

Final Geophysical Report  
Reflection Seismic Survey

PEEL RIVER PROJECT, YUKON TERRITORY  
(Project No. 2-6-6-69-2)

Report of work performed on  
Permits Nos. 5672 to 5685 inclusive, and  
6295 during the work period  
February 16, 1969 to April 28, 1969.

Reflection Seismic program shot for  
Gulf Oil Canada Ltd.  
by  
Heiland Exploration Party No. 3

*R. A. Halvorsen*  
R. A. Halvorsen, Geophysicist  
Gulf Oil Canada Ltd.

Date: FEB 13 1970

## TABLE OF CONTENTS

### A: MAPS

The following maps are included with this report and are located in the attached expanding envelope:

Figure No. 1 - Project Location Map

Figure No. 2 - Composite Map - Unit Map 106-L  
Shot Point Locations and Elevations

Figure No. 3 - Composite Map - Unit Map 106-L  
Contours on Middle Devonian Horizon  
(Approximate Hume)

### B: STATISTICAL DATA

	<u>Page</u>
1. Dates .....	1
2. Production .....	1
3. Equipment .....	1
4. Personnel .....	2
5. Survey Procedures .....	2
6. Conditions .....	2
C: FIELD PROCEDURES .....	3
D: DATA PROCESSING .....	3
E: RESULTS AND INTERPRETATION .....	4
F: SUMMARY AND CONCLUSIONS .....	4



## B: STATISTICAL DATA

### 1. Dates of Operation:

- (a) Mobilization of vehicles, equipment - February 16, 1969
- (b) Recorders left base on March 3, 1969
- (c) Recording commenced on March 23, 1969
- (d) Recording completed on April 24, 1969
- (e) Vehicles, equipment released on April 28, 1969

### 2. Production:

Number of miles shot	-	99.25	
Number of shots taken	-	200	
Number of stations	-	188	shot points
Number of recording days	-	29	
Average daily production:			
(a) miles shot	-	3.42	
(b) stations shot	-	6.48	
Days lost due to weather conditions	-	Nil	
Days lost due to equipment failure	-	1	day
Days lost due to waiting on drills, cats, etc.	-	3	days

### 3. Equipment:

#### (a) Transport and Mounted Equipment-

7 Bombardier tracked units as follows:

- 1 Instrument carrier
- 2 Survey units
- 1 Shooting unit
- 2 Line laying units
- 1 Mechanics unit

- 1 Four wheel drive - Personnel carrier
- 2 Four wheel drive - Supply trucks
- 1 Four wheel drive - Shooting truck
- 3 Mayhew 500 Air Drills mounted on Nodwells

- 1 D-7 Caterpillar Bulldozer
- 1 D-6 Caterpillar Bulldozer

- 1 DC-3 Aircraft

(b) Recording Equipment-

Instrumentation-

Recorder - SIE PT 100

Tape System - PMR-20

Detectors - Electro-Tech EVS-2

Number of cables used - 12  
Length of each cable - 960 feet  
Number of detector strings - 72  
Detector spacing - 15 feet  
Distance between group centres- 160 feet

4. Personnel:

1 Party Manager  
2 Surveyors  
2 Rodmen  
1 Observer  
1 Assistant Observer  
1 Shooter  
2 Line truck drivers  
3 Recording helpers  
2 Field computers  
1 Mechanic  
3 Drillers  
3 Drill helpers  
6 Bulldozer Operators  
1 Supervisor of Bulldozing Operations  
3 Catering Staff

5. Survey Procedures:

(a) Survey Equipment -

Wild T-1A Theodolite

(b) Method used to locate lines and stations -

- Compass bearings were not used.
- Line bearings determined from star shots.
- Stations located by latitude and departure.

6. Conditions:

Recording quality was affected by permafrost and frequent high winds. The usual winter conditions presented no particular problems to the recording crew.



Difficult terrain, however, restricted the movement of vehicles. The project area is deeply cut by a dendritic drainage pattern. Steep stream banks occasionally required that control lines be relocated or dropped from the original program.

