAY INTRACLAST
98					98.1 - 98.2 m RED HEMATITE ALTERED CLAY INTRACLASTS
	100	87	14		
100					PLANAR CROSSBEDDING WELL DEFINED BY

SILICIFICATION | BLEACHING | MAROON HEM. | RED HEM. | GREEN ALT.

GAMMA LOG (CPS/DIV) 10 20 30 40

SAM #

MR-79 16

MR-79 15

MR-79 14

DDH No. MR-79

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
100				Cy 65	CLAY INTRACLAST CLAY FILLED SOLUTION SEAM							
101				70°	CROSSBEDDING [illegible] VARIATIONS 103.1 - 103.6m [illegible] LISEGANG RINGS							
	97	97	7	90° Py	FRACTURE PARTIALLY COATED BY SOOTY SYRITE							
				75	UNFILLED FRACTURE CROSSCUTTING BEDDING							MR-79 13
104				60° Cy	BEDDING PARALLEL CLAY FILLED FRACTURE							
105	100	98	12	70 Cy	105.0 - 106.0 RED HEMATITE LISEGANG RINGS WELL DEFINED CLAY FILLED SOLUTION SEAM CLAY INTRACLAST				WEAK			
				60°	PLANAR CROSS BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
107				60° Bit	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY BITUMEN							
	100	90	12		108 - 108.7m WELL DEFINED RED HEMATITE LISEGANG RINGS. CLAY INTRACLAST							
					CLAY INTRACLAST							
110				60° Bit 15°	CLAY ALTERED SILTSTONE [illegible] 60° TO C.A. INDICATING BEDDING CROSSCUTTING FRACTURE PARTIALLY COATED BY BITUMEN		MODERATE					
	100	93	14	40° Bit	CROSSCUTTING FRACTURE [illegible] COATED BY BITUMEN							
				60 Cy	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY CLAY							MR-79 12
113					114.8 - 115.8m WELL DEFINED RED HEMATITE LISEGANG RINGS							
				30° Bit Py / Py 10°	CROSSCUTTING FRACTURE PARTIALLY COATED BY BITUMEN [illegible] FRACTURE PARTIALLY [illegible] EUHEDRAL PYRITE							
115	97	94	9									
116				60 Cy	BEDDING PARALLEL CLAY [illegible]							
	100	99	14	65	BEDDING POORLY DEFINED				MODERATE			
				30 Py 45° Cy	CROSSCUTTING FRACTURE [illegible] EUHEDRAL PYRITE BEDDING PARALLEL CLAY FILLED FRACTURE							
119					119.2 - 119.9m WELL DEFINED RED HEMATITE LISEGANG RINGS							
120	100	95	9	Py 60	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY PYRITE BEDDING POORLY DEFINED BY VARIATIONS IN GRAIN SIZE CLAY FILLED SOLUTION SEAM							
				Cy 60	BEDDING PARALLEL CLAY FILLED SOLUTION SEAM							
122				45	BEDDING PARALLEL SIDERITE [illegible] GRAIN SIZE VARIATIONS BEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS	WEAK		WEAK	WEAK			MR-79 11
	100	88	13		SIDERITE INTRACLAST							
125												

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
125					124.9-125.9 WELL DEVELOPED RED MAROON HEMATITE LISEGANG RINGS						
				05° Q	125.2 m - CLAY FILLED SOLUTION SEAM CROSSCUTTING FRACTURE FILLED BY EUHEDRAL QTZ						
	100	93	15	0° Bit	126.6 - 128.6 m WELL DEVELOPED RED HEMATITE LISEGANG RINGS BITUMEN COATED FRACTURE		WEAK	WEAK			MR-79 11
				15° Bit	CROSSCUTTING BITUMEN FILLED FRACTURE						
128				20° Bit	BITUMEN COATED FRACTURE						
	100	97	20	40°	PLANAR CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS						
130				Bit 20°	BITUMEN COATED FRACTURE, CROSSCUTTING BEDDING						
131				Bit 30°		WEAK					
	100	97	9	60°	THIN BEDDING PARALLEL SIDERITE BANDS						
				50°	PLANAR CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS						MR-79 10
134					CLAY FILLED SOLUTION SEAM						
135				30° Bit	CROSSCUTTING FRACTURE COATED BY BITUMEN						
	100	97	14	45°	CROSSBEDDING WELL DEFINED						
137				15° Bit	CROSSCUTTING FRACTURE PARTIALLY FILLED BY BITUMEN						
				30° Cy	BEDDING PARALLEL CLAY FILLED FRACTURE						
	100	90	13	25° Bit	CROSSCUTTING FRACTURE PARTIALLY COATED BY BITUMEN						
				60° Sid 10°	PLANAR CROSSBEDDING WELL DEFINED						
					FRACTURE PARTIALLY FILLED BY SIDERITE						
140					CLAY INTRACLASTS						
				Cy 50°	BEDDING PARALLEL CLAY FILLED FRACTURE						
	98	93	8								
				40 50°	CLAY INTRACLAST WITH MAROON HEMATITE ALTERATION RIM						
143				Bit 38	PLANAR FORESETS WELL DEFINED BY VARIATIONS IN GRAIN SIZE						
				35 Bit	BEDDING PARALLEL BITUMEN FILLED FRACTURE						
					BITUMEN COATED FRACTURE CROSSCUTTING BEDDING						
				10°	UNFILLED FRACTURE						
	97	85	25			MODERATE					MR-79 9
145											
				60°	BEDDING PARALLEL UNFILLED FRACTURE						
146											
				85 Hem	HEMATITE CLAY FILLED FRACTURE						
	100	88	17	60 Bit	BEDDING PARALLEL BITUMEN COATED FRACTURE						
				50	BEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS.						
149				15° Bit	FRACTURE PARTIALLY COATED BY BITUMEN						
150											

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
150	100	85	20	20 Cy	SOOTY PYRITE NOTED IN MATRIX; CROSSCUTTING FRACTURE PARTIALLY COATED BY CLAY.						
152	100	90	16	30 Hem	CROSSCUTTING FRACTURE PARTIALLY FILLED BY RED HEMATITE						MR-79 7
155				50 Bit, 55 Bit	BEDDING PARALLEL FRACTURE COATED BY BITUMEN						MR-79
	100	91	13	35°, 55°, 25° Cy	UNFILLED FRACTURES; CROSSCUTTING CLAY FILLED FRACTURE			WEAK			MR-79 6
158				35°	CROSSCUTTING FRACTURE, UNFILLED						
				5°	UNFILLED FRACTURE						
	100	90	16	30°, 30°	RED HEMATITE FILLED FRACTURE; CROSSCUTTING UNFILLED FRACTURE	MODERATE					
160				PEBBLE BAND	159.6 – 182.7m FAIR POINT FORMATION – MODERATELY BLEACHED; WEAK MAROON & RED HEMATITE; COARSE GRAINED, POORLY BEDDED SANDSTONE CONTAINING SPARSE MATRIX SUPPORTED PEBBLE BANDS & RANDOM FLOATING CLASTS.						
161				30	UNFILLED FRACTURE		WEAK				MR-79 5
	100	88	17		PEBBLE BAND; ANGULAR & SUBROUNDED, STRAINED QTZ PEBBLES IN A RED HEMATITE STAINED MATRIX.						
164				30 Hem	RED HEMATITE FILLED FRACTURE						
165				30	UNFILLED FRACTURE						
	97	94	10								
167				7	FLOATING ANGULAR PEBBLES						MR-79 4
				30° Py	FRACTURE PARTIALLY COATED BY SOOTY PYRITE						
	100	92	13	30°, 30	UNFILLED FRACTURES						
170				60 Bit	FRACTURE PARTIALLY COATED BY BITUMEN						
	100	97	7								
				60°	SILTSTONE BAND, INDICATING BEDDING						
173											
	100	93	13	60° Cy	FRACTURE PARTIALLY COATED BY CLAY						
175											

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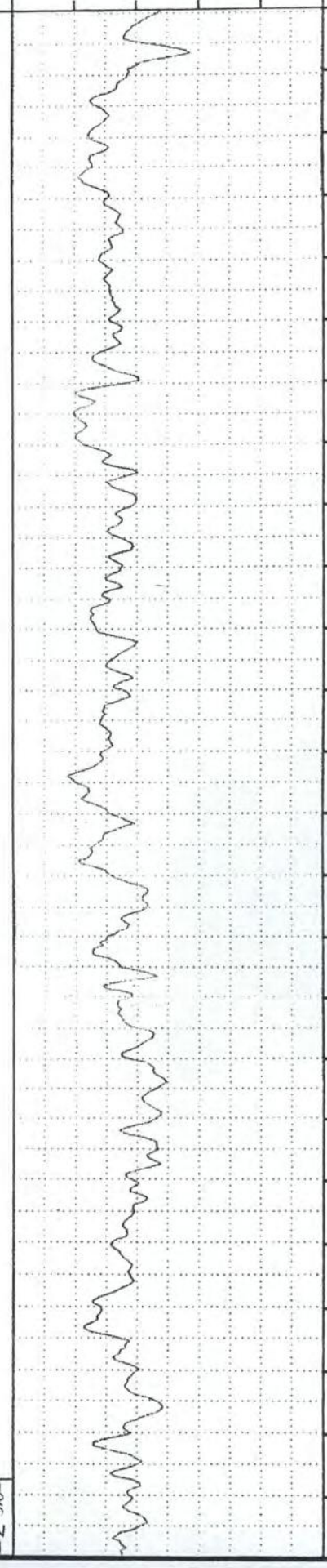
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
175				4/60 19	← FRACTURE PARTIALLY COATED BY CALCITE						
176				~60°	← UNFILLED FRACTURE						MR-79 2
	100	97	7	~60°	UNFILLED FRACTURE						
179					← RANDOM FLOATING CLASTS						MR-79 3
				~55°	← UNFILLED FRACTURE						
180											
	100	100	5	~100	← POORLY DEFINED MATRIX SUPPORTED PEBBLE BAND (ANGULAR QTZ FRAGMENTS FLOATING IN A RED-MAROON HEMATITE ALTERED MATRIX).						MR-79 1
182					182.2 - 182.7m - ANGULAR TO SUBROUNDED, STRAINED & SHATTERED QTZ FRAGMENTS FLOATING WITHIN A FINE GRAINED MAROON RED HEMATITE ALTERED MATRIX.						
					UNCONFORMITY 182.8m (IRREGULAR CONTACT)						
				~30°	182.8 - 218.7m WEAKLY TO MODERATELY CHLORITIZED, WEAKLY MAROON RED HEMATIZED, WELL FOLIATED QTZ -						
	100	94	12	PLAG	← MYLONITE CONTAINING INTERVALS OF CATACLASITE & QTZ-PLAG PEGMATITE.						
185				~35°	182.9m - UNFILLED FRACTURE						
				~30°	184.4 - BANDING ON A 5-10cm SCALE RELATIVELY WELL DEFINED						
				~50° 11cm	184.5 - CROSSCUTTING UNFILLED FRACTURE						
					184.6m - MAROON HEMATITE FILLED FRACTURE						
	100	100	7		185.1m - TRACE, RANDOM FINE PYRITE NODES.						
				~40°	185.2m - CROSSCUTTING RED HEMATITE FILLED FRACTURE						
					185.5m - BANDING, RELATIVELY WELL DEFINED						
					185.9m - CROSSCUTTING FRACTURE FILLED BY RED HEMATITE						
					186.9m - UNFILLED FRACTURE						
188				~40°	← BANDING, POORLY DEFINED BY ALTERNATING UNITS OF MAROON HEMATITE ALTERATION & PROTOMYLONITE QUARTZOSE INTERVALS						
				~90°	188.9 - 192.2m PEGMATITIC CHLORITIZED BY INTERLOCKING ANHEDRAL GRAINS OF SERICITIZED & CHLORITIZED PLAG WITH RED HEMATITE STAINED QTZ → UNIT GRADUALLY GIVES WAY TO UNDERLYING PROTO-MYLONITE						
					← FRACTURE PARTIALLY COATED BY BITUMEN						
190	100	95	6								
191				~50° 11cm							
					← FRACTURE PARTIALLY COATED BY RED HEMATITE						
	100	97	13		192.2 - 195m CATACLASTIC TO MYLONITIC TEXTURES PREVAIL WITH INTERVALS OF ANHEDRAL FRACTURED, PEGMATITIC QTZ & PLAG.						
194				~05 Kal	← FRACTURE PARTIALLY COATED BY CALCITE.						
195											
	100	95	11	~20 Kal	← FRACTURE PARTIALLY COATED BY CALCITE						
197				~50	← QTZ FILLED FRACTURE						
	100	96	10								
				~20	← WELL DEFINED, SHEAR IMPOSED FABRIC (MYLONITE)						
200											

BLEACHING: MODERATE
MAROON HEM.: WEAK; WEAK; MODERATE
RED HEM.: WEAK; WEAK
GREEN ALT.: LIGHT; WEAK

DDH No. MR-79

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	LIGHT GREEN ALT.	GRAPHITE	PYRITE	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
200							WEAK	WEAK	MODERATE				
	100	90	13	40° 20°	← UNFILLED FRACTURE ← WELL DEFINED SHEAR IMPOSED MYLONITIC FABRIC								
203				15 Cy	← FRACTURE PARTIALLY COATED BY CLAY								
				35°	← UNFILLED FRACTURE								
				25°	← WELL DEFINED SHEAR IMPOSED FOLIATION (MYLONITE) ← TRACE, GRAPHITE NOTED IN MATRIX								
205	98	96	12	60 30	← UNFILLED, CROSSCUTTING FRACTURE WELL DEFINED SHEAR IMPOSED FOLIATION. ← TRACE OF GRAPHITE NOTED IN MATRIX					WEAK, TRACE TO 2%			
206													
				20° 60	← UNFILLED FRACTURE CROSSCUTTING SHEAR IMPOSED FABRIC.								
	100	95	8	05 Cy	← CLAY FILLED FRACTURE								
				50°	← UNFILLED FRACTURE CROSSCUTTING FOLIATION								
209				20	← WELL DEFINED SHEAR IMPOSED FOLIATION CHARACTERIZED BY THE SUB PARALLEL ALLIGNMENT OF ELONGATED QTZ & PLAG GRAINS SET WITHIN A FINE GRAINED CHLORITE RED MATRIX								
210													
	95	93	12	Hem 60°	← CROSSCUTTING FRACTURE FILLED BY RED HEMATITE								
212				40° Chl 55	← FOLIATION PARALLEL CHLORITE FILLED FRACTURE ← WELL DEFINED SHEAR IMPOSED FOLIATION (MYLONITE)								
				30°									
	100	86	14					MOD	WEAK				
215													
				40 Hem	← FOLIATION PARALLEL FRACTURE FILLED BY RED HEMATITE								
	100	84	15	20	← SHEAR IMPOSED FOLIATION WELL DEFINED (MYLONITE			WEAK					
				40 Chl	← SUBPARALLEL CHLORITE FILLED FRACTURES CROSSCUTTING FOLIATION.								
218				55 Py	← FRACTURE PARTIALLY COATED BY EUHEDRAL PYRITE				MODERATE				
				20° Chl	← CHLORITE FILLED FRACTURE								
	100	92	14		218.7-245.8 m CHLORITIZED, MASSIVE TO MODERATELY WELL FOLIATED, BIOT-QTZ-PLAG GRANODIORITE (GNEISS??) CONTAINING ACCESSORY TRACE QUANTITIES OF GRAPHITE (TRACE TO 2%) ← PYRITE (2-5%). - UNIT IS IN GRADATIONAL CONTACT WITH OVERLYING MYLONITE PACKAGE.								
220				40° Chl									
221				30°	← FOLIATION POORLY DEFINED BY ELONGATED QTZ & PLAG. 220.0 m CROSSCUTTING CHLORITE FILLED FRACTURE								
	96	94	12						WEAK				
224				15° Py 30	← PYRITE FILLED FRACTURE.						2-5%		
225				45° Chl									



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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
225					
	100	66	>30	∠15°	CHLORITE COATED FRACTURE
				Chl ∠30	SHEAR IMPOSED FOLIATION (MYLONITE) WELL DEFINED
227				∠30 Py	FRACTURE PARTIALLY COATED BY PYRITE
				∠30	PYRITE COATED FRACTURE
	100	88	15	∠20	FOLIATION POORLY DEFINED
230				∠10°	CHLORITE COATED FRACTURE
				∠25°	FOLIATION POORLY DEFINED BY THE SUBPARALLEL ALLIGNMENT OF ELONGATED QTZ & PLAG GRAINS
	100	80	21		
233				∠30	FOLIATION POORLY DEFINED BY THE PLATY ALLIGNMENT OF BIOT. GRAINS
				∠45	CHLORITE COATED FRACTURE
235	100	93	16	∠30 Chl	CALCITE COATED FRACTURE
				∠20	FOLIATION DEFINED BY THE ALLIGNMENT OF QTZ & PLAG GRAINS
236				∠20° Chl	CHLORITE FILLED FRACTURE
	100	98	10		
239					
240				∠30 Py	UNFILLED FRACTURE FRACTURE PARTIALLY COATED BY PYRITE
	100	85	17	∠50	UNFILLED FRACTURE
242				∠35 Chl	CHLORITE COATED FRACTURE
				∠15° Cal.	CALCITE FILLED FRACTURE
				Py ∠40	FRACTURE PARTIALLY COATED BY PYRITE
	100	96	14		
				∠60 Py ∠40	PYRITE FILLED FRACTURES
245				Chl ∠30°	CHLORITE COATED FRACTURE
				∠20	245.8-260.0m - CHLORITIZED, FINE GRAINED, WELL FOLIATED, GARNET-PYRITE BEARING, GRAPHITE (10-25%) QTZ-PLAG GNEISS.
	95	93	10	∠70	FOLIATION WELL DEFINED BY THIN (1-15mm THICK) SUBPARALLEL ALLIGNED GRAPHITE RICH UNITS.
248					
				∠20	CROSSCUTTING FRACTURE COATED BY CALCITE
	100	90	12	∠35	WELL DEFINED FOLIATION.
250				Bit ∠30	FOLIATION PARALLEL FRACTURE COATED BY BITUMEN

BLEACHING

MAROON HEM.

RED HEM. — WEAK

GREEN ALT. — WEAK — LT GREEN — DARK GREEN — WEAK — STRONG

PYRITE — TRACE TO 2% — 2-5% — TRACE — 2-5%

GRAPHITE — TRACE

GAMMA LOG (CPS/DIV) 10 20 30 40

SAM #

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
250				30 / 50	FOLIATION WELL DEFINED BY THE SUBPARALLEL ALIGNMENT OF GRA. RICH PACKAGES CROSSCUTTING UNFILLED FRACTURE
251				25	WELL DEFINED FOLIATION
				20° Cal	FRACTURE PARTIALLY COATED BY CALCITE
	100	97	8	45°	WELL DEFINED FOLIATION
				85° Cal	FRACTURE PARTIALLY COATED BY CALCITE
254				50° Cal	FOLIATION PARALLEL FRACTURE COATED BY CALCITE.
255				30°	FOLIATION WELL DEFINED BY THIN SUBPARALLEL BANDS OF GRAPHITE RICH MATERIAL.
				20° Qtz	CROSSCUTTING FRACTURE FILLED BY QTZ
	98	97	6	Cal 40°	FOLIATION PARALLEL FRACTURE COATED BY CALCITE.
				50	FOLIATION WELL DEFINED
				Py 30	CROSSCUTTING FRACTURE FILLED BY PYRITE
257				60	FOLIATION WELL DEFINED BY .5cm THICK GRA. RICH UNITS
				30	
				40	FOLIATION WELL DEFINED.
	100	95	15	85° Cal	FRACTURE PARTIALLY COATED BY CALCITE
				30	FOLIATION POORLY DEFINED
260					260 m END OF HOLE

	BLEACHING	MAROON HEM.	RED HEM.	DARK GREEN ALT.	PYRITE	COPPER STN
				WEAK	2-5%	STRONG

GAMMA LOG (CPS/DIV) 10 20 30 40

SAM #

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-79

PAGE OF

COORDINATE X: 298+00N

COORDINATE Y: 221+27E

ELEVATION Z:

INCLINATION: -60

AZIMUTH: 267

BOREHOLE Ø: NQ

CASING DEPTH: 30.5M

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: FEBRUARY 7-10 1979

TOTAL DEPTH: 260m

LOGGED THROUGH :
OPEN HOLE | PLASTIC PIPE | RODS

INSTRUMENT: MOUNT SOPRIS 2500 AI-5-B-79

PROBE GAMMA: AI-6-14 SER. # 105

PROBE NEUTRON:

DATE of LOGGING: FEBRUARY 10 1979

TIME of LOGGING: 11:15AM - 13:20 PM 3 HOURS TESTING OVERALL

TOTAL DEPTH: 260.20M

OPERATOR: R. AVERY

REMARKS:

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
260.20	1:10 CPS/DIV	5M/MIN.	100:1
0.0			

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR-80

AREA: MAYBELLE RIVER	DISPOSITION: 6886050004 PROJECT NO.: 71-42	PAGE 1 OF 12
COORDINATES: 218+80E, 318+00N, UTM: 6450500N, 520300E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: yes no DEPTH: 27m	DRILLED BY: MIDWEST DRILLING COMMENCED: FEBRUARY 11 1990 COMPLETED: FEBRUARY 14 1990
TOTAL DEPTH (m): 257 m ELEVATION (m A.S.L.): 307m DIP/AZIMUTH: -60°/267°	GEOLOGY BY: R. AVERY 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 ACID ACID

TEST AT(m)	248.5	150	27													
DIP	-59°	-62°	-61°													
AZIMUTH	274°	/	/													

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 27.5m	SANDY DIAMICTON, OUTWASH SANDS & GRAVELS
MANITOU FALLS FM. - ATHABASCA GP.	27.5 - 157.9m	FINE TO MEDIUM GRAINED, MASSIVE TO CROSS BEDDED, CLEAN WELL SORTED SANDSTONE CONTAINING CLAY INTRACLASTS, SILTSTONE BEDS, ~ HEMATITIC LISEGANG RINGS THROUGHOUT; MODERATE BLEACHING, WEAK MAROON RED HEMATITE; MINOR INTERVALS OF STRONG FRACTURING THROUGHOUT.
FAIR POINT FM. ATHABASCA GP.	157.9 - 196.2 m	STRONGLY BLEACHED, MASSIVE, POORLY SORTED, COARSE SANDSTONE CONTAINING OCCASSIONAL FLOATING PEBBLE CLASTS & INCOHESIVE, STRONGLY FRACTURED INTERVALS
CHLORITIZED PLAGIOCLASE GNEISS	196.2 - 210.4 m	196.2 m UNCONFORMITY - IRREGULAR, FRACTURED CONTACT AT 70° TO C.A. STRONGLY CHLORITIZED, HEMATIZED, BANDED, MEDIUM GRAINED, QTZ-PLAG-GNEISS
CHLORITIZED PY-GRA-QTZ-PLAG GNEISS	210.4 - 230.2m	STRONGLY CHLORITIZED, FOLIATED, FINE TO MEDIUM GRAINED, PY-GRA-QTZ-PLAG-GNEISS CONTAINING STRONGLY TECTONIZED INTERVALS OF FRACTURED, INCOHESIVE CORE; REHEALED GRAPHITE FILLED FRACTURES; & GRAPHITIC BRECCIAS.
CHLORITIZED GRA-PY BEARING BIOT-KSPAR-QTZ-PLAG-GNEISS	230.2 - 257.2m	GREENISH GRAY, CHLORITIZED, WELL FOLIATED, MEDIUM GRAINED, GRA-PY BEARING BIOT-KSPAR-QTZ-PLAG-GNEISS WITH OCCASSIONAL INTERVALS (20-70 CM THICK) OF QTZ-PLAG-KSPAR PEGMATITE.

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

ANOMALOUS RADIOACTIVITY
(DEAD TIME CORRECTED VALUES)

238.3m - 144 cps
229.5m - 228 cps

GEOCHEMISTRY

MR-80-1	196.2-191 m	COMPOSITE SST. SAMPLE
2	191-186 m	"
3	186.2-186m	"
4	186-176 m	"
5	176-166m	"
6	166-157.9m	"
7	157.9-153	"
8	153-148	"
9	157.9-148	"
10	148-138	"
11	138-128	"
12	128-118	"

MR-80-13	118-108	COMPOSITE SST. SAMPLE
14	108-98	
15	98-88	
16	88-78	
17	78-68	
18	68-58	
19	58-48	
20	48-38	
21	38-27.5	

DDH No. MR-80

PAGE 2 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
0					0-27.5m - OVERBURDEN; SANDY DIAMICTON, OUTWASH SANDS & GRAVELS						
5											
10											
15											
20											
25											

DDH No. MR-80

PAGE 3 OF 12

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
25					
	100	70	17		27.5 - 157.9 m MANITOU FALLS FM. - ATHABASCA GROUP FINE TO MEDIUM GRAINED, MASSIVE, TO CROSS-BEDDED, CLEAN, WELL SORTED SANDSTONE CONTAINING CLAY INTRACLASTS, SILTSTONE BEDS & LISEGANG RINGS THROUGHOUT; MODERATE BLEACHING, WEAK MAROON & RED HEMATITE; MINOR INTERVALS OF STRONG FRACTURING PRESENT. HEMATIZED CLAY SEAM 28.4 - 28.8m STRONGLY FRACTURED INTERVAL, CORE REDUCED TO RUBBLE PLANAR CROSSBEDDING POORLY DEFINED BY VARIATIONS IN GRAIN SIZE
29					
30	90	86	10		BEDDING PARALLEL CLAY COATED FRACTURE
32					32.4 - 32.6 STRONGLY FRACTURED INTERVAL, CORE REDUCED TO RUBBLE
	100	80	22		SILTSTONE LAYER, 60° TO C.A. INDICATING BEDDING BEDDING PARALLEL CLAY COATED FRACTURE
35					35.0 - 37.2 m WELL DEVELOPED RED HEMATITE LISEGANG RINGS
	100	95	7		BEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS
38					38.9 - 42.0 m BITUMEN STRONGLY IMPREGNATED IN CORE ALONG BEDDING SEAMS.
40	100	100	2		
41					SOOTY PYRITE NOTED IN MATRIX
	100	93	10		RANDOM FINE NODULES OF SOOTY PYRITE NOTED IN MATRIX. SILTSTONE BED AT 60 TO C.A. CROSSCUTTING UNFILLED FRACTURE BEDDING WELL DEFINED FRACTURE PARTIALLY COATED BY BITUMEN
44					
45					SOOTY PYRITE NOTED IN MATRIX.
	100	95	7		PLANAR CROSSBEDDING DEFINED BY VARIATIONS IN GRAIN SIZE
47					CLAY INTERLAMINATIONS CROSSCUTTING FRACTURE FILLED BY QTZ.
	100	100	9		
50					BEDDING PARALLEL CLAY FILLED FRACTURE

BLEACHING: MODERATE | WEAK | STRONG

MAROON HEM.: WEAK

RED HEM.: WEAK | MODERATE | STRONG

GREEN ALT.: MODERATE | WEAK

BITUMEN: STRONG

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #: MR 80 21 | MR 80 20 | MR 80 19

DDH No. MR-80

PAGE 4 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
50				ƒ60 CY	← BEDDING PARALLEL, CLAY COATED FRACTURE
	100	82	25	ƒ60 BitPy	← BEDDING PARALLEL FRACTURE PARTIALLY COATED BY PYRITE & BITUMEN
					← CLAY INTRACLAST
					51.4 - 51.6m - STRONGLY FRACTURED INTERVAL: CORE REDUCED TO RUBBLE
53				ƒ60 CY	← BEDDING PARALLEL CLAY COATED FRACTURE
					53.2 - 55.2 m WELL DEVELOPED MAROON HEMATITE LIESEGANG RINGS
55	100	92	11		
					← CLAY INTRACLAST
56					
					56.6 - 61.0 MAROON HEMATITE LIESEGANG RINGS, WELL DEFINED
	100	90	19	ƒ30° Py	← CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE.
				ƒ65 CY	← BEDDING PARALLEL, CLAY COATED FRACTURE
59					
60				ƒ60 Bit	← BITUMEN COATED, BEDDING PARALLEL FRACTURE
	98	87	14	ƒ60 Hem	← RED HEMATITE CLAY COATED FRACTURE
				ƒ60	← SOOTY PYRITE NOTED ON UNFILLED FRACTURE
62				ƒ60 PX	← PLANAR CROSS BEDDING DEFINED BY VARIATIONS IN GRAIN SIZE, CROSSCUTTING FRACTURE COATED BY HEMATITIC CLAY
				41cm	← CLAY INTRACLAST
				ƒ70 CY	← BEDDING PARALLEL CLAY COATED FRACTURE
	100	91	13		
65					
					← CLAY INTRACLAST
				ƒ60 CY	← BEDDING PARALLEL CLAY COATED FRACTURE
	100	93	17	ƒ60 CY	← BEDDING PARALLEL CLAY COATED FRACTURE
				ƒ10 CY	← CROSSCUTTING FRACTURE COATED BY HEMATITIC CLAY
68					
				ƒ68 CY	← BEDDING PARALLEL CLAY COATED FRACTURE
70	100	97	8		
					← CLAY FILLED SOLUTION SEAM
71				Bit	← BEDDING PARALLEL SEAMS IMPREGNATED BY BITUMEN
	98	94	11	ƒ50° Bit	← BEDDING PARALLEL FRACTURE COATED BY BITUMEN
74					
				CY ƒ60	← CLAY INTRACLAST
					← BEDDING PARALLEL CLAY FILLED FRACTURE
75				ƒ60°	← PLANAR CROSSBEDDING, WELL DEFINED BY

	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
	MODERATE	WEAK	WEAK	
		MODERATE		
		WEAK		

GAMMA LOG (CPS/DIV)
20 40 60 80

SAM #
MR-80 18
MR-80 17

DDH No. MR-80

PAGE 5 OF 12

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
75					
	100	98	7		CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE QTZ FILLED FRACTURE CLAY INTRACLAST
77					
	100	90	13		CROSSCUTTING FRACTURE FILLED BY HEMATITIC CLAY BEDDING PARALLEL, HEMATITIC CLAY FILLED FRACTURE
80					
					CROSSCUTTING BITUMEN FILLED FRACTURE BEDDING PARALLEL CLAY FILLED FRACTURE
	100	100	7		PLANAR FORESETS WELL DEFINED BY VARIATIONS IN GRAIN SIZE
83					BEDDING PARALLEL UNFILLED FRACTURE CLAY INTRACLAST
					FRACTURE PARTIALLY COATED BY CLAY
85	100	93	10		BEDDING PARALLEL FRACTURE COATED BY CLAY & MINOR SOOTY PYRITE CLAY INTRACLAST CLAY FILLED SOLUTION SEAM
86					
					PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE
	100	69	21		BEDDING PARALLEL CLAY FILLED FRACTURE 87.3-88.2m - WELL DEVELOPED RED HEMATITE LIESEGANG RINGS CLAY FILLED SOLUTION SEAM
89					88.6-89.1m - STRONGLY FRACTURED INTERVAL CORE REDUCED TO RUBBLE
					UNFILLED FRACTURE SOOTY PYRITE NOTED IN MATRIX
90	100	80	29		SUBPARALLEL BITUMEN FILLED FRACTURES CROSSCUTTING BEDDING
					91.4-91.6m - STRONGLY FRACTURED INCOHESIVE INTERVAL
92					PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE CLAY INTRACLAST SILTSTONE BED AT 60°TO C.A. INDICATING BEDDING UNFILLED BEDDING PARALLEL FRACTURE
	100	85	18		
					CLAY INTRACLASTS BEDDING PARALLEL CLAY FILLED FRACTURE
95					PLANAR CROSSBEDDING
					CLAY FILLED SOLUTION SEAM
	100	91	19		
					BITUMEN COATED FRACTURE WITH ACCESSORY SOOTY PYRITE BEDDING PARALLEL FRACTURE PARTIALLY COATED BY BITUMEN
98					BITUMEN FILLED FRACTURE 98.6 - 99.8m WELL DEVELOPED RED HEMATITE LIESEGANG RINGS
	100	85	21		
100					

BLEACHING — MODERATE

MAROON HEM. — WEAK

RED HEM. — WEAK — MODERATE

GREEN ALT.

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #
MR 80 16
MR 80 15
MR 80 14

DDH No. MR-80

PAGE 6 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
100				40°	CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS.
101				55° Py	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY SOOTY PYRITE
				Cy	CLAY FILLED SOLUTION SEAM
	100	92	13		CLAY INTRACLAST
					102·7 - 103·1 m HEMATITIC LISEGANG RINGS WELL DEFINED
104				80° Bit	CROSSCUTTING BITUMEN COATED FRACTURES
				0° Bit.	CLAYFILLED SOLUTION SEAM
105					
	100	88	12		CLAY INTRACLAST
				60° Cy	CLAY INTRACLAST
					BEDDING PARALLEL CLAY FILLED FRACTURE
107				55° Cy	BEDDING PARALLEL CLAY FILLED FRACTURE
					107·9 - 109·5 m - RED & MAROON HEMATITE LISEGANG RINGS
	100	97	12		CLAY INTRACLAST
				60° Cy	CLAY FILLED FRACTURE.
110					BEDDING PARALLEL CLAY FILLED SOLUTION SEAM
				60°	BEDDING DEFINED BY VARIATIONS IN GRAIN SIZE
				50° Cy	BEDDING PARALLEL CLAY FILLED FRACTURE
	100	98	8		111·5 - 114·9 WELL DEVELOPED RED HEMATITE LISEGANG RINGS
					BEDDING PARALLEL BITUMEN IMPREGNATED PARTINGS
113					CLAY INTRACLAST
115	100	97	6	60° Cy	BEDDING PARALLEL CLAY FILLED FRACTURE
					CLAY INTRACLASTS
116				60°	CROSS BEDDING DEFINED BY VARIATIONS IN GRAIN SIZE
	100	100	5	Cy	IRREGULAR, CLAY FILLED SOLUTION SEAMS
119				60° Cy	BEDDING PARALLEL CLAY FILLED FRACTURE
					119·7 - 120·2 RED HEMATITE LISEGANG RINGS
120	100	97	10	Cy	CLAY FILLED SOLUTION SEAM
					120·3 - 122·6 m RED HEMATITE LISEGANG RINGS, WELL DEVELOPED
122				15° Bit	CROSSCUTTING BITUMEN FILLED FRACTURE
	100	97	6		
125				50° Bit	BEDDING PARALLEL BITUMEN COATED FRACTURE

BLEACHING: MODERATE — WEAK

MAROON HEM.: WEAK

RED HEM.: WEAK — MODERATE — WEAK

GREEN ALT.:

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #: MR-80 13; MR-80 12

DDH No. MR-80

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
125					
					← SUBPARALLEL, CROSSCUTTING BITUMEN FILLED FRACTURES
					← CROSSCUTTING FRACTURE COATED BY BITUMEN & EUHEDRAL QTZ.
	100	87	11		← PLANAR CROSS BEDDING POORLY DEFINED BY VARIATIONS IN GRAIN SIZE
					← CROSSCUTTING FRACTURE COATED BY BITUMEN & EUHEDRAL QTZ
128					← CROSSCUTTING BITUMEN FILLED FRACTURES
					← BEDDING PARALLEL CLAY FILLED SOLUTION SEAM.
	100	90	14		← CROSSCUTTING FRACTURE COATED BY BITUMEN & EUHEDRAL QTZ.
130					← PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE.
131					← CLAY INTRACLAST.
					← BEDDING PARALLEL FRACTURE PARTIALLY COATED BY BITUMEN
	100	93	20		← CROSSCUTTING FRACTURE COATED BY EUHEDRAL QTZ & BITUMEN
					← SILTSTONE BAND AT 60° TO C.A. DEFINING BEDDING
					← PLANAR CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS.
134					← FRACTURE PARTIALLY COATED BY BITUMEN.
135					← CLAY INTRACLAST WITH MAROON HEMATITE ALTERATION RIM.
	100	88	23		← CROSSCUTTING BITUMEN FILLED FRACTURES
					← BITUMEN FILLED FRACTURE
137					← CROSSCUTTING BITUMEN FILLED FRACTURE
					← CROSSCUTTING FRACTURE COATED BY EUHEDRAL QTZ & BITUMEN
	100	89	20		← BITUMEN FILLED FRACTURE
					← PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAINSIZE
					← CLAY INTRACLASTS
140					← BEDDING PARALLEL CLAY FILLED FRACTURE
					← CLAY INTRACLAST
	100	88	13		← CROSSCUTTING BITUMEN FILLED FRACTURE
					← PLANAR CROSSBEDDING WELL DEFINED
					← CROSSCUTTING FRACTURE COATED BY BITUMEN
					← PLANAR CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS
143					← CROSSCUTTING FRACTURE COATED BY BITUMEN
					← CLAY INTRACLAST
					← SILTSTONE BAND
	100	80	22		← CROSSCUTTING BITUMEN COATED FRACTURE
145					← 144.5 - 145 m STRONGLY FRACTURED COHESIVE CORE W/ RADIATING FRACTURES FILLED BY BITUMEN.
					← PLANAR CROSSBEDDING WELL DEFINED
146					← SILTSTONE BED AT 60° TO C.A. DEFINES BEDDING
					← CROSSCUTTING FRACTURE COATED BY BITUMEN.
	100	92	14		← PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE
					← CROSSCUTTING BITUMEN COATED FRACTURES
149					← WELL DEFINED PLANAR CROSS BEDS.
					← CROSSCUTTING BITUMEN FILLED FRACTURE
150					

BLEACHING — MODERATE

MAROON HEM. — WEAK — M — WEAK

RED HEM. — WEAK

GREEN ALT. — WEAK

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

MR80 11

MR80 10

MR80 8

DDH No. MR-80

PAGE 3 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
150									
	100	87	18		45° BLT — BITUMEN COATED FRACTURE CROSSCUTTING BEDDING 50° — SILTSTONE BED AT 50° TO C.A.	MODERATE	WEAK	WEAK	
152					30° BLT, 10° BLT — CROSSCUTTING FRACTURE PARTIALLY COATED BY BITUMEN				
	100	88	14		10° BLT — CROSSCUTTING FRACTURE, BITUMEN FILLED. IRREGULAR CLAY FILLED SOLUTION SEAM	WEAK	MODERATE		
155					BLT 30° — BITUMEN COATED CROSSCUTTING FRACTURE PLANAR CROSSBEDDING WELL DEFINED	MODERATE	WEAK		
					70° BLT — SUBPAR ALLEL BITUMEN FILLED FRACTURES	STRONG			
	100	98	9		65° BLT — BITUMEN COATED FRACTURE. 55° — PLANAR CROSS BEDDING WELL DEFINED	MODERATE	WEAK	WEAK	MOD
158					157.9 - 196.2 m FAIR POINT FORMATION STRONGLY BLEACHED, MASSIVE, POORLY SORTED COARSE SANDSTONE CONTAINING OCCASSIONAL FLOATING PEBBLE CLASTS & INCOHESIVE STRONGLY FRACTURED INTERVALS.	STRONG			
	100	87	14		(159.3-159.6 m) INCOHESIVE, POORLY CEMENTED FRIABLE CORE.				
160									
161					BLT 30° — BITUMEN FILLED FRACTURE BLT — DEDRITIC, BITUMEN FILLED FRACTURES SILTSTONE BANDS AT 55° T.C.A. DEFINING BEDDING BLT 40° — BITUMEN COATED FRACTURE	MODERATE	WEAK	WEAK	
	100	86	17		30° — CLAY COATED FRACTURE				
164									
165					164.9-166.2 m STRONGLY FRACTURED INTERVAL (COHESIVE)				
	100	82	21		20° BLT — BITUMEN COATED FRACTURE				
167					167.0-168.9 m INCOHESIVE, POORLY CEMENTED, FRIABLE CORE WITH NUMEROUS BITUMEN + CLAY COATED FACES				
	100	42	>30		40° BLT — BITUMEN COATED FRACTURE				
170					40° BLT — BITUMEN COATED FRACTURE				
					170.5 - 171.0 m STRONGLY FRACTURED INTERVAL: NUMEROUS DENDRITIC BITUMEN FILLED FRACTURES	STRONG			
	100	66	28		90° 30° BLT, 40° BLT — BITUMEN COATED FRACTURES				
173					172.8-173.1 m INCOHESIVE, POORLY CEMENTED, FRIABLE CORE				
	100	77	>30		60° — UNFILLED FRACTURE.				
175									

GAMMA LOG (CPS/DIV) 20 40 60 80

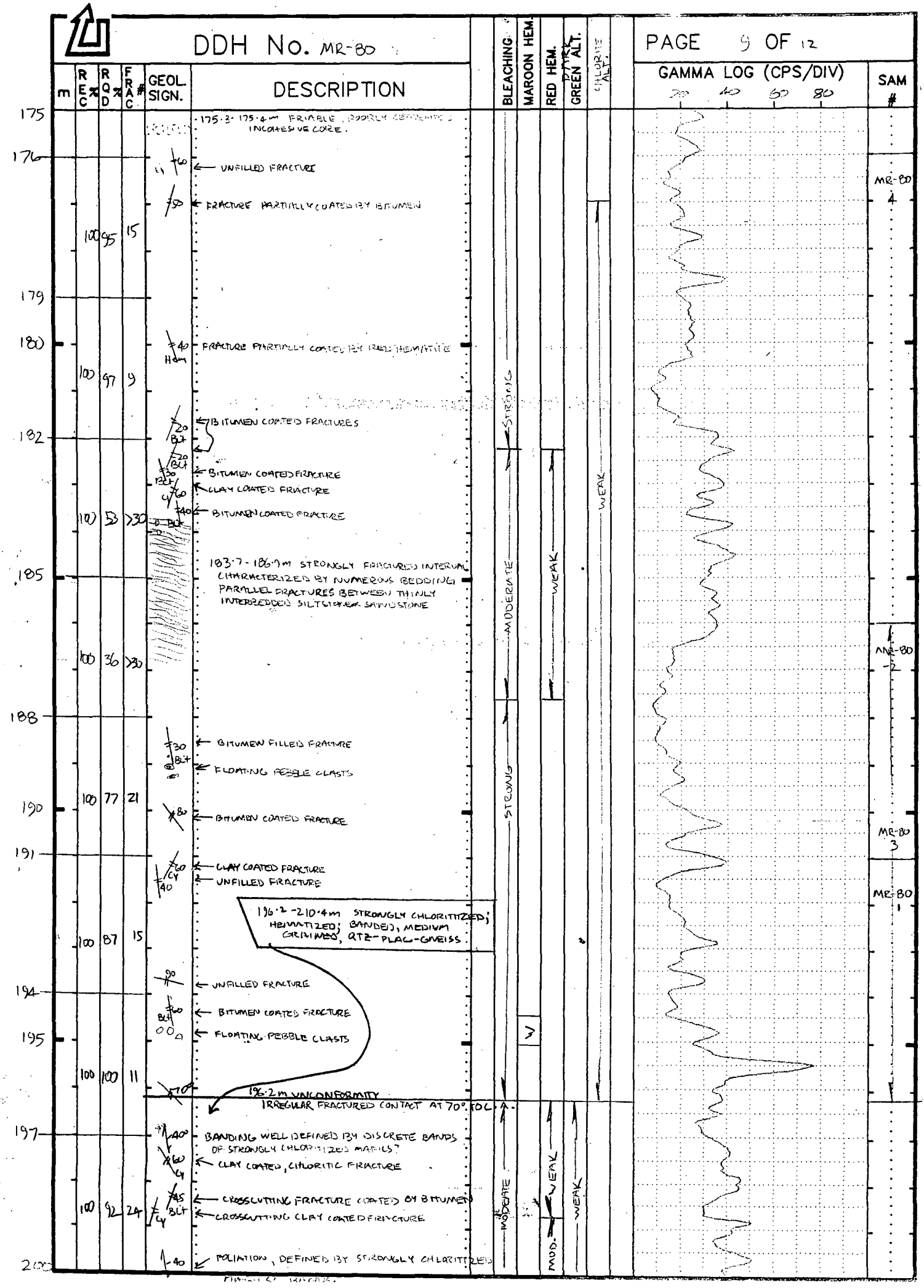
SAM #

MR-80 9

MR-80 7

MR-80 6

MR 80 5


DDH No. MR-80
PAGE 9 OF 12
m
REC %
RQD %
FRAC #
GEOL. SIGN.
DESCRIPTION
BLEACHING
MAROON HEM.
RED HEM.
DARK GREEN ALT.
CHLORITE ALT.
GAMMA LOG (CPS/DIV)
20 40 60 80
SAM #
175
176
179
180
182
185
188
190
191
194
195
197
200
175.3-175.4m FRIABLE, POORLY CEMENTED INCOHESIVE CORE.
UNFILLED FRACTURE
FRACTURE PARTIALLY COATED BY BITUMEN
100 95 15
FRACTURE PARTIALLY COATED BY RED HEMATITE
100 97 9
BITUMEN COATED FRACTURES
BITUMEN COATED FRACTURE
CLAY COATED FRACTURE
BITUMEN COATED FRACTURE
100 53 >30
183.7-186.9m STRONGLY FRACTURED INTERVAL CHARACTERIZED BY NUMEROUS BEDDING PARALLEL FRACTURES BETWEEN THINLY INTERBEDDED SILTSTONE & SANDSTONE
100 36 >30
BITUMEN FILLED FRACTURE
FLOATING PEBBLE CLASTS
100 77 21
BITUMEN COATED FRACTURE
CLAY COATED FRACTURE
UNFILLED FRACTURE
196.2-210.4m STRONGLY CHLORITIZED; HEMATIZED; BANDED, MEDIUM GRAINED, QTZ-PLAG-GNEISS
100 87 15
UNFILLED FRACTURE
BITUMEN COATED FRACTURE
FLOATING PEBBLE CLASTS
100 100 11
196.2m UNCONFORMITY
IRREGULAR FRACTURED CONTACT AT 70° TO C.A.
BANDING WELL DEFINED BY DISCRETE BANDS OF STRONGLY CHLORITIZED MAFICS?
CLAY COATED, CHLORITIC FRACTURE
CROSSCUTTING FRACTURE COATED BY BITUMEN
100 92 24
CROSSCUTTING CLAY COATED FRACTURE
FOLIATION, DEFINED BY STRONGLY CHLORITIZED
STRONG
MODERATE
STRONG
WEAK
WEAK
MOD.
WEAK
WEAK
MR-80 4
MR-80 -2
MR-80 3
MR-80 1

DDH No. MR-80

PAGE 10 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
200				50°	← FOLIATION POORLY DEFINED BY SUBPARALLEL BANDS OF STRONGLY CHLORITIZED MAFICS(?)
				Hm/A 45	← CROSSCUTTING FRACTURE PARTIALLY COATED BY (RED) HEMATITE.
				40	← UNFILLED FRACTURE
	100	92	15	70 Hem	← CROSSCUTTING HEMATITE FILLED FRACTURE
				50	← HEMATITE FILLED FRACTURE
203				40	← FOLIATION WELL DEFINED BY ALLIGNMENT OF STRONGLY CHLORITIZED MAFIC BANDS
205	100	89	12		
				40	← FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF CHLORITIZED MAFIC BANDS.
206				30 Hm	← CROSSCUTTING FRACTURE FILLED BY RED HEMATITE
				25 Cal	← CROSSCUTTING FRACTURE FILLED BY CALCITE
	100	97	12		
				30	← FOLIATION WELL DEFINED BY ALLIGNMENT OF STRONGLY CHLORITIZED MAFICS.
209				40	← UNFILLED FRACTURE
210					210.4-230.2m STRONGLY CHLORITIZED, FOLIATED, FINE TO MED. GRAINED PY-GRA-QTZ-PLAGNEISS CONTAINING STRONGLY TECTONIZED INTERVALS OF FRACTURED INCOHESIVE CORE, REHEALED GRAPHITE FILLED FRACTURES, & GRAPHITIC BRECCIAS.
	100	79	>30		210.4-211.1 m STRONGLY CHLORITIZED, SEMI-COHESIVE FRIABLE CORE, CONTAINING (COHESIVE FRACTURES) NUMEROUS GRAPHITE FILLED FRACTURES
212					← 212.3-213.1 STRONGLY FRACTURED INCOHESIVE INTERVAL, CORE REDUCED TO RUBBLE. NUMEROUS GRAPHITE COATED FACES
				30	← FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF GRAPHITE RICH PACKAGES.
	100	57	>30		
				60 Gm	← GRAPHITE COATED FRACTURE
215					214.6-216.1 m STRONGLY TECTONIZED INTERVAL CHARACTERIZED BY AN INTENSE NETWORK OF COHESIVE DENDRITIC FRACTURES & TENSION GASHES FILLED BY GRAPHITE, QTZ & PYRITE.
				30	← FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF GRAPHITE RICH PACKAGES
	100	82	24		
218				35	
					219-221.1 STRONGLY TECTONIZED INTERVAL CHARACTERIZED BY AN INTENSE NETWORK OF THIN DENDRITIC GRAPHITE, PYRITE & QTZ FILLED FRACTURES & TENSION GASHES.
	100	77	25		
220					
221					
	100	74	>30		223.0-225.1 BRECCIATED INTERVAL: ANGULAR FRACTURED GNEISS FRAGMENTS WITHIN AN INCOHESIVE FRIABLE FINE GRAINED GRAPHITIC MATRIX.
				30	← GRAPHITE COATED FRACTURE
224					
225					

BLEACHING: MODERATE

MAROON HEM.

RED HEM.: STRONG; NONE

GREEN ALT.: MODERATE; STRONG

GRAPHITE: MODERATE 4-8%; STRONG 8-15%

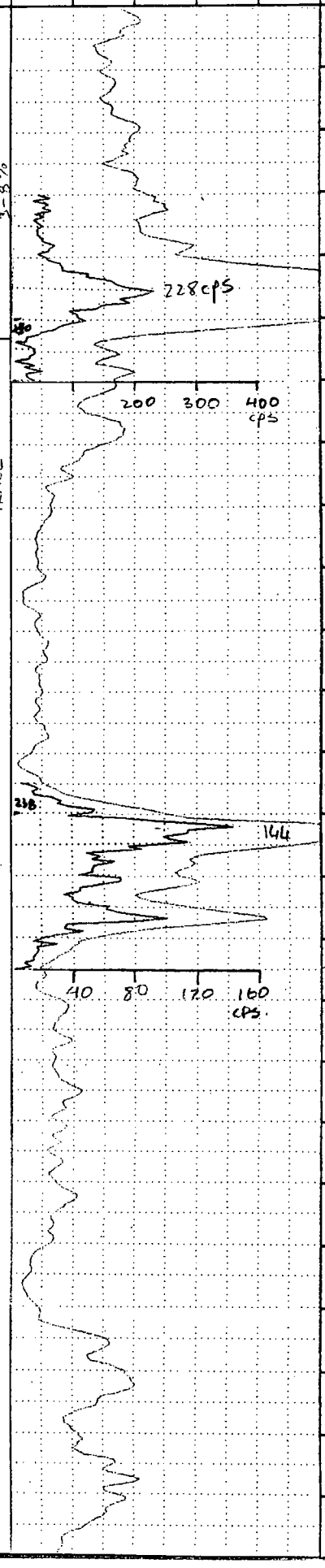
PYRITE: 2-3% PYRITE

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

DDH No. MR-80

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	DARK GREEN ALT.	GRAPHITE	PYRITE	GAMMA LOG (CPS/DIV)	SAM #
225	100	62	>30	BLT 90 / 20	← BITUMEN COATED FRACTURE ← FOLIATION WELL DEFINED BY THIN SUBPARALLEL BANDS OF GRAPHITE.								
227	100	9	>30	10 / CH	227.0 - 230.1 m STRONGLY FRACTURED INCOHESIVE INTERVAL WITH CORE REDUCED TO RUBBLE - NUMEROUS GRAPHITE COATED FRACTURE FACES - THIN, DENDRITIC, GRAPHITE FILLED FRACTURE COMMON PLACE THROUGHOUT. ← GRAPHITE COATED FRACTURE								
230					MASSIVE PYRITE NOTED IN MATRIX								
	96	80	25	68 BLT / 40 / 65 BLT / 80 BLT / 20° BLT	← CROSSCUTTING BITUMEN FILLED FRACTURE ← FOLIATION WELL DEFINED BY THIN, SUBPARALLEL BANDS OF GRAPHITE. ← CROSSCUTTING FRACTURE PARTIALLY COATED BY BITUMEN 230.2 → 257.0 m GREENISH GRAY - CHLORITIZED, WELL FOLIATED, MEDIUM GRAINED, GRA-PY-BEARING 10PX - KSPAR - QTZ-PLAG GNEISS WITH OCCASSIONAL INTERVALS (20-70 cm THICK) OF QTZ - PLAG - KSPAR - PEGMATITE.				STRONG	STRONG 5-15%	MODERATE 3-8%		
233				BLT 30° / 50	← BITUMEN COATED FRACTURE ← WELL DEVELOPED FOLIATION DEFINED BY THE SUBPARALLEL ALLIGNMENT OF CHLORITIZED MARKS ← CROSSCUTTING BITUMEN FILLED FRACTURE					WEAK - TRACE 70+%	TRACE		
235	98	95	11	45	← UNFILLED FRACTURE								
236	100	100	5	25 / 50° CH	← FOLIATION WELL DEFINED BY ALTERNATING BANDS OF CHLORITIZED BIOT WITH QTZ-PLAG INTERVALS. ← CROSSCUTTING FRACTURE COATED BY CALCITE								
239				40 CH / 35 Q	← CALCITE COATED FRACTURE 238.6-239.0 ANHEDRAL, COARSE INTERLOCKING GRAINS OF QTZ, PLAG & KSPAR (PEGMATITE) WITH GRADATIONAL CONTACTS TO UNDERLYING & OVERLYING GNEISS. ← CROSSCUTTING QTZ FILLED FRACTURE								
240	100	99	8		240.1-240.4 - QTZ - PLAG - KSPAR PEGMATITE.								
242				65 QPY / 40 / 40 Q / 40	← 241.2 m - FRACTURE PARTIALLY COATED BY QTZ & PYRITE. ← FOLIATION WELL DEFINED BY THE PLATY ALLIGNMENT OF BIOT. GRAINS ← FOLIATION PARALLEL QTZ FILLED FRACTURE. ← FOLIATION WELL DEFINED BY THE ALLIGNMENT OF FINE BIOT.				MODERATE				
	100	90	14	50 CH	← CROSS CUTTING FRACTURE PARTIALLY COATED BY CALCITE								
245				60 CH	← FOLIATION PARALLEL, CALCITE COATED FRACTURE								
	100	100	9	30° / 85 Q	← QTZ FILLED FRACTURE 247.1 - 247.8 m PEGMATITIC INTERVAL: INTERLOCKING ANHEDRAL GRAINS OF COARSE QTZ, PLAG, & KSPAR.								
248	100	97	6	30 / 45° Q / 30	← FOLIATION WELL DEFINED BY THE PLATY ALLIGNMENT OF FINESIZE BIOT. GRAINS. ← CROSSCUTTING FRACTURE COATED BY QTZ. ← FOLIATION WELL DEFINED								
250													



DDH No. MR-80

PAGE 12 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GRAPHITE	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
250												
					← FOLIATION WELL DEFINED BY THE ALLIGNMENT OF FINE SIZE BIOT.							
251												
	100	93	10		← FOLIATION PARALLEL FRACTURE FILLED BY PYRITE ← CROSSCUTTING FRACTURE COATED BY RED HEMATITE ← PYRITE IN MATRIX. ← CROSSCUTTING CALCITE FILLED FRACTURE 253.5 - 254.9 m PEGMATITE CHARACTERIZED BY A TEXTURE OF COARSE ANHEDRAL INTERLOCKING QTZ, PLAG & K FSPAR GRAINS.				MODERATE	TRACE		
254												
255					← FOLIATION WELL DEFINED ← CROSSCUTTING CALCITE FILLED FRACTURE							
	100	100	9		← CLAY COATED FRACTURE PYRITE NOTED							
					257 m END OF HOLE							

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-80

PAGE 1 OF 1

COORDINATE X: 318+00N

COORDINATE Y: 218+80E

ELEVATION Z:

INCLINATION: -60°

AZIMUTH: 267°

BOREHOLE Ø: NQ

CASING DEPTH: 27m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: FEBRUARY 11-14 1990

TOTAL DEPTH: 257.0m

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

INSTRUMENT: MOUNT SOPRIS AL-5-8-79

PROBE GAMMA: AL-6-14 WITH: AL-4-7

PROBE NEUTRON:

DATE of LOGGING: FEBRUARY 14 1990

TIME of LOGGING: 09:20 TO 11:20 AM AM 3 HOURS TESTING OVERALL

TOTAL DEPTH: 259.40m

OPERATOR: R. AVERY

REMARKS:

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
259.40	10 CPS/DIV	5m/min	1:100
0.0			

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR81

AREA: May belle River	DISPOSITION: 6884100001 PROJECT NO.: 71-42	PAGE 1 OF 12 DRILLED BY: Midwest	
COORDINATES: L154 N 178+50E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: (yes) no DEPTH: 36.5	COMMENCED: Feb. 10/90 COMPLETED: Feb 15/90	
TOTAL DEPTH (m): 233 ELEVATION (m A.S.L.): 315 (est) DIP/AZIMUTH: -60°/229°	GEOLOGY BY: B. Lacey CORE STORED AT: Jas Lake	CORE SIZE: NQ CASING SIZE: NW	
	DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 12	DOWN-HOLE PULSE-EM yes no	

DIP TEST: Pajari ACID ACID

TEST AT(m)	233	27 m	150 m	
DIP	-57°	-61°	-61°	
AZIMUTH	238°			

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 36.6m	Overburden
ATHABASCA GROUP — Manitou Falls Fm.	36.6 - 148.3 m	Moderately to strongly bleached sandstone, maroon hematite as liesegang rings, locally moderately to strongly fractured, zones of moderate silicification, trace pyrite and euhedral quartz.
ATHABASCA GROUP — Fair Point Fm.	148.3 - 173.9m	Weakly to moderately bleached coarse grained sandstone, weakly fractured, weak to moderate maroon hematite, weak red hematite
BASEMENT	173.9-233m	Weakly to moderately altered, garnetiferous-quartz-feldspar-pegmatoid / protomylonite, mainly massive coarse grained texture with zones of protomylonitic to mylonitic texture; 173.9-180.5 - Paleoweathering "Red" zone, strongly reworked. 190.7 - 199.3 - Protomylonite to mylonite texture 218 - 230 m - Trace disseminated graphite
	E.O.H. @ 233m	

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

UTM Coords
528250E
6446800N

Down hole & Peaks

Sample List

MR81-1 164 - 173.9m FP
-2 154 - 164 m FP
-3 148.3 - 154m FP
-4 154 - 159 FP
-5 148.3 - 159 FP
-6 138 - 148.3 MF
-7 143 - 148.3 MF
-8 138 - 143 MF
-9 128 - 138 MF
-10 118 - 128 MF
MR81-11 108 - 118 m MF
-12 98 - 108 m MF
-13 88 - 98 m MF
-14 78 - 88 m MF
-15 68 - 78 m MF
-16 58 - 68 m MF
-17 48 - 58 m MF
-18 366 - 48 m MF
-19 230.2 - 230.3m BSMT

DDH No. MR81

PAGE 4 OF 5

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

DDH No. MR81

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					OVERBURDEN									
30														
35					Casing to 36.6 m (120 feet)									
	100	97	5		36.6–148.3 MANITOU FALLS FM	qtz py								
				≠40°	Moderately to strongly bleached sandstone, weak maroon hematite as liesegang rings, locally moderately to strongly fractured, zones of moderate silicification, clay intraclasts common, weak bitumen in matrix and common along fractures. trace pyrite common along fractures.	qtz py								
40	100	91	7	XXXXX		py								
	100	100	6	≠30° ≠30°		py								MR81-18
				≠35°										
45	94	94	2		← py in sst matrix	py	Weak	Moderate				Weak		
	100	100	0	65°	← py in sst matrix	py								MR81-17
50														

DDH No. MR81

PAGE 4 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
50	100	100	0		51.2-113m strongly bleached, moderately to strongly fractured, locally silicified.
	100	98	6		
55	100	78	11		
					59.1-59.2m - crush breccia with minor sandy, clay gouge, trace pyrite.
60	100	85	13		silty gouge, fractured, tr. py
	100	94	5		minor pyrite veinlet along fracture
65	100	91	8		minor py along fracture
	100	87	7		py + euhedral qtz
70					69-108m - blocky/ fractured sandstone
	100	58	28		
75					

BLEACHING: Strong

MAROON HEM.: Weak

RED HEM.:

GREEN ALT.:

SILICIFIED: Weak

BITUMEN: N/K

GAMMA LOG (CPS/DIV) 10

SAM #

MR81-17

MR81-16

MR81-15

DDH No. MR81

PAGE 1 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
75	100	88	13		77-78.9 mod. fractured. tr. py + bitumen
	100	94	14		
80	100	82	19		clay intraclast qtz ~81.5 - 102m Moderately to strongly fractured
85	96	38	>30		clay intraclasts.
	100	76	28		clay intraclast. trace light green clay along some fractures.
90	100	33	>30		
	100	36	>30		trace light green clay gouge
95	97	67	>30		sooty pyrite minor soft, light green clay gouge.
100	100	67	18+		

BLEACHING: Strong

MAROON HEM.: WK

RED HEM.:

GREEN ALT.:

SILICIFIED: WK

BITUMEN: WK

GAMMA LOG (CPS/DIV) 0

SAM #: MR81-15, MR81-14, MR81-13, MR81-12

DDH No. MR81

PAGE / OF

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
100	94	76	14		
				py	
105	91	42	>30		
	100	71	18		
110				XXXXX	
	100	91	10		
	100	85	14		
115				±30°	
				±30°	
				±30°	
	100	100	4		
				±20°	118.8 - 148.3 weakly bleached sandstone
120	100	97	6		
				±15°	
	100	85	19		122.9 - 124.5 series of sub H fractures.
125					

qtz py

qtz py

qtz py

DDH No. MR81

PAGE [illegible] OF [illegible]

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV)	SAM #
125	100	85	18			Mod	3						MR81-10
				≠25°									
				≠30° 35°									
130	100	91	11	≠0°									
				≠40°									
	100	98	5	≠30°		py							MR81-9
						py							
135	100	94	8	≠20°		py							
	100	98	4	≠45°	← py trace along fracture	py							
				40°	← trace py along fracture	py							
					← 5cm light green siltstone bed								
140	100	94	6	65°		py							MR81-8
				≠25°		py							
				≠50°									
145	100?	94	8+		143 ± 146m 1 metre of core lost due to drilling problems.								MR81-6
	100	86	14										MR81-7
					← 5cm maroon hematite siltstone								
				≠0°	148.3-173.9m FAIR POINT FM weakly to moderately bleached coarse grained sandstone, weakly fractured			Wk					MR81-5
150													MR81-3

Weak Moderate

Weak (along fractures)

DDH No. MR81

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV)	SAM #
150	100	85	12		weak to moderate maroon hematite, weak red hematite								MR81-3
	100	96	5	25°	tr. dark green clays in slt matrix								MR81-5
155	100	82	>30		156.9-157.6m strongly friable sandstone			Weak					MR81-4
				30°	157.8-158.1 - dark green siltstone bed 10cm friable sst - increase in clay matrix content.								
160	100	98	8	25°									MR81-2
	100	94	8	60° 25°		Weak		Mod.			Weak (along fractures)		
165	100	96	6	5°	rehealed fracture with maroon hematite along it.								
				15°	trace dravite along fracture.	dr							
	100	97	5	65°									
170	100	97	3		trace dark green clays in matrix		Wk	Wk					MR81-1
					172.6-173m conglomeratic sst with chloritized basement clasts.								
					Unconformity at 173.9m								
175	100	85	9	0°	Sharp sst/BSMT Contact.		Str.						

