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REPORT ON COMBINED HELICOPTER-BORNE MAGNETIC AND VLF SURVEY TASHOTA AREA NORTHWESTERN ONTARIO

# RECEIVED

APR 05 1990

MINING LANDS SECTION

FOR LAMINCO EXPLORATION INC. BY AERODAT March 26, 1990

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Douglas Oneschuk Geologist/Geophysicist

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APPENDIX I - Certificate of Qualifications APPENDIX II - Personnel Basic Maps: (As described under Appendix B of the Contract)

1. PHOTOMOSAIC BASE MAP; Prepared from available air photos and photographically enlarged to map scale.

## 2. FLIGHT LINE MAP;

Showing all flight lines and fiducials with the base map.

- 3. TOTAL FIELD MAGNETIC CONTOURS; Showing magnetic values corrected of all diurnal variation with flight lines, fiducials, and base map.
- 4. VERTICAL MAGNETIC GRADIENT CONTOURS; Showing magnetic gradient values calculated from the total field with flight lines, fiducials and base map.
- 5. VLF-EM TOTAL FIELD CONTOURS; Showing VLF total field response from the in-line transmitter with flight lines, fiducials, and base map.

#### 1 - 1 1. <u>INTRODUCTION</u>

This report describes an airborne geophysical survey carried out on behalf of Laminco Exploration Inc. by Aerodat Limited. Equipment operated during the survey included a high sensitivity cesium vapour magnetometer, a two frequency VLF-EM system, a video tracking camera, radar altimeter, and an electronic positioning system. Magnetic and altimeter data were recorded both in digital and analog forms. Positioning data was stored in digital form, encoded on VHS format video tape and recorded at regular intervals in local UTM coordinates, as well as being marked on the flight path mosaic by the operator while in flight.

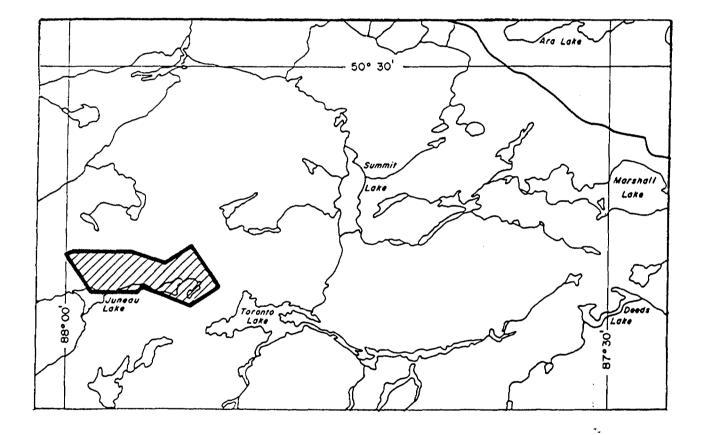
The survey area is located in northwestern Ontario, centred approximately 25 kilometres northwest of Tashota. The survey was flown on March 01-04, 1990. Data from five flights were used to compile the survey results. The flight lines were oriented at an angle of 330 degrees, with a nominal line spacing of 100 metres (according to Appendix "A" of the contract). Geophysical information is provided in the form of maps at 1:10,000. Coverage and data quality were considered to be well within the specifications described in the service contract.

The purpose of the survey was to record airborne geophysical data over ground that is of interest to Laminco Exploration Inc.

A total of 261 line kilometres of the recorded data were compiled in map form. The maps are presented as part of this report according to specifications laid out by Laminco Exploration Inc. 2 - 1

# 2. SURVEY AREA LOCATION

The survey area is depicted on the index map shown below. It is centred at approximate geographic latitude 50 degrees 26 minutes North, longitude 87 degrees 38 minutes West.



3 - 1

#### 3. AIRCRAFT AND EQUIPMENT

#### 3.1 Aircraft

An Aerospatiale A-Star 350 D helicopter, (C-FTPH), piloted by M. Lapointe, owned and operated by Peace Helicopters Limited, was used for the survey. Peter Moore of Aerodat acted as navigator and equipment operator. Installation of the geophysical and ancillary equipment was carried out by Aerodat. The survey equipment was flown at a mean terrain clearance of 60 metres.

#### 3.2 Equipment

#### 3.2.1 VLF-EM System

The VLF-EM System was a Herz Totem 2 A. This instrument measures the total field and quadrature component of the selected frequency. The sensor was towed in a bird 30 metres below the helicopter.

#### 3.2.2 Magnetometer System

The magnetometer employed a Scintrex Model VIW 2321 H8 cesium, optically pumped magnetometer sensor. The sensitivity of this instrument was 0.1 nanoTeslas. The sensor was towed in a bird 30 metres below the helicopter.

#### 3.2.3 Magnetic Base Station

An IFG proton precession magnetometer was operated at the base of operations to record diurnal variations of the earth's magnetic field. The clock of the base station was synchronized with that of the airborne system to facilitate later correlation.

### 3.2.4 <u>Altimeter System</u>

A King KRA 10 radar altimeter was used to record terrain clearance. The output from the instrument is a linear function of altitude for maximum accuracy.

#### 3.2.5 Tracking Camera

A Panasonic video flight path recording system was used to record the flight path on standard VHS format video tapes. The system was operated in continuous mode and the flight number, real time and manual fiducials were registered on the picture frame for cross-reference to the analog and digital data.

