MAR 19780008: ATHABASCA

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19780008

REPORT ON MAGNETOMETER SURVEY

V.L.F. ELECTROMAGNETIC SURVEY

FOR

GOLDEN EAGLE OIL AND GAS LTD.

ON

ATHABASCA JOINT VENTURE
ALBERTA

PERMITS 219, 220, 221, 222, 223

December 17, 1978

Covering Period
June to December 1978

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Ancon Corporation Ltd.

Operations conducted under Geophysical License #476

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INTRODUCTION

In June of 1978, Ancon Corporation Ltd. was contracted by Golden Eagle Oil & Gas Limited to conduct a magnetometer survey and V.L.F. Electromagnetic Survey in the Lake Athabasca area in northeastern Alberta.

The observations and conclusions were to be presented in the report on the project.

Approximately 125 miles of Magnetometer and V.L.F. Electromagnetic Survey was completed from June to September on the subject property. Readings were taken every 100 to 150 feet on the cross grid for both V.L.F. Electromagnetic and Magnetometer surveys.

Personnel employed on the project were L.E.W. Hogg; Geologist of Calgary, Alberta, Rick Zozuk of Calgary, Oakley Michelin of Happy Valley, Labrador and Senior Geophysical Operators; R. Sampson of Calgary, D. Wiley of Calgary, J. Sinclair and I. Ripper of Channel Island, B.C., and Scott Rose of Calgary.

A base magnetometer was used for diurnal corrections. The V.L.F. Electromagnetic transmitter station at Seattle, Washington was used for the S.W. transmitter. Cutler Main was used as the AM transmitter station.

Geophysical operations were conducted under Permit #476. Equipment specifications are attached.

MAGNETOMETER SPECIFICATIONS

Geometrics Model G-816 Serial #CE038 , 60708

Sensitivity	± gamma throughout range
Range	20,000 to 90,000 gammas (Worldwide)
Tuning	Multi-position switch with signal amplitude indicator light on display
Gradient Tolerance	Exceeds 150 gammas/ft.
Sampling Rate	Manual push-button, one reading each 6 seconds
Output	5 digit numeric display with readout directly in gammas
Power Requirements	Twelve self-contained 1.5 volt "D" cell, universally available flashlight, type batteries. Charge state or replacement signified by flashing indicator light on display.
Temperature Range	Console and sensor: -40^0 to $+85^0$ C Battery Pack: 0^0 to $+50^0$ C (limited use to -15^o C; lower temperature operation - optional)
Accuracy	± gamma through 0^o to 50^o C temperature range
Sensor	High signal, noise cancelling, interchangeably mounted on separate staff

Size	Console: 3.5 x 7 x 10.5 inches (9 x 18 x 27 cm)		
	Sensor: 4.5 x 6 inches (11 x 15 cm)		
	Staff: 1 inch diameter x 8 ft. length (3 cm x 2.44 cm)		
Weight	Console (W/batteries)	Lbs 5.5	Kgs. 2.5
	Sensor & signal cable	4	1.8
	Aluminum staff	2	0.9
		11.5	5.2

BASE MAGNETOMETER

Geometrics Model G-826A Base Recording magnetometer

SPECIFICATIONS

Resolution:	± 1 gamma throughout tuning range
Turning Range:	20,000 to 90,000 gammas (world-wide)
Tuning Mechanism:	Multi-position rotary switch with twenty-four overlapping positions. Peak signal (SIG) amplitude indicator light on readout display.
Gradient Tolerance:	Exceeds 800 gammas/foot (Portable applications).

