MAR 19790002: NORTHEASTERN ALBERTA

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ELDORADO NUCLEAR LIMITED
Exploration Division

19790002

PROJECT 508
NORTHEASTERN ALBERTA
REPORT ON FALL
GEOPHYSICS, 1978

4-AF 142(1)

January 12, 1979

Peter A. Fortuna
Exploration Geologist

1.- SUMMARY

Turam and magnetometer surveys were run over Grid E on Permit 214, with the intent of identifying bedrock structures or an extension of the graphitic horizon encountered in the 1978 winter drilling programme near Esker Lakes (Grid B).

One bedrock source conductor and another zone, possibly due to surficial phenomena, were picked up by the Turam survey.

It is recommended that diamond drilling tests these areas. Stratigraphic drilling to locate a major E-W structure crossing the permit area where it cuts the unconformity is also required. In addition, diamond drilling should test a resistivity low located in the summer programme.

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GEOSEARCH CONSULTANTS LIMITED
Turam Electromagnetic Survey on
Grid E, Project 508, Permit 214
Richardson River Area, Alberta

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2.- LOCATION AND ACCESS

Project 508 is located in N.E. Alberta, within the S.W. edge of the Precambrian Shield. The permits lie along the edge of the geologically favourable Athabasca formation (Fig. 1).

Access to the project area is restricted to fixed wing or rotary aircraft. A winter road passes the Richardson airstrip, about 20 km W.S.W. of the base camp. Uranium City (225 km north) and Fort McMurray (145 km south) serve as supply depots.

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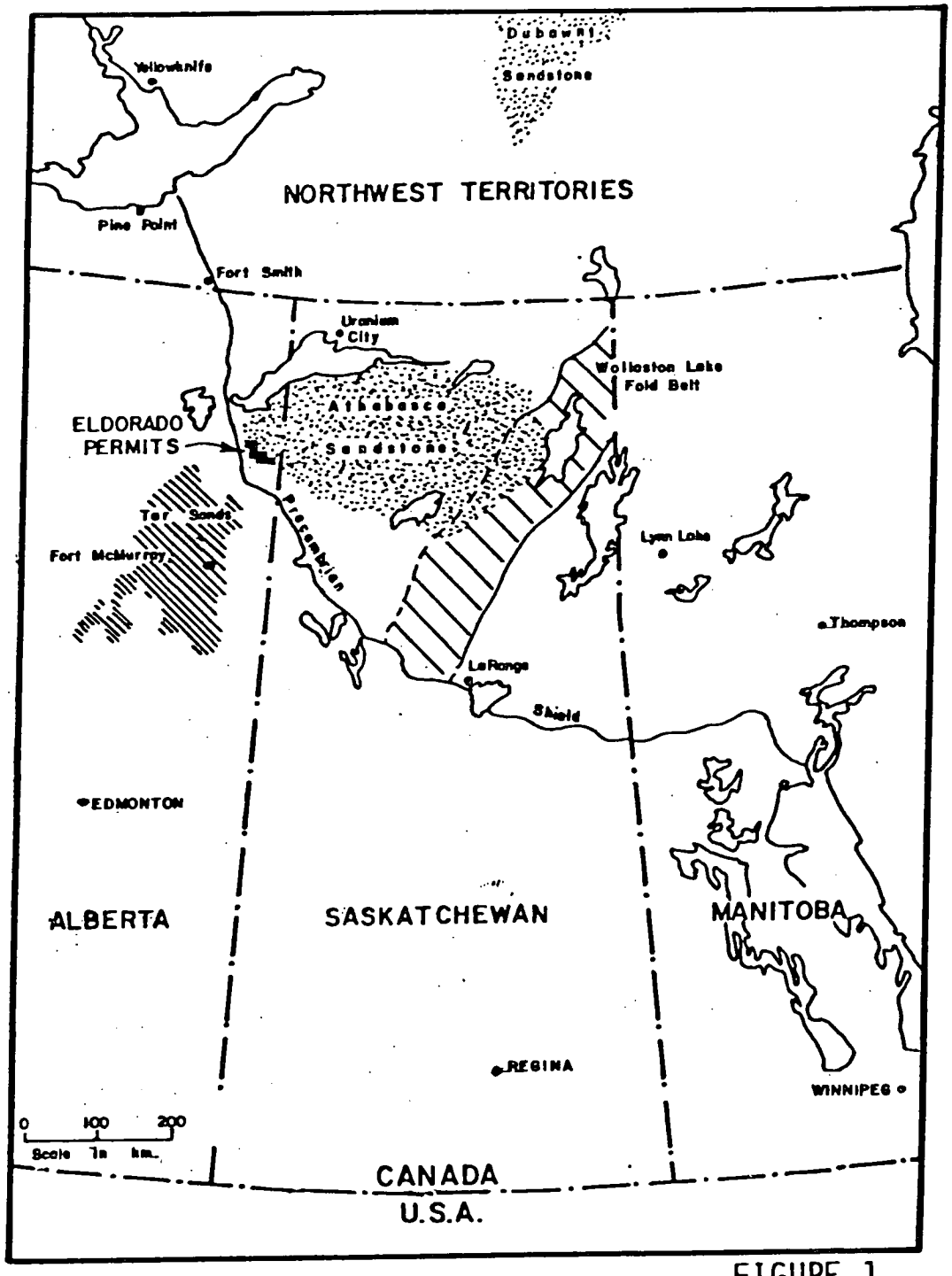

FIGURE 1

PROJECT 508

LOCATION MAP

.../3

3.- REVIEW OF PREVIOUS WORK (1975-1978)

Eldorado Nuclear Limited has been engaged in uranium exploration in the Project 508 area since May, 1975. Discoveries at Rabbit Lake, Cluff Lake, Key Lake and Maurice Bay have proven the unconformity between the Athabasca Formation and underlying basement rocks to be a favourable target for uranium exploration.

