

Report of Reflection Seismograph Survey

GREAT BEAR LAKE AREA  
Northwest Territories

Latitude 65°30' to 66°10' Longitude 122°30' to 124°30'

Project No. 39-6-6-73-2

Survey Type - Reflection Seismograph VIBROSEIS\*

Dates of Operation - December 4, 1974 to February 10, 1975

For  
BP EXPLORATION CANADA LIMITED  
Calgary, Alberta



Report by  
G. Schneider



WESTERN GEOPHYSICAL COMPANY OF CANADA, LTD.

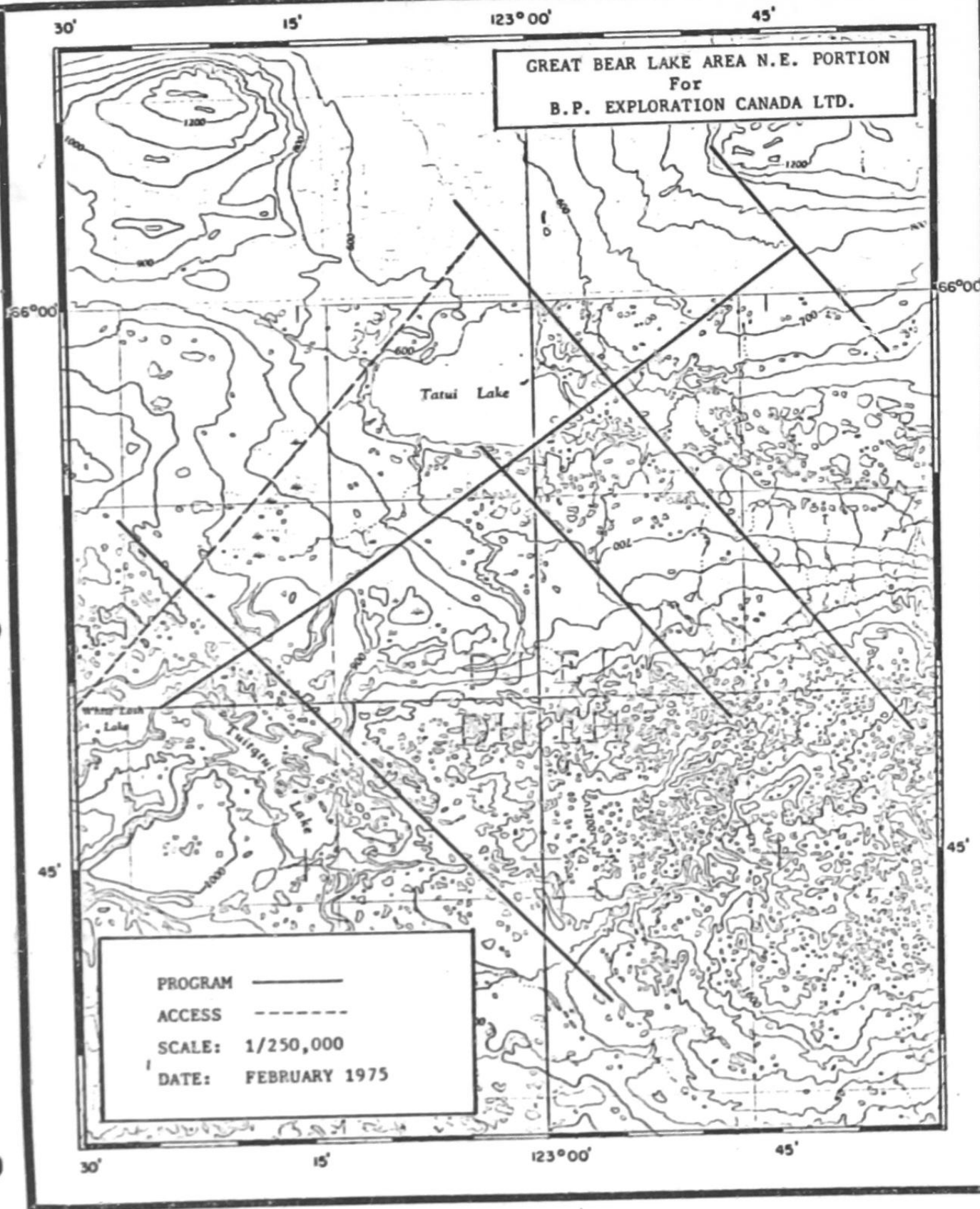
Party V-12  
Calgary, Alberta

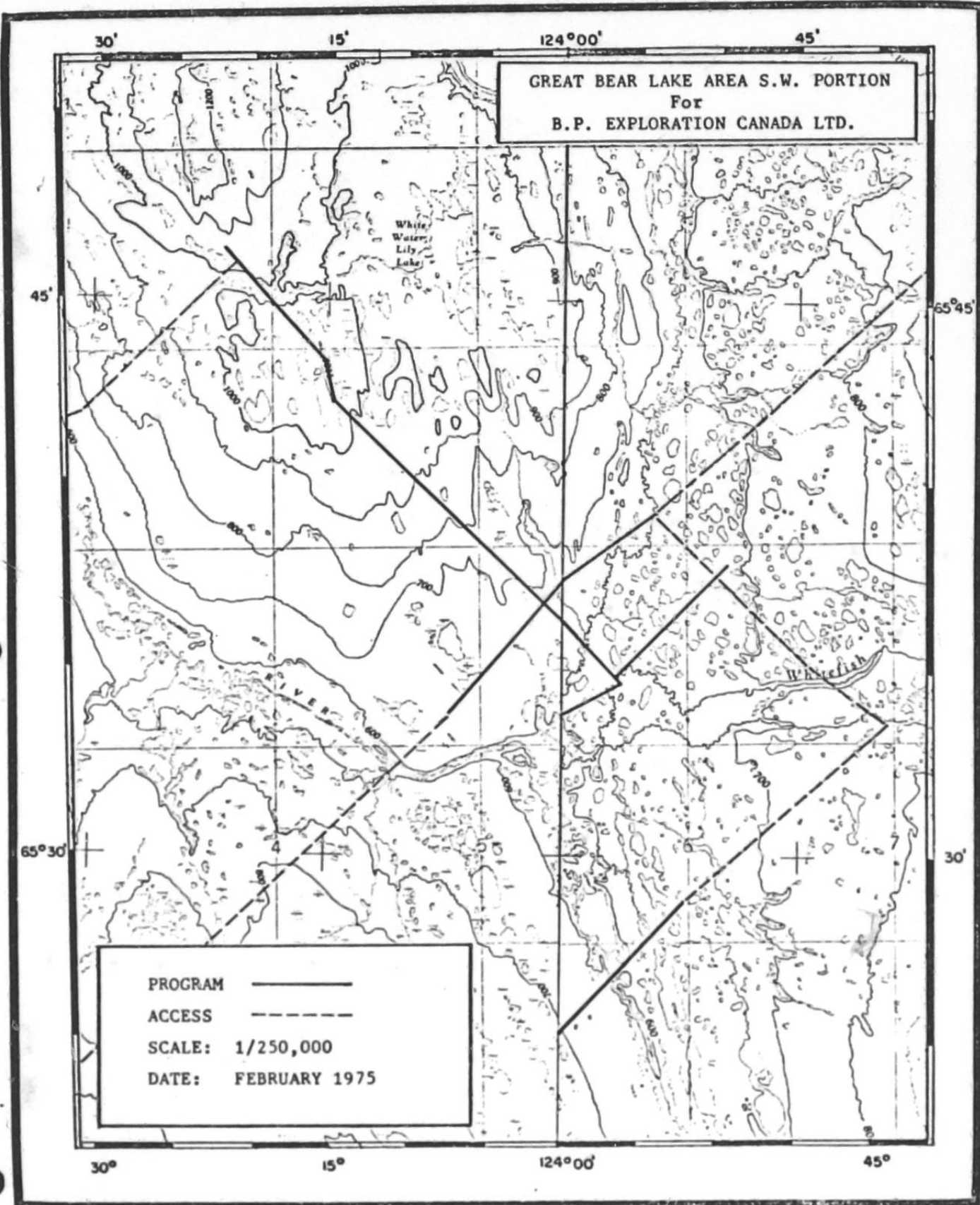
039-06-06-028

May, 1975

## TABLE OF CONTENTS

	<u>PAGE</u>
INDEX MAPS . . . . .	INSIDE FRONT COVER
INTRODUCTION . . . . .	1
STATISTICAL DATA:	
DATES . . . . .	2
PRODUCTION. . . . .	2
EQUIPMENT SUMMARY . . . . .	2, 3, & 4
CREW SUMMARY. . . . .	5
SUMMARY OF CONTRACTORS. . . . .	6
GENERAL ACCESSIBILITY:	
ACCESS. . . . .	7
TOPOGRAPHY. . . . .	7
LOGISTICS . . . . .	8
FIELD PROCEDURES:	
RECORDING . . . . .	9
SURVEY. . . . .	10
BULLDOZING. . . . .	10
SPREAD DIAGRAM . . . . .	INSIDE BACK COVER





## INTRODUCTION

The prospect area was divided into two parts. One part was located near Tatui Lake and directly west of Deer Pass Bay on Great Bear Lake. The other part was located approximately 20 miles to the south-west around the Whitefish River and about 30 miles north-west of Fort Franklin on Great Bear Lake.