DDH No. MR81

PAGE 2 OF ..

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
175	100	94	9.	f0°	173.9 - 233m Weakly to moderately altered, garnetiferous-quartz-feldspar-pegmatoid/ protomylonite, massive coarse grained with minor protomylonite to mylonite sections
					173.9 - 180.5m - Paleoweathering "Red Zone" strongly reworked
180	100	100	6.	+	179.2 - 182m - veinlets of soft, clear light green mineral ?
	100	100	2.	+ + 30°	weakly foliated.
185				30°	
	100	98	4.		
150	100	100	3.		
					190.7 ~ 199.3m - Protomylonitic texture, locally mylonitic texture
	100	97	4.		
				15°	
195	100	84	16.	38°	
	100	100	6.	30°	well developed mylonite.
200					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	WHITE ALT.	BITUMEN
	Strong		Wk (dk green)		
	Weak		Mod Hgreen		Weak veining fractures)

GAMMA LOG (CPS/DIV)

SAM #

DDH No. MR81

PAGE 10 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
200	100	94	9		199.3 - 233m Generally massive coarse grained gt-qtz-fsp.-rock (pegmatoid, granitoid).
				↗30°	200.4 - 200.5m 10cm Crush breccia with associated veinlets of red/brown hematite.
205	100	100	4		← trace disseminated graphite.
	100	98	4		← quartz veinlet (1cm wide)
					207.5 - 233m Weakly altered to Fresh rock.
				∓15°	
210	100	98	6	30° ∓	← carbonate veinlet along fracture CO_3 ←
					212 - 214.1 Foliated Gneiss
	100	97	2	↗25°	← trace disseminated graphite.
215				∓30°	
	100	93	16		
					218 - 230m trace disseminated graphite.
				∓60°	← minor light green clays along fracture
220	100	90	18		
					← fresh garnet
	100	100	10		
225					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	WHITE ALT	BITUMEN
			Mod		
	WK				Wk (along fractures)

DDH No. MR81

PAGE 11 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	WHITE ALT	BITUMEN	GAMMA LOG (CPS/DIV) 10	SAM #
225	100	97	20		~225-833m trace disseminated pyrite								
	100	88	20+	XXX	228.3-228.5m - Quartz vein, fractured.								
230	100	88	18	30°	230 - 233 - qtz-fsp-gneiss with lenses of sdfp mineral (~2½)				n/k		n/k		
					E.O.H. @ 233m								
235													

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR-81

COORDINATE X:

COORDINATE Y:

ELEVATION Z:

INCLINATION: -60°

AZIMUTH: 229°

BOREHOLE Ø: NQ

CASING DEPTH: 120'

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: FEBRUARY 15 - 11 1990

TOTAL DEPTH: 233m

LOGGED THROUGH :
OPEN HOLE | PLASTIC PIPE | RODS

INSTRUMENT: MOUNT SOPRIS 2500 -AI-5-8-475

PROBE GAMMA: AI-6-14 (G-375) WINCH -AL-4-7-

PROBE NEUTRON:

DATE of LOGGING: FEBRUARY 15 1990

TIME of LOGGING: 16:00 TO 1745 HRS

TOTAL DEPTH: 234.20

OPERATOR: R. AVERY

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
233	10 CPS/DIV	5m/min	1:100
0.65			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

REMARKS: WINCH FAILURE AT 167.2 m DEPTH

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR-82

AREA: MAYBELLE RIVER	DISPOSITION: 6886050004 PROJECT NO.: 71-42	PAGE 1 OF 12
COORDINATES: 322+00N, 218+72E 6450850N, 520250E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: yes no DEPTH: 33m	DRILLED BY: MIDWEST DRILLING COMMENCED: FEBRUARY 15 1990 COMPLETED: FEBRUARY 19 1990
TOTAL DEPTH (m): 260m ELEVATION (m A.S.L.): 305 DIP/AZIMUTH: -60/267	GEOLOGY BY: R. AVERY 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 ACID ACID

TEST AT(m)	2585	150	35m														
DIP	-64	-65°	-63°														
AZIMUTH	267°																

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 33.5 m	SANDY DIAMICTON, OUTWASH SANDS AND GRAVELS
MANITOU FALLS FM. - ATHABASCA GP.	33.5 - 151.3 m	MODERATELY BLEACHED & SILICIFIED; WEAK WITH LOCALIZED PATCHES OF MODERATE MAROON-RED HEMATITE; MASSIVE TO PLANAR CROSSBEDDED, FINE TO COARSE GRAINED, CLAY-INTRACLASTIC SANDSTONE CONTAINING OCCASSIONAL SILTSTONE INTERBEDS; HEMATITE LIESEGANG RINGS COMMON THROUGHOUT THE INTERVAL.
FAIR POINT FM. - ATHABASCA GP.	151.3 - 197.8m	POORLY BEDDED TO MASSIVE COARSE GRAINED SANDSTONE CONTAINING OCCASSIONAL MATRIX SUPPORTED PEBBLE BANDS; MODERATELY TO STRONGLY BLEACHED WITH INTERVALS OF STRONG MAROON HEMATITE.
BASEMENT PALEOWEATHERING PROFILE	197.8 - 217.4 m	197.8 UNCONFORMITY; SHARP FRACTURED CONTACT. RED ZONE OF PALEOWEATHERING PROFILE; MODERATELY BLEACHED; MODERATE RED-MAROON HEMATITE; WEAKLY CHLORITIZED; POORLY FOLIATED; MEDIUM GRAINED PLAGIOCLASE GNEISS.
PY-BIOT-GRA-QTZ PLAG-GNEISS	217.4 - 260.0m	STRONGLY CHLORITIZED, WELL FOLIATED; FINE TO MEDIUM GRAINED, PYRITE BEARING, P.B.G.T. - GRAPHITE - QTZ - PLAG - GNEISS. (GRA. CONTENT VARIABLE, 5-20%); UNIT CONTAINS RANDOM INTERVALS OF COARSE QTZ-PLAG-KSPAR-CHLORITE (BIOT) - PEGMATITE, 70-130 CM THICK.
		260 m END OF HOLE

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

GEOCHEMISTRY

MR-82-1	197.8-193m	COMPOSITE SST SAMPLE	MR-82-12	131-121 m	COMPOSITE SST SAMPLE
2	193-186	"	13	121-111	"
3	197.8-188	"	14	111-101	"
4	188-178	"	15	101-91	"
5	178-168	"	16	91-81	"
6	168-158	"	17	81-71	"
7	158-151.3	"	18	71-61	"
8	151.3-146	"	19	61-51	"
9	146-141	"	20	51-41	"
10	151.3-141	"	21	41-33.5	"
11	141-131	"			

DDH No. MR-82

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m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
0					0 – 33.5 m OVERBURDEN: SANDY DIAMICTON, OUTWASH SANDS & GRAVELS						
5											
10											
15											
20											
25											

DDH No. MR-82

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
25												
30												
					Casing To 33.5m							
	100	90	13	70 / 60 BLt / 60	33.5 - 151.3m MANITOU FALLS FM - ATHABASCA GROUP MODERATELY BLEACHED & SILICIFIED, WEAK WITH LOCALIZED PATCHES OF MODERATE MAROON & RED HEMATITE, MASSIVE TO PLANAR CROSSBEDDED, FINE TO COARSE GRAINED CLAY-INTRACLASTIC SANDSTONE CONTAINING OCCASSIONAL SILTSTONE INTERBEDS. HEMATITIC LISEGANG RINGS COMMON THROUGHOUT THE [illegible] 33.6 - 34.7 MAROON HEMATITE LISEGANG RINGS WELL DEFINED	MODERATE		MODERATE				MR-82 21
35	100	97	9	20 Py/BLt	CROSSCUTTING FRACTURE COATED BY BITUMINOUS ACCESSORY PYRITE							
38				60 Cy / 60 / 85 Py	BEDDING PARALLEL CLAY COATED FRACTURE PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE PYRITE COATED FRACTURE							
40	100	98	12	75°	PLANAR FORESETS DEFINED BY GRAIN SIZE VARIATIONS IN BEDDING 40.3 - 43.0m - RED & MAROON HEMATITE LISEGANG RINGS WELL DEFINED							
41	100	100	4	70°	MASSIVE (10cm THICK) PLANAR CROSS BEDDING WELL DEFINED			WEAK				MR-82 20
44				70	UNFILLED FRACTURE							
45	100	97	13	70 Cy / Cy	CLAY COATED FRACTURES SEDIMENTARY SCOUR & FILL STRUCTURES WELL DEFINED 45.7 - 46.7 - WELL DEVELOPED RED HEMATITE LISEGANG RINGS		WEAK		MODERATE			
47				70	EROSIONAL ACTIVATION SURFACE WELL DEFINED							
	100	100	8	70	CLAY INTRACLAST PLANAR CROSSBEDDING WELL DEFINED CLAY INTRACLAST		MODERATE		WEAK			
50												

DDH No.: MR-82

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
50				50°	← BEDDING PARALLEL UNFILLED FRACTURE							
					← PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
	100	97	10	70 CY	← BEDDING PARALLEL CLAY COATED FRACTURE							MR-82 15
53				30 CY	← CROSSCUTTING CLAY COATED FRACTURE							
				70 CY	← BEDDING PARALLEL CLAY FILLED FRACTURE							
				20	← UNFILLED FRACTURE							
				70 BIT	← BEDDING PARALLEL BITUMEN COATED FRACTURE							
					54.1 - 57.4 m MAROON HEMATITE LISEGANG RINGS WELL DEFINED							
55	100	87	18		← CLAY INTRACLASTS							
56				70 CY	← CLAY COATED FRACTURE							
					← CLAY INTRACLAST							
				70	← UNFILLED CROSSCUTTING FRACTURE							
				70 Q	← SUBPARALLEL QTZ FILLED FRACTURE							
	100	90	13	45	← CROSSCUTTING FRACTURE, UNFILLED							
59				50 CY	← BEDDING PARALLEL CLAY FILLED FRACTURES							
				70 CY								
60					← CLAY FILLED SOLUTION SEAM							
	100	88	17		60.3 - 68m WELL DEVELOPED RED (MAROON) HEMATITE LISEGANG RINGS							MR-82 16
62				60 CY	← CLAY COATED FRACTURE							
				60	← UNFILLED FRACTURE							
				65	← PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE.							
	100	94	17		← CLAY INTRACLAST							
					← CLAY INTRACLAST							
65					← CLAY FILLED SOLUTION SEAM.							
				60	← UNFILLED FRACTURE							
					← CLAY INTRACLAST							
				70 BIT	← BEDDING PARALLEL BITUMEN COATED FRACTURE							
	100	97	14	CY	← CLAY COATED FRACTURE.							
				50	← BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
68				60	← BEDDING PARALLEL UNFILLED FRACTURE							
				60 CY	← CLAY FILLED FRACTURE							
	100	92	16		69.5 - 71.4 m WELL DEVELOPED (MAROON) HEMATITE LISEGANG RINGS.							MR-82 17
70				60 CY	← CLAY INTRACLAST							
				70 CY	← BEDDING PARALLEL CLAY FILLED FRACTURE							
71					← CLAY INTRACLAST							
	100	87	21	70	← HEMATITIC CLAY COATED FRACTURE							
				30 CY	← PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
				BIT 60	73.6 - 74.1 m INCOHESIVE, STRONGLY FRACTURED INTERVAL							
74				60	← CROSSCUTTING FRACTURE COATED BY BITUMEN & PYRITE.							
75				BIT 60 CY	← BITUMEN/CLAY COATED FRACTURE							

SILICIFICATION: MODERATE
BLEACHING: STRONG
MAROON HEM.: WEAK, MODERATE
RED HEM.: MODERATE, WEAK
GREEN ALT.: WEAK

DDH No. MR-82

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
75	98	80	30	60 Blt	75.5-75.9 STRONGLY FRACTURED, INCOHERENT INTERVAL; BITUMEN COATED FRACTURE							
77	100	85	18	60; Hem	UNFILLED FRACTURE; IRREGULAR SOLUTION SEAM FILLED BY RED HEMATITE							
80	100	74	24	60; 65°; 15°; 65; 60	PLANAR CROSS BEDDING WELL DEFINED BY GRAINSIZE VARIATIONS IN SUCCESSIVE BEDS; BEDDING PARALLEL UNFILLED FRACTURE; CLAY FILLED FRACTURE; CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAINSIZE		STRONG	WEAK	WEAK			MR-82 16
83	100	95	11	60 Blt; 55° Cy; 65; 65 Hem	BEDDING PARALLEL BITUMEN COATED FRACTURE; CLAY FILLED SOLUTION SEAM CROSSCUTTING BEDDING; PLANAR CROSSBEDDING WELL DEFINED; BEDDING PARALLEL FRACTURE PARTIALLY COATED BY RED HEMATITE							
86	100	83	19	65; 60° Blt; 55°; 60 Cy	CROSSCUTTING BITUMEN FILLED FRACTURE; BEDDING PARALLEL FRACTURE COATED BY SOOTY PYRITE; BEDDING WELL DEFINED; BEDDING PARALLEL CLAY COATED FRACTURE							
89	100	97	10	65; 50°; 70 Cy; 75 Cy; 65	CLAY INTRACLAST; SILTSTONE BED AT 65° TO C.A., INDICATES BEDDING; CLAY INTRACLAST; PLANAR FORESETS WELL DEFINED; BEDDING PARALLEL, CLAY COATED FRACTURES; PLANAR CROSSBEDDING.	MODERATE			MODERATE			MR-82 15
92	100	99	9	70; 65; 60	PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAINSIZE BETWEEN SUCCESSIVE BEDS.; SILTSTONE BED AT 60° TO C.A.; CLAY FILLED SOLUTION SEAM; UNFILLED VUG; CLAY FILLED SOLUTION SEAM; CLAY INTRACLAST.		MODERATE					
95	100	83	22	70; 30°; 45; 65; 60 Blt	CROSSCUTTING FRACTURE, UNFILLED; 94.5-97m WELL DEVELOPED MAROON & RED HEMATITE LISEGANG RINGS; UNFILLED FRACTURES; PLANAR CROSS BEDDING WELL DEFINED; BEDDING PARALLEL BITUMEN COATED FRACTURE							
98	97	100	9	125	CROSSCUTTING, UNFILLED FRACTURE.; CLAY INTRACLAST.; CLAY FILLED SOLUTION SEAM.							
100												

DDH No. MR-B2

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SPECIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
100					99.8 - 102.5 WELL DEVELOPED RED HEMATITE LISEGANG RINGS.							
101												MR-B2 14
	100	95	13				MODERATE	WEAK	MODERATE			
				BCt 15°	CROSSCUTTING BITUMEN COATED FRACTURE							
				BCt 20	CROSSCUTTING BITUMEN & EUHEDRAL QTZ COATED FRACTURE							
104				40	BITUMEN COATED FRACTURE							
				10°	SUBPARALLEL, UNHEALED CROSSCUTTING FRACTURES							
105				BCt 10°	BITUMEN FILLED FRACTURE CROSSCUTTING BEDDING							
	97	82	22	BCt 0°	BITUMEN FILLED FRACTURE							
				BCt 15°	CROSSCUTTING FRACTURE COATED BY BITUMEN, EUHEDRAL QTZ & ACCESSORY PYRITE							
107					106.4 - 107.5m INCOHESIVE STRONGLY FRACTURED INTERVAL. WITH FRACTURE FACES COATED BY BITUMEN & EUHEDRAL QTZ.	MODERATE						
				60	PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
	100	75	>30	BCt 20°	CROSSCUTTING BITUMEN COATED FRACTURE							
				0°	CLAY INTRACLAST							
				BCt	BITUMEN COATED FRACTURE							
				30°	SUBPARALLEL, BITUMEN COATED FRACTURES							
110					5cm THICK CLAY GOUGE INCLINED AT 35° TO C.A.							
				60 Cy	BEDDING PARALLEL CLAY FILLED FRACTURE							
					110 - 128.0m WELL DEVELOPED RED & MAROON HEMATITE LISEGANG RINGS							
	100	93	13		CLAY INTRACLAST							MR-B2 13
					CLAY INTRACLAST							
113				60	PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
	100	98	9	70	BEDDING PARALLEL UNFILLED FRACTURE							
115					IRREGULAR CLAY FILLED SOLUTION SEAM							
116				60 Cy	BEDDING PARALLEL CLAY FILLED FRACTURE		WEAK		STRONG			
	100	93	9	60 Py BCt 70	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY SOOTY PYRITE & BITUMEN							
					PLANAR CROSSBEDDING WELL DEFINED							
				60	CLAY INTRACLAST							
119					UNFILLED FRACTURE							
120					CLAY & HEMATITE FILLED SOLUTION SEAM.							
					CLAY INTRACLAST							
	100	97	7		CLAY INTRACLAST							MR-B2 12
122					CLAY FILLED SOLUTION SEAM.							
				70	PLANAR CROSSBEDDING WELL DEFINED BY POORLY SORTED, COARSE GRAINED INTERVALS							
	100	100	8		CLAY-HEMATITE FILLED SOLUTION SEAM.		MODERATE		MODERATE			
				65 Cy	CLAY FILLED FRACTURE PARALLEL TO BEDDING							
125					CLAY FILLED SOLUTION SEAM							

DDH No. MR-82

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
125	100	96	11	65 / 20 / 65 / 45	UNFILLED FRACTURE; PLANAR CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS; CLAY COATED BEDDING PARALLEL FRACTURE; UNFILLED FRACTURE		MODERATE	MODERATE	MODERATE			
128	100	94	7	30 / 50°	CROSSCUTTING EUHEDRAL PYRITE & BITUMEN FILLED FRACTURE; PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE; SIDERITE NOTED IN MATRIX; 128.6 - 133.2m WELL DEVELOPED MAROON/RED HEMATITE LISEGANG RINGS							
130				45° / 65° Cy	CLAY INTRACLASTS; PLANAR CROSSBEDDING WELL DEFINED; BEDDING PARALLEL CLAY FILLED FRACTURE							
131	100	93	10	25° BIG / 55°	HEMATITE FILLED SOLUTION SEAM. CLAY INTRACLASTS; CROSSCUTTING BITUMEN FILLED FRACTURE; PLANAR CROSSBEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS; CROSSCUTTING BITUMEN COATED FRACTURE							MR-82 11
134				25 BLT / 60 BLT	BEDDING PARALLEL BITUMEN COATED FRACTURE; IRREGULAR, CLAY GOUGE							
135	100	85	25	60° / 55° BLT / 70°	BEDDING WELL DEFINED BY COARSE GRAINED INTERVALS; CROSSCUTTING BITUMEN COATED FRACTURE; UNFILLED FRACTURE							
137				70° BLT	BITUMEN COATED FRACTURE CROSSCUTTING BEDDING							
	100	82	17	70 BLT / 65°	SUBPARALLEL BITUMEN FILLED FRACTURES; BITUMEN FILLED FRACTURE							
140				60 / 40° / 40 BLT / 60 Cy	PLANAR FORESETS WELL DEFINED BY COARSE GRAINED BEDS; CROSSCUTTING BITUMEN COATED FRACTURE; CLAY COATED SOLUTION SEAM; BEDDING PARALLEL CLAY COATED FRACTURE							
	100	93	13	60 / 65 Cy / 40°	CLAY INTRACLASTS; PLANAR CROSSBEDDING WELL DEFINED; BEDDING PARALLEL CLAY FILLED FRACTURE; CLAY INTRACLASTS; UNFILLED CROSSCUTTING FRACTURE				WEAK			MR-82 9
143					143.0 - 146.1m - STRONGLY FRACTURED, INCOHESIVE INTERVAL							
145	90	34	29						WEAK			MR-82 10
146	100	92	14	65°	PLANAR CROSSBEDDING WELL DEFINED BY COARSE GRAINED INTERVALS							MR-82 8
149				15° BLT / 70 / 70°	CLAY INTRACLASTS; CLAY FILLED SOLUTION SEAMS. CROSSCUTTING, BITUMEN FILLED FRACTURE; CROSSCUTTING CLAY FILLED FRACTURE; BITUMEN FILLED FRACTURE							
150												

DDH No. MR-82

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
150							M	W	W			
	93	78	18	70 Cy 160	← BEDDING PARALLEL CLAY COATED FRACTURE. 150.6 - 151.3m INTERBEDDED SILTSTONE & COARSE SANDSTONE							MR-82 -7
					151.3 - 197.8m FAIR POINT FORMATION ATHABASCA GROUP MODERATELY TO STRONGLY BLEACHED WITH INTERVALS OF STRONG MAROON HEMATITE; POORLY BEDDED TO MASSIVE, COARSE GRAINED SANDSTONE CONTAINING OCCASSIONAL MATRIX SUPPORTED PEBBLE BANDS.							
152				155°	← SILTSTONE BED WITH EROSIONAL CONTACT AT 55° TO CA.		WEAK	STRONG	MODERATE			
				60 BLT	← BEDDING PARALLEL BITUMEN COATED FRACTURE							
	100	95	12	60°	← CLAY COATED FRACTURE							
155				50	← UNFILLED FRACTURE							
				55°	← UNFILLED FRACTURE							
				50 Cy	← FRACTURE PARTIALLY COATED BY CLAY							
	100	93	11	20 Cy	← FRACTURE PARTIALLY COATED BY CLAY	MODERATE	STRONG	WEAK	WEAK			
158				60	← UNFILLED FRACTURE							MR 82 6
				30° BLT	← BITUMEN COATED FRACTURE							
160	100	73	19	60 BLT	← FRACTURE PARTIALLY COATED BY BITUMEN							
161				60 BLT	← FRACTURE PARTIALLY COATED BY BITUMEN							
				40	← UNFILLED FRACTURE							
	100	73	14	60 Cy	← FRACTURE PARTIALLY FILLED BY CLAY		MODERATE	WEAK	MODERATE			
				[illegible]	← UNFILLED FRACTURE							
164												
165				50	← UNFILLED FRACTURE							
				60 BLT	← BEDDING PARALLEL FRACTURE PARTIALLY COATED BY BITUMEN.							
	100	88	18	55	← UNFILLED FRACTURE							
				Cy 20	← CROSSCUTTING FRACTURE PARTIALLY COATED BY CLAY							
167				60° BLT	← FRACTURE PARTIALLY COATED BY BITUMEN							
				20	← UNFILLED, CROSSCUTTING FRACTURE							
				50 Cy	← FRACTURE PARTIALLY COATED BY CLAY							MR-82 5
	100	80	19									
				60 Cy	← CLAY COATED FRACTURE							
					← PEBBLE CLASTS (MATRIX SUPPORTED)							
170				65	← UNFILLED FRACTURE							
				65 BLT	← BEDDING PARALLEL OR FRACTURE PARTIALLY COATED BY BITUMEN.							
	100	97	7		← RED HEMATITE FILLED SOLUTION SEAM.							
				65 Cy	← CLAY COATED FRACTURE							
173				50 Cy	← CLAY COATED FRACTURE							
					← FLOATING PEBBLE CLASTS							
	100	93	16		← MATRIX SUPPORTED PEBBLE BAND; ANGULAR SHATTERED BASEMENT CLASTS PRESENT							
175												

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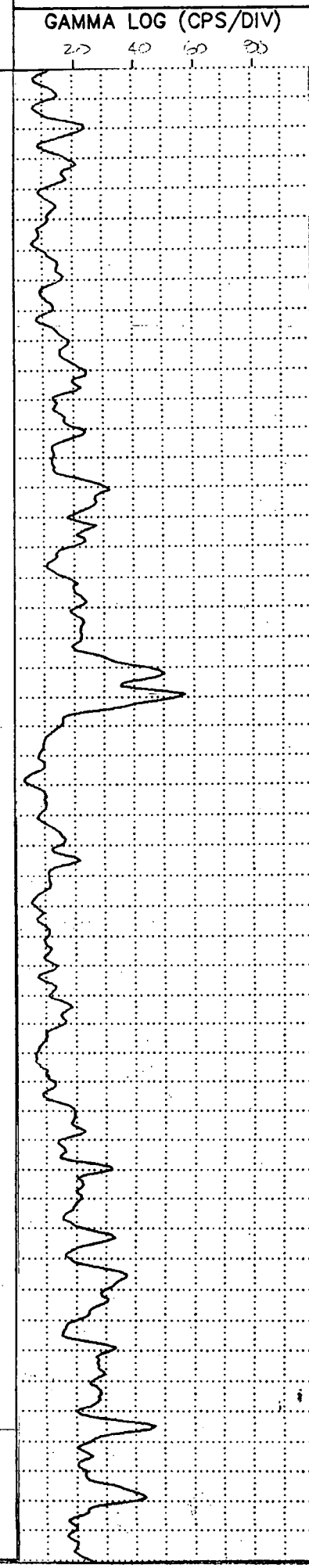
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SAM #
175				50° CY	CLAY COATED FRACTURE		MODERATE				
176					MATRIX SUPPORTED PEBBLE BAND CONTAINING STRAINED OR FRACTURED ?? PEBBLES AS WELL AS CLASTS INDICATIVE OF BASEMENT LITHOLOGIES.						
	100	99	7	55°	UNFILLED FRACTURE				WEAK		MR-82 4
179					179.5-179.7m MATRIX SUPPORTED PEBBLE BAND CONTAINING SUBROUNDED TO ANGULAR GRANULES & PEBBLES OF LARGELY QTZ PROVENANCE WITH A LESSER NUMBER OF CLASTS INDICATIVE OF BASEMENT LITHOLOGIES.						
180				60 CY BLT	CLAY, BITUMEN COATED FRACTURE						
	100	90	14	80 CY	CLAY FILLED FRACTURE		WEAK	MODERATE	MODERATE		
				20	BITUMEN COATED, CROSSCUTTING? FRACTURE						
					3cm THICK CLAY GOUGE						
182				50 70	RED HEMATITE COATED FRACTURE						
				70 CY	HEMATIZED SILTSTONE SAND AT 70° TO C.A.						
					BEDDING PARALLEL CLAY COATED FRACTURE						
	100	93	8	60 BLT	BITUMEN COATED, BEDDING PARALLEL? FRACTURE						
					PEBBLE SAND (MATRIX SUPPORTED)						
					CLAY FILLED SOLUTION SEAM						
185				20 BLT	BITUMEN COATED FRACTURES						
				0°	185.5 - 186.2m - STRONGLY FRACTURED INCOHESIVE INTERVAL WITH NUMEROUS BITUMEN COATED FRACTURE FACES						
	100	79	>30	70°	186.4 - 187.0m SUCCESSIONS OF THIN CLASTIC MATRIX SUPPORTED PEBBLE BANDS 1 TO 3cm THICK DEMONSTRATING WELL DEFINED PLANAR CROSSBEDDING. CLAST SIZES RANGE FROM V. COARSE SAND TO QTZ PEBBLES 1cm IN DIAM.				STRONG		
188				60	UNFILLED FRACTURE						
				70 CY	CLAY COATED FRACTURE						MR-82 2
				30° BLT	BITUMEN COATED FRACTURE						
190	100	100	8					WEAK	WEAK		
					MATRIX SUPPORTED PEBBLE BAND CONTAINING FRACTURED SUBROUNDED OR PEBBLES						
191				75	PLANAR CROSSBEDDING FOOTLY DEFINED BY VARIATIONS IN GRAINSIZE FROM BED TO BED.						
				60 BLT	BEDDING PARALLEL BITUMEN COATED FRACTURE						MR-82 3
	97	95	12				MODERATE				
				50°	BEDDING PARALLEL BITUMEN COATED FRACTURE						MR-82
194				20 BLT	BITUMEN COATED CROSSCUTTING FRACTURE						
195					194.0-197.4 m - FINE GRAINED, WELL SORTED, MASSIVE INTERVAL						
	100	97	12	40 BLT	CROSSCUTTING BITUMEN FILLED FRACTURE			MODERATE			
				65 CY	PARTIALLY CLAY COATED FRACTURE						
197				55° BLT	BITUMEN COATED FRACTURE						
					UNCONFORMITY 197.3m SHARP, FRACTURED CONTACT AT 45° TO C.A.						
	100	100	10		MODERATELY BLEACHED; MODERATE - REDDISH MAROON HEMATITE; WEAKLY CHLORITIZED; POORLY FOLIATED, MEDIUM GRAINED, PLAGIOCLASE GNEISS; 197.8-217.4m RED ZONE IS PALEOWEATHERING PROFILE.		WEAK	MODERATE	STRONG		
				BLT 35°	BITUMEN COATED FRACTURE						
200					FOLIATION WELL DEFINED BY HEMATITE ALTERED MAFIC?						

GAMMA LOG (CPS/DIV)



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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	GRAPHITE	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	DARK CR. ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
202				60	FOLIATION POORLY DEFINED BY THE ALLIGNMENT OF STRONGLY HEMATITE ALTERED MAFICS.		MODERATE	MODERATE	MODERATE	WEAK			
	100	98	9	45°	UNFILLED FRACTURE								
203				30° BLK	FRACTURE PARTIALLY COATED BY BITUMEN								
				60	UNFILLED FRACTURE								
				165	BANDING WEAKLY DEFINED ON A GROSS CM SCALE BY VARIATIONS IN ALTERATION. eg. SERICITE ALTERED PLAG BANDS LAMINATED BETWEEN HEMATITE ALTERED MAFIC BANDS.								
205	98	100	6	65	UNFILLED FRACTURE								
206				60	FRACTURE PARTIALLY COATED BY CLAY								
				60 BLK	207.4-207.6m STRONGLY FRACTURED INTERVAL (COHESIVE) WITH FRACTURES FILLED BY BITUMEN.								
	100	93	11										
209				40 CY	FRACTURE PARTIALLY COATED BY CLAY								
210				45° BLK	FRACTURE PARTIALLY COATED BY BITUMEN		STRONG						
	100	100	5	35	210.8-212.7 MYLONITE WITH SHEAR IMPOSED FOLIATION WELL DEFINED BY THE ALLIGNMENT OF SHEARED QTZ & PLAG GRAINS			WEAK	WEAK				
212				20	FOLIATION WELL DEFINED BY THE ALLIGNMENT OF SHEARED QTZ & PLAG GRAINS								
	100	95	16	20 CY	FRACTURE PARTIALLY COATED BY CLAY.								
				50 BLK	BITUMEN COATED FRACTURE								
215				55 BLK	BITUMEN COATED FRACTURE								
					215.6-215.8m STRONGLY FRACTURE (COHESIVE) INTERVAL.								
	100	93	19	50 BK	FRACTURE PARTIALLY COATED BY BITUMEN								
218				55°	217.4-260.0 m - STRONGLY CHLORITIZED, WELL FOLIATED, FINE TO MEDIUM GRAINED PYRRHOTITE BEARING, BIOTITE GRAPHITE - QTZ - PLAG GNEISS; GRAPHITE CONTENT VARIABLE, 5-20 %.; UNIT CONTAINS RANDOM INTERVALS OF COARSE QTZ-PLAG; CHLORITE (BIOT) PEGMATITE 70-130cm THICK. (ANATECTIC GRANITOID)		MODERATE 5-10%			WEAK			
				40° BLK	CROSS CUTTING BITUMEN FILLED FRACTURES								
				50 BK									
	100	94	14	55	FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF STRONGLY CHLORITIZED MAFIC BANDS.					MODERATE	STRONG		
220					219.9-220.6 m PEGMATITE - CHARACTERIZED BY COARSE ANHEDRAL GRAINS OF SERICITIZED PLAG, QTZ & CHLORITIZED BIOT.								
221				50	WELL DEFINED FOLIATION.								
				40	FOLIATION WELL DEFINED BY DISCRETE LAYERS OF STRONGLY CHLORITIZED BIOT ??								
	100	98	8	100 CY	FOLIATION PARALLEL CLAY COATED FRACTURE								
				50 55 CY	GRAPHITE COATED, FOLIATION PARALLEL FRACTURE								
224					FOLIATION WELL DEFINED					WEAK	STRONG		
				30	MASSIVE PYRITE IN MATRIX.								
225					PYRITE COATED FRACTURE								

DDH No. MR-32

PAGE 11 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
225					
	100	85	15		FOLIATION WELL DEFINED BY SUBPARALLEL BANDS OF STRONGLY CHLORITIZED MAFICS (BIOT)
					FOLIATION PARALLEL FRACTURE COATED BY PYRITE
227					DENDRITIC PYRITE FILLED FRACTURES
					BEDDING PARALLEL GRAPHITE COATED FRACTURE
					FOLIATION WELL DEFINED
	100	93	15		
					DENDRITIC, CALCITE FILLED FRACTURES
					FOLIATION WELL DEFINED BY THE SUBPARALLEL ALLIGNMENT OF GRAPHITE RICH BANDS .5 TO 1.5 mm THICK.
230					
					FOLIATION WELL DEFINED BY STRONGLY CHLORITIZED BIOT. BANDS
	100	95	12		231.2 - 231.3 m - CRUSH BRECCIA CHARACTERIZED BY ANGULAR GNEISS FRAGMENTS WITHIN A FINEGRAINED PYRITE RICH MATRIX.
					WELL DEFINED FOLIATION
233					CROSSCUTTING UNFILLED FRACTURE
					BEDDING PARALLEL GRAPHITE COATED FRACTURE
					CROSSCUTTING UNFILLED FRACTURE
					FIRST APPEARANCE OF FRESH BIOTITE
					233.5 - 234.8 m. POORLY FOLIATED PLAG PHYRIC INTERVAL
235	100	97	9		DENDRITIC SERPENTINE FILLED FRACTURES CROSS CUTTING PYRITE FILLED FRACTURE
					FOLIATION WELL DEFINED BY STRONGLY CHLORITIZED BANDS OF BIOT.
236					
					WELL DEFINED FOLIATION.
	100	88	18		
					UNFILLED FRACTURE
					CALCITE FILLED FRACTURE
239					FOLIATION WELL DEFINED BY STRONGLY CHLORITIZED MAFIC BANDS
					BEDDING PARALLEL GRAPHITE COATED FRACTURE
240					CROSSCUTTING CALCITE FILLED FRACTURE
	100	97	13		FOLIATION WELL DEFINED
					CROSSCUTTING UNFILLED FRACTURE
242					CROSSCUTTING CALCITE COATED FRACTURE
					FOLIATION WELL DEFINED BY STRONGLY CHLORITIZED GRAPHITIC MAFIC BANDS
					FOLIATION PARALLEL FRACTURE PARTIALLY COATED BY GRAPHITE
	100	93	15		FOLIATION WELL DEFINED
					CROSSCUTTING UNFILLED FRACTURE
245					CROSSCUTTING CALCITE FILLED FRACTURE
					FOLIATION WELL DEFINED BY CHLORITIZED MAFIC BANDS.
					245.8 - 247.0 m PEGMATITIC INTERVAL WITH GRADATIONAL CONTACTS TO BORDERING GNEISS CHARACTERIZED BY AN INTERLOCKING TEXTURE OF COARSE GRAINED ANHEDRAL QTZ, PLAG & K-FSPAR
	100	93	15		

GRAPHITE: MODERATE 5-10% | STRONG 15-20% | MODERATE 5-10%

BLEACHING

MAROON HEM.

RED HEM.

GREEN ALT.: WEAK | STRONG

LIGHT GREEN ALT.

DARK GREEN ALT.: MODERATE 3-8% | STRONG 10-15% | MODERATE 3-8%

PYRITE: MODERATE

GAMMA LOG (CPS/DIV)

20 40 60 80

SAM #

DDH No. MR-32

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
250					← CROSSCUTTING CALCITE/CLAY COATED FRACTURE
					← CROSSCUTTING QTZ FILLED FRACTURE
251					← FOLIATION WELL DEFINED BY SEGREGATED QTZ-FSPR BANDS & CHLORITIZED MAFIC BANDS.
					← FOLIATION PARALLEL GRAPHITE COATED FRACTURE
					← CROSSCUTTING CLAY COATED FRACTURE
	100	80	25		← FOLIATION WELL DEFINED BY THE SUBPARALLEL ALIGNMENT OF STRONGLY CHLORITIZED MAFICS BANDS
					← GRAPHITE COATED FRACTURE
254					← FOLIATION WELL DEFINED
					← FOLIATION PARALLEL PYRITE FILLED FRACTURE
255					← FOLIATION WELL DEFINED
	100	90	19		← CROSSCUTTING PYRITE FILLED FRACTURE
					← BEDDING PARALLEL GRAPHITE COATED FRACTURE
					← BANDING WELL DEFINED BY DISCRETE QTZ-PLAG LAYERS LAMINATED BETWEEN CHLORITIZED MAFICS BANDS.
257					256.5 - 257.6 m PEGMATITIC INTERVAL CHARACTERIZED BY AN INTERLOCKING TEXTURE OF COARSE ANHEDRAL PLAG QTZ & KFSPAR GRAINS.
					← BANDING (GNEISSOSITY) WELL DEFINED BY DISCRETE QTZ-PLAG LAYERS LAMINATED BETWEEN CHLORITIZED MAFICS BANDS.
	100	90	16		← CROSSCUTTING UNFILLED FRACTURE.
					← CROSSCUTTING CALCITE FILLED FRACTURE
260					257.7 - 259.9 m GRAPHITIC BRECCIA (SHATTERED GNEISS FRAGMENTS WITHIN A GRAPHITIC MATRIX)
					260m END OF HOLE
263					
265					
266					
269					
270					
272					
275					

GRAPHITE: WEAK — MODERATE

BLEACHING

MAROON HEM.

RED HEM.

GREEN ALT.: STRONG

LIGHT GREEN ALT.: WEAK

PYRITE: WEAK — MODERATE 2-3%

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

SAM #

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-92

PAGE 1 OF 1

COORDINATE X: 322+00N

COORDINATE Y: 218+72E

ELEVATION Z: 305 m

INCLINATION: -60°

AZIMUTH: 267°

BOREHOLE Ø: NQ

CASING DEPTH: 108' (33m)

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: FEBRUARY 15-19-1990

TOTAL DEPTH: 260.0

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

INSTRUMENT: MOUNT SOPRIS 2900 - AI-5-37

PROBE GAMMA: AI-6-14 WINCH AI-4-3

PROBE NEUTRON:

DATE of LOGGING: FEBRUARY 19, 1990

TIME of LOGGING: 10:45 TO 12:55 HRS 2 3/4 HRS TEST

TOTAL DEPTH: 260.0 m

OPERATOR: R. TURLEY

REMARKS:

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
260.0	10 CPS/DIV	5 M/MIN	1:100
0.0			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR83

AREA: Maybelle River Alberta	DISPOSITION: 688804000/ PROJECT NO.: 7142	PAGE 1 OF 9
COORDINATES: Line 238 N 136+30 E	PLASTIC PIPE: yes no DEPTH: CASING REMOVED: yes no DEPTH: 21 m	DRILLED BY: Midwest COMMENCED: FEBRUARY 28 1990 COMPLETED: MARCH 3 1990
TOTAL DEPTH (m): 182.0m ELEVATION (m A.S.L.): 288 est. DIP/AZIMUTH: -90°/—	GEOLOGY BY: R. AVERY 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 ACID ACID

TEST AT(m)	180.5	101	21														
DIP	88°	88°	89°														
AZIMUTH	253°	—	—														

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 22.1 m	SANDY DIAMICTON, OUTWASH SANDS + GRAVELS
MANITOU FALLS FM. - ATHABASCA GP.	22.1 - 84.1 m	MODERATELY BLEACHED, WEAK RED [illegible] FINE TO MEDIUM GRAINED, MASSIVE TO [illegible] WITH HEMATITIC HALOES AND RARE HEMATITIC LAMINATIONS WITH CLAY FILLED SOLUTION CAVITIES, CLAY FILLED FRACTURES COMMON THROUGHOUT.
FAIR POINT FM. - ATHABASCA GP.	84.1 - 117.9 m	STRONGLY BLEACHED; MASSIVE; COARSE [illegible] SUBROUNDED CONGLOMERATIC PEBBLES - FLOATING IN MATRIX. - BITUMEN IN PYRITE FILLED FRACTURES AND [illegible] THROUGHOUT. — 117.9m UNCONFORMITY
GRANITIC MYLONITE	117.9 - 132.4 m	SHEARED, FRACTURED CORE ATTEMPTED CORE [illegible] MOD. [illegible] HEMATIZED FELDSPARS, PYRITE IN [illegible] PLAG(K-SPAR??) MYLONITE CONTAINING BANDS OF [illegible] PYROXENE.
MONZONITE	132.4 - 157.5 m	FRESH, UNALTERED, MEDIUM TO COARSE GRAINED, MASSIVE TO FOLIATED, PYROXENE-BEARING - PYRX-BIOT-QTZ-PLAG-KSPAR. MINOR DIKES [illegible] FOLIATED TO MYLONITIZED GRANODIORITE - UNIT REPRESENTS A TRANSITIONAL ZONE BETWEEN MYLONITIZED GRANITE & UNDEFORMED GRANODIORITE
GRANODIORITE	157.5 - 182.0 m	FRESH, UNALTERED, GREENISH-GREY, FINE TO MEDIUM GRAINED, WELL FOLIATED, GRANITIC BEARING - BIOT-PYRX-QTZ-PLAG-KSPAR-SYENODIORITE AS WELL AS SOME PORTIONS OF [illegible] PEGMATITE

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

UTM COORDS.
~~6450100N~~ 6450070N
~~518825E~~ 512550E

GEOCHEMISTRY

MR-83-1	117.9 - 108	COMPOSITE EST SAMPLE
2	117.9 - 113	"
3	113 - 108	"
4	108 98	"
5	98 - 88	"
6	88 - 84.1	"
7	84 - 76	"
8	74 - 64	"
9	64 - 54	"
10	54 - 44	"
11	46 - 34	"
12	34 - 22.1	"
22	128.4	PETROLOGY SAMPLE

DDH No. MR-83

PAGE 2 OF

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM	RED HEM.	GREEN ALT.			GAMMA LOG (CPS/DIV)	SAM #
0					0 - 22.1 m OVERBURDEN: SANDY DIAMICTON, OUTWASH SANDS ~GRAVELS									
5														
10														
15														
20														
23		100	78	5	22.1 - 84.1 MANITOU FALLS FORMATION ATHABASCA GROUP MODERATELY BLEACHED, WEAK RED & MAROON HEMATITE, FINE TO MEDIUM GRAINED, MASSIVE TO CROSSBEDDED, CLEAN, WELLSORTED CLAY INTRACLASTIC SANDSTONE; HEMATITIC LISEGANG RINGS, CLAY FILLED SOLUTION SEAMS, & HEMATITIC CLAY COATED FRACTURES ARE COMMON THROUGHOUT. SILTSTONE BANDS AT 90 ° TO C.A.		MOD.	MODERATE	WEAK	WEAK				MR-83 12
25		98	84	17										

SPOTY PYRITE IN MATRIX

DDH No. MR-83

PAGE 3 OF 3

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	CLAY	GAMMA LOG (CPS/DIV)	SAM #
25					25.2-25.8 - WEAK RED HEMATITE LISEGANG RINGS.								
26				85	PLANAR CROSSBEDS WELL DEFINED BY VARIATIONS IN GRAIN SIZE								
					IRREGULAR, CLAY FILLED SOLUTION SEAMS								
	95	97	12		27.2-28.6m RED-MAROON HEMATITE LISEGANG RINGS								
29				15° 0° 85	HEMATITIC CLAY FILLED, CROSSCUTTING FRACTURES								
30				19°	PLANAR CROSSBEDS WELL DEFINED BY VARIATIONS IN GRAIN SIZE IN SUCCESSIVE BEDS								
					CLAY FILLED SOLUTION SEAM								
	100	92	20		MINOR SIDERITE NOTED IN MATRIX								
					CLAY FILLED SOLUTION SEAM								
				10° Hem	CROSSCUTTING FRACTURE COATED BY RED HEMATITIC CLAY								
32				80	BEDDING PARALLEL, WHITE CLAY FILLED FRACTURE								
				15° Bit	PLANAR CROSSBEDDING, POORLY DEFINED								
					CROSSCUTTING BITUMEN FILLED FRACTURE								
					IRREGULAR CLAY FILLED SOLUTION SEAM								
				80 Py	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY SOOTY PYRITE.								
	100	98	13		SIDERITE NOTED IN MATRIX								MR-83 11
				80 75°	PLANAR CROSSBEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE								
35													
				80° Cy	BEDDING PARALLEL FRACTURE PARTIALLY COATED BY CLAY.								
					IRREGULAR CLAY FILLED SOLUTION SEAM.								
	100	84	22		CLAY INTRACLAST								
					SOOTY PYRITE NOTED IN MATRIX.								
				15° Cy	37.1-40.9m STRONGLY FRACTURED INTERVAL (INCOHESIVE WITH NUMEROUS FRACTURE FACES COATED BY RED HEMATITIC CLAY								
38				0° Cy									
				10° Cy									
40	100	80	28										
41				05 Hem	HEMATITIC CLAY FILLED FRACTURES								
				10° Cy	SIDERITE NOTED IN MATRIX								
	100	90	21	90°	SILTSTONE BAND ORIENTED AT 90° TO C.A.								
				10° Cy	42.9-43.8m STRONGLY FRACTURED, INCOHESIVE INTERVAL								
44				10°	UNFILLED, CROSSCUTTING FRACTURE								
				15° Py	CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE								MR-83 10
45				70 Cy	BEDDING PARALLEL CLAY FILLED FRACTURE								
					45.7-46.4m - INCOHESIVE FRACTURED INTERVAL								
	100	93	25	35 Py	CROSSCUTTING FRACTURES PARTIALLY FILLED BY SOOTY PYRITE								
				30° Py									
				85°	CLAY INTRACLAST								
47					SILTSTONE BAND ORIENTED AT 85° TO C.A.								
				80	CLAY INTRACLAST.								
					BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE								
				85°	SILTSTONE BED AT 85° TO CORE AXIS.								
	100	92	17		CLAY FILLED SOLUTION SEAM								
					49.2-49.8m WEAK, RED HEMATITE LISEGANG RINGS								
50													

MODERATE

MODERATE

WEAK

WEAK

MODERATE

DDH No. MR-83

PAGE OF

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
50				80°	PLANAR CROSS BEDS WELL DEFINED BY VARIATIONS IN GRAIN SIZE.							
				80 Cy	BEDDING PARALLEL CLAY FILLED FRACTURE							
				80 Py/Cy	BEDDING PARALLEL FRACTURE PARTIALLY FILLED BY CLAY & SOOTY PYRITE.							
				80	BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE							
	100	97	14	80°	SILTSTONE BED ORIENTED AT 80° TO CORE AXIS WITH EROSIONAL SURFACE AS UPPER CONTACT.							
					CLAY INTRACLAST.							
53				20 Cy Py	CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE & CLAY							
					CLAY INTRACLAST							
					IRREGULAR, CLAY FILLED SOLUTION SEAM							
				70	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE.							MR-83 9
	100	85	18	90	SILTSTONE BEDS ORIENTED AT 90° TO CORE AXIS.							
55												
56				0°	UNFILLED FRACTURE							
					CLAY INTRACLAST							
					IRREGULAR, CLAY FILLED SOLUTION SEAM							
				80	UNFILLED FRACTURE							
	100	94	17	60	PLANAR CROSSBEDDING WELL DEFINED.	MODERATE			WEAK			
				10° Cy	CROSSCUTTING FRACTURE COATED BY HEMATITIC CLAY							
59					IRREGULAR CLAY FILLED SOLUTION SEAM.							
60				10° 5°	UNFILLED FRACTURES							
	100	98	15	70	SILTSTONE BED ORIENTED AT 70° TO CORE AXIS							
62				70	PLANAR CROSSBEDS WELL DEFINED BY VARIATIONS IN GRAIN SIZE		MODERATE	WEAK				
				80								
	100	87	28	10°	CROSSCUTTING HEMATITIC COATED FRACTURE							
				10°	CROSSCUTTING FRACTURE COATED BY HEMATITIC CLAY							
				80°	CROSSCUTTING FRACTURE COATED BY RED HEMATITE							MR-83 8
				Hcvs	SILTSTONE BAND AT 80° TO CORE AXIS							
65					64.9-65.7m INCOHESIVE, FRACTURED INTERVAL							
					SOOTY PYRITE NOTED IN MATRIX.							
				90° Py	FRACTURE PARTIALLY COATED BY SOOTY PYRITE							
	100	84	27		SILTSTONE BED WITH IRREGULAR EROSIONAL CONTACTS							
					SOOTY PYRITE NOTED IN MATRIX.							
				90° Py	SOOTY PYRITE IN MATRIX							
					SOOTY PYRITE PARTIALLY COATING FRACTURE.							
					CLAY INTRACLAST							
68				70°	PLANAR CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE							
				75 Py	SOOTY PYRITE IN MATRIX							
					BEDDING PARALLEL FRACTURE PARTIALLY COATED BY SOOTY PYRITE							
				70	CLAY INTRACLAST.							
70	100	100	9		PLANAR FORESETS WELL DEFINED BY GRAIN SIZE VARIATIONS							
				75	UNFILLED FRACTURE				MODERATE			
71					IRREGULAR CLAY FILLED SOLUTION SEAM							
				85°	SILTSTONE BED AT 85° TO CORE AXIS.							
	100	97	12	80 Cy	CLAY INTRACLAST							
					BEDDING PARALLEL, CLAY FILLED FRACTURE							
74				70 Cy	CROSSCUTTING FRACTURE PARTIALLY COATED BY CLAY							
					SIDERITE NOTED IN MATRIX							MR-83 7
75					CLAY FILLED SOLUTION SEAMS							

DDH No. MR-83

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
75				85	CROSSBEDDING WELL DEFINED BY SUCCESSIVE VARIATIONS IN GRAIN SIZE							
	100	97	13	10°	UNFILLED FRACTURE IRREGULAR CLAY FILLED SOLUTION SEAM				MODERATE			
77				80 90° Cy	BEDDING PARALLEL CLAY COATED FRACTURE SILTSTONE BED WITH EROSIONAL CONTACTION UPPER SURFACE							
				30 Py	BEDDING PARALLEL CLAY COATED FRACTURE 2cm THICK CLAY GOUGE CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE							
	100	74	28		IRREGULAR, CLAY FILLED SOLUTION SEAM CROSSCUTTING FRACTURE PARTIALLY COATED BY SOOTY PYRITE 79.5 - 80.4m INCOHESIVE, FRACTURED INTERVAL							
80				15° Py	HEMATITIC CLAY COATED FRACTURE							
				0° 20	UNFILLED, CROSSCUTTING FRACTURE							
				0°	UNFILLED FRACTURE							
	100	90	17	5° Cy	SOOTY PYRITE NOTED IN MATRIX CROSSCUTTING, CLAY FILLED FRACTURE CLAY FILLED SOLUTION SEAM 82.1 - 82.8m - WEAK RED HEMATITE LISEGANG RINGS				WEAK			
83				85	BEDDING WELL DEFINED BY VARIATIONS IN GRAIN SIZE SOOTY PYRITE IN MATRIX. IRREGULAR EROSIONAL CONTACT	MODERATE						
					84.1 - 117.9m - FAIRPOINT FORMATION ATHABASCA GROUP CLAY GOUGE STRONGLY BLEACHED, MASSIVE, COARSE GRAINED POORLY SORTED SANDSTONE CONTAINING OCCASSIONAL FLOATING QTZ PEBBLES; BITUMEN & PYRITE FILLED FRACTURES ARE RELATIVELY COMMON THROUGHOUT.							MR-83 6
85	100	94	9									
86				5° Bit	BITUMEN FILLED FRACTURE SUBPARALLEL, BITUMEN FILLED FRACTURES				MODERATE			
				10 Bit 10 Bit	SOOTY PYRITE NOTED IN MATRIX							
	100	100	8	80 15° Bit	BITUMEN FILLED FRACTURE							
				90° Bit	BITUMEN FILLED FRACTURE SOOTY PYRITE IN MATRIX				MODERATE			MR-83 5
89												
90												
	100	97	6	50°	UNFILLED FRACTURE							
				85 30°	UNFILLED FRACTURE SILTSTONE BED AT 85° TO CORE AXIS							
92				0° Py	SOOTY PYRITE FILLED FRACTURE.							
	100	95	11	20 Py 20 Py	SUBPARALLEL FRACTURES - FILLED BY SOOTY PYRITE				WEAK			
95					FLOATING PEBBLE CLASTS							
				100 Bit 10	BITUMEN COATED FRACTURES							
	100	97	15	100 Bit 10 Bit								
98				0° Bit 10 Bit	BITUMEN FILLED FRACTURES		STRONG					MR-83 4
	100	100	6	80° Cy	FRACTURE PARTIALLY COATED BY CLAY							
100												