Sampling Rate:	Base Station Mode: Six-position rotary switch for automatic sampling every 4, 10, 30 seconds or 1, 2, or 5 minutes (time base oscillator stable within 10 second/week from 0^{o} to 50^{o}C).
Data Outputs:	Visual (Base Station & Portable): 5-digit illuminated incandescent display directly in gammas - visible even in bright sunlight. Analog (Base Station): Potentiometric: Calibrated for 100 mV full-scale, maximum load is 20K Galvanometric: Calibrated for 1 ma full scale into 1500 Digital (Base Station): 5-BCD characters, 1-2-4-8 code (4 line output) "0" state = 0 to + .5V "1" state = 2.5 to + 5V
Standard Full Scale Resolution:	100 gammas (1 gamma sensitivity) 25 gammas (0.25 gamma sensitivity)
Even Marker:	Automatic, every 30 minutes (Analog Recorder only)

Power Requirements:	Base Station Mode: External 24V to 32V DC or 110/220V, 50/60 Hz AC power (maximum current drain per measurement is 2.18 amps with Rustrak recorder and display on).
Temperature Range:	Consoles and Sensors $-40^{o}C$ + $85^{o}C$ Analog Recorder (Rustrak) $0^{o}C$ + $50^{o}C$
Accuracy (Total Field):	$\pm$ 1 gamma throughout 0^{o} to + $50^{o}C$ ($\pm$ 3 gamma from - $40^{o}C$ to + $85^{o}C$)
Sensors:	Base Station: High signal, AC noise cancelling for use with long signal cables. Includes threaded aluminum mounting stud.
Galvanometric Analog Recorder:	Rustrak, model 2146. Includes 5.2 cm (2 inch) usable chart width with fixed chart speed of 10.2 cm (4 inch) or 15.2 cm (6 inch) per hour (select), event marker, and inkless writing. Style "N" chart paper (50 divisions f/s), 6.4 cm x 19.2 m (2.5 inch wide x 63 feet long).

V.L.F. ELECTOMAGNETIC EQUIPMENT

CRONE RADEM
SPECIFICATIONS

Source of Primary Field: VLF Communication Stations 12 to 24K hz

Stations Used:

Code	Station & Location	Frequency
CM	Cutler, Maine	17.8 KHz
SW	Seattle, Washington	18.6 KHz
BA	Buenos Aires	23.6 KHz

CHECK THAT STATION IS TRANSMITTING: Audible signal from speaker.

PARAMETERS MEASURED:

(1) DIP ANGLE in degrees of the magnetic field component, from the horizontal, of the major axis of the polarization ellipse. Detected by a minimum on the field strength meter and read from an inclinometer with a range of $\pm 90^{o}$ and an accuracy of $\pm$ 1/2 %

(2) FIELD STRENGTH (total or horizontal) of the magnetic component of the VFL field, (amplitude of the major axis of the polarization ellipse). Measured as a percent of normal field strength established at a base station. Accuracy $\pm$ % dependent on signal. Meter has two ranges : 0 - 300% and 0 - 600%.

(3) OUT-OF-PHASE component of the magnetic field, perpendicular in direction to the resultant field, as a percent of normal field strength, (amplitude of the minor axis of the polarization ellipse). This is the minimum reading of the Field Strength meter obtained when measuring the dip angle. Accuracy $\pm$ 2%.

OPERATING TEMPERATURE RANGE:	$-30^{o}C(-20^{o}F)$ to $+50^{o}C(120^{o}F)$
DIMENSIONS AND WEIGHT:	9 x 9 27cm - 2.7Kg(6 lb)
SHIPPING;	Instrument with foam lined wooden case, shipping wt. - 6.0Kg(13 lb)
BATTERIES:	2 of 9 volt - Eveready 216 Average life expectancy - 20 hours for continuous operation

LOCATION AND ACCESS

The property is accessable by float equipped aircraft based at Uranium City, Fort Chipewyan or Fort McMurray. Access by boat from Lake Athabasca is possible during the summer months.

CONCLUSIONS

V.L.F. Electromagnetic Survey

The V.L.F. Electromagnetic survey of Permits 219, 220, 221, 222, and 223 produced no reliable data. The large geologic noise component resulted in unreliable data which is exceedingly difficult to interpret. Interpretation by various data manipulation techniques has not produced usable results.

The geologic noise is primarily a function of the deep and conductive overburden. Overburden consisting of clayey sand beds are estimated to be 75 to 100 feet thick over all of the property. Some of the noise is contributed by the topographic effect of low lying and swampy areas and the adjoining higher areas. The depth to sandstone conductors which is assumed to be in excess of 100 feet will have poorly defined wave forms and will be masked by the conductive overburden.

The V.L.F. data was not plotted.