Air service was occasionally restricted due to fog conditions or ice crystals.

Radio reception was rated poor to good.

#### C: FIELD PROCEDURES

The crew began shooting with recording parameters designated to obtain a 300% Common Depth Point coverage. However, due to drilling problems a 100% coverage program was tried. Approximately 16 miles of 300% data was obtained, the balance of the control is 100% coverage control.

Shot point spacing for the 300% data was 1/4 mile (1,280 feet), shot point spacing for the 100% data was 2/3 mile. The average shot hole depth was 40 feet.

Dynamite charges varied considerably. Single hole shots ranged from 20 to 50 pounds. Multiple holes in a 3 hole pattern were loaded with 10 to 15 pounds each, providing a total of 30 to 45 pounds per shot.

#### D: DATA PROCESSING

The basic field data was shipped from the field office to the Calgary, Alberta processing centre of Gulf Canada. Weathering and elevation corrections and velocity functions were computed and the data was presented in record section form. Typical processing parameters are listed below:

Ve:	10,000 ft/sec.
Datum:	1,500 ft. AMSL
Reflection:	300% or 100%
Structural sections	
Gain:	10-2
AVC:	1-1
Filter:	49-4
Mix:	25-50-25
Plot:	Electrical



#### E: RESULTS AND INTERPRETATION

Data quality varied from only fair to poor. The mapped horizon was identified as the Hume formation. This identification was made from an evaluation of the Shell Peel River Y. T. 1-21 well located at  $66^{\circ} 10' 36.5''$  N. Latitude and  $134^{\circ} 18' 52''$  W. Longitude.

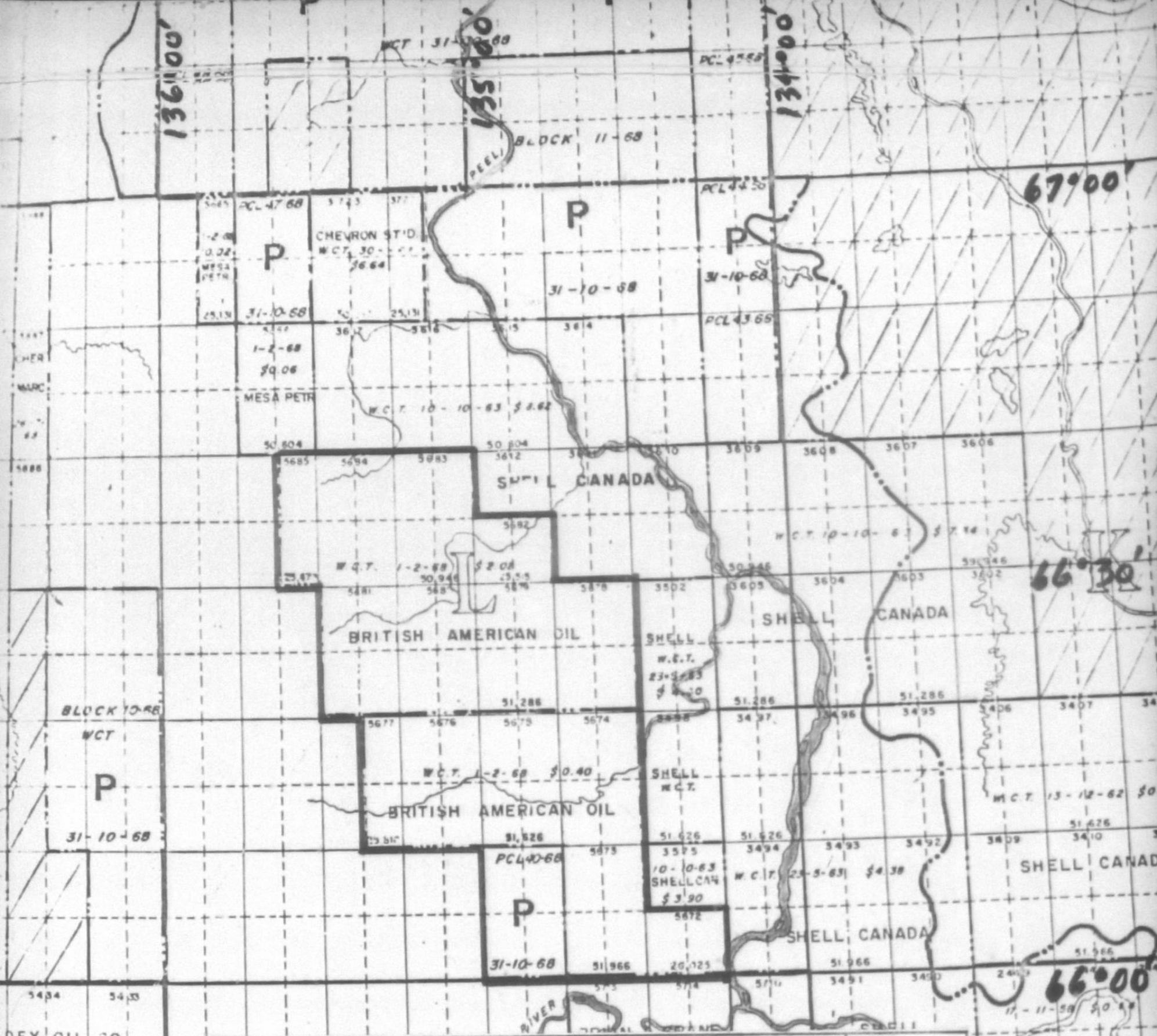
The enclosed horizon map is distinguished by a strong fault zone of NW-SE alignment which extends across the area of new control. Changes of reflection character associated with this fault, combined with the presence of multiple reflections and the effects of extreme elevation changes, complicated the correlation of the record sections. Since the geologic interpretation suggests that the area was block faulted upward to the west, the interpreter was guided accordingly.