# 3.2.6 Analog Recorder

An RMS dot-Matrix recorder was used to display the data during the survey. In addition to manual and time fiducials, the following data was recorded:

Channel	Input	Scale
VLT	VLF-EM Total Field, Line	25 %/cm
VLQ	VLF-EM Quadrature, Line	25 %/cm
VOT	VLF-EM Total Field, Ortho	25 %/cm
VOQ	VLF-EM Quadrature, Ortho	25 %/cm
RALT	Radar Altimeter	100 ft./cm
MAGF	Magnetometer, fine	25 nT/cm
MAGC	Magnetometer, coarse	250 nT/cm

# 3.2.7 Digital Recorder

A DGR 33:16 data system recorded the survey on magnetic tape. Information recorded was as follows:

Equipment	<b>Recording Interval</b>
VLF-EM	0.20 seconds
Magnetometer	0.10 seconds
Altimeter	0.20 seconds
Nav System	0.20 seconds

# 3.2.8 Radar Positioning System

A Mini-Ranger MRS-III radar navigation system was used for both navigation and flight path recovery. Transponders sited at fixed locations were interrogated several times per second and the ranges from these points to the helicopter were measured to a high degree of accuracy. A navigational computer triangulated the position of the helicopter and provided the pilot with navigation information. The range/range data was recorded on magnetic tape for subsequent flight path determination.

#### 4. DATA PRESENTATION

#### 4.1 Base Map

A photomosaic base at a scale of 1:10,000 was prepared from available air photos and enlarged to the required scale.

#### 4.2 Flight Path

The flight path was derived from the Mini-Ranger radar positioning system. The distance from the helicopter to two established reference locations was measured several times per second and the position of the helicopter was calculated by triangulation. It is estimated that the flight path is generally accurate to about 10 metres with respect to the topographic detail on the base map.

The flight lines have the time, and the navigator's manual fiducials for cross reference to both analog and digital data.

## 4.3 Magnetics

#### 4.3.1 Total Field

The magnetic data from the high sensitivity cesium magnetometer provided virtually a continuous magnetic reading when recording at 0.2 second intervals. The system is also noise free for all practical purposes.

#### 4 - 1

A sensitivity of 0.1 nanoTesla (nT) allows for the mapping of very small inflections in the magnetic field, resulting in a contour map that is equal to or exceeds ground data in quality and accuracy.

The aeromagnetic data was corrected for diurnal variations by adjustment with the digitally recorded base station magnetic values. No correction for regional variation was applied. The corrected data was interpolated onto a regular grid at a 25 metre true scale interval using an Akima spline technique. This grid provided the basis for threading the presented contours at a 2 nT interval.

The contoured aeromagnetic data has been presented on a Cronaflex copy of the base map with flight lines.

#### 4.3.2 Vertical Gradient

The vertical magnetic gradient was calculated from the total field magnetic data. Contoured at a 0.2 nT/m interval, the data was presented on a cronaflex copy of the base map with flight lines.

The VLF data was interpolated onto a regular grid at a 25 metre true scale interval using an Akima spline technique. This grid provided the basis for threading the contours at a 1% interval.

The VLF-EM signal from the in-line transmitting station was compiled as contours in map form on cronaflex copies of the base map with flight lines.

The transmitting station used was NSS Annapolis, MD broadcasting at 21.4 kHz. The orthogonal VLF station used was NLK Jim Creek, Washington broadcasting at 24.8 kHz. This station was not utilized in the compilation.

Respectfully submitted,

nomhak

March 26, 1990

Douglas Oneschuk Geologist/Geophysicist

#### APPENDIX I

# **CERTIFICATE OF QUALIFICATIONS**

- I, Douglas Oneschuk, certify that:-
- 1. I hold two B. Sc.'s in Geology from McMaster University (1981) and a Certificate in Computer Programming (Engineering) from Ryerson Polytechnical Institute (1985).
- 2. I reside at 2025 Chrisdon Road in Burlington, Ontario.
- 3. I have been engaged in the resource industry in Canada and abroad for the past eleven years.
- 4. I have no interest, direct or indirect, in the property described nor do I hold securities in Laminco Exploration Inc.

Signed,

Dreschuk

Mississauga March 26, 1990

D. Oneschuk Geologist/Geophysicist

# APPENDIX II

# PERSONNEL

FIELD

Flown	February, 1990		
Pilot	Mark Lapointe		
Operator	Peter Moore		
OFFICE			
Processing	K. Killin		
Report	D. Oneschuk		

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#### JUNEAU LAKE CLAIMS

Thunder Bay Mining Division Claim Numbers:

1109000	1109057	1109229	1109247	1109265
1109001	1109058	1109230	1109248	1109266
1109002	1109059	1109231	1109249	1109267
1109003	1109060	1109232	1109250	1109268
1109004	1109061	1109233	1109251	1109269
1109005	1109062	1109234	1109252	1109270
1109006	1109063	1109235	1109253	1109271
1109007	1109064	1109236	1109254	1109272
1109008	1109065	1109237	1109255	1109273
1109009	1109066	1109238	1109256	1109274
1109010	1109067	1109239	1109257	1109275
1109050	1109068	1109240	1109258	1109276
1109051	1109069	1109241	1109259	1109277
1109052	1109070	1109242	1109260	1109278
1109053	1109071	1109243	1109261	
1109054	1109072	1109244	1109262	11
1109055	1109073	1109245	1109263	
1109056	1109074	1109246	1109264	$\Delta I = II$

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3883 NASHUA DRIVE • MISSISSAUGA • ONTARIO • CANADA • L4V 1R3 Telephone: (416) 671-2446 Telex: 06-968872 Fax: (416) 671-8160

June 25, 1990.