Magnetometer Survey

The magnetometer survey was performed during a period of very minor diurnal drift. The base magnetometer station was located near the Saskatchewan-Alberta border at Jackfish Creek on Permit 220.

The magnetics generally trend in a northwesterly direction. The magnetic gradient is gentle with a maximum variation of approximately 400 gammas. As the magnetic variation is low and the line spacing is one-quarter of a mile, small features are not definable.

A north-south bias is produced in the contouring as a result of the grid spacing. The very low gradient on Permit 220, 221 and 223 is interpreted as an area of thick Athabasca Sandstone.

No identifiable magnetic features were located over the area diamond drilled in the 1978 program.

The Magnetometer Survey is presented on maps 1 to 7. The location map is attached to this report as Plat #1.

RECOMMENDATIONS

As the magnetic character of the property has been accurately defined, further magnetometer work is not necessary on this property. Further geophysical exploration should utilize deep penetration Electromagnetic techniques.

Seismic surveys could locate geological features for testing by drilling that the magnetometer and V.L.F. surveys failed to do.

[redacted]

LuVerne E.W. Hogg

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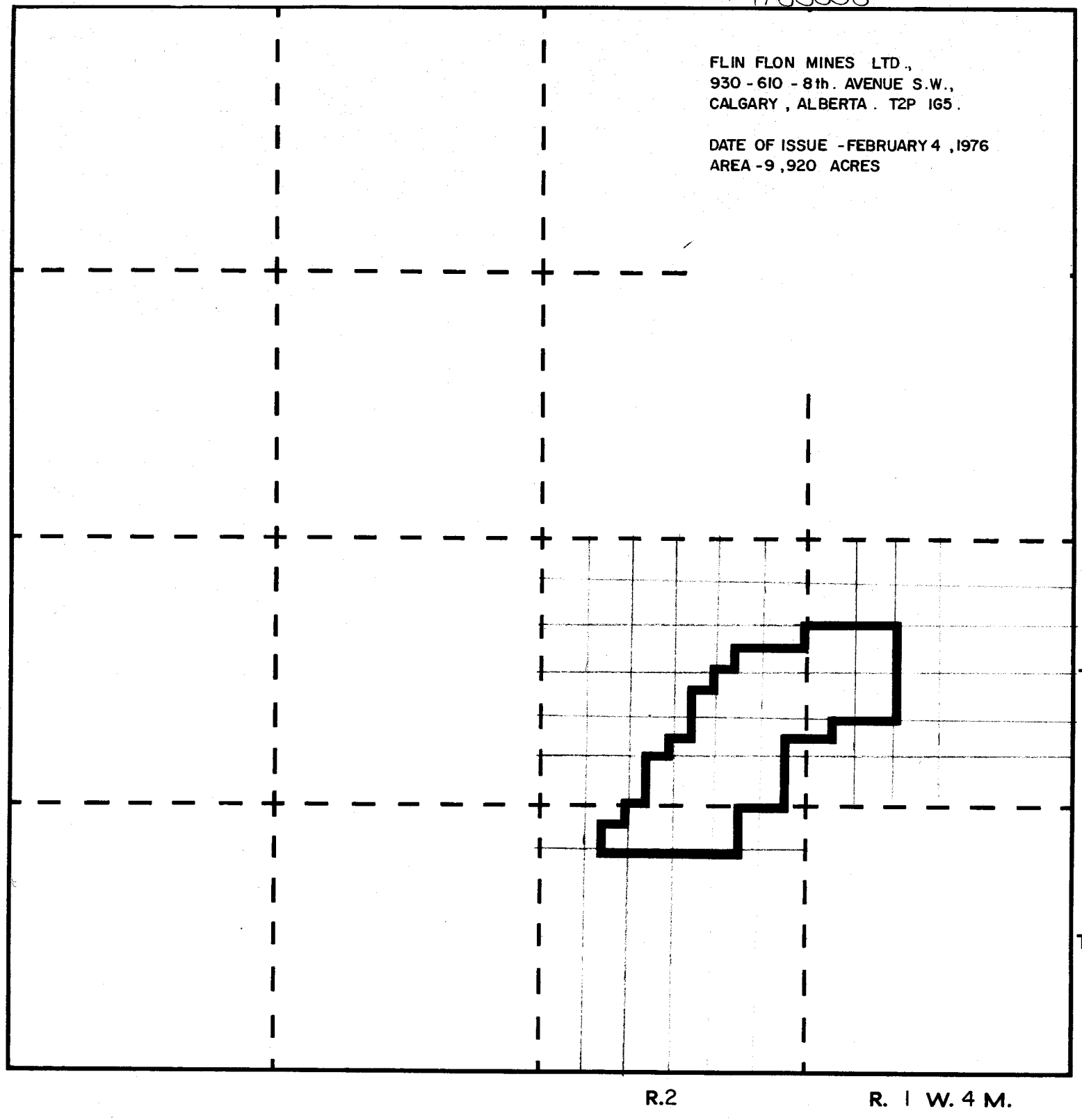
19780008