The prospective horizons on this project are the Middle Devonian "Gossage" and the Siluro-Ordovician "Ronning". Geological evidence suggests that the Gossage may not be present at the fault zone. The Ronning, however, provides a good prospect in both the up-and-downthrown areas. Since the sedimentary beds are dipping to the north, prospective areas exist to the northwest of the fault zone and in the two high features contoured to the west of Line No. 1.

#### F: SUMMARY AND CONCLUSIONS

Additional data, obtained by trade from Shell Canada, is plotted on the enclosed maps (solid, dark shot points). This control is being integrated with the Gulf data and a revised horizon map will be issued shortly.





GULF OIL CANADA LIMITED  
CALGARY, ALBERTA

NORTHERN DIVISION  
EXPLORATION

### Final Geophysical Report

PEEL RIVER PROJECT, N. W. T.  
(Project No. 2-6-6-69-2)  
Project Location Map

OUTLINE OF PROJECT AREA

Scale: 1 inch = 8 miles

By:

R. A. Halvorsen  
R. A. Halvorsen, Geophysicist  
Northern Division Exploration

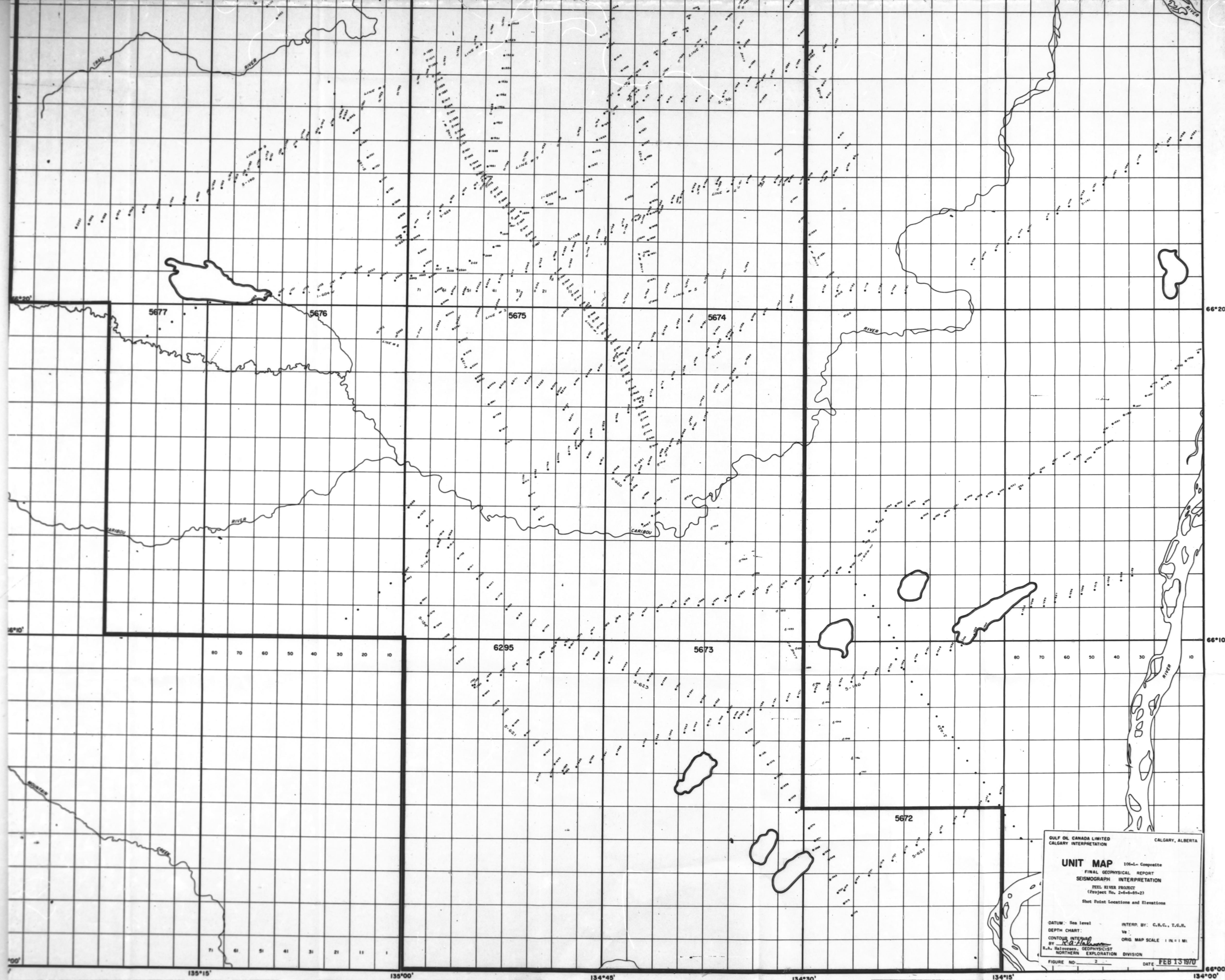
Date:

FEB 13 1970

Figure No.