Mr. W. R. Cowan Ministry Of Northern Development And Mines Mining Lands Section 3rd Floor, 880 Bay Street Toronto, Ontario M5S 128

File: 2.13218

Dear Mr. W. R. Cowan

Enclosed please find the executed copies of the Geophysical Survey Report submitted on Mining Claim TB 1109000.

Yours truly, AERODAT LIMITED

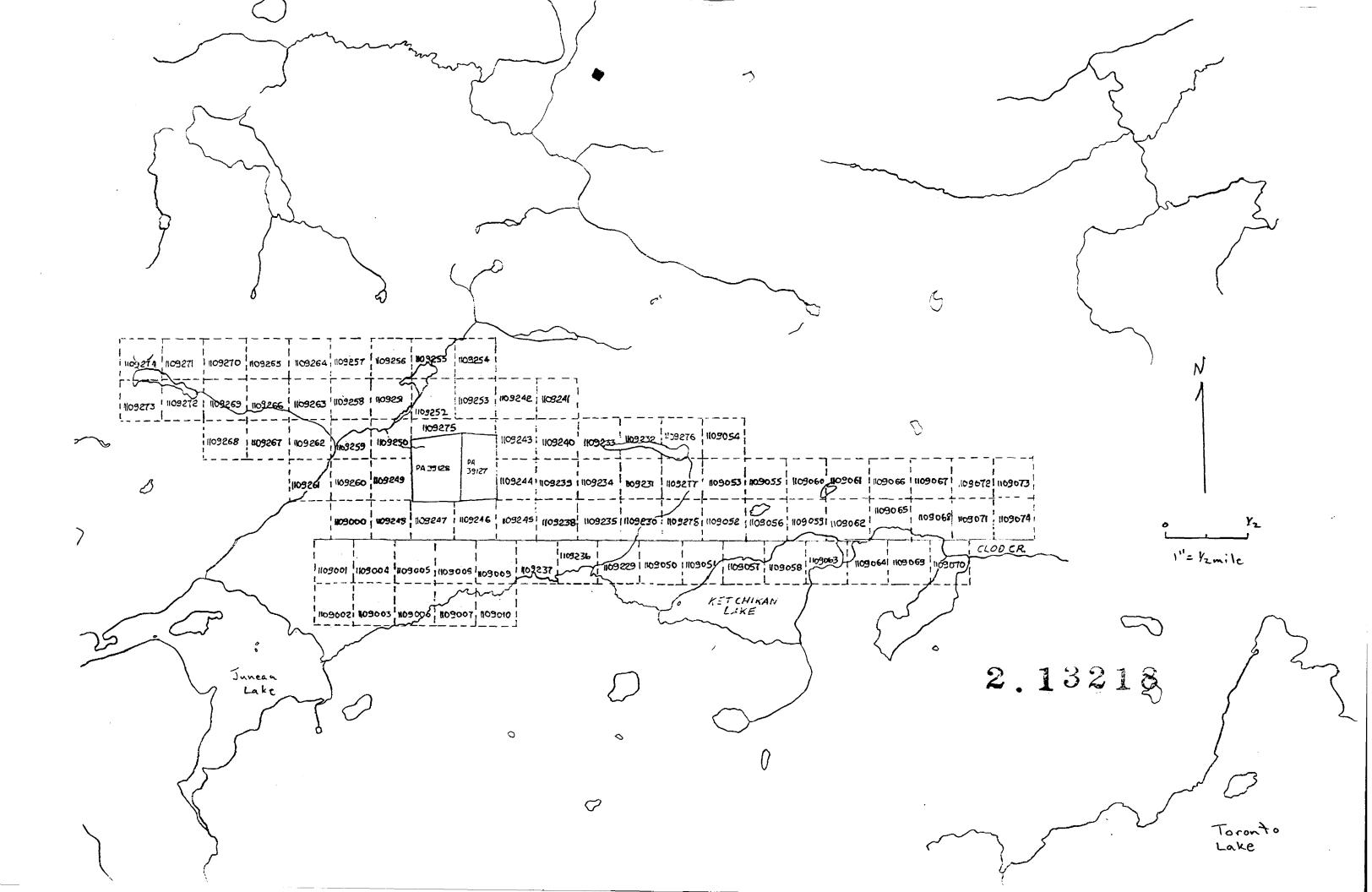
Douglas Oneschuk Geologist

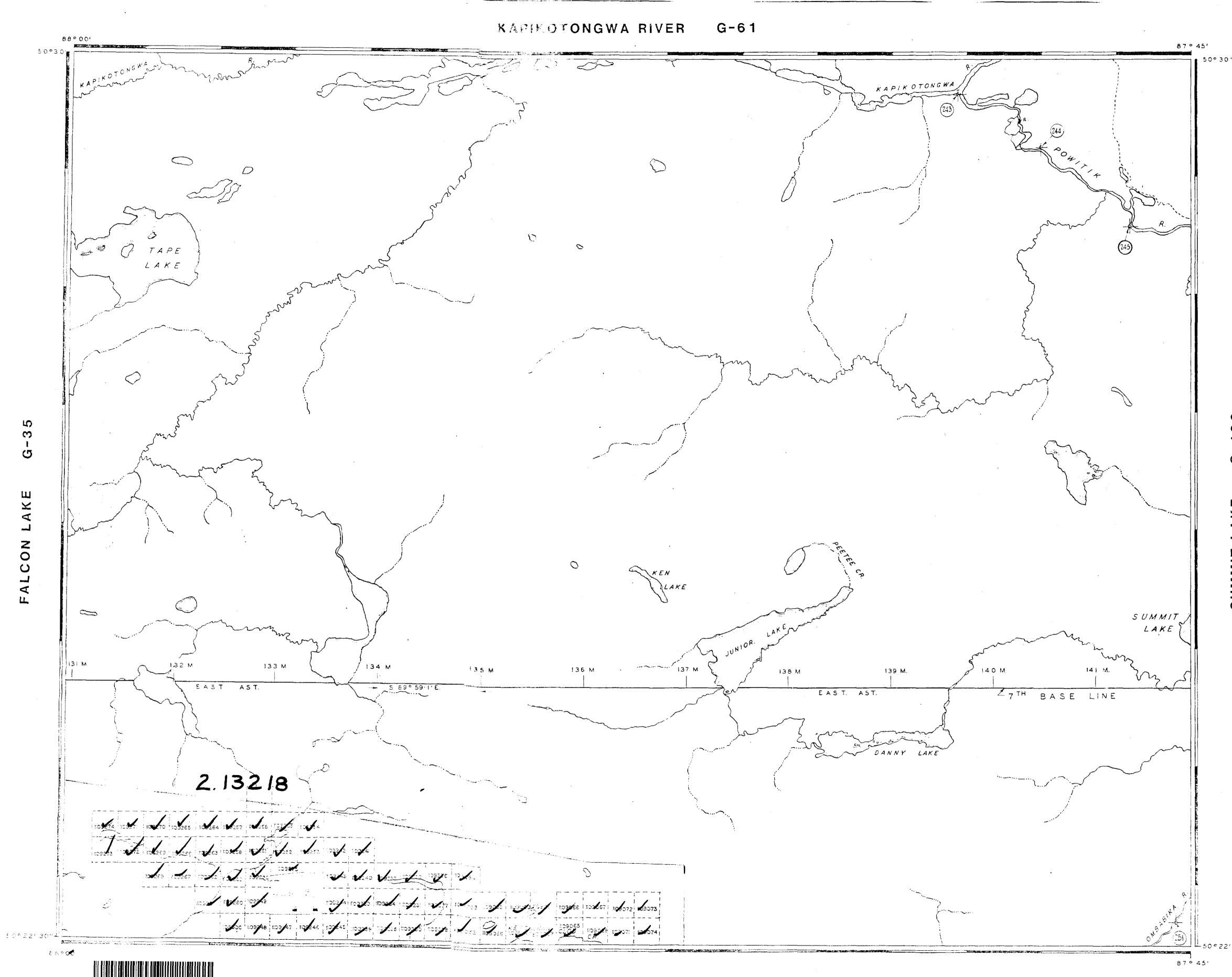
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