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MICROFILMED

D. of M. | A.O. | G. | E.O. | D.S.I.
DIR. | 14 MAY 1984 | E & IL
DEPT. OF MINES
4760/84

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LIMITED

RELINQUISHMENT REPORT ON PART OF

E.L. 9/74

BIRCH INLET
TASMANIA

J.PEMBERTON
MAY 1984

OPEN FILE

CONTENTS

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1.	INTRODUCTION	2.
2.	AREA TO BE RELINQUISHED	3.
3.	WORK DONE IN AREA TO BE RELINQUISHED	4.
4.	REFERENCES	5.

FIGURES

FIG 1 LOCALITY MAP OF E.L. 9/74

PLANS

1a & b DIGHEM SURVEY - MAGNETICS

2a & b DIGHEM SURVEY - RESISTIVITY

3a & b DIGHEM SURVEY - ENHANCED MAGNETICS

4a & b DIGHEM SURVEY - ELECTROMAGNETICS

1. INTRODUCTION

E.L. 9/74 covered an area of 285sq km south and east of Birch's Inlet in the south west of Tasmania. The area is held by Geopeko in a joint venture with Union Oil Development Corporation.

A progress report by C.D. Strickland in 1978 and J. Pemberton in 1981 summarised the exploration efforts of Geopeko in the area.

2. AREA TO BE RELINQUISHED.

The area to be relinquished is displayed on Figure 1 and covers 160sq km. The area to be retained is as follows: Commencing at the south west corner of the area whose AMG co ordinates are 384000mE, 5 265000mN thence grid north to 5 290 000mN, thence grid east to 389000mE, thence grid south to 5 265000mN, thence grid west to the point of commencement.

3. WORK DONE IN AREA TO BE RELINQUISHED.

A Dighem II airborne electromagnetic survey was flown over the area in December 1980. Plans 1 to 4 show the results for the magnetics, enhanced magnetics, resistivity and electromagnetics in the area to be relinquished.

No follow up work was done in this area as the rock types (Tertiary gravels, Ordovician conglomerate + sandstone and Precambrian quartzite + schists) were not regarded as potential target sequences.

4. REFERENCES

Pemberton, J., 1981: Progress Report on E.L. 9/74 Birch Inlet - Tasmania. Report to the Tasmania Mines Department.

Strickland, C.D., 1978: Progress Report: E.L. 9/74 Birch Inlet - Tasmania. Report to the Tasmania Mines Department.

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431007

AREA TO BE RETAINED 125sq.k

AREA TO BE RELINQUISHED

E.L. 9/74

5 cm

FIG 1

DIGHEM^{II} SURVEY

BIRCH INLET AREA, TASMANIA

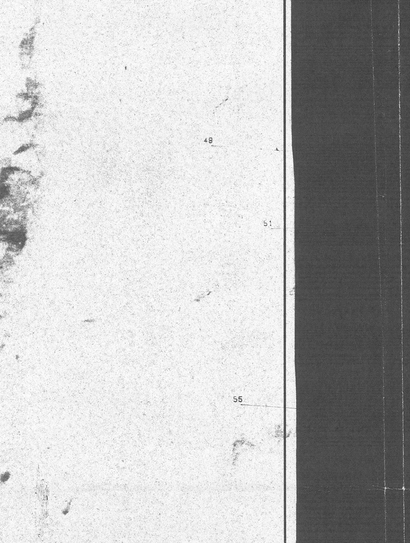
431008

MAGNETICS

FOR

GEOPEKO LIMITED

LOCATION MAP



Scale 1 : 250,000

SCALE 1 : 10,000

1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

5 cm

Flight line

1255

Fiducials and numbers

1255

ISOMAGNETIC LINES

(total field)

1000 ..... 1000 gammas

200 ..... 200 gammas

..... 50 gammas

..... 25 gammas

..... magnetic depression

Magnetic Inclination within the survey area: 72°

NEW BOUNDARY EL. 9/74

OLD BOUNDARY EL. 9/74

384000E

5286000N

5275000N

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D. C. FRASER
PROVINCE OF ONTARIO