1

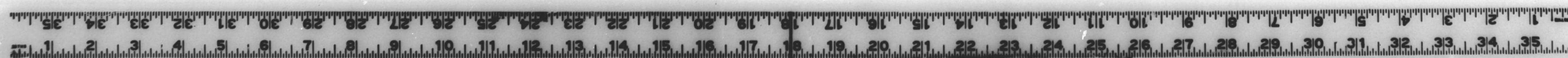
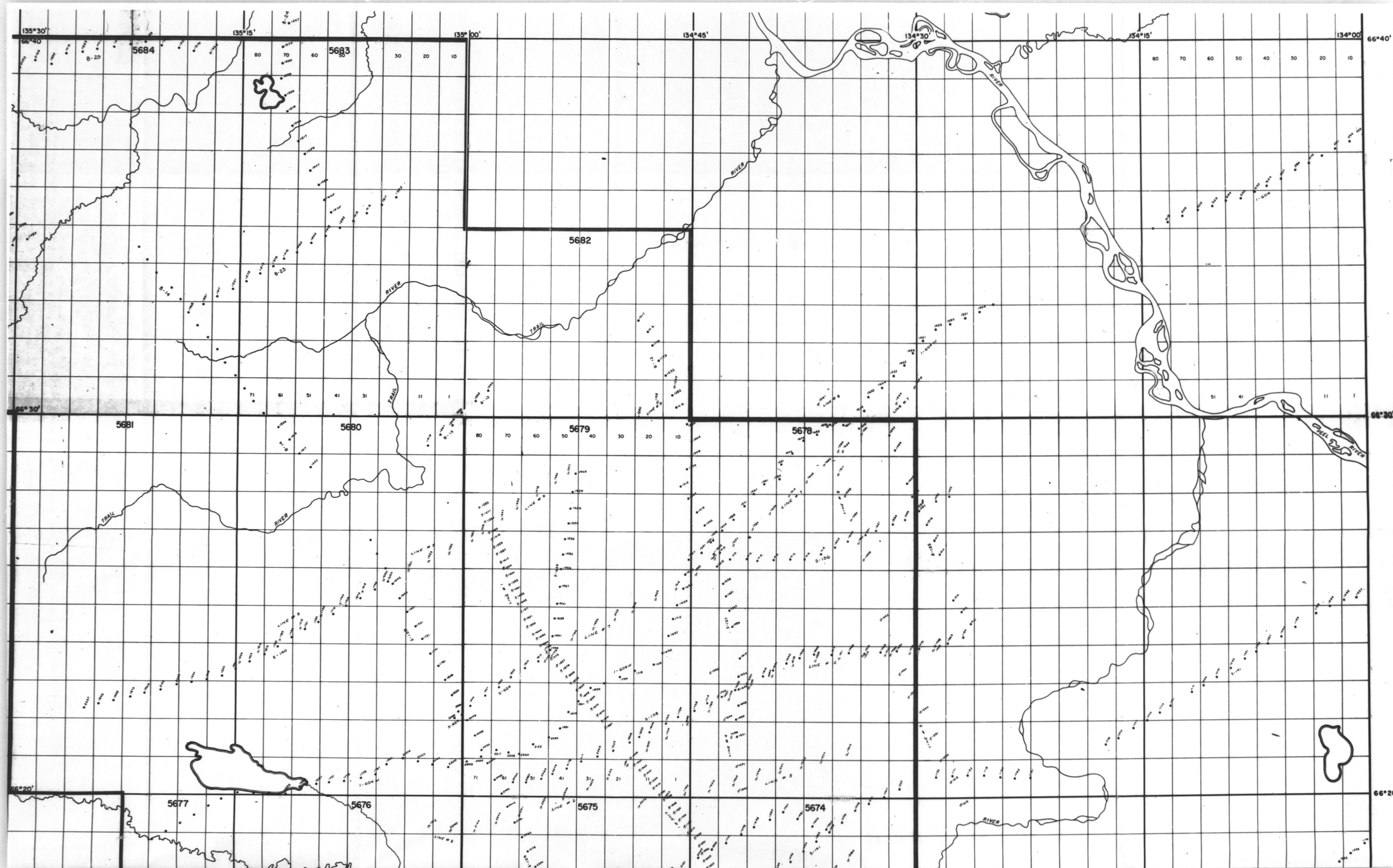




30x

West Canadian Graphic Industries Ltd.