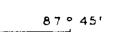
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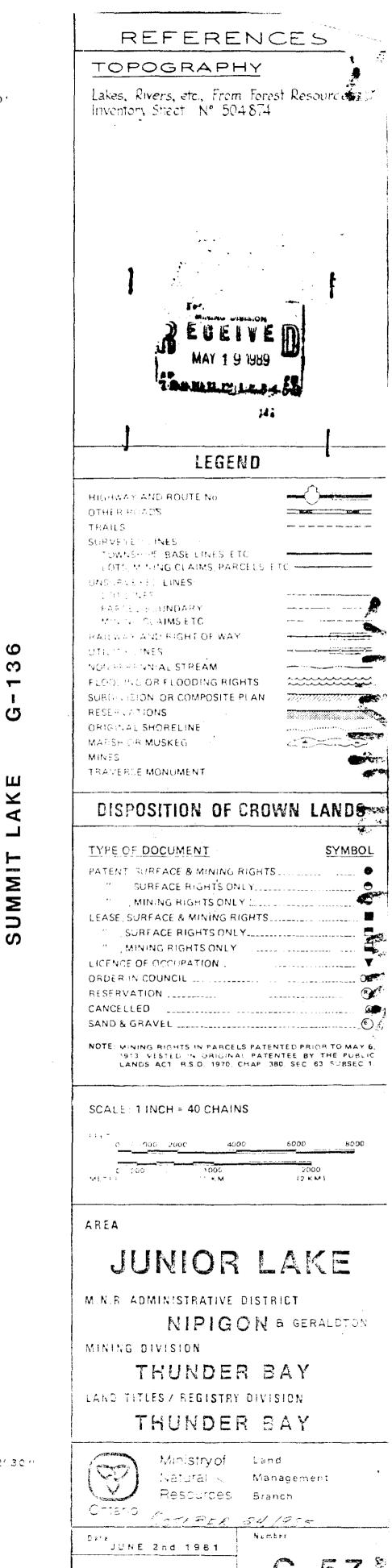
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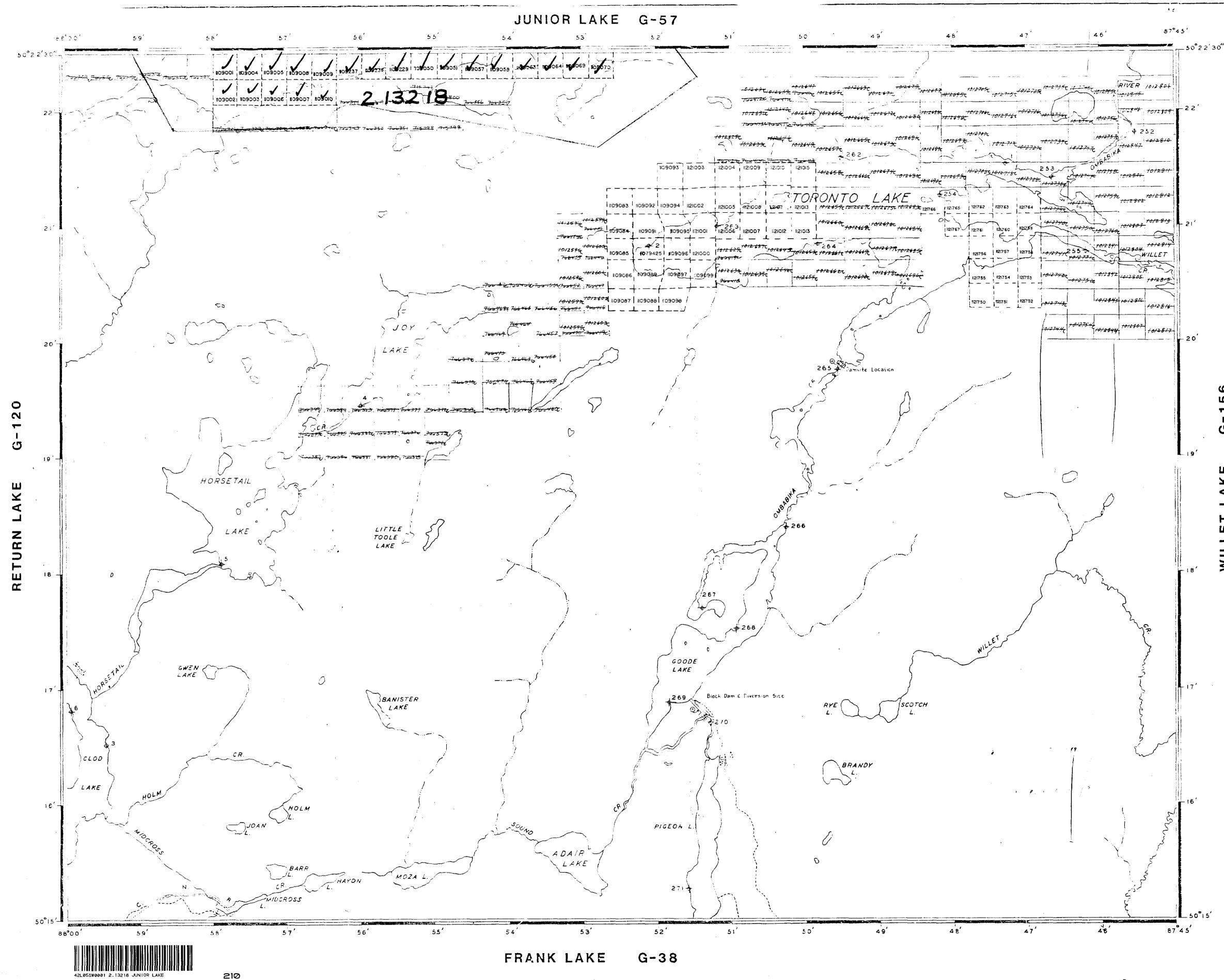