DDH No. MR-83

PAGE 6 OF 9

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
100				0° Bt	BITUMEN FILLED FRACTURE							
101				10° Cy	BITUMEN & HEMATITIC CLAY FILLED FRACTURE; PEBBLE CLASTS.							
				0° Bt Cy	BITUMEN & CLAY FILLED FRACTURE; PEBBLE CLASTS (MATRIX SUPPORTED)							
	100	95	11	10° Bt	BITUMEN FILLED FRACTURES							
104				80 Cy	CLAY COATED FRACTURE							
105	100	98	5		ISOLATED, FLOATING PEBBLES							
				0° Bt	BITUMEN FILLED FRACTURE							
107				80° 80°	UNFILLED FRACTURES							
	100	97	7	70° Cy	CLAY COATED FRACTURE	MODERATE	STRONG	WEAK	WEAK			MR-83 3
				80° Cy	FRACTURE PARTIALLY COATED BY CLAY							
110					ISOLATED FLOATING QTZ PEBBLES							
	100	100	5		QTZ & PEBBLE CLASTS INDICATIVE OF BASEMENT LITHOLOGIES PRESENT.							MR-83 1
113												MR-83 2
	100	97	9	150	114.9-115.2 MASSIVE SILTSTONE BED ORIENTED AT 90° TO C.A.							
115				80	UNFILLED FRACTURE							
116				85	PEBBLE CLAST; UNFILLED FRACTURE							
	100	97	12	80 Cy	CLAY COATED FRACTURE; ANOMALOUS RADIOACTIVITY AT U/C - 70 CPS; UNCONFORMITY 117.9 m, SHARP FRACTURE CONTACT AT 75° TO CORE AXIS.							
				40°	117.9-132.4 PALE GREEN & MOTTLED MAROON, MODERATELY HEMATIZED & CHLORITIZED?? FINE TO MEDIUM GRAINED PY BEARING-QTZ+PLAG-(KSPAR??) MYLONITE CONTAINING SANDS OF STRONGLY HEMATIZED PYROXENES?				STRONG			
119				30° 60	THIN UNFILLED FRACTURE; CROSS-CUTTING UNFILLED FRACTURE, PYRITE NOTED IN MATRIX. UNIT IS RELATED TO UNDERLYING UNTECTONIZED GRANITOID.							
120	100	99	10	85 Hcm	117.9-120.0 m - RED ZONE OF PALEOWEATHERING PROFILE.							
				50°	FOLIATION PARALLEL FRACTURE FILLED BY RED HEMATITE; FOLIATION DEFINED BY THE SUBPARALLEL ALLIGNMENT OF SHEARED QTZ & PLAG GRAINS				MODERATE	MODERATE		
122				15° Cy	CROSSCUTTING CLAY FILLED FRACTURES							
	100	97	13	55° Cy 35	FOLIATION DEFINED BY THE SHEARED ALLIGNMENT OF QTZ & PLAG GRAINS.							
125					FRESH PYROXENE? (HBL) VISIBLE							

DDH No. MR-83

PAGE 7 OF 9

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
125					← UNFILLED FRACTURE ← HEMATITIC CLAY FILLED FRACTURE ← 2cm THICK CLAY GOUGE ORIENTED 50° TO C.A. ← FOLIATION DEFINED BY THE ALLIGNMENT OF SHEARED QTZ & PLAG GRAINS.						
	100	97	16								
128					127.7 - 130.0m BRITTLE DEFORMATION ZONE WITH 2 STAGES OF FRACTURING HAVING OCCURED: i) A DENSE NETWORK OF EARLY SUBPARALLEL HEMATITE FILLED FRACTURES WITH MINOR ASSOCIATED BRECCIAS, ORIENTED 10-25° TO C.A. ii) LATE STAGE LESS NUMEROUS QTZ-CLAY FILLED FRACTURES.						128.4 m PETROG SAMPLE 83-22
130	100	97	13		129.7 m 1cm THICK FRIABLE BRECCIA (UNCOHESIVE) ORIENTED 60° TO C.A. & CROSSCUTTING FOLIATION ← FOLIATION DEFINED BY THE ALLIGNMENT OF SHEARED QTZ & PLAG GRAINS ← UNFILLED CROSSCUTTING FRACTURE						
131					← CROSSCUTTING BITUMEN FILLED FRACTURE GRADATIONAL CONTACT						
	100	95	19		132.4 - 157.5m FRESH, UNALTERED, MEDIUM TO COARSE GRAINED, MASSIVE TO FOLIATED, PY-GRA BEARING - PYROXENE-QTZ-PLAG-KSPAR - GRANITOID (MONZONITE) CONTAINING INTERVALS OF FOLIATED TO MYLONITIZED GRANODIORITE (136-137.3, 140.5-143.6, 145-152.8) & FINE GRAINED BIOT RICH, PLAG-PHYRIC DYKES?? (142.6-145m) - UNIT REPRESENTS A ZONE OF MIXING BETWEEN OVERLYING MONZONITE & UNDERLYING GRANODIORITE						
134											
135					← HEMATITE FILLED FRACTURE						
	100	93	12		← 2% RANDOM PYRITE NOTED						
					136.0-137.3 - FRESH, UNALTERED, WELL FOLIATED MEDIUM GRAINED - PY BEARING - PYROXENE - KSPAR ? - QTZ-PLAG - GRANODIORITE						
137					← UNFILLED FRACTURE						
					137.4 - 140.5 FRESH, FOLIATED, MEDIUM GRAINED PYROXENE - QTZ-PLAG-KSPAR-MONZONITE.						
	100	92	15		← CROSSCUTTING BITUMEN COATED FRACTURE ← FOLIATION PARALLEL BITUMEN COATED FRACTURE ← CALCITE FILLED FRACTURE						
140											
					140.5 - 143.6 - FRESH, UNALTERED, WELL FOLIATED, MEDIUM GRAINED, PY BEARING - PYROXENE - QTZ-PLAG - GRANODIORITE						
					← UNFILLED FRACTURE						
	100	99	15		← BITUMEN COATED FRACTURE						
143					← SHARP LITHOLOGICAL CONTACT AT 70° TO C.A. (FOLIATION PARALLEL) 143.6 - 145.0 m FRESH, UNALTERED, WELL FOLIATED BIOT. RICH - FINE GRAINED, PYRITE BEARING, PLAG-PYROXENE "DYKE?? CONTAINING FOLD & STRINGERS OF HEMATITIC GRANITOID (SWEAT)						
145	100	94	15		← SHARP LITHOLOGICAL CONTACT AT 70° TO C.A. 145.0 - 152.8m FRESH UNALTERED, MEDIUM GRAINED PYROXENE, QTZ-PLAG-KSPAR-MONZONITE HOSTING BANDS OF FRESH, MYLONITIZED TO FOLIATED GRA-PY-BEARING, QTZ-PLAG GRANODIORITE (GRA CONTENT = TRACE TO 1%)						
146											
	100	99	13		← CALCITE FILLED FRACTURE ← CROSSCUTTING PYRITE FILLED FRACTURE						
149					← PYRITE COATED FRACTURE						
150											

DDH No. ME-83

PAGE 5 OF 9

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
150											
	100	92	14		150.9 - 152.8 MYLONITIZED GRANITOID GNEISS ← CROSSCUTTING BITUMEN FILLED FRACTURE						
152					152.8 - 157.5 m FRESH, UNALTERED, GRAY-BEARING PYROXENE, QTZ-KSPAR-PLAG MYLONITIC GRANITOID CONTAINING VARIABLE PLAG:KSPAR RATIOS ← PYRITE/CALCITE FILLED FRACTURE (GRA CONTENT < 1%)						
	100	100	11								
155					← CALCITE FILLED FRACTURE ← BITUMEN & HEMATITE COATED FRACTURE ← BITUMEN COATED FRACTURE						
	100	87	13								
158					157.5 - 182.0 m FRESH, UNALTERED, GREENISH GREY - FINE TO MEDIUM GRAINED, WELL-FOLIATED WITH MYLONITE INTERVALS - GRA-PY BEARING, BIOT? — PYROXENE - QTZ-PLAG-GRANODIORITE GNEISS UNIT CONTAINS MINOR INTERVALS OF MEDIUM GRAINED, POORLY FOLIATED, SYN-BIOT-QTZ-PLAG-KSPAR-SYENOGRANITIC AS WELL AS IRREGULAR FOLDED STRINGERS OF PEGMATITIC PYROXENE-KSPAR-PLAGIOCLASE SWEATS						
	100	92	17								
160					← CALCITE PYRITE ± BITUMEN COATED FRACTURE						
161					← FOLIATION WELL DEFINED BY THIN CLAY FILLED FRACTURE ← FOLIATION WELL DEFINED BY THIN DISCRETE PYROXENE BIOT BANDS						
	100	95	11								
164					← UNFILLED FRACTURE ← FOLIATION WELL DEFINED BY DISCRETE MAFIC BANDS						
165											
	97	96	10		← CROSSCUTTING PYRITE COATED FRACTURE ← FOLIATION PARALLEL CALCITE COATED FRACTURE ← FOLIATION WELL DEFINED BY DISCRETE MAFIC BANDS						
167					← FOLIATION PARALLEL CALCITE FILLED FRACTURE 167.5 - 167.7 MASSIVE, MEDIUM GRAINED INTERVAL OF BIOT-PYR-QTZ-PLAG-KSPAR SYENOGRANITE						
	100	90	9								
170					FOLIATION WELL DEFINED BY DISCRETE MAFIC BANDS						
	100	97	7		← FRACTURE PARTIALLY COATED BY BITUMEN						
173					173.4 - 178.0 PEGMATITIC TEXTURAL CHARACTERIZED BY INTERLOCKING COARSE GRAINS OF QTZ, KFSPAR & PYROX.						
	100	95	10		← FOLIATION PARALLEL HEMATITE COATED FRACTURE ← RANDOM PYRITE GRAINS NOTED ← BITUMEN COATED FRACTURES (CROSSCUTTING)						
175											

DDH No. MR-83

PAGE OF

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
175											
176				70 70 Cal, Bit	CROSSCUTTING FRACTURE PARTIALLY COATED BY BITUMEN & CALCITE						
					176.5 - 178.2m INTERVAL OF WELL FOLIATED, MEDIUM GRAINED, PYRIX - PLAG - DTR - KSPAR STENOGRANITE						
				70							
				15° Bit	CROSSCUTTING BITUMEN COATED FRACTURE						
	100	93	8								
				50							
179				60 Cal	CROSSCUTTING CALCITE COATED FRACTURE						
				50	FOLIATION WELL DEFINED BY THE SUBPARALLEL DISCONTINUOUS ALLIGNMENT OF PYRX. GRAINS						
180				80 Cal.	PYRITE NOTED						
					CROSSCUTTING CALCITE COATED FRACTURE						
	100	100	5	60	FOLIATION WELL DEFINED						
				60 Cal	CROSSCUTTING CALCITE COATED FRACTURE						
182					182 m END OF HOLE						
185											

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-83

PAGE OF

COORDINATE X: 2380+00N

COORDINATE Y: 136+30E

ELEVATION Z: 283m

INCLINATION: -90°

AZIMUTH: —

BOREHOLE Ø: NQ

CASING DEPTH: 21m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: FEB 28 - MARCH 3 1990

TOTAL DEPTH: 182.0m

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

INSTRUMENT: MOUNT SOPRIS 2500 AI-5-8-79

PROBE GAMMA: AI-51-600 WINCH: AI-4-3

PROBE NEUTRON:

DATE of LOGGING: MARCH 3 1990

TIME of LOGGING: 8:15PM TO 10:30PM

TOTAL DEPTH: 182.0

OPERATOR: R. AVERY

REMARKS:

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
182.8	10 CPS/DIV	5 m/min	100:1
0°Dip			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
177.6	50 CPS/DIV	5 m/min	100:1
172.0			
127.0	50 CPS/DIV	5 m/min	100:1
123.0			

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR84

AREA: Maybelle River Alberta.	DISPOSITION: 6886050006 PROJECT NO.: 7142	PAGE 1 OF 18 DRILLED BY: Midwest
COORDINATES: 468+50N 327+25E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: (yes) no DEPTH: 397	COMMENCED: Feb. 21/90 COMPLETED: Mar. 1/90
TOTAL DEPTH (m): 389m ELEVATION (m A.S.L.): 297 DIP/AZIMUTH: -90°/—	GEOLOGY BY: B. Lacey CORE STORED AT: Jas Lake, Alberta.	CORE SIZE: NQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: yes no PAGE:	DOWN-HOLE PULSE-EM yes (no)

DIP TEST: ACID ACID ACID

TEST AT(m)	40.5	200	389
DIP	-90°	-90°	-90°
AZIMUTH	—	/	/

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 39.7m	OVERBURDEN
ATHABASCA GROUP — Manitou Falls Formation	39.7 - 252.6m	Weakly to moderately bleached, fine to medium grained sandstone, weak to strong maroon hematite as bands and liesegang rings, locally moderately fractured 39.7 - 150m - moderately silicified 115.3 - 117.9m - structure zone, strongly altered, with strong red hematite + minor chlorite + siderite on fract's.
ATHABASCA GROUP — Fair Pt. Fm.	252.6 - 338m	Weakly bleached, coarse grained to pebbly sandstone, moderate maroon, weak red hematite, locally moderately fractured.
BASEMENT	338 - 389m	Weakly to moderately altered, pyritic - garnetiferous - biotite - quartz - feldspar - anatectic pegmatoid, moderately well foliated zones, pyrite tr - 3% diss. 338 - 349.9m - Paleoweathering "red zone"
	E.O.H. 389m	

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

UTM COORDS
517900 E
6460730N

Geochem Samples

MR84-1 327-338m FP
-2 318-328m "
-3 308-318m "
-4 298-308m "
-5 288-298m "
-6 278-288m "
-7 268-278m "
-8 258-268m "
-9 252.6-258m "
-10 243-252.6m MF
-11 233-243m "
-12 223-233m "
MR84-13 213-223m MF
-14 203-213m "
-15 193-203m "
-16 183-193m "
-17 173-183m "
-18 163-173m "
-19 153-163m "
-20 143-153m "
-21 133-143m "
-22 123-133m "
-23 113-123m "
-24 103-113m "
-25 93-103m "
-26 83-93m "
-27 73-83m "
MR84-28 63-73m MF
-29 53-63m "
-30 43-53m "
-31 34?-43m "
-32 333-338m FP
-33 328-333m FP

DDH No. MR84

PAGE 2 OF 18

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					OVERBURDEN						
5											
10											
15											
20											
25											

DDH No. MR84

PAGE 3 OF 18

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10	SAMPLE #
25					OVERBURDEN							20 40 60 80	
30													
35													
40					Casing to 39.7m								
	100	100	1	∓30°	39.7–252.6 MANITOU FALLS FM. Moderately bleached, fine to medium grained, sandstone weak to moderate maroon hematite as bands and to a lesser extent as liesegang rings, weakly to locally moderately fractured, bitumen coating some fractures and to a minor extent in pores of sst., weak red hematite.	sid.							
	100	100	0		39.7–150m moderately silicified								MR84-31
45					10 cm gritty sst layer- qtz pebbles 1-2cm dia.	Moderate	Weak	Moderate	Weak	Moderate	Weak		
	100	91	6	∓5°									
				∓5°									MR84-30
	100	100	0										
50												50	

DDH No. MR84

PAGE 4 OF 18

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
50	100	100	8		minor spheroidal pyrite and trace bitumen along healed fracture.
					53.2 - 55.8m series of sub-parallel fractures both healed and open with traces of spheroidal pyrite and bitumen, traces of limonite coating some fractures
55	100	85	15		
	100	97	9		trace spheroidal pyrite along fracture.
60	100	91	8		60.7 - 67.8m interbedded sandstone and silty sandstone, weakly bleached.
	100	100	9		
65	100	97	7		
70	100	97	9		trace pyrite and siderite along fracture.
					70.9 - 74.8 moderately fractured mostly healed fractures.
	100	90	16		
75					trace pyrite along fracture

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	ENTOMBED
py		Mod			
Li →					
tr. pyrite					
Moderate		Weak			
Li					
py					
Weak		Moderate		Moderate	
Moderate		Weak		Weak	
py sid					
sid					
Moderate					
Weak					
py					

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

SAM #

MR84-30

MR84-29

MR84-28

MR84-27

DDH No. MR84

PAGE 4 OF 13

m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION
75	100	100	6		
					∓20° ← trace siderite along fracture
	100	100	13		∓10°
					∓20°
80	100	97	6		← 1cm wide bed of light green siltstone.
					∓10° ← tr. pyrite along fracture.
					← subhedral quartz along fracture.
85	100	97	7		0°∓ ∓50° 0°∓
	100	100	5		36°∓ ∓55° 35
90	100	94	16		8°∓5°∓ 90.6-91.7 silty sandstone, weakly bleached, fractured
	100	84	25		92.1-93.5m - moderately fractured open and healed fractures with traces of bitumen coating them (0-20°CA)
95	100	94	13		∓15° ∓20°
					30°∓ ∓40° ← 4-5cm hematized clay gouge
	100	75-85	23		∓55° 5°∓ ∓10°

	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
sid						
py						
qtz		Moderate	Weak		Moderate	Weak
qtz						

GAMMA LOG (CPS/DIV) 10 — 20 — 40 — 60 — 80 — 100

SAM #

MR84-37

MR84-26

MR84-25

DDH No. M284

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
100	100	91	9		
					fracture zone (5-20°CA) - bitumen coating most fractures.
105	100	81	16		bitumen coated fractures.
	100	95	11		py trace along fracture
110	100	100	4		113.5 - 117.9m weakly bleached.
115	100	88	8		pebble band over 10cm qtz pebbles ½cm - 1cm diameter
	100	67	25		115.3 - 117.9m strongly altered sandstone, strong red hematite and maroon hematite, in part dense massive red hematite with specularite 116.2 - 117.6m stronges hematite alteration with 5cm vuggy intervals, specularite, spheroidal siderite (up to ½cm diameter) and dark green chloritic clays coating fractures. Siderite and chlorite form veinlets along fractures.
120	100	96	7		pebble band. (½cm dia. pebbles) 119.7 - 120.3 m strong red hematite alteration ("brick red")
	100	100	3		
125					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
py	Moderate	Weak			
qtz				Moderate	

DDH No. MR84

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
125	100	100	3	≠0°	125.2 - 132.4 coarse grained sandstone; trace brick red hematite in porous coarse grained sandstone.							125	
130	100	88	17		128.8 - 130.2 m moderately fractured, sub parallel fractures with tarry bitumen coating and traces of euhedral quartz	Strong							MR84-22
	100	100	4	≠15°	10cm laminated siltstone.								
135	100	97	7	≠10° ≠0°	well developed euheral quartz along healed fracture.			Weak		Weak	Weak (along fractures)		
	100	88	14	250 ≠20° ≠0° 50	138.1 - 143.1 - fracture zone with fractures sub parallel to core axis, bitumen and trace euhedral quartz along fractures								MR84-21
140	100	65	16	≠0° ≠5° 0° ≠5° 0° ≠0° ≠0°	well developed euhedral quartz along fracture	Moderate	Weak						
145	100	100	5	≠20°									
	100	100	3	≠30° ≠40°									MR84-20
150												150	

DDH No. MR84

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
150	100	100	8	≠20° ≠40°								150	MR84-20
	100	100	7	90° 0° ≠ 25° ≠0°									
155				≠20°									
	100	100	3	≠20°	← Euhedral quartz coating fracture.	qtz							
					156.8 - 157.3m - coarse crush breccia, healed fractures (silicified) to rotated clasts reduced in size by tectonic movement.								MR84-19
	100	100	3	≠30°	← dravite veinlet along fracture 2-3mm wide.	dv	Moderate	Weak	Weak		Weak along fractures and in porous sst layers		
160													
	100	100	1										
165	100	100	0	≠30°	~166- Weakly bleached, moderate to strong banded maroon hematite, weakly fractured; bitumen common in porous sandstone as well as along some fractures, maroon hematite as liesegang rings as well.	dv							
	100	88	12			sid.							MR84-18
170													
	100	91	9	≠0°			Weak	Strong					
	100	100	3	15° ≠	← trace dark green clays in matrix ← dk green clays in matrix near fracture				← ←				MR84-17
175												175	

DDH No. MR84

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 #
175												175	
	100	97	5	25° ‡ ‡25°	176.2m veinlet along fracture containing dk. green clays and siderite - 25° CA minor crush brecciation. 176.7 - 177.3 - strong dark red/brown hematite alteration. 177.8 - 178.7m same as above	Sid							MR84-17
					← trace dk green clays in sst mtrx								
180	100	100	0										
				⨯ 60°	← tr. dk. green clays in matrix								
	100	100	2										
185	100	100	0										MR84-16
190	100	100	1			Weak	Strong	Weak			Weak (along fractures in porous sst)		
				‡5° ‡20°									
	100	100	2										
195	100	100	0										MR84-15
	100	100	0										
200					← trace dk green clays in matrix							200	

DDH No. MR84

PAGE 10 OF 18

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV)/10 20 40 60 80	SAM #
200												200	
	100	100	3		∓18 ← trace dark green clays along fracture – chlorite	Weak	Strong						MR84-15
205	100	100	0										
	100	100	0			Moderate							MR84-14
210	100	88	>50		209.4–210.5m strongly fractured Sandstone mainly bitumen + minor clay along fractures	sid					wk		
	100	100	5				Moderate	Weak					
215	100	91	10		10° ∓ 0° ∓ 10° ∓ 15° ∓ 0° ← trace dark green clays along fracture.	Weak					wk		MR84-13
					← minor light green siltstone bed.		Strong						
220	100	100	0										MR84-12
	100	100	0										
225												225	

DDH No. MR84

PAGE 11 OF 17

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
225	100	100	0		
				∓0	
					green siltstone bed.
	100	100	1		
230					
	100	100	2	∓0°	
				∓40° ∓30°	233.2-233.6m dark green clays (trace) along fractures and indurating sst matrix around fractures
	100	97	7		
235					
				∓0°	
					10cm dk. green silty sandstone.
	100	100	2		trace dk green clays in matrix
				∓5°	
240	100	100	1		
					clay intraclast.
					trace dark green clays in sst matrix
	100	100	0		
245					
	100	100	2	∓30°	trace dark green clays along fracture
	100	98	4		
250					

BLEACHING: Weak
MAROON HEM.: Strong
RED HEM.: Weak
GREEN ALT.: dk
SILICIFIED
BITUMEN

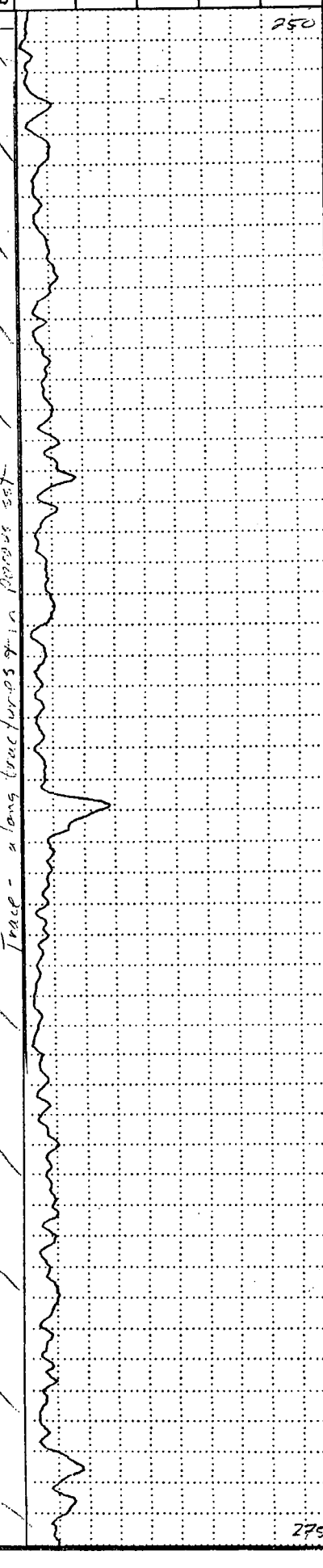
GAMMA LOG (CPS/DIV) 10
20 40 60 80
225
250

SAMPLE #: MR84-12, MR84-11, MR84-10

DDH No. MR84

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	SAM #
250	100	98	16	20° ≠ ≠30° ≠20° 35°	250.3 - 251.4m fractured sst, mostly bitumen coated fractures, trace dk. green clays in matrix.				wk			MR84-10
				≠5° ≠0°	252.6 - 338.0m FAIR POINT FM weakly bleached, coarse grained to pebbly sandstone, moderate maroon and weak red hematite, clay matrix, weakly to locally mod. fractured.							MR84-9
255	100	93	16	0° ≠ ≠5°	254.5 - 255.1 weakly friable sst., minor increase in clay matrix content, bitumen stained. 256.3 - 257. Weak dark green clays in sst matrix.	Moderate	Weak		wk		Trace - along fractures & in porous sst	
	100	100	8	≠10° 20° ≠ ≠25°	257.9 - 262.5m moderately fractured, traces of bitumen and light green clays, occasional euhedral quartz, moderately bleached. qtz qtz qtz							
260	100	94	20	≠10° ≠30° ≠25° ≠40° ≠30°	← trace light green clay gouge along fracture			Weak				MR84-8
				≠45° ≠20°	← tr. light & dark green clays associated with fractures.							
265	100	97	4									
	100	100	0									
270	100	100	1	≠30°	268.9 - 269.8m wk dk. green clays in sst. matrix. ← trace green clays in matrix	Weak	Moderate		wk			MR84-7
	100	98	4	26° ≠								
275												

GAMMA LOG (CPS/DIV) 10



DDH No. MR84

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
275	100	100	1		276-276.8 m trace light green clays in matrix.				wk			275	MR84-7
	100	100	3	30° ≠									
280				≠20°	← trace light green clays in matrix								
					← trace light green clays in matrix								
	100	100	5	≠5°	281.7-284.3m trace light and dark green clays in sst matrix and associated with fractures						wk (along fractures)		MR84-6
				≠25° ≠5°									
285	100	88	16	≠30° ≠30°	285.3-285.8m - moderately fractured, weakly friable sst, mainly bitumen coating fractures, traces of green clays								
	100	97	2		← grn clays. 289.5-290 trace green clays in matrix	Weak	Moderate	Weak					
290	64	36	730	TAR BITUMEN	290-291.2 - core loss due to seam of massive tarry bitumen.				wk		Strong		
					291.5-292.3m wk dark and light green clays in matrix				wk				MR84-5
					← trace green clays in matrix								
295	100	100	6	≠25°	← trace green clays in matrix associated with fracture.								
	100	100	5	≠5° ≠30°	← trace dark green clay gouge along fracture								
300													MR84-4

DDH No. MR84

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV)/10	SAM #
300	100	100	0				Moderate					300	
	100	100	0		~304 - 338m - gritty to conglomeratic sandstone, poorly sorted, scattered quartz pebbles.								MR84-4
305	100	100	1	≠30°									
310	100	100	0										
	100	100	1	≠80°		Weak	Strong	Weak					MR84-3
315	100	100	1	≠85°									
	100	100	0										
320	100	100	1	≠60°			Moderate						MR84-2
325	100	100	0									325	

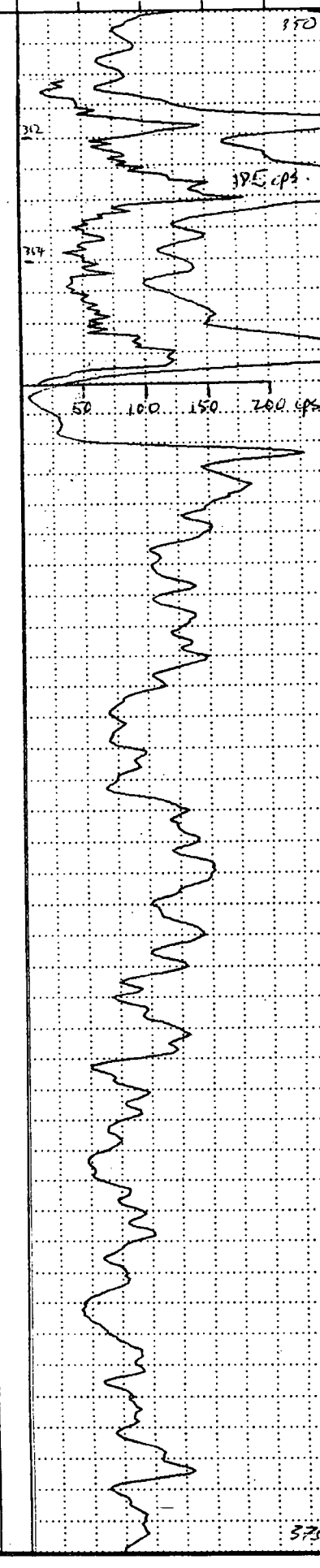
DDH No. MR84

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 #
325													MR84-2
	100	100	0										
330	100	100	0		331.1-331.6m trace light green clays in matrix	Weak	Moderate	Weak	wk				MR84-33
	100	100	1										MR84-32
335				≠30°	← trace light green clays in sst matrix								
	100	100	0		325.2-325.9 green clays in matrix 326-326.6 - moderate brick red hematite in porous conglomeratic layer Sharp sst/bsmt Unconformity				ε				
340	100	94	9	≠30° ≠26° ≠25°	338-389m. Weakly to mod. altered pyritic-garnetiferous-biotite-quartz-feldspar-anatectic pegmatoid, moderately foliated zones, pyrite trace to 2-3% disseminated,		Strong		Mod. Dk grn				
	100	100	1	≠30°	338-349.9m Paleoweathering "red zone", strongly hematized, weakly to moderately chloritized.								
345	100	100	1	≠35°			Moderate		Moderate dk & light green				
	100	100	0										
350												350	

DDH No. MR84

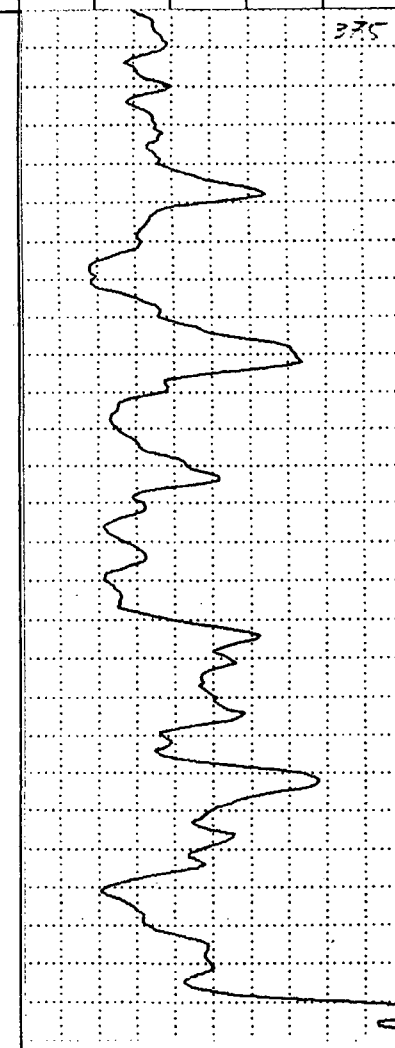
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SAM #
350	100	92	11	90, 85°	349.9 - E.O.H. fresh to weakly altered rock. Fresh K-spar.					
355	100	92	7	30°						
	100	100	8	50°	355.7 - 357m silicifred gneiss					
360	100	100	3						Weak light and dark green	
365	100	97	10	65°						
	100	98	3	20°						
370	100	88	24	10°	368 - 369.3 m moderately to strongly chloritized, fractured.					
	100	98	4	30°	371.4 - 373.2m moderately well foliated.					
375										

GAMMA LOG (CPS/DIV) 10



DDH No. MR84

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10	SAM #
375	100	85	17								
	100	100	2	20°							
380	100	94	5	20° 20°					Wk (dark + light green)		
385	100	100	1	30°							
	100	100	8								
					389m E.O.H.						
390											



URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR84

PAGE 18 OF 18

COORDINATE X: 468+50N

COORDINATE Y: 136+30E

ELEVATION Z:

INCLINATION: -90°

AZIMUTH: —

BOREHOLE Ø: NQ (to m), BQ (

CASING DEPTH: 39.7m

CASING WALL THICKNESS: BW

WATER or MUD LEVEL:

DATE of DRILLING: JAN 22-MAR 1 1990

TOTAL DEPTH: 389

LOGGED THROUGH:
OPEN HOLE | PLASTIC PIPE | RODS

INSTRUMENT: MOUNT SOPRIS 2500 -AI-5-0-79

PROBE GAMMA: AI-61-500

PROBE NEUTRON: WINCH; AI-4-3

DATE of LOGGING: MARCH 1 1990

TIME of LOGGING: 3:00 PM TO 5:20 PM

TOTAL DEPTH: 389.0m

OPERATOR: B.L/R.A.

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
389.0	10cps	5m/min.	100.1				
0.0							

REMARKS: Digitially Recorded as MR-84 GRØ (Raw δ)
MR-84 GDØ (Dead Time Corrected)

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR85

AREA: Maybelle River Alberta.	DISPOSITION: 6886050005 PROJECT NO.: 7142	PAGE 1 OF 15 DRILLED BY: Midwest
COORDINATES: L 356+00 N 205+87 E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: yes no DEPTH:	COMMENCED: Feb. 21/90 COMPLETED: Feb. 27/90
TOTAL DEPTH (m): 317.7m ELEVATION (m A.S.L.): 302m est. DIP/AZIMUTH: -60°/087°	GEOLOGY BY: 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: Acid.

TEST AT(m)	31															
DIP	60°															
AZIMUTH	/															

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 30.5	Overburden.
ATHABASCA GROUP.	30.5 - 208.2m	MANITOU FALLS FM. Moderately to strongly bleached, fine to medium grained sandstone, clay intraclasts common, weak maroon hematite as liesegang rings, weak red hematite, zones of moderate to strong fracturing.
	208.2 - 246.1m	FAIR POINT FM. Moderately bleached, coarse grained to pebbly sandstone, poorly bedded, light green/white clay matrix, locally fractured and altered.
BASEMENT	246.1 - 259m	strongly altered, (amphibole) - quartz - feldspar - mylonite/saprolite, weakly to well foliated, pegmatoid intervals. weakly fractured.
	259 - 264.2m	Moderately altered, graphitic (5-10% disseminated) - quartz-feldspar - gneiss/mylonite, mostly non-brittle deformation.
	264.2-284.m	strongly altered, quartz-feldspar-fault rock/mylonite, zones of strong crush brecciation and silicification
	284 - 293.6m	Strongly altered, graphitic (5-10% diss., to >10% in faults) - quartz-feldspar-mylonite, fault contact with above unit, well developed mylonitic texture.
	293.6 - 298.2	strongly altered, medium to coarse grained, quartz-feldspar mylonite/proto mylonite, abundant garnet relicts.
	298.2 - 312.4	strongly silicified, weakly chloritized, weakly hematized, mylonite/ultra mylonite, strongly fractured.
	312.4 - 317.7m	Strongly chloritized, graphitic (2-5% diss., >10% on fault planes) - amphibole - quartz - feldspar - gneiss, intervals of crush breccia with carbonate cementing clasts together.
	E.O.H. 317.7m	

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

UTM COORDS
6454125N
518825E
330cps 257.5m
170cps 263.3m
140cps 270.2m

Geochem Samples:

MR85-1	241-246.1 m	FP
-2	236-241 m	"
-3	236-246.1 m	"
-4	226-236 m	"
-5	216-226m	"
-6	208.2-216 m	"
-7	198-208.2m	MF
-8	188-198 m	"
-9	178-188 m	"
-10	168-178 m	"
MR85-11	158-168 m	MF
-12	148-158 m	"
-13	138-148 m	"
-14	128-138 m	"
-15	118-128m	"
-16	108-118m	"
-17	98-108 m	"
-18	88-98m	"
-19	78-88m	"
-20	68-78 m	"
-21	58-68m	"
MR85-22	48-58 m	MF
-23	38-48m	"
-24	31-38 m	"
-25	252.6-254.6	SPLIT CORE
-26	252.6-253.6	SPLIT CORE
-27	254.6-255.6	SPLIT CORE

DDH No. MR85

PAGE 2 OF 15

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

DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
25					OVERBURDEN
30					Casing to 31m
	100	0	>30		31.0–208.2 MANITOU FALLS FM. Moderately bleached, fine to medium grained, sandstone, clay intraclasts common, weak maroon hematite as bands and liesegang rings, weak red hematite as bands and liesegang rings, zones of moderate to strong fracturing, Bitumen common along fractures and as minor staining in sst mtrx.
	100	90	16		← clay intraclasts.
35					← large (2–3 cm long) intraclast, relatively hard clay clast.
	100	91	14		37.8–50.6m moderately fractured sandstone, both open and healed fractures
					← siderite in sst matrix
40	100	96	20		
					← clay intraclasts.
	100	93	18		
45					minor bitumen and hematitic clay coating fractures.
	100	37	>30		
					46.9 – 47.6 - fault breccia, silicified, associated sooty pyrite and hematitic clays coating fractures
	100	76	>30		
50					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
py					
py					
py					
sid					
	Moderate	Weak	Weak		Weak
py				py	

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

SAM #

MR85-24

MR85-23

MR85-22

DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
50	100	88	9		trace pyrite along fractures.
					51.-53.1 fine grained sandstone silty
					trace py along healed fracture.
					py along fracture.
55	100	98	5		
	100	85	23		56.3-57.4m moderately fractured
					py along fracture (trace)
60	97	88	1		
					trace pyrite and siderite coating fracture.
	100	96	10		quartz pebble band, pebbles .3-.5cm in diameter.
65					siderite (trace) in sst. matrix
	100	100	4		siderite in sst matrix 66.2-66.7m healed fracture sub // to CA with red and maroon hematite alteration adjacent, minor light green clay along fracture.
					66.9-75.5m medium to course grained sandstone occasional quartz pebbles up to 2-3mm in diameter.
70	97	94	7		
	100	97	4		trace pyrite xtals along fracture.
75					

m	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
50						
55						Weak
60	Moderate		Weak			
		Weak				
65						
	Weak					
70			Moderate			
75						

GAMMA LOG (CPS/DIV) 10

20 40 60 80

50 75

SAM #

MR85-22

MR85-21

MR85-20

DDH No. MR85

PAGE 5 OF 15

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 #
75	100	97	7		75.4m regional quartz pebble marker band, qtz pebbles 1/2 cm to 1cm diameter	Mod.						75	MR85-20
				30° / 10°									
				/25°	75.4 - more typical fine to medium grained Manitou falls sandstone with common clay intraclasts.								
	100	82	17	/30°	trace py + sooty py along healed fracture, sooty pyrite forms slickenlides.	py							
80					77.1 - 79.3 - moderately fractured, weakly friable sandstone								
				dv.	79.7 - 80m - crush breccia vernlets of white clay + qtz between clasts.	py dv sid							
	100	64	8		80.3m - 3cm of sub II vernlets of silicified clays or dravite (60°CA)								MR85-19
	100	100	8	/38 /30°	py (trace) cooling fracture	py							
85													
	100	100	6		87.5 - 87.9m coarse crush breccia, minor light green clays between clasts	py							
				/30°									
90	100	100	4	/5°	minor healed fractures.	Weak	Weak	Weak					
				/5°									
	100	97	9	XXXXX /30°									MR85-18
95													
	100	100	4	/20°	tr. pyrite along fracture.	py sid py							
	100	100	6	/15°	2cm soft light green clay gouge	py							MR85-17
100						Mod						100	

DDH No. MR85

PAGE 6 OF 15

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING %	MAROON HEM %	RED HEM. %	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 (20 40 60 80)	SAM #
100				10° f								100	
	100	64	11	f 20°	101.6 - 101.8m - minor fault breccia, minor light green clay covering fractures	py							
105	100	97	4		← tr. py in sst matrix	py							MR85-17
				f 20° f 25° f 15°			Mod						
	100	100	4										
110				f 20°									
	100	100	3	f 30°									MR85-16
				60°	← pyrite (trace, along fracture)	py							
	100	97	8+	60° 30° f	114.6 - 114.7m - 10cm friable sst.	py	Weak	Weak					
115					← tr. pyrite along fracture.								
	100	100	0		← clay intraclast + light green clay along bed parting.								
				5° f	← tr. py	py							
120	100	100	4		← clay intraclast.								MR85-15
					120.8 - 120.9m siltstone band. green and red silt.		Strong						
				55°	← trace siderite coating fracture	Sid							
				35°	121.8 - 124m strongest bleached sst. - no hematite.								
	100	98	3										
125												125	

DDH No. MR85

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	SULPHIDES	GAMMA LOG (CPS/DIV)/10 20 40 60 80	SAM #
125	100	100	3		½cm light green siltstone band. 126.1-126.2m mod. friable sst. 122m - 5cm wide light green siltstone band.							125	MR85-15
130	100	98	4	30°	1-2cm light green clay gouge at ~80° CA - cross-cuts fracture.	Strong							MR85-14
	100	94	8	20° 15° 20° 20°	132.2-132.6 - sub parallel fractures @ 20° CA.								
135	100	74	5	5° 15° 10° 30°	135.7-146.9m - Moderately fractured sst., fractures mostly open at 5°-30° CA.								
	100	100	1				Weak	Weak					
140	100	34	>30			Py							MR85-13
					trace pyrite along fracture.	Py	Moderate						
145	100	67	20		pyrite euhedral quartz along fractures	Py							
	100	88	12		147.9-148.5m weakly friable, fractured sandstone	Strong							MR85-12
150				60°								150	

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR-74X

AREA: MAYBELLE RIVER UTM: 6441325N, 524475E	DISPOSITION: [illegible] PROJECT NO.: 71-42	PAGE 1 OF 9 DRILLED BY: MIDWEST DRILLING
COORDINATES: 92+00N, 159+98.5E	PLASTIC PIPE: yes (no) DEPTH: / CASING REMOVED: (yes) no DEPTH: 40m	COMMENCED: JANUARY 29 1993 COMPLETED: JANUARY 31 1993
TOTAL DEPTH (m): 188.0 m ELEVATION (m A.S.L.): 321.6m DIP/AZIMUTH: -90°	GEOLOGY BY: R. AVERY CORE STORED AT: JAC LAKE	CORE SIZE: NW CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: yes no PAGE:	DOWN-HOLE PULSE-EM yes (no)

DIP TEST: PAJARI ACID ACID

TEST AT(m)	186	100	40														
DIP	-88°	-89°	-89°														
AZIMUTH		/	/														

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 40.5m	SANDY DIAMICTON, OUTWASH SANDS & GRAVELS
MANITOU FALLS FORMATION - ATHABASCA GROUP	40.5 - 103.7m	STRONGLY BLEACHED & SILICIFIED, FINE TO MEDIUM GRAINED, CROSS-BEDDED SANDSTONE CONTAINING NUMEROUS STRONGLY FRACTURED & BRECCIATED INTERVALS WHERE ANGULAR, FRACTURED SANDSTONE FRAGMENTS ARE SUPPORTED IN A MATRIX OF SECONDARY QTZ & BITUMEN.
STRONGLY CHLORITIZED PLAGIOCLASE PEGMATOID	103.7 - 156.2m	LIGHT GREEN STRONGLY CHLORITIZED, LOCALLY WEAKLY HEMATIZED, MASSIVE, COARSE GRAINED PLAGIOCLASE PEGMATOID - STRONGLY TECTONIZED THROUGHOUT AS INDICATED BY THIN SEAMS OF CLAY GOUGE, STRONGLY FRACTURED CLAY FILLED RUBBLE INTERVALS & NUMEROUS BRECCIATED UNITS
FAULT BRECCIA	156.2 - 164.0m	- FAULT BRECCIA WITH PROTOMYLONITE INTERVALS, 10 - 40 CM THICK, OF WISPY ANISTOMOSING FOLIATION. THE INTERVAL IS CHARACTERIZED BY ANGULAR TO SUBROUNDED, FRACTURED COARSE PLAG. IN A FINE GRAINED GRAPHITIC MATRIX (5-15%) CONTAINING ACCESSORY PYRITE (2-5%).
PLAGIOCLASE AMPHIBOLITE	164.0 - 181.5m	MASSIVE TO POORLY FOLIATED, STRONGLY CHLORITIZED, FINE GRAINED PYRITE - GRAPHITE PLAGIOCLASE AMPHIBOLITE CONTAINING VARIABLE AMOUNTS (2-10%) OF SECONDARY QTZ.
	181.5 - 188.0m	GREENISH GRAY, RELATIVELY FRESH, DENSE, MASSIVE, MEDIUM GRAINED, CHLORITE ALTERED PYRITE GRAPHITE BEARING - QTZ - PLAG. - AMPHIBOLITE.
		188m END OF HOLE

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

ANOMALOUS RADIOACTIVITY: (MOUNT SOPRIS 2500) (CORRECTED VALUES)

111.2m - 194cps
115.1m - 135cps
129.4m - 140cps
129.9m - 135cps
139.0m - 2618cps. ($.11\% eU_3O_8$ / 2cm)
141.9m - 356cps
145.2m - 488cps
145.6m - 484 cps
176.2m - 171 cps
177.3m - 154cps
181.5m - 182cps
182.5m - 156 cps.

GEOCHEMISTRY

MR 74X - 1	104 - 94 m	COMPOSITE SST SAMPLE
2	99 - 94m	"
3	104 - 94m	"
4	94 - 84 m	"
5	84 - 74 m	"
6	74 - 64 m	"
7	64 - 54 m	"
8	54 - [illegible]	"
9	162.25m - [illegible]	CORE
10	137.5 - 138.5m	SPLIT CORE FOR U3O8
11	136.5 - 137.5m	"
12	138.5 - [illegible]	"

DDH No. 74 X

PAGE 2 OF 4

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.
0					OVERBURDEN 0-40.5m SANDY DIAMICTON, OUTWASH SANDS & GRAVELS				
5									
10									
15									
20									
25									

GAMMA LOG (CPS/DIV)

20 40 60 80

0

SAM #

25

DDH No. 74 X

PAGE 3 OF 9

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFICATION	BITUMEN	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
25				POSITION	OF OVERBURDEN/DEVONIAN CONTACT AS FOUND IN DDH MR-74							25	
30													
35					OVERBURDEN; OUTWASH SEDIMENTS (GRAVELS, SANDY DIAMICTON).								
40													
41				30° BED	40.5 – 103.7m ATHABASCA GROUP MANITOU FALLS FORMATION. - STRONGLY BLEACHED, SILICIFIED, FINE TO MEDIUM GRAINED SANDSTONE WITH WELL DEFINED PLANAR CROSSBEDDING DEVELOPED THROUGHOUT. - THE UNIT IS STRONGLY TECTONIZED;								MR 74-8
	100	35	>30	#30 Py	← FRACTURE PARTIALLY COATED BY SOOTY PYRITE	CHARACTERIZED BY FRIABLE FRACTURED INTERVALS, BRECCIATED UNITS & ROTATED CROSSBEDDING. BITUMEN & EUHEDRAL QTZ FORM THE PRINCIPAL FRACTURE COATINGS & BRECCIA MATRICES THROUGHOUT.				STRONG			
					43.1m CLAY INCLUSION								
				25°	43.8m WELL DEVELOPED PLANAR CROSSBEDDING								
44					44.5m VUGS FILLED BY BITUMEN & EUHEDRAL QTZ								
45				#10"	45.0m FRACTURE FILLED BY BITUMEN & EUHEDRAL QTZ.								
	100	35	>30		45.6m 1cm THICK BRECCIATED SANDSTONE: ANGULAR FRAGMENTS WITHIN A MATRIX OF SECONDARY QTZ & BITUMEN								
47													
				100	48.4 - POORLY DEVELOPED PLANAR CROSSBEDS								
	100	3	>30		48.8 – 50.2m - STRONGLY FRACTURED INTERVAL								
50												50	

DDH No. 74-X

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFICATION	BITUMEN	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
50	100	23	>30	10° 40° Bit	50.6m WELL DEFINED PLANAR CROSSBEDS FRACTURE COATED BY EUHEDRAL QTZ & ACCESSORY BITUMEN. 51.6 - 55.2 m BRECCIATED INTERVAL; ANGULAR FRAGMENTS OF SANDSTONE SET WITHIN A MATRIX OF SECONDARY QTZ; THE ENTIRE INTERVAL IS CROSSCUT BY A DENSE NETWORK OF DENDRITIC FRACTURES FILLED BY QTZ & BITUMEN.								
53	100	20	>30										MR 74-7
55					54.9 - 55.8 m RANDOM NODULES OF HEMATITE (1-2 mm DIAM) RELATIVELY COMMON.								
56				10° 10° Q 30° Bit	FRACTURE FILLED BY EUHEDRAL QTZ & ACCESSORY BITUMEN 56.2m - WELL DEFINED PLANAR CROSSBEDDING COSETS.						FRACTURE COATINGS		
	100	35	>30					NONE					
59				15° 15° 09 10° 10	CLAY INTRACLAST 58.5m - PLANAR CROSSBEDDING 59.1 - 60.4 m COSETS OF PLANAR CROSSBEDDING, WELL DEVELOPED THROUGHOUT.								
60	100	27	>30		61.0 - 61.6m RUBBLE INTERVAL; CORE IS STRONGLY FRACTURED & BRECCIATED.			WEAK		STRONG			
62	100	27	>30	05°	PLANAR FORESETS WELL DEVELOPED 63.2 - 64.0 m BRECCIATED SANDSTONE: ANGULAR SANDSTONE FRAGMENTS SET WITHIN A MATRIX OF SECONDARY QTZ, CROSSCUT BY A DENSE FABRIC OF DENDRITIC LATE STAGE FRACTURES.						PARTIAL FRACTURE COATING		
65					65.5 - 66.1 m - BRECCIATED INTERVAL	STRONG							MR 74-6
	90	15	>30		66.4 - 67.5 m - RUBBLE INTERVAL; CORE EXTREMELY FRACTURED & FRIABLE.					WEAK			
68	97	31	>30	15° 90° 5° Bit	WELL DEVELOPED PLANAR CROSSBEDS 69.1 - 69.5 m RUBBLE INTERVAL 69.7m, PLANAR CROSSBEDS, ROTATED THROUGH 90° SUBPARALLEL, BITUMEN FILLED FRACTURES			TRACE TO NONE		STRONG			
70													
71	100	60	>30	60° 80° 5° 60° 20°	72.3 m, PLANAR CROSSBEDDING, WELL DEVELOPED 73.2 m, WELL DEVELOPED PLANAR FORESETS FRACTURE PARTIALLY FILLED BY BITUMEN.								
74													
75													

-75.6m

...GE SCALE ...RAL ...PTION, ...VIOUSLY ...IZONTAL ...SBEDS ROTATED ...NEAR ...RTICAL ...ITIONS.

