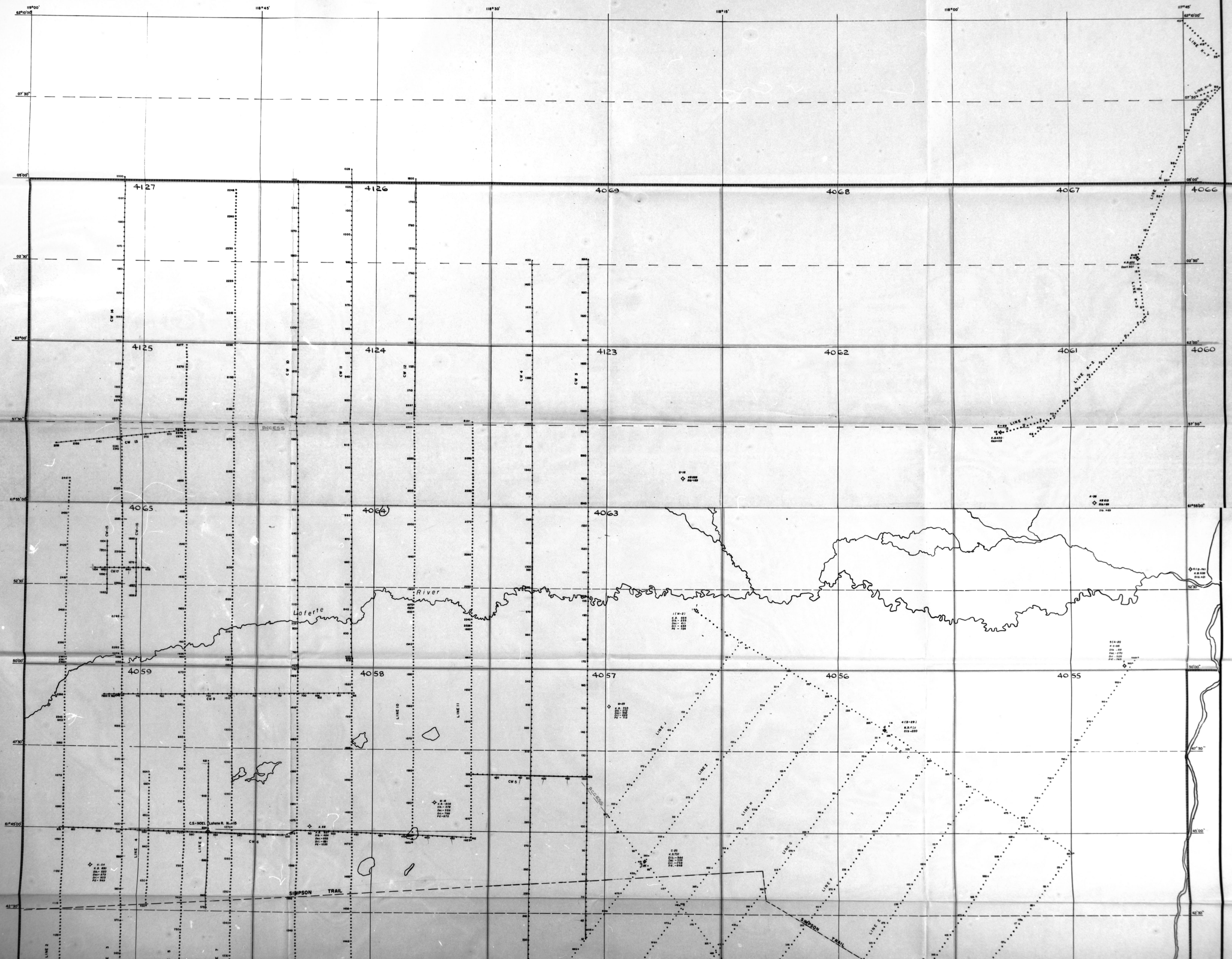
