

REFLECTION SEISMIC RE-INTERPRETATION
PROGRAM - PEEL-ANDERSON AREA N.W.T.
and YUKON

Project Numbers

7-6-6-69-6

Dec. 15/71

7-6-7-69-6
MAPS I-46

R.O. Grieve

IMPERIAL OIL ENTERPRISES LTD.
PRODUCING DEPARTMENT - WESTERN REGION

Abstracted for
Geo-Science Data Index

REFLECTION SEISMIC RE-INTERPRETATION PROGRAM
PEEL-ANDERSON AREA N.W.T. and YUKON

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By

R.O. Grieve

December 15, 1971

NORTHERN EXPLORATION DISTRICT
EDMONTON, ALBERTA

CONTENTS

	<u>Page</u>
INTRODUCTION	1
INDEX MAP	2
LIST OF SEISMIC MAPS	3
DESCRIPTION OF MAPS	5
SUMMARY	8

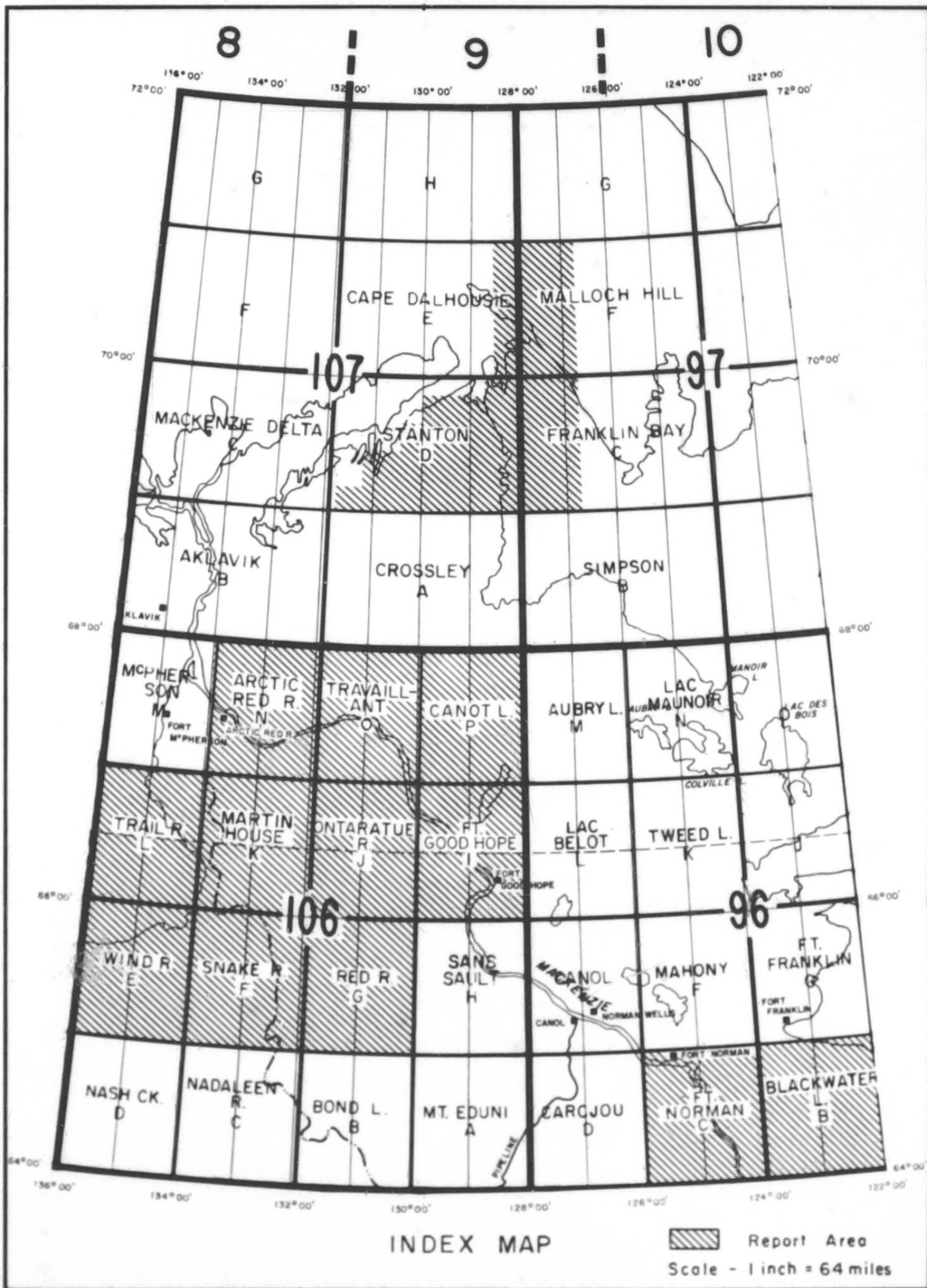
INTRODUCTION

This is a report covering re-interpretation of some old Imperial Oil Enterprises Ltd seismic data and the interpretation of seismic data acquired in the recent past by the Company by trade or purchase.