DDH No. 74X

PAGE 5 OF 9

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
75					BITUMEN FILLED FRACTURE
	100	38	>30		PLANAR CROSSBEDS WELL DEFINED BITUMEN FILLED FRACTURE
					76.5 m 10cm THICK BRECCIA; ANGULAR SANDSTONE FRAGMENTS FLOATING WITHIN A FRIABLE QTZ - CLAY MATRIX.
77					77.0 m PLANAR CROSSBEDDING, POORLY DEFINED
					77.4 m FRACTURE PARTIALLY COATED BY BITUMEN
	100	52	>30		FRACTURE FILLED BY BITUMEN & EUHEDRAL QTZ.
80					79.7 - 80.4 m - SUBROUNDED & ROUNDED GRANULES & PEBBLES WITHIN A QTZ - CLAY - CARBONATE MATRIX.
					PLANAR CROSSBEDDING, WELL DEFINED
	100	48	>30		BITUMEN FILLED FRACTURE.
					CLAY FILLED FRACTURE.
83					SUB PARALLEL BITUMEN FILLED FRACTURES.
					84.3 - 85.9 m INTENSELY FRACTURED, RUBBLE INTERVAL WITH FRACTURES COATED BY BITUMEN & EUHEDRAL QTZ.
85	100	45	>30		
86					5cm THICK CLAY SEAM, 60° TO CORE AXIS
					86.8m, WELL DEVELOPED PLANAR CROSS BEDDING
	100	53	>30		PLANAR CROSSBEDDING.
89					FRACTURE FILLED BY EUHEDRAL QTZ
					PLANAR CROSSBEDDING WELL DEVELOPED
90					
	100	77	>30		BITUMEN & QTZ COATED FRACTURE
					91.3m WELL DEVELOPED PLANAR CROSSBEDS
92					
					FRACTURE PARTIALLY FILLED BY BITUMEN
	100	72	>30		93.4 m WELL DEVELOPED PLANAR CROSSBEDDING BITUMEN, EUHEDRAL QTZ COATED FRACTURE
95					
					BITUMEN COATED FRACTURE
					2cm THICK CLAY SEAM
					95.4 - 95.9 m - STRONGLY FRACTURED INTERVAL CHARACTERIZED BY A DENSE NETWORK OF DENDRITIC BITUMEN FILLED FRACTURES.
	88	43	>30		95.9 - 96.7 m FRIABLE ZONE OF EXTENSIVE CLAY ALTERATION.
					96.9m - WELL DEVELOPED PLANAR CROSSBEDS
98					
					98.1 - 100.8 m - STRONGLY FRACTURED INTERVAL CHARACTERIZED BY AN INTENSE NETWORK OF BITUMEN, EUHEDRAL QTZ, & CLAY FILLED DENDRITIC FRACTURES
	100	10	>30		
100					

BLEACHING: MODERATE
MAROON HEM.: STRONG
RED HEM.: TRACE TO NONE
GREEN ALT.: WEAK
SILICIFICATION: STRONG
BITUMEN: PARTIAL COATING OF FRACTURES

GAMMA LOG (CPS/DIV)
20 40 60 80
75
100

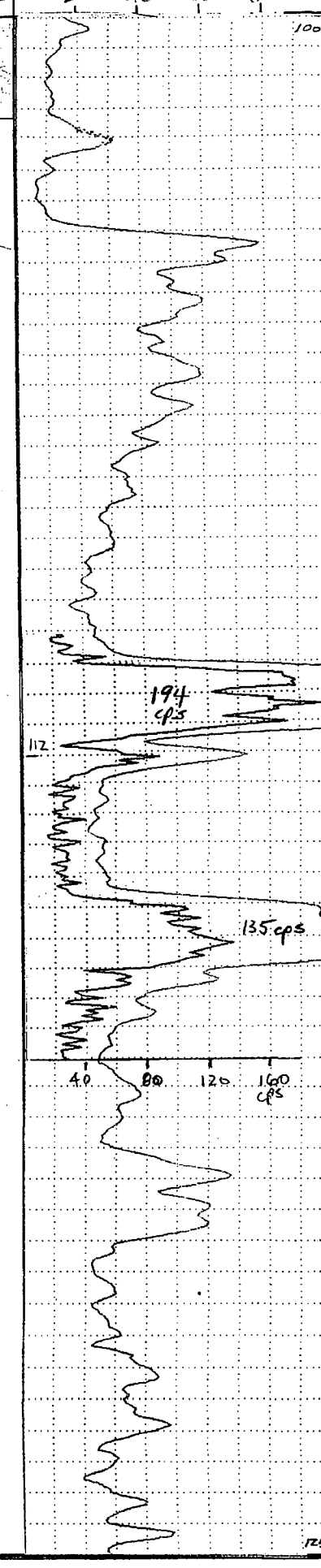
SAM #
MR 74-5
MR 74-4
MR 74-2
MR 74-3

DDH No. 74-X

PAGE 6 OF 9

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	RED ALT.	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFICATION	BIOTITE	SAM #
100							MOD		WEAK				
101	100	73	29	40° Cy	← CLAY INTRACLAST ← CLAY FILLED FRACTURE ← MINOR SIDERITE NOTED IN MATRIX 102·3 m 1cm THICK CLAY SEAM AT 70° TO CORE AXIS 10° 103·3m WELL DEVELOPED CROSSBEDDING DEMONSTRATING NORMAL GRADING (FINING UPWARD) 103·7 m UNCONFORMITY 85° TO CORE AXIS		WEAK MOD		MODERATE WEAK		STRONG		MR 74-1
104													
105	90	22	>30		103·7 - 104·6m, 106·2 - 107·1m RUBBLE INTERVAL OF FRIABLE, STRONGLY CLAY ALTERED CORE 103·7 → 156·2m - LIGHT GREEN, STRONGLY CHLORITIZED, LOCALLY WEAKLY HEMATIZED, MASSIVE, COARSE GRAINED PLAGIOCLASE GNEISS, STRONGLY TECTONIZED THROUGHOUT AS INDICATED BY THIN SEAMS OF CLAY GOUGE, STRONGLY FRACTURED CLAY FILLED RUBBLE INTERVALS & NUMEROUS BRECCIATED UNITS.								
107	100	62	26	20 Cy	108·9m CLAY FILLED FRACTURE								
110	100	43	>30	20° Q	← FRACTURE PARTIALLY COATED BY EUHEDRAL QTZ ← ANOMALOUS RADIOACTIVITY 100cps (SCINTOL.) ← 112·2m, 2cm THICK CLAY GOUGE		WEAK						
113	100	68	27	45° Cy, 30° Cy	← SUBPARALLEL CLAY FILLED FRACTURES ← 1-3mm THICK HEMATITE FILLED FRACTURES						STRONG		
115													
116	100	88	18	10° Cy	← SUBPARALLEL CLAY FILLED FRACTURES 118·4 - 120·4m BRECCIATED INTERVAL: ANGULAR PIECES OF STRONGLY FRACTURED QTZ & PLAG SET IN A FRIABLE MATRIX OF CLAY, ACCESSORY CARBONATE, & HEMATITE.								
119													
120	100	30	29		← DENDRITIC FRACTURES FILLED BY HEMATITE								
122	100	68	27		← 2cm THICK CLAY GOUGE AT 40° TO CORE AXIS 122·4 - 123·0 m INTENSE NETWORK OF THIN (·5mm) DENDRITIC CLAY-HEMATITE FILLED FRACTURES 123·1m MINOR BRECCIATED INTERVAL WITH FRACTURES GRADING INTO SCHLIEREN. 124·9 - 125·6m BRECCIATED INTERVAL								
125													

GAMMA LOG (CPS/DIV)



DDH No. 74X

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
125					ANGULAR & FRACTURED QTZ WITHIN A CLAY-CARBONATE MATRIX
	100	73	15		← CLAY COATED FRACTURE
128					128.1 – 128.4 m · BRECCIATED INTERVAL ANGULAR FRACTURE PLAGIOCLASE SUPPORTED IN A FRIABLE CLAY MATRIX.
130	100	65	28		← FRACTURES PARTIALLY COATED BY HEMATITE
131					
	100	88	13	Hem	133.1 – 136.7m – INTERVAL IS CHARACTERIZED BY A DENSE NETWORK OF THIN (·5-3mm) DENDRITIC, HEMATITE FILLED FRACTURES.
134					
135					← 90cps (SCINTOLOM)
	100	92	15		
137					ANOMALOUS RADIOACTIVITY 120 cps (SCINTOLOM) 138.6m CLAY FILLED FRACTURE
					← 240cps (SCINTOLOM)
	100	85	20		← 200cps
					← 120 cps
140					139.1 – 141.1 m – BRECCIATED INTERVAL: ANGULAR & FRACTURED FRAGMENTS OF QTZ, ALTERED PLAG SUPPORTED IN A FRIABLE CLAY-CARBONATE MARIX.
					← 140cps (SCINTOLOM)
	100	83	22		
143					143.2 – 143.7m – BRECCIATED INTERVAL: ANGULAR FRAGMENTS OF HOST ROCK
					← 120cps (SCINTOLOM) SUPPORTED IN A MATRIX OF FRIABLE CLAY.
	100	66	>30		
145					← 144.2m CLAY FILLED FRACTURE
					145.1 – 146.8m DENSLY FRACTURED CORE CHARACTERIZED BY THIN (1·5mm) ANISTOMOSING CLAY FILLED FRACTURES
146					
	100	38	>30		
					147.5m – 5cm THICK BRECCIA: ANGULAR FRAGMENTS OF HOST ROCK FLOATING WITHIN A FINE GRAINED, FRIABLE CLAY MATRIX,
149					148.5 – 148.9 m ANOSTOMOSING FRACTURES (1-6mm THICK) FILLED BY SECONDARY QTZ.
150					

RED ALT. — WEAK — MODERATE — STRONG

BLEACHING — MODERATE — WEAK

MAROON HEM. — MODERATE

RED HEM. — STRONG

GREEN ALT. — STRONG

GAMMA LOG (CPS/DIV)

20 40 60 80

125

140 cps

130 135 cps

40 80 120 160 cps

2618 cps

138

1000 2000 3000 cps

355 cps

498 cps

494 cps

200 400 800 cps

150

SAM #

MR-72X 11

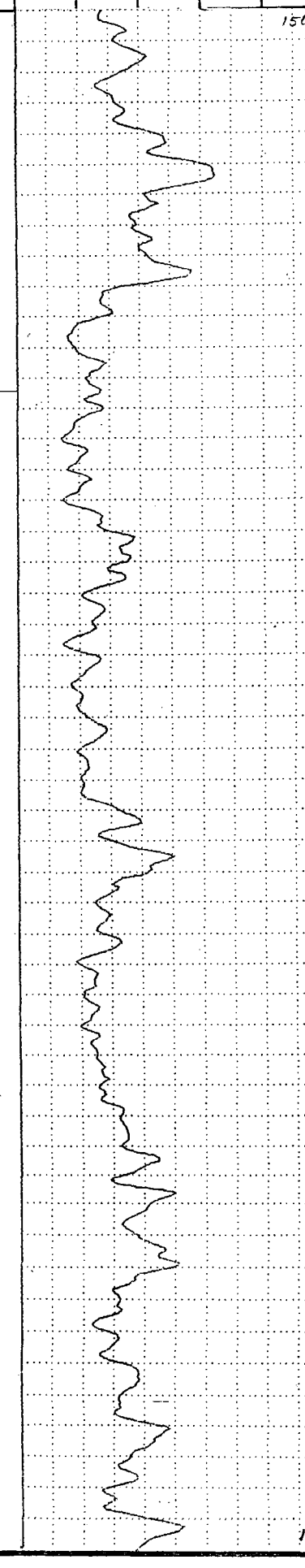
MR-74 10

MR-74X 12

DDH No. 74X

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	GRAPHITE	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	PYRITE	SAM #
150	97	72	>30									
152	100	67	29	Cy 40° Cy; Cy 35°	151.8 m - 1cm THICK CLAYGOUGE ORIENTED 45° TO CORE AXIS; 152.1m, 152.8m CLAY COATED FRACTURES					STRONG		
155				0° Hem	← 154.7m HEMATITE FILLED FRACTURE; 155.3-155.4m DENSE FRACTURE NETWORK FILLED BY HEMATITE.							
158	100	73	24		156.2 - 164.0 m FAULT BRECCIA WITH PROTOMYLONITE INTERVALS 10-40cm THICK, OF WISPY ANISTOMOSING FOLIATION. THE INTERVAL IS CHARACTERIZED BY ANGULAR TO SUBROUNDED, FRACTURED PLAGIOCLASE ACCESSORY QTZ FRAGMENTS, .5 TO 3cm IN DIAMETER WITHIN A FINE GRAINED MATRIX CONTAINING GRAPHITE (5-15%) & RANDOM FINE PYRITE. (2-5%). - SERICITE & CHLORITE ALTERATION OF CLASTS WITHIN THE FABRIC IS RELATIVELY COMMON THROUGHOUT.	5-15%				WEAK		
160	100	62	>30									
161	100	67	>30									MR 74X 9
164					164.0 - 181.5m MASSIVE TO POORLY FOLIATED, STRONGLY CHLORITIZED, FINE GRAINED PYRITE-GRAPHITE, PLAGIOCLASE AMPHIBOLITE (?) CONTAINING VARIABLE AMOUNTS (2-10%) OF SECONDARY QTZ						TRACE TO 3%	
165	100	78	22		← 3% RANDOM FINE PYRITE IN MATRIX; 165.9 - 166.7m STRONGLY FRACTURED INTERVAL CONTAINING RANDOM, ANISTOMOSING FRACTURES 1-3mm WIDE FILLED BY GRAPHITE & CLAY.							
167	100	87	25	30° Gra Py	← 168.3 GRAPHITE COATED FRACTURE; 168.7 FRACTURE PARTIALLY COATED BY FINE PYRITE							
170	100	80	26	30° 40° Gra Py	FOLIATION DEFINED BY THE SUBPARALLEL ALLIGNMENT OF QTZ & PLAG. ← FRACTURE PARTIALLY COATED BY GRAPHITE & FINELY DISSEMINATED PYRITE	1-5%				STRONG		
173	100	80	22	40° Gra; Gra Py 10°; 40° Gra	← GRAPHITE COATED FRACTURE; TRACE, FINELY DIVIDED CHALCOPYRITE IN MATRIX, GRAPHITE - QTZ - ACCESSORY PYRITE FILLED FRACTURE; ← GRAPHITE COATED FRACTURE							
175												

GAMMA LOG (CPS/DIV)



DDH No. 74 x

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m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
175					175.1 – 178.9 ULTRA CATACLASITE INTERVAL WITH ABUNDANT NETWORK OF THIN (1mm) DENDRITIC FRACTURES FILLED BY GRAPHITE.
176	100	50	>30		
179				∠15° Q	← QTZ FILLED FRACTURE
180	100	30	>30		
182					181.5 – 184.0m, DARK GREY, DENSE, MASSIVE APHANITIC AMPHIBOLITE(??) CONTAINING IRREGULAR MASSES OF COARSE ANHEDRAL PLAGIOCLASE.
	100	82	29		70 cps (SCINTOL), CLAY FILLED FRACTURE
				∠90°	184.0 – 188.0m – GREENISH GRAY, RELATIVELY FRESH, DENSE, MASSIVE, MEDIUM GRAINED, CHLORITE ALTERED, PYRITE-GRAPHITE BEARING QTZ-PLAG-AMPHIBOLITE.
185				∠0°	← FRACTURE PARTIALLY FILLED BY CALCITE
	100	55	>30	∠60° ∠40°	← CALCITE FILLED FRACTURES
188					188m END OF HOLE

GRAPHITE	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	PYRITE
2-5%				STRONG	TRACE TO 2%
TRACE TO 2%				WEAK	TRACE

GAMMA LOG (CPS/DIV)

20 40 60 80

175

171 cps

154 cps

182 cps

182

40 80 120 160 cps

187.5

SAM #

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-74-X

PAGE OF

COORDINATE X: 92 100N NORTH

COORDINATE Y: 159 + 98.5 EAST

ELEVATION Z: 321.6m

INCLINATION: -90°

AZIMUTH: /

BOREHOLE Ø: NQ

CASING DEPTH:

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: JANUARY 28 - JANUARY 31 1980

TOTAL DEPTH: 187.52m

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

INSTRUMENT: MT SOPRIS 2500 A-I-5-8 #79

PROBE GAMMA: AI-6-23 #155

PROBE NEUTRON:

DATE of LOGGING: JANUARY 31 1980

TIME of LOGGING: 2 HRS

TOTAL DEPTH: 187.52m

OPERATOR: R. AVERY / R. ORR

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0	10 CPS / DIV	5.0 m/min	1:100
187.52			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

REMARKS: ANOMALOUS RADIOACTIVITY : 110.8m 177 cps
138.1m 2582 cps
145.6m 482 cps
145.9m 402 cps
} CORRECTED VALUES

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR74

AREA: Maybelle River UTM: 6441325N, 524475E	DISPOSITION: 68841000Z PROJECT NO.: 71-42	PAGE 1 OF 4 DRILLED BY: Midwest COMMENCED: JANUARY 26 1990 COMPLETED: JANUARY 28 1990
COORDINATES: L92 N 160+00 E	PLASTIC PIPE: yes (no) DEPTH: / CASING REMOVED: yes (no) DEPTH: 40m	
TOTAL DEPTH (m): ELEVATION (m A.S.L.): 321.6 DIP/AZIMUTH: -90°/-	GEOLOGY BY: R. AVERY 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: NONE COMPLETED

TEST AT(m)																
DIP																
AZIMUTH																

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 25.5 m	SANDY DIAMICTON, OUTWASH SANDS & GRAVELS
DEVONIAN (MCMURRAY FM.)	25.5 - 41.0 m	MASSIVE, MEDIUM GRAINED, DOLOMITIZED SANDSTONE CONTAINING THIN SEAMS OF OLIVE GREEN CLAY
MANITOU FALLS FORMATION - ATHABASCA GROUP	41.0 - 71.0 m	FINE TO MEDIUM GRAINED, STRONGLY BLEACHED & SILICIFIED SANDSTONE CONTAINING NUMEROUS BRECCIATED AND STRONGLY FRACTURED INTERVALS WHICH HAVE BEEN HEALED BY SECONDARY QTZ & ACCESSORY BITUMEN.

HOLE ABANDON AT 71 M DUE TO STUCK RODS IN HOLE

INVESTIGATIONS: (DOWN-HOLE GAMMA-LOG, GEOCHEMISTRY, MINERALOGY, OTHERS) - NONE

DDH No. MR-74

PAGE 1 OF 2

m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
0m					OVERBURDEN 0 - 25.5 m SANDY DIAMICTON, OUTWASH SANDS & GRAVELS						
5											
10											
15											
20											
25											

DDH No. MR-74

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFICATION	BITUMEN	GAMMA LOG (CPS/DIV)	SAM #
25					OVERBURDEN								
20	66	43	19		25.5 - 41.0m MOTTLED TAN & BROWN COLORED, MASSIVE, MEDIUM GRAINED DOLOMITIZED GRAINSTONE (SANDSTONE) CONTAINING, OCCASSIONAL SUBROUNDED FLOATING VITREOUS GRAY & WHITE QTZ GRANULES BOUND TOGETHER BY QTZ CEMENT. SUBPARALLEL SEAMS OF DISCOLORED, OLIVEGREEN CLAY (SOLUTION SEAMS??), 2 TO 7mm THICK ARE RELATIVELY COMMON THROUGHOUT THE INTERVAL.					STRONG			
29													
30	0				29.0-38.0 NO CORE RECOVERED								
32													
35	0												
38													
40	73	25	12										
41				PY	FRACTURE FILLED WITH BITUMEN & MINOR PYRITE								
					MANITOU FALLS FORMATION								
					41.0 - 71.0 m WHITISH-GRAY, FINE TO MEDIUM GRAINED, STRONGLY SILICIFIED SANDSTONE CONTAINING BOTH LOW ANGLE & ROTATED PLANAR CROSS BEDDINGS. THE ENTIRE INTERVAL IS FURTHER CHARACTERIZED BY AN EXTREMELY DENSE NETWORK OF SUB VERTICAL & SUB PARALLEL FRACTURES, SOME OF WHICH ARE HEALED BY QTZ, SOOTY PYRITE & BITUMEN; OTHERS REMAIN OPEN. THE INTERVAL RESEMBLES A BRECCIATED SANDSTONE WITH FRACTURES HEALED BY QTZ & BITUMEN.						MODERATE		
44	100	35	>30										
45	100	20	>30										
47	100	23	>30		46.7 SUBPARALLEL FRACTURE NETWORK FILLED BY EUHEDRAL QTZ & BITUMEN 41.2 - 42.1 - BRECCIA ZONE CONTAINING 1-10 CM THICK PACKAGES OF ANGULAR SANDSTONE FRAGMENTS WITHIN A MATRIX OF SECONDARY QTZ. THE ZONE ALSO CROSSCUTS ANY EARLIER FABRIC OF DENDRITIC BITUMEN FILLED FRACTURES.				STRONG	STRONG			
50					SUBPARALLEL FRACTURES FILLED BY BITUMEN								



DDH No. MR 74

PAGE 4 OF 4

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
50				20°–15°	WELL DEFINED TABULAR CROSS BEDDING
				∓20° Bit	SUBPARALLEL FRACTURES FILLED BY BITUMEN
	82	7	>30		
					52.1-52.7 BRECCIA ZONE CHARACTERIZED BY ANGULAR FRAGMENTS OF SANDSTONE WITH A MATRIX OF SECONDARY QTZ + BITUMEN
53					
					2 INTENSELY FRACTURED INTERVAL WITH FRACTURES COATED BY BITUMEN + EUHEDRAL QTZ
	100	12	>30		
55					
				∓ Bit	SUBPARALLEL FRACTURES FILLED BY BITUMEN
56					
					56.4-57.0 INTENSELY FRACTURED INTERVAL
				10°	
	93	8	>30		
				10°	WELL DEFINED LOW ANGLE PLANAR CROSSBEDS
59					
					59.7-60.2m INTENSELY FRACTURED INTERVAL
60					
	100	7	>30		
					60.6-61.8m, 62.2-64.8 BRECCIA ZONE CONTAINING ANGULAR SANDSTONE FRAGMENTS WITHIN A MATRIX OF SECONDARY QTZ, CROSSCUT BY AN INTENSE NETWORK OF DENDRITIC FRACTURES ANNEALED BY EUHEDRAL QTZ + BITUMEN.
62					
	83	26	>30		
65					
					66.1m ± END OF HOLE
				65°	DIP DETERMINATIONS OF PLANAR CROSSBEDS INDICATE A STRUCTURAL STEEPENING OF PREVIOUSLY LOW ANGLE BEDDING HAS OCCURRED IN ASSOCIATION WITH BRECCIATION FROM 69.4m TO 70.1m
	73	16	>30		
				60°	
68				50°	
				∓10°	SUBPARALLEL FRACTURES COATED BY BITUMEN.
					69.4 - 70.1m BRECCIA ZONE CHARACTERIZED BY COARSE ANGULAR SANDSTONE & CLAY INTRACLAST FRAGMENTS WITHIN A QTZ - CLAY MATRIX.
70				10°	
				70°	
					HOLE ABANDONED AT 71m DUE TO STUCK RODS
75					

BLEACHING: STRONG

MAROON HEM.

RED HEM.: WEAK

GREEN ALT.

SILICIFICATION: STRONG

GAMMA LOG (CPS/DIV)

SAM #

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR75

AREA: Maybelle River	DISPOSITION: 6886050004 PROJECT NO.: 71-42	PAGE 1 OF 13 DRILLED BY: Midwest
COORDINATES: L 314 N 219+28E	PLASTIC PIPE: yes (no) DEPTH: — CASING REMOVED: (yes) no DEPTH: 35m	COMMENCED: Jan 26/89 COMPLETED: Jan 31/89.
TOTAL DEPTH (m): 257m ELEVATION (m A.S.L.): 305m DIP/AZIMUTH: -55°/270°	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 Acid Acid.

TEST AT(m)	105.5	34	257
DIP	-57°	-58°	-57°
AZIMUTH	288°	—	—

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 35m	OVERBURDEN
ATHABASCA GROUP	35 - 150.8m	MANITOU FALLS FORMATION: Moderately to strongly bleached, medium grained sandstone, weak maroon hematite, weak to moderate red hematite, trace py along some fractures. weakly to locally moderately fractured
	150.8 - 197.8m	FAIR POINT FORMATION: Moderately to strongly bleached, coarse grained sandstone, weak red hematite, moderately fractured throughout, local zones of friable sandstone, clay gouge and core loss.
BASEMENT	197.8 - 221.4m	PLAGIOCLASE GNEISS: Strongly altered, quartz-(felspar)-gneiss, strong light green alteration, moderate dark green alteration, massive to augen textured.
	221.4 - 252.7	GRAPHITIC GNEISS: Moderately to strongly altered, Pyritic (tr-5%) - graphitic (5->10%) - quartz-(feldspar)-gneiss, strong dark green alteration (chloritization), 225.1 - 228.5m - strongly faulted graphitic gneiss, crush breccia, gouge, minor cataclasite. 233.7 - 236.6m - strongly faulted/sheared graphitic gneiss 242 - 243.8m - Crush breccia, >10% to massive gf, 5-10% pyrite.
	252.7 - 257	PLAGIOCLASE GNEISS: Moderately altered, (biotite) - quartz - feldspar - gneiss, banded texture
	E.O.H @ 257m	

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

UTM COORDS
E 520350
N 6450000

γ-LOG PEAKS

Samples For Geochem

MR75-1	35-40m MF	MR75-10	120-130m
-2	40-50m "	-11	130-140m
-3	50-60m "	-12	140-150.8m
-4	60-70m "	-13	150.8-157m
-5	70-80m "	-14	157-167m
-6	80-90m "	-15	167-177m
-7	90-100m "	-16	177-187m
-8	100-110m "	-17	187-197m
-9	110-120m "		

DDH No. MR75

PAGE 2 OF 13

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					OVERBURDEN						
5											
10											
15											
20											
25											

DDH No. MR75

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	B.Bum	GAMMA LOG (CPS/DIV) 10 (20 40 60 80)	SAM #
25					OVERBURDEN							25	
30													
35					Casing to 35m								
	100	82	21	20°	35–150.8 MANITOU FALLS FM Moderately to strongly bleached, medium grained sandstone with siltstone interlayers, weak maroon hematite, weak to moderate red hematite mainly as liesegang rings, clay intraclasts common, trace pyrite along some fractures.	py	py	py					MR75-1
				35°		py	py	py					
40	100	94	8	45° 60°	35–42.1m. Possible Lazenby Lake Formation (gritty sst with silt layers)	py	py	py					
	100	97	6		42.7–43.2 weak crush breccia-(reheated by qtz ?)	py	py	py					
				35°	py + dv	py	dv	Mod	Weak	Mod			
				40°	py	py	py						
45	100	94	7		py + euhedral quartz along fracture	py	qtz						MR75-2
	100	100	13	60°	py	py							
50												50	

DDH No. MR75

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicific	Bitumen	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
50	100	98	2	45°			Weak	Mod				50	
55	100	96	6	25°	← euhedral quartz along fracture; clay intraclast	qtz							MR75-3
	100	98	1	10°	← py	py							
60	100	97	6	45°; 50°; 50°	← possible dravite along fracture (rehealed)	dv							
65	100	100	3				Mod	Weak					MR75-4
	100	100	3	60°	← clay intraclast								
70	100	94	13	15°; 25°	← pyrite along fracture	py							
	100	94	6	25°; 60°									MR75-5
75							Str					75	

DDH No. MR75

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
75	97	97	8		← minor silty clay gouge (~2cm)							75	MR75-5
	100	82	14	15° 15°	78.6-78.9m clay-sandy gouge at ~15° CA								
80	100	73	17	10° 20°	← trace py ← trace py 80.2-80.8m series of sub parallel fractures. 10-15° CA	py py							
				20°	← py	py							
85	100	98	7	30°									MR75-6
	100	64	27		← py ← py	py py	Strong	Weak			trace (fractures)		
90	100	94	9	60°	← py	py							
				30° 30°									
	100	97	6		← 10cm friable sst								
95				55°									MR75-7
	100	98	2	25°	← siderite in sst matrix 96.6-97.1m siderite in sst matrix	sid							
					← sid ← sid	sid sid							
					← sid.	sid.							
100	100	97	6	15°	← clay intraclast	py qtz						100	

DDH No. MR75

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
100	100	93	8		101.7–102.7 spheroidal pyrite (trace ~ 1%) within sst matrix
				35°/	← py
				10°/	← py + blu on fracture
105	100	91	8	/50°	← trace py + blu
				5°/ /	← tr. py.
				25°/	~107.3–150.8m Moderately bleached weak red and maroon hematite as liesegang rings
	100	85	11	20°/	
110	100	100	4	70°/20	← tr. py.
				/35°	← trace py.
				/25°	
115	100	97	3	/10°	
	100	94	13		117.2–121.7m. series of sub II fractures, 20-30°CA.
120	100	82	16		
	100	98	7	/40° /45°	
125					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
Strong					
Moderate					
Weak					
Weak					Weak (along fractures)

GAMMA LOG (CPS/DIV) 10

80 40 60 80

100

125

SAM #

MR75-8

MR75-9

MR75-10

DDH No. MR75

PAGE 9 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
125	100	97	4		∠30° ← trace py along fracture
	97	91	9		← clay intraclast.
130	100	85	13		30° ∠ 70°
					XXXX
135	100	94	5		∠50°
	100	93	9		30° ∠
140	100	94	14		30° ∠ ∠30°
					60° ∠ 30°
					← 10-20cm soft white clay gouge
145	100	94	12		∠00
					← clay intraclast
	100	88	16		∠25° ∠20°
150					

m	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIC	BTUFF?
125						
130						
135						
140						
145						
150						

py

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIC	BTUFF?
3	1	2			
Moderate	Weak	Weak			Weak (along fractures)

py

GAMMA LOG (CPS/DIV) 10

20 40 60 80

125

150

SAM #

MR75-10

MR75-11

MR75-12

DDH No. MR75

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
150	97	92	12		150.8 m – 197.8 m FAIR POINT FM							150	12
				60°	Moderately to strongly bleached, coarse grained sandstone with white clay matrix, weak red hematite, moderately fractured throughout (with bitumen along most fractures), local zones of clay gouge.	Moderate	Weak						MR75-13
	100	79	19										
155					← 10cm friable sst								
	100	79	>30		fractured / friable sst								
					fracture / friable sst.								
					← 158.1-158.4 m weakly friable sst. (20cm core loss?)								
	94	87	>10?	15°									
160				20°									
	100	82	25		moderately fractured.			Weak			Weak (along fractures)		MR75-14
165	100	94	13	45° 30°	← bitumen stained sandy / clay gouge (20cm)	Strong							
	100	88	13	30°									
170					170-172.2 m friable / fractured sandstone (core loss)								
	85	18	>30		171.8-172.2 increase in clay content (sandy / clay gouge)								MR75-15
					173-173.8 fractured sst.								
175	97	76	17									175	

DDH No. MR75

PAGE 1 OF

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 #
175	97	87	15		← 10 cm clay gouge							175	MR75-15
180	100	80	17			Strong		Weak			Weak (along fractures)		MR75-16
185	100	93	16		183.8 - 189.1 siltstone interlayers. (<1 to 1cm wide)								
	97	50	>30		184.9 - 186.9m increase in clay matrix content and sst is moderately friable.								
190	82	33	>30		189.1 - 192.1m increase in clay content (>50%) with qtz grains still visible, strongly friable (core loss)	Moderate		Moderate					MR75-17
	57	27	>30		193.4 - 194.1m fractured friable sst, light green clays in matrix (increase in clay content)				17.4m				
195	100	82	13		← 20 cm sst with increased clay matrix content - light green clays								
					0° ∓ 10°								
	85	67	>30	sst / BM	Uc at 197.8m sst / BSMT Fault contact - contact at ~ 8° to CA. stringer veins of green clays penetrate from basement up into sst.				Sst. 17.4m.				
200												200	

DDH No. MR75

PAGE 10 OF 13

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	BIOTITE	STRUCTURE	GAMMA LOG (CPS/DIV) 10	SAM #
200	100	87	14	75°	197.8 – 221.4 Strongly altered quartz-(feldspar)-gneiss, quartz is only remaining unaltered mineral, strong light green alteration, moderate dark green alt., weak to locally moderate hematization, massive to augen textured.								
205	100	85	12				n/r						
	100	76	20+	20°	206.6 – 206.9m clay gouge								
210	100	90	13	35° 30°									
	100	93	11	50°				Moderate					
215	100	76	22+						strong light green moderate dk. green				
220	100	88	14										
	100	98	3	70° 80°	221.4 – 252.7m Moderately to strongly altered, pyritic (trace) – graphitic (trace to 5%) – qtz-fsp-gneiss, locally fault brecciated and gouged, graphite 5->10% diss and >10%-mass locally in strong faulting, strong light and dark green alteration.								
225													

DDH No. M875

PAGE 11 OF

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
225	97	50	>30		225.1 - 228.5 m strongly faulted graphitic gneiss consisting of crush breccia, graphitic gouge and minor cataclasite, faulting appears to be ~ 25-30° C.A., graphite 10% to massive in strongest faulting, pyrite up to 5% locally (± veinlets)
	100	76	>30	30°	
230	100	74	>30	25°	
235	100	67	>30		233.7 - 236.6 m - strong faulting - crush breccia, gouge + cataclasite, pyrite 5-10% graphite 10% to massive.
	100	76	>30		
240	100	90	22+	33°	
	100	82	20+		242 - 243.8m strong crush brecciation, country rock fragments in groundmass of >10 to massive f. gr. graphite 5-10% pyrite
245	100	88	14	36°	243.8 - 257m generally un-faulted, banded graphitic gneiss graphite content 2-5%, Pyrite 2-5%
	100	47	>30	40°	
250					

BLEACHING | MAROON HEM. | RED HEM. | GREEN ALT. (strong dk green, mod light green) | WHITE ALT. | EPIDOTE

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

DDH No. MR75

PAGE 12 OF 13

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10 20 40 80	SAM #
250	100	96	>30		252 - 252.7m graphitic fault gouge				Strong	250	
					252.7 - 257m Moderately altered, (biotite)-quartz-feldspar-gneiss, banded.						
255	100	88	15	15° 20° 20°					Mod		
					E.O.H @ 257m.						
260											

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7742

HOLE NO. MR75

COORDINATE X: L 314 N

COORDINATE Y: 219+28E

ELEVATION Z:

INCLINATION: −55°

AZIMUTH: 270°

BOREHOLE Ø: NQ

CASING DEPTH: 35m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: Jan 26 - Jan 31/90

TOTAL DEPTH: 257m

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

INSTRUMENT: Mt. Sopris 2500 SN 79

PROBE GAMMA: G375A SN 105

PROBE NEUTRON:

DATE of LOGGING: Jan 31/90

TIME of LOGGING:

TOTAL DEPTH: 256.5

OPERATOR: B.L.

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0	10 cps/div	5m/min	100/1
256.5			

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

REMARKS:

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR76

AREA: MAYBELLE RIVER	DISPOSITION: 6534120001 PROJECT NO.: 71-42	PAGE 1 OF 7 DRILLED BY: MIDWEST DRILLING
COORDINATES: 108+00N; 163+64E UTM: 6442750N, 523650E	PLASTIC PIPE: yes no DEPTH: CASING REMOVED: yes no DEPTH: 40m	COMMENCED: FEBRUARY 2 1990 COMPLETED: FEBRUARY 6 1990
TOTAL DEPTH (m): 137 m ELEVATION (m A.S.L.): 317 m DIP/AZIMUTH: -60/045°	GEOLOGY BY: R. AVERY CORE STORED AT: JAS LAKE	CORE SIZE: NQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: yes no PAGE: 1	DOWN-HOLE PULSE-EM yes no

DIP TEST: PAJARI PAJARI

TEST AT(m)	61.5	135.5														
DIP	-63°	-63°														
AZIMUTH	040°	047°														

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0.0 - 37.5 m	SANDY DIAMICTON, OUTWASH SANDS & GRAVELS DEVONIAN 20 - 37.5m
MANITOU FALLS FORMATION ATHABASCA GROUP	37.5 - 71.3 m	FINE TO MEDIUM GRAINED, CLEAN, WELL SORTED, SANDSTONE WITH WELL DEFINED PLANAR CROSSBEDS THROUGHOUT; MODERATELY BLEACHED & WEAK RED HEMATIZATION. MAROON HEMATITE IS COMMON THROUGHOUT AS THIN BEDDING BEDDING PARALLEL SEAMS. PYRITE BITUMEN FORM THE PREDOMINANT FRACTURE COATINGS.
		UNCONFORMITY, 71.3 m - 85° TO CORE AXIS
HEMATIZED GRANITOID	71.3 - 90.4 m	REDDISH BROWN, STRONGLY HEMATIZED, MASSIVE TO WEAKLY FOLIATED. MEDIUM GRAINED, BIOT-HBL-QTZ-PLAG-GRANITE CONTAINING WISPY BANDS OF HEMATIZED BIOT? & HBL.
GRANODIORITE	90.4 - 137 m	RELATIVELY FRESH (LOCALLY CHLORITIZED & HEMATIZED), POORLY TO WELL FOLIATED, MEDIUM TO COARSE GRAINED, PINK, BIOT? - KSPAR - QTZ - PLAG - GRANODIORITE CONTAINING OCCASSIONAL THIN PEGMATITIC INTERVALS.
	137m - END OF HOLE	

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

UTM
E 523650
N 6442750

GEOCHEMISTRY

MR-76-1	71.3-66 m	[illegible]
2	66-61 m	"
3	71.3-61 m	"
4	61-51 m	"
5	51-37.5 m	"

DDH No. MR-76

PAGE 2 OF 7

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
0					OVERBURDEN 0-37.5m. SANDY DIAMICTON, OUTWASH SANDS & GRAVELS						
5											
10											
15											
20					Top of Devonian Beds from γ-Log.						
25											

DDH No. MR-76

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
25												
30												
35					OVERBURDEN							
					OPEN FRACTURE							
38				10	37.5 - 71.3 m							
				50 BLK	→ MANITOUS FALLS FORMATION - ATHABASCA GROUP ←							
				50	BUFF WHITE TO PINK SUTTON COLORED, FINE TO MEDIUM GRAINED, CLEAN, WELL SORTED SANDSTONE WITH WELL DEFINED PLANAR CROSSBEDDING THROUGHOUT. MODERATELY BLEACHED & WEAKLY RED HEMATIZED THROUGH MAROON HEMATITE IS COMMON IN THIN BEDDING PARALLEL SEAMS, WITH PYRITE & BITUMEN FOUND AS THE PREDOMINANT FRACTURE COATINGS.							
				20 BLK Q	BITUMEN COATED FRACTURE							
	100	67	26		38.4m WELL DEFINED PLANAR CROSSBEDS							
				60°	38.7m FRACTURE PARTIALLY COATED BY EUHEDRAL QTZ & BITUMEN							
40				50 Py Cy 60								
				50 Py	39.6m CLAY COATED FRACTURE							
					39.7m FRACTURE PARTIALLY COATED BY SOOTY PYRITE							
41					40.5m BEDDING PARALLEL FRACTURE PARTIALLY COATED BY SOOTY PYRITE.							
					40.9m CLAY INTRACLAST							
				15 Py 70°	41.3m HEMATITE ALTERED, CLAY INTRACLAST INTERGRANULAR BITUMEN THROUGHOUT CORE.							
	90	87	11	30 BLK	41.6m PLANAR CROSSBEDDING WELL DEFINED, PYRITE FILLED FRACTURE							
					42.6m BITUMEN COATED FRACTURE							
				20 BLK Q	43.6m BITUMEN, EUHEDRAL QTZ COATED FRACTURE							
44				65	← WELL DEVELOPED PLANAR CROSSBEDDING							MR 76 5
45				20° BLK	← BITUMEN COATED FRACTURE							
					← THIN BANDS (.5-2cm THICK) OF BEDDING PARALLEL MAROON HEMATITE							
	100	80	26	60	← PLANAR FORESETS, WELL DEVELOPED							
47				70	← PLANAR CROSSBEDS							
				60°	← UNFILLED FRACTURE							
	100	88	18									
				35 BLK	← FRACTURE PARTIALLY FILLED BY BITUMEN							
50												

MODERATE

MODERATE

WEAK

WEAK

DDH No. MR-76

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	SILICIFICATION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	PYRITE	GRAPHITE	GAMMA LOG (CPS/DIV)	SAM #
50				15°	← UNFILLED FRACTURE									
				10 BLT	← UNFILLED FRACTURE									
	100	98	12	70	← WELL DEFINED PLANAR CROSSBEDDING									
				10° BLT	← FRACTURE PARTIALLY FILLED BY INTERSTITIAL BITUMEN									
53				70	← 53.4m - PLANAR CROSSBEDDING 53.5 - 57.4m CIRCULAR MAROON HEMATITE MOTTLES 1-3mm INDIAMETER, THROUGHOUT CORE			WEAK	WEAK					
55	100	90	13	70 85	← PLANAR CO-SETS, WELL DEFINED									MR-76 1
56														
					← 57.2m CLAY INTRACLAST									
	97	93	21	15°	← FRACTURE PARTIALLY COATED BY BITUMEN									
				80°	← CROSSBEDDING, WELL DEFINED									
59				70										
60				30 Py	← FRACTURE PARTIALLY COATED BY PYRITE									
	94	95	15	80 BLT	← BITUMEN COATED FRACTURE									
				35 BLT Py	← BITUMEN, PYRITE COATED FRACTURE									
62				BLT 60° Py										
				70	← PLANAR CROSSBEDDING	MODERATE								
	100	80	22											MR-76 2
				70	← BEDDING WELL DEFINED									
				70°	← BEDDING PARALLEL BITUMEN PYRITE COATED FRACTURE									
65					64.7 m - RELATIVELY SHARP CHANGE FROM MEDIUM TO COARSE GRAINS RE OCCURS - THIN, VERY COARSE GRAINED INTERVALS (<1cm THICK) ARE COMMON PLACE.									MR-76 3
	100	93	13	65°	← BEDDING WELL DEFINED BY GRAIN SIZE VARIATIONS		WEAK		MODERATE		71.3-71.4m TRACE TO 2% PYRITE GRAPHITE			
68				65	← BEDDING WELL DEFINED BY INTERVALS OF V. COARSE SANDSTONE.									MR-76 1
	100	92	14	70°	← 69.4m UNFILLED BEDDING PARALLEL FRACTURE									
70				65°	← BEDDING PARALLEL UNFILLED FRACTURE									
				65°	← BEDDING WELL DEFINED BY COARSE SANDSTONE INTERVALS									
71					~~~ UNCONFORMITY 85° TO ~71.3m CORE AXIS									
				70°	71.3 - 90.4m REDDISH BROWN, STRONGLY HEMATIZED, MASSIVE									
	100	87	19	10° BLT 10° HEM	TO WEAKLY FOLIATED, MEDIUM GRAINED, BIOT - HBL - QTZ - FLAG GRANITOID CONTAINING WISPY BANDS OF HEMATITE ALTERED BIOT & HBL.				STRONG					
				50°	72.3m BITUMEN COATED FRACTURE, HEMATITE FILLED FRACTURE									
74					73.3m UNFILLED FRACTURE									
75														

DDH No. MR-76

PAGE 5 OF 7

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
75											
	100	92	13		UNFILLED FRACTURE FOLIATION DEFINED BY THE PLATY ALLIGNMENT OF HEMATITE ALTERED HBL.						
77											
	100	95	14		78.3 m 1cm THICK CLAY GOUGE ORIENTED 40° TO CORE AXIS. UNFILLED FRACTURE						
80					TRACE, ACCESSORY, EXTREMELY FINE PYRITE						
	100	95	10		81 - 85.4 m CORE BECOMES MASSIVE & MORE LEUCOCRATIC WITH A GREATER PLAG CONTENT & ONLY 5-10% MAFIC CONSTITUENTS.			STRONG			
					TRACE, EXTREMELY FINE PYRITE & ARSENITE						
83											
					84.9 M - FRACTURED CONTACT AT 60° TO CORE CONTAINING PLAG-CHLORITE AXIS						
85	100	85	14		UNFILLED FRACTURE SLICKENSIDED.						
					FOLIATION POORLY DEFINED BY PLATY ALIGNMENT OF HBL.						
86					FRESH UNALTERED HBL MASKS ITS TRUE APPEARANCE.						
	97	92	14		FOLIATION WELL DEFINED BY THE PLATY ALLIGNMENT OF HBL.						
					88.3 - 89.8 m STRONG SERICITIZATION OF PLAGIOCLASE.						
89					FIRST APPEARANCE OF FRESH UNALTERED BIOT. UNFILLED FRACTURE						
					FOLIATION DEFINED BY THE PLATY ALLIGNMENT OF HBL & BIOT.						
90	100	80	24		90.3 m ENTIRELY PARTIALLY FILLED BY QTZ			WEAK			
					90.4 - 137 m RELATIVELY FRESH (LOCALLY WEAKLY CHLORITIZED & HEMATIZED), POORLY TO WELL FOLIATED, MEDIUM TO COARSE GRAINED, SALMON PINK, BIOT - K-SPAR - QTZ - PLAG - GRANODIORITE CONTAINING OCCASSIONAL, THIN PEGMATITE INTERVALS 30-80cm THICK.						
92											
	97	85	17		HEMATITE COATED FRACTURE FOLIATION DEFINED BY THE PLATY ALLIGNMENT OF COARSE BIOT GRAINS						
95											
					UNFILLED FRACTURE CONTAINING TRACE OF PYRITE						
	90	68	29		96.3 - 98.2 m FRACTURED INTERVAL 96.4 m CHLORITE FILLED FRACTURE						
					FOLIATION DEFINED BY THE PLATY ALLIGNMENT OF BIOTITE						
98				Cal. Chl	98.1 m CHLORITE-CALCITE COATED FRACTURE. CALCITE FILLED FRACTURE						
	97	88	17								
100					99.8 m BITUMEN - CALCITE COATED FRACTURE						

DDH No. MR-76

PAGE 6 OF 7

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
100											
				40° Bit	← CALCITE, BITUMEN COATED FRACTURE						
101				20°	← FOLIATION WELL DEFINED BY ALLIGNED BIOTITE GRAINS						
	100	85	16	20°							
				15° Cal	← FRACTURE PARTIALLY COATED BY CALCITE						
104											
105				30°	← FRACTURE COATED BY RED HEMATITE						
	100	97	16								
				20°	← WELL DEFINED FOLIATION.						
107				15°	← FRACTURE FILLED BY RED HEMATITE						
				15° Hem	107.8-107.9 m - 10cm THICK PACKAGE OF SERICITE ALTERED PLAGIOCLASE STRADDLING A CENTRAL FRACTURE.						
	100	88	16	20°	108.9 m, FOLIATION WELL DEFINED BY THE SUBPARALLEL PLATY ALLIGNMENT OF MEDIUM GRAINED BIOTITE						
				5° Cal.	← FRACTURE PARTIALLY COATED BY CALCITE & RED HEMATITE.						
110											
				30°	← 110.9 m PREVASIVE RED HEMATITE ALTERATION OF BIOTITE FOLIATION, WELL DEFINED.						
	100	98	15		111.6-111.4 - PEGMATITIC INTERVAL CONSISTING COARSE CLOTS OF SUBHEDRAL PLAG & BIOTITE.						
113											
				30° 30°	← UNFILLED FRACTURE, CROSSCUTTING WELL DEFINED FOLIATION.						
	100	58	730	30° 30°	114-114.6 m NUMEROUS UNFILLED FOLIATION PARALLEL FRACTURES ALONG BIOTITE LAYERS PRESENT.						
115				70°	115.0m : 5cm THICK HEMATITIC CLAY GOUGE						
				30°	← FOLIATION WELL DEFINED BY ALLIGNED BIOT.						
116				50° Py	115.4m SUBPARALLEL FRACTURES FILLED BY SOOTY PYRITE??						
				30° Qz	116.4 m QTZ FILLED FRACTURE (SILICA)						
				30°	116.4 m . 5 cm THICK, FOLIATION PARALLEL RED HEMATITE ALTERED BAND.						
	100	95	15		117.6 - 118.1 m PEGMATOID INTERVAL CHARACTERIZED BY COARSE ANHEDRAL CLOTS OF PLAG, QTZ & BIOT.						
				30°	← 118.4 m FOLIATION WELL DEFINED						
119				30° Hem	← RED HEMATITE COATED FRACTURE						
				30°	← FOLIATION WELL DEFINED BY DISCRETE BIOT. BANDS						
				20° Calc	← CALCITE FILLED FRACTURE						
120											
	100	75	26	10° Cal	121.0m FOLIATION WELL DEFINED						
				15°	← CALCITE FILLED FRACTURE						
122					122.0-127.4m RETROGRADE CHLORITIZATION OF BIOTITE APPARENT IN PLACES						
				35°	122.4-122.5m ZONE OF STRONG RED HEMATITE ALTERATION						
					122.3m WELL DEFINED FOLIATION						
	100	89	15	50° Calc	← CALCITE COATED FRACTURE.						
				10°	← FOLIATION WELL DEFINED BY ALLIGNMENT OF PLATY BIOT. GRAINS.						
				84 05	← 124.9 FRACTURE PARTIALLY COATED BY BITUMEN						
125											

WEAK

WEAK

DDH No. MR-76

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
125					125.0-125.8 - INCOHESIVE, FRACTURED CORE ← BITUMEN, CALCITE COATED FRACTURES						
	100	78	25		125.8 m, 10cm THICK, FOLIATION PARALLEL PROTOMYLONITE BAND. (30° TO CORE AXIS) 126.1 STRONGLY CHLORITIZED PROTOMYLONITE BAND, ORIENTED PARALLEL TO FOLIATION. (35° TO CORE AXIS) FOLIATION, POORLY DEFINED BY DISCONTINUOUS ALIGNMENT OF FINE SIZED BIOTITE. ← FOLIATION, WELL DEFINED BY BIOTITE.			WEAK	WEAK		
128				Ch1 Fio Cal	← FRACTURE, PARTIALLY COATED WITH CHLORITE + CALCITE ← CALCITE COATED FRACTURE						
	98	91	14								
130				Hem	← FOLIATION DEFINED BY THE DISCONTINUOUS ALLIGNMENT OF BIOT.						
131					← FRACTURE COATED BY RED HEMATITE.						
					← FRACTURE CROSSCUTTING FOLIATION, PARTIALLY COATED BY GREEN CLAY.						
					← FOLIATION WELL DEFINED.						
	100	87	10	Hem	← FRACTURE PARTIALLY COATED BY RED HEMATITE						
134					134.0-134.3 m FINE GRAINED, UNFOLIATED, GRANITIC DYKE WITH SHARPLY DEFINED MARGINS ORIENTED 40° TO CORE AXIS						
135				Hem	← 134.5 m SUBPARALLEL FRACTURES COATED BY RED HEMATITE ← 134.9 m HEMATITE COATED FRACTURES						
	96	98	8		← VARIABLE FOLIATION, DEFINED BY THIS SUBPARALLEL, DISCONTINUOUS ALLIGNMENT OF PLATY BIOT. GRAINS.						
					136.2 - 10cm THICK FINE GRAINED, UNFOLIATED GRANITIC DYKE ORIENTED 30° TO CORE AXIS 136.7 FINE GRAINED GRANITIC DYKE, SHARP CONTACTS, ORIENTED 40° TO CORE AXIS.						
137					137 m END OF HOLE						

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 71-42

HOLE NO. MR-76

PAGE OF

COORDINATE X: 108

COORDINATE Y: 16364 N

ELEVATION Z:

INCLINATION: -60°

AZIMUTH: 045°

BOREHOLE Ø: NQ

CASING DEPTH: 40m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: FEBRUARY 2-6 1990

TOTAL DEPTH: 137m

LOGGED THROUGH :
OPEN HOLE | PLASTIC PIPE | RODS

INSTRUMENT: MOUNT SOPRIS 2500 - AI-58-79
WINCH - AI-4-7

PROBE GAMMA: AI-61-500

PROBE NEUTRON:

DATE of LOGGING: FEBRUARY 6 1990

TIME of LOGGING: 11:15 - 12:30 PM

TOTAL DEPTH: 136.04 m

OPERATOR: R.AVERY

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
136.04m	100/1	5m/min	10 CPS/DIV
0.10 m			

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR77

AREA: Maybelle River	DISPOSITION: 6886050004 PROJECT NO.: 7142.	PAGE 1 OF 11 DRILLED BY: Midwest
COORDINATES: L142 N 1744 27 E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: (yes) no DEPTH: 18.2	COMMENCED: Feb. 1/90 COMPLETED: Feb. 7/90
TOTAL DEPTH (m): 204 m ELEVATION (m A.S.L.): 300 m DIP/AZIMUTH: −70°/049°	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)	63.5	201.5															
DIP	−68°	−69°															
AZIMUTH	044°	327°															

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 18.2	Overburden.
ATHABASCA GROUP — MF. FM.	18.2 - 142.1 m	Weakly to moderately bleached sandstone, clay intraclasts common, weak to moderate maroon and red hematite as liesegang rings, weakly fractured.
ATHABASCA GROUP — F.P. Fm.	142.1 - 153.5 m	Weakly bleached, coarse grained sandstone, moderate maroon, wk red hematite, weakly fractured or altered
BASEMENT	153.5 - 196.6 m	Moderately altered, (garnetiferous) - (biotite) - quartz-feldspar-gneiss / protomylonite, coarse grained, massive to weakly laminated (ie protomylonitic texture), weak to moderate hematization, relict garnets. 153.5 - 158 m - Paleoweathering "red zone"
	196.6 - 203.2 m	Mafic Dyke - very fine grained, dense, massive mafic rock (diabase?), sharp contact with country rock, small pyrite phenocrysts, ~~or~~ strong dark brown hematite, moderate dark green chlorite.
	203.2 - 204 m	Fresh qtz-feldspar-gneiss
	E.O.H. 204 m	

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

UTM
E 522000
N 6645855

Sample List

MR77X-1	153.5 - 148 m	FP
-2	148.0 - 143 m	FP
-3	153.5 - 143 m	FP
-4	143 - 133 m	MF
-5	123 - 133 m	MF
-6	113 - 123 m	MF
-7	103 - 113 m	MF
-8	93 - 103 m	MF
-9	83 - 93 m	MF
-10	73 - 83 m	MF
-11	63 - 73 m	MF
-12	53 - 63 m	MF
MR77X-13	43 - 53	MF
-14	33 - 43	MF
-15	23 - 43	MF
-16	18 - 23	MF
-17	200 - 200.4 m	BSMT
-18	196.6 - 196.7 m	BSMT

DDH No. MR77

PAGE 2 OF 11

m	REC %	ROD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
0					OVERBURDEN								
5													
10													
15													
20	100	100	0		Casing to 18.2 18.2 – 142.1m MANITOU FALLS FM. Weakly to moderately bleached, fine to medium grained sandstone, clay intraclasts common, weak to moderate red hematite as lies egang rings, weak maroon hematite								
	97	88	7	40°		P4							
				30°		Weak	Weak	Mod					MR77-16
25	100	96	5	70°		P4							MR77-15

35

DDH No. MR77

PAGE 3 OF 11

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
25				∓20°	
				∓35°	← massive pyrite veinlet & healing fracture
	100	95	4	15°∓	← sandy, bituminous clay gouge (1½cm wide) along fracture
30	100	100	0	∓70°	
	100	98	2	20°∓	
				∓25°	
35	97	97	2	∓40°	
				∓20°	
40	100	100	1		
				∓20°	
	100	100	1		← clay intraclast.
				∓35°	
45	100	97	3	0∓	
	100	100	0		
50					

BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN
py					
½		Mod			
py					
py					
Moderate					
Weak					

DDH No. MR77

PAGE 4 OF 11

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
50	100	100	1										MR77-13
55	100	100	1	25°									
	100	100	1	30°	trace pyrite along fracture and trace spheroidal pyrite in sst matrix on both sides of fracture	Med							MR77-12
60	100	100	2	30°	tr. spheroidal pyrite in sst matrix py clay intraclast								
65	100	100	2	25°		Strong / Weak							
	100	97	4	20°	clay intraclast py in sst matrix								MR77-11
				15°									
70	100	98	4	70°									
	100	100	3	20°	clay intraclast								MR77-10
75					74.2m - clay intraclasts py								

DDH No. MR77

PAGE 5 OF 11

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
75	100	97	3		
	100	97	5	25° #	
80				70° #	
	100	100	3	# 40°	
85	100	100	0		
	100	100	0		← clay intraclast
				65°	
90	100	97	2		← traces of pyrite xtals + tr. brick red hematite along rehealed fracture
	100	100	0		← tr. brick red hematite
95	100	100	1		← trace py along healed fracture
	100	100	2		
100					

BLEACHING: Strong; Weak; Moderate

MAROON HEM.

RED HEM.

GREEN ALT.

PY

BR

ER

PY

GAMMA LOG (CPS/DIV) 10 20 30 40

SAM #

MR77-10

MR77-9

MR77-8

DDH No. MR77

PAGE 6 OF 11

m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10 / 10 20 30 40	SAM #
100				10f	← minor spheroidal pyrite along fracture.						
	100	100	1	20f PY	101.2-102.6m trace spheroidal pyrite in sst matrix						MR77-4
					← tr. py + br. red hematite in sst matrix		Mod				
105	100	100	3								
	100	82	2	f30° 50f	106.8-108.9m moderately fractured - fractures 0°-5° CA. associated pyrite.						MR77-7
110				f10°							
	100	94	5	f10°							
				f20°	← trace euhedral qtz + pyrite along fracture						
	100	92	6	f10° f30°	← siderite, pyrite, euhedral quartz in traces along fracture.		Strong	Weak			MR77-9
115											
	100	100	0	65°							
				f20°	← euhedral quartz, pyrite and siderite crystals in trace amounts along fracture.						
120	100	100	2								
	100	100	1								MR77-5
					← trace brick red hematite		Mod				
125											

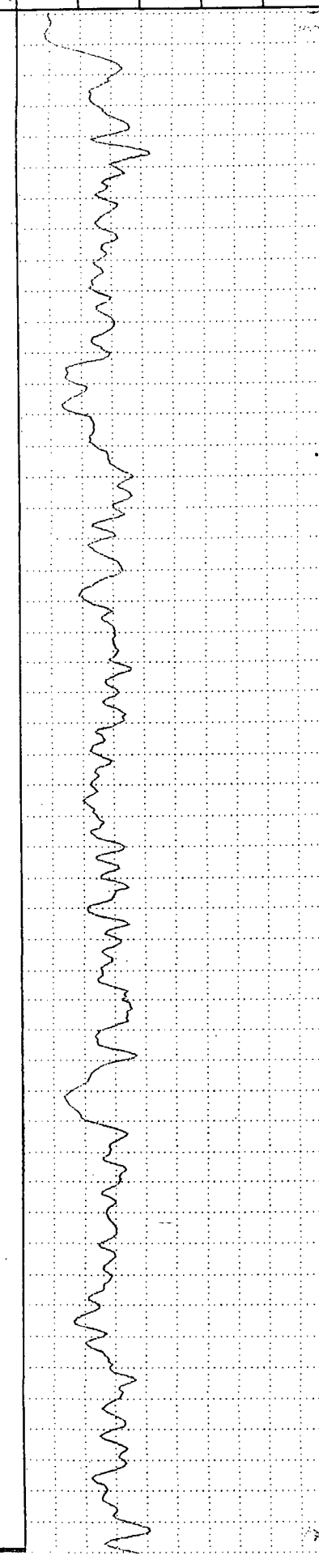
DDH No. MR77

PAGE 7 OF 11

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10 20 30 40	SAM #
125	100	100	0										
130	100	100	0			Mod	Weak						MR77-5
	100	100	0		← trace siderite in cst matrix								
135	100	100	0		← clay intraclast								
	100	100	0		← clay intraclast.								MR77-4
140	100	93	9		142.1 – 153.5 m FAIR POINT FM								
	100	98	3		Weakly bleached coarse grained to pebbly sandstone, moderate maroon, wk red hematite, weakly fractured.	BK	Weak	Mod					
145					142.1 – 143.2 m wk. brick red hematite.								
	100	100	0		147.8 – 147.3 m brick red hem	FP		Weak					MR77-3
150													MR77-2
													MR77-1

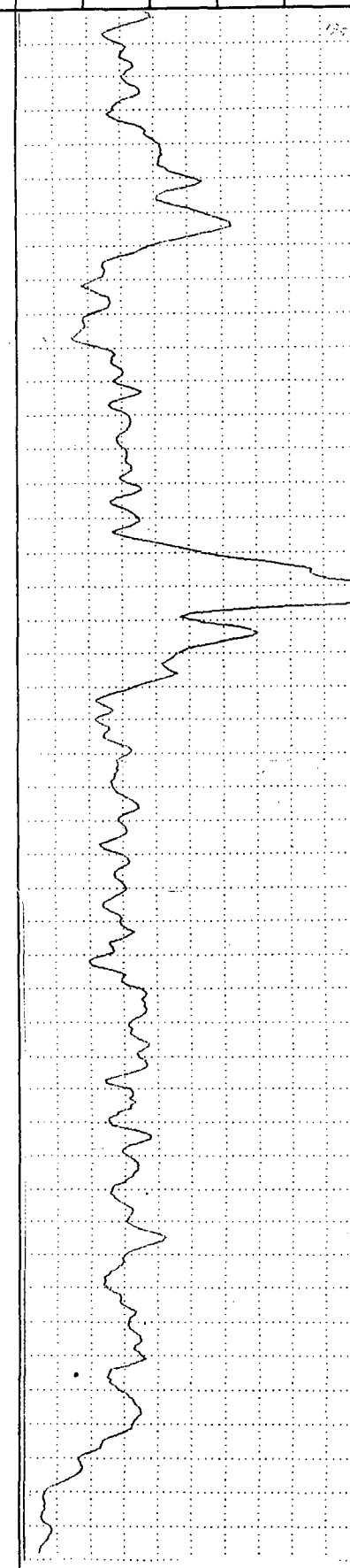
DDH No. MR77

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFIED	BITUMEN	GAMMA LOG (CPS/DIV) 10	SAM #
150	100	100	0			Weak	Weak	Weak		White alt.			MR77-3
	100	100	0		UNCONFORMITY AT 153.5 m								MR77-1
155	100	98	6		Moderately altered, (garnetiferous) (biotite ?) - qtz-feldspar-gneiss / protomylonite, coarse grained massive to weakly laminated (ie protomylonitic) texture, weak to moderate hematization, moderate white alteration, relict garnets.		Moderate						
				≠50° ≠30° ≠30°	153.5 ~ 158 m paleoweathering								
160	100	88	14	50°									
				25° ≠									
	100	97	7	≠25°									
165	100	93	7	30°			Weak			Moderate			
	100	96	10	≠30°									
170	100	94	7	25°	← mylonitic texture well developed								
175	100	75	>30										



DDH No. MR77

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Mica	Brown Mica	GAMMA LOG (CPS/DIV) 10	SAM #
175	100	85	17	35° 20° 20°									
180	100	91	7	25°	5cm fault breccia.								
	100	82	22	20° 30° 30°	weak red hematite along fractures. veinlets of red hematite and quartz ⊥ to protomylonite foliation.					Mod			
185	100	98	7	30°	trace sulphides. ~187 - 196.6m Fresh to weakly altered gneiss/protomylonite.								
190	100	96	8	40° 20°									
	100	100	6	70°	$CaCO_3$ along fracture.								
195	100	97	11		contact sharp - 15° CA.								
200	100	100	23+		196.6-203.2 m very fine grained (aphanitic) dense, massive dyke, strong dark brown hematite, moderate to strong dk. green chlorite, small pyrite phenocrysts, healed fractures with $CaCO_3$ veinlets		Strong		Mod. dk. Green				MR77-18 MR77-17



DDH No. MR77

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 10	SAM #
200	100	91	22+				Strong		Mod dk Green		
					Sharp contact (15° CA) carbonate veinlet at margin between dyke + country rock						
				20°	203.2 - 204m Same rock type as above dyke (along drill hole)						
					E.O.H @						
205											
210											

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 77-42

HOLE NO. MR77-

COORDINATE X:

COORDINATE Y:

ELEVATION Z:

INCLINATION: -70°

AZIMUTH: 049°

BOREHOLE Ø: NQ

CASING DEPTH: 35

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: Feb 2 - 7, 90

TOTAL DEPTH: 204m

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

INSTRUMENT: MI Sopris 2500 SN 79--

PROBE GAMMA: G375 A SN 442

PROBE NEUTRON:

DATE of LOGGING: Feb 7 /90

TIME of LOGGING: 00:30 - 03:00

TOTAL DEPTH: 198.0m

OPERATOR: BL

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0	10cps/div	5m/min	100%/1
198m			

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY DDH No. MR78

AREA: Maybelle River	DISPOSITION: 6884(2000) PROJECT NO.: 71-42.	PAGE 1 OF 5 DRILLED BY: Midwest
COORDINATES: L120+06N 167+78E	PLASTIC PIPE: yes (no) DEPTH: CASING REMOVED: (yes) no DEPTH: 28.9	COMMENCED: Feb 7/90 COMPLETED: Feb 10/90
TOTAL DEPTH (m): 83m ELEVATION (m A.S.L.): 315 DIP/AZIMUTH: -60°/229°	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:

TEST AT(m)																
DIP																
AZIMUTH																

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 28.9m	Overburden.
DEVONIAN	28.9 - 53.0m	Devonian Sediments - dolomite, sandstone.
ATHA BASCA GROUP	53 - 59.5 56.5m	Manitou Falls formation: strongly bleached sandstone, moderately fractured, trace pyrite along fractures.
Basement	59.5 56.5 - 83.0m	Moderately to strongly altered, garnetiferous qtz-felsdpar-gneiss/protomylonite, local ultramylonite, generally massive to local laminated texture, relict garnets.
	E.O.H. @ 83m	Hole lost: Rods broken off

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

UTM COORDS.
6443900 N
523100 E

No γ-Log

Samples For Geochem
MR78-1 53-54.5 MF

DDH No. MR78-

PAGE 2 OF 5

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

DDH No. MR78

PAGE 3 OF 5

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bituminous	GAMMA LOG (CPS/DIV)	SAM #
25					Casing to 28.9m 28.9 – 53m DEVONIAN SEDIMENTS. Interlayered sandstone and sandy-dolostone								
30													
35													
40													
45													
50													

DDH No. MR 78

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Pyrite	GAMMA LOG (CPS/DIV)	SAM. #
50													
	100	91	15	30°	53.0-59.5m MANITOU FALLS FM. Strongly bleached sandstone moderately fractured, traces of weak red hematite, trace Pyrite along some fractures.	Py							
55				50°		Py							
	100	90	15			Py							MR78-1
				35°		Py							
					Unconformity @ 59.5m	Py							
60	100	97	9	55°	59.5-83m strongly altered, (Garnet) quartz-(Fsp)-gneiss/proto-mylonite, local ultramylonite sections, texture generally coarse grained, massive to weakly laminated, garnet in form of hematized relicts.	Strong							
	100	97	9	30°	63.7-64.0m crush breccia (coarse) - clasts mainly quartz.	CO_3 Hb							
65				5°	pyrite, bitumen + carbonate veinlet along fracture								
	94	94	12		carbonate veinlets along fracture.	CO_3							
				70°									
	82	62	>30		core loss due to drilling and blocky basement			Weak					
70				30°	70.7-71.0 - silicified ultramylonite								
	100	100	1										
75													

DDH No. MR78

PAGE 6 OF 8

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White	Brown	GAMMA LOG (CPS/DIV)	SAM. #
75	100	100	2	25°	76.9 - 77.3m Ultramylonite, silicified.		/						
	100	98	5	70°			/						
80	100	97	4		82.2 - carbonate veinlets.		Weak						
					E.O.H. @ 83m		/						
85													

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR-79

AREA: MAYBELLE RIVER	DISPOSITION: 6884100001 PROJECT NO.: 71[illegible]	PAGE 1 OF 12 DRILLED BY: MIDWEST DRILLING
COORDINATES: 298+00N, 221+27E UTM: 6450000N, 520 350E	PLASTIC PIPE: yes no DEPTH: CASING REMOVED: yes no DEPTH: 30m	COMMENCED: FEBRUARY 7 1990 COMPLETED: FEBRUARY 10 1990
TOTAL DEPTH (m): 260.0m ELEVATION (m A.S.L.): 310 m DIP/AZIMUTH: -60°/267°	GEOLOGY BY: R. AVERY 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	ACID	ACID													
TEST AT(m)	258.5	30	150													
DIP	-59°	-60°	-61													
AZIMUTH	057°??															