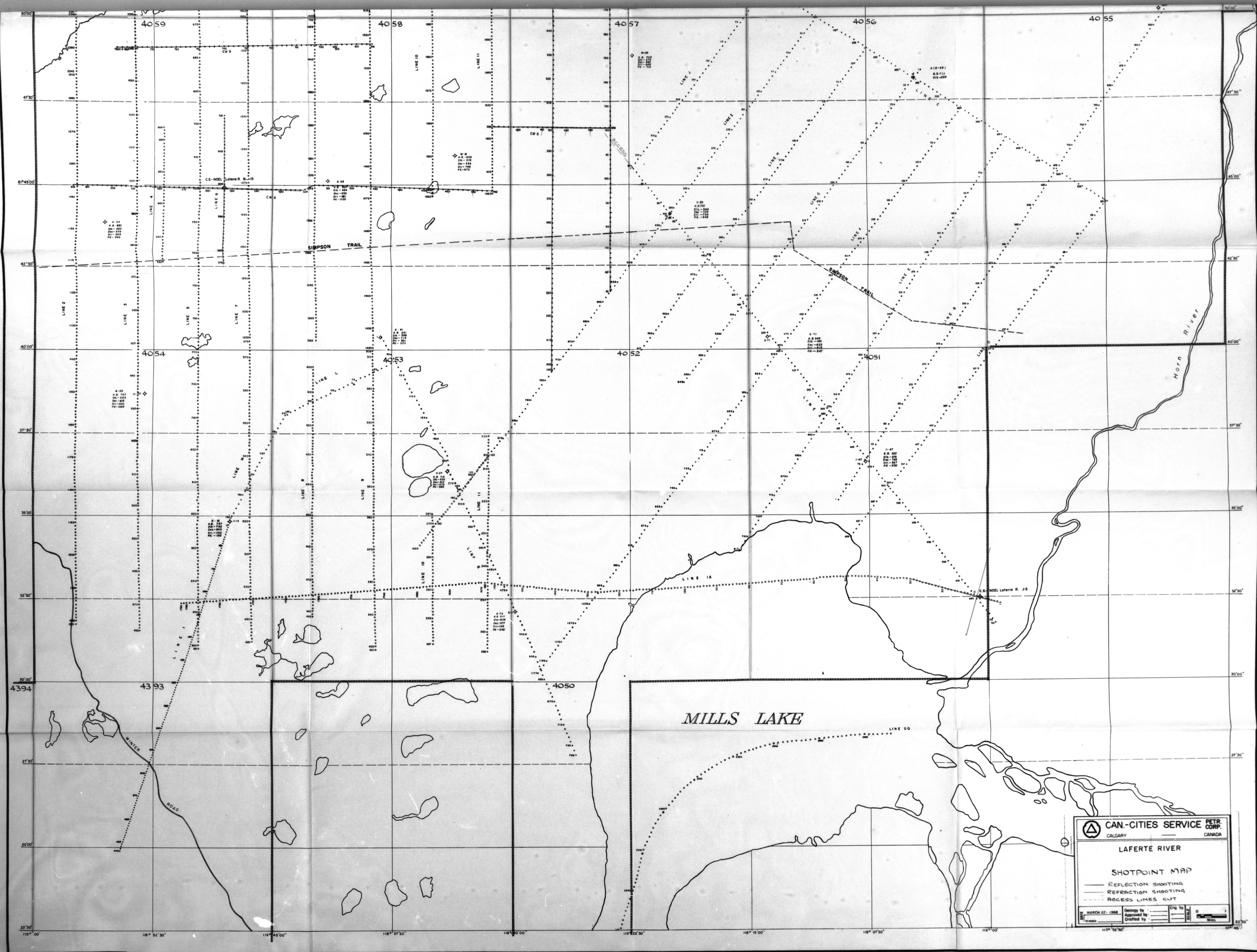