Originally, the project consisted of three permits, (185, 186 and 187). These were dropped in 1976 and an additional five permits (214 to 218) were granted. Permit 207 was obtained from Ram Petroleum Limited/Vipond Oil and Gas International Limited in 1977.

The search area is along the geologically favourable SW edge of the Athabasca Formation sandstone (Fig.2). Except for some granitic outcrops in and near the SW part of the Project area, there are no other outcrops in the area. The glacial overburden is thick, often in excess of 30 meters. Uncertainty regarding the actual location of the edge of the Athabasca Formation has been a major problem since the inception of the exploration program. In 1974 it was thought that this edge, which marks the unconformity between the Athabasca sandstone and Precambrian basement, lies along the NE boundary of Permit 185.

Field work during 1975 indicated that this edge is much farther toward the SW, between Maybelle and Richardson Rivers. Subsequently, five additional permits (Nos. 214 to 218) were obtained in the Richardson River area and the 1976 and 1977 work was done mostly here. The Winter Drilling Programs, 1976-1977, and 1978 were carried out to test this assumption, and the results indicate that the edge of the Athabasca Formation is within the Permits 214, 215, and 216. The exact shape and location of the edge is by no means yet certain, and can only be determined by further work. The former Permits 185, 186 and 187 were found to be underlain entirely by thick,

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(125m.) Athabasca Formation sandstone, which, in turn, is partly overlain by remnants of calcereous Devonian mud- and sandstone.

Aside from the above, the three past summers (1975, 1976 and 1977) were spent doing various regional surveys. These included regional sediment, water and muskeg geochemistry, semi-detailed soil sampling, radiometric prospecting, outcrop geology and boulder mapping. The 1975 work was done on the Permits 185, 186 and 187, and in adjacent areas. The 1976 and 1977 work was done on the Permits 214 to 218, and in the areas adjacent to these; this work was more productive since it outlined several water and sediment geochemical anomalies by the end of summer 1976. A geochemical muskeg sampling program was started in late 1976 and continued in 1977.

Several grids have been cut on the property. Soil sampling and ground geophysical surveys have accounted for the bulk of the work in the area. Mapping of granitic outcrop in the southern portion of the permits was completed in 1976.

An airborne INPUT-EM and magnetometer survey in 1977 indicated a number of bedrock EM conductors in the area. Ground geophysics (Turam, horizontal loop, magnetometer and EM-16) and diamond drilling in winter, 1978 followed up these anomalies. Drilling intersected some graphitic zones. The edge of the Athabasca Formation and a deep alteration zone encountered during the 1976-1977 drilling were also tested.

The 1978 summer programme involved further follow-up of airborne conductors (Questor Zone 14) by horizontal EM. None were detected, and it was concluded that the airborne response was due to surficial phenomena.

Resistivity was run over a long line parallel to the edge of the Athabasca sandstone. One structure has been interpreted from the data. Several broad lows were encountered; these are explained as layering effect caused by the Devonian sediments overlying the Athabasca.

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In addition, resistivity and magnetometer surveys were carried out to define the alteration zone encountered in the DDH 2 area. The magnetometer data confirms a broad magnetic low trending E-W (seen in the airborne) across the grid.

Complete reports concerning previous work in the area are on file.

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4.- DISCUSSION OF FALL PROGRAMME, 1978

Fall exploration on Permit 214 consisted of ground geophysics (Turam and magnetometer surveys). A grid was established for ground control.

The following table summarizes the work completed during the 1978 fall exploration programme.

Type of Survey	Line km
Turam	192.3
Magnetometer	117.2
Line cutting	190.6

500.1

5.- OBJECTIVES OF THE FALL PROGRAMME

GRID E

The graphite zone on Grid B near Esker Lakes, confirmed by diamond drilling, appears to parallel the magnetic contours of both the aerial and ground magnetic surveys. These contours trend toward the edge of the Athabasca Sandstone. This implies that the stratigraphic horizon containing the graphite zone may intersect the edge of the Athabasca Basin.

The area where this projected intersection might be lies outside the limits of the airborne survey. A grid was established, and magnetometer and Turam surveys were run to cover this area and test for an extension of the graphitic zone below the sandstone. In addition, these surveys might detect any significant structures in the area. (Refer to Figure 2 for location of Grid E).

6.- DISCUSSION AND INTERPRETATIONS

Turam Survey

One fairly well defined Turam conductor was located

.../7

by this survey, centred at L138 OON/114 OOE (Figure 3). The strike is interpreted as NNW. This cuts across the magnetic contours, and suggests that the conductor may be a fault cross-cutting a shallow dipping graphitic zone.

A second anomalous zone is located at the east of Lake Endississi. Further follow-up is necessary to determine if this response is due to surficial phenomena.

The Turam survey was done by Geosearch Consultants Limited; the report submitted by them is appended.

Magnetometer Survey

A detailed ground magnetometer survey was carried out over Grid E. Stations were read every 20m on N-S trending lines. A Geometrics G-816 magnetometer was used initially, and later replaced by a Barringer GM-122 when it malfuntioned.

The magnetic response is illustrated in Figure 4. The northwest portion of the grid has a fairly flat magnetic character. Response increases and contours become more closely spaced towards the southeast corner of the grid. This is in agreement with the airborne magnetic survey which shows a pronounced high in this area.

7.- RECOMMENDATIONS

Graphitic zones immediately beneath the Helikian unconformity are associated with most of the uranium deposits in the Athabasca Basin. The conductors located by the Turam survey on Grid E are most probably graphitic zones, and should be investigated further with diamond drilling.

Diamond drilling is required to follow up a resistivity low detected during the summer exploration programme and to locate the edge of a major E-W structure cutting the sandstone.

Unfavourable magnetic activity did not permit the survey on Grid E to be completed; this should be done while the drilling programme is underway.