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
OVERBURDEN	0 - 30.5	SANDY DIAMICTON, OUTWASH SANDS AND GRAVELS
MANITOU FALLS FM ATHABASCA GROUP	30.5 - 159.6 m	MODERATE TO STRONGLY BLEACHED; LOCALIZED WEAK RED-MAROON HEMATITE; MEDIUM TO COARSE GRAINED; CLEAN, CROSS-BEDDED SANDSTONE CONTAINING NUMEROUS BITUMEN COATED FACTURES
FAIR POINT FM. ATHABASCA GROUP	159.6 - 182.8m	MODERATELY BLEACHED; WEAK MAROON & RED HEMATITE; COARSE GRAINED, POORLY BEDDED SANDSTONE CONTAINING SPARSE MATRIX SUPPORTED PEBBLE BANDS & RANDOM FLOATING CLASTS.
		182.8 UNCONFORMITY - IRREGULAR CORE AXIS CONTACT
CHLORITIZED MYLONITE	182.8 - 218.7m	WEAK TO MODERATE CHLORITIZED; WEAK MAROON & RED HEMATITE; WELL FOLIATED, QTZ-FLAG MYLONITE CONTAINING CATACLASTIC & PEGMATITIC INTERVALS
CHLORITIZED GRANODIORITE	218.7 - 245.8m	CHLORITIZED, MASSIVE TO POORLY FOLIATED, BIOT-QTZ-FLAG-GRANODIORITE CONTAINING ACCESSORY TRACE QUANTITIES OF GRAPHITE & PYRITE.
GRAPHITIC GNESS	245.8 - 260.0m	CHLORITIZED, FINE GRAINED, WELL FOLIATED, GARNET-PYRITE BEARING-GRAPHITIC QTZ-FLAG-GNESS.
	260 m END OF HOLE	

UTM: E 520750
N 6449450

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

GEOCHEMISTRY

MR-79-1	182.7 - 178 m	COMPOSITE SANDSTONE SAMPLE	MR 79-11	150-[illegible] m	COMPOSITE SST. SAMPLE
2	178 - 173 m	"	12	120-[illegible] m	"
3	182.7 - 173m	"	13	[illegible] m	"
4	173 - 163 m	"	14	100-90 m	"
5	163 - 159.6 m	"	15	90-80 m	"
6	159.6 - 155 m	"	16	80-[illegible] m	"
7	155 - 150 m	"	17	70-[illegible] m	"
8	159.6 - 150 m	"	18	[illegible] m	"
9	150 - 140 m	"	19	50-[illegible] m	"
10	140 - 130 m	"	20	[illegible] - 30.5 m	"

DDH No. MR-79

PAGE 1 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV)	SAM #
0					0.0 - 30.5 m OVERBURDEN: SANDY OUTWASH SANDS & GRAVELS						
5											
10											
15											
20											
25											

DDH No. MK 11

PAGE 5 OF 16

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 (70 80 60 80)	SAM #
25											
30											
35											
40											
45											

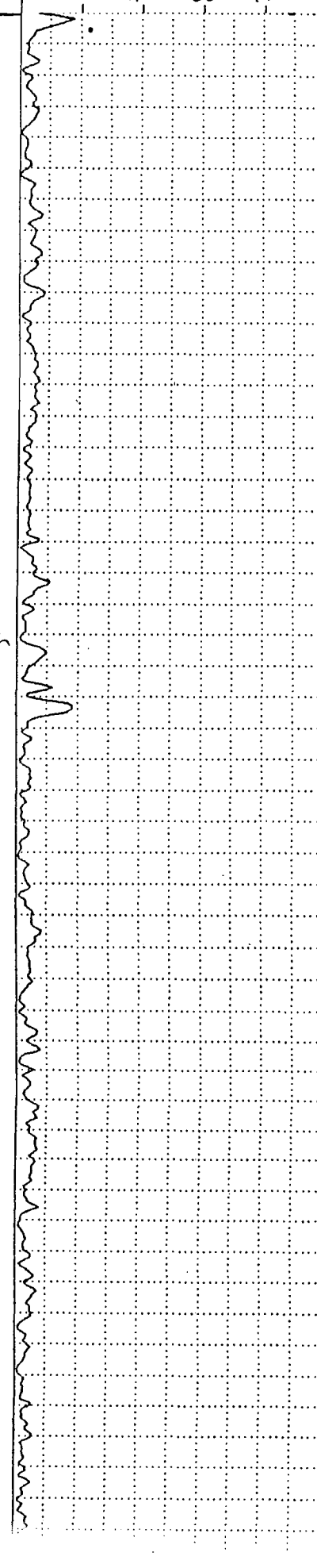
DDH No. MR71

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicification	Pyrite	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
50					51 approx. start of bedrock as indicated on f-log.								
55													
					Start of core								
	100		–		58.1-224.0= Manitou Falls sandstone 58.1-85.5 typical f-g massive sandstone; well bleached to 66.4m	m	w						
60				‡20° ‡15°	traces f-g diss. py; minor local bitumen along fractures; occasional porous layers, and bedding partings						tr tr		MR71-1
	100		–										
	100		3	‡10° ‡10°							tr		
65													
	100		0										MR71-2
70													
	100		0										
	100		3	‡15°	74.5-75.1: no alt interbed S.60°CA								3

DDH No. MR71

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.		SAM
75											
.3	100		0		76.1-85.5: pebbly unit coarse grained ss, 1-10 cm-wide pebble bands: 76.1-76.2, 77.1, 84.6, 85.1	W	W				
.3											
80	100		0								MR71-3
.4											
	100		-	#10°							
.4											
85	100		-		85.5- : f.g. reddish ss, typical Manitou Falls 86: first appearance of clay chips 87-87.1 sct. interfaced, So 60°CA 87: 3 cm-wide clay gouge					tr	
.5											
	100		0								MR71-4
90											
.5											
	100		0								
.6											
95	100		2	#40°							
.6				#40°							
	100		-								MR71-5

GAMMA LOG (CPS/DIV) 20



DDH No. MR71

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
100	100		0		cont. f-g. to m-g ss; mod. primary maroon colour-lie segregating rings; weakly fractured with bitumen on face; 0-1% scattered clay chips.		m to s						MR71-5
.7	100		0										
105													
.8	100		2	∓35°	weakly fractured with trace to minor bitumen on face								MR71-6
.8				∓30°									
110	100		2	∓50°									
.9			3	∓10° ∓0°							tr		
115	100		0										
.0	100		0										MR71-7
120	100		6	∓0° ∓10°							tr		
.1													

DDH No. MR 71

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicified	B.t.	GAMMA LOG (CPS/DIV) 20	SAMP #
125				#40°									
	100		1		126.1: 3 cm green slt. interbed So 65° CA		M						
.1													
	100		0										
130 .1													MR71-8
	100		1										
.2													
135	100		0		135.35: 3 cm green slt. interbed. So 60° CA								
.2													
	100		0										MR71-9
.3													
140	100		0										
.3					143: Start of weak to moderate bleaching	W	W						
	100		0										
145 .4													
	100		0										MR71-10
.4													
	100		7										

DDH No. MK 71

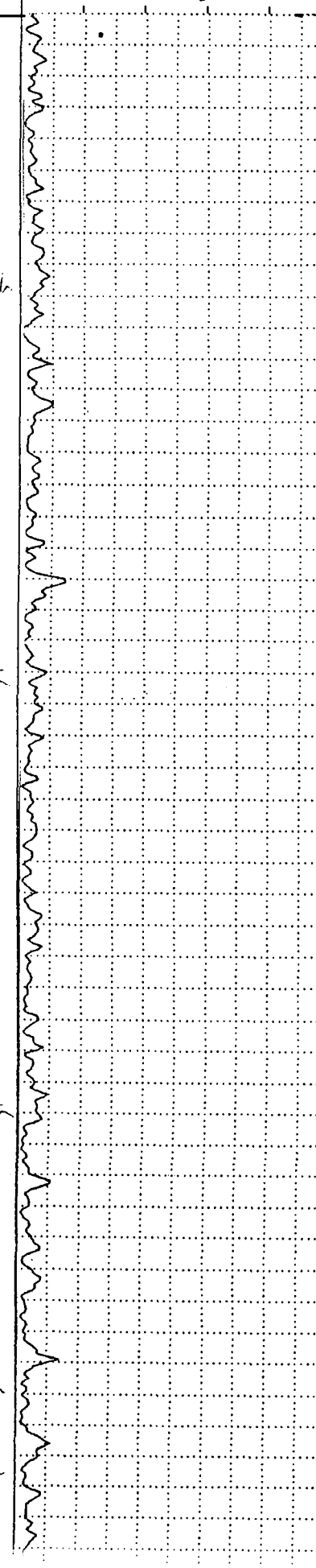
PAGE 8 OF 16

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 (20 40 60 80)	SAM #
150											
.5	100		0								MK71-10
155					151.2-156.0: well bleached						
.5	100		0								
.6	100		0								MK71-11
160											
.6	100		0								
.7	100		0								
165											
.7	100		0								MK71-12
170											
.8	100		0								
.8	100		0								

DDH No. MR71

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicified	Rt.	SAM. #
175					mg to c-g sandstone; poorly bleached; prominent primary maroon colour; weak fracturing; traces locally bitumen along fractures + in porous layers	B S W	W m					
.9	100		0									
.9					179.8-182.3: weakly fractured with minor tan on faces						tr	
180	100		9	∓20°								MR71-13
				∓30°								
.0				∓15°								
	100		7									
185					185.2; 10cm slt. interbed $S_0 \sim 65°$ CA						tr	
.0	100		4	∓30°								
					187.4: Start of C-G to gritty (to 2 mm) layers.							
.1				∓15°								
190	100		3									MR71-14
.1	100		4	∓20°							tr	
.2												
195			4									
				∓30°							tr	
.2					197.55; 2cm green slt. interbed.							
	100		7	∓35° ∓40° ∓20°							tr	MR71-15

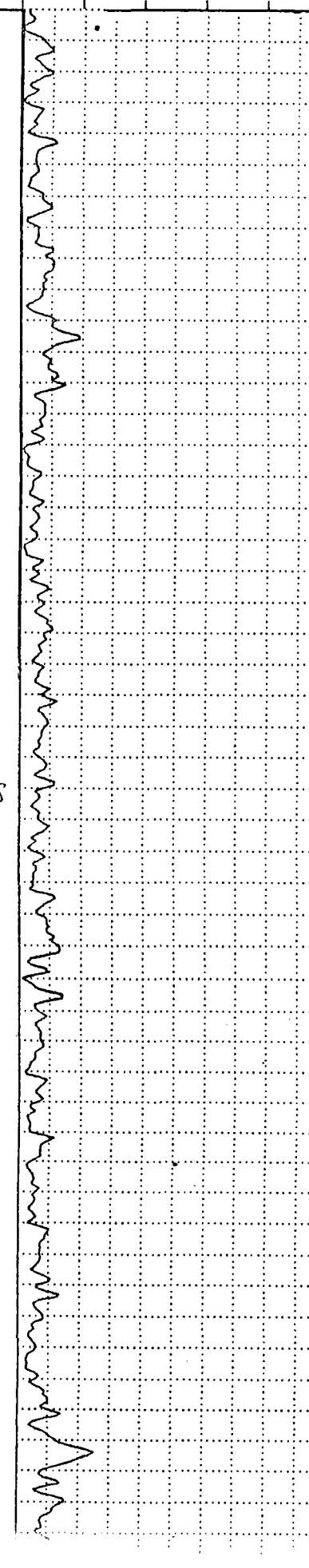
GAMMA LOG (CPS/DIV) 20



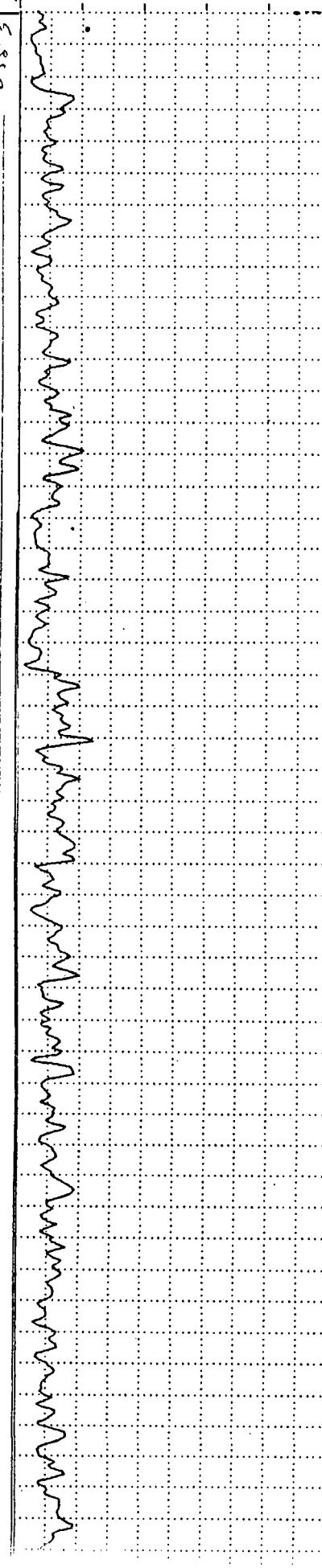
DDH No. MR11

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HI	RED HEM.	GREEN ALT.		SAM #
200					Continued massive m-g to c-g ss; weak to moderately bleached; weakly fractured	C	3				
	100		—								MR71-15
205	100		6								
	100		0								
210	100		4								MR71-16
				1/45°						S	
	100		0								
215											
	100		8	1/30°		M					
											MR71-17
220	100		—								
				1/35°		S					
	100		4								
					224.2						

GAMMA LOG (CPS/DIV) 20 70 40 60 80



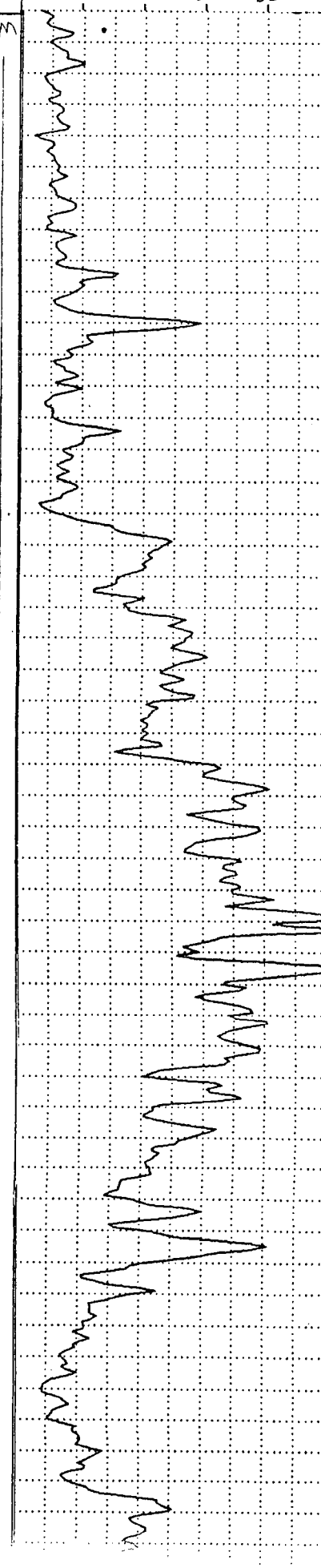
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	Silicified	Alteration	SAM
225	100		7	∓35° ∓30°	224.2-236.6 coarse grained, clay-rich sst, rare pebbles of angular qtz, moderately bleached, weakly fractured; mod. to strong bitumen especially on frac. Locally fractures have sericite developed.						3 to 5	
230	100		4									MR71-18
	100		5	∓20°	231.8-232.1: clay gouge 232.6-233.4: clay gouge	S						
235	90		4	∓25° ∓25° ∓15°								
	87		>30	∓20°	236.8 - similar rock as above but zones of strong to intense clay fault gouge; moderate to strong bitumen within gouge sandy and friable. 236.8-239.6: clay gouge							MR71-19
240	82		>30									
245	100		1									MR71-20
	83		5									
	0				244-252.1: 30% core loss in							



m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.		SAM #
250	70		>30			S				M	71-20
.1	47		>30		252.1-255.1: 53% core loss through seam of sand, clay, water and bitumen.						
255	73		>30		ca. 255m - 256.5m c.g to pebbly ss.						MR71-21
.2	60		>30								
260	33		>30		261.2 - 270.5m Basement thrust fault zone, intense clay alteration (>90% clay gouge), clay gouge is whitish with streaks of dark green clays, core loss				W		
.3	72		>30	±50°							
265	47		>30		267.3-275.5: alternating zones of ss and fault gouge; friable sandy + clay gouge; core loss						
270	57		>30		270.5 - 275.5m Fair Point Fm sandstone; zones of clay gouge.						
.4	77		>30	±25°							

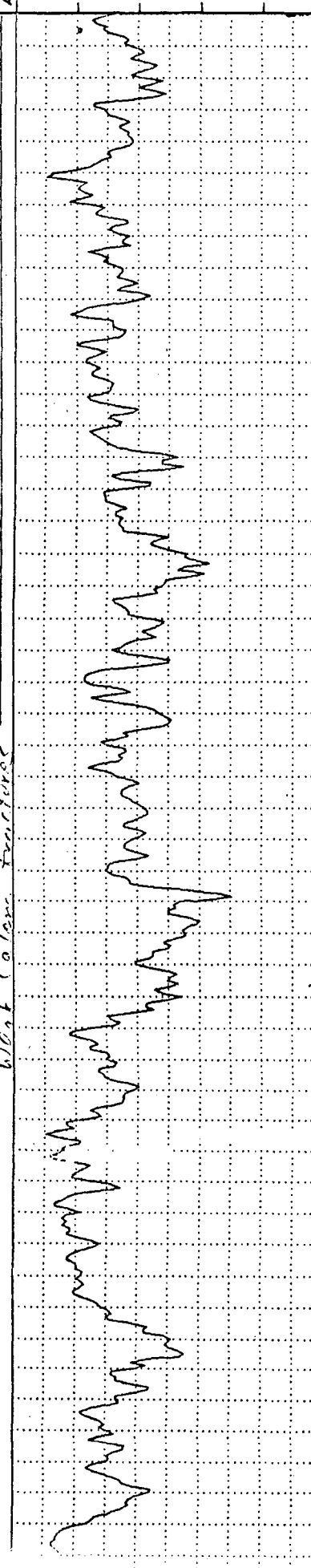
GAMMA LOG (CPS/DIV) 20

20 40 60 80



DDH No. MR71 PAGE 13 OF 16

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	White Ch.	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
275						M to S			W				
	100		>30	≠40° ≠50°	275.5-291.7 m Basement intensely faulted interval, predominantly a mylonite with zones (up to 12 cm) of aphanitic greenish clay gouge; massive-sericite? + chlorite?; difficult to pick u/c because of intense alteration associated with deformation; numerous fractures give rock a shattered look							
280	100		>30										
	100		>30										
285	100		>30										
	100		>30	≠35° ≠0°	286.6: rounded of pebbles to 7 cm - basal Fairpoint? 290. last probable ss.?								
290	100		>30		290.0 unconformity? 291.7-296.5: continued zone of strongly fractured rocks; moderately bleached, [illegible] printed red-zone; interspersed sericite-chlorite zones (to 30 cm) within sheared rock.					Moderate	Weak colour fracture		
	100		>30	≠20° ≠30° ≠80° ≠50° ≠40° ≠60° ≠30° ≠20°									
295	100		>30		296.5 - only weakly fractured - same lithology? as above. Gneissic to locally mylonitic texture								
	100		>30										



DDH No. MK71

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
300	100	14		30°	
9				25°	
305	100	>30			
9					306 - 307.2m fracture zone fracturing mainly ~50°CA moderate bitumen on fractures
9	100	21		45°	
310					
	100	9			311 ~ Hinges of open asymetric folds
					~311 - 315m coarse grained chloritized, qtz-(feldspar) pegmatoid, (garnetiferous) garnet relicts.
315	100	15			
.1					315 - 326.2m Plagioclase-gneiss (quartz-rich), weakly fractured.
	100	>30			XXXXX — Bitumen along fractures
.1					
320	100	19		20°	
.2				70° 90°	— bitumen along fractures.
	100	>30		60°	— fracture with well developed euhedral quartz.

BLEACHING

MAROON HE

RED HEM.

GREEN ALT.

White Alt

Bitumen

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

DDH No. MR71

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White alt.	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
325 .2	100		26	50°	Chloritized. garnetiferous (biotite) - (amphibole/pyroxene) - quartz - feldspar - gneiss (mafic - plagioclase - gneiss); locally hematized, strong ductile deformation evident throughout zone. garnet as large (~1cm) to small (~few mm's), fractured, veined, ductile deformation gives gneissic to laminated texture, fractured.			Weak	W	Mod 11			
.3 330	100		27	80° 40° 50°									
.3	100		>30		332.4 - 333m strongly altered, (clay alteration), strong hematite, chlorite, veined (veinlets)								
.4 335	100		10	50°									
.4	100		5		~338 - 349.6m less mafic plagioclase gneiss, rock also less altered.								
340 .5	100		11	45° 0° 20°	← small (cm. folds) ← blue-grey material along fracture.								
.5 345	100		2	30°									MR71-22
.6	100		6	15°									

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR71

PAGE 16 OF 16

COORDINATE X: Line 428 N

COORDINATE Y: 324 + 15 E

ELEVATION Z: 297 (est. by topo.)

INCLINATION: −60°

AZIMUTH: 262°

BOREHOLE Ø: ~~59~~ NQ

CASING DEPTH: 58.1

CASING WALL THICKNESS: ~~NQ~~ NW

WATER or MUD LEVEL:

DATE of DRILLING: July 8 – July 13, 1989

TOTAL DEPTH: 349.6 m

LOGGED THROUGH:
OPEN HOLE | PLASTIC PIPE | RODS

INSTRUMENT: Mnt. Sopris Model 2500 SN: 79

PROBE GAMMA: SN 442 G375/A

PROBE NEUTRON: —

DATE of LOGGING: July 13/89

TIME of LOGGING: 1:00 PM – 2:00 (Pitari) / 2:15 – 5:00 PM

TOTAL DEPTH: ~~[illegible]~~ 350.0

OPERATOR: [redacted]

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE	DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
Ø	10 cps/div	5 m/min	100/1				
350 m							

REMARKS:

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR72

AREA: Maybelle River	DISPOSITION: 6886050006 PROJECT NO.: 71-42	PAGE 1 OF 21 DRILLED BY: Advance
COORDINATES: L468+00N/330+70E	PLASTIC PIPE: (yes) no DEPTH: 455.1 CASING REMOVED: yes (no) DEPTH: 48.8	COMMENCED: July 14/89 COMPLETED: July 20/89
TOTAL DEPTH (m): 460.1m ELEVATION (m A.S.L.): 308 (est.) DIP/AZIMUTH: 262°/-62°	GEOLOGY BY: B. Lacey CORE STORED AT: Jas Lake	CORE SIZE: NQ CASING SIZE: NW
	DOWN-HOLE GAMMA-LOG: (yes) no PAGE: 21	DOWN-HOLE PULSE-EM yes no

DIP TEST:	Acid	Acid	Acid	Pajari
TEST AT(m)	100	200	300	460
DIP	-63°	-64°	-62°	-63°
AZIMUTH	—	—	—	270°

UNIT		FROM - TO	SUMMARY OF OBSERVATIONS
		0 - 45.7	Overburden
ATHABASCA GROUP	MANITOU FALLS FORMATION	45.7 - 275.3m	Weak to locally moderately bleached, fine to medium grained sandstone, minor siltstone interbeds, most of formation strongly faulted. and strong secondary hematization, zones of strongly silicified sandstone, common dravite and specularite veinlets 54.4-134.7m moderately silicified, local zones of crush breccia and fracturing. 134.7-142.3m Crush breccia, strong secondary hematization, rotated sst blocks. 150.1-180.1m Fault zone with crush breccia and rotated sst blocks. 212.1-230.5m completely crush brecciated and rotated sst.
	FAIR POINT FORMATION	275.3 - 385.2m	Weakly to moderately bleached coarse grained sandstone, locally fauted 306.4-316.2 Fault zone, fault breccia, sst clasts in matrix of sandy clay gouge, associated dark green clays (chlorite?) 330.9-338.6m foliated fault gouge, >50% to massive secondary hematite
BASEMENT		385.2 - 421.6m	Paleoweathering "Red zone", strongly hematized, reworked gneiss
		421.6 - 438.6m	chloritized, weakly hematized, quartz-feldspar gneiss, banded texture, anatectic pegmatoid intervals.
		438.6 - 460.1m	Weakly chloritized. pyritic-biotite-amphibole/pyroxene-quartz-feldspar-gneiss, "Banded Plagioclase Gneiss", common carbonate veinlets.
		E.O.H. @ 460.1m	

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

UTM COORDINATES
6460850 N
518235 E
Downhole & Peaks.
116 cps - 149.4m sst
112 cps - 336.9m sst

Samples.

MR72-1	48.8-55m	MF	MR72-12	155-165	MF
-2	55-65m	"	-13	165-175	"
-3	65-75m	"	-14	175-185	"
-4	75-85m	"	-15	185-195	"
-5	85-95m	"	-16	195-205	"
-6	95-105m	"	-17	205-215	"
-7	105-115m	"	-18	215-225	"
-8	115-125m	"	-19	225-235	"
-9	125-135m	"	-20	235-245	"
-10	135-145m	"	-21	245-255	"
-11	145-155m	"	-22	255-265	"
			-23	265-275.3	"
			-24	275.3-285	FP
			-25	285-295	"

MR72-26	295-305	FP
-27	305-315	"
-28	315-325	"
-29	325-335	"
-30	335-345	"
-31	345-355	"
-32	355-365	"
-33	365-375	"
-34	375-385	"

DDH No. MK42

PAGE 2 OF 21

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

DDH No. MR72

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HE	RED HEM.	GREEN ALT.	GAMMA LOG (CPS/DIV) 20 20 40 60 80	SAM #
25										25	
30					OVERBURDEN					30	
35											
40										40	
45					Top of sst (from γ log) 45.7m Triconed sandstone						
					Casing to 48.8m						

DDH NO. MR72

PAGE 4 OF 21

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicific	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM.
50					48.8-275.3m Manitou Falls Formation								
.9	100	97	12	10cm bx py; 30° sid	Weak to locally moderately bleached fine to medium grained sandstone, minor inter bedded siltstone, zones of moderate silicification, fault zones with strong earthy ("brick") red hematite and rehealed crush breccia, maroon hematite common as liesegang rings, moderately fractured, clay intraclasts common	py; sid; rein		Mod					MR72-1
.9													
55	100	97	10	30° py	48.8-54.4m red hematite in med. grained sandstone	py							
	97	82	20	30° bx py; 10°; 50°	54.4-134.7m Moderately silicified, mod. maroon hematite (as liesegangs) moderately fractured (open + healed), local crush breccia. trace bitumen along some fractures	py							MR72-2
60	100	90	17	btu 20°; 20°	57.7m - clay clasts. 61.7 (10cm) crush breccia							60	
.1	100	96	11	45°	64.5 → 10cm crush breccia	Weak	Mod			Mod	trace (along fractures)		
65													
.1	100	97	11	rh. 15°; rh. 20°									
.2					69.4 - clay intraclasts.								
70	100	87	16		69.7-72.5 moderately fractured sandstone, mostly rehealed (silicified)	py						70	MR72-3
.2	100	95	15	25°	72.1 10cm crush breccia.	py; py							
75												75	

DDH NO. MR72

PAGE 3 OF 3

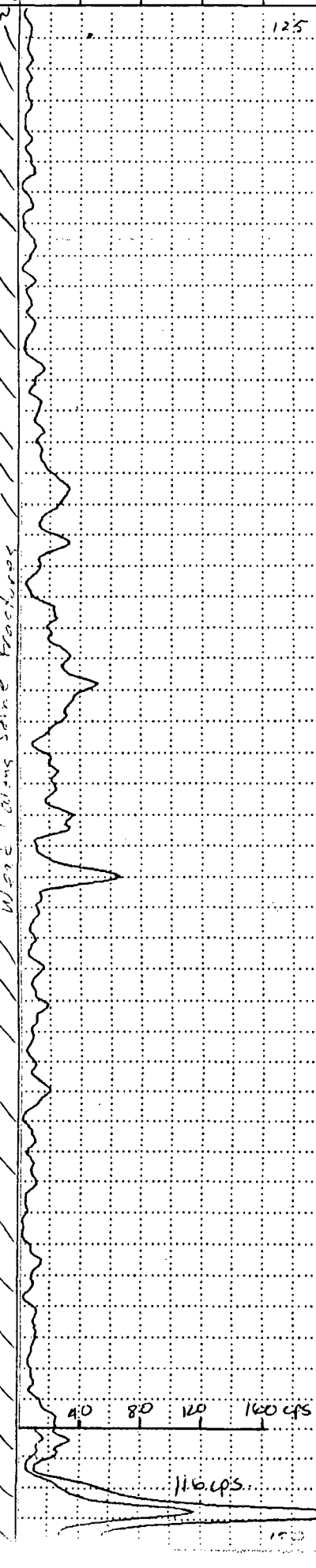


m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM
75					~75-91m mod-strongly fractured, both open and healed hairline fractures. minor zones of crush breccia, trace pyrite and bitumen along fractures. sid + py traces on fracts.								
.3	100	79	>30	bx	75.6-75.8 - crush breccia (silicified) clasts (cm size), strongly rotated, silicified.								
.3					78.2m. 5cm, fine crush breccia strong movement of clasts, strong red hem.								
80	100	67	>30										
.4				bfem sst.	81-81.3m - 20cm vein with massive specularite and brick red hematite (zoned) 20° CA								MR72-4
	100	67	>30	py hem sid.	82-82.5m. Crush breccia cm size sst clasts in matrix of massive brick red hematite								
.4													
85	100	85	23		85.2m. specularite, brick red hematite veinlet.								
					86.7-87.1 siltstone, brick red mudstone								
.5					87.1 - 10cm crush breccia sst clasts in maroon hematite matrix, matrix is vuggy								
	100	85	24		88.7m 1cm wide crush breccia vein ~10°CA	weak	Moderate			Moderate	Weak (along some fractures)		MR72-5
90					90.7-90.9m. 20cm strongly bleached crush breccia, negligible movement of clasts, sst shattered then rehealed.								
.5	100	82	19	dv	90.1-91.5m crush breccia weak lineation of breccia clasts, silicified.								
					92.7 10cm crush breccia diavitic veinlets								
.6					~91-134.7m - mod. fractured open and rehealed								
95	100	97	11		94.9-95.9m 1-2cm wide crush breccia sub-parallel to CA.								
.6					96.9-97.1m crush breccia minor movemen of sst clasts, silicified, fault movement offsets liesegang rings.								MR72-6
	97	88	17		98m - minor silicified light green clay gouge								
.7													

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION		BLEACHING	MAROON	RED HEM.	GREEN AL	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20 / 20 40 60 80	SAM #
100	100	95	13	25°									100	
				30°	← dravite along open fracture	dv								
.7	100	88	16	btu 20° 30° 20°	103.1 - 103.5 parallel fractures 20°-30° CA 103.6m - clay intraclast									MR72-6
105				25° btu										
.8	96	97	11	20° 20°	107.5m 2cm wide crush breccia weakly laminated 25° CA									
.8	100	97	9		109.6m - 10cm weak crush breccia. bleaching around fractures.									MR72-7
110				20° 25° Li 45° py	111.5 - 112.7m parallel fractures with trace pyrite and limonite	Li py								
.9	100	97	11				Weak	Moderate (lies along rings)			Moderate	Weak (traces along some fractures		
115					← dravite along healed fracture	dv								
.9	100	98	13	btu 30° 60° btu										
				60°	117.2 - 118.5m siltstone and silty sandstone, partly brick red hematite, part maroon hem 118.5 - 118.7m - strongly fractured									
120	100	91	14+		← py along healed fracture	py								MR72-8
	100	93	12	40° btu										
				25°	← py + Li trace along fractures	py Li								
.1														

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM	GREEN AL	Silicif	Bitum	GAMMA LOG (CPS/DIV) 20	SAM #
125	100	100	5+		126.1 - parallel fractures healed with dravite (~11 to bedding 50°)								
.1	100	100	4	10° ≠ ≠ 10°	126.7 - 127.7 weakly brecciated sst with minor blebs of dk. green clay in matrix.								
130				blo ≠ 25°						Mod			MR72-9
.1	100	100	6		130.6 - 131m crush breccia, little movement or reduction in size of clasts, silicified.								
.2					132.8 - 133.1m silicified crush breccia, minor rotation or reduction in size of clasts								
135	100	85	16	20° ≠ 20°	134.7 - 142.3 m - fault zone, rehealed crush breccia zone, moderate maroon hematite in sst clasts - also light green clays in sst clast matrix, younger pervasive "brick red hematite replacing quartz and other clays (locally massive brick red), fractured.	Weak	Mod						
.2	100	79	>30		137.6 6cm wide pebble band (grit)			Mod-Str.	illite ?	Weak	Weak (along some fractures)		
.3					137.8 - 138.6 strong to massive dense fine grained, brick red hematite.								
140	100	98	7		138.6 - 7cm wide pebble/grit band. 139.3 - 6cm wide pebble/grit band. 139.6 - 140.3 f. crush breccia massive br. red hem matrix								MR72-10
.3					10cm crush breccia, quartz vein.								
145	100	94	7	≠ 20° ≠ 20°									
.4	100	79	26		146.2 - 148.5m moderately fractured, bleached sandstone, moderate tarry bitumen coating fractures	Mod	Weak						MR72-11
.4	100	85	17	≠ 20°									

sid



m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	SILICIFICATION	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
150					150 - 180.1m Weakly bleached strong red/brown hematite, weak maroon hematite, weakly to moderately silicified sandstone, 150 - 180.1 Fault Zone, extensive zones of crush breccia, breccia fragments generally cm's but large rotated blocks (½ metre to metre) common, weak green clays common in matrix locally fractured.							
5	100	28	14		150.1 - 150.3 - mudstone, green/red; 150.5 - 150.7m - pebbly sst. 150.9 - 151.6m - crush breccia. 151.1 - 151.9m - red/green mudstone, dense, fractured veinlets of siderite 152.2 - 152.8m Crush breccia 157.2 - 160.0m Crush breccia.							
155	100	91	11									
160	100	75	28		-160.0 - 161.0m mod. silicified							
6	100	27	>30		-161 - 161.9. crush breccia and fine crush breccia, fractured, trace chlorite on open fractures. 162.3 - 164.2 Crush to fine crush breccia mostly fine grained red/brown hematite (hematitic clay), chlorite and brick red hematite stringer veins along fractures,							
165	100	100	8		164.2 - 165.6m Rotated sst block bedding dips ~ 25°-30° ie part of crush breccia							
7	100	82	20		165.6 - 166.9m Crush breccia coarse - fragments less than 1cm to 10's of cm's.							
170					166.9 - 170.6m Evidence of faulting from intervals of rotated blocks (to 30° CA)							
8	100	88	17		170.6 - 172.9m Crush breccia, generally large sst breccia clasts, some rotated blocks.							
	100	97	7	by	172.9 - 180.1m - relatively more bleached and silicified, large blocks of rotated sst evidenced from steep bedding L's, light green veinlets parallel to bedding			Mod	Mod	Mod		

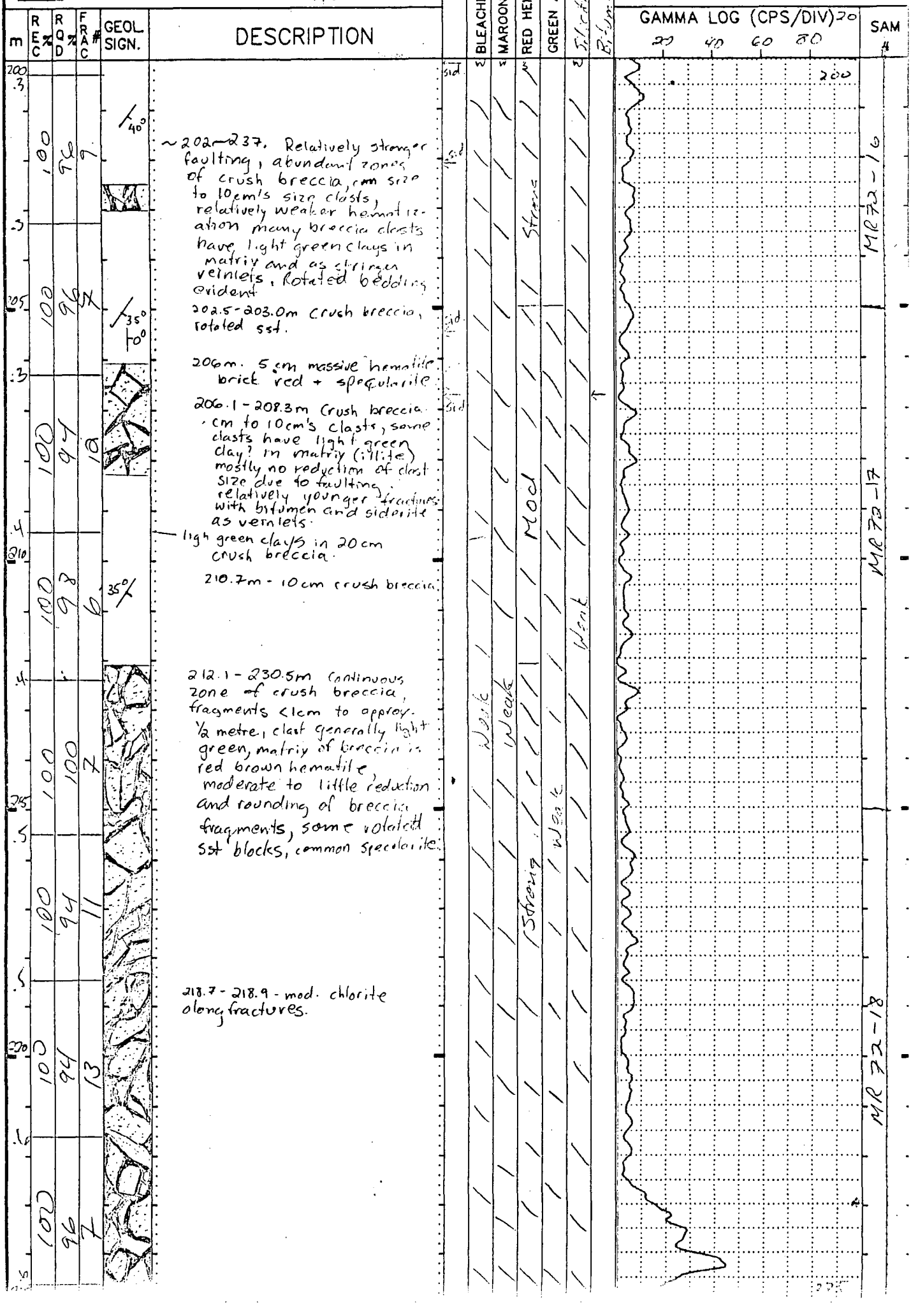
MR 72-11
MR 72-12
MR 72-13

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	GAMMA LOG (CPS/DIV) 20 30 40 60 80	SAM #
175						2	2	3	2	175	
.9	100	94	10		176.6-176.8m 20cm crush breccia cm size breccia clasts.						MR72-14
					178.1m - 10 cm crush breccia cm size clasts.						
.9					178.8-179.0m crush breccia cm size clasts.						
180	100	94	11		180.1 ~ 202m relatively less disturbed sandstone, or larger slightly rotated blocks, zones of steeper than normal sst bedding, zones of smaller scale crush breccia (to 10cm) evident.						
	100	88	14		181.4 - 10 cm crush breccia, cm size clasts.						
185					183.9-184.2m - crush breccia cm size clasts, refractured with bitumen						
	100	88	9		187.8m 10cm crush breccia						
.1	100	97	5		190.2-190.8m open and healed fractures with siderite veinlets + minor tarry bitumen.						MR72-15
190											
.1	100	100	5		rotated bedding						
.2					194.5m 10 cm crush breccia. 194.9-195.5m - strong 'brick red' hematite.						MR72-16
195	100	94	10		siderite veinlet along fracture						
.2											

DDH NO. MR72

PAGE 10 OF

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicified	Bitume	GAMMA LOG (CPS/DIV) 20	SAM
200 .3	100	96	9	40°	~202–237. Relatively stronger faulting, abundant zones of crush breccia, cm size to 10cm's size clasts, relatively weaker hematization many breccia clasts have light green clays in matrix and as stringer veinlets. Rotated bedding evident	sid		Strong				200	MR72-16
.3													
205	100	96	7	35° 0°	202.5–203.0m crush breccia, rotated sst.	sid							
.3					206m. 5cm massive hematite brick red + specularite								
	100	94	10		206.1–208.3m Crush breccia cm to 10cm's clasts, some clasts have light green clay? in matrix (illite) mostly no reduction of clast size due to faulting, relatively younger fractures with bitumen and siderite as veinlets.	sid		Mod					MR72-17
.4					— ligh green clays in 20cm crush breccia.								
210	100	98	6	35°	210.7m – 10cm crush breccia					Weak			
.4	100	100	7		212.1–230.5m Continuous zone of crush breccia, fragments <1cm to approx. ½ metre, clast generally light green, matrix of breccia is red brown hematite, moderate to little reduction and rounding of breccia fragments, some rotated sst blocks, common specularite.	Weak	Weak						
215 .5	100	94	11					Strong	Weak				
.5					218.7–218.9 – mod. chlorite along fractures.								
220	100	94	13										MR72-18
.6	100	96	7										
.5													



DDH NO. MR72

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicific	Bitumen	SAM #
225	100	100	8									
.7	100	100	5				Weak	Strong	Weak	Weak		
230					230.5 End of strongest fault brecciation							MR72-19
.7	100	94	11+		230.5 - 275.3m relatively non-tectonized ie fault brecciated, typical Manitou Falls Sandstone, moderate to strong maroon hematite, fractured, local short intervals of crush breccia. Green Reduction spots throughout	? dv						
.8					230.5 - 239m - fractured (mod) with many having veinlets of green clay and dravite (?)	dv						
235	100	93	20+		233.1m - 10cm crush breccia 234.3m - 10cm crush breccia with chloritic/dravitic veinlets							
.8	100	93	15				Weak					
240												MR72-20
.9	100	100	6	≠30° ≠30°	241.6 dravite + chlorite along fracture.	dv		Strong	Weak			
.9	100	100	4	20°≠	243.2m siderite veinlet along fracture	sid						
245	100	97	8	15°≠ ≠20°	248.3 - 249m - Brick red hematite							MR72-21

GAMMA LOG (CPS/DIV) 20

20 40 60 80

225

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
250	97	93	8		← drawite veinlet along fracture ← drawite veinlets
	100	97	8		252.5 ~ 281m moderate to strong red/brown secondary hematite, moderate maroon hem.
255	100	67	>30		255.2 - 257.7m - mod. to strongly fractured, some open fractures with tarry bitumen and some healed.
					257.3m - 30 cm light green clays in sst matrix
	100	97	7		258.7 ~ 265 mod. to strong hematite clay enrichment, hematite replacing quartz + matrix
260					260.1 - 260.6m strongly silicified sst 260.5 small fault along fractures offsetting hematitic
	100	97	7		262.1 - 262.5m open fractures with tarry bitumen
					263.5 - 263.9m >50% to massive hematite and specularite "brick red" secondary hematitic
265					264.5 - 264.8m >50% to massive hematite as above
	100	100	12		
270	100	39	>30		267.7 - 275m moderate to strong brittle fracturing dark green clay (chlorite) coating fractures.
					270.6 - 10-20cm veinlet with pyrite + specularite crystals in open vug.
	100	50	>30		273.2 - 275 mod. fractured
275	27	11			

BLEACHING | MAROON HEM. | RED HEM. | GREEN ALT. | Silicification | Bitumen

GAMMA LOG (CPS/DIV) 20 | 20 | 40 | 60 | 80

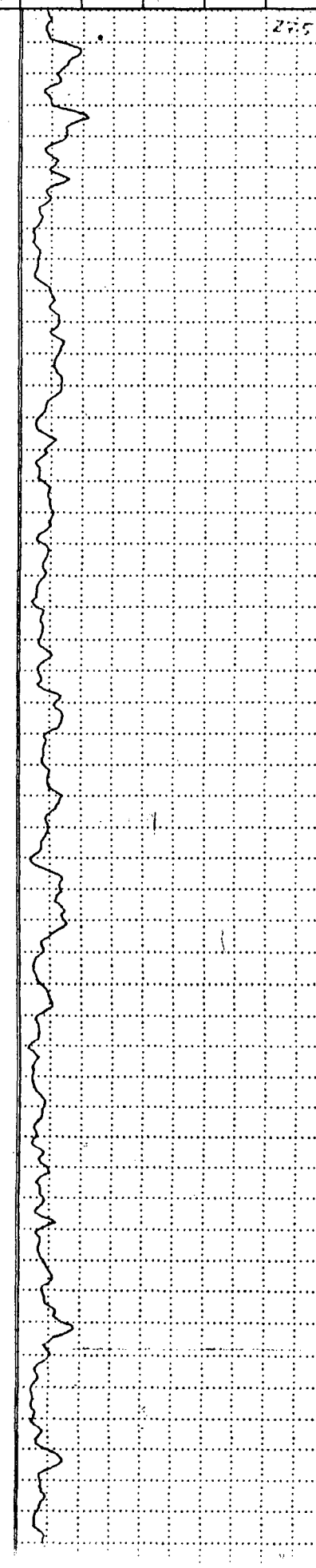
SAM #

MR72-21

MR72-22

MR72-23

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON H	RED HEM.	GREEN ALT	Silicification	Bitume	GAMMA LOG (CPS/DIV) 20	SAM #
275					Gradational MF/FP contact	W	2	2				275	
.5	100	100	3	20° ∓	275.3 - 385.2m FAIR POINT FORMATION Weakly to moderately bleached, coarse grained to pebbly sandstone, maroon and red/brown hematite, clay matrix, mostly weakly fractured, with some intervals of faulting; weak green (illite?) clays throughout most of FP.								
280	100	96	4		281.2 - 281.4m dk green clays along fracture.								MRT2-24
.6	100	100	4	∓ 60° ∓ 20°									
285					285.3 - 289.2 relatively more strongly bleached, weaker maroon and moderate red hematite.								
.6	100	98	3	∓ 40°		Weak	Moderate	Moderate	Weak (trace)				
290	100	94	7	∓ 30° 10° ∓	289.2 - 289.9 moderately fractured with bitumen veinlets.								MRT2-25
.7	100	100	10	∓ 35°	292 - 294.2 maroon hematite mostly leached out, red hematite and minor green clays in matrix								
295	100	98	9	28° 08	295.5 - 296.9m no maroon hematite, moderate green clays and red hematite in matrix 296.3 - 296.6 minor fault breccia with moderate red hematite 10° CA 2-3cm's wide.								MRT2-26
.8	98	100	5	∓ 30°									



DDH NO. MR72

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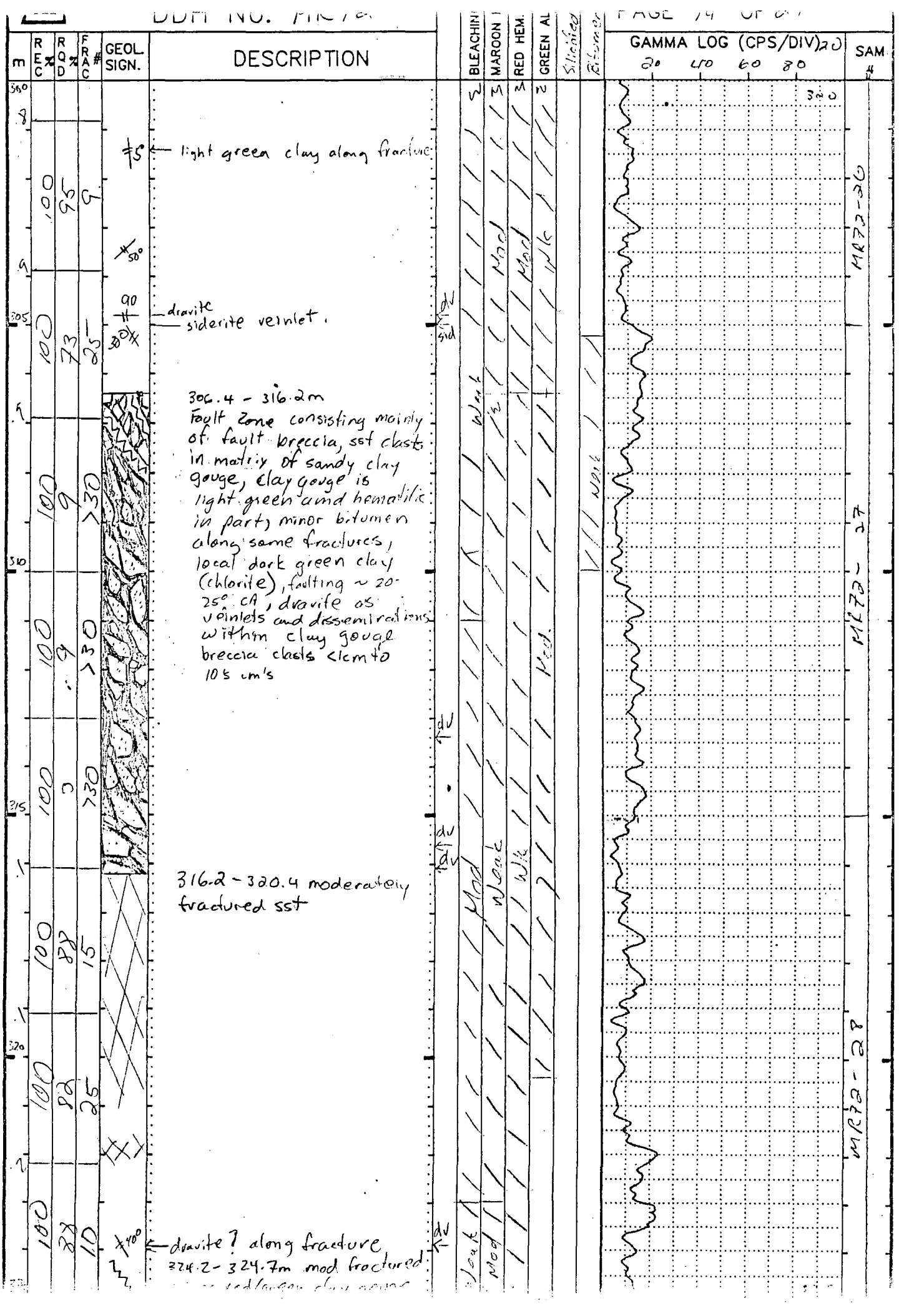
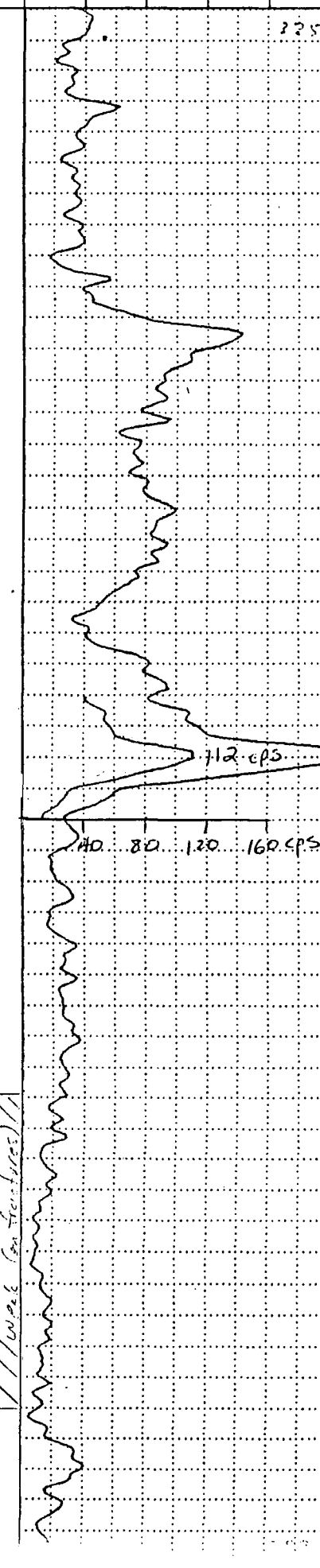
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM #
300						W	M	M	W			300	
8	100	95	9	75°	← light green clay along fracture		Mod	Mod	Wk				MR72-26
9				50°									
305	100	73	25	90 / 30°	← dravite / siderite veinlet.	dv / sid							
9	100	9	>30		306.4 - 316.2m Fault zone consisting mainly of fault breccia, sst clasts in matrix of sandy clay gouge, clay gouge is light green and hematitic in part, minor bitumen along some fractures, local dark green clay (chlorite), faulting ~ 20-25° CA, dravite as veinlets and disseminations within clay gouge breccia clasts <1cm to 10's cm's		Weak				Wk		MR72-27
310	100	9	>30						Mod.				
315	100	0	>30			dv							
1	100	88	15		316.2 - 320.4 moderately fractured sst	dv / dv	Mod	Weak	Wk				
320	100	82	25										MR72-28
2	100	88	10	40°	← dravite? along fracture 324.2 - 324.7m mod fractured red/green clay gouge	dv	Weak	Mod					



DDH NO. MR72

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicifi	Bitum	GAMMA LOG (CPS/DIV) 20	SAM #
325 .2	100	76	30+		326.1 – 326.7m >50% to massive hematite replacing sst (qtz) – hematitic clay gouge, fractured, relatively cohesive, waxy lustre on fracture faces, chlorite along fractures								
.3	100	85	15		327 – 328m same as above. slickensides.								
330 .3	100	9	>30		330.9 – 338.6m >50% to massive red hematite in the form of foliated fault gouge, cohesive, abundant stringers and blebs of chlorite, strongly fractured, laminated texture, sheared with abundant slickensides. Comlete replacement of sandstone by hematitic and chloritic clays. foliation of fault gouge from 20° to 30° CA average, specularite common.	Weak	Weak	Strong	Mod (Dk green chlorite)				MR72-29
.4 335	100	6	>30										
.4	100	33	>30		339m hematization decreases to weak. 338.6 – 347.5m. moderately to strongly fractured and zones of sandy clay gouge								MR72-30
340 .5	100	28	>30		340.6 – 341.4m sandy clay gouge. 341.8 – 343.5m mostly sandy clay gouge 343.5 – 347.5 mod. fractured				Weak light green clay				
.5	100	47	>30		347.5 – 385.2 Weakly to moderately bleached typical Fair Point Fm.	Mod		Mod.			Weak (on fractures)		
.6	100	88	17										MR72-31
.6					...ite along open fractures								



DDH NO. MR72

PAGE 10 OF 21

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	Silicification	Bitumen	GAMMA LOG (CPS/DIV) 20	SAM. #
350	100	94	10	20°	350.5 – 362.5 gritty to conglomeratic sandstone. minor hematitic sandy gouge along fracture	W	W	W				350	MR72-31
.7	100	100	4		well developed euhedral quartz crystals in 2cm wide vug.								
355				30°									
.7	100	100	4	30°	drovite along open fracture.	dv							MR72-32
.7													
360	100	85	21		360.4 – 362.1m moderately fractured								
.8					trace dark green clay along fractures.								
	100	88	11	40° 40° 40°	drovite 363.8 – 364.7m	dv	Moderate	Weak	Moderate				
.8				40°	drovite drovite veinlets along drovite fractures	dv							
365	100	100	5	50° 40°	366.6 – 370.6 Relatively more strongly bleached, weak light green and white matrix (illite/kaol?)								
.9	100	94	13		369.3 – 370m. small (1-2mm) blebs of chlorite or dark green clays				weak				MR72-33
370													
.9	100	97	4	35°	373.9 – 375.2m weak light green clays in sst matrix								

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
375	100	95	9	X 35°	375.4 – 376.2m – numerous dravite veinlets along healed fractures.
	100	85	13		377.4m 10 cm fault breccia in silty sandstone layer, clasts (mm's) in light green clay mtrx
380					379.2 – 80cm crush breccia 80° cA dravite veinlets within.
.1	100	83	24		380 – 382.6m strongly hematitic siltstone/mudstone, some dark green clay minerals, fractured
					382.6 – 383.4m moderate green clays in matrix
1				20°	
385	100	82	16		Basal Conglomerate
					U/C at 385.2m
.2	100	100	8	15°	385.2 – 321.6 Paleoweathering "Red Zone" strongly hematized, weakly chloritized, weakly sericitized (white clay minerals), (biotite) – (hornblende/pyrox.) – quartz – (feldspar) gneiss, completely altered minerals except for quartz foliated to ?protomylonitic texture, very minor brittle deformation except minor fracturing and reworked regolith. foliation 10-20° cA.
390	100	97	3	20°	
.3	100	100	1		
395				20°	
.5	100	100	3	20°	foliation close to core axis, visible open folding.
				15°	
.4	100	100	2	15°	

	BLEACHING	MAROON H	RED HEM.	GREEN AL	White & Brown
	Wk		Wk		
	Weak	Wk	Mod		
			Strong (primary)	Wk	Wk

GAMMA LOG (CPS/DIV) 20 40 60 80

SAM #

MK70 – 34

DDH NO. MIC76

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m	REC %	RQD %	FRAC #	GEOL SIGN.	DESCRIPTION
100					
.4	100	100	3	10°	
				15°	
.5					
5	100	100	4	20°	
.5					
110	100	100	6	30°	
.6					
.6	100	100	5	25°	
115					
.7	100	94	8		416.2 - 418.8 m Crush breccia, breccia fragments <1cm to 1cm, dark hem clasts in lighter red hematite matrix
.7	100	100	5	15°	
7					
720					end of paleoweathering red zone.
.8	100	98	8	10°	421.6 - 434.3 m Chloritized weakly hematized qtz-(feldspar)-gneiss (as above), banded texture, anatectic pegmatoid intervals.
				15°	
100	85	21		20°	324.5 - 324.8 minor shearing (+ breccia)

BLEACHING

MAROON H

RED HEM. — Strong (primary)

GREEN AL — Weak, Weak, Weak, Strong

GAMMA LOG (CPS/DIV) 20 40 60 80

SAMP #

DDH NO. MK 72

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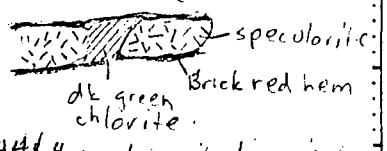
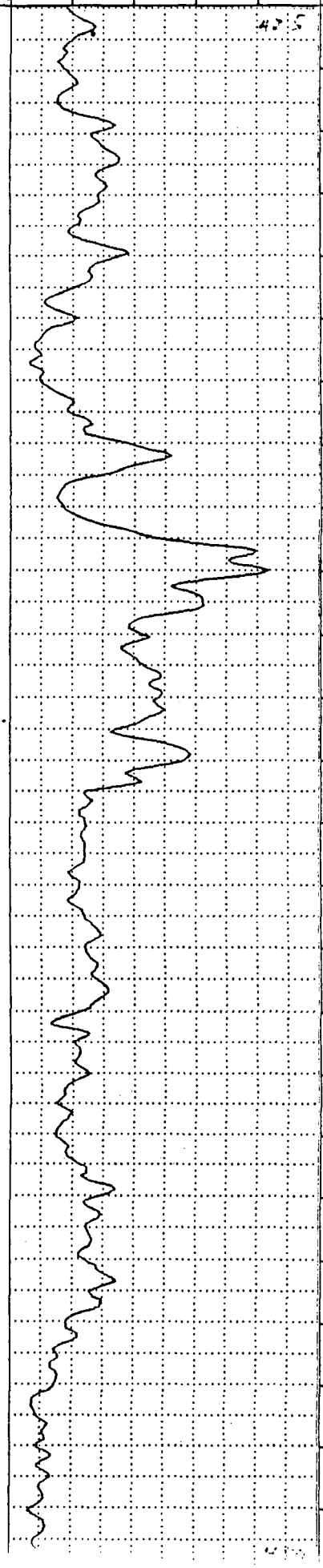
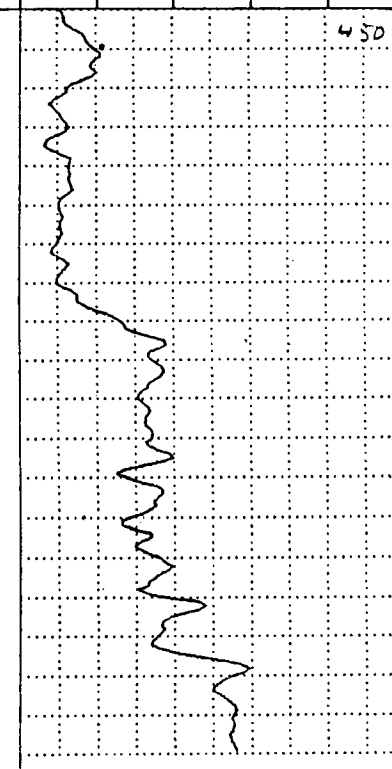
m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	White A	Bitum	GAMMA LOG (CPS/DIV) 20	SAM #
425				15°									
.4	100	93	10	25°	427.8 - 431.0m Anatectic Pegmatoid. (granitoid)				Strong Hgr				
.9													
430	100	91	8					weak					
				25°									
.9				50°	$CaCO_3$ veinlets								
	100	85	13						Moderate				
.9													
435	100	91	7		— stringer veinlets of matic mineral — qtz veinlets.								
.1													
440	100	91	10	40°	438.6 - 455.1m Banded Plagioclase Gneiss, weakly chloritized pyritic - biotite - quartz - feldspar - gneiss, locally fractured. (fresh biotite common), carbonate veinlets common								
0				30°									
	100	94	9	10	439.1 - 439.8 carbonate veinlets along fractures 440.7m - ½cm wide veinlet 80° CA with mostly massive specular hematite with adjacent zone of brick red hematite, also dense dark green chlorite								
.1													
445	100	79	30	25°					weak				
.1				10°	441.4m - laminated veinlet of carbonate and chlorite ¼ - ½ cm wide.								
	100	100	7	50°	444.7 - 447m - moderately fractured. 445.8 - Well developed chlorite slickensides.								