CAN-CITIES SERVICE PETR. CORP.
CALGARY CANADA

LAFERTE RIVER

SHOTPOINT MAP

— REFLECTION SHOOTING
— REFRACTION SHOOTING
--- ACCESS LINES CUT

MARCH 22, 1968
Geology by: _____
Approved by: _____
Drafted by: _____
Scale: 1" = 1 Mile

Abstracted for
Geo-Science Data Index

Date _____

SEISMIC INVESTIGATION

LAFERTE RIVER AREA - FORT PROVIDENCE, N.W.T.

FOR PERIOD DECEMBER 1969, TO JANUARY 1970

For:

CANADA-CITIES SERVICE PETROLEUM CORPORATION

By:

Canwest-Olympic Geophysical Limited

On:

Permits 4051, 4052, 4057 - 4059, 4063 - 4065,
4069, 4123 - 4127

Prepared By:

J. H. HARDING: CHIEF GEOPHYSICIST

June, 1970

Project Number 62-6-4-69-2



TABLE OF CONTENTS

Locality Map

Introduction.....	1
Statistical Data.....	1
Field Procedure.....	2
Data Processing.....	3
Results and Interpretation.....	3
Conclusions.....	4

Enclosures:

Shot Point Location Maps

Surface Elevation Map

Time Structure Map: Top of the Lonely Bay Carbonate

INTRODUCTION:

SEISMIC INVESTIGATION - LAFERTE RIVER AREA FORT PROVIDENCE, N.W.T.

PERMIT NUMBERS 4051, 4052, 4057 - 4059, 4063 - 4065
4069, 4123 - 4123.

The purpose of the seismic survey was to detail, using reflection and refraction seismic methods, areas of interest shown by previous surveys and to conduct a reconnaissance survey on portions of the area not previously explored.

A total of 168 miles of program was shot with approximately 27 miles being end on refraction shooting. Access to the area was via the Northern Oil Explorers Ltd. road from Fort Providence to the crossing of the Horn River and then on a previously cut shot line, as shown on the locality plat.

STATISTICAL DATA

The survey commenced on November 28, 1969, and was terminated on January 20, 1970, with a break in operations from December 23, 1969 to January 2, 1970 for the Christmas and New Years holidays.

PRODUCTION

Total number of miles recorded	168
Number of miles of refraction shooting	27
Number of miles of reflection shooting	141
Total number of shots	2,229
Average daily production	3.74 miles
Total number of days worked	45
Total number of weather days	1

EQUIPMENT

1 Recording unit - 24 channel digital D.F.S. III Binary Gain System
2 Four wheel drive line trucks

- 1 Four wheel drive shooting truck
- 1 Four wheel drive supply vehicle
- 2 Conventional shot hole drills
- 3 Auger type shot hole drills
- 1 Party Manager's vehicle
- 2 Survey pick-ups
- 3 Water trucks
- 1 D7 - A Caterpillar Dozer
- 1 D7 - E Caterpillar Dozer
- 2 TD15 Caterpillar Dozer
- 1 110 volt power trailer, 20 K.W.
- 1 Dynamite Magazine
- 1 Cap Magazine
- 40 Man trailer camp

PERSONNEL

1 Party Manager	8 Geophone Line Men
2 Surveyors	8 Dozer Operators
2 Rodmen	2 Cooks
10 Shot Hole Drillers	1 Camp Attendant
1 Observer	1 Shooter
1 Junior Observer	1 Shooter's Helper

NAVIGATION

A T - 16 Wilde Theodolite survey instrument was used for horizontal and vertical control. Star and sun shots were taken for azimuth checks. Vertical control was established from abandoned exploratory wells within the area.

FIELD PROCEDURE

The reflection survey was shot using 1320 foot split spreads with 110 foot intervals between geophone stations and 440 feet between shot points to give 300% C.D.P. coverage. Eighteen geophones were used at each station spread over a 220 foot interval.

The average charge used for the reflection survey was 1 1/4 pounds at a depth of 45 feet.

The refraction survey was shot as inline refraction with a single end 2640 foot spread and shot points at 1/2 mile intervals and offsets varying from 110 feet to 4280 feet. Average charge size for refraction was 5 pounds.

All data was recorded digitally using a 24 channel D.F.S. III Binary Gain System.

DATA PROCESSING

The reflection data was processed digitally to give 300% stack structural sections. The processing was done in three stages:

- Stage I Normal Move-out Removal
- Stage II Trace Gathers and flattening statics
- Stage III Stack and Structural corrections

Weathering corrections were computed using the critical distance method. Elevations were corrected to a +600 foot datum using a correction velocity of 12,000 feet per second. All data was digitally filtered using a 20/25 to 50/55 cycle band pass filter.

Ninety percent of the data was processed at Digitech Ltd. and the balance at Cendac Ltd., both of Calgary, Alberta.

RESULTS AND INTERPRETATION

Quality of the data varied from poor to good with most of the sections being classed as fair.

Over most of the area there was only one mappable horizon which was identified as the Top of the Lonely Bay Carbonate. Some difficulty was encountered in getting good time ties to the shooting previously done in the area due primarily to erratic changes in weathering.