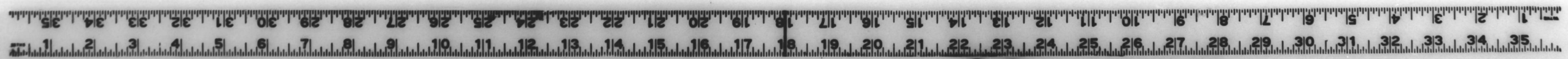
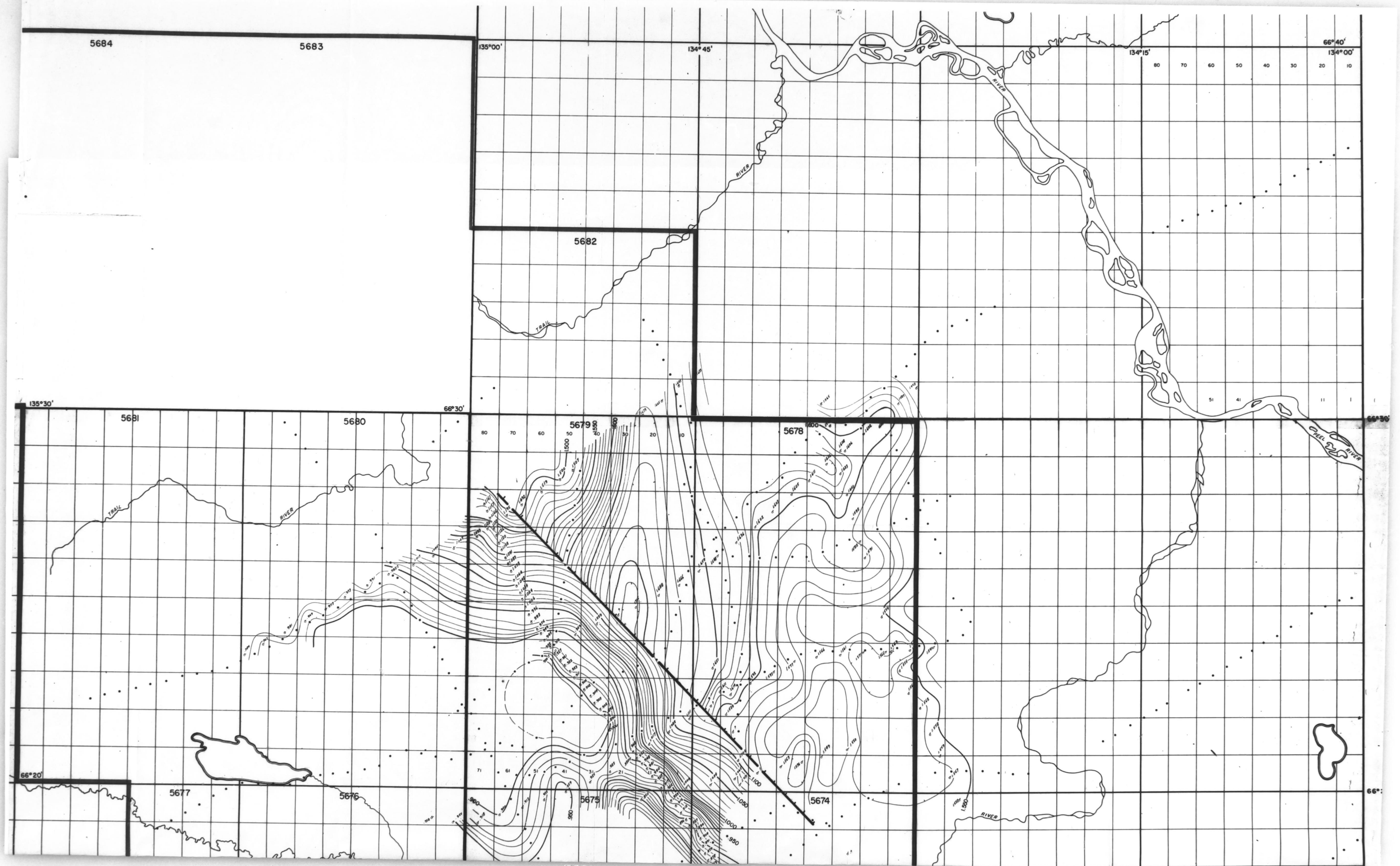




30x

West Canadian Graphic Industries Ltd.