Some of the seismic data were re-processed by the Company's Geophysical Data Processing Group in Edmonton.

The Index Map (Page 2) shows the areas for which seismic maps are included in this report.

The discussion of the seismic maps is in general terms but the maps themselves are copies of the Company's operational maps and therefore show all pertinent details.



LIST OF SEISMIC MAPS

<u>Map No.</u>	<u>N.T.S. Area</u>	<u>Type of Map</u>
Map 1	107E, 97 F Composite	Shot Point Locations and Numbers
Map 2	107D, 97C Composite	Shot Point Locations and Numbers
Map 3	106N	Shot Point Locations and Numbers
Map 4	106O	Shot Point Locations and Numbers
Map 5	106P	Shot Point Locations and Numbers
Map 6	106K	Shot Point Locations and Numbers
Map 7	106J	Shot Point Locations and Numbers
Map 8	106I	Shot Point Locations and Numbers
Map 9	106L	Shot Point Locations and Numbers
Map 10	106E	Shot Point Locations and Numbers
Map 11	106F	Shot Point Locations and Numbers
Map 12	106G	Shot Point Locations and Numbers
Map 13	96C	Shot Point Locations and Numbers
Map 14	96B	Shot Point Locations and Numbers
Map 15	107B, 97F Composite	Structure - Hume-Bear Rock
Map 16	97F	Isochron - Canol to Hume
Map 17	97C, 107D Composite	Structure - Hume-Bear Rock
Map 18	97C, 107D Composite	Isochron - Canol to Hume
Map 19	106N	Structure - Bear Rock
Map 20	106N	Isochron - Bear Rock to Cambrian Shale
Map 21	106O	Structure - Bear Rock
Map 22	106O	Structure - Cambrian
Map 23	106O	Isochron - Bear Rock to Cambrian Shale

<u>Map No.</u>	<u>N.T.S. Area</u>	<u>Type of Map</u>
Map 24	1060	Isochron - Cambrian to Proterozoic
Map 25	106P	Structure - Cambrian
Map 26	106P	Isochron - Cambrian to Proterozoic
Map 27	106K	Structure - Bear Rock
Map 28	106K	Structure - Hume
Map 29	106K	Isochron - Canol to Hume
Map 30	106J	Structure - Hume
Map 31	106J	Isochron - Canol to Hume
Map 32	106J	Isochron - Bear Rock to Cambrian Shale
Map 33	106I	Structure - Hume
Map 34	106I	Structure - Cambrian
Map 35	106I	Isochron - Cambrian to Proterozoic
Map 36	106L	Structure - Hume
Map 37	106E	Structure - Bear Rock
Map 38	106E	Isochron - Bear Rock to Base Ronning
Map 39	106F	Structure - Bear Rock
Map 40	106F	Isochron - Bear Rock to Base Ronning
Map 41	106G	Structure - Bear Rock
Map 42	106G	Isochron - Bear Rock to Base Ronning
Map 43	96C	Structure - Hume-Bear Rock
Map 44	96C	Structure - Proterozoic
Map 45	96B	Structure - Hume-Bear Rock
Map 46	96B	Structure - Proterozoic

DESCRIPTION OF MAPS

Scale:

Most of the maps are on a scale of 1:125,000. The rest are on a scale of 1 inch equals two miles. The two scales are very nearly the same.

Structure Maps:

All of the structure maps are in time, there being insufficient velocity control to warrant a conversion to depth. Most of the structure maps are on the Hume - Bear Rock reflection because over most of the area this reflection has high amplitude, is readily correlated and is geologically meaningful.

In the northern part of the area (Maps 15 and 17) the strike is northeast-southwest with minor complications due to faulting. Further south in the Arctic Red River-Canot Lake area (Maps 21, 22 and 25) the strike has changed to north-south and some large anomalous structural highs are present.

Further south, the north-south strike in the Martin House area (Maps 27 and 28) changes to northwest-southeast in the Ontaratue River area (Map 30). Also, on Map 30 there are several indications that deep low areas are present. The control is too sparse to determine the size and shape of these anomalous lows. Until more definitive seismic data and/or well control becomes available any interpretation