8.- COST SUMMARY

Reporting, drafting	$ 1000.
Geological Investigation	2000.
Ground Geogphysics	45000.
Supervision, planning	1200.
Logistic support	10000.
Linecutting	33000.
Operators fee	6500
TOTAL	$ 98700.

NOTE: Cost summary includes estimated costs for December,1978.

APPENDIX

GEOSEARCH CONSULTANTS LIMITED

Turam Electromagnetic Survey
for
ELDORADO NUCLEAR LIMITED
on
Grid E, Project 508, Permit 214
Richardson River Area
Alberta
(To Accompany Map 78-130)

December 15, 1978

INTRODUCTION

A Turam electromagnetic survey was carried out for Eldorado Nuclear Limited on Grid E, Project 508, Permit 214, Richardson River area, Alberta between November 10 and December 7, 1978.

The property is located 92 miles north-northeast of Fort McMurray from where access was made by aircraft.

The purpose of this survey was to locate geo-electrical sub-surface conductors which might be associated with uranium mineralization.

One weakly conductive zone and one possible indefinite conductor were located.

The accompanying map shows the area surveyed and the results obtained.

A technical data sheet is appended to this report.

METHOD AND INTERPRETATION OF RESULTS

Turam Electromagnetic Survey

The model 2S Turam equipment was used for this survey. It was manufactured and developed in Sweden by the ABEM Instrument Group of the Craelius Company.

In common with other electromagnetic inductive systems the Turam method is based on the fact that a secondary current is induced in an electrical conductor when the conductor is subjected to an electromagnetic field. This secondary current creates its own electromagnetic field which, together with the primary applied field, produces a resultant electromagnetic field. This resultant field, which can be detected and measured, differs both in phase and amplitude from the calculated primary field; these differences may indicate the presence of a conductor.

The primary alternating field is created by the use of a large horizontal rectangular loop, energized by a current at 660 Hz or 220 Hz. The receiving system consists of two coils 100 feet apart, connected to a compensator-amplifier which measures the complex field-strength ratios and phase-differences between successive points on traverses outside and perpendicular to a long side of the primary loop. Both the phase-difference readings and the reduced field-strength ratios are plotted as curves at points mid-way between the coil positions. The reduced ratios are the measured ratios divided by the normal ratios. The normal ratios may be calculated from the geometry of the primary loop and from the location of the points at which the readings were taken in relationship to the loop.

The conductivity of steeply dipping conductors may be estimated from the following chart:

Ratio Anomaly > 1.00	Negative Phase-difference	Conductivity
Very small or nil	Small to medium	Very poor
Small	Medium to large	Poor
Large	Medium	Good
Large	Small	Very good

In areas of conductive overburden, the amplitudes of anomalous readings, both the phase and the ratio, increase as their distance from the primary loop increases.

RESULTS

A low-amplitude conductor was located on Line 138N at 114+10E (see inset loop no. 33). The conductor appears to have a northwest strike direction. It is fairly well defined on Line 137N but is indefinite on the other adjacent line, 139N. There appears to be another poorly defined conductor about 100 meters to the east where the indication on Line 140N at 114+55E is the most definite. These conductors were first located from loop no. 27 where the source was located to the east. The conductors are not well-defined from this loop. This could be explained if the dip is to the northeast.

Anomalous readings were recorded on Lines 109E and 110E between 144N and 145+50N (loop no. 16). It is difficult to predict whether this zone reflects a basement conductor or is due to near-surface conductivity.

The remainder of the area surveyed is essentially geo-electrically neutral. The single-reading anomalous readings are probably caused by slight conductivity in the overburden or sandstone.

RECOMMENDATIONS

The conductor located on Line 138N at 114+10E warrants further exploration, if the indicated strike direction coincides with the magnetic trend.

Geosearch Consultants Ltd.

[redacted]

J. A. Woodard, P. Eng.

GEOPHYSICAL TECHNICAL DATA

TURAM ELECTROMAGNETIC SURVEY

INSTRUMENT: ABEM TURAM Model 2S

ACCURACY: One unit field-strength ratio per scale division
One-half degree phase-difference per scale division

METHOD: In-line receiver coils along lines outside and perpendicular to the primary rectangular transmitting loop 1400 m by 700 m

COIL CONFIGURATION: Co-planar

PARAMETERS MEASURED: Field-strength ratios and phase-differences in degrees between successive observation points 30 m apart