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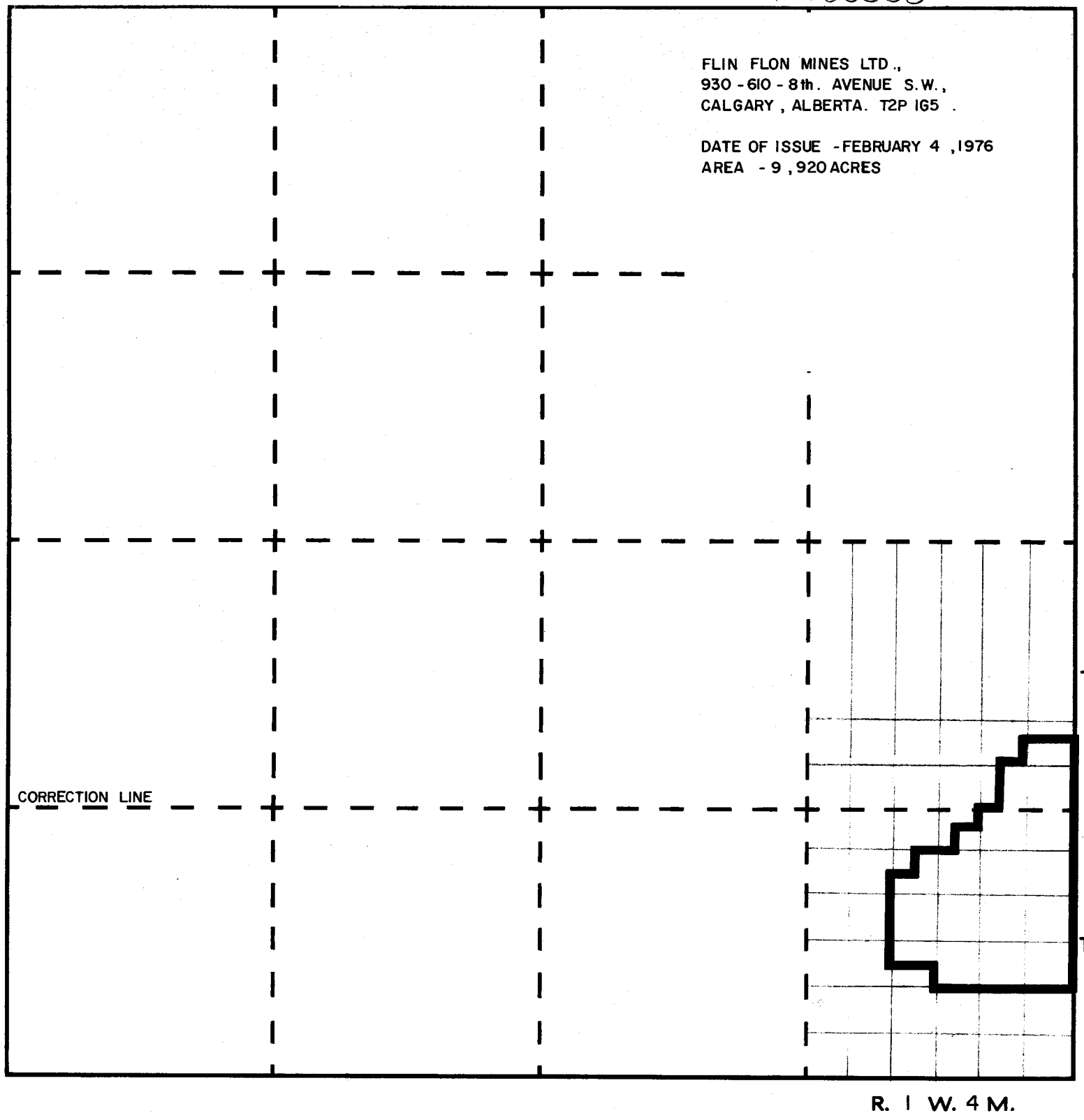