There was some evidence of shallower reflections in the area but these events were masked by first break energy except on those lines that were shot on top of the Horn Plateau.

The refraction surveys were computed and interpreted by Carwest Olympic Geophysical Ltd. These maps show an 11,000'/sec. and a 20,000'/sec. refractor present on all lines shot by refraction. They also show a 15,000'/sec. refractor in some cases and this was interpreted as possibly being reef material similar to a known reef outcrop on top of the Horn Plateau. Copies of the refraction maps are not included with this report. If they are required we shall submit them under separate cover.

CONCLUSIONS

The results of the above surveys led to the selection and drilling of two test wells in February and March of 1970. The two wells drilled failed to encounter any hydrocarbons and did not find any reef type formation.

The locations of the wells were as follows:

C.S. NOEL Laferte N-15 $61^{\circ}44'55''\text{N}$ $118^{\circ}48'02''\text{W}$
C.S. NOEL Laferte J-03 $61^{\circ}32'28''\text{N}$ $118^{\circ}00'34''\text{W}$

The structural possibilities in the area are quite small in size and the amount of closure is limited. Many of the structural changes may be due to lack of good weathering control as the J-03 well indicated a depth of glacial drift in excess of 500 feet.

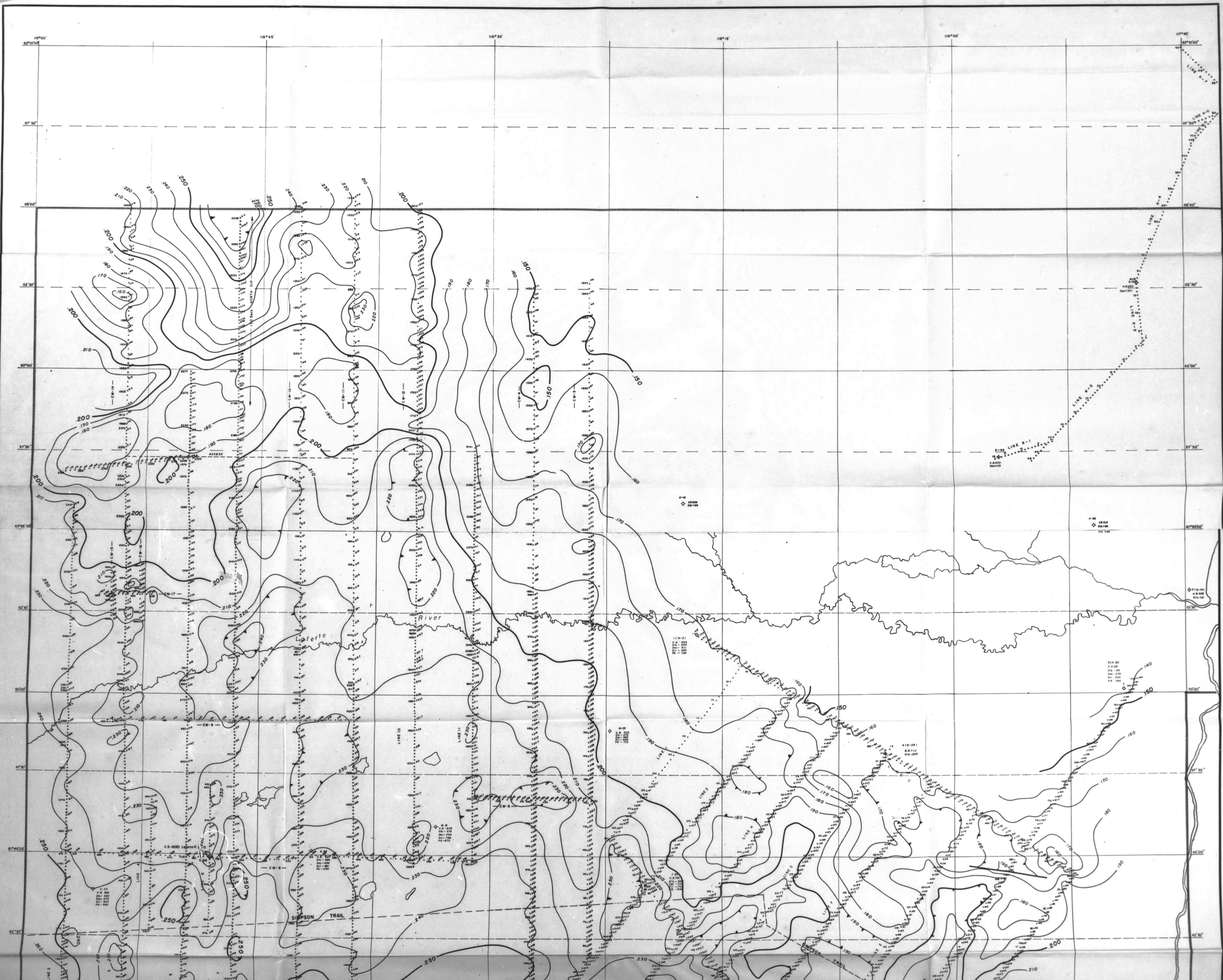