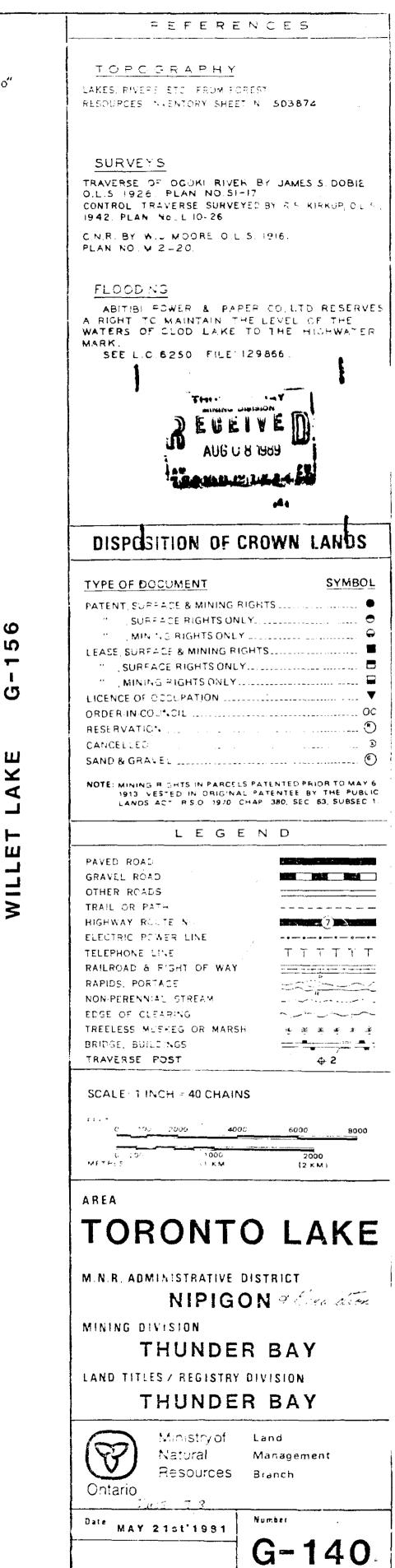
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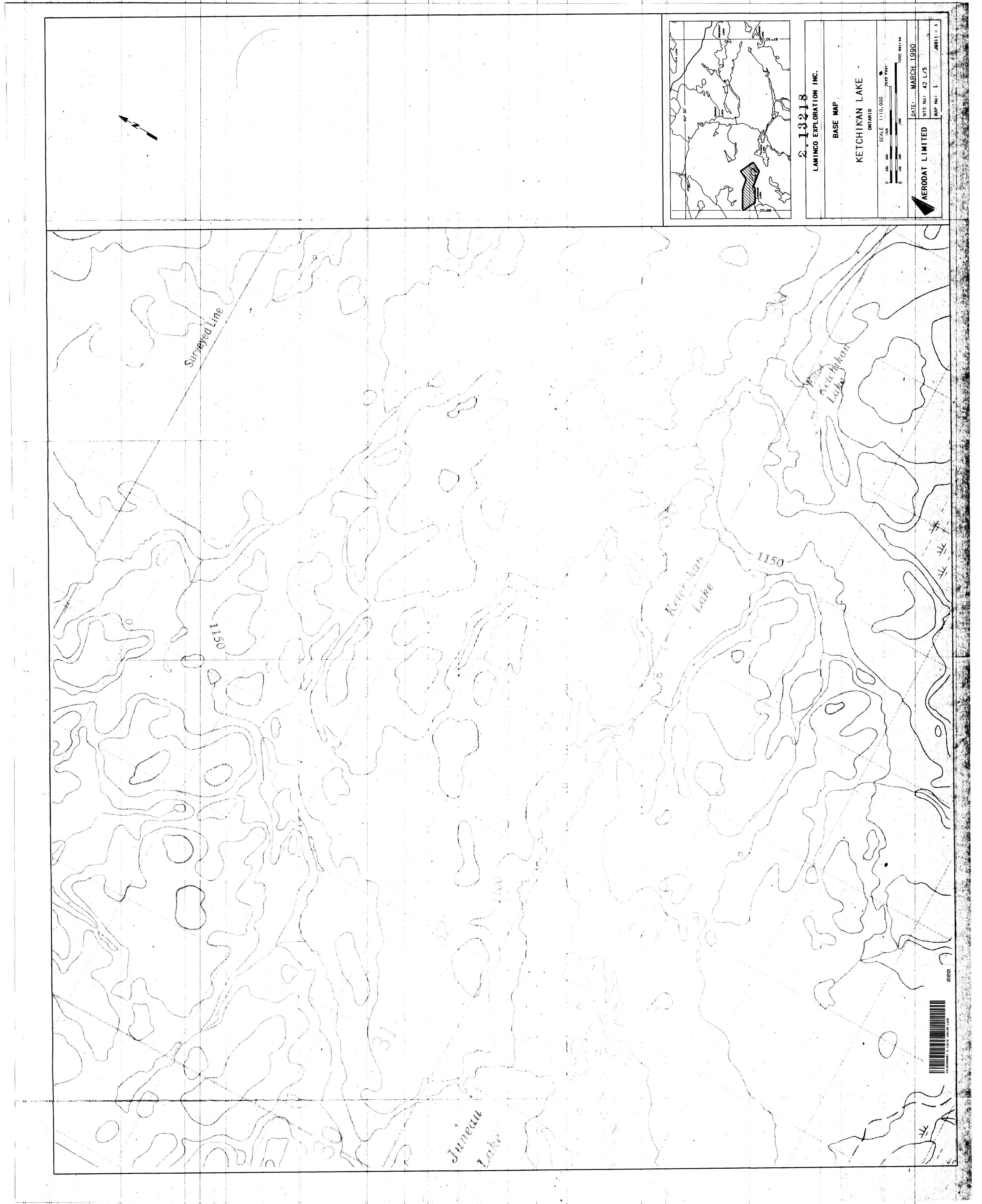