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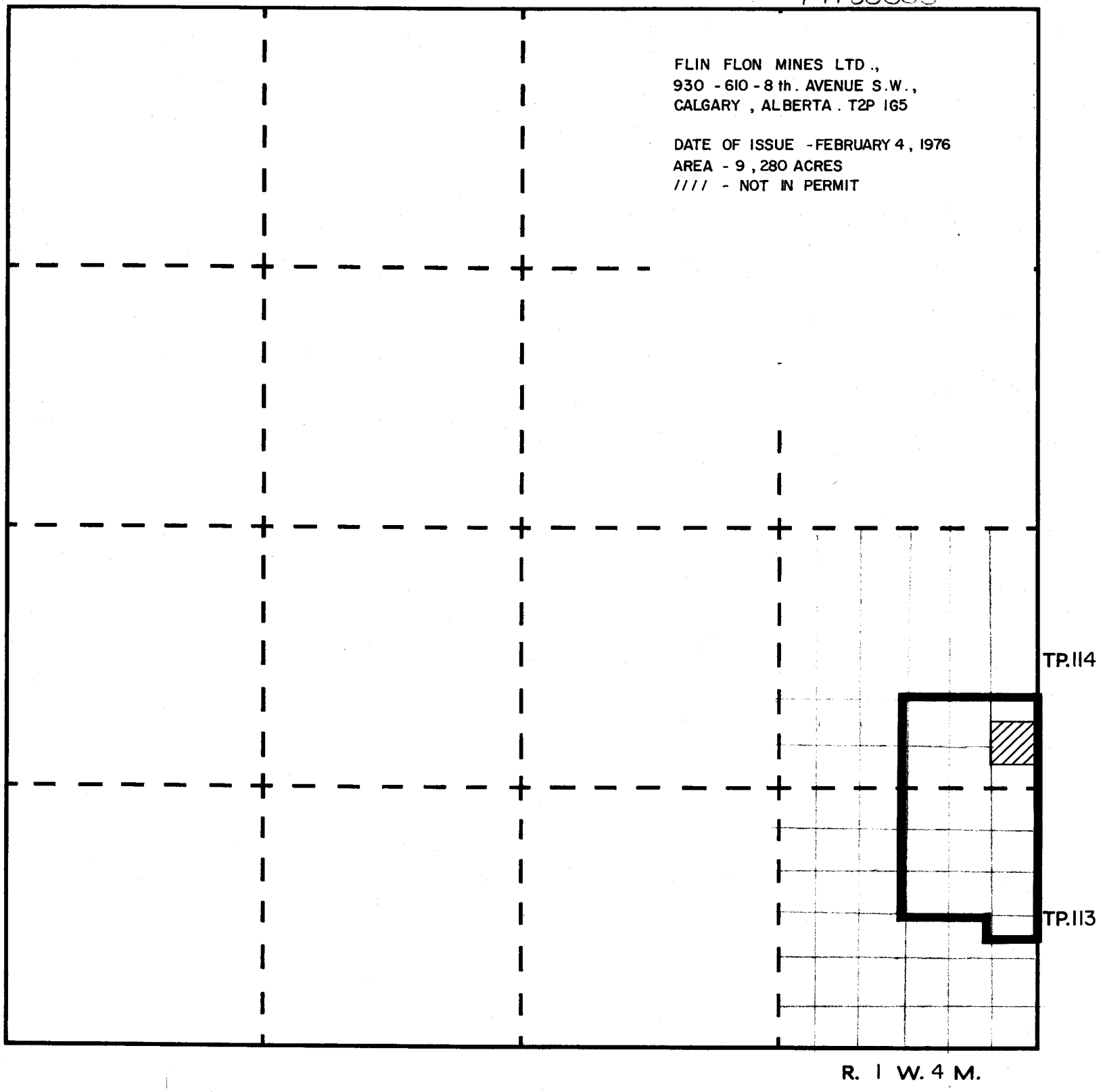