PLAN 1a

84-2124

007

Sheet 1

DIGHEM^{II} SURVEY

BIRCH INLET AREA, TASMANIA

MAGNETICS

FOR 431009

GEOPEKO LIMITED

LOCATION MAP



Scale 1 : 250,000

SCALE 1 : 10,000

1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

5 cm

Flight line

Fiducials and numbers

ISOMAGNETIC LINES

(total field)

1000 ..... 1000 gammas

200 ..... 200 gammas

..... 50 gammas

..... 25 gammas

..... magnetic depression

Magnetic Inclination within the survey area: 72°

NEW BOUNDARY E.L. 9/74

OLD BOUNDARY E.L. 9/74

5278000N

5267000N

389000E

390000E

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D. C. FRASER
PROVINCE OF ONTARIO

84-2124

PLAN 16 008

Sheet 2

5286000N

384000 E

5286000 N

370000 E

NEW BOUNDARY E.L. 9/74

OLD BOUNDARY E.L. 9/74

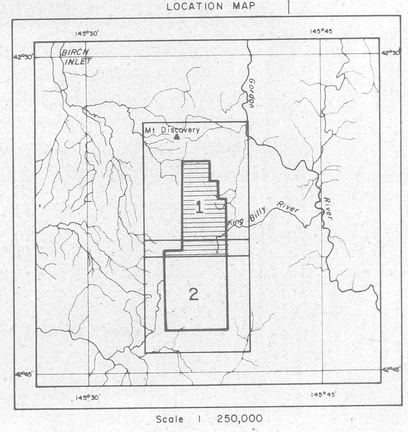
384000 E

5275000N

390000 E

5275000 N

LOCATION MAP



Scale 1 250,000

431010

DIGHEM II SURVEY

BIRCH INLET AREA, TASMANIA

RESISTIVITY

FOR

GEOPEKO LIMITED

SCALE 1 : 10,000

1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

PLAN 2a

84-2124

009

Sheet 1

Flight line

Fiducials and numbers

5 cm

LEGEND

Contours in ohm-m at eight intervals per decade

100
75
56
42
31
23
17
13
10

Note

The numbers face in the direction of increasing value.

431011

DIGHEM^{II} SURVEY

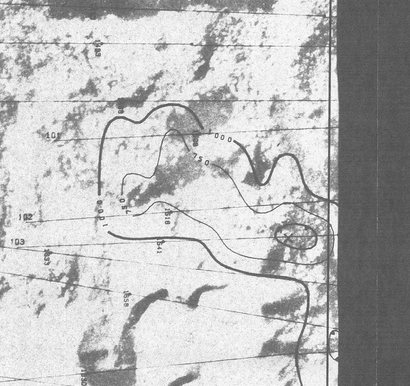
BIRCH INLET AREA, TASMANIA

RESISTIVITY

FOR

GEOPEKO LIMITED

LOCATION MAP



Scale 1 : 250,000

SCALE 1 : 10,000

1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

5 cm

Flight line

Fiducials and numbers

LEGEND

Contours in ohm-m at eight intervals per decade

100
75
56
42
31
23
17
13
10

Note

The numbers face in the direction of increasing value.

NEW BOUNDARY E.L. 9/74

OLD BOUNDARY E.L. 9/74

PLAN 26 84-2124

Sheet 2

010

5286000N

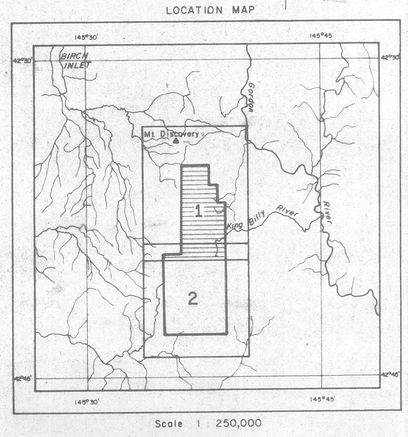
390000E

NEW BOUNDARY E.T. 9/74

OLD BOUNDARY E.T. 9/74

5275000N

LOCATION MAP



Scale 1 : 250,000

431012

DIGHEM^{II} SURVEY

BIRCH INLET AREA, TASMANIA

ENHANCED MAGNETICS

FOR

GEOPEKO LIMITED

011

SCALE 1:10,000

1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

5 cm

PLAN 3a

8L-2124.