FREQUENCY: 660 Hz

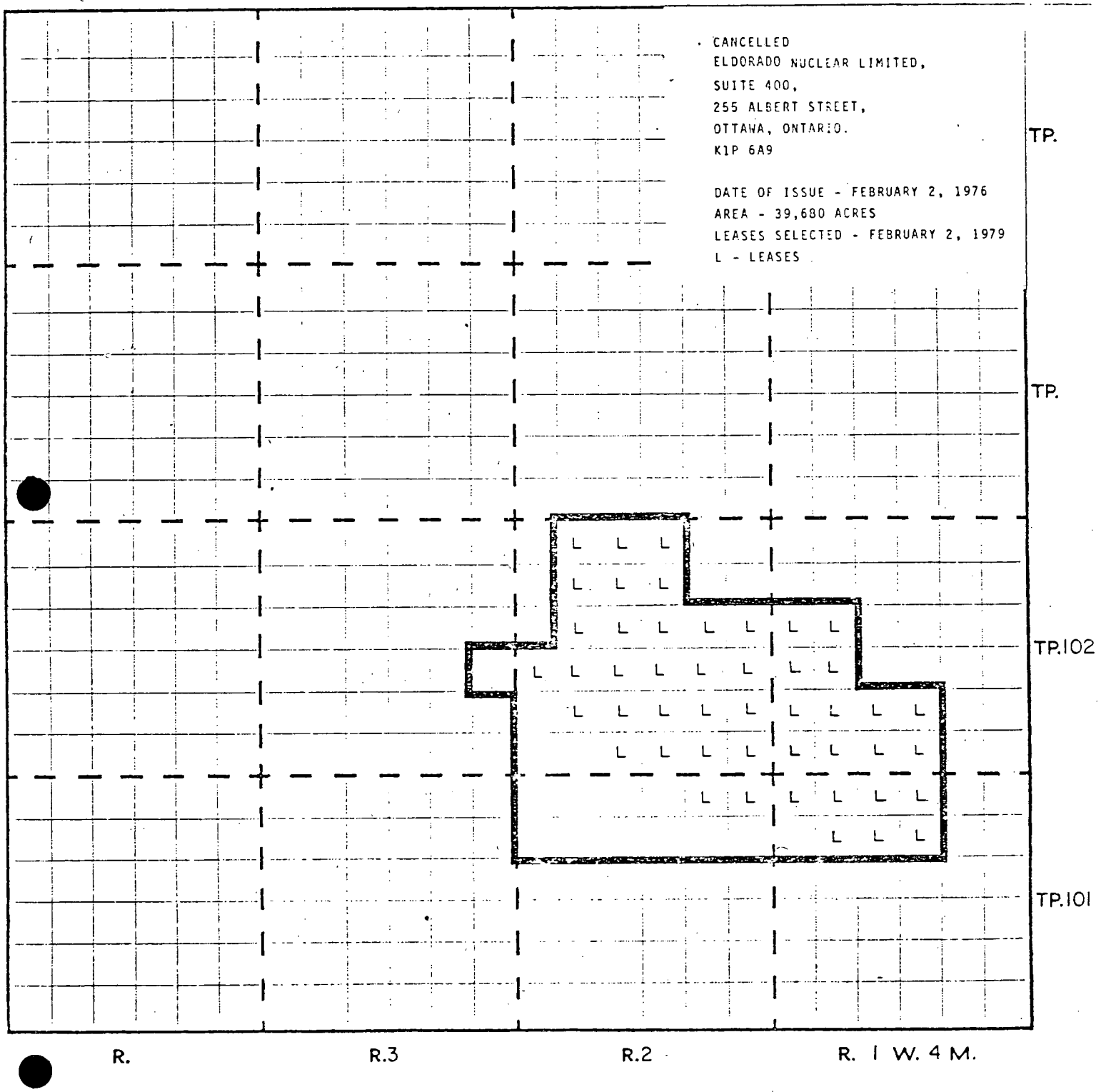
RECEIVER COIL SEPARATION: 30 m

STATION INTERVAL: 30 m

LINE SPACING: 100 m

PROFILE SCALE: Ratio - 1 cm to 10
Phase - 1 cm to 5 degrees

QUARTZ MINERAL EXPLORATION PERMIT No. 214



19790002

ELDORADO
ELDORADO NUCLEAR LIMITED Suite 1002, CN Towers, Midtown Plaza, Saskatoon, Canada S7K 1J5, (306) 665-6166

August 31, 1979

Alberta Energy and Natural
Resources
Petroleum Plaza - South Tower
9915 - 108 Street
EDMONTON, Alberta
T5K 2C9

Attention: Mr. G.H. Fulford

Dear Mr. Fulford:

Re: Final Plan
Quartz Mineral Exploration
Permit Nos. 214, 215, 216,
217 and 218

With regard to your letter of August 21, 1979, please find enclosed four (4) copies of the Final Plan, Quartz Mineral Exploration Permits Nos. 214, 215, 216, 217, and 218 by P.A. Fortuna.

Should you have any questions regarding the above, do not hesitate to contact me.

Yours truly,

[redacted]