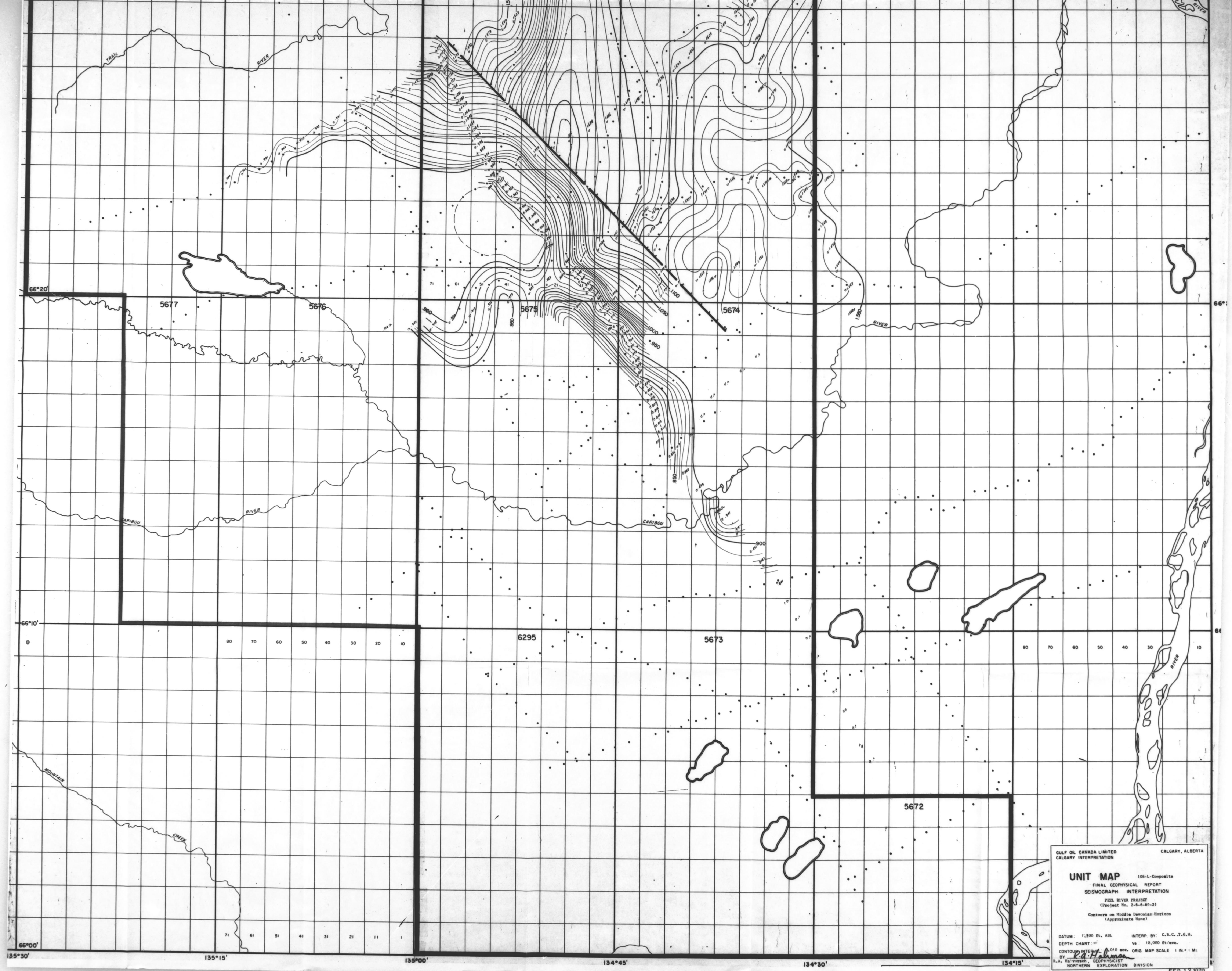




30x

West Canadian Graphic Industries Ltd.





GULF OIL CANADA LIMITED  
CALGARY, ALBERTA

**UNIT MAP** 105-L-Composite  
FINAL GEOPHYSICAL REPORT  
SEISMOGRAPH INTERPRETATION  
PEEL RIVER PROJECT  
(Project No. 2-6-6-67-2)  
Contours on Middle Devonian Horizon  
(Approximate Name)

DATUM: 1,500 FT. ASL INTERP. BY: C.B.C.T.G.M.  
DEPTH CHART: 10,000 FT. SCALE  
BY: *E. J. H. H. H.*  
NORTHERN EXPLORATION DIVISION  
FIGURE NO. 3 DATE FEB 13 1970



30x

West Canadian Graphic Industries Ltd.