Sheet 1

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D. C. FRASER
PROVINCE OF ONTARIO

Flight line

Fiducials and numbers

ISOMAGNETIC LINES

(enhanced field)

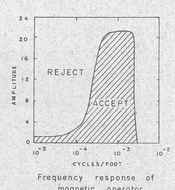
5000 gammas

1000 gammas

200 gammas

100 gammas

magnetic depression



Frequency response of magnetic operator

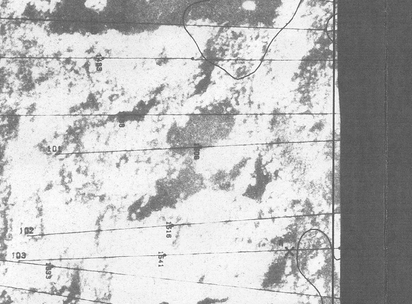
5278000N

NEW BOUNDARY E.L. 9/74

OLD BOUNDARY E.L. 9/74

5267000N

LOCATION MAP



431013

DIGHEM^{II} SURVEY

BIRCH INLET AREA, TASMANIA

ENHANCED MAGNETICS

FOR

GEOPEKO LIMITED

012

REGISTERED PROFESSIONAL ENGINEER
R. D. FRASER
PROVINCE OF ONTARIO

SCALE 1 : 10,000

1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

5 cm

Flight line

5281

5281

Fiducials and numbers

ISOMAGNETIC LINES

(enhanced field)

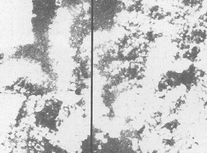
5000 gammas

1000 gammas

200 gammas

100 gammas

magnetic depression



Frequency response of magnetic operator

PLAN 36 8L-212L

Sheet 2

431014

DIGHEM^{II} SURVEY

BIRCH INLET AREA, TASMANIA

ELECTROMAGNETICS

FOR

GEOPEKO LIMITED

013

SCALE 1:10,000

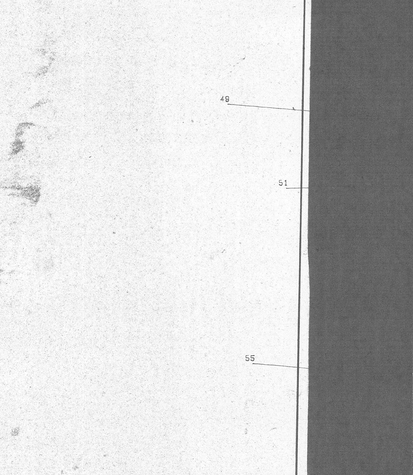
1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

PLAN 4a 84-212-4

Sheet 1

LOCATION MAP



D. C. FRASER
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

384 000 E

5275000 N

NEW BOUNDARY E.L. 9/74

OLD BOUNDARY E.L. 9/74

Flight line

Fiducials and numbers

ANOMALY GRADE	EM GRADE SYMBOL	MHO RANGE
6	●	≥ 100
5	●	50 — 99
4	●	20 — 49
3	◉	10 — 19
2	○	5 — 9
1	○	≤ 4
	X	Possible conductor

DIGHEM anomalies are divided into six grades or conductivity — thickness product. This product in mhos is the reciprocal of resistance in ohms. The mho is a measure of conductance, and is a geologic parameter. Most swamps yield Grade 1 anomalies but highly conducting clays can give Grade 2 anomalies. The multi-coil anomaly shapes often allow surface conductors to be recognized, and these are indicated by the letter S on this map. The remaining Grade 1 and 2 anomalies could be weak bedrock conductors. The higher grades indicate increasingly higher conductances. Examples: The ore bodies at the Magusi River camp yield Grade 4 anomalies, while Matagami and Whistle give Grade 5. Graphite and sulphides can span all grades but in this survey area, field work may show that the different grades indicate different types of conductors.

identifier → L78 ← mho value

Depths are greater than
50 feet
100 feet
150 feet
200 feet

Response and Quadrature of Standard Coil is greater than
5 ppm
10 ppm
15 ppm
20 ppm

Refer to list of anomalies in survey report for the actual ppm values for all coils, and for conductor depths.