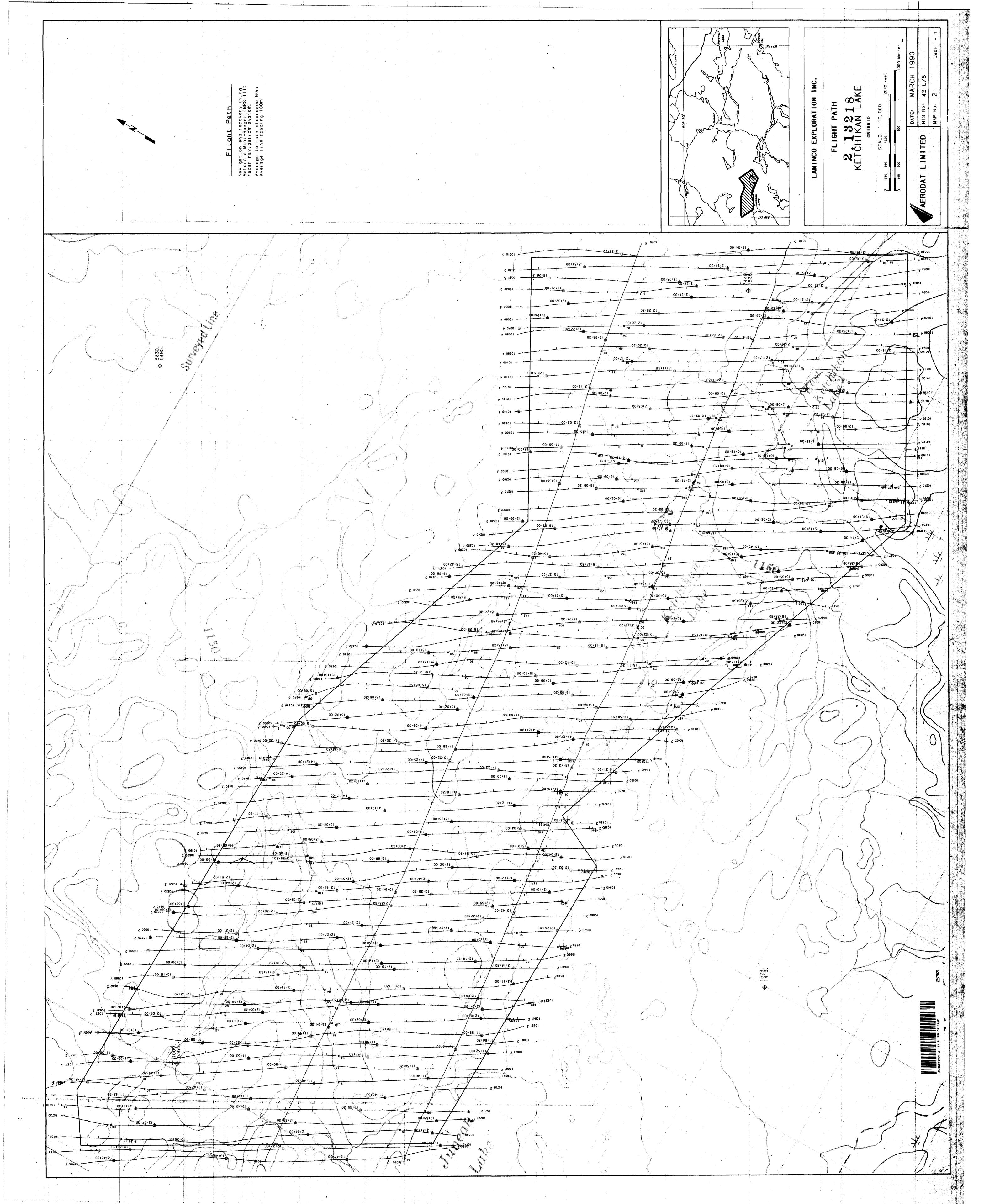
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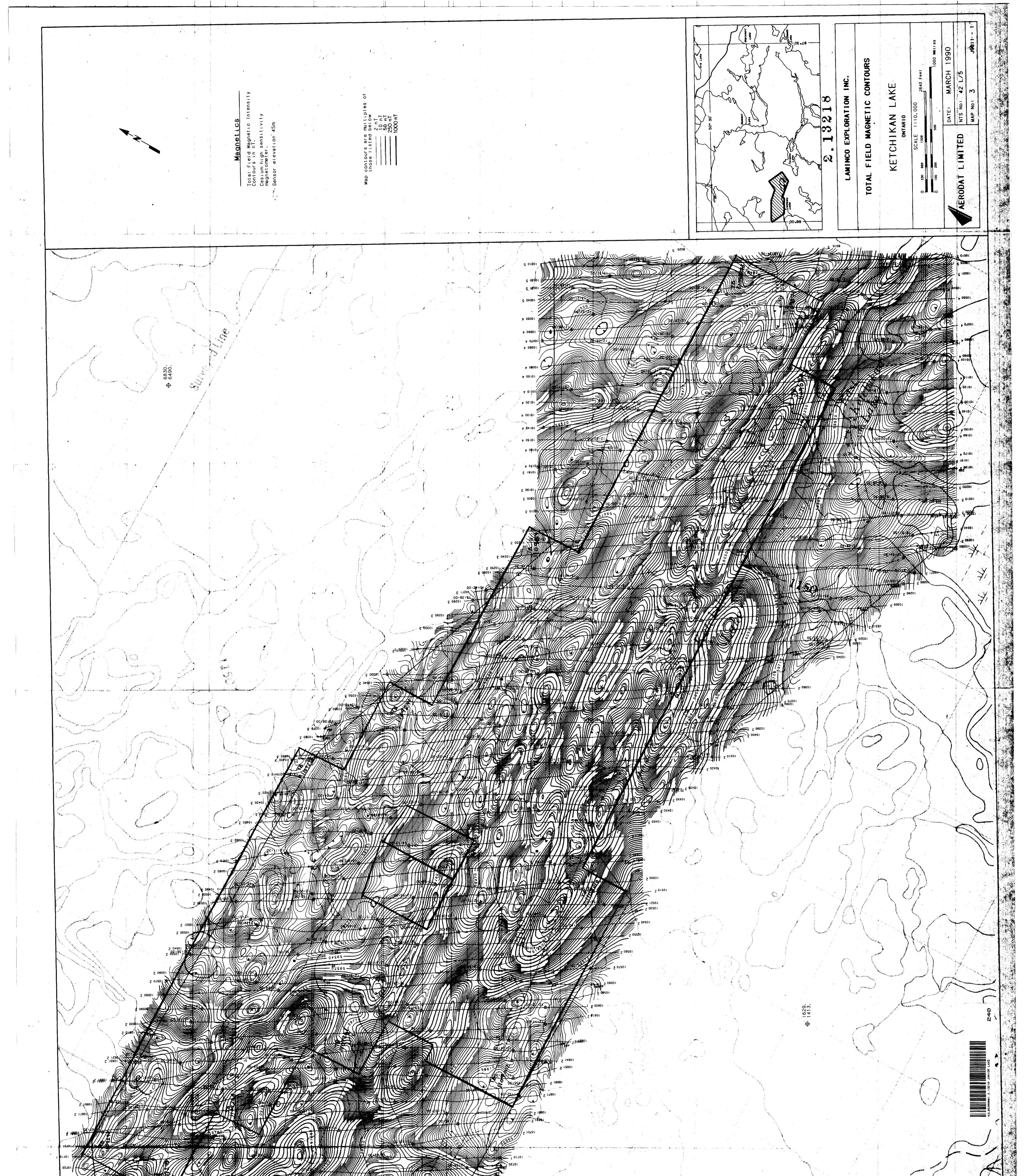