DDH NO.

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON	RED HEM.	GREEN AL	GAMMA LOG (CPS/DIV) 20 40 60 80	SAM #
450 .2	100	94	7	10°	452m - fractures with carbonate veinlets						
.2				80°	CO_3 veinlet						
455	100	94	11	80 ≠0°	454.3-455.1 CO_3 veinlets						
.3	100	97	8		455.1-460.1 moderately altered. qtz-fsp-anatectic Pegmatoid.						
.3 460					E.O.H. @ 460.1m						



URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. _____

HOLE NO. MR72

PAGE 21 OF 21

COORDINATE X:

COORDINATE Y:

ELEVATION Z:

INCLINATION:

AZIMUTH:

BOREHOLE Ø: -62

CASING DEPTH:

CASING WALL THICKNESS: NQ

WATER or MUD LEVEL:

DATE of DRILLING:

TOTAL DEPTH: 459.3m

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

INSTRUMENT: Mt Sopris SN# 79

PROBE GAMMA: 442

PROBE NEUTRON:

DATE of LOGGING: July 20

TIME of LOGGING: 9:30 AM

TOTAL DEPTH:

OPERATOR: [redacted]

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
Ø	10cps/div	5m/min	100/1
455			

Uranerz Exploration and Mining Ltd.

DRILLHOLE SUMMARY

DDH No. MR73

AREA: Maybelle River

DISPOSITION: Permit 6884/0000/
PROJECT NO.: 71-42

PAGE 1 OF 12

COORDINATES: L1+00N / 164+14N
9+72E / 179+76E

PLASTIC PIPE: yes (no) DEPTH: —
CASING REMOVED: (yes) no DEPTH: 35m

DRILLED BY: Midwest
COMMENCED: Jan 23, 90
COMPLETED: Jan 26, 90

TOTAL DEPTH (m): 239m
ELEVATION (m A.S.L.): 310 (est)
DIP/AZIMUTH: -60°/257°

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 Pajari Acid Acid

TEST AT(m)	153.5	239	34m	200m
DIP	-62°	-63°	-58°	-60°
AZIMUTH	276°	274°		

UNIT	FROM - TO	SUMMARY OF OBSERVATIONS
	0 - 31m	Overburden
ATHABASCA GROUP — Manitou Falls Fm.	3 - 176.4m	Moderately to strongly bleached, medium grained sandstone, clay intraclasts, weakly to moderately fractured, weak red hematite mostly as liesegang rings, trace pyrite, siderite and euhedral quartz common along fractures.
ATHABASCA GROUP — Fair Point Fm.	176.4 - 195.3m	Weakly to moderately bleached, medium to coarse grained sandstone with clay matrix, weakly to moderately fractured local light green clay gouge
BASEMENT	195.3 - 216 m	Moderately to strongly altered, quartz-feldspar-gneiss, moderate to strong white clay alteration, moderate light green clay alteration, generally massive to weakly laminated texture, "Plagioclase Gneiss".
	216 - 239 m	Moderately altered, graphitic (trace) - biotite - feldspar - quartz gneiss. 217.2 - 218.4 - fault zone, veins of metallic minerals, pyrite graphite (possibly traces of nickel). Radiometric anomalies 235.3 - 238.0 Weakly altered to fresh.
	E.O.H. @ 239.0m	

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

UTM COORDS:
520895E
6447785N

Downhole β Peaks
216.75m, 467 cps
203.30m, 136 cps

Samples For Geochem:

MR73-2	34-46 m	sst MF
-3	46-56 m	"
-4	56-66 m	"
-5	66-76 m	"
-6	76-86 m	"
-7	86-96 m	"
-8	96-106 m	"
-9	106-116 m	"
-10	116-126 m	"
-11	126-136 m	"
-12	136-146 m	"
MR73-13	146-156 m	MF
-14	156-166 m	"
-15	166-176.4 m	"
-16	176.4-185 m	FP
-17	185-195.3 m	"
-18	215-216	BSMT
-19	216-217	"
-20	217-218	"
-21	218-219	"
-22	219-220	"
-23	220-221	"

DDH No. MR 73

PAGE 2 OF 12

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					OVERBURDEN						
5											
10											
15											
20											
25											

DDH No. MR 73

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Bitumen	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
25					OVERBURDEN							
30					Top of Bedrock from γ-Log. Casing to 34m							
35	100	91	10		34-176.4m Manitou Falls Fm Moderately to strongly bleached medium grained to coarse grained sandstone, bedded, clay intraclasts common, weakly to locally moderately fractured, weak local maroon hematite, weak to moderate red hematite (?) lieseg ang rings, bitumen common within pores as well as along some fractures, pyrite (trace) common along fractures, trace siderite along some fractures.					Strong (porous)		
	100	98	2									
40	100	100	2	60° 25°	siderite within sst matrix (greenish brown mineral)	qtz sid						MR 73-2
	100	79	14	10° 20° 15°	10cm sst breccia, light green clay gouge associated with. 42.6-43.2m sub ll fractures trace py, euhedral qtz + bitumen	py qtz	Moderate	Weak	Moderate	Weak	Weak (porous + along fractures)	
45	100	92	7		trace sooty py	py						
50	100	95	9	30°	48.5-50.1 sub ll fractures (healed and open) with traces of spheroidal pyrite and euhedral qtz.	py py qtz qtz py						MR 73-3

DDH No. MR73

PAGE 4 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicification	Bitumen	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
50	97	94	7	60°	← py xtals along fracture								
				40°	← euheral qtz xtals along healed fracture								
	100	97	5	30°	← py + euhedral qtz along fracture								MR73-3
55				35°	← spheroidal pyrite along fractures								
	100	100	3	55°									
				62°	← clay intraclast								
60	100	98	3	35°	← euhedral quartz along fracture (+ tarry bitumen)								MR73-4
					← clay intraclast								
	100	100	2	30°	← trace sooty pyrite along fracture								
				60°	← trace spheroidal pyrite along fracture								
65	100	100	1		← clay intraclast	Moderate	Weak	Moderate		Weak	Weak (fractures + porous)		
					67.6 – 70m trace spheroidal pyrit in sst matrix								
	100	96	3	50°	← trace euhedral qutz along bedding part								MR73-5
70													
	100	96	3						Weak				
					← clay clast.								
75													

DDH No. MR73

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV) 10 20 40 60 80	SAM #
75	100	94	4		← clay intra clasts ← 30cm fracture zone trace py + euhedral qtz								5
	100	98	2										
80	100	100	1		← light grey clay along fracture (1/2cm wide clay gouge)	Moderate							MR73-6
	100	100	0		← clay intraclast.								
85	100	100	0		← green siderite in sst matrix silty layer. 57°								
	100	100	0		65° ← clay intraclast								
90	100	98	4		← siderite in matrix	Strong		Weak					MR73-7
	100	100	1										
95	100	97	3		X 40° to 0°								MR73-8
100	100	100	0										

DDH No. MR73

PAGE 6 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
100					
	100	100		55°	
105	100	97	2	30°	trace pyrite along fracture siderite in sst matrix
	100	98	3		
				65	trace py in clay intraclast vug.
110	100	98	2		
	100	100	0		coliform siderite xtals in vug (intraclast vug)
115	100	100	0		clay intraclast
				55°	
120	100	100	0		
	100	98	2		
125					

py
sid
py
sid

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

GAMMA LOG (CPS/DIV) 10
20 40 60 80 100

SAM #
MR73-8
MR73-9
MR73-10

DDH No. MR73

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION		BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	GAMMA LOG (CPS/DIV)/10 (20 40 60 80)	SAM #
125	100	91	7		← sooty pyrite along bed parting	py								10
				20° 5°	127.4-127.8m sub ∥ fractures with trace pyrite and euhedral qutz along fractures.	py qtz								
				15°		py								
130	100	96	3	20°	← py (trace along fracture)	py								MR73-11
	100	97	7	35°	← trace spheroidal pyrite along fracture	py								
				40		py								
				5°										
135	100	96	6	35°	← py along fractures. py									
				55° 20°	← py	py								
	97	88	6	15° 25°			Moderate		Moderate					
140	100	97	5	40°	← py (trace along fracture)	py								MR73-12
				25°	clay intraclast.									
				20°	← py (trace along fracture)	py								
145	100	100	2											
					← py along fracture	py								
	100	98	2	30°	← pyrite (trace) and bitumen along fracture	py								MR73-13
150					← pyrite + dravite (?) along fracture	py dv								

DDH No. MR 73

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	SAM #
152	100	94	8	≠35° 35°	trace py and bitumen along fracture	Moderate	Weak	Moderate				MR73-13
	97	94	5	≠20°	152.7-152.9m spheroidal pyrite within sst matrix 152.85m- pyrite xtals along fracture							
155	100	97	2		clay intraclasts clay intraclasts. 156.7-161.8 - Gritty Sandstone Layer. with lenses of silty sandstone							
160	100	100	0									MR73-14
	100	94	6	20° ≠ ≠20°	trace py + bitumen along fracture	Strong						
165	100	98	7	30° ≠	py + bitumen along fracture							
	100	92	9	30° ≠ ≠35° ≠15°		Moderate	Weak			Weak (along fractures		MR73-15
170	100	36	>30		170.6 - 171.4 - Brick Red hematite (moderate) 172.8 - 173.4 - moderately friable sst - increase in clay content of sst.							
	100	70	>30		173.4 - 176.4 coarse grained weakly friable sandstone euhedral qtz	Weak	Moderate					
175												

GAMMA LOG (CPS/DIV) 10 20 40 60 80 150m

DDH No. MR73

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	Silicified	Bitumen	SAM #
175						Weak	Mod				Wk	15
	100	97	5	30°	176.4 - 195.3 m Fair Point Fm Weakly to moderately bleached medium to coarse grained sandstone with predominantly white clay matrix, weakly to moderatly fractured, weak red hematite Br. red hem.							
180	100	97	7		moderate brick red hematite.							MR73-16
	100	91	6	5° 20°	traces of sooty pyrite along fracture							
185	100	67	22	5° 25°	185.7 - 185.9 m soft, light green clay gouge (~25° CA) >50% clay 10 cm clay gouge (>50% clay)	Moderate		Weak				
190	100	76	13+		189.3 - 190 m >50% soft light green clay gouge							MR73-17
	100	73	13+		191.8 - 192.0 m - minor brick red hematite 192.5 - 193.5 → increase in light green clay content of sandstone matrix, friable						Mod	
195	100	82	15		1" Unconformity 195.3 m 195.3 - 216 Moderately to strongly altered, quartz-feldspar-gneiss, moderate to strong sericitization, generally massive to weakly laminated texture with local coarse grained pegmatoid segregations.							
	100	96	8	40°			Weak		Med	Strong		
200												

GAMMA LOG (CPS/DIV) 10

20 40 60 80

1.12m

DDH No. MR73

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
200	100	100	3	30°	
				+ + + + + +	← γ-peak (70 cps 5rat SPP-2)
205	100	91	11	10°	
	100	100	3	25°	
				40°	
210	100	94	2		← trace brick red hematite along rehealed fractures
					211.7 - 212.3m series of sub-parallel yellow sericite veinlets at ~10-20° CA
	100	83	8	~30° ~30°	212.7 - 214.5m traces of brick red hematite along rehealed fractures
215					215.5 - 216 m traces of brick red hematite
	100	53	>30		216 - 219 - Radiometric anomaly - 2 maximum peaks of 160 cps on SPP-2
					217.2 - 218.4 strongly tectonized, faulted zone with veinlets of metallic minerals, minor pyrite, trace graphite, (trace nickel?) some veins parallel to foliation, some cross-cutting, fractured.
220	100	85	23	25°	
				40°	216 - 238m trace disseminated graphite
	100	92	14	35°	
225					

	BLEACHING	MAROON HEM.	RED HEM.	GREEN ALT.	White Alt.	Bitumen
		WK		Moderate		
				Strong		

GAMMA LOG (CPS/DIV) 10

20 40 60 80

200

203 — 136 cps

40 120 160 cps

100 200 300 400

217 — 467 cps

SAM #
-18
-19
-20
-21
-22
-23

DDH No. MR73

PAGE 11 OF 12

m	REC %	RQD %	FRAC #	GEOL. SIGN.	DESCRIPTION
225	100	98	13		trace brick red hematite 226.1 - 226.4 carbonate + pyrite veinlet
	100	97	7	40°	
230	100	94	7		trace fresh biotite.
				45°	trace brick red hematite along 1cm wide cross-cutting veinlet
235	100	97	4		
	100	93	5		235.3 - 238m Fresh to weakly altered graphitic (trace) - biotite - feldspar - quartz - gneiss
					E.O.H @ 239m
240					
245					
250					

BLEACHING | MAROON HEM. | RED HEM. | GREEN ALT. | White Alt | Bitumen

GREEN ALT.: Moderate / Strong; Weak / Mod. / Weak

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

SAM #

URANERZ EXPLORATION & MINING LTD.

DOWN HOLE LOGGING PARAMETERS

PROJECT NO. 7142

HOLE NO. MR73

COORDINATE X: 1+00N (164+14N)

COORDINATE Y: 9+72 E (179+76 E)

ELEVATION Z:

INCLINATION: -60°

AZIMUTH: 257°

BOREHOLE Ø: NQ

CASING DEPTH: 34m

CASING WALL THICKNESS: NW

WATER or MUD LEVEL:

DATE of DRILLING: Jan 23 - Jan 26, 90

TOTAL DEPTH: 239.0m

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

INSTRUMENT: Mount Sopris 2500, SN 79

PROBE GAMMA: G375A, SN 125

PROBE NEUTRON:

DATE of LOGGING: Jan 26 / 90

TIME of LOGGING: 11:00 - 12:35

TOTAL DEPTH: 238.0

OPERATOR: [redacted]

DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE
0	10gs/div	5m/min	100'/1
238			

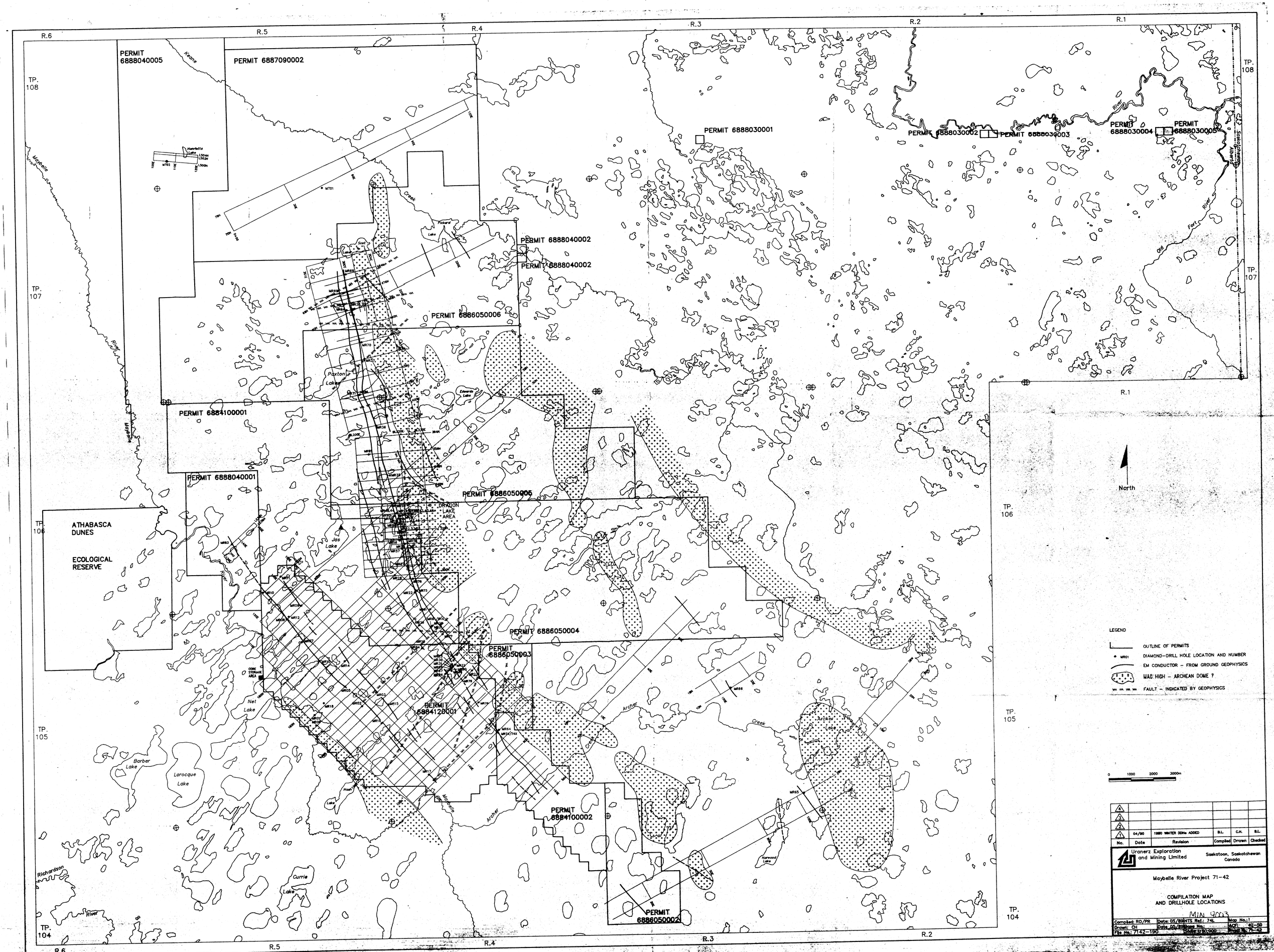
DEPTH	LOGGING SCALE	LOGGING SPEED	CHART SCALE

REMARKS: Rig Shut down from ~10:00 - 1:00

Digitally Recorded using Acquire (1989 system)

Files: MR73.GR0

MR73.GD0



R.6
R.5
R.4
R.3
R.2
R.1
TP. 108
TP. 107
TP. 106
TP. 105
TP. 104
PERMIT 6888040005
PERMIT 6887090002
PERMIT 6888030001
PERMIT 6888030002
PERMIT 6888030003
PERMIT 6888030004
PERMIT 6888030005
PERMIT 6888040002
PERMIT 6888040002
PERMIT 6886050006
PERMIT 6884100001
PERMIT 6888040001
PERMIT 6886050005
PERMIT 6886050004
PERMIT 6886050003
PERMIT 6884120001
PERMIT 6884100002
PERMIT 6886050002
ATHABASCA DUNES
ECOLOGICAL RESERVE
DRAGON LAKE AREA
Paxton Lakes
Jas Lake
Net Lake
Barber Lake
Larocque Lake
Currie Lake
Richardson River
Maybelle River
Archer Creek
Old Fort River
Saskatchewan
Alberta
North
LEGEND
OUTLINE OF PERMITS
DIAMOND-DRILL HOLE LOCATION AND NUMBER
EM CONDUCTOR - FROM GROUND GEOPHYSICS
MAG HIGH - ARCHEAN DOME ?
FAULT - INDICATED BY GEOPHYSICS
0 1000 2000 3000m
4
3
2
1 04/90 1990 WINTER DDHs ADDED B.L. C.H. B.L.
No. Date Revision Compiled Drawn Checked
Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada
Maybelle River Project 71-42
COMPILATION MAP AND DRILLHOLE LOCATIONS
MIN 9003
Compiled: RO/PR Date: 05/89 NTS Ref.: 74L Map No.: 1
Drawn: CH Date: 05/89 Base No.: ACF: 42-50
File No.: 7142-190 Scale: 1:50,000 Project No.: 71-42

DDH: MR85

AZIMUTH/DIP : 087°/-60°
ELEVATION (m asl) : 302 (est.)
GRID COORDINATE : L 356+00 N / 205+87 E
UTM COORDINATE : 6454125 N / 518825 E
VERTICAL SCALE : 1:500
PROJECT : 71-42 MAYBELLE RIVER
DISPOSITION : PERMIT 6886050005
COMPILED BY : B. LACEY
DATE (MO/YR) : 02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 / 2.6 ppm	8 / 28 ppm	196 / 174 ppm	12 / 14 ppm	2.4 / 5.2 ppm	6 / 8 ppm	80 / 100 ppm	0.9 / 5.0 %	0.46 / 0.28	0.10 / 0.22 %

STRUCTURE: DIP TEST Azim./Dip. 75°/-60°; Elevation m a.s.l.; % CORE RECOVERY; % ROCK QUALITY DESIGNATION (RQD); FRACTURE DENSITY (No. of FRACTURES per 3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

LITHOLOGY

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

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES: MR85-24, MR85-23, MR85-22, MR85-21, MR85-20, MR85-19, MR85-18, MR85-17, MR85-16, MR85-15, MR85-14, MR85-13, MR85-12, MR85-11, MR85-10, MR85-9, MR85-8, MR85-7, MR85-6, MR85-5, MR85-4, MR85-3, 85-2, 85-1

CALCULATED CLAY: KAOLINITE / ILLITE / CHLORITE %; TOTAL CLAY %

ACID

0-30.5m OVERBURDEN

30.5-208.2m MANITOU FALLS FORMATION
Moderately to strongly bleached, fine to medium grained sandstone, clay intraclasts common, weak maroon hematite as lieas-gang rings, weak red hematite, zones of moderate to strong fracturing

177.8-188.1m Strongly fractured and friable sandstone, associated core loss

208.2-246.1m FAIR POINT FORMATION
Moderately bleached, coarse grained to pebbly sandstone with light green/white clay matrix, locally fractured and clay altered

246.1 Unconformity
fractured/faulted contact

246.1-259m Strongly altered, (amphibole)-quartz-feldspar-mylonite/saprolite, weakly- to well foliated, pegmatoid intervals, weakly fractured

259-264.2m Moderately chloritized, graphitic-gneiss, 5-10% diss. graphite

264.2-284m Strongly altered quartz-feldspar-fault rock, zones of strong crush brecciation, and silicification

284-293.6m Strongly altered, graphitic-quartz-feldspar-mylonite, 5-10% to >10% graphite content, well developed mylonitic texture, local brittle faulting with cataclasite

293.6-298.2m Strongly altered, (garnet)-quartz-feldspar-pegmatoid/protomylonite

298.2-312.4m Strongly silicified, mylonite/-ultramylonite, strongly fractured

strongly altered, graphitic-(amphibole)-quartz-feldspar-gneiss, 5->10% graphite

11.5%

SECTION LOOKING N
LINE 356 N

W — E

205+87E — 207+15E

MR85 087°/-60°

Moving Loop (1989) Conductor Axis Estimated Depth 220m

OVERBURDEN 30.5m

Manitou Falls Formation
Moderately to strongly bleached, fine to medium grained sandstone, weak maroon hematite, zones of moderate to strong fracturing

100m 150m 200m

strongly fractured/friable sandstone, core loss

ATHABASCA GROUP

208.2m

Fair Point Formation
Moderately bleached, coarse grained to pebbly sandstone, light green/white clay matrix, locally fractured with clay gouge

clay gouge, light green clays

Unconformity 246.1m fault contact unconformity

paleoweathering

BASEMENT
- strong to intense polyphase deformation in both graphitic and non-graphitic units
- strong light and dark green chlorite alteration

strongly chloritized quartz-feldspar-mylonite

strongly silicified mylonite, fractured

5-10% graphite disseminated

mafic (amphibole?)-graphitic-gneiss, 2-5% disseminated graphite

coarse grained pegmatoid, crush breccia

EOH 317.7m

graphitic mylonite, 5->10% graphite

Uranerz Exploration and Mining Limited
71-42 MAYBELLE RIVER
SCHEMATIC CROSS SECTION
DDH MR85
LINE 356 N
Scale 1:1000 03/90 Figure 11

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 OCCURRENCE

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

LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan, Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR85
LINE 356 N

MIN 90-2

Compiled: B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 10
Drawn: B.L.	Date: 05/90	Base No.:	ACF: C-MR85
File No.: 7142-225	Scale: 1:500		Project No.: 71-42

DDH: MR–86

AZIMUTH/DIP : 082°/–65°
ELEVATION (m asl) : 305 m
GRID COORDINATE : 428+00 N, 324+15 E
UTM COORDINATE : 6457825 N, 518400 E
VERTICAL SCALE : 1:500
PROJECT : 71–42 MAYBELLE RIVER
DISPOSITION : PERMIT 6886050005
COMPILED BY : R.AVERY
DATE (MO/YR) : 03/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U total and partial	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.8 ppm	8 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	28 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.10 %	0.28	0.22 %

STRUCTURE: DIP TEST Azim./Dip. 75° / Elevation ..... m a.s.l.; CORE RECOVERY 25 % 75; ROCK QUALITY DESIGNATION (RQD) 25 % 75; FRACTURE DENSITY 10 20 (# OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

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 %, FRACTURES – UNFILLED, FRACTURES – FILLED

LITHOLOGY

0–52.3 m; OVERBURDEN: Sandy diamicton, outwash sands, and gravels.

52.3–204.3 m; MANITOU FALLS FORMATION: ATHABASCA GROUP.
Moderately to strongly bleached, weakly hematized, fine to coarse grained, massive to crossbedded, clay intraclastic pebbly sandstone containing several strongly fractured, incohesive, bitumen impregnated intervals.
–unit also features sparse matrix supported pebble bands and clay filled solution seams

123.5–139.2 m; strongly fractured interval: core reduced to bitumen impregnated friable rubble
structural disruption, core loss, and rotation of bedding from 129–139 m. (fault zone suspected)

204.7 m sharp, erosional contact

204.7–258.6 m; FAIR POINT FORMATION ATHABASCA GROUP.
Moderately bleached, weakly hematized, massive to crossbedded, coarse pebbly sandstone containing hematized, matrix supported conglomerate bands featuring strained, fractured, and stretched qtz, mafic, and granitic pebbles.
–siltstone interbeds are common throughout the interval.

258.6 m UNCONFORMITY
sharp, irregular, fractured contact

Paleoweathering Profile
Strongly hematized red zone: 258.6–268.6m
Red–green zone: 268.6–274.2m
(strong hematization, moderate chloritization)
Paleoweathering profile gives way to reddish maroon, hematized and weakly chloritized, banded, medium grained, mafic rich, ga–qtz–biot–plag–gneiss (metasediment) with minor intervals of plag porphyry.

289.1–315.2 m; Fresh, unaltered, well foliated, medium grained, biot–hbl–plag–qtz gneiss.

289.1–315.2 m; Greenish–gray, fresh, unaltered, fine to medium grained, banded, mafic rich, ga–qtz–biot–plag–gneiss (metasediment) containing intervals of anatectic? kspar–qtz–plag pegmatite.

315.2 m END OF HOLE

GAMMA LOG CPS 0 20 40 60 80

SAMPLES: MR86–1 … MR86–21

ACID –66° ACID –67°

C

K

K

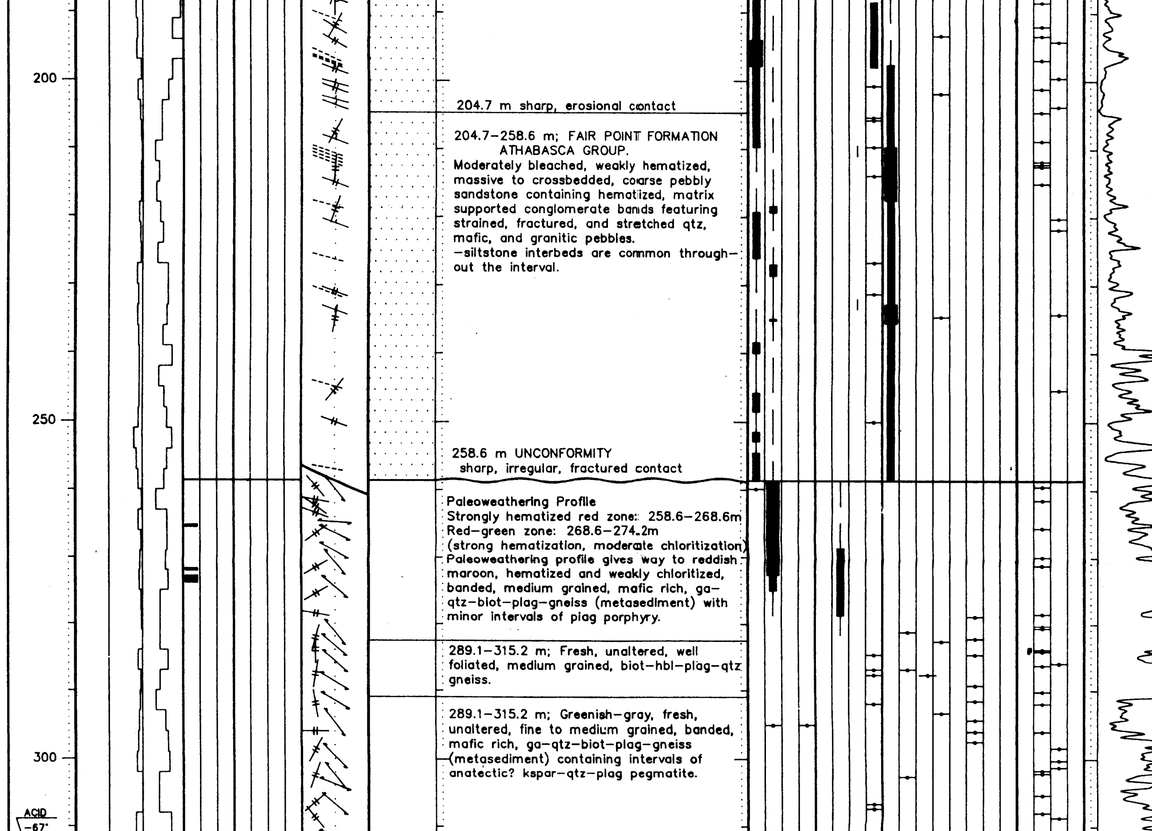
LEGEND

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

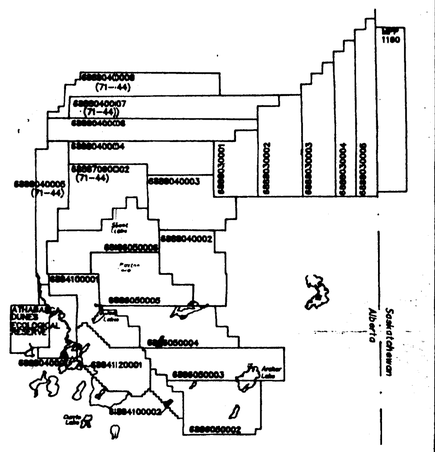
MAGNITUDE OF GEOLOGICAL FEATURE: WEAK, MODERATE, STRONG, TRACE OR SINGLE OCCURRENCE

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



Uranerz Exploration and Mining Limited
71–42 MAYBELLE RIVER
SCHEMATIC CROSS SECTION
DDH MR71 AND MR86
LINE 428 N
Scale 1:1250 03/90 Figure 5



No.	Date	Revision	Compiled	Drawn	Checked
4					
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2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River Project 71–42

COMPOSITE GEOLOGICAL LOG MR86
LINE 428 N

Compiled: R.A., B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 11
Drawn: R.A., B.L.	Date: 05/90	Base No.:	ACF: C–MR86
File No.: 7142–226		Scale: 1:500	Project No.: 71–42

DDH: MR-83

AZIMUTH/DIP : - / -90°
ELEVATION (m asl) : 288 m
GRID COORDINATE : 238+00 N, 136+30 E
UTM COORDINATE : 6450070 N, 512550 E
VERTICAL SCALE : 1:500
PROJECT : 71-42 MAYBELLE RIVER
DISPOSITION : PERMIT 6888040001
COMPILED BY : R.AVERY
DATE (MO/YR) : 03/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

STRUCTURE: DIP TEST Azim./Dip. 75°; Elevation ..... m a.s.l.; 25 75 % CORE RECOVERY; 25 75 % ROCK QUALITY DESIGNATION (RQD); 10 20 FRACTURE DENSITY (# OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

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 %, FRACTURES - UNFILLED, FRACTURES - FILLED

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES: MR83-12, MR83-11, MR83-10, MR83-9, MR83-8, MR83-7, 6, MR83-5, MR83-4, MR83-1, 83-2, 83-3, MR-83 22

CALCULATED CLAY: KAOLINITE, ILLITE, CHLORITE, TOTAL CLAY; % 0 50 100; % 4 8

ACID -89° / ACID -88° / PAJARI -88° 253°

0-22.1 m; OVERBURDEN: Sandy diamicton, outwash sands and gravels.

22.1-84.1 m; MANITOU FALLS FORMATION, ATHABASCA GROUP.
Moderately bleached, weak red and maroon hematite, fine to medium grained, massive to crossbedded, clean, well sorted, clay intraclastic sandstone.
-hematitic liesegang rings, clay filled solution seams, and hematitic clay coated fractures common throughout the interval.

84.1-117.9 m; FAIR POINT FORMATION; ATHABASCA GROUP.
Strongly bleached, massive, coarse grained, poorly sorted sandstone containing occassional floating qtz pebbles.
-bitumen and pyrite filled fractures are relatively common throughout.

117.9-132.4 m; Pale green and mottled maroon, moderately hematized and chloritized, fine to medium grained, py bearing-qtz-plag-(kspar?)-mylonite containing bands of strongly hematized pyroxenes.
-unit is related to underlying fresh granite.

132.4-157.5 m; Fresh, unaltered, medium to coarse grained, massive to foliated, py-gra bearing-pyrx-qtz-plag-kspar-monzonite containing intervals of foliated to mylonitized granodiortie (eg. 136-137.3m, 140.5-143.6m 145-152.8m)
-unit represents a zone of mixing between overlying sheared monzonite and underlying fresh granodiorite.

157.5,-182.0 m; Fresh, unaltered, whitish-gray, fine to medium grained, well foliated with mylonite intervals, gra-py bearing-biot-pyrx-qtz-plag-granodiorite.
-unit contains minor intervals of medium grained, poorly foliated, pryx-biot-qtz-plag-kspar-syenogranite as well as irregular pods and stringers of anatectic granitic pegmatite

E.O.H. @ 182.0 m

SECTION LOOKING NW LINE 238 N

SW — NE

136+30E

0 / 288 — MR83 — -90° — Moving Loop (1990) EM 37 Conductor Axis Estimated Depth 160m

OVERBURDEN — 22.1m

fracture zone, hematitic clay along fractures

50 / 238 — 50m — Manitou Falls Formation Moderately bleached, fine to medium grained, well sorted sandstone, clay intraclasts common, weakly fractured throughout

84.1m

ATHABASCA GROUP

100 / 188 — 100m — Fair Point Formation Strongly bleached, coarse grained, poorly sorted pebbly sandstone, bitumen and accessory pyrite common along fractures throughout interval

117.8m

BASEMENT

Tectonized red and red-green paleoweathering profiles: hematized and chloritized, pyrite bearing-quartz-plagioclase-mylonite, strongly altered pyroxene

150 / 138

Unaltered, pyrite bearing-biotite-quartz-plagioclase-granodiorite, with minor intervals of mylonite

Unaltered, pyrite bearing-quartz-plagioclase-potassic-feldspar-monzonite, with intervals of tectonized granodiorite

trace localized disseminated graphite

EOH 182m

increasing tectonism

Uranerz Exploration and Mining Limited
71-42 MAYBELLE RIVER
SCHEMATIC CROSS SECTION
DDH MR83
LINE 238 N
Scale 1:1000 /90 Figure 3

LEGEND

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

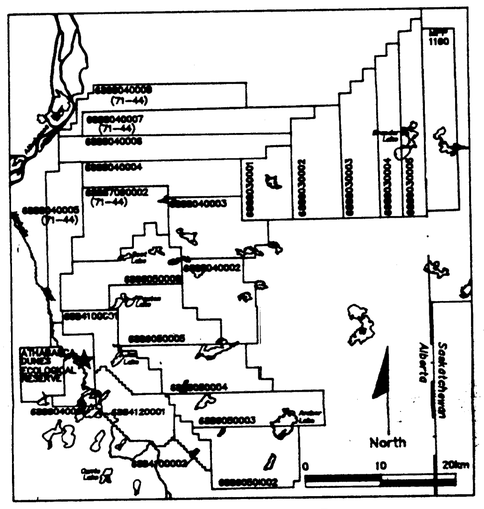
MAGNITUDE OF GEOLOGICAL FEATURE
WEAK MODERATE STRONG TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR83
LINE 238 N

Compiled: R.A., B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 12
Drawn: R.A., B.L.	Date: 05/90	Base No.:	ACF: C-MR83
File No.: 7142-223		Scale: 1:500	Project No.: 71-42

DDH: MR-80

AZIMUTH/DIP	267°/-60°
ELEVATION (m asl)	317 m
GRID COORDINATE	318+00 N, 218+80 E
UTM COORDINATE	6450500 N, 520300 E
VERTICAL SCALE	1:500
PROJECT	71-42 MAYBELLE RIVER
DISPOSITION	PERMIT 688PERMIT 6050004
COMPILED BY	R.AVERY
DATE (MO/YR)	02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

STRUCTURE: DIP TEST Azim./Dip 75°; Elevation m a.s.l.; 25 % CORE RECOVERY; 25 % ROCK QUALITY DESIGNATION (RQD); 10 FRACTURE DENSITY 20 (# OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: 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 %; FRACTURES - UNFILLED; FRACTURES - FILLED

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES

CALCULATED CLAY: KAOLINITE %; ILLITE %; CHLORITE %; TOTAL CLAY % 0 50 100; 4 8

0-27.5 m; OVERBUDEN: Sandy diamicton, outwash sands and gravels.

27.5-157.9 m; MANITOU FALLS FM. ATHABASCA GROUP
Fine to medium grained, masive to cross-bedded, clean, well-sorted sandstone containing clay intraclasts, siltstone beds, and lisegang rings throughout.
Moderate bleaching, weak maroon and red hematite; minor intervals of strong fracturing present.

157.9-196.2 m; FAIR POINT FORMATION
Strongly bleached, massive, poorly sorted coarse sandstone containing occassional floating pebble clasts and incohesive strongly fractured intervals.

UNCONFORMITY- Irregular, fractured contact

196.2-210.4 m; Strongly chloritized, hematized, banded, medium grained qtz-plag-gneiss.

210.4-230.2 m; Strongly chloritized, pyrite-graphite-qtz-plag-gneiss containing strongly tectonized intervals of fractured incohesive core, rehealed graphite filled fractures, and graphitic breccias.

230.2-257.0 m; Greenish-gray chloritized, well foliated, medium grained, gra-py-bearing kspar-qtz-plag-gneiss with occassional intervals (20-90cm thick) of qtz-plag-kspar pegmatite.

257m END OF HOLE

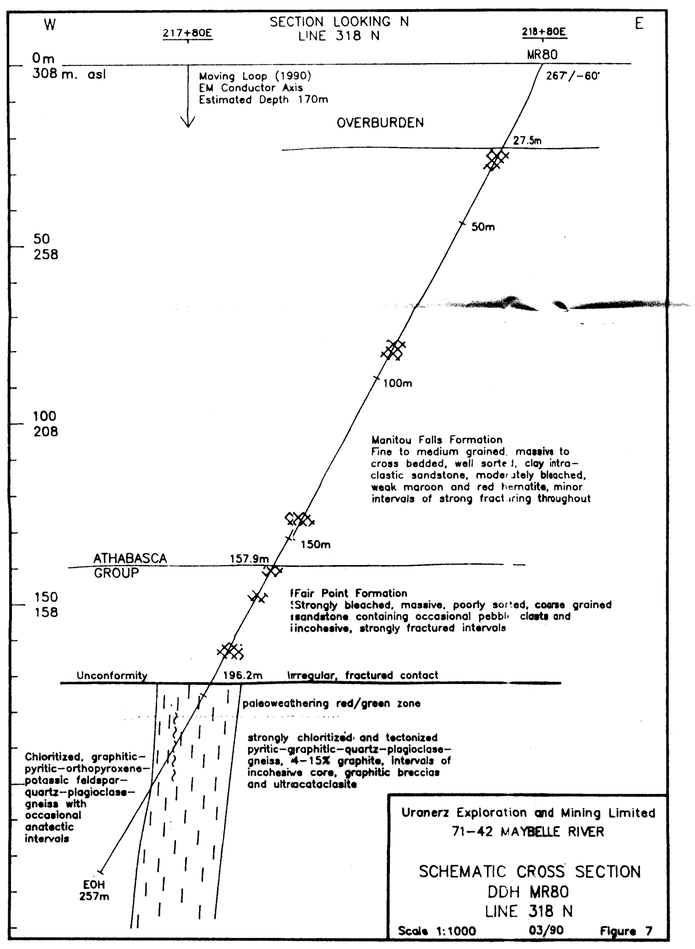
ACID -61° ACID -62° PAJARI -59° 274°

228 cps; 100 200 300 400 cps

MR80-1 MR80-2 MR80-3 MR80-4 MR80-5 MR80-6 MR80-7 MR80-8 MR80-9 MR80-10 MR80-11 MR80-12 MR80-13 MR80-14 MR80-15 MR80-16 MR80-17 MR80-18 MR80-19 MR80-20 MR80-21

K I K I K I

20.2% 24.3% 15.8% 12.9%



Uranerz Exploration and Mining Limited
71-42 MAYBELLE RIVER

SCHEMATIC CROSS SECTION
DDH MR80
LINE 318 N
Scale 1:1000 03/90 Figure 7

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 OCCURRENCE

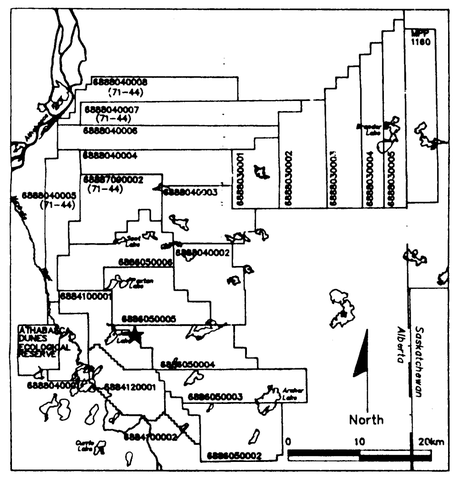
LITHOLOGY

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
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Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR80
LINE 318 N

Compiled: R.A., B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 13
Drawn: R.A., B.L.	Date 05/90	Base No.:	ACF: C-MR80
File No.: 7142-220		Scale: 1:500	Project No.: 71-42

DDH: MR-82

AZIMUTH/DIP : 267°/-60°
ELEVATION (m asl) : 305 m
GRID COORDINATE : 322+00 N, 218+72 E
UTM COORDINATE : 6450850 N, 520250 E
VERTICAL SCALE : 1:500
PROJECT : PERMIT 6886050004
DISPOSITION : 71-42 MAYBELLE RIVER
COMPILED BY : R.AVERY
DATE (MO/YR) : 02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

DIP TEST Azim./Dip. 75° / Elevation ..... m a.s.l.

STRUCTURE: CORE RECOVERY (25 % 75); ROCK QUALITY DESIGNATION (RQD) (25 % 75); FRACTURE DENSITY (10 20 (# OF FRACTURES/3m RUN)); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: 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 %, FRACTURES - UNFILLED, FRACTURES - FILLED

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES

U total and partial ppm 2 4 6 8 | Th ppm 20 40 | Zr ppm 200 400 | Ni ppm 10 20 30 | As ppm 5 10 15 | Pb ppm 10 20 | B ppm 100 200 | Al2O3 % 5 10 15 | K2O/Al2O3 0.2 0.4 0.6 0.8 | MgO % 0.1 0.2 0.3 0.4

CALCULATED CLAY: KAOLINITE, ILLITE, CHLORITE % 0 50 100 | TOTAL CLAY % 4 8

ACID -63°

0-33.5 m; OVERBURDEN: Sandy diamicton, outwash sands and gravels.

33.5-151.3 m; MANITOU FALLS FORMATION, ATHABASCA GROUP.
Moderately bleached and silicified, massive to planar crossbedded, fine to coarse grained, clay intraclastic sandstone containing occassional siltstone interbeds; weakly hematized with localized patches of moderate maroon and red hematite.

151.3-197.8 m; FAIR POINT FROMATION ATHABASCA GROUP.
Moderately to strongly bleached with intervals of strong maroon hematite; poorly bedded to massive, coarse grained sandstone containing occassional matrix supported pebble bands and random floating clasts.

UNCONFORMITY; sharp, fractured contact.

197.8-217.4 m; Red zone of paleoweathering profile; moderately bleached, moderate red and maroon hematite, weakly chloritized; plagioclase gneiss.

217.4-260.0 m; Strongly chloritized, well foliated, fine to medium grained, pyrite-biot-graphite-qtz-plag-gneiss (gra content variable, 5-20%); unit contains random intervals of coarse qtz-plag-kspar-chl (biot)-pegmatite, 70-130 cm thick.

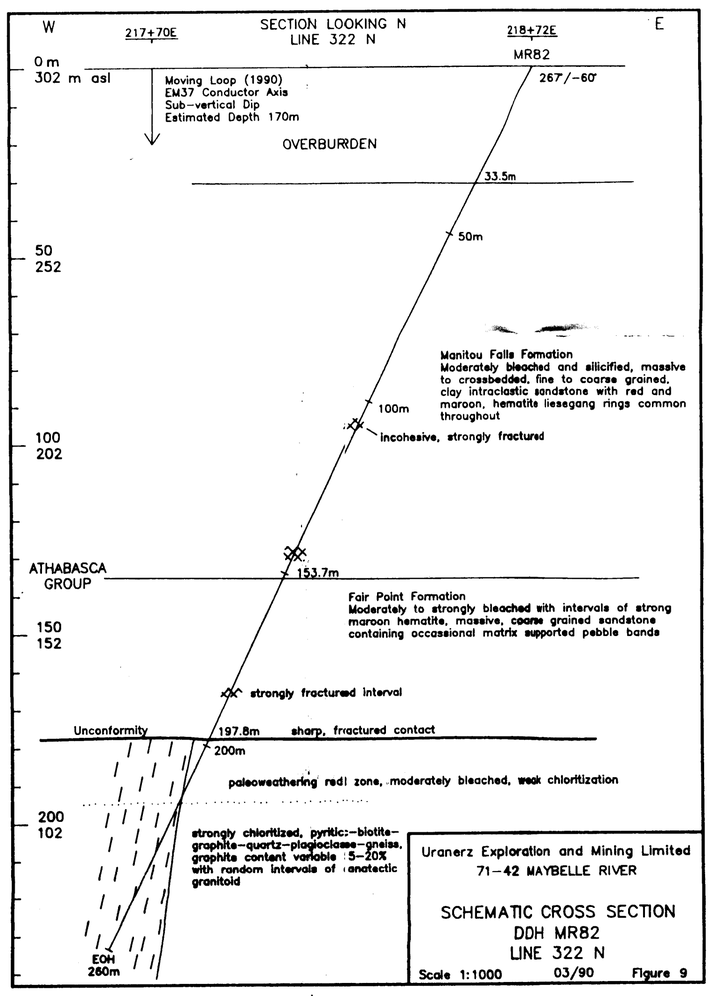
260 m END OF HOLE

PAJARI -64° 267°

SAMPLES: MR82-21, MR82-20, MR82-19, MR82-18, MR82-17, MR82-16, MR82-15, MR82-14, MR82-13, MR82-12, MR82-11, MR82-10, 82-8, 82-9, MR82-7, MR82-6, MR82-5, MR82-4, MR82-3, 82-1, 82-2

K 12.3% 11.0% 12.7% 20.8% 20.8%

SECTION LOOKING N LINE 322 N



Uranerz Exploration and Mining Limited
71-42 MAYBELLE RIVER

SCHEMATIC CROSS SECTION
DDH MR82
LINE 322 N
Scale 1:1000 03/90 Figure 9

LEGEND

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

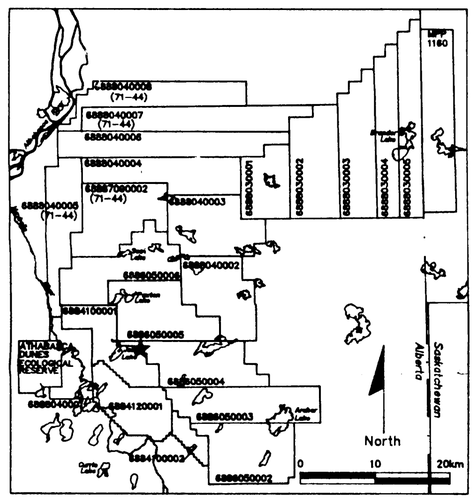
MAGNITUDE OF GEOLOGICAL FEATURE
WEAK MODERATE STRONG TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
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Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR82
LINE 322 N

Compiled: R.A., B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 14
Drawn: R.A., B.L.	Date: 05/90	Base No.:	ACF: C-MR82
File No.: 7142-222		Scale: 1:500	Project No.: 71-42

DDH: MR73

AZIMUTH/DIP : 257° / −60°
ELEVATION (m asl) : 310
GRID COORDINATE : L 1+00 N / 9+72 E
UTM COORDINATE : 6447785 N / 520895 E
VERTICAL SCALE : 1 : 500
PROJECT : 71−42 MAYBELLE RIVER
DISPOSITION : PERMIT 6884100001
COMPILED BY : B. LACEY
DATE (MO/YR) : 01/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

DIP TEST Azim./Dip. 75° — Elevation ..... m a.s.l.

STRUCTURE: % CORE RECOVERY; ROCK QUALITY DESIGNATION (RQD) %; FRACTURE DENSITY (# OF FRACTURES/3m RUN); INCOHESIVE (FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE); COHESIVE (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: MR73-2, MR73-3, MR73-4, MR73-5, MR73-6, MR73-7, MR73-8, MR73-9, MR73-10, MR73-11, MR73-12, MR73-13, MR73-14, MR73-15, MR73-16, MR73-17

CALCULATED CLAY: KAOLINITE, ILLITE, CHLORITE %; TOTAL CLAY %

0−30.5m OVERBURDEN

ACID −58°

30.5−34m Triconed Sandstone

34−176.4m MANITOU FALLS FORMATION
Moderately to strongly bleached, medium−grained sandstone, clay intraclasts common, weakly to moderately fractured, weak red hematite mostly as liesegang rings, trace pyrite, siderite and euhedral quartz common along fractures.

70 ppm Pb

PAJARI −62° 276°

176.4−195.3m FAIR POINT FORMATION
Weakly to moderately bleached, medium to coarse grained sandstone with white clay matrix, weakly to moderately fractured local light green clay gouge.

1.41% MgO
1.04% MgO
20.7%
24.3%

UNCONFORMITY 195.3m

ACID −60°

195.3−216m PLAGIOCLASE GNEISS
Moderately to strongly altered quartz−feldspar−gneiss, moderate to strong white clay alteration, generally massive to weakly laminated texture.

136 cps
50 150 200 cps

467 cps
200 800 800 cps

216−239m Moderately altered, graphitic (trace)−biotite−feldspar−quartz−gneiss.

217.2−218.4 fault zone − veins of metallic minerals, mainly pyrite, trace graphite and possibly traces of nickel(?) minerals.

PAJARI −63° 274°

E.O.H. @ 239.0m

SECTION LOOKING NORTHWEST

SW — NE

DEPTH (m) / ELEVATION (m asl)
0 / 310
50 / 260
100 / 210
150 / 160
200 / 110

CONDUCTOR C7 (1986) EM37 TARGET 178+00E
EM37 CONDUCTOR (1989) 20 si 178+50E
MR22 L164N / 179+00E 250°/−60°
MR73 L164N / 179+76E 257°/−60°

OVERBURDEN
DEVONIAN SEDIMENTS
27m
29.7m
31.0m
50m
50.0m
MANITOU FALLS FORMATION
100m
100m
Moderately bleached sandstone, weak to moderate red hematite as liesegang rings, generally weakly fractured, traces of pyrite, siderite and euhedral quartz along some fractures
150m
150m
MF
FP
130 cps
167.0m
FAIR POINT FORMATION
174.6m
CONGLOMERATIC SANDSTONE
UNCONFORMITY
ATHABASCA GROUP SANDSTONE
185.5m
185.3m
Weakly to moderately bleached sandstone, weak red hematite, moderate fracturing locally
GRANITOID/PEGMATOID AND INTERBEDDED PELITIC GNEISSES
200m
200m
PLAGIOCLASE GNEISS
GRAPHITIC GNEISS STRONGLY BRECCIATED 5−30% GRAPHITE
BASEMENT
trace graphite
moderately to strongly altered, quartz−feldspar−gneiss
strongly faulted (1.5−2m) with associated radiometric anomalies over 3.5m, max. 467 cps
PELITIC GNEISSES AND GRANITOID
100 cps
234.0m
242.2m
252.0m
E.O.H. 239m
ALUMINOUS TO MAFIC FELDSPATHIC GNEISSES
EDH AT 260m
0 25m 50m

Uranerz Exploration and Mining Limited
71−42 MAYBELLE RIVER
SCHEMATIC CROSS SECTION MR22, MR73 LINE 164 N
Scale 1:1000 02/90 Figure 2

LEGEND

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

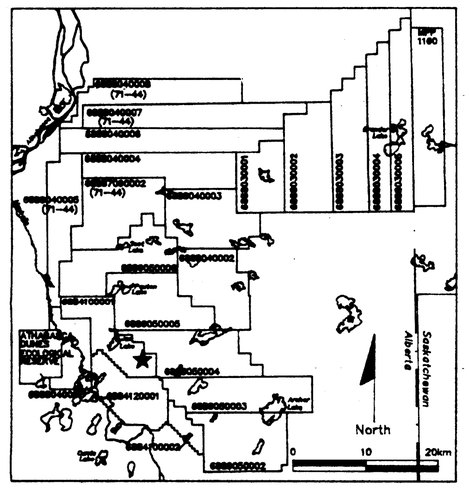
MAGNITUDE OF GEOLOGICAL FEATURE
WEAK MODERATE STRONG TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River Project 71−42

COMPOSITE GEOLOGICAL LOG MR73
LINE 164 N (APPROX.)