The program consisted of approximately 140 miles of 600% CDP VIBROSEIS\* recording.

The survey was conducted by Western Geophysical Company of Canada, Ltd., Party V-12. Operations commenced December 4, 1975 and were completed February 10, 1975.

The field operation was under the direction of Mr. Ken Dobson (Party Manager). Supervision was by Mr. A. Leroy of BP Exploration Canada Limited, and by Mr. Gerry Schneider of Western Geophysical Company of Canada, Ltd.

Survey operations were conducted by Industrial Geodetic Surveys Ltd. of Calgary, Alberta. Survey operations were directed by Mr. Milan Martis.

Bulldozing operations were conducted by MacMillan Construction Ltd. of Peace River, Alberta. Bulldozing operations were directed by Mr. Doug Gardner.

Catering was provided by Western Geophysical Company, owners of the seismic camp.

\* - Registered trademark and service mark of Continental Oil Company

## STATISTICAL DATA

### DATES

Commencement of Operations . . . . .	December 4, 1974
Commencement of Recording. . . . .	December 12, 1974
Completion of Recording. . . . .	February 10, 1975
Completion of Operations . . . . .	February 10, 1975

### PRODUCTION

Total Days Operated. . . . .	61 days
Total Days Recording . . . . .	43 days
Number of Days Moving. . . . .	10 days
Number of Days Standby & Maintenance .	8 days
Number of Miles Shot . . . . .	139.617
Number of Profiles Recorded. . . . .	1576
Number of Profiles Per Day . . . . .	36.65
Number of Days Holiday (Xmas Break). .	10 days

### SUMMARY OF EQUIPMENT

#### TECHNICAL

Recording Instruments	DDS 888 COBA II with summing disc, correlator, computer and keyboard cassette
Vibrators	WABCO Y600D with Pelton Advance I instrumentation
Cables	1320' Length/Section 110' group interval
Seismometers	Mark L-10, 10 cycle

#### RECORDING CREW

1 - Recording Unit - RN 110  
3 - Dual Vibrator Units - RN 240  
2 - Cable Units - RN 110  
1 - Spare Cable Unit - Ford  $\frac{1}{2}$  Track  
1 - Survey Unit - RN 110  
1 - Party Manager Unit - Ford  $\frac{1}{2}$  Track  
1 - Supply Unit - RN 110  
1 - Snow Plow - Ardco Buggy  
1 - Shop Unit - RN 110

#### CAMP UNITS

1 - Incinerator/Storage  
1 - Kitchen/Diner  
1 - Utility  
1 - Office/Sleeper  
3 - Sleepers  
2 - Power/Shop Units  
2 - Fuel Sleighs, 3000 gallons each

#### BULLDOZING

2 - D6C Cats  
2 - D7F Cats  
2 - Fuel Sleighs, 3000 gallons each  
1 - Kitchen/Diner/Utility  
1 - Sleeper  
1 - Power Plant/Shop  
1 - Fuel Haul Unit, c/w living quarters and fuel storage