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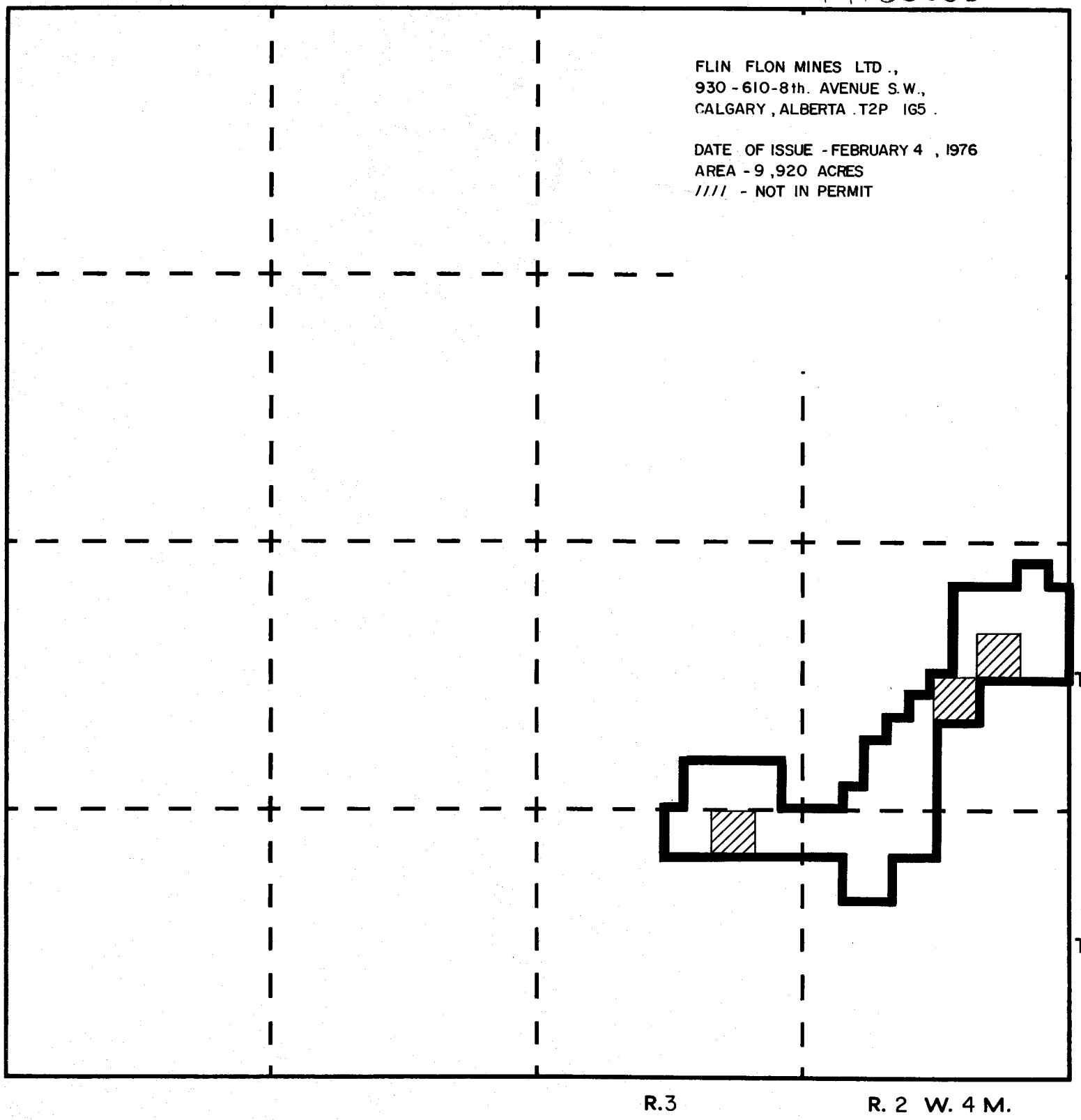