L.A. HOMENIUK
District Geologist

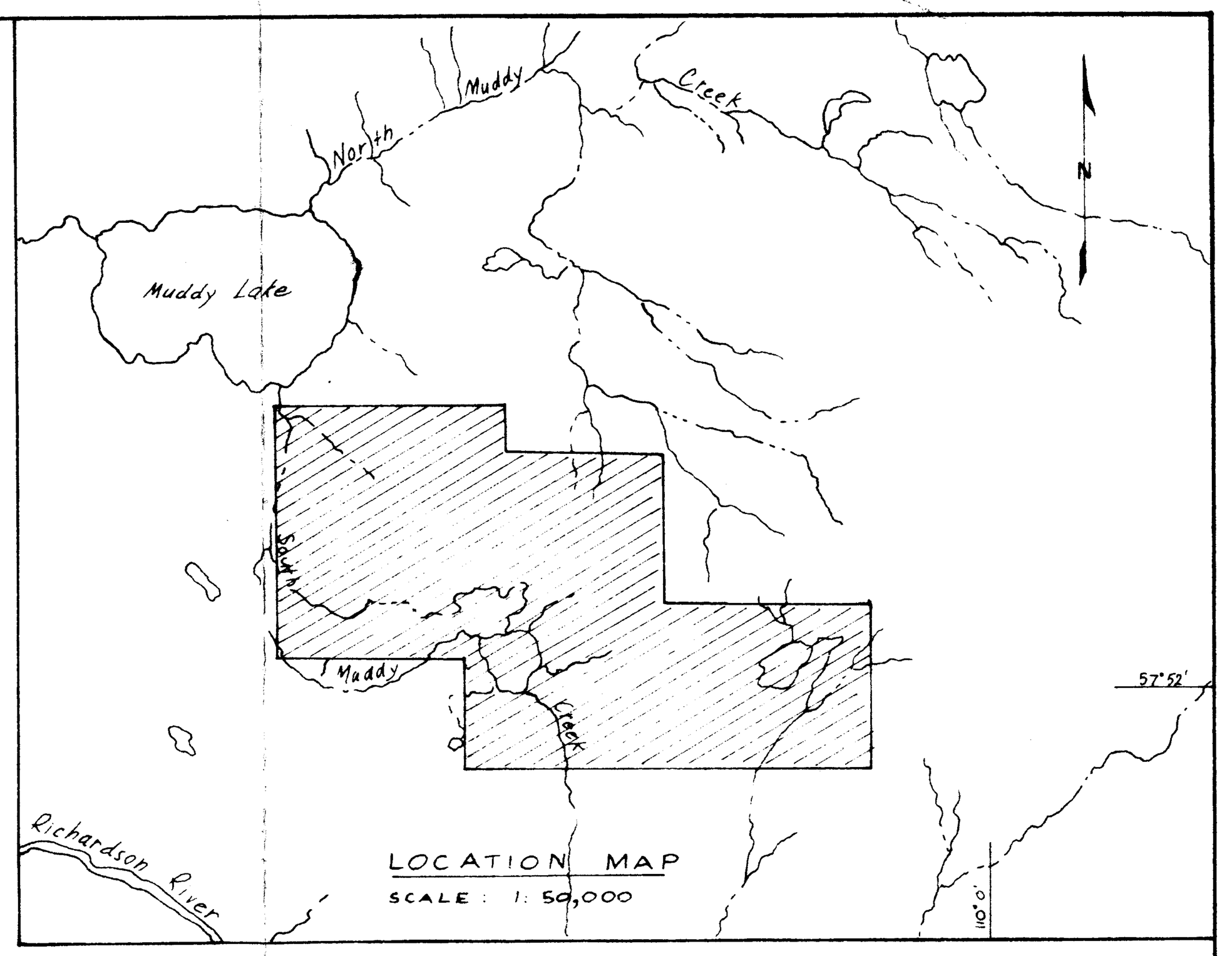
LAH:mcc

Enclosures

cc: D.K. Fountain
D.M. Ward
508-01 Correspondence

CONFIDENTIAL

19790002



LEGEND

61200 — Magnetic Contour

Contour Interval — 20 gammas

FIGURE 4

ELDORADO NUCLEAR LIMITED

NORTHEASTERN ALBERTA PERMITS

PROJECT 508

GRID "E" - PERMIT 214

GROUND MAGNETOMETER SURVEY

Scale: 1:5000 — 1 cm = 50 m

0 50 100 200 300 400 500 meters

OCT., NOV. - 1978

Operators: R. Major
S. Stephen

19790002.

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Loop Co-ordinates

Loop					Loop					Loop				
1.	163N80	156N80	84E	98E	12.	141N	148N	93E	107E	23.	143N	136N	128E	142E
2.	159N	152N	84E	98E	13.	167N20	174N20	108E	122E	24.	142N	149N	128E	142E
3.	153N80	146N80	84E	98E	14.	162N40	169N40	108E	122E	25.	110E	117E	149N	135N
4.	156N80	163N80	84E	98E	15.	154N40	161N40	108E	122E	26.	115E50	122E50	149N	135N
5.	152N	159N	84E	98E	16.	151N	158N	108E	122E	27.	121E	128E	149N	135N
6.	163N80	156N80	98E	112E	17.	145N60	152N60	108E	122E	28.	117E	110E	149N	135N
7.	158N80	151N80	93E	107E	18.	140N20	147N20	108E	122E	29.	122E50	115E50	149N	135N
8.	153N	146N	93E	107E	19.	147N	154N	114E	128E	30.	128E	121E	149N	135N
9.	148N	141N	93E	107E	20.	143N	136N	114E	128E	31.	133E40	126E40	149N	135N
10.	151N80	158N80	93E	107E	21.	142N	149N	114E	128E	32.	138E	131E	149N	135N
11.	146N	153N	93E	107E	22.	147N	154N	128E	142E	33.	110E	103E	149N	135N

TURAM ELECTROMAGNETIC SURVEY
by
Geosearch Consultants Ltd.
for

ELDORADO NUCLEAR LIMITED

ON

Grid E

PROJECT 508, PERMIT 214

RICHARDSON RIVER AREA, ALBERTA

Scale: 1:5,000

FIGURE 3

DATE: DEC., 1978
DRAWN: M.H.M.

Map 78-130

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ELDORADO NUCLEAR LIMITED

Exploration Division

PROJECT 508

SUMMARY REPORT - PERMIT 214

February 2, 1976 to February 2, 1979

19790002

Peter A. Fortuna
Exploration Geologist

INTRODUCTION

Eldorado Nuclear Limited has been actively involved in uranium exploration in the Richardson River area, N.E. Alberta, since May 1975. Quartz Mineral Exploration Permits Numbers 214, 215, 216, 217 and 218 were issued on February 2, 1976. The permits expire on February 2, 1979 and must be taken to lease.

The work on Eldorado's Project 508 has been reported on previously. The following reports, dealing with the exploration programmes on the above permits, have been forwarded to the Earth Sciences Branch, Alberta Energy and Natural Resources.

1) Eldorado Nuclear Limited, Project 508; Progress Report on results of work done during summer 1976 and winter 1976-77; Hugo Laanela, Project Geologist.
2) Eldorado Nuclear Limited, Project 508; Progress report on results of work done during spring and summer 1977; Hugo Laanela, Project Geologist.
3) Eldorado Nuclear Limited, Project 508; Progress Report on results of work done during winter, 1978; Hugo Laanela, Project Geologist.
4) Summer Field Programme, 1978; Gerry Mitchell, Geophysicist and Peter A. Fortuna, Exploration Geologist.
5) Project 508, Northeastern Alberta; Report on Fall Geophysics, 1978; Peter A. Fortuna, Exploration Geologist.

This report summarizes the work performed on Permit 214 to date. It should be stated that due to the nature of the exploration, the entire project area is treated as a unit. Dealing with each permit individually is possible, but with the degree of overlap that is necessary from one permit to the next, particularly in interpretations and recommendations, the project area must still be evaluated as one.

Maps, drill logs, details, etc., of the previous work are not included in this report. All of this information has been previously provided with the reports indicated above. This report will summarize the work done to date, review the conclusions of this work, and discuss the reasons for continuing exploration in the area.