MISCELLANEOUS

- 15 - Motrac Radios - communication field camp to crew
- 3 - SSB Northern - communication field camp to N. Wells
- 1 - CDN Marconi VHF - communications field camp to N. Wells
- 1 - Non-directional aircraft beacon
- 1 - VHF - air to ground radio



## SUMMARY OF CREW COMPOSITION

### PERSONNEL

1 - Party Manager ( 1 - Man)

### SURVEY

2 - Surveyors ( 4 - Men)

2 - Rodmen

### RECORDING

1 - Observer (16 - Men)

1 - Junior Observer

4 - Vibrator Operators

1 - Head Line Man

2 - Line Truck Drivers

7 - Recording Helpers

### CATERING

1 - Cook ( 3 - Men)

1 - Cook's Helper

1 - Camp Attendant

### LINE CUTTING & CLEARING

1 - Foreman (10 - Men)

8 - Machine Operators

1 - Cook

### ADDITIONAL PERSONNEL

1 - Supplyman ( 4 - Men)

1 - Mechanic - All units

1 - Mechanic - Vibrators

1 - Office Clerk

SUMMARY OF CONTRACTORS

PRINCIPAL CONTRACTOR

Western Geophysical Company of Canada, Ltd.  
530 - 71 Avenue S.E.  
Calgary, Alberta

SUB-CONTRACTORS

MacMillan Construction Ltd.  
P.O. Box 1680  
Peace River, Alberta

Industrial Geodetic Surveys Ltd.  
#204, 703 - 14 Avenue S.W.  
Calgary, Alberta

Peace Air Ltd.  
P.O. Box 1357  
Peace River, Alberta

Gateway Aviation Ltd.  
No. 13 Hangar, Industrial Airport  
Edmonton, Alberta

## GENERAL ACCESSIBILITY

### ACCESS

Access to the BP prospect was made on existing trails from a staging area on Great Bear River near Mount St. Charles. Access was made through the Franklin Mountains, then north-eastward to the prospect area. Upon completion of the prospect V-12 moved to another prospect approximately 10 miles north of Fort Franklin on Great Bear Lake.

### TOPOGRAPHY

In the north-east portion of the prospect the main topographical features were Tatui Lake, Tuitatui Lake and Deer Pass Bay, part of Great Bear Lake. Drainage from the prospect area flowed into these lakes. In addition to these lakes hundreds of small lakes and ponds were scattered over the prospect area. High points were to the west (1200 feet above sea level) and the south-east (1800 feet above sea level). Lowest point of elevation was Deer Pass Bay (512 feet above sea level). The area was hilly with many small streams and a sparse cover of timber.

In the south-west portion of the prospect the main topographical feature is the Whitefish River. Drainage from much of the area flows into the Whitefish River. There are a few scattered lakes and a sparse cover of timber. The area is flat with marsh or swamp areas present. Elevation varies from 600 feet above sea level in the south to 1000 feet above sea level in the north.

## LOGISTICS

The party headquarters was in Norman Wells. Crew accommodation was a mobile camp located on the prospect. The supply point for the crew was Norman Wells, with a full time expeditor on duty at all times. A complete storage complex in Norman Wells was used for groceries and parts in transit from Calgary. The office in Norman Wells was equipped with a telephone and a telex for direct communication with Calgary. Communication Norman Wells to camp was maintained via single sideband radio and VHF radio telephone with radio contact often poor.

Most of the supplies and personnel were flown into Norman Wells via twice weekly flights with a chartered Hawker Sidley 748 aircraft. This charter flew between Calgary and Norman Wells every Tuesday and Friday and was shared by three Western crews. Additional supplies and personnel were sent on Pacific Western's regular flights.

Personnel, fuel and supplies were sent to and from the crew via aircraft. Aircraft used were a ski-equipped Cessna 185 for hauling personnel and supplies as well as scouting. Twin Otters and DC-3's were used for hauling fuel and supplies. DC-3's were used where strip length and ice thickness permitted, because of their lower cost. A twin engine Islander capable of carrying 2000+ lbs. was used for personnel and supplies. A twin engine Aztec was also used for personnel and supplies when required. Since no direct routes existed between Norman Wells and the prospect, aircraft proved to be the best means of supplying camp.