Respectfully submitted,

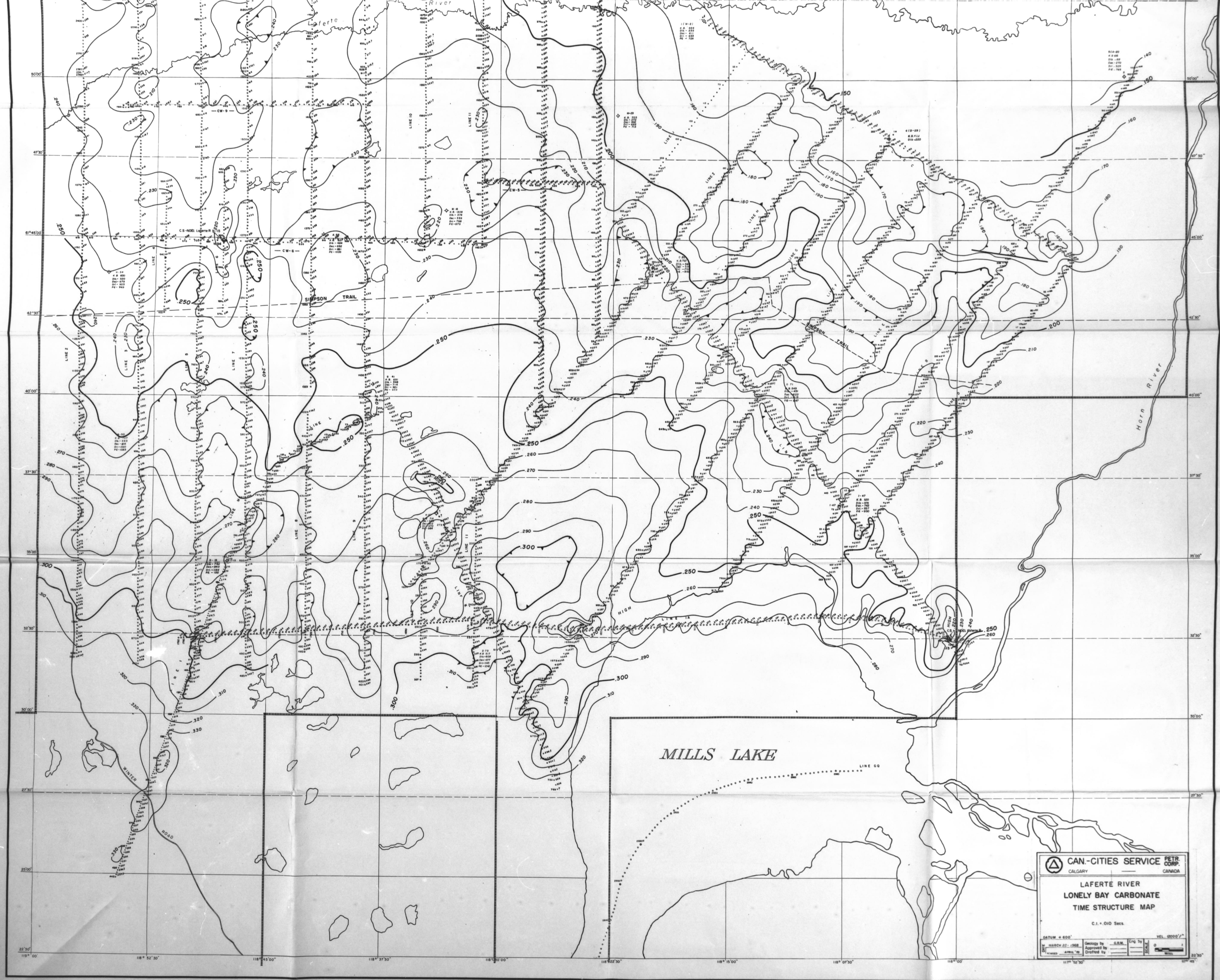
CANADA-CITIES SERVICE PETROLEUM CORPORATION

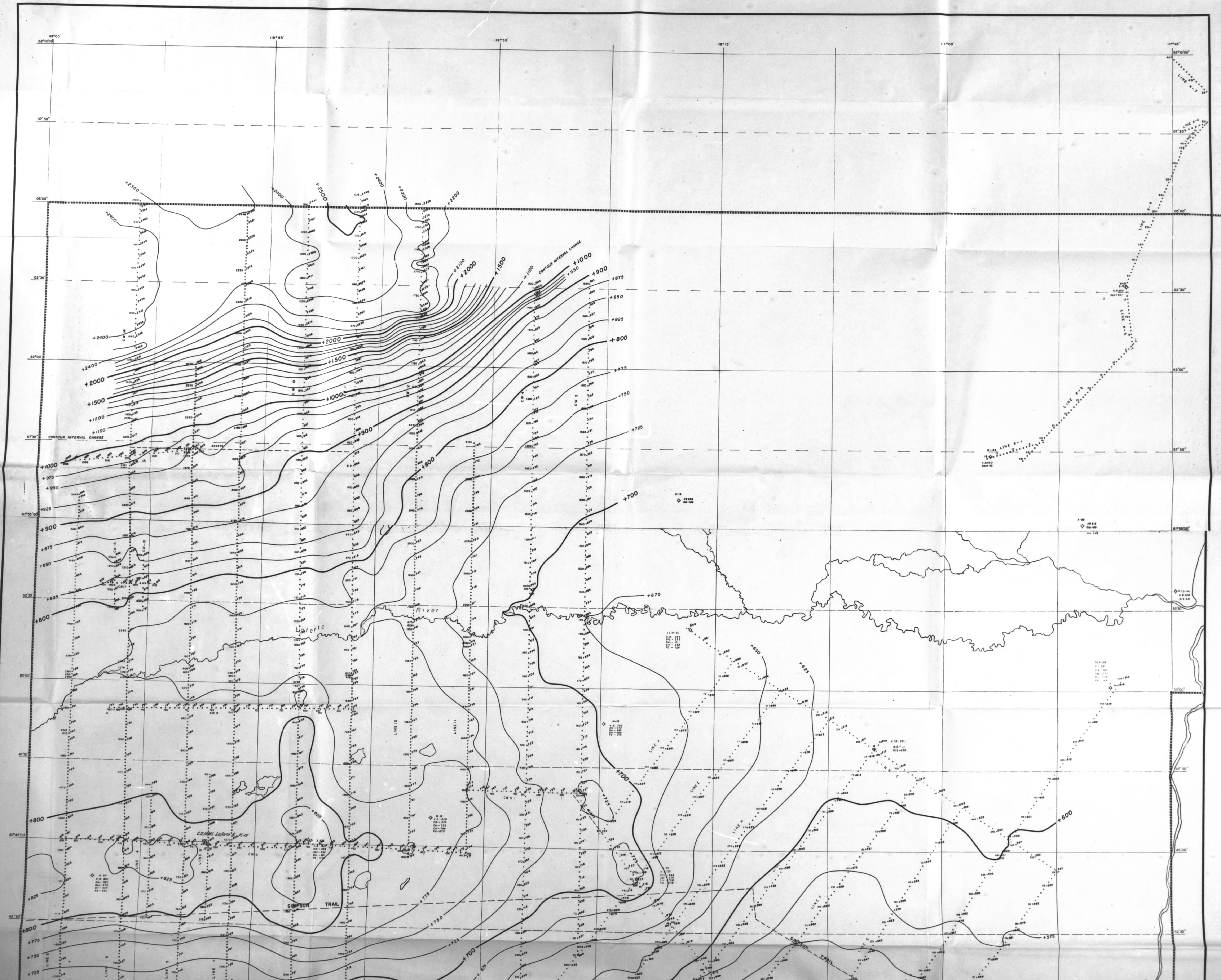


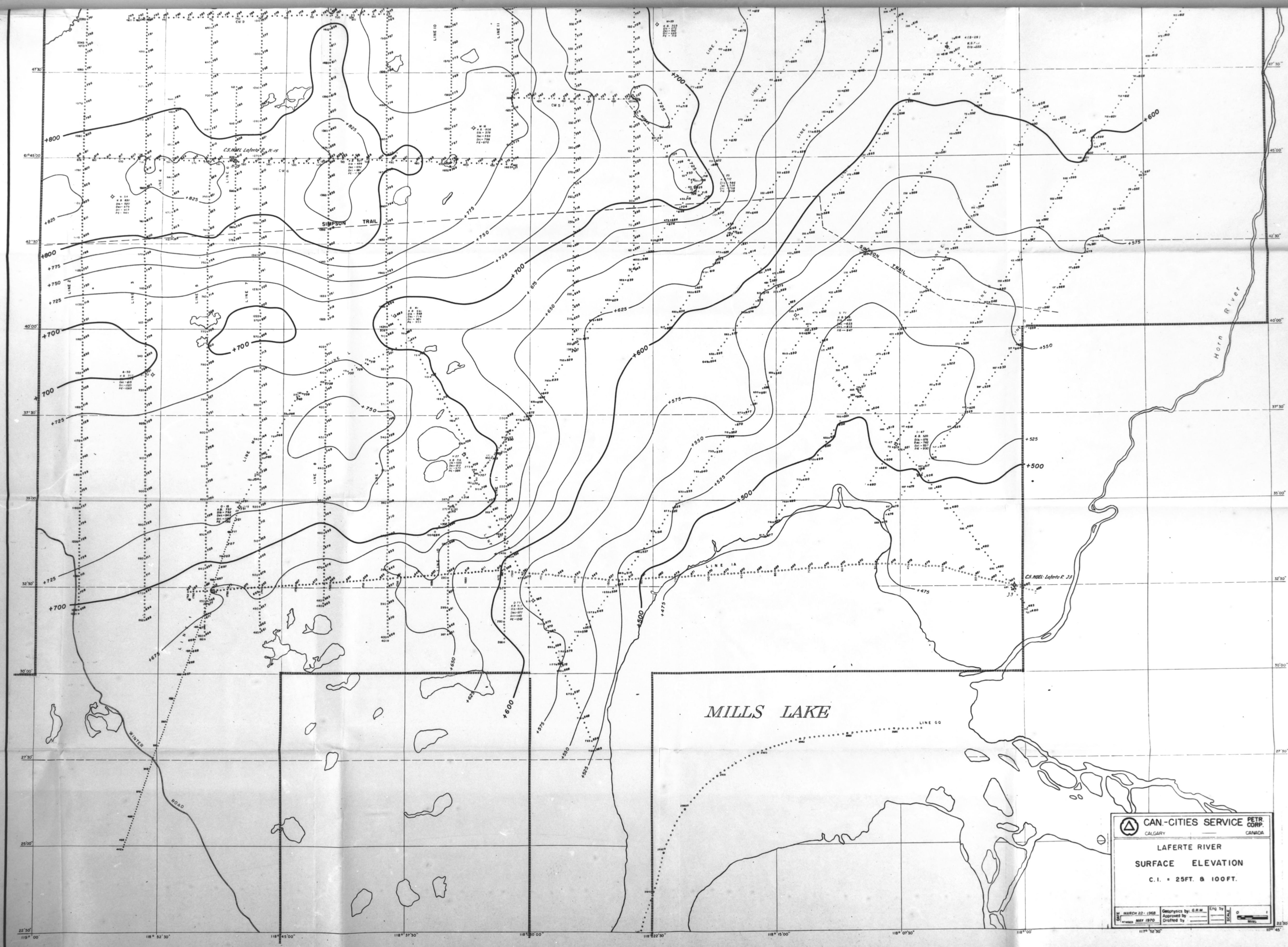
J. H. Harding
Chief Geophysicist

June 16, 1970









CAN-CITIES SERVICE PETR. CORP.
CALGARY CANADA

LAFERTE RIVER
SURFACE ELEVATION
C.I. = 25 FT. & 100 FT.

MARCH 22 - 1968
Approved by: _____
Drafted by: _____

Geographics by: G.R.M.
Eng. by: _____
Scale: 1" = 25' & 100'