The actual mho value is plotted beside the EM grade symbol. The letter is the anomaly identifier. The horizontal rows of dots indicate anomaly amplitude on the flight record, and the vertical column gives the estimated depth. This depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or conductive overburden effects.

	Conductor axis
S	Probable surface response
S?	Possible surface response
L	Probable line (power, telephone, pipe, or fence)
L?	Possible line
?	Questionable anomaly
	Apparent thickness > 10 m
	Dip
100 ±	Direct magnetic correlation of 100 gammas

DIGHEM maps are designed to provide a correct impression of conductor quality by means of the conductance grade symbols. The symbols can stand alone with geological when planning a follow-up program. The actual mho values are plotted for those who wish quantitative data. The anomaly ppm and depth are indicated by inconspicuous dots which should not distract from the conductor patterns, while being helpful to those who wish this information. The map provides an interpretation of all conductors in terms of length, strike direction, conductance and depth. The accuracy is comparable to an interpretation from a ground E.M. survey having the same line spacing.

5 cm

431015

DIGHEM^{II} SURVEY

BIRCH INLET AREA, TASMANIA

ELECTROMAGNETICS

FOR

GEOPEKO LIMITED

014

SCALE 1:10,000

1/2 0 1/2 1 Kilometres

1/4 0 1/4 1/2 Miles

PLAN 4b

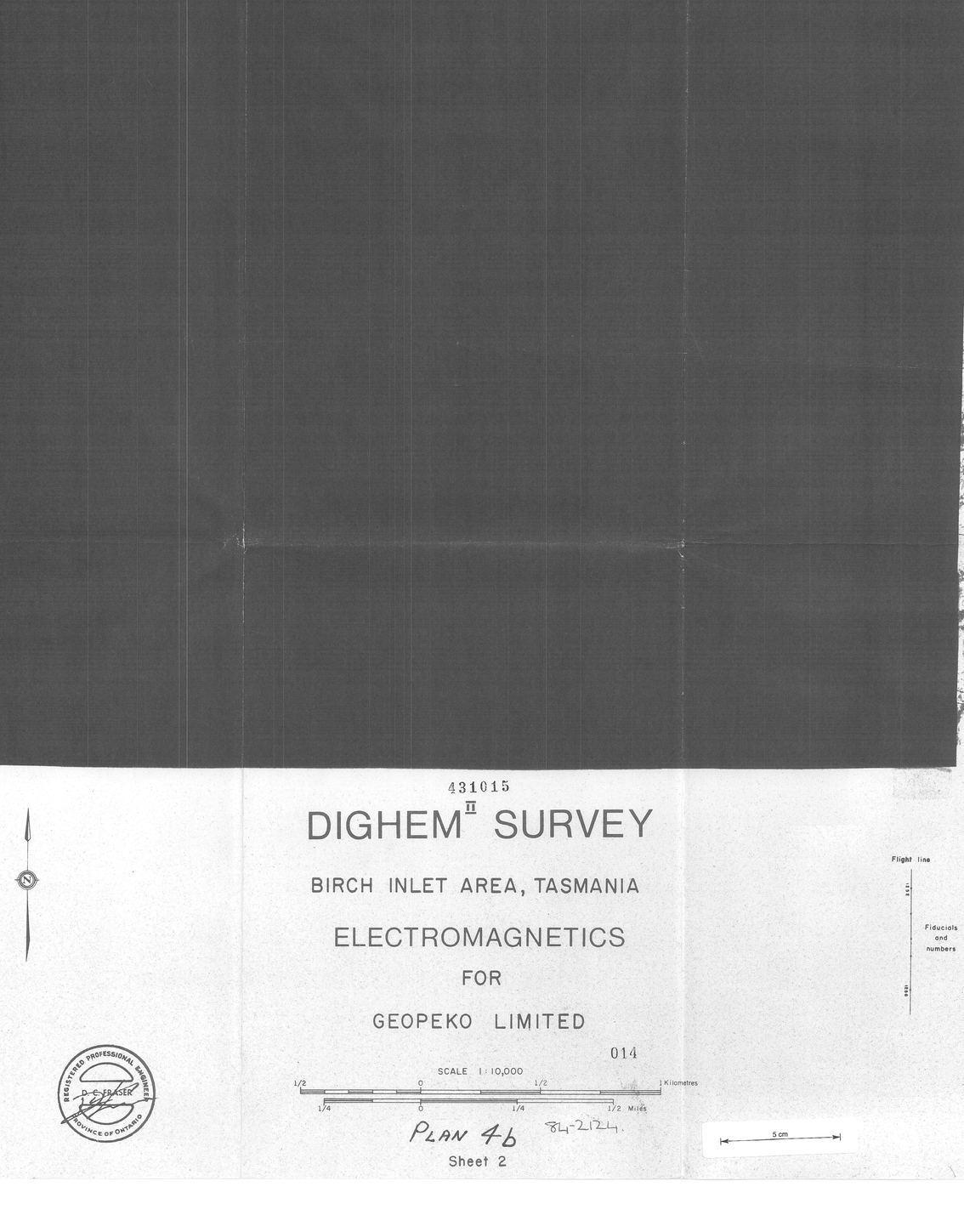
84-2124.