Compiled: B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 15
Drawn: B.L.	Date 05/90	Base No.:	ACF: C−MR73
File No.: 7142−212		Scale: 1: 500	Project No.: 71−42

DDH: MR75

AZIMUTH/DIP : 270°/−55°
ELEVATION (m asl) : 305 (est.)
GRID COORDINATE : L 314 N / 219+28 E
UTM COORDINATE : 6450000 N / 520350 E
VERTICAL SCALE : 1:500
PROJECT : 71−42 MAYBELLE RIVER
DISPOSITION : PERMIT 6886050004
COMPILED BY : B. LACEY
DATE (MO/YR) : 02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	28 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

DIP TEST Azim./Dip. 75° — Elevation ..... m a.s.l.

STRUCTURE: 25 % CORE RECOVERY (75) | 25 % ROCK QUALITY DESIGNATION (RQD) (75) | 10 FRACTURE DENSITY 20 (# OF FRACTURES/3m RUN) | INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE | COHESIVE: 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: MR73−1 … MR73−17

CALCULATED CLAY: KAOLINITE % | ILLITE | CHLORITE (0 50 100) | TOTAL CLAY % (4 8)

ACID −58° — PAJARI 57° 288° — ACID −57°

0−35.0m OVERBURDEN

35.0−150.8m MANITOU FALLS FORMATION moderately to strongly bleached sandstone, weak to moderate red hematite as liese−gang rings, weakly fractured.

150.8−197.8m FAIR POINT FORMATION moderately to strongly bleached coarse grained sandstone, moderately fractured throughout, local zones of friable sand−stone, local clay gouge and core loss.

170.0−173.8m Fractured and friable sandstone, core loss, minor clay gouge

189.1−194.1m Fractured and friable sandstone, increase in clay matrix content, light green clays

197.8−221.4m PLAGIOCLASE GNEISS strongly, altered, quatrz−feldspar−gneiss, strong light green chloritization, massive to augen texture

221.4−252.7m GRAPHITIC GNEISS moderately to strongly altered, pyritic (tr.−5%)−graphitic (5−>10%)−quartz−feldspar−gneiss, locally fractured and faulted

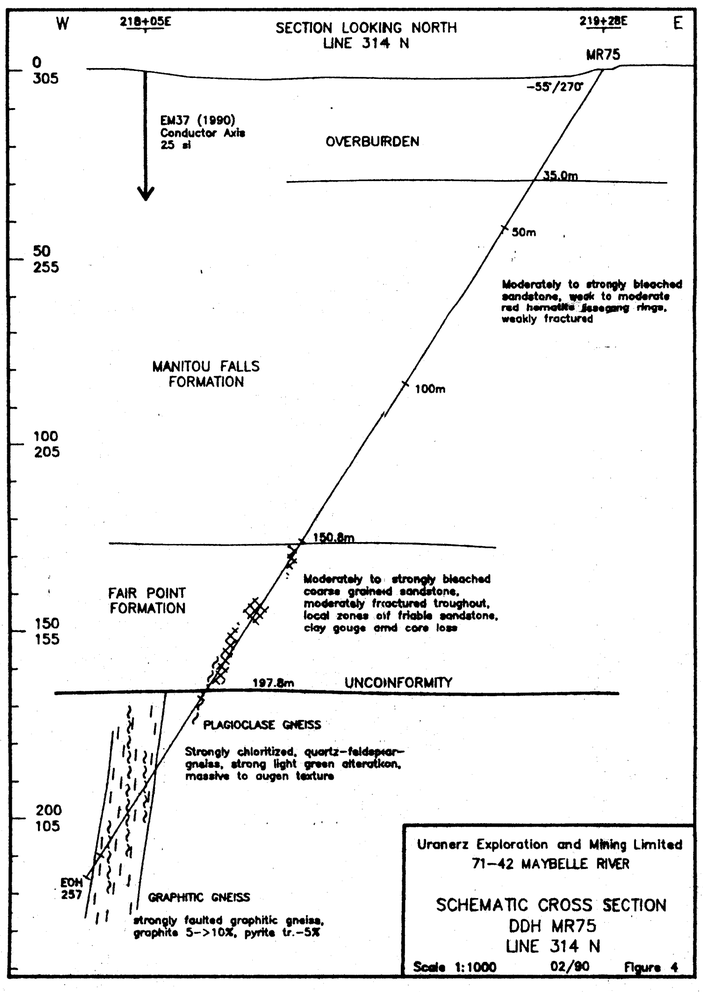
225.1−228.5m strongly faulted graphitic gneiss, crush breccia, gouge, and minor cataclasite

233.7−236.6m strongly faulted graphitic gneiss

242.0−243.8m crush breccia, >10% to massive graphite, 5−10% pyrite

252.7−257m PLAGIOCLASE GNEISS moderately altered, qtz−fsp−gneiss

153 cps (80 120 160 cps)



Uranerz Exploration and Mining Limited
71−42 MAYBELLE RIVER

SCHEMATIC CROSS SECTION
DDH MR75
LINE 314 N
Scale 1:1000 02/90 Figure 4

LEGEND

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

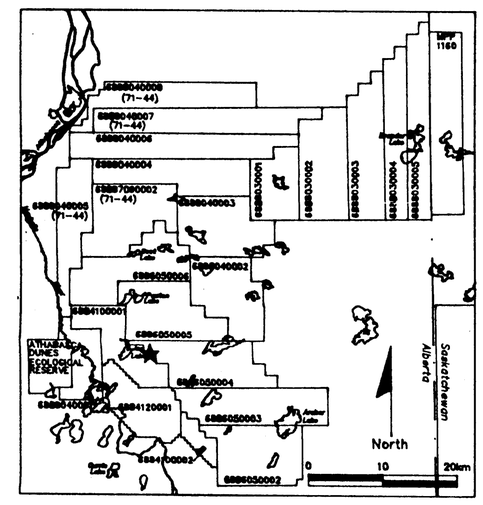
MAGNITUDE OF GEOLOGICAL FEATURE: WEAK | MODERATE | STRONG | TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River Project 71−42

COMPOSITE GEOLOGICAL LOG MR75
LINE 314 N

Compiled: B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 16
Drawn: B.L.	Date 05/90	Base No.:	ACF: C−MR75
File No.: 7142−215		Scale: 1:500	Project No.: 71−42

DDH: MR77

AZIMUTH/DIP : 049°/–70°
ELEVATION (m asl) : 300 (est.)
GRID COORDINATE : L 142 N / 174+27 E
UTM COORDINATE : 6445850 N / 522000 E
VERTICAL SCALE : 1:500
PROJECT : 71–42 MAYBELLE RIVER
DISPOSITION : PERMIT 6886050004
COMPILED BY : B. LACEY
DATE (MO/YR) : 02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

STRUCTURE: DIP TEST Azim./Dip. 75° / Elevation ..... a.s.l. m; 25 % CORE RECOVERY; 25 % 75 % ROCK QUALITY DESIGNATION (RQD); 10 20 FRACTURE DENSITY (# OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: 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

CALCULATED CLAY: KAOLINITE, ILLITE, CHLORITE %; TOTAL CLAY % 0 50 100; 4 8

0–18.2m OVERBURDEN

18.2–141.2m MANITOU FALLS FORMATION weakly to moderately bleached sandstone, clay intraclasts common, weak to moderate maroon and red hematite as liesegang rings, weakly fractured

141.2–153.5m FAIR POINT FORMATION weakly bleached, coarse grained sandstone, moderate maroon hematite, weakly fractured

153.5–196.6m Moderately altered garnetiferous–biotite–quartz–feldspar–gneiss/protomylonite, coarse grained massive to weakly laminated texture

196.6–203.4m MAFIC DYKE fine grained, dense, massive mafic rock (diabase?), trace pyrite as phenocrysts

50m 100m 150m

PAJARI –88° 044°

PAJARI –69° 327°

150cps 50 100 150 200 CPS

MR77 –16 MR77 –17

MR77–1 2 MR77–3 MR77–4 MR77–5 MR77–6 MR77–7 MR77–8 MR77–9 MR77–10 MR77–11 MR77–12 MR77–13 MR77–14 MR77–15 16

K I K I C C

12.8%

SECTION LOOKING NW LINE 142 NORTH

SW 174+27E 174+75E NE

MR77 –70°/049°

EM37 (1990) Conductor Axis Estimated 125m Depth Steep Dip to West 10 S

m 0 m asl 300

OVERBURDEN 18.0m

MANITOU FALLS FORMATION — Weakly to moderately bleached sandstone, weak to moderate maroon hematite as liesegang rings, weakly fractured

50m 100m 150m

50 250 100 200 150 250

ATHABASCA GROUP

FAIR POINT FORMATION 141.2m — Weakly bleached, coarse grained sandstone, weakly fractured

Unconformity 153.5m — paleoweathering

BASEMENT

Weakly to moderately altered garnetiferous–biotite–quartz–feldspar–gneiss/protomylonite

Graphitic Gneiss ?

Mafic Dyke (Diabase ?) – very fine grained, dense, massive mafic rock

EOH 204m

Uranerz Exploration and Mining Limited
71–42 MAYBELLE RIVER

SCHEMATIC CROSS SECTION
DDH MR77X
LINE 142 N
Scale 1:1000 02/90 Figure 4

LEGEND

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

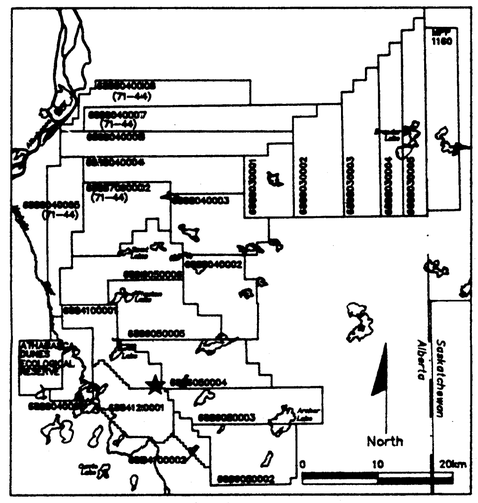
MAGNITUDE OF GEOLOGICAL FEATURE
WEAK MODERATE STRONG TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71–42

COMPOSITE GEOLOGICAL LOG MR77
LINE 142 N

Compiled: B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 17
Drawn: B.L.	Date 05/90	Base No.:	ACF: C–MR77
File No.: 7142–217		Scale: 1:500	Project No.: 71–42

DDH: MR-79

AZIMUTH/DIP : 267°/-60°
ELEVATION (m asl) : 310
GRID COORDINATE : 298+00N, 221+27E
UTM COORDINATE : 6450000 N, 520350 E
VERTICAL SCALE : 1:500
PROJECT : 71-42 MAYBELLE RIVER
DISPOSITION : PERMIT 6884120001
COMPILED BY : R.AVERY
DATE (MO/YR) : 02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

DIP TEST Azim./Dip. 75°
Elevation ..... m a.s.l.

STRUCTURE: % CORE RECOVERY; ROCK QUALITY DESIGNATION (RQD) %; FRACTURE DENSITY (# OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: 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 %; FRACTURES - UNFILLED; FRACTURES - FILLED

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES

CALCULATED CLAY: KAOLINITE %; ILLITE; CHLORITE; TOTAL CLAY %

ACID -61°

0.0-30.5 m; OVERBURDEN; Sandy diamicton, outwash sands and gravels.

30.5-159.6 m; MANITOU FALLS FORMATION, ATHABASCA GROUP.
Moderate to strongly bleached, localized weak red and maroon hematite, medium to coarse grained, clean, crossbedded, clay interclast sandstone containing numerous bitumen coated fractures throughout.

159.6-182.7 m; FAIR POINT FM.
Moderately bleached, weak maroon and red hematite, coarse grained, poorly bedded sandstone containing sparse matrix supported pebble bands and random floating clasts.

182.8-218.7 m; Well foliated, qtz-plag-mylonite containing cataclastic and qtz-plag pegmatitic intervals; weak to moderate chloritization; weak maroon and red hematization.

188.9-192.2 m; pegmatitic interval characterized by interlocking anhedral grains of chloritized plag with red hematite stained qtz; unit is gradational with underlying and overlying mylonites.

218.7-245.8 m; Chloritized, massive to moderately well foliated, biot-qtz-plag-granodiorite containing trace quantities of graphite (trace to 2%) and pyrite (2-5%).

245.8-260.0 m; Chloritized, fine grained, well-foliated, ga-py bearing graphitic-qtz-plag-gneiss; (graphite: 10-25%).

PAJARI -59° 057°

SAMPLES: MR79-1 (6, 7); MR79-2; MR79-3 (1, 2); MR79-4; MR79-5; MR79-6; MR79-7; MR79-8; MR79-9; MR79-10; MR79-11; MR79-12; MR79-13; MR79-14; MR79-15; MR79-16; MR79-17; MR79-18; MR79-19; MR79-20

CALCULATED CLAY: K 11.5%; K 12.9%; K 19.3%; I 25.7%; I; I; I

DDH: MR-81

AZIMUTH/DIP : 229°/-60°
ELEVATION (m asl) : 315 m
GRID COORDINATE : 154+00 N, 178+50 E
UTM COORDINATE : 6446800 N, 521250E
VERTICAL SCALE : 1:500
PROJECT : 71-42 MAYBELLE RIVER
DISPOSITION : PERMIT 6886050004
COMPILED BY : R. AVERY / B. LACEY
DATE (MO/YR) : 02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

STRUCTURE: DIP TEST Azim./Dip. 75°; Elevation ..... m a.s.l.; % CORE RECOVERY (25–75); ROCK QUALITY DESIGNATION (RQD) % (25–75); FRACTURE DENSITY (# OF FRACTURES/3m RUN) (10–20); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

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: MR81-1, MR81-2, 81-3, 81-4, MR81-6, 81-7, 81-8, MR81-9, MR81-10, MR81-11, MR81-12, MR81-13, MR81-14, MR81-15, MR81-16, MR81-17, MR81-18

CALCULATED CLAY: KAOLINITE, ILLITE, CHLORITE %; TOTAL CLAY %

LITHOLOGY

0–36.6m OVERBURDEN

36.6–148.3 m; MANITOU FALLS FM.
ATHABASCA GROUP
Moderately to strongly bleached sandstone; weak maroon hematite as liesegang rings; locally moderately to strongly fractured; zones of moderate silicification; clay intraclasts common; bitumen and pyrite common as fracture coatings.

59.1–59.2 m; Crush breccia with minor sandy clay gouge and trace py.

148.3–173.9 m; FAIR POINT FORMATION.
ATHABASCA GROUP
Weakly to moderately bleached, coarse grained sandstone; weakly fractured; weak to moderate maroon hematite; weak red hematite.

172.6–173 m; Conglomeratic sandstone containing chloritized basement clasts.

173.9 m UNCONFORMITY– sharp contact

173.9–233.0 m; Weakly to moderately altered, garnetiferous–qtz–fspar–pegmatoid/protomylonite; massive, coarse grained with minor intervals of mylonite and protomylonite.

173.9–180.5 m; paleoweathering red zone; strongly reworked.

199.3–233.0 m; generally massive coarse grained ga–qtz–fspar–pegmatoid. (granitoid)

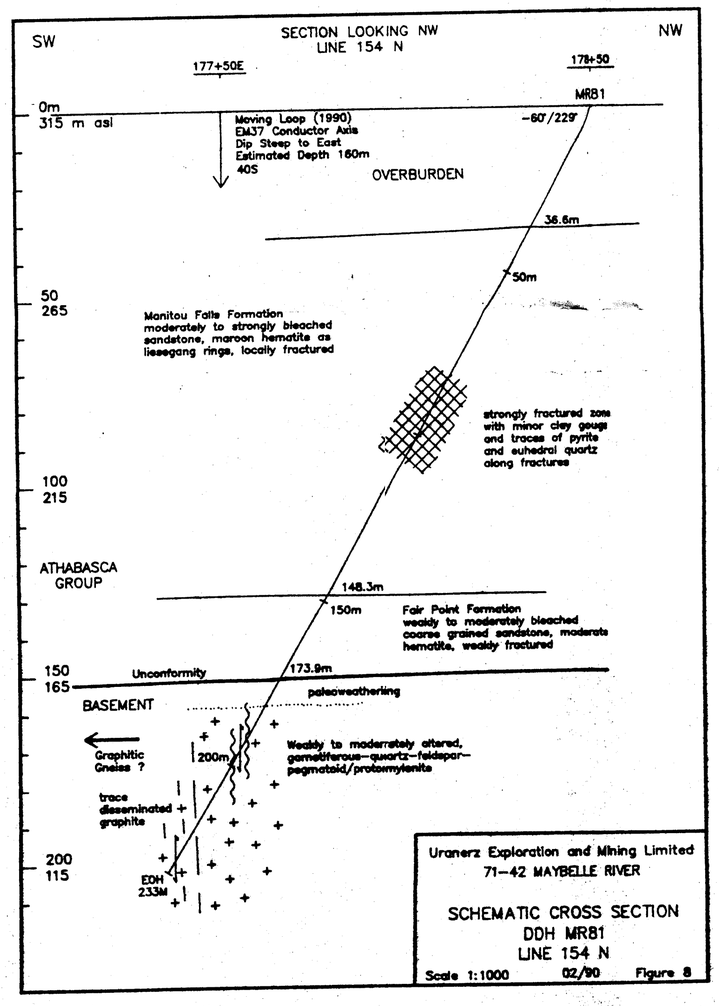
E.O.H. @ 233m

ACID –61°; PAJARI –57° 238°

11.8%; 11.6%; 12.9%; 20.6%; K; I

172 cps

SECTION LOOKING NW
LINE 154 N



Uranerz Exploration and Mining Limited
71–42 MAYBELLE RIVER

SCHEMATIC CROSS SECTION
DDH MR81
LINE 154 N
Scale 1:1000 02/90 Figure 8

LEGEND

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

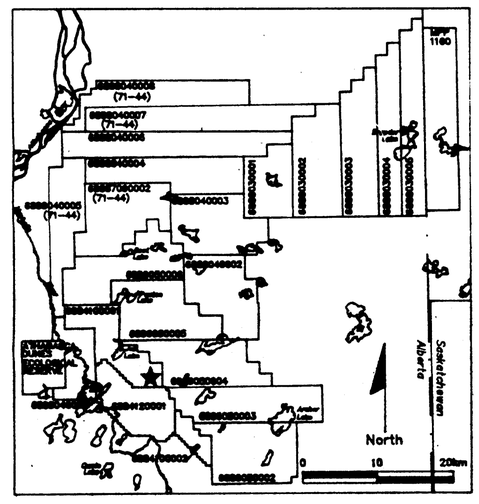
MAGNITUDE OF GEOLOGICAL FEATURE: WEAK, MODERATE, STRONG, TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River Project 71–42

COMPOSITE GEOLOGICAL LOG MR81
LINE 154 N

MIN 103

Compiled: R.A., B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 19
Drawn: R.A., B.L.	Date: 05/90	Base No.:	ACF: C–MR81
File No.: 7142–221		Scale: 1:500	Project No.: 71–42

DDH: MT-2

AZIMUTH/DIP	: -90°
ELEVATION (m asl)	: 253 m
GRID COORDINATE	: 500+00 N, 106+00E
UTM COORDINATE	: 6467875 N, 5010550 E
VERTICAL SCALE	: 1:500
PROJECT	: 71-44 MAYBELLE RIVER II
DISPOSITION	: 6888040005
COMPILED BY	: R.AVERY
DATE (MO/YR)	: 03/90

DIP TEST Azim./Dip. 75° Elevation ..... m a.s.l.

STRUCTURE: CORE RECOVERY % (25–75); ROCK QUALITY DESIGNATION (RQD) % (25–75); FRACTURE DENSITY (10–20 @ OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: 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 %, FRACTURES - UNFILLED, FRACTURES - FILLED

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U total and partial	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO	CALCULATED CLAY
↓1.6 ppm	↓6 ppm	↓196 ppm	↓12 ppm	↓2.4 ppm	↓6 ppm	↓80 ppm	↓0.9 %	↓0.46	↓0.10 %	KAOLINITE, ILLITE, CHLORITE % (0–50–100); TOTAL CLAY % (4–8)
↓2.4 ppm	↓26 ppm	↓174 ppm	↓14 ppm	↓5.2 ppm	↓6 ppm	↓100 ppm	↓5.0 %	↓0.28	↓0.22 %	
ppm 2 4 8	ppm 20 40	ppm 200 400	ppm 10 20 30	ppm 5 10 15	ppm 10 20	ppm 100 200	% 5 10 15	0.2 0.4 0.6 0.8	% 0.1 0.2 0.3 0.4	

0–58.1 m; OVERBURDEN: Sandy diamicton, outwash sands and gravels.

58.1–178.1 m; MANITOU FALLS FORMATION, ATHABASCA GROUP.

Moderately bleached and silicified, fine to medium grained, massive to crossbedded, clean, well-sorted, clay intraclastic pebbly sandstone with siltstone interbeds, clay filled solution seams, and light green clay alteration (illite) common throughout.

178.1–229.7 m; FAIRPOINT FORMATION, ATHABASCA GROUP.

Moderately bleached and silicified, massive, coarse grained, poorly sorted, pebbly sandstone with intervals of strong hematization.
–massive siltstone interbeds and weak light green clay alteration (illite) are common throughout.

229.7 m UNCONFORMITY
Sharp, irregular contact

229.7–240.3 m; Strongly hematized, chloritized, reddish brown, foliated, medium grained, kspar?–qtz–plag–granodiorite containing strongly hematized prx and biot.

240.3–282.0 m; Fresh, unaltered, whitish–gray, well foliated, medium to corase grained, py bearing–pyrx–biot–qtz–plag–granodiorite containing irregular intervals of strongly hematized, pyrx–qtz–kspar anatectic pegmatite.

282.0 m END OF HOLE

PAJARI −90°

MT02-19, MT02-18, MT02-17, MT02-16, MT02-15, MT02-14, MT02-13, MT02-12, MT02-11, MT02-10, MT02-9, MT02-8, MT02-7, MT02-6, MT02-5, MT02-4, MT02-1, 02-2, 02-3

13.2% K I
K I
K I
9.8%
16.8%
17.0%
22.9%

15.7%

SECTION LOOKING N LINE 500 N

W — E

106+00E

MT02

0 m / 265 m asl

−90°

Moving Loop (1990)
EM 37 Conductor Axis
Estimated Depth 260m
Steep Dip to West
+/- 15S

OVERBURDEN

50 / 215 — 50m — 58.1m

Manitou Falls Formation
Moderately bleached and silicified, cross-bedded, clay intraclastic pebbly sandstone with clay filled solution seams, siltstone interbeds and light green clay alteration common throughout

100 / 165 — 100m

150 / 115 — 150m

ATHABASCA GROUP

178.1m

Fair Point Formation
Moderately bleached and silicified, massive, coarse grained, pebbly sandstone containing strongly hematized intervals, siltstone interbeds and light green clay alteration are common throughout

200 / 65 — 200m

229.7m Unconformity: sharp irregular contact

paleoweathering, strongly hematized and chloritized

250 / 15

Strongly hematized, chloritized, foliated, quartz–plagioclase–granodiorite, contains strongly altered biotite and proxenes

BASEMENT

Uranerz Exploration and Mining Limited
71-44 MAYBELLE RIVER II

SCHEMATIC CROSS SECTION
DDH MT02
LINE 500 N

LEGEND

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

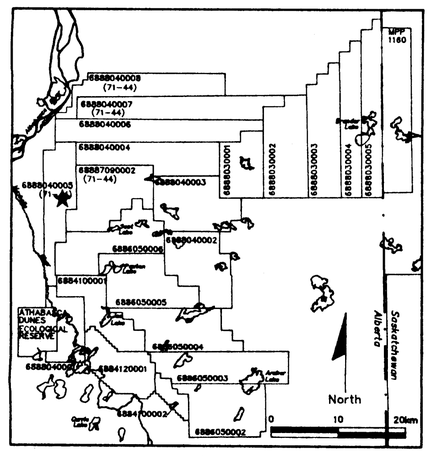
MAGNITUDE OF GEOLOGICAL FEATURE: WEAK, MODERATE, STRONG, TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River II Project 71-44

COMPOSITE GEOLOGICAL LOG MT02
LINE 500 N

MIN90D3

Compiled: R.A., S.L. Date: 05/90 NTS Ref.: 74L — Map No.: 2
Drawn: K.S. Date: 05/90 Dwg. No.: MAP2-3-MT02
Plotted: [illegible] Scale: 1:500

DDH: MR-74X

AZIMUTH/DIP : -90°
ELEVATION (m asl) : 322 m
GRID COORDINATE : 92+00 N, 159+98.5 E
UTM COORDINATE : 6441325 N 524475 E
VERTICAL SCALE : 1:500
PROJECT : 71-42 MAYBELLE RIVER
DISPOSITION : PERMIT 688410002
COMPILED BY : R.AVERY
DATE (MO/YR) : 02/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al2O3	K2O/Al2O3	MgO
1.6 ppm	6 ppm	196 ppm	12 ppm	2.4 ppm	6 ppm	80 ppm	0.9 %	0.46	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	6 ppm	100 ppm	5.0 %	0.28	0.22 %

DIP TEST Azim./Dip. 75°
Elevation ..... m a.s.l.

STRUCTURE: 25 % CORE RECOVERY; 75; ROCK QUALITY DESIGNATION (RQD) 25 % 75; 10 FRACTURE DENSITY 20 (# OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

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 %; FRACTURES - UNFILLED; FRACTURES - FILLED

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES

CALCULATED CLAY: KAOLINITE, ILLITE, CHLORITE % 0 50 100; TOTAL CLAY % 4 8

ACID -89° / PAJARI -88° N/A

LITHOLOGY

OVERBURDEN; 0-40.5 m
Sandy diamicton, outwash sands and gravels.

Position of Overburden/Devonian contact as found in DDH MR-74.

ATHABASCA GP., MANITOU FALLS FM.
40.5-103.7 m
Strongly bleached and silicified, fine to medium grained sandstone with well-defined planar cross-bedding throughout.
-unit is strongly tectonized, characterized by friable fractured intervals, brecciated units, and rotated cross-bedding.
-bitumen and euhedral qtz form the principal fracture coatings throughout

UNCONFORMITY

103.7-156.2m; Light green, strongly chloritized, locally hematized, massive, coarse grained, plagioclase pegmatoid, strongly tectonized throughout as indicated by thin seams of clay gouge, strongly fractured rubble intervals, and numerous brecciated units.

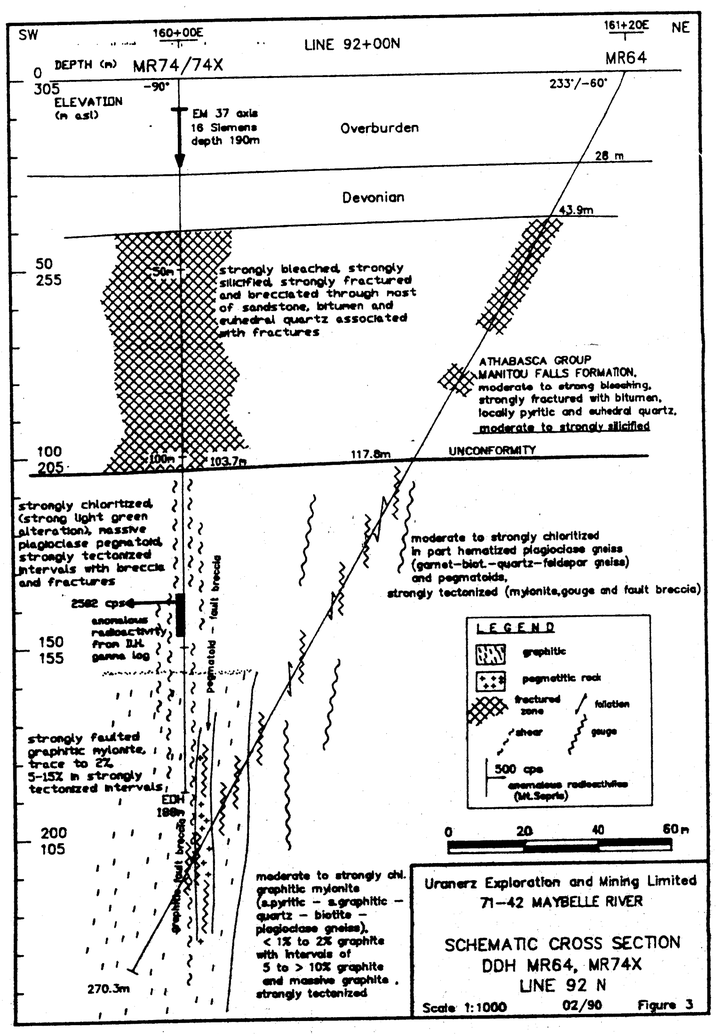
156.2-164.0m; Graphitic fault breccia with thin protomylonitic intervals.

164.0-188.0m; Greenish gray, massive to poorly foliated, coarse to medium grained, chloritized to relatively fresh, pyrite-graphite-plag amphibolite containing variable amounts of coarse, anhedral plag and secondary qtz.

188m-END OF HOLE

MR 74-8, MR 74-7, MR 74-6, MR 74-5, MR 74-4, MR74-3 1 2, MR74 11 10 12

194cps 135cps 100 300 cps 100 200 300 cps 140cps 2618cps 355cps 480cps 200 600 800 cps 100 300 cps 180cps



Uranerz Exploration and Mining Limited
71-42 MAYBELLE RIVER
SCHEMATIC CROSS SECTION
DDH MR64, MR74X
LINE 92 N
Scale 1:1000 02/90 Figure 3

LEGEND

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

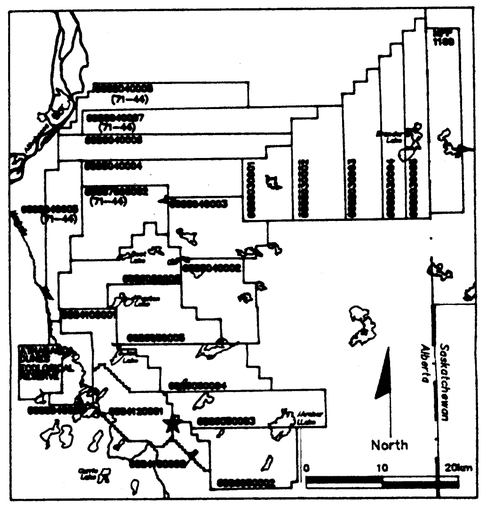
MAGNITUDE OF GEOLOGICAL FEATURE
WEAK MODERATE STRONG TRACE OR SINGLE OCCURRENCE

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR74X
LINE 92 N

Compiled: B.L./R.A.	Date: 05/90	NTS Ref.: 74L	Map No.: 20
Drawn: B.L./R.A.	Date 05/90	Base No.:	ACF: C-MR74X
File No.: 7142-213		Scale: 1:500	Project No.: 71-42

DDH: MR–76

AZIMUTH/DIP : 045°/–60°
ELEVATION (m asl) : 307 m
GRID COORDINATE : 108+00 N, 163+64 E
UTM COORDINATE : 6442750 N, 523650 E
VERTICAL SCALE : 1:500
PROJECT : 71–42 MAYBELLE RIVER
DISPOSITION : 6884120001
COMPILED BY : R.AVERY
DATE (MO/YR) : 02/90

DIP TEST Azim./Dip. 75°

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

STRUCTURE: % CORE RECOVERY (25, 75); % ROCK QUALITY DESIGNATION (RQD) (25, 75); FRACTURE DENSITY (10, 20 (# OF FRACTURES/3m RUN)); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

LITHOLOGY

0–20.0 m; OVERBURDEN; Sandy diamicton, outwash sands and gravels.

20–37.5m DEVONIAN SEDIMENTS derived from gamma log

37.5–71.3 m; MANITOU FALLS FM.; ATHABASCA GROUP
Fine to medium grained, clean, well sorted, sandstone with well defined planar cross–bedding throughout; moderately bleached; weak red hematization; maroon hematite common in thin bedding parallel seams; pyrite and bitumen common as fracture coatings.

UNCONFORMITY

71.3–90.4 m; Reddish brown, strongly hematized, massive to weakly foliated, medium grained, hbl–qtz–plag–gneiss containing wispy bands of hematite altered hbl.

90.4–137.0 m; Relatively fresh, (locally chloritized and hematized), poorly to well foliated, medium grained, pink, biot–kspar–qtz–plag–gneiss, (biot–granodiorite) containing occassional thin pegmatitic intervals.

111.4–111.6 m; pegmatitic interval; coarse clots of interlocking anhedral plag and qtz.

125.8–126.1 m; strongly chloritized, foliation parallel protomylnite bands.

134.1–136.2 m; fine grained, unfoliated, granitic dykes with sharply defined contacts.

50

100

PAJARI –63° 040°

PAJARI –63° 047°

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, GRAPHITE %; OTHERS: FRACTURES – UNFILLED, FRACTURES – FILLED

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (Ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U total and partial ppm	Th ppm	Zr ppm	Ni ppm	As ppm	Pb ppm	B ppm	Al2O3 %	K2O/Al2O3	MgO %
↓1.6 ppm	↓6 ppm	↓196 ppm	↓12 ppm	↓2.4 ppm	↓6 ppm	↓80 ppm	↓0.9 %	↓0.46	↓0.10 %
↓2.4 ppm	↓26 ppm	↓174 ppm	↓14 ppm	↓5.2 ppm	↓8 ppm	↓100 ppm	↓5.0 %	↓0.28	↓0.22 %
2 4 6 8	20 40	200 400	10 20 30	5 10 15	10 20	100 200	5 10 15	0.2 0.4 0.6 0.8	0.1 0.2 0.3 0.4

CALCULATED CLAY: KAOLINITE, ILLITE, CHLORITE % (0 50 100); TOTAL CLAY % (4 6)

MR 76–5; MR 76–4; MR76–3 (1, 2)

SECTION LOOKING NW
LINE 108 N

SW NE

163+64E MR76 164+10E

0m
307 m asl
–60°/045°
OVERBURDEN
20m
DEVONIAN SEDIMENTS
37.5m
ATHABASCA GROUP
50m
Manitou Falls Fm. Moderately bleached sandstone, weak red and maroon hematite, weakly to locally moderately fractured
50
257
Unconformity 71.3m
paleoweathering
BASEMENT
100m
Weakly altered biotite–quartz–feldspar–gneiss/granitoid, occasional thin pegmatitic intervals, weakly chloritized
100
207
fresh
EOH
137m
150
157

Moving Loop (1990) EM37 Conductor Axis Dip Steeply to W 4S

Uranerz Exploration and Mining Limited
71–42 MAYBELLE RIVER

SCHEMATIC CROSS SECTION
DDH MR76
LINE 108 N
Scale 1:1000 02/90 Figure 3

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 OCCURRENCE

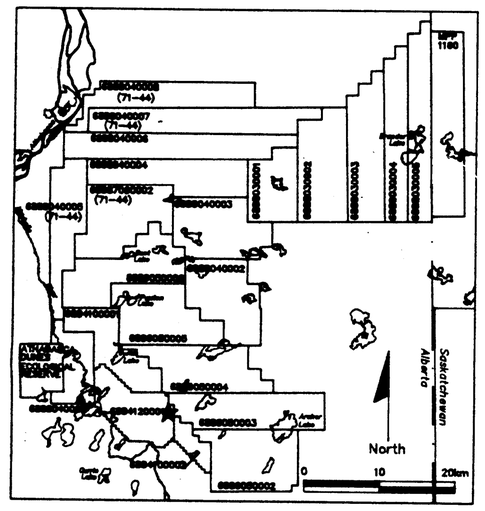
LITHOLOGY

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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

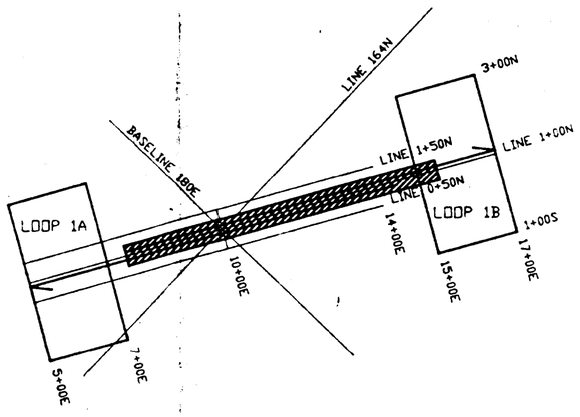
Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71–42

COMPOSITE GEOLOGICAL LOG MR76
LINE 108 N

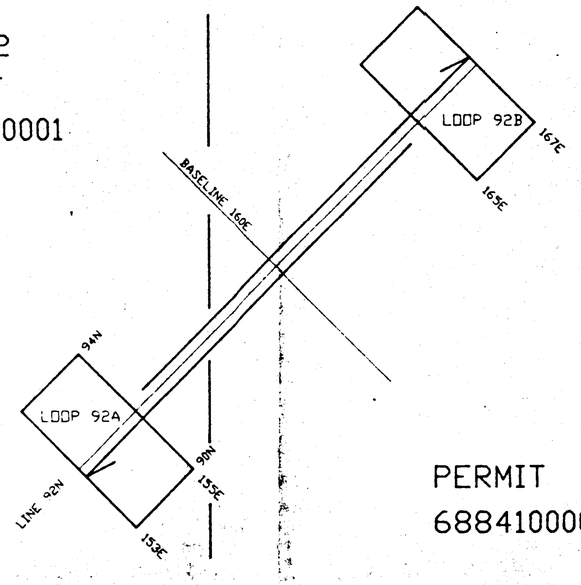
Compiled: R.A., B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 21
Drawn: R.A., B.L.	Date 05/90	Base No.:	ACF: C–MR76
File No.: 7142–216		Scale: 1:500	Project No.: 71–42

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

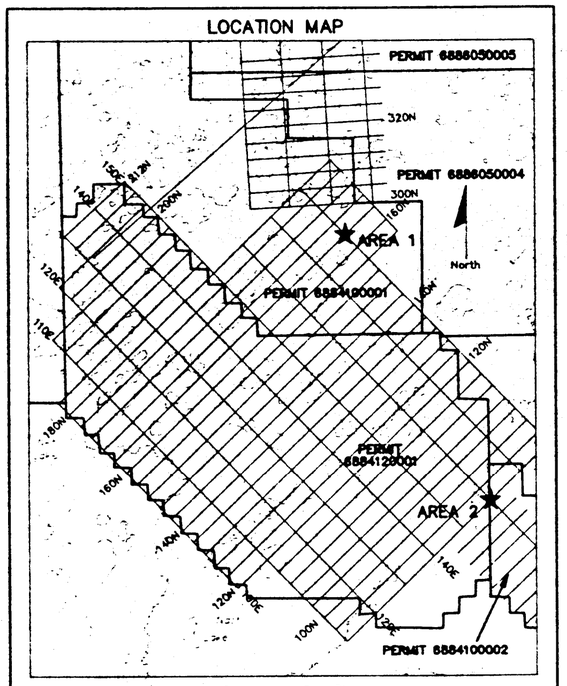
LEGEND

Fixed Transmitter Loop Location and Profile Coverage

Moving Loop Profile : Receiver Locations

Receiver Location for Center Loop Sounding

LOCATION MAP



SCALE 1:100,000

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan
Canada

Maybelle River Project 71-42

WINTER OF 1989 TEM COVERAGE
SURVEYS BY JVX LTD.

Compiled: PR	Date: 03/89	NTS Ref.:	Map No.: 23
Drawn: PR	Date 03/89	Base No.:	ACF: 42TM189
File No.: 7142-207		Scale: 1:10,000	Project No.: 71-42

DDH: MR78

AZIMUTH/DIP	: 229°/−60°
ELEVATION (m asl)	: 315 (est. by topo.)
GRID COORDINATE	: L 120+06 N / 167+78 E
UTM COORDINATE	: 6443900 N / 523100 E
VERTICAL SCALE	: 1:500
PROJECT	: 71−42 Maybelle River
DISPOSITION	: Permit 6884120001
COMPILED BY	: B. Lacey
DATE (MO/YR)	: 02/90

DIP TEST Azim./Dip. 75°

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

STRUCTURE: 25 % CORE RECOVERY 75; 25 % ROCK QUALITY DESIGNATION (RQD) 75 %; 10 FRACTURE DENSITY 20 (# 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 %

GAMMA LOG: CPS, 0

SAMPLES

50m

0−28.9m OVERBURDEN

28.9−53.0m DEVONIAN SEDIMENTS
Interbedded dolomite and calcareous sandstone.

53.0−59.5m MANITOU FALLS FORMATION
strongly bleached, fractured sandstone

59.5−83.0m PLAGIOCLASE GNEISS
moderately to strongly altered, garnetiferous−quartz−feldspar−gneiss/protomylonite, generally massive to locally foliated and mylonitic, relict garnets

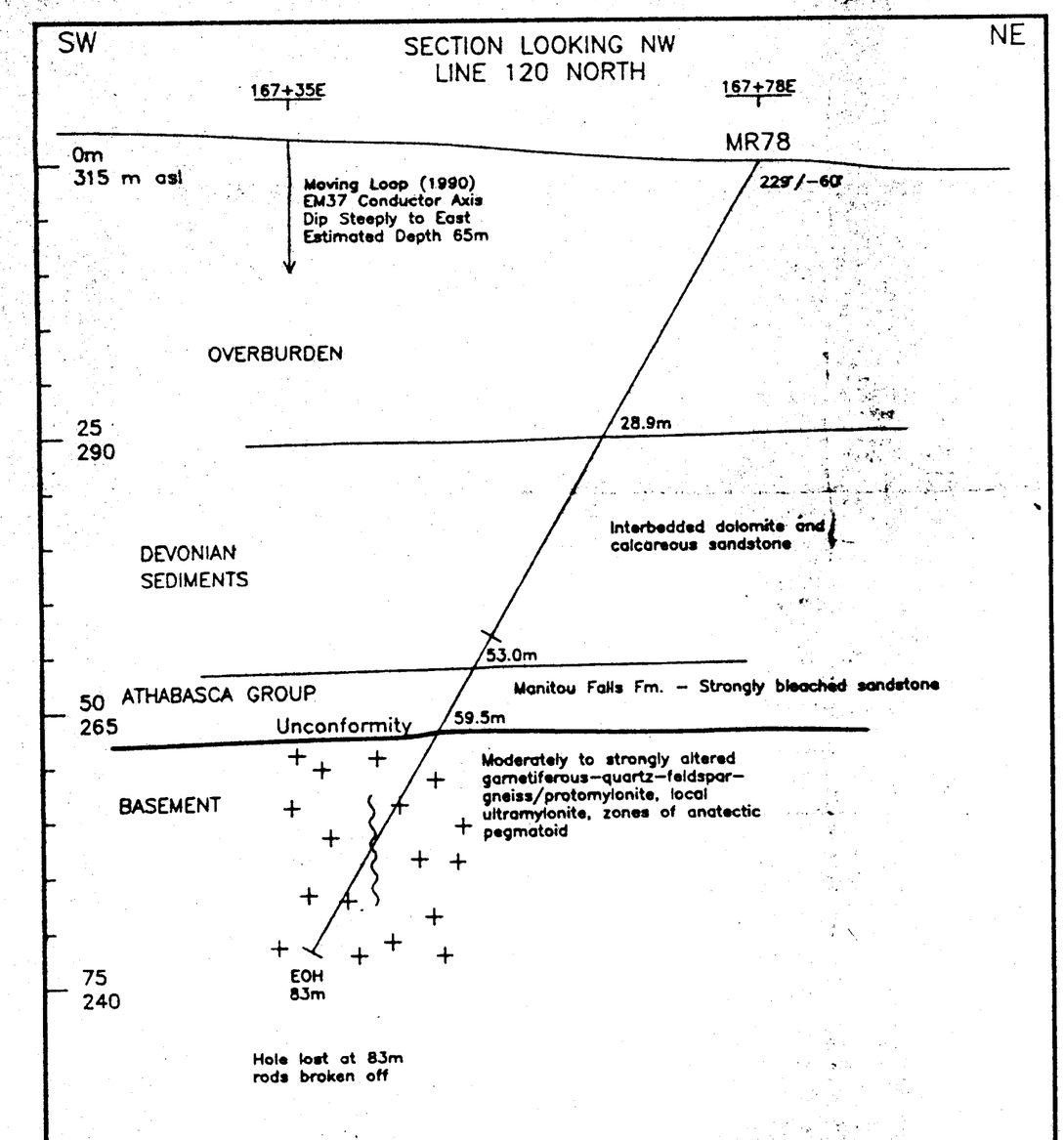
E.O.H. 83.0m
Hole Abandoned − Drill Rods Broken Off

NO RADIOMETRIC LOG

HOLE ABANDONED

MR78-1

SW — SECTION LOOKING NW LINE 120 NORTH — NE



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 OCCURRENCE

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

Uranerz Exploration and Mining Limited
71−42 MAYBELLE RIVER

SCHEMATIC CROSS SECTION
DDH MR78
LINE 120 N

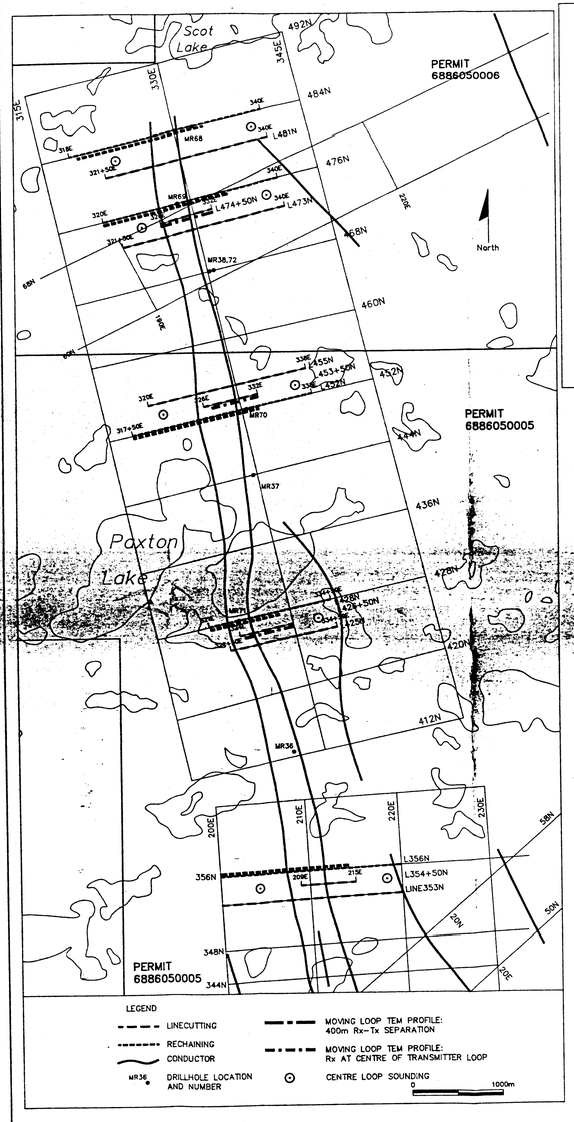
Scale 1:500 02/90 Figure 5

Maybelle River Project 71−42

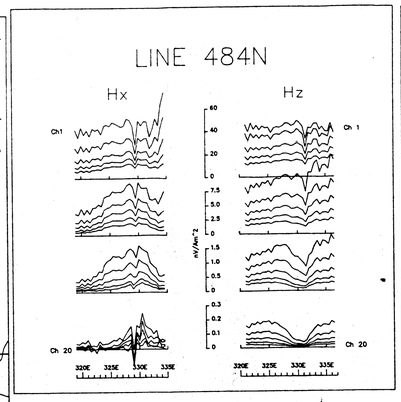
COMPOSITE GEOLOGICAL LOG MR78
LINE 120 N

Compiled: B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 22
Drawn: B.L.	Date 05/90	Base No.:	ACF: C−MR78
File No.: 7142−218		Scale: 1:500	Project No.: 71−42

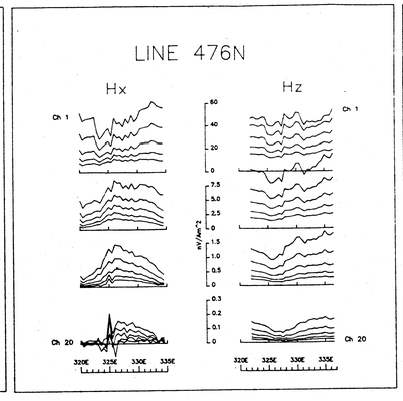
MOVING LOOP TEM PROFILES



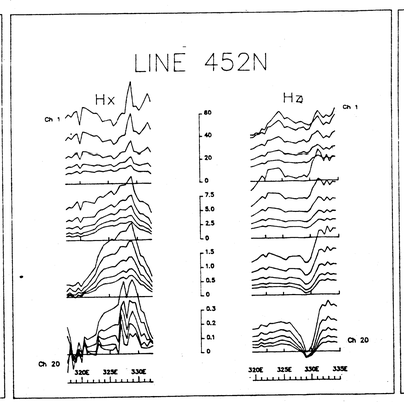
LINE 484N



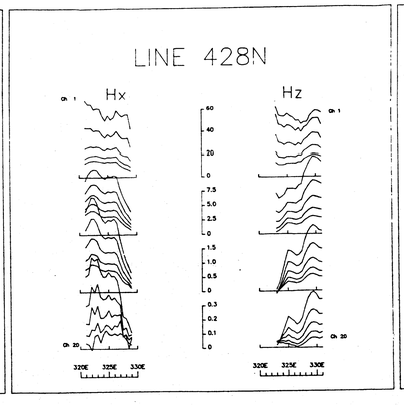
LINE 476N



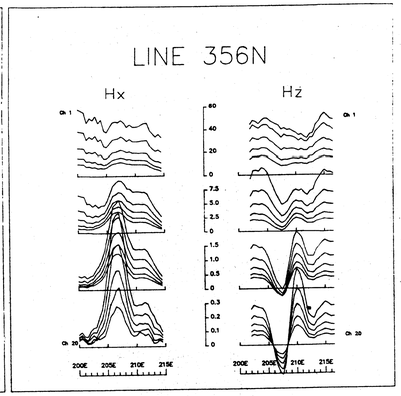
LINE 452N



LINE 428N



LINE 356N

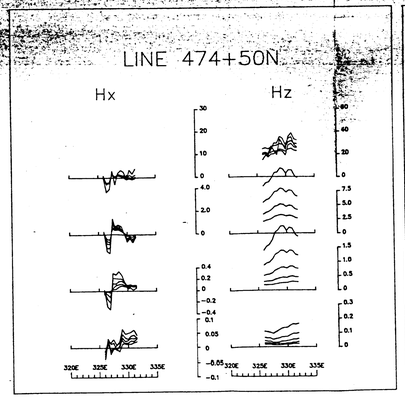


400 m
Receiver Location — Centre Loop Sounding Location

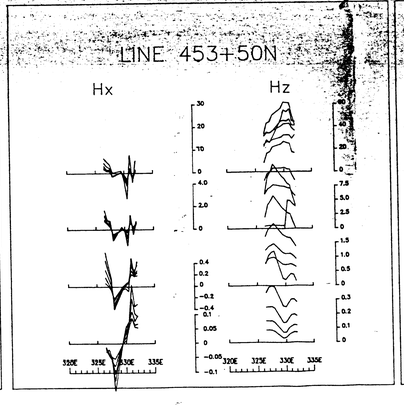
Transmitter Loop Size : 300 m x 300 m
Receiver – Transmitter Separation : 400 m

CENTRE LOOP TEM PROFILES

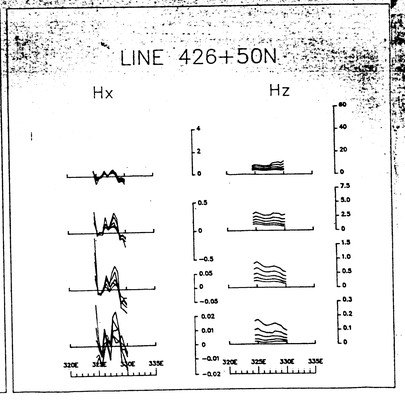
LINE 474+50N



LINE 453+50N



LINE 426+50N



Receiver Location

Transmitter Loop Size : 300 m x 300 m

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

EM-37 TEM SURVEYS
PAXTON LAKE AREA
GEO-PHYSI-CON CO. LTD.
JUNE, 1989

MIN GEOS

Compiled: P.R.	Date: 12/89	NTS Ref.:	Map No.: 24
Drawn: E.B.	Date: 12/89	Base No.:	ACF: PAX-TEM
File No.: 7142-210		Scale: 1:25,000	Project No.: 71-42

Lake Athabasca

PERMIT 6888040008

PERMIT 6888040007

PERMIT 6888040006

PERMIT 6888040004

PERMIT 6888040035

PERMIT 6867090002

PERMIT 6888040003

PERMIT 6888030001

PERMIT 6888030002

PERMIT 6888030003

PERMIT 6888030004

PERMIT 6888030005

MPP 1160

PERMIT 6888040002

PERMIT 6886050006

Parton Lake

PERMIT 6884100001

PERMIT 6886050005

ATHABASCA DUNES ECOLOGICAL RESERVE

PERMIT 6886050004

PERMIT 6888040001

PERMIT 6884120001

PERMIT 6884100002

PERMIT 6886050003

PERMIT 6886050002

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited

Saskatoon, Saskatchewan Canada

Maybelle River Projects 71-42 & 71-44

1990 GEOTEM SURVEY
FLIGHT LINES
GEOTERREX LTD.

MIN 9003

Compiled: Geoterrex	Date: 06/90	NTS Ref.:	Map No.: 25
Drawn: C. Haider	Date 02/91	Base No.:	ACF: 7142b1
File No.: 7144-007		Scale: 1:100,000	Project No.: 7142.44

PERMIT 6888040008

PERMIT 6888040007

PERMIT 6888040006

PERMIT 6888040004

PERMIT 6888040003

PERMIT 6888030002

PERMIT 6888030003

PERMIT 6888030004

PERMIT 6888030005

PERMIT 6888030001

MPP 1160

Willow Island Bay

Fort Crown Creek

Fort River

Grass River

Grass Creek

Saskatchewan Alberta

Brander

Time Lake

Eder Lake

Fort River

Saskatchewan Alberta

LEGEND

LAKE SEDIMENT SAMPLE

STREAM SEDIMENT AND WATER SAMPLES

SAMPLE NIMBER

0 1000 2000 3000m

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

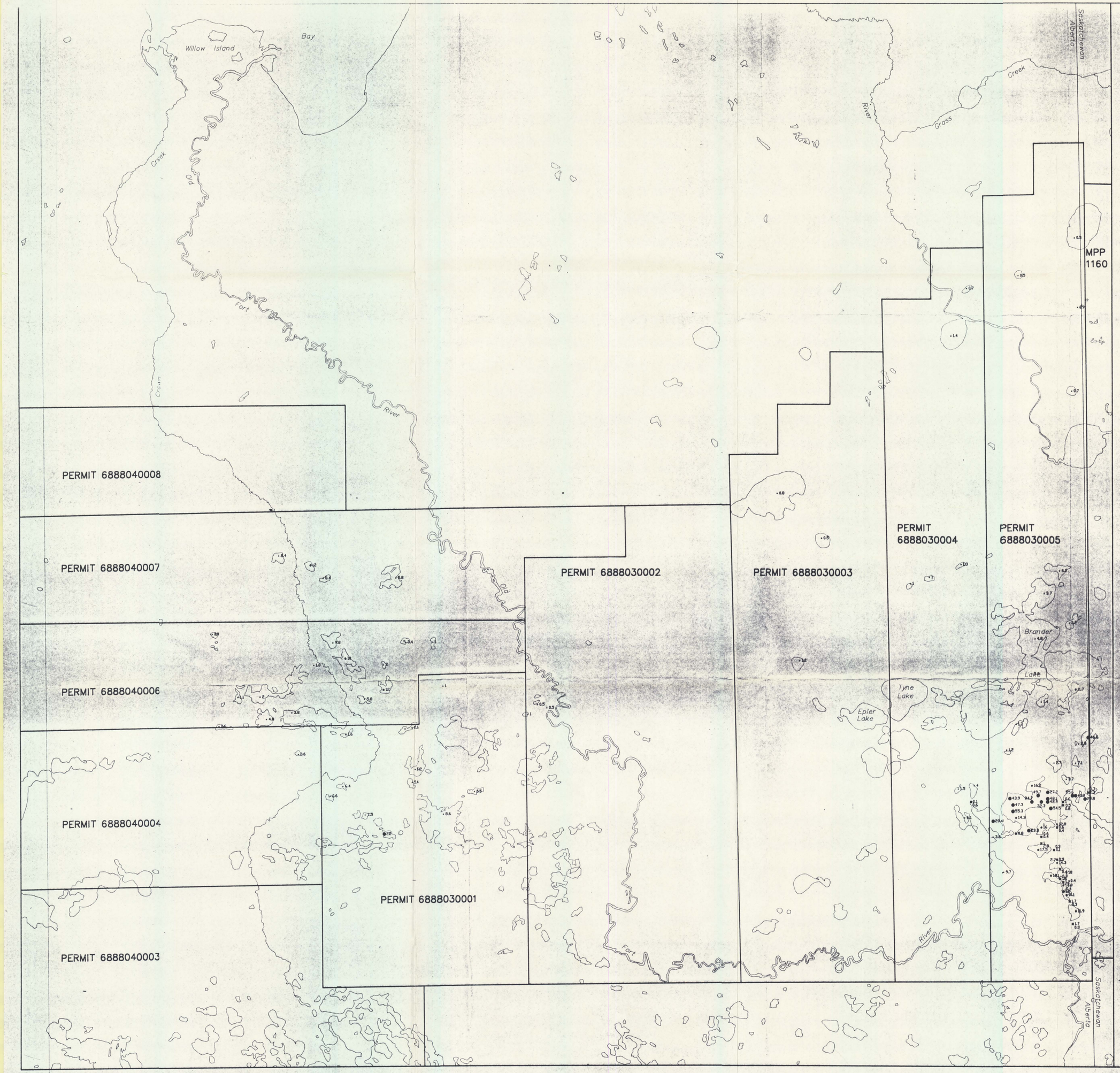
Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

1988 LAKE SEDIMENT SAMPLES LOCATIONS AND VALUES

SAMPLE LOCATIONS

Compiled: BT/BL	Date: 03/91	NTS Ref.:	Map No.: 26
Drawn: E.B.	Date: 03/91	Base No.:	ACF: MAYB-SA
File No.: 7142-244		Scale: 1:50,000	Project No.: 71-42



LEGEND

LAKE SEDIMENT

- < 10 ppm U
- > 10 – < 20 ppm U
- > 20 ppm U

STREAM SEDIMENT AND WATER SAMPLE

- ppm U
- ppb U

0 1000 2000 3000m

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited

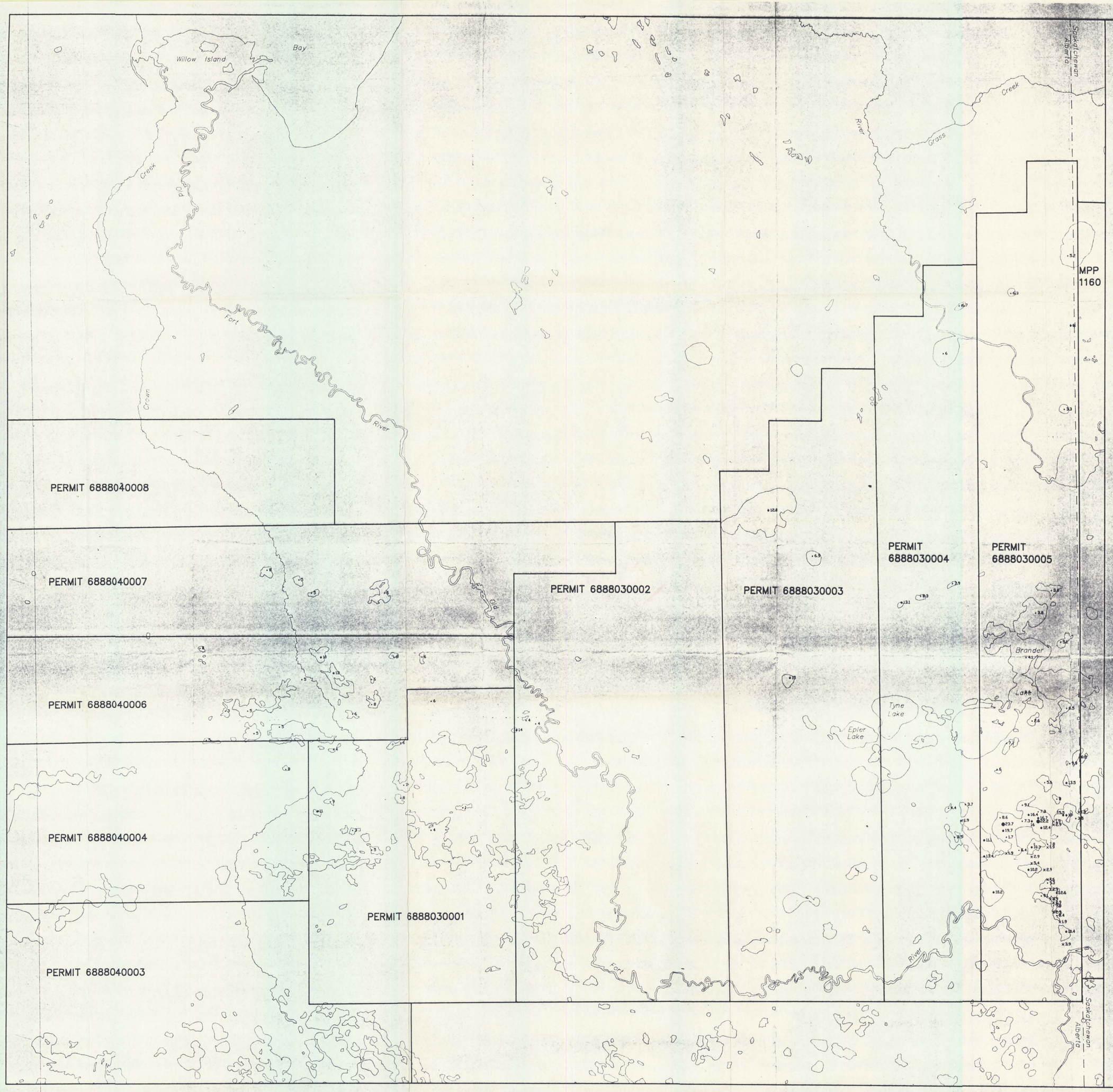
Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

1988 LAKE SEDIMENT SAMPLES LOCATIONS AND VALUES

URANIUM

Compiled: BT/BL	Date: 03/91	NTS Ref.:	Map No.: 26A
Drawn: E.B.	Date: 03/91	Base No.:	ACF: MAYB-U
File No.: 7142-241		Scale: 1:50,000	Project No.: 71-42



LEGEND

LAKE SEDIMENT

< 10 ppm Ni

> 10 - < 20 ppm Ni

> 20 ppm Ni

STREAM SEDIMENT

ppm Ni

0 1000 2000 3000m

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited

Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

1988 LAKE SEDIMENT SAMPLES LOCATIONS AND VALUES

NICKEL

Compiled: BT/BL	Date: 03/91	NTS Ref.:	Map No.: 26B
Drawn: E.B.	Date: 03/91	Base No.:	ACF: MAYB-NI
File No.: 7142-243		Scale: 1:50,000	Project No.: 71-42

Bay
Willow Island
Creek
Old
Fort
Crown
River
Saskatchewan
Alberta
Creek
Grass
River
MPP
1160
PERMIT 6888040008
PERMIT 6888040007
PERMIT 6888040006
PERMIT 6888040004
PERMIT 6888040003
PERMIT 6888030002
PERMIT 6888030003
PERMIT
6888030004
PERMIT
6888030005
PERMIT 6888030001
Brander
Lake
Tyne
Lake
Epler
Lake
Fort
River
Saskatchewan
Alberta

LEGEND

LAKE SEDIMENT

.48 < 10 ppm As

.16 > 10 - < 20 ppm As

●48.9 > 20 ppm As

STREAM SEDIMENT

x 0.5 ppm As

0 1000 2000 3000m

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

1988 LAKE SEDIMENT SAMPLES LOCATIONS AND VALUES

ARSENIC

Compiled: BT/BL	Date: 03/91	NTS Ref.:	Map No.: 26C
Drawn: E.B.	Date: 03/91	Base No.:	ACF: MAYB-AS
File No.: 7142-242		Scale: 1:50,000	Project No.: 71-42

DDH: MT1

AZIMUTH/DIP : NA/−90°
ELEVATION (m asl) : 293 (est.)
GRID COORDINATE : L 70 N / 45+00 E
UTM COORDINATE : 6466350 N / 516950 E
VERTICAL SCALE : 1:500
PROJECT : 71−44 Maybelle River II
DISPOSITION : 6887090002
COMPILED BY : W. Gaskin / B. Lacey
DATE (MO/YR) : 06/89

DIP TEST Azim./Dip. 75°
Elevation m a.s.l.