ELDORADO NUCLEAR LIMITED

Project 508

SUMMARY REPORT - PERMIT 214

February 2, 1976 to February 2, 1979

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ELDORADO NUCLEAR LIMITED

Project 508

Summary Report - Permit 214

February 2, 1976 to February 2, 1979

LOCATION AND ACCESS

Permit 214 is part of Eldorado's Project 508, located in N.E. Alberta, within the S.W. edge of the Precambrian Shield. The property lies along the edge of the geologically favourable Athabasca formation. (Fig.1).

Access to the project area is restricted to fixed wing or rotary aircraft. A winter road passes the Richardson airstrip, about 20 km W.S.W. of the base camp. Uranium City (225 km north) and Fort McMurray (145 km south) serve as supply depots.

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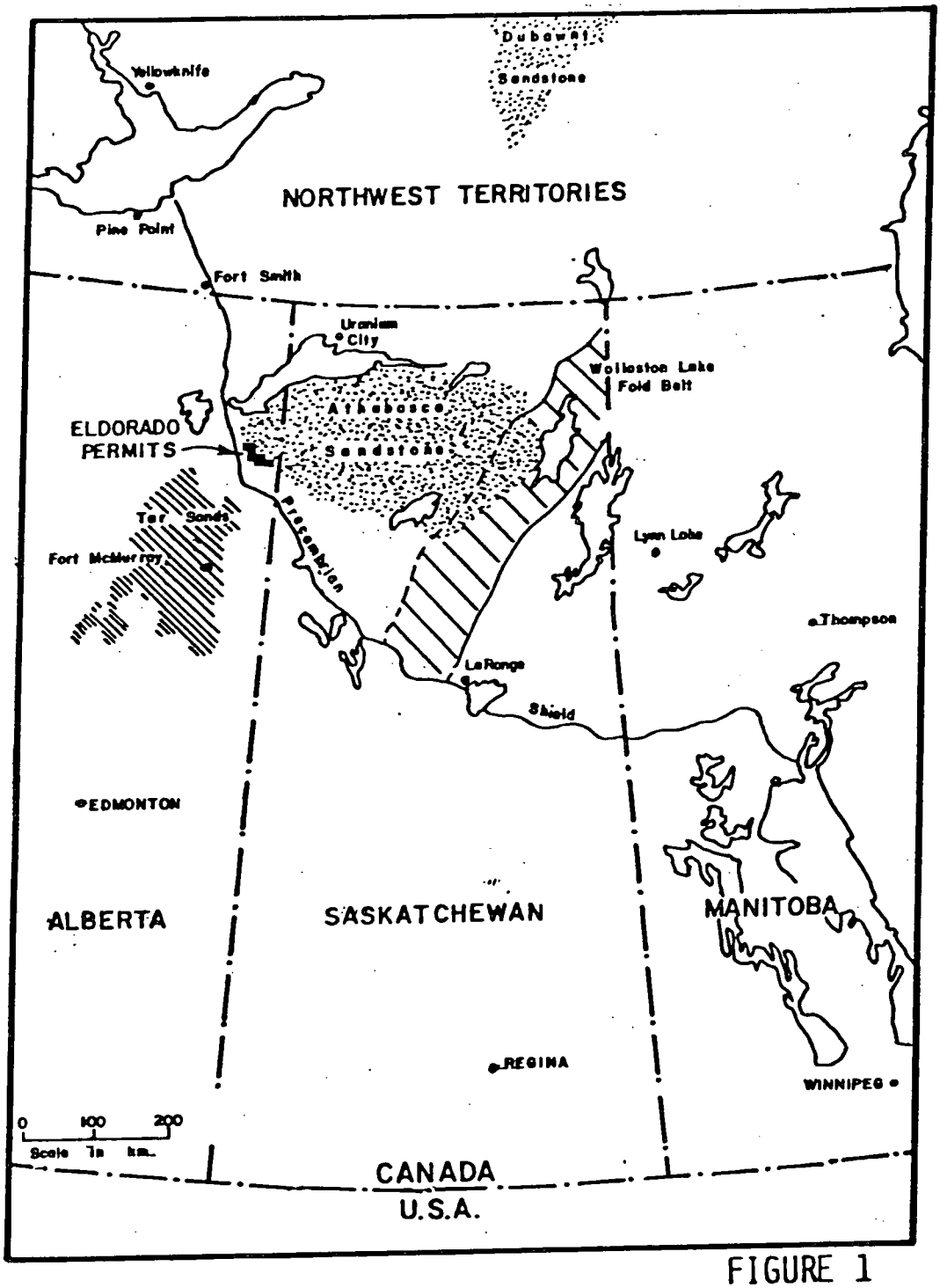

FIGURE 1

PROJECT 508
LOCATION MAP

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REVIEW OF PREVIOUS WORK (1975-1978)

Eldorado Nuclear Limited has been engaged in uranium exploration in the Project 508 area since May, 1975. Discoveries at Rabbit Lake, Cluff Lake, Key Lake and Maurice Bay have proven the unconformity between the Athabasca Formation and underlying basement rocks to be a favourable target for uranium exploration.

Originally, the project consisted of three permits (185, 186 and 187). These were dropped in 1976 and an additional five permits (214 to 218) were granted. Permit 207 was obtained from Ram Petroleum Limited/Vipond Oil and Gas International Limited in 1977. The option on Permit 207 was not exercised and the permit returned to Ram/Vipond in 1978.

The search area is along the geologically favourable SW edge of the Athabasca Formation sandstone. Except for some granitic outcrops in and near the SW part of the Project area, there are no other outcrops in the area. The glacial overburden is thick, often in excess of 30 meters. Uncertainty regarding the actual location of the edge of the Athabasca Formation has been a major problem since the inception of the exploration program. In 1974 it was thought that this edge, which marks the unconformity between the Athabasca sandstone and Precambrian basement, lies along the NE boundary of Permit 185.