## FIELD PROCEDURES

### RECORDING

Format	SEG 'C' EPR
Sample Rate	4 milli-seconds
V.P. Interval	440 feet
Group Interval	110 feet
Seismometer Array	In line
Seismometer Per Group	18
Seismometer Spacing	18/220

All lines were recorded with Trace #1 to the north and east. Coverage of 600% was obtained with a 110 foot group interval with V.P.'s located at 440' intervals. Used were 18 geophones per trace spaced over 220' giving continuous overlapping of groups. Vibrators provided an energy source with a 10 second 64-14 linear down sweep. Total sweeps per V.P. were 16 sweeps with four vibrators or 12 sweeps with six vibrators. Vibrator drag used was 330' in the north-east portion of the prospect with nine groups dropped at the V.P. In the south-west portion of the prospect vibrator drag was 440' with 11 groups dropped at the V.P.

## SURVEY

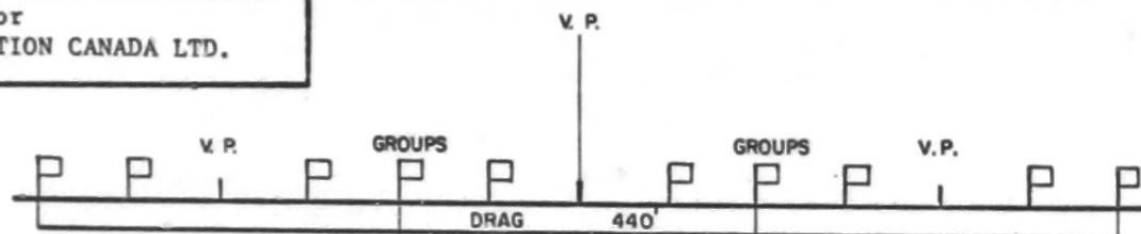
All lines were surveyed by Industrial Geodetic Surveys Ltd. of Calgary, Alberta. The survey instrument was a Wild T-16 equipped for taking star and sun shots. Lines were located using existing data and topographical features. Star shots and sun shots were also used for checking line location. The survey produced computer checked elevations and co-ordinates for each group as well as maps showing lines and V.P. locations.

V.P. locations and group locations were chained with a steel surveyor's chain and pin flags used to mark locations. Permit tags were placed at regular V.P. intervals.

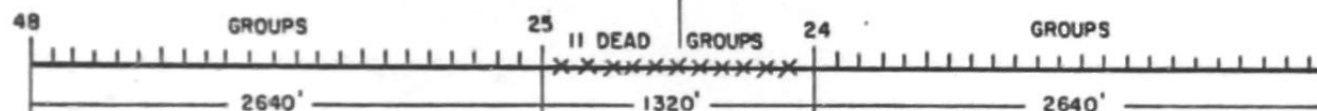
## BULLDOZING

Dozing was conducted by MacMillan Construction using four dozers, two caterpillar D7F's and two caterpillar D6C's. Program lines were cut with the assistance of the surveyors and topo maps. Program lines were cut in accordance with the Forestry Department's specifications and the assigned program. Lines were cut approximately 33 feet wide using half of the width to pile and walk down timber so as to meet Forestry requirements. The D7F cats were used to move camp as well as cutting line. One D6C was used for building airstrips and transfer of fuel between airstrip and camp. This D6C also assisted the line cats whenever required.

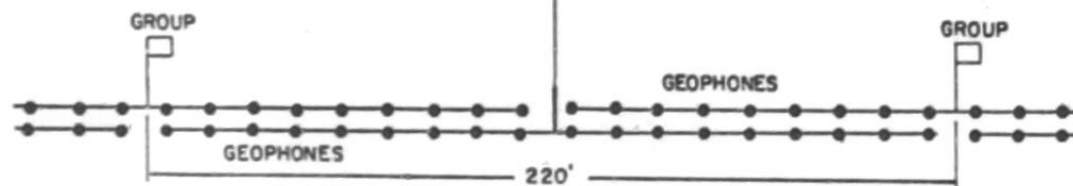
GREAT BEAR LAKE AREA S.W. PORTION  
For  
B.P. EXPLORATION CANADA LTD.