STRUCTURE: % CORE RECOVERY (−25, 25−75, 75−); ROCK QUALITY DESIGNATION (RQD) (−25, 25−75, 75−); FRACTURE DENSITY (# OF FRACTURES/2m RUN) (−10, 10−20, 20−); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA; COHESIVE: 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: 0 20 40 60 80 CPS

SAMPLES: MT01−1 … MT01−31

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

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

U total and partial ppm	Th ppm	Zr ppm	Ni ppm	As ppm	Pb total and partial ppm	B ppm	Bi ppm	Al2O3 %	K2O/Al2O3	MgO %
↓ 2 ppm	↓ 4 ppm	↓ 104 ppm	↓ 6 ppm	↓ 2.18 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 %
2 4 6 8	20 40	200 600	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 − 70.1m OVERBURDEN

Top of Bedrock Determined From Gamma Log

62−70.1m Triconed Sandstone

70.1 − 229.2m MANITOU FALLS FORMATION
Moderately bleached, locally silicified, medium to coarse grained sandstone, moderately fractured, some fractures have tarry bitumen coatings, rehealed fractures (silicified) common, euhedral quartz and trace spheroidal pyrite common along fractures, maroon and red hematite mainly as liesegang rings, siltstone interbeds common, clay intraclasts common

229.2 − 327.6m FAIR POINT FORMATION
Weakly to moderately bleached, coarse grained sandstone, white clay matrix, moderate maroon hematite bands, weak red hematite, local light and dark green clays (chlor. ?) indurating sst. matrix, trace specular hematite common, occurances of "brick red" (secondary) hematite along select fractures

327.6−345.9m Paleoweathering strongly hematized, moderately chloritized, (biotite)−quartz−(feldspar)−gneiss, texture mainly overprinted by paleoweathering

345.9−364.0m Graphite Gneiss / Mylonite (garnetiferous)−graphitic−pyritic−(biotite)−quartz−(feldspar)−gneiss, intervals of anatectic pegmatoid rock, strong ductile deformation overprinting gneissic texture

364.0−387.7m
moderate to strong hematization, no graphite or pyrite present in this zone

387.7−404.4m
strongly chloritized, trace graphite and pyrite

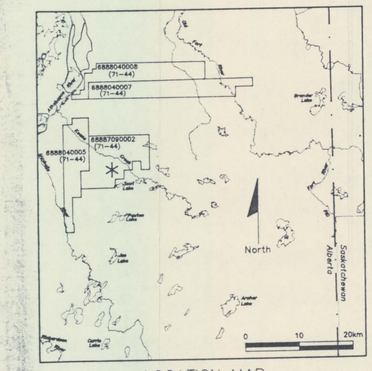
404.4−419.7
strong dark green chloritization, trace−2% graphite, abundant pyrite and quartz veinlets

E.O.H. AT 419.7m

115 cps max.
40 80 120 160 cps

ACID −90°
PAJARI −89°

LOCATION MAP



SECTION LOOKING NNW
DDH MT1 (−90°)
Line 70N / 45+00E

DEPTH (m) ELEVATION (m asl) 0 293 | WEST (GRID) | EAST (GRID)

EM37 Conductor (45+00E) Depth 375m 25 Siemens

OVERBURDEN

50 243 — 62m

pyrite siderite ?

100 193 — euhedral quartz

dravite on fractures ?

ATHABASCA GROUP

Manitou Falls Formation: moderately bleached, locally silicified, medium to coarse grained sandstone, siltstone interbeds and clay intraclasts common, moderate maroon and red hematite, moderately fractured locally, euhedral quartz and pyrite along fractures in upper part of M.F., siderite (?) and dravite (?) along some fractures

150 143

minor silicified fault breccia

200 93 — minor fault breccia — 229.1m

Fair Point Formation: weakly to moderately bleached, coarse grained sandstone, white clay matrix, moderate maroon and weak red hematite bands, cm to 1m intervals of light to dark green clays indurating sst matrix, weakly fractured and tectonized

250 43

short intervals of dark green clays (chlorite ?) in sandstone matrix throughout F.P.

300 −7

Unconformity — 327.6m

paleoweathering strongly hematized

BASEMENT

350 −57

Plagioclase Gneiss ?

trace graphite trace to 5% pyrite

Graphitic Gneiss/Mylonite garnetiferous−graphitic−Pyritic−biotite−quartz−feldspar−gneiss, mostly strongly chloritized, texture mainly an augen−gneiss (plastic deformation evident)

chloritized

trace to 5% disseminated graphite

E.O.H. @ 419.7

400 −107

450 −157

0 10 20m
Scale 1 : 1250

Uranerz Exploration and Mining Limited
Maybelle River Project 71−42
SCHEMATIC CROSS SECTION SCOT LAKE AREA DDH MT1 , LINE 70 N
B.L. June 89 Figure

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

Maybelle River Project 11 71−44

COMPOSITE GEOLOGICAL LOG MT01

MIN 9003

Compiled: B.L.	Date: 09/89	NTS Ref.:	Map No.: 3
Drawn: B.L.	Date: 10/89	Base No.:	ACF: C−MT01
File No.: 7144−001		Scale: 1:500	Project No.: 71−44

Lake Athabasca

LINE 39

LINE 38

LINE 37

LINE 36

LINE 35

LINE 34

LINE 33

LINE 32

LINE 31

PERMIT 6888040008

PERMIT 6888040007

PERMIT 6888040006

PERMIT 6888040004

PERMIT 6888040005

PERMIT 6887090002

PERMIT 6888040003

PERMIT 6888030001

PERMIT 6888030002

PERMIT 6888030003

PERMIT 6888030004

PERMIT 6888030005

PERMIT 6888040002

PERMIT 6886050006

PERMIT 6884100001

PERMIT 6886050005

PERMIT 6886050004

PERMIT 6888040001

PERMIT 6884120001

PERMIT 6884100002

PERMIT 6886050003

PERMIT 6886050002

ATHABASCA DUNES ECOLOGICAL RESERVE

NW4688

118 120 125 126

117 115 110 105 103

86 90 95 100 102

85 80 75 70 67

54 55 60 65 66

53 50 45 41

27 30 35 40

26 25 20 15 14

1 5 10 13

LEGEND

Photo Scale: 1:50,000

Date Flown: 15 June 1988

Camera: RC 120

Lens: UAG 1048

Focal Length: 153.267mm

Contractor: North West Geomatics Ltd.

Job No.: 88-709

0 1 2 3km

North

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited

Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

1988 AERIAL PHOTOGRAPHY LOCATION MAP

MIN 9003

Compiled: Geomatic	Date: 06/88	NTS Ref.:	Map No.: 27
Drawn: C. Haider	Date: 04/89	Base No.:	ACF: 7142b1
File No.: 7142-185		Scale: 1:100,000	Project No.: 71-42

6505000

6500000

6495000

Lake Athabasca

Old Fort Bay

Hillsore Island

Bartlett Lake

MPP 1160

PERMIT 6888040006

PERMIT 6888040007

PERMIT 6888040005

PERMIT 6888040004

PERMIT 6888040005

PERMIT 6887090002

PERMIT 6888040003

PERMIT 6888030001

PERMIT 6888030002

PERMIT 6888030003

PERMIT 6888030004

PERMIT 6888030005

PERMIT 6888040002

PERMIT 6886050006

PERMIT 6884100001

PERMIT 6886050005

ATHABASCA DUNES ECOLOGICAL RESERVE

PERMIT 6888040001

PERMIT 6886050004

PERMIT 6884120001

PERMIT 6884100002

PERMIT 6886050003

PERMIT 6886050002

LEGEND

- Composite Boulder Sample
- × Sand / Soil Sample
- ■ Overburden Trench

0 1 2 3km

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited

Saskatoon, Saskatchewan Canada

- Maybelle River Project 71-42

GROUND FOLLOW-UP TO LAKE SEDIMENT SURVEY
BRANDER LAKE AREA

DIN 9003

Compiled: B.L.	Date: 11/88	NTS Ref.:	Map No.: 28
Drawn: C.H.	Date 01/89	Base No.:	ACF: 7142B2
File No.: 7142-172		Scale: 1:100,000	Project No.: 71-42

DDH: MR68

AZIMUTH/DIP : 262°/-60°
ELEVATION (m asl) : 308 (est. by topo.)
GRID COORDINATE : L 484+00 N / 332+18 E
UTM COORDINATE : 6462000 N / 518000 E
VERTICAL SCALE : 1:500
PROJECT : 71-42 Maybelle River
DISPOSITION : Permit 6886050005
COMPILED BY : B. Lacey
DATE (MO/YR) : 08/89

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (1e 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 %

STRUCTURE: DIP TEST Azim./Dip. 75° / Elevation m a.s.l.; CORE RECOVERY %; ROCK QUALITY DESIGNATION (RQD) %; FRACTURE DENSITY (# PER METRE); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA; COHESIVE: FAULTED 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, CARBONATE/CARBONATES, SIDERITE/CARBONATES, U-ORE MINERALS, NICKEL MINERALS; OTHERS: GRAPHITE %, BITUMEN

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES: MR68-1 | MR68-2 | MR68-3 | MR68-4 | MR68-5 | MR68-6 | MR68-7 | MR68-8 | MR68-9 | MR68-10 | MR68-11 | MR68-12 | MR68-13 | MR68-14 | MR68-15 | MR68-16 | MR68-17 | MR68-18 | MR68-19 | MR68-20 | MR68-21 | MR68-22 | MR68-23 | MR68-24 | MR68-25 | MR68-26 | MR68-27 | MR68-28 | MR68-29 | MR68-30 | MR68-31 | MR68-37 | MR68-38 | MR68-39 | MR68-40

CLAY XRD: KAOLINITE / ILLITE / CHLORITE %; TOTAL CLAY %

ACID -63°

0–75.5m OVERBURDEN

75.5–274.4m MANITOU FALLS FORMATION
Weakly to moderately bleached sandstone, medium grained with interbedded siltstone, locally moderately to strongly silicified, locally strongly fractured with strong tarry bitumen, euhedral quartz and trace pyrite common along select fractures

274.4–379.6m FAIR POINT FORMATION
Weakly to locally moderately bleached, coarse grained sandstone, white clay matrix, moderate maroon and weak red hematite, traces of light and dark green clays in matrix, local zone of tectonized sandstone with strong fracturing, bitumen and clay fault gouge

Paleozoic/Athabasca rock, hematite chloritized

381.2–387.2m strongly chloritized, pegmatoid, pyritic and graphitic locally

387.2–425m Graphitic Gneiss/Mylonite Graphitic–pyritic (amph./prox.)–(biotite)–quartz–(feldspar)–gneiss, graphite trace to 5% diss., pyrite 1–5% diss., general texture of rock indicates major shearing (ductile deformation)

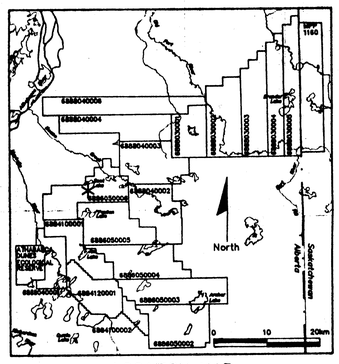
401.2–410.6m Fault Zone, strongly brecciated and gouged graphitic rock, >10% to massive brecciated graphite in strongest faulting, strong veining

410.6–425m 5–10% Graphite (disseminated) 1–5% pyrite, disseminated

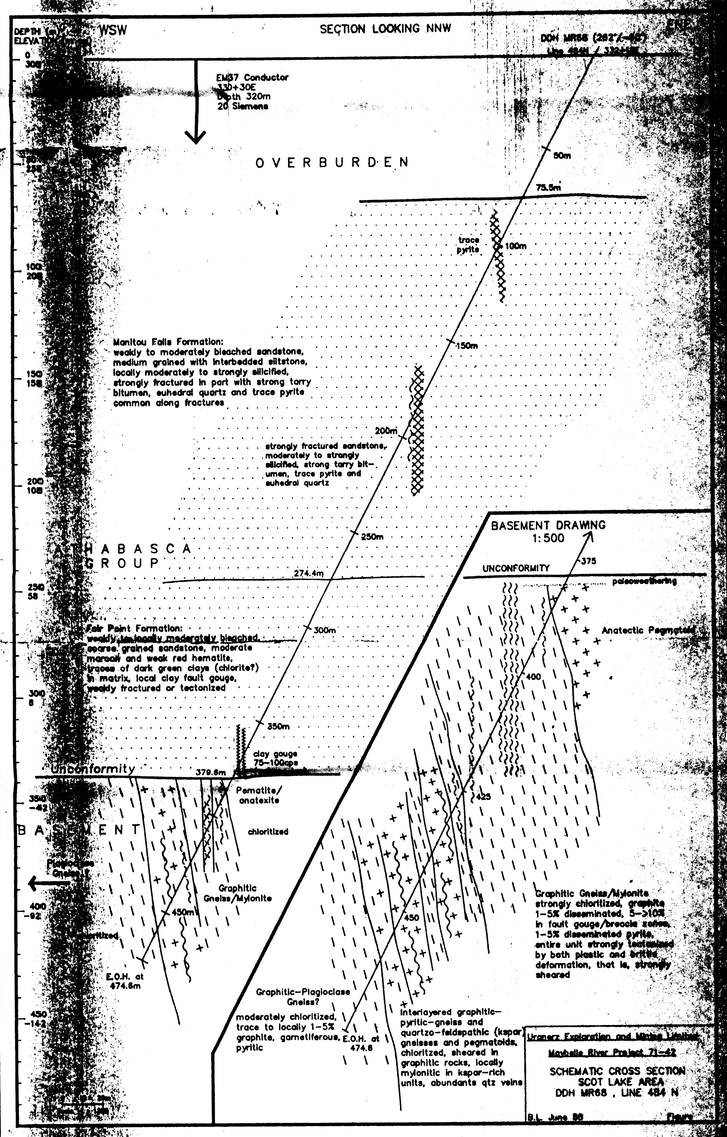
425–459.5m Graphitic Gneiss/Pegmatoid Interlayered quartz–feldspar (kspar)–gneiss/pegmatoid and pyritic–graphitic–biotite–feldspar–quartz–gneiss, k–spar rich rock is granitoid with massive to mylonitic texture, graphitic rock trace–5% graphite, locally sheared, and 1–5% pyrite

459.5–474.6m Graphite–Plagioclase–Gneiss garnetiferous–pyritic–graphitic–biotite–amph./pyrox.–feldspar–gneiss, trace to 5% graphite, 1–5% pyrite

PAJARI 269° -63°



LOCATION MAP



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	Rev.
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan, Canada

Maybelle River Project 71–42

COMPOSITE GEOLOGICAL LOG MR68

MIN 9003

Compiled: B.L.	Date: 09/89	NTS Ref.:	Map No. 62 P/
Drawn: B.L.	Date: 10/89	Base No.:	Map No. 62 P/
File No.: 7142–202		Scale: 1:500	Figure No. 3

DDH: MR69

AZIMUTH/DIP : 262° / -60°
ELEVATION (m asl) : 308 (est.)
GRID COORDINATE : L 476+00 N / 328+56 E
UTM COORDINATE : 6461600 N / 517850 E
VERTICAL SCALE : 1:500
PROJECT : 71-42 Maybelle River
DISPOSITION : Permit 6886050006
COMPILED BY : B. Lacey
DATE (MO/YR) : 08/89

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (≥ 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	↓ 2.5 ppm	↓ 6 ppm	↓ 80 ppm		↓ 0.9 %	↓ 0.2	↓ 0.1 %
↓ 2ppm	↓ 14 ppm	↓ 88 ppm	↓ 10 ppm	13 ppm	↓ 8 ppm	↓ 100 ppm		↓ 5.0 %	↓ 0.2	0.38 %

DIP TEST Azim./Dip. 75°

STRUCTURE: CORE RECOVERY %; ROCK QUALITY DESIGNATION (RQD) %; FRACTURE DENSITY <10 FRACTURES/3m RUN, >30 (# OF FRACTURES/3m RUN); INCOHESIVE: FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE; COHESIVE: 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, GRAVITE, SIDERITE/CARBONATES, U-ORE MINERALS, NICKEL MINERALS; OTHERS: GRAPHITE %, BITUMEN

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES: MR69-01 MR69-02 MR69-03 MR69-04 MR69-05 MR69-06 MR69-07 MR69-08 MR69-09 MR69-10 MR69-11 MR69-12 MR69-13 MR69-14 MR69-15 MR69-16 MR69-17 MR69-18 MR69-19 MR69-20 MR69-21 MR69-22 MR69-23 MR69-24 MR69-25 MR69-26 MR69-27 MR69-28 MR69-29 MR69-30 MR69-31 MR69-32 MR69-33 MR69-34 MR69-35 MR69-36 MR69-37 MR69-38 MR69-58

CLAY XRD: KAOLINITE / ILLITE / CHLORITE %; TOTAL CLAY %

PAJARI -63° 283°
PAJARI -63° 285°
PAJARI -64° 286°
PAJARI -63° 283°

0 – 57m OVERBURDEN

Top of Bedrock Determined From Gamma Log

57–61.1m Triconed Sandstone

61.1–312.3m MANITOU FALLS FORMATION weakly to moderately bleached, medium grained sandstone, moderate maroon hematite as bands and liesegang rings, clay intraclasts and silty beds common, trace pyrite and euhedral quartz along some fractures, tarry bitumen in porous sandstone and along fractures

160.5–225.0m strongly fractured, strongly bleached sandstone, moderate tarry bitumen coating fractures, minor clay fault gouge, minor pyrite and euhedral quartz on fractures, locally silicified

312.3–421.3m FAIR POINT FORMATION weakly to laocally moderately bleached, coarse grained sandstone, maroon and red hematite (in part secondary "Brick Red" hematite), locally strongly fractured and faulted

312.3–315m and 320.0–324.2m strong dark red hematite in siltstone beds

360.5–371.9m strongly faulted and clay altered sandstone, strongly fractured, zones of clay fault gouge, strong dark green clays enhancing and replacing original Fair Point Fm. clay matrix

382.5–388m fractured and faulted zone, clay fault gouge, light green clay

UNCONFORMITY 421.3m

421.3–432.2m Paleoweathering strongly hematized gneiss/pegmatoid

432.2–444.9m Biotite–amphibole–quartz–feldspar–gneiss, intervals of pegmatoid, moderately chloritized to fresh, moderately hematized locally

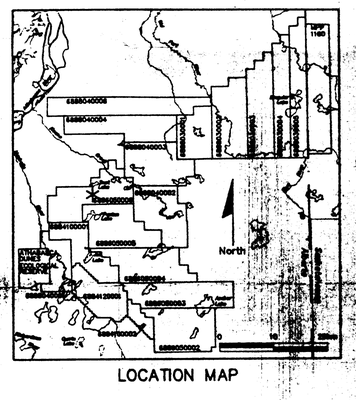
444.9–458.9m Pyritic–garnetiferous–amphibole–quartz–feldspar–anatectic pegmatoid, coarse grained, weakly chloritized to fresh

458.9–465.0m AMPHIBOLITE, pyritic–cordierite–quartz–plagioclase–biotite–hornblende, fresh to weakly altered

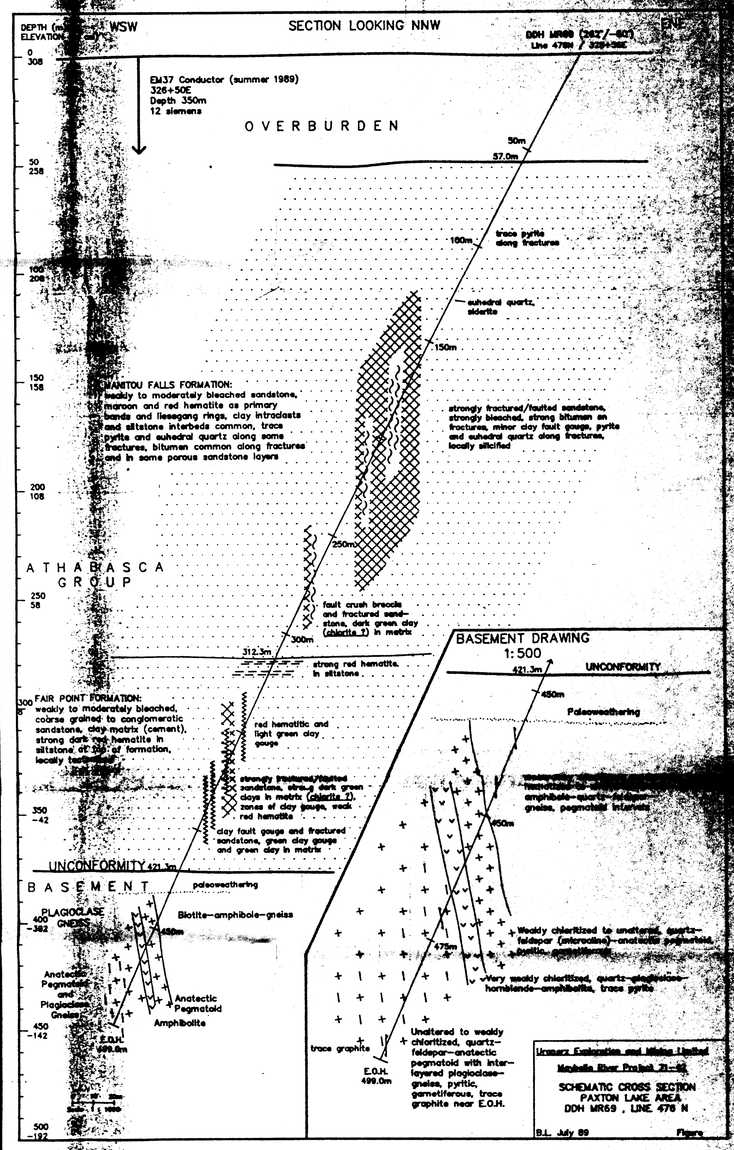
465.0–499.0m ANATECTIC PEGMATOID AND AND PLAGIOCLASE GNEISS, pyritic–garnetiferous–amphibole–biotite–quartz–feldspar, fresh to locally chloritized, trace graphite locally

trace graphite

E.O.H. AT 499.0m



LOCATION MAP



LEGEND

STRUCTURE: 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 (LAZYBOY LAKE, MANITOU FALLS, FAIR POINT); SILTSTONE INTERBEDS

UNCONFORMITY

BASEMENT: GRAPHITIC GNEISS/MYLONITE; MAFIC GNEISS (AMPHIBOLITE, PYRIBOLE); ANATECTIC PEGMATOID/ GRANITOID; PLAGIOCLASE GNEISS

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan, Canada

Maybelle River Project 71–42

COMPOSITE GEOLOGICAL LOG MR69

MIN 9003

Compiled: B.L.	Date: 08/89	NTS Ref.:	Map No.: 5
Drawn: B.L.	Date: 10/89	Base No.:	ACF: C-MR69
File No.: 7142-203		Scale: 1:500	Project No.: 71-42-07

DDH: MR72

AZIMUTH/DIP : 262° / -62°
ELEVATION (m asl) : 308 (est.)
GRID COORDINATE : L 468+00 N / 330+70 E
UTM COORDINATE : 6460850 N / 518235 E
VERTICAL SCALE : 1 : 500
PROJECT : 71-42 Maybelle River
DISPOSITION : Permit 6886050006
COMPILED BY : B. Lacey
DATE (MO/YR) : 09/89

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	↓ 6 ppm	↓ 80 ppm		↓ 0.9 %	↓ 0.2	↓ 0.1 %
↓ 2ppm	↓ 14 ppm	↓ 88 ppm	↓ 10 ppm	13 ppm	↓ 8 ppm	↓ 100 ppm		↓ 5.0 %	↓ 0.2	↓ 0.38 %
total and partial					total and partial					
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	% Al2O3		% MgO
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 6)

STRUCTURE: DIP TEST Azim./Dip. 75°; Elevation ..... m o.a.l.
CORE RECOVERY (25 % 75); ROCK QUALITY DESIGNATION (RQD) (25 % 75); FRACTURE DENSITY (10 / 20 (# 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, GRAPHITE %, BITUMEN

OTHERS

GAMMA LOG: CPS (0 20 40 60 80)

SAMPLES: MR72-1, MR72-2, MR72-3, MR72-4, MR72-5, MR72-6, MR72-7, MR72-8, MR72-9, MR72-10, MR72-11, MR72-12, MR72-13, MR72-14, MR72-15, MR72-16, MR72-17, MR72-18, MR72-19, MR72-20, MR72-21, MR72-22, MR72-23, MR72-24, MR72-25, MR72-26, MR72-27, MR72-28, MR72-29, MR72-30, MR72-31, MR72-32, MR72-33, MR72-34

0-45.7m OVERBURDEN

Top of Bedrock Determined From Gamma Log

45.7-48.8m Triconed Sandstone

48.8-275.3m MANITOU FALLS FORMATION weakly to locally moderately bleached, fine to medium grained sanstone, minor siltstone interbeds, most of fromation is strongly faulted and strongly altered to secondary hematite

54.4-134.7m Moderately silicified sandstone, weakly bleached, local minor crush breccia and fracturing

134.7-230.5m Fault Zone
Strongly hematized (secondary) fault breccia and fault rotated sandstone blocks (evident from the bedding angles)

134.5-142.3m Crush breccia zone, strongly hematized, minor light green clays, locally massive "brick red" hematite, strongly fractured

150-180.1m Fault zone with crush breccia and fine crush breccia, large (1-3m) blocks of rotated sandstone (bedding angles up to 20°-25° CA), chlorite and secondary hematite stringer veinlets common

180.1-202m Fault zone, large rotated sandstone blocks indicated by steep bedding angles (up to 25° CA), local zones of finer crush breccia within blocks, strong secondary red hematite

202-237m Fault zone, relatively stronger faulting, abundant zones of crush breccia (breccia clasts cm to 10cm sizes), strong secondary hematization

212.1-230.5 Continuous zone of crush breccia, breccia fragments range from less than 1cm to approximately 0.5m, fragments generally have light green clays (illite?) in the matrix, the breccia matrix is mainly red/brown secondary hematite, little or moderate tectonic reduction in size or rounding of breccia fragments

230.5-237m Strongly fractured sanstone below strong fault breccia

237-275.3 Relatively non-tectonized sandstone, only local zones of moderate to strong fracturing

Gradational Contact Between MF/FP Formations

275.3-385.2 FAIR POINT FORMATION weakly to moderately bleached, coarse grained to pebbly sandstone, maroon and red/brown (secondary hematite), intervals of strong faulting, clay matrix, weak light green clay in matrix through most of formation

306.4-316.2m Fault zone, consists mainly of fault breccia, sandstone breccia clasts in a matrix of sandy/clay gouge, clay gouge has light green clays and is hematitic in part, faulting appears to be about 20°-25° to CA

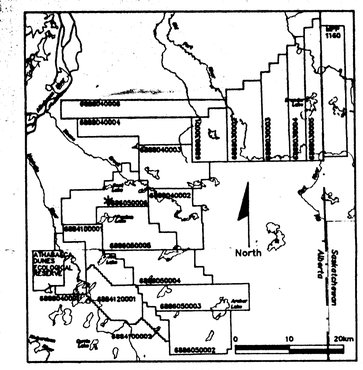
330.9-338.6m >50% to massive red hematite in the form of foliated fault gouge, cohesive, abundant veinlets and blebs of chlorite(?), strongly fractured, laminated texture, sheared with abundant slickensides, complete replacement of sandstone [illegible], chloritic clays, foliation of fault gouge from 20° to 30° CA, specular hematite common

385.2-421.6m Paleoweathering Red Zone strongly hematized, reworked plagioclase gneiss

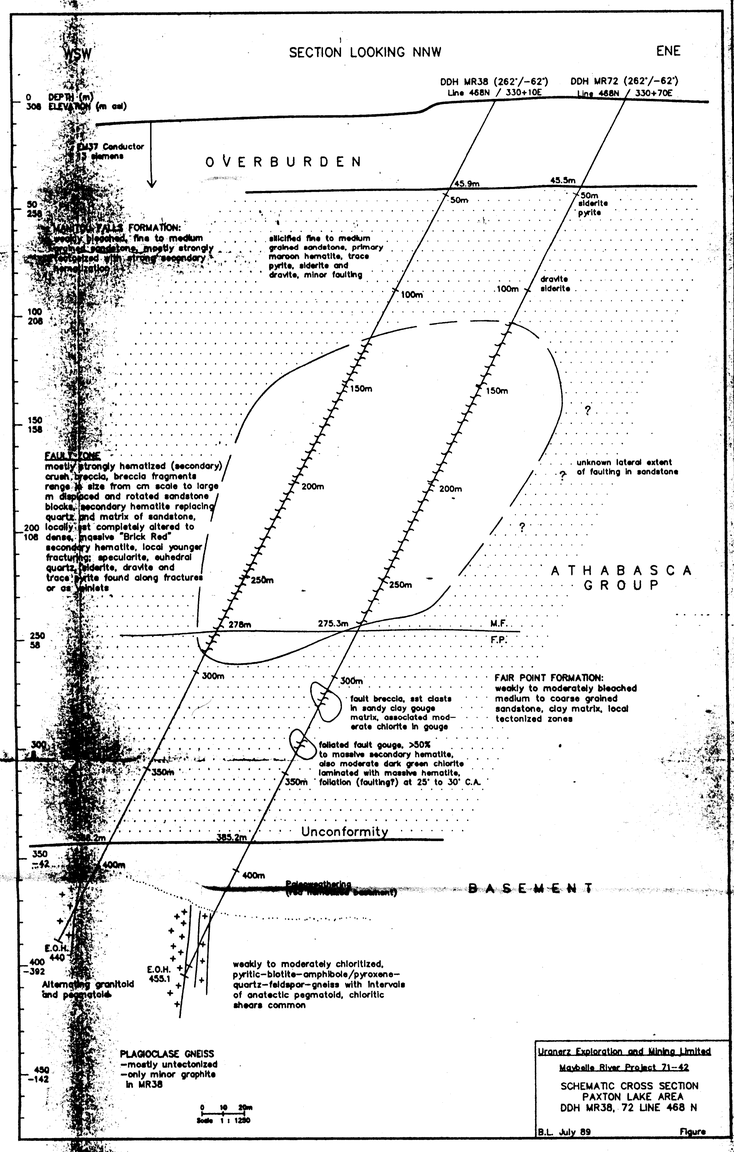
421.6-438.6 Plagioclase Gneiss weakly hematized, quartz-feldspar-gneiss, banded texture, anatectic pegmatoid intervals

438.6-480.1m Banded Plagioclase Gneiss weakly chloritized to fresh pyritic-biotite-amphibole/pyroxene-quartz-feldspar-gneiss, common calc-silicate veinlets

E.O.H. @ 480.1m



LOCATION MAP



Uranerz Exploration and Mining Limited
Maybelle River Project 71-42
SCHEMATIC CROSS SECTION PAXTON LAKE AREA DDH MR38, 72 LINE 468 N
B.L. July 89 Figure

LEGEND

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

- 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

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR72

Figure 3

DDH: MR84

AZIMUTH/DIP : -/-90°
ELEVATION (m asl) : 297 (est. by topo.)
GRID COORDINATE : 488+50 N / 327+25 E
UTM COORDINATE : 6460730 N / 517900 E
VERTICAL SCALE : 1:500
PROJECT : 71-42 MAYBELLE RIVER
DISPOSITION : Permit 6886050006
COMPILED BY : B. LACEY
DATE (MO/YR) : 03/90

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

THRESHOLD VALUES (ie 2 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U	Th	Zr	Ni	As	Pb	B	Al_2O_3	K_2O/Al_2O_3	MgO
1.8 ppm	8 ppm	196 ppm	12 ppm	2.4 ppm	8 ppm	80 ppm	0.9 %	0.48	0.10 %
2.4 ppm	26 ppm	174 ppm	14 ppm	5.2 ppm	8 ppm	100 ppm	5.0 %	0.28	0.22 %

DIP TEST Azim./Dip. 75° / Elevation ..... m a.s.l.

STRUCTURE: % CORE RECOVERY (25, 75); % ROCK QUALITY DESIGNATION (RQD) (25, 75); FRACTURE DENSITY (10, 20 (# OF FRACTURES/3m RUN)); INCOHESIVE (FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE); COHESIVE (FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE); STRUCTURAL INTERPRETATION

LITHOLOGY

ALTERATION/MINERALIZATION: Fe-OXIDES (MAROON HEMATITE, RED HEMATITE, BRICK RED HEMATITE, LIMONITE, HEMATITIC); CLAYS (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

CALCULATED CLAY: KAOLINITE / ILLITE / CHLORITE %; TOTAL CLAY %

ACID -90°

0-39.7m OVERBURDEN

39.7-252.6m MANITOU FALLS FORMATION
Weakly to moderately bleached, fine to medium grained sandstone, weak to strong maroon hematite as bands and liesegang rings, weakly to locally moderately fractured, bitumen coating some fractures and locally within porous sandstone

39.7-150m moderately silicified sandstone

115.3-117.9m fractured, strongly faulted zone, strong red hematite and maroon hematite, in part dense, massive red hematite with minor to massive specularite, associated chlorite and siderite along some fractures

252.6-251.4m FAIR POINT FORMATION
weakly to moderately bleached, coarse grained to pebbly sandstone, moderate maroon and weak red hematite, white and light green clay matrix, weakly to locally moderately fractured.

290-291.2 Core loss due to seam of massive tarry bitumen

UNCONFORMITY AT 338m

338-389m ANATECTIC PEGMATOID
weakly to moderately altered (locally fresh), pyritic-garnetiferous-biotite-quartz-feldspar-pegmatoid, moderately well foliated zones, trace to 3% disseminated pyrite

338-348.8m Paleoweathering "Red Zone" -moderately hematized

185cps (100 200 400 cps)

E.O.H. @ 389m

SECTION LOOKING NNW

WSW — ENE

DDH MR84 (-90°) (PROJECTED TO LINE 468N) Line 468+50N/327+25E
DDH MR38 (262°/-62°) Line 468N / 330+10E
DDH MR72 (282°/-62°) Line 468N / 336+70E
Moving Loop (1990) Conductor Axis
EM37 Conductor 1.3 siemens (1987 Survey)

OVERBURDEN

MANITOU FALLS FORMATION (MR84 only)
weakly bleached, weakly tectonized sandstone, strong primary maroon hematite, weakly fractured

FAIR POINT FORMATION (MR84 only)
weakly bleached, weakly fractured, coarse grained sandstone

silicified fine to medium grained sandstone, primary maroon hematite, trace pyrite, siderite and dravite, minor faulting

fractured/altered zone, strong hematite alteration, with specularite, minor chlorite and siderite along select fractures

MANITOU FALLS FORMATION: weakly bleached, fine to medium grained sandstone, mostly strongly tectonized with strong secondary hematization

FAULT ZONE
mostly strongly hematized (secondary) crush breccia, breccia fragments range in size from cm scale to large m displaced and rotated sandstone blocks; secondary hematite replacing quartz and matrix of sandstone, locally and completely altered to dense, massive "Brick Red" secondary hematite, local younger fracturing; specularite, euhedral quartz, siderite, dravite and trace pyrite found along fractures or as veinlets

unknown lateral extent of faulting in sandstone

ATHABASCA GROUP

FAIR POINT FORMATION: weakly to moderately bleached medium to coarse grained sandstone, clay matrix, local tectonized zones

fault breccia, set clasts in sandy clay gouge matrix, associated moderate chlorite in gauge

foliated fault gouge, >80% to massive secondary hematite, plus moderate dark green chlorite mineralized with massive hematite, foliation (faulting?) at 25° to 30° C.A.

UNCONFORMITY

BASEMENT

Paleoweathering (red hematized basement)

weakly altered to fresh, pyritic-garnetiferous-biotite-quartz-feldspar-anatectic pegmatoid

Alternating granitoid and pegmatoid

PLAGIOCLASE GNEISS -mostly unrecrystallized -only minor graphite in MR38

weakly to moderately chloritized, pyritic amphibole/pyroxene-quartz-feldspar-gneiss with intervals of anatectic pegmatoid, chloritic shears common

Scale 1 : 2000 (0 20 40 60 m)

Uranerz Exploration and Mining Limited
71-42 MAYBELLE RIVER
SCHEMATIC CROSS SECTION DDH's MR38, MR72, MR84 LINE 468 N
Scale 1:2000 03/90 Figure 10

LEGEND

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

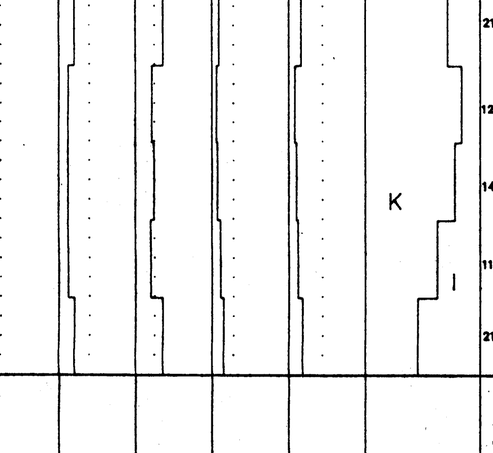
MAGNITUDE OF GEOLOGICAL FEATURE: WEAK / MODERATE / STRONG / TRACE OR SINGLE OCCURRENCE

LITHOLOGY

DEVONIAN SEDIMENTS
DOLOMITE AND CALCAREOUS 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



LOCATION MAP

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uranerz Exploration and Mining Limited — Saskatoon, Saskatchewan Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR84
LINE 468+50 N

MIN 9003

Compiled: B.L.	Date: 05/90	NTS Ref.: 74L	Map No.: 7
Drawn: B.L.	Date: 05/90	Base No.:	ACF: C-MR84
File No.: 7142-224		Scale: 1:500	Project No.: 71-42

DDH: MR70

AZIMUTH/DIP : 262° / -60°
ELEVATION (m asl) : 297 (est.)
GRID COORDINATE : L 451+95 N / 331+10 E
UTM COORDINATE : 6459350 N / 518650 E
VERTICAL SCALE : 1 : 500
PROJECT : 71-42 Maybelle River
DISPOSITION : Permit 8886050005
COMPILED BY : B. Lacey / R. Orr
DATE (MO/YR) : 08/89

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

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

STRUCTURE: CORE RECOVERY %; ROCK QUALITY DESIGNATION (RQD) %; FRACTURE DENSITY (# OF FRACTURES/3m RUN); NON-COHESIVE: FAULT BRECCIA, FAULT GOUGE; COHESIVE: FAULT BRECCIA, CATACLASITE, MYLONITE; STRUCTURAL INTERPRETATION

LITHOLOGY

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

GAMMA LOG: CPS 0 20 40 60 80

SAMPLES

U total and partial ppm	Th ppm	Zr ppm	Ni ppm	As ppm	Pb total and partial ppm	B ppm	Bi ppm	Al2O3 %	K20/Al2O3	MgO %	CLAY XRD: KAOLINITE %	ILLITE %	CHLORITE %	TOTAL CLAY %
2 4 6 8	8	88	10 28	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	0 50 100			4

0–64.0m OVERBURDEN

64.0–78.4m Triconed Sandstone

78.4–245.6m MANITOU FALLS FORMATION weakly bleached, fine to medium grained sandstone, maroon hematite bands and liesegang rings common, generally massive and non-tectonized, minor siltstone interbeds

190.5–217.5 Fractured Zone, moderately to strongly fractured, bitumen coating on fractures, minor silicified crush breccia trace euhedral quartz along some fractures

245.6–339.4m FAIR POINT FORMATION weakly bleached, coarse grained sandstone, clay matrix, conlomeratic to locally fanglomeratic, weakly fractured

339.4–417.9m INTERLAYERED GRAPHITIC MYLONITE AND PEGMATOID FAULT BRECCIA chloritized, strongly faulted, gneissic to laminated texture

339.4–341.2m ultracataclasite/Pseudotachylite

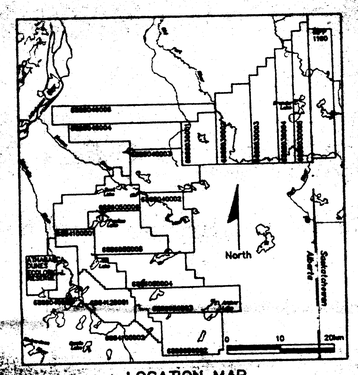
341.2–343.3m massive fine grained graphitic mylonite

343.3–388.8m interlayered biotite-chlorite-graphite gneiss and pegmatoid breccia, locally laminated to augen gneiss

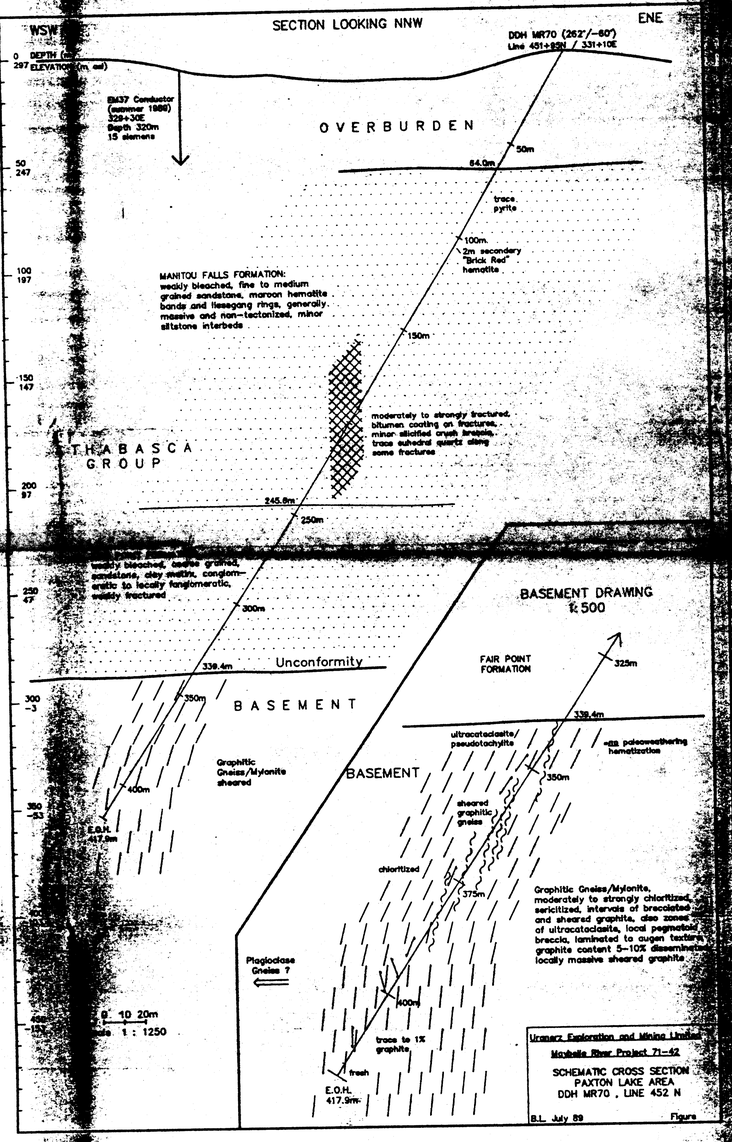
388.8–417.9m generally massive fine grained, grey graphitic gneiss (quartz-biotite-graphite-chlorite)

SAMPLES: MR70–1, MR70–2, MR70–3, MR70–4, MR70–5, MR70–6, MR70–7, MR70–8, MR70–9, MR70–10, MR70–11, MR70–12, MR70–13, MR70–14, MR70–15, MR70–16, MR70–17, MR70–18, MR70–19, MR70–20, MR70–21, MR70–22, MR70–23, MR70–24, MR70–25, MR70–26, MR70–27

0.70%



LOCATION MAP



Uraserz Exploration and Mining Limited
Maybelle River Project 71-42
SCHEMATIC CROSS SECTION
PAXTON LAKE AREA
DDH MR70 , LINE 452 N
B.L. July 89 Figure

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 PEGMATOID/ GRANITOID
- PLAGIOCLASE GNEISS

No.	Date	Revision	Compiled	Drawn	Checked
4					
3					
2					
1					

Uraserz Exploration and Mining Limited
Saskatoon, Saskatchewan, Canada

Maybelle River Project 71-42

COMPOSITE GEOLOGICAL LOG MR70

DDH: MR71

AZIMUTH/DIP : 262° / −60°
ELEVATION (m asl) : 297 (est.)
GRID COORDINATE : L 428+00 N / 324+15 E
UTM COORDINATE : 6456950 N / 518475 E
VERTICAL SCALE : 1 : 500
PROJECT : 71−42 Maybelle River
DISPOSITION : Permit 6886050005
COMPILED BY : B. Lacey / R. Orr
DATE (MO/YR) : 09/89

DIP TEST Azim./Dip. 75°

Elevation m a.s.l.

STRUCTURE: CORE RECOVERY (>75 %, 25−75 %, <25 %); ROCK QUALITY DESIGNATION (RQD) (>75 %, 25−75 %, <25 %); FRACTURE DENSITY (<10, 10−20, >20 (# OF FRACTURES/3m RUN)); INCOHESIVE (FRACTURED ZONE, FAULT BRECCIA, FAULT GOUGE); COHESIVE (FRACTURED ZONE, FAULT BRECCIA, CATACLASITE, MYLONITE)

STRUCTURAL INTERPRETATION

LITHOLOGY

0−51m OVERBURDEN

Top of Bedrock Determined From Gamma Log

51−58.1m Triconed Sandstone

58.1−224.2m MANITOU FALLS FORMATION weakly to moderately bleached, fine to medium grained sandstone, moderate maroon hematite (primary), only minor fracturing or other tectonic disturbance in the Manitou Falls Fm.

224.2−261.2m FAIR POINT FORMATION moderately bleached, coarse grained sandstone with white clay matrix, mostly strongly faulted, bitumen along fractures

236.8−281.2m strongly faulted/tectonized sandstone, strongly fractured and friable, local zones of massive white/green clay gouge, heavy core loss

261.2−270.3m Basement Thrust Fault Zone, completely clay altered basement wedge, white and green clays, heavy core loss

270.3−275.5m FAIR POINT FORMATION, coarse grained sandstone with clay gouge

275.5−291.7m Tectonized Basement, intensely altered and faulted quartz−(feldspar)−mylonite(?), strong white clay alteration with zones of dark green aphanitic rock, locally strongly fractured

291.7−326.7m Relativley less altered (than above zone) quartz−(feldspar)−mylonite/gneiss, moderate white clay alteration (bleaching), weakly hematized, intervals of pegmatoid

326.7−349.6m Mafic Plagioclase Gneiss, chloritized, garnetiferous−(biotite)−(amphibole/pyroxene)−quartz−feldspar−gneiss, locally hematized, gneissic to mylonitic texture, fractured, locally veined, large (1−2 cm) and small (few mm) size garnet porphyroblasts

E.O.H. @ 349.6m

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

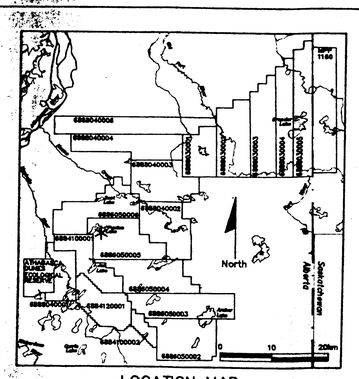
SAMPLES: 71−1; MR71−2; MR72−3; MR71−4; MR71−5; MR71−6; MR71−7; MR71−8; MR71−9; MR71−10; MR71−11; MR71−12; MR71−13; MR71−14; MR71−15; MR71−18; MR71−17; MR71−18; 71−18; MR71−19; MR71−20; MR71−21; MR71−22

SANDSTONE BENCH GEOCHEMISTRY AND CLAY ANALYSIS

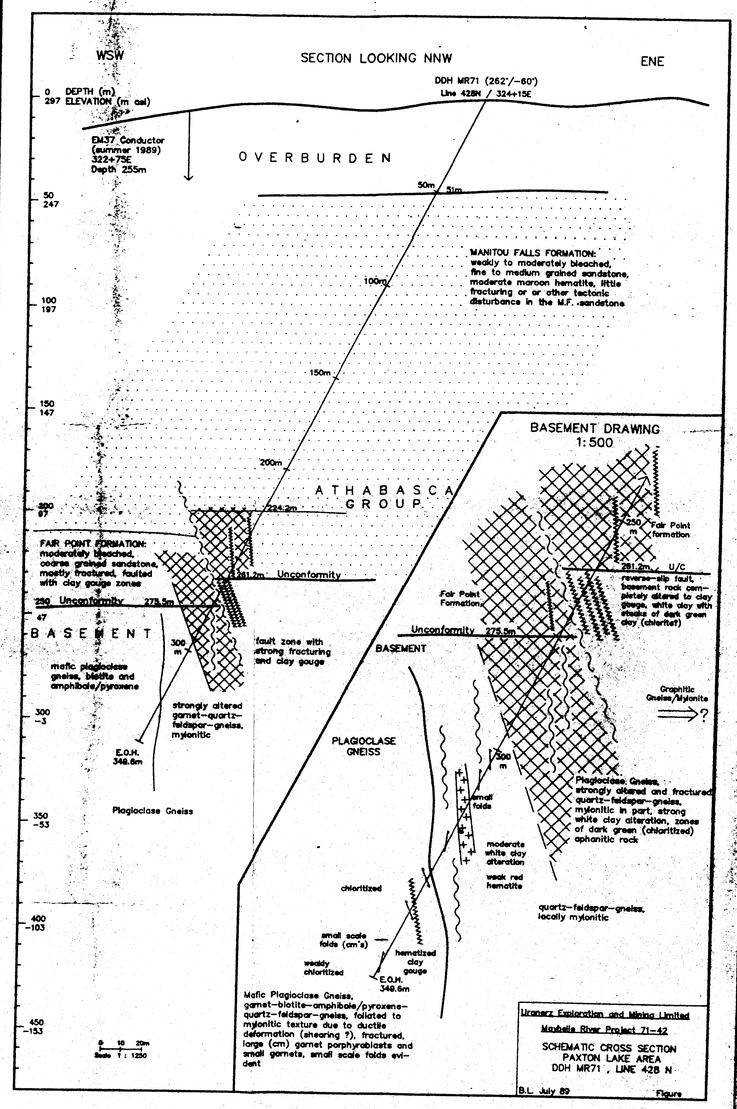
THRESHOLD VALUES (≈ 3 X MEDIAN) FOR MANITOU FALLS (TOP) AND FAIR POINT (BOTTOM)

U (total and partial)	Th	Zr	Ni	As	Pb (total and partial)	B	Bi	Al2O3	K2O/Al2O3	MgO	CLAY XRD
↓ 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	↓ 8 ppm	↓ 100 ppm		↓ 5.0 %	↓ 0.2	0.38 %	
ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%		%	KAOLINITE ILLITE CHLORITE TOTAL CLAY
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	0 % 50 100 + %

80 ppm



LOCATION MAP



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4					
3					
2					
1					

Uranerz Exploration and Mining Limited
Saskatoon, Saskatchewan, Canada

Maybelle River Project 71−42

COMPOSITE GEOLOGICAL LOG MR71

Compiled: B.L.	Date: 09/89	NTS Ref.:	Map No.:
Drawn: B.L.	Date: 10/89	Base No.:	Auth. C.
File No.: 7142−205		Scale: 1:500	Project