Field work during 1975 indicated that this edge is much further toward the SW, between Maybelle and Richardson Rivers. Subsequently, five additional permits (No's 214 to 218)were obtained in the Richardson River area and the 1976 and 1977 work was done mostly here. The Winter Drilling Programs, 1976-1977, and 1978 were carried out to test this assumption, and the results indicate that the edge of the Athabasca Formation is within the Permits 214, 215 and 216, between the above two rivers. The exact shape and location of the edge is by no means yet certain, and can only be determined by further

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work. The former Permits 185, 186 and 187 were found to be underlain entirely by thick (125 m ±) Athabasca Formation sandstone, which, in turn, is partly overlain by remnants of calcareous Devonian mud- and sandstone.

Aside from the above, summer exploration has included various regional surveys. These included regional sediment, water and muskey geochemistry, semi-detailed soil sampling, radiometric prospecting, outcrop geology and boulder mapping. The 1975 work was done on the Permits 185, 186 and 187, and in the adjacent areas. The 1976 and 1977 work was done on the Permits 214 to 218, and in the areas adjacent to these; this work was more productive since it outlined several water and sediment geochemical anomalies by the end of summer, 1976. A geochemical muskeg sampling program was started in late 1976 and continued in 1977.

Several grids have been cut on the property. Soil sampling and ground geophysical surveys have accounted for the bulk of the work in the area. Mapping of granitic outcrop in the southern portion of the permits was completed in 1976.

An airborne INPUT-EM and magnetometer survey in 1977 indicated a number of bedrock EM conductors in the area. Ground geophysics (Turam, horizontal loop, magnetometer and EM-16) and diamond drilling in winter, 1978 followed up these anomalies. Drilling intersected some graphitic zones. The edge of the Athabasca Formation and a deep alteration zone encountered during the 1976-1977 drilling were also tested.

The 1978 summer programme involved further follow-up of the airborne conductors. In addition, resistivity surveys were carried out to detect any

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major basement structures below the sandstone and to define an alteration zone that was intersected in DDH 2.

A Turam survey in late fall, 1978 indicates some bedrock conductors on Grid E. The magnetic survey verified the airborne magnetic character.

Table I breaks down the work done to data on Permit 214.

NOTE: The above review deals with the exploration history of the entire project area.

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ELDORADO NUCLEAR LIMITED

Exploration Division

Distribution of Work Project 508 Permit 214

ACTIVITY	1976	1977	1978	TOTAL
Diamond Drilling - meters	--	145.69	627.90	773.59
Horizontal Loop Survey - line km.	--	--	53.65	53.65
Resistivity Survey - line km.	--	--	12.20	12.20
Turam Survey - line km.	--	--	267.20	267.20
EM-16 Survey - line km.	--	--	67.80	67.80
Magnetometer Survey - line km.	--	--	185.0	185.0
A/B INPUT EM & Mag - line km.	--	1082.00	--	1082.00
Soil Sampling - # samples	--	--	--	--
Muskeg Sampling - # samples	--	47	--	47
Lake/Stream Sediments - # samples	101	--	--	101
Linecutting- line km.	--	--	310.10	310.10

TABLE I

RESULTS OF WORK DONE

Diamond Drilling

Diamond drilling has helped define the edge of the Athabasca Formation across portions of Permit 214. The location of the edge has been extrapolated to the west using drill hole information from Permit 215.

The stratigraphic sequence on the permit is: Precambrian granites and gneisses, overlain by Athabasca sandstone, overlain by Devonian sediments (mudstone). Overburden is quite thick, 30 m.

Graphitic shear zones were intersected by drill holes testing airborne INPUT-EM anomalies followed up with Turam and horizontal loop surveys.

Horizontal Loop Survey

Horizontal loop methods (EM-17 and MaxMin II) were used to follow up airborne INPUT-EM anomalies on Grids B and C.

The surveys successfully outlined conductive zones indicated by INPUT-EM; graphitic shears were intersected when these were drilled.

Resistivity Survey

Several broad resistivity lows were detected in the survey run in summer, 1978; these are interpreted as layering effects due to Devonian sediments overlying the Athabasca formation.

Turam Survey

Airborne INPUT-EM condutors were successfully detected by this survey on Grid B. Subsequent diamond drilling intersected graphitic shear zones.

Conductors indicated by a recent survey on Grid E have not yet been followed up by diamond drilling.

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EM-16 Survey

Although the location of the graphitic shear zones on Grid B was verified by this survey method, several other EM-16 crossovers were indicated. These are coindicent with swamp or lake edges and interpreted to be caused by surficial rather than bedrock phenomena.

Magnetometer Survey

Ground magnetometer surveys were in close agreement with airborne data. No structures were suggested by the magnetic response in the area tested.

A/B INPUT-EM and Magnetometer Survey

Several INPUT-EM anomalies were indicated by this survey over Permit 214. These were followed up by ground geophysics (Turam and horizontal loop); those interpreted to be bedrock sources were drilled, and graphitic zones intersected.

Muskeg Sampling

The results of analyses on these samples reflect background values only.

Lake/Stream Water Sediments

Aside from some high U values along the Richardson River, waters and sediments reflect background values only.

In addition to the above surveys, reconnaissance geological traverses covered the permit area. No outcrop was seen, and no radioactive boulders were detected by the propecting.

CONCLUSIONS

1. The Athabasca formation covers part of Permit 214. It is overlain in part by Devonian sediments and underlain by Precambrian granites and gneisses.

2. Graphitic zones were successfully detected by the airborne INPUT-EM survey, and later followed up by Turam and horizontal loop surveys. These zones were verified by diamond drilling.

3. Several broad resistivity lows, attributed to layering effects caused by Devonian sediments overlying the Athabasca sandstone were picked up by this survey.

4. Turam indicates the presence of additional bedrock conductors on Grid E.

5. Standard geochemical methods in this area are questionable. Due to the nature of the far-travelled glacial material, the reliability of geochemical anomalies as a guide to ore deposits is questionable.