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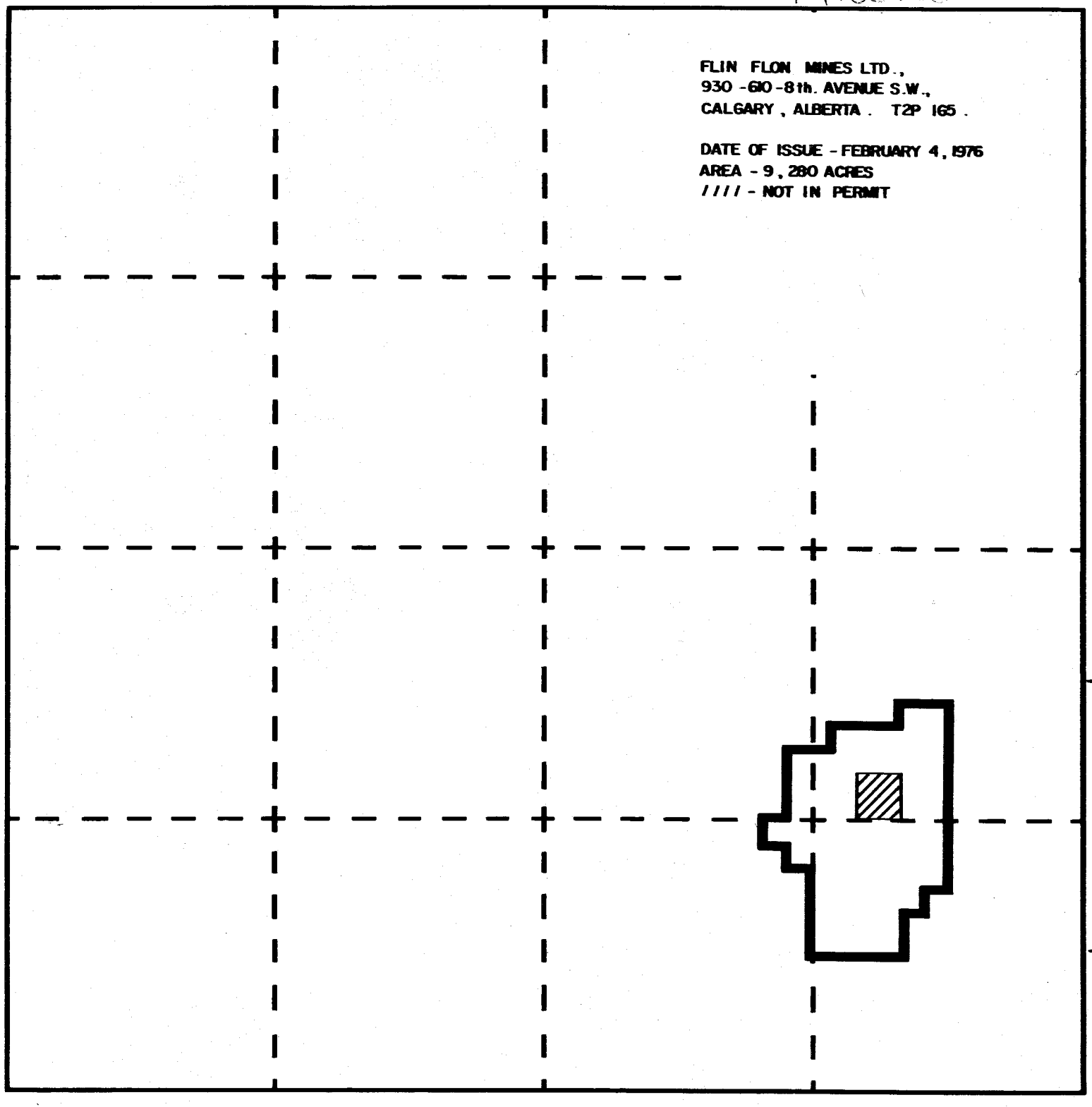