DRAG DIAGRAM



SPREAD CONFIGURATION

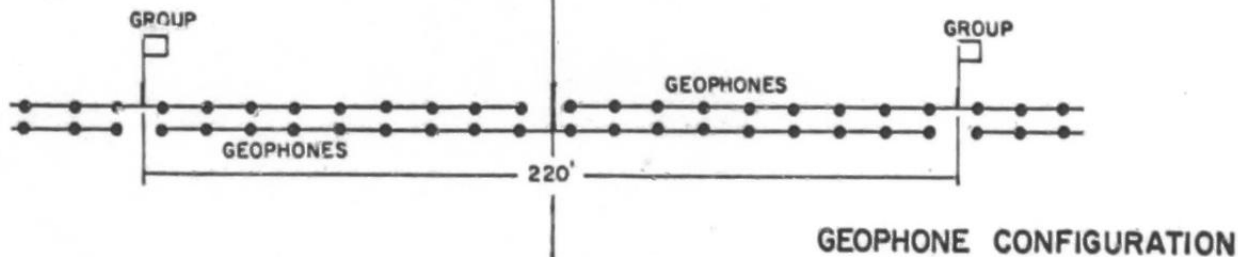
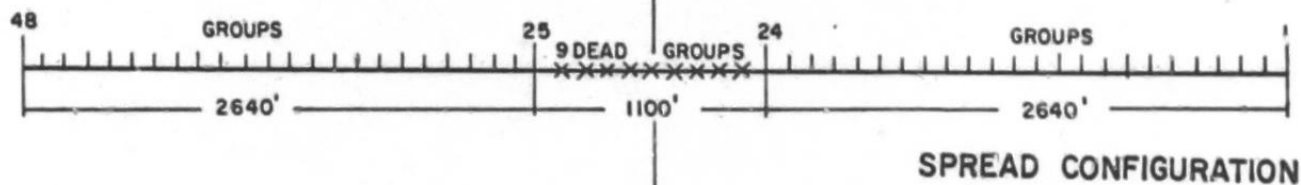
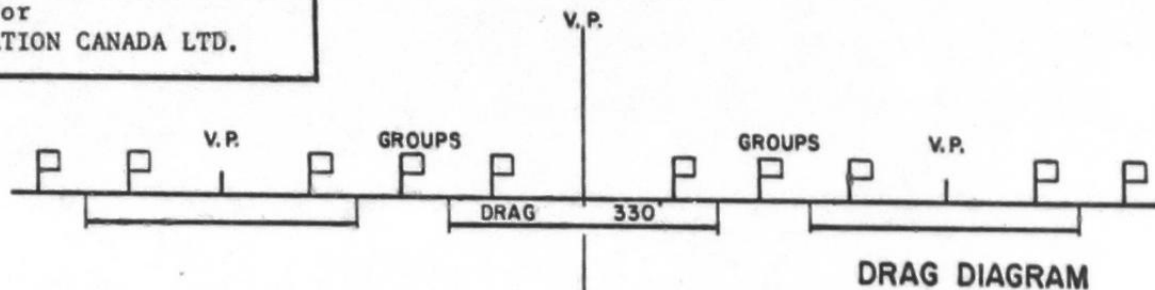


GEOPHONE CONFIGURATION

V.P. INTERVAL - 440'  
GROUP INTERVAL - 110'  
GEOPHONES PER TRACE - 18

TOTAL DRAG - 440'  
GEOPHONE SPACING 18/220'  
11 GROUP GAP - 660' OFFSET

GREAT BEAR LAKE AREA N.E. PORTION  
For  
B.P. EXPLORATION CANADA LTD.