6. The EM-16 does not appear to penetrate excessive overburden thicknesses and often reflects only surficial phenomena.

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RECOMMENDATIONS

1. Geochemical methods should not be applied in this area unless areas of local till can be defined.

2. Because the overburden is thick, and with the added complication of Devonian cover, any geophysical methods used should have deep penetrating power in order to reflect bedrock conditions.

3. Since the basement-Athabasca unconformity is present at shallow depths within the permit, this land is in a favourable environment for uranium mineralization. The proximity of this contact to graphite-bearing zones makes this area even more attractive.

4. Diamond drilling should be carried out to follow up the Turam anomalies detected on Grid E in fall, 1978 and resistivity lows located in the summer programme.

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SUMMARY

A considerable amount of work is still required to properly evaluate the economic potential of Permit 214. It is recommended that the permit be taken to lease to allow Eldorado to continue exploration for uranium. The southern portion of the permit, well away from the sandstone edge, need not be retained.

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STATEMENT OF COSTS

PROJECT 508

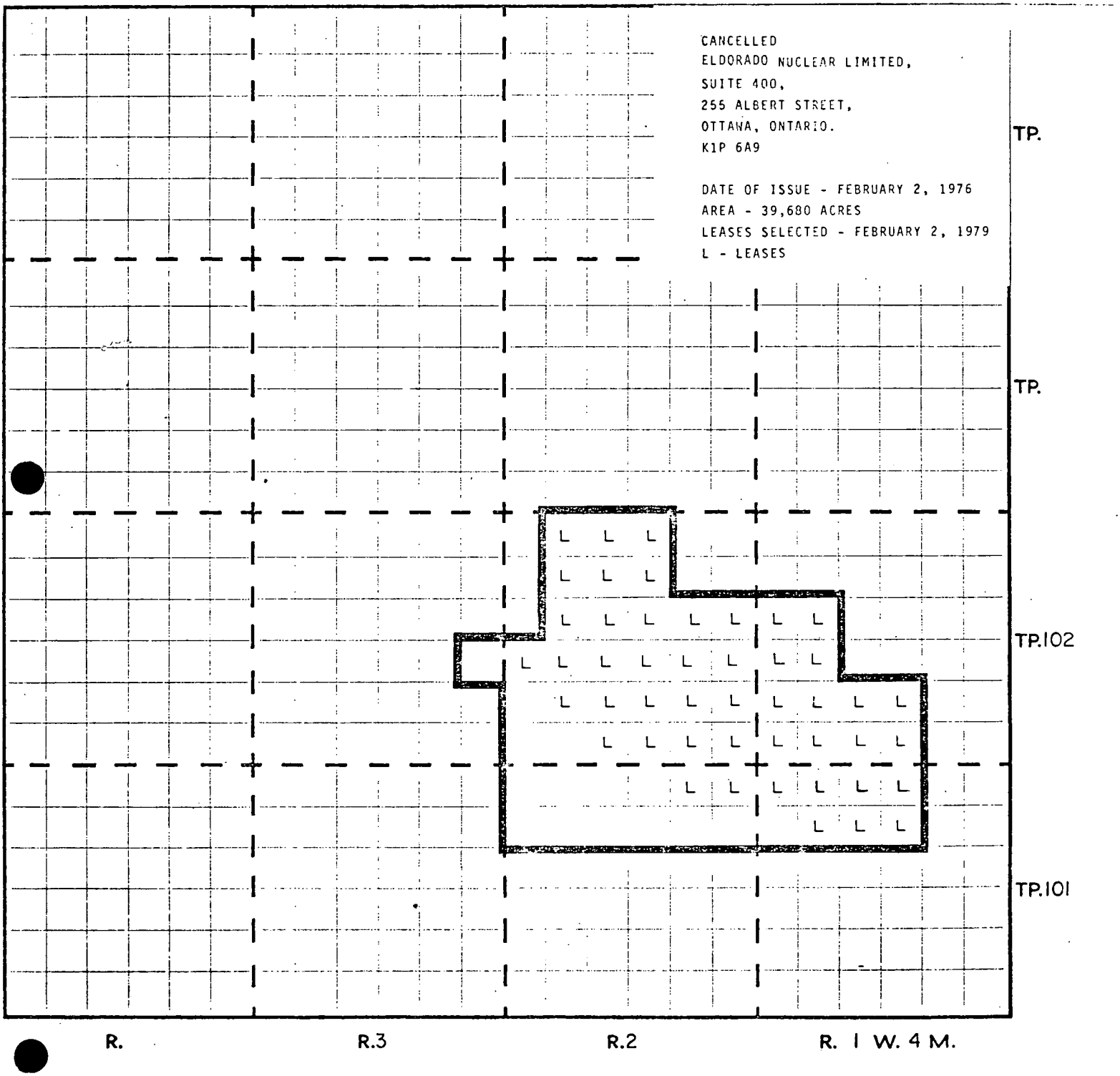
Permit 214

	1976	1977	1978
Drafting, clerical	$ 1200	593	1404
Reporting	2040	2370	4136
Geological-mapping,prospecting etc.	6060	--	1250
Diamond Drilling	20060	--	59459
Borehole Survey	--	--	1914
Ground Geophysics	2750	--	47469
Airborne Geophysics	--	27542	--
Geochemistry - soil, muskeg, etc	6205	3500	--
Supervision, planning	2500	4000	7416
Logistic support	12112	3490	27370
Linecutting	--	--	20441
Disposition maintenance	32	3968	5952
TOTAL	52959	45463	176771

NOTE: 1978 costs represent winter and summer exploration programmes. An additional estimated $100,000. was expended in the fall programme. A statuatory declaration of costs will be submitted shortly, as soon as the year end computer print-out is received.

leased

QUARTZ MINERAL EXPLORATION PERMIT No. 214



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