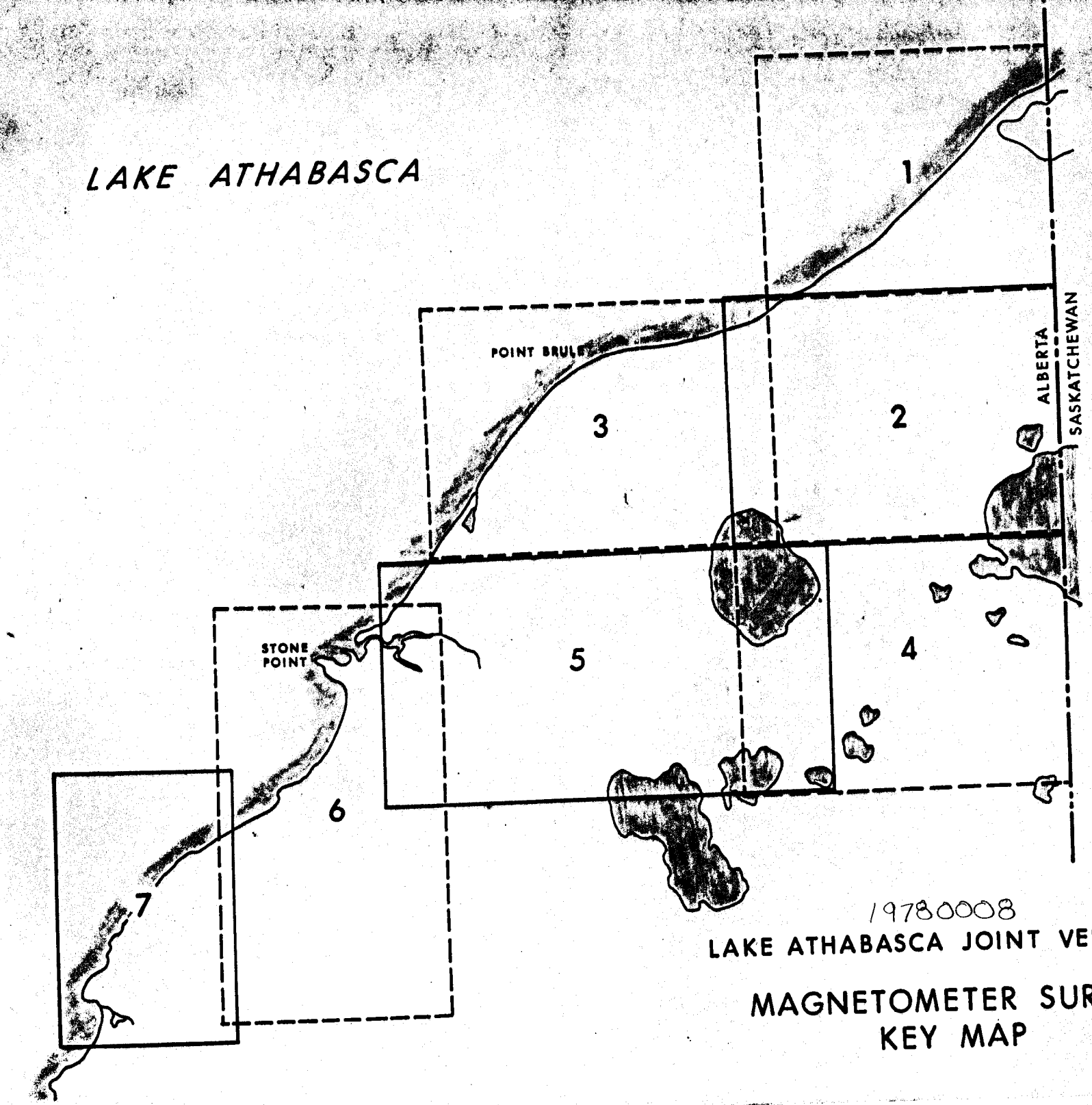

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LAKE ATHABASCA JOINT VENTURE

MAGNETOMETER SURVEY KEY MAP