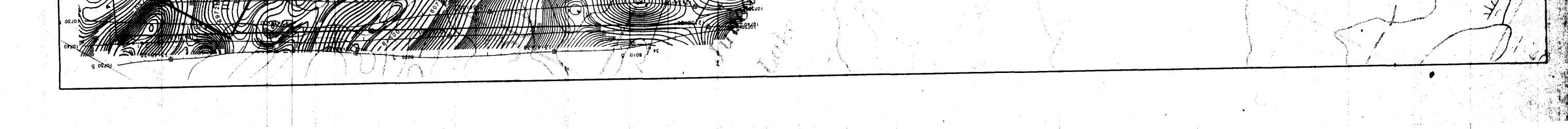


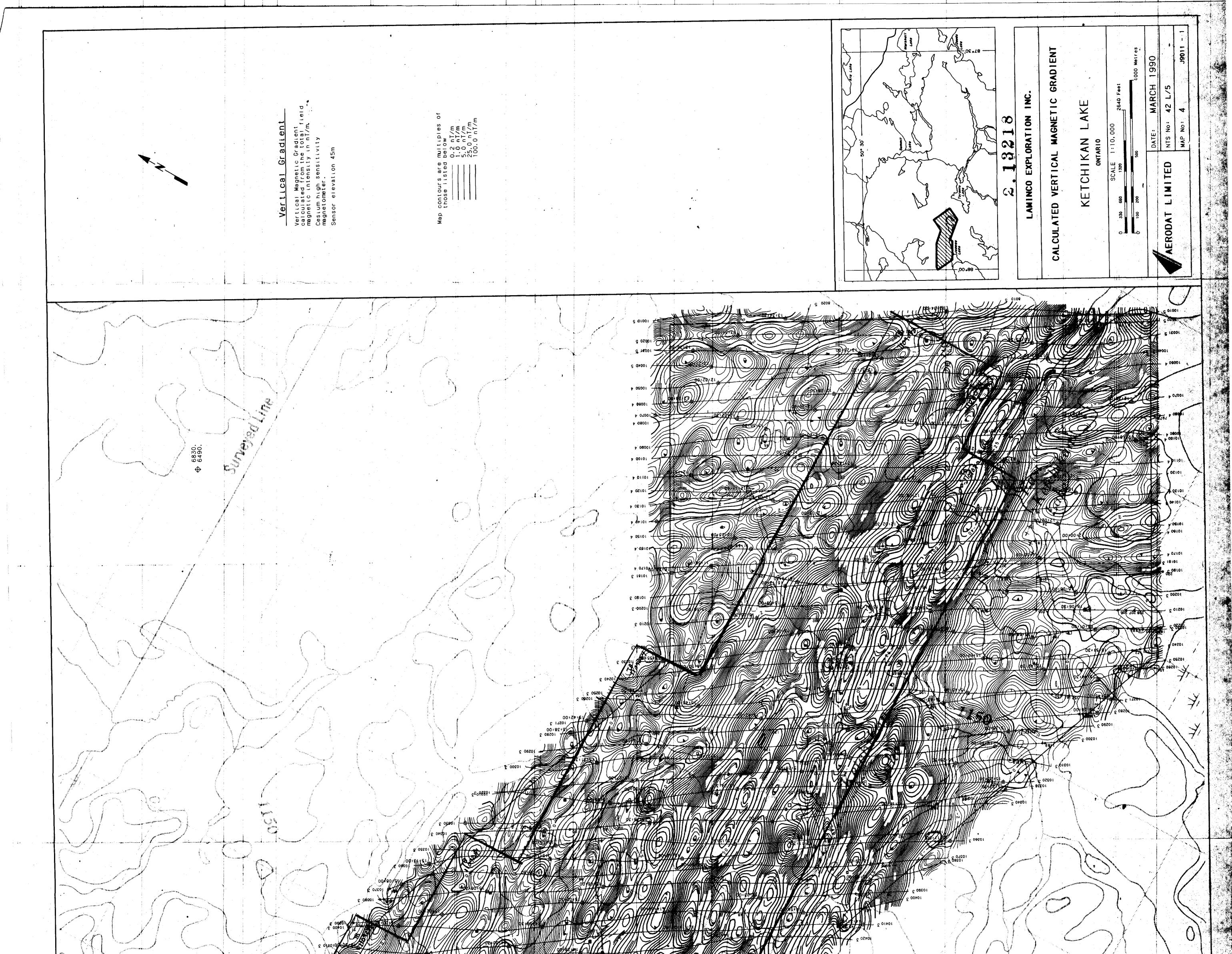
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