Sheet 2

LOCATION MAP



Scale 1 250,000



Flight line

Fiducials and numbers

ANOMALY GRADE	EM GRADE SYMBOL	MHO RANGE
6	●	≥ 100
5	●	50 — 99
4	●	20 — 49
3	◉	10 — 19
2	○	5 — 9
1	○	< 4
	×	Possible conductor

DIGHEM anomalies are divided into six grades of conductivity – thickness product. This product in mhos is the reciprocal of resistance in ohms. The mho is a measure of conductance, and is a geologic parameter. Most swamps yield Grade 1 anomalies but highly conducting clays can give Grade 2 anomalies. The multi-coil anomaly shapes often allow surface conductors to be recognized, and these are indicated by the letter S on this map. The remaining Grade 1 and 2 anomalies could be weak bedrock conductors. The higher grades indicate increasingly higher conductances. Examples: The ore bodies of the Mogul River camp yield Grade 4 anomalies, while Mattabi and Whistle give Grade 5. Graphite and sulphides can span all grades but, in this survey area, field work may show that the different grades indicate different types of conductors.

identifier → 16 ← mho value

Depth is greater than
50 feet
100 feet
150 feet
200 feet

Response and Quadrature of Standard Coil is greater than
5 ppm
10 ppm
15 ppm
20 ppm

Refer to list of anomalies in survey report for the actual ppm values for all coils, and for conductor depths.

The actual mho value is plotted beside the EM grade symbol. The letter is the anomaly identifier. The horizontal rows of dots indicate anomaly amplitude on the flight record, and the vertical column gives the estimated depth. This depth may be unreliable because the stronger part of the conductor may be deeper or to one side of the flight line, or because of a shallow dip or conductive overburden effects.

	Conductor axis.
S	Probable surface response
S?	Possible surface response
L	Probable line (power, telephone, pipe, or fence)
L?	Possible line
?	Questionable anomaly
V	Apparent thickness > 10 m
90°	Dip
100γ	Direct magnetic correlation of 100 gammas

DIGHEM maps are designed to provide a correct impression of conductor quality by means of the conductance grade symbols. The symbols can stand alone with geology when planning a followup program. The actual mho values are plotted for those who wish quantitative data. The anomaly ppm and depth are indicated by inconspicuous dots which should not distract from the conductor patterns, while being helpful to those who wish this information. The map provides an interpretation of all conductors in terms of length, strike direction, conductance, and depth. The accuracy is comparable to an interpretation from a ground EM survey having the same line spacing.

5 cm

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