V.P. INTERVAL - 440'  
GROUP INTERVAL - 110'  
GEOPHONES PER TRACE - 18

TOTAL DRAG - 330'  
GEOPHONE SPACING 18/220'  
9 GROUP GAP - 550' OFFSET



September 1975

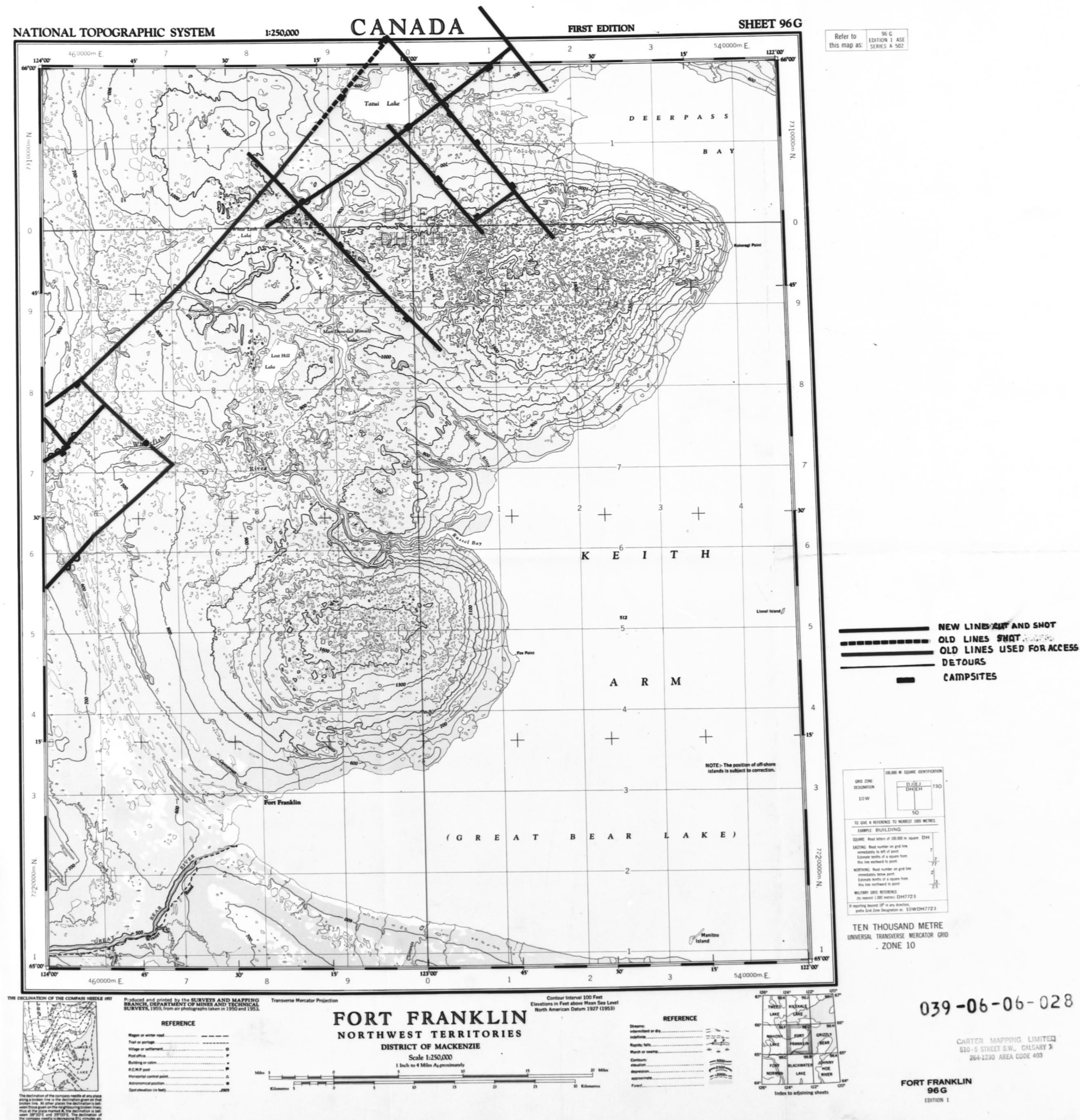
11X

MICROMAT

105 M.M.

WEST CANADIAN GRAPHIC INDUSTRIES LTD.  
80 - 5th Avenue S.W. CALGARY 1, ALBERTA  
Phone 263-2555

039-06-06-028





11x

FORT NORMAN  
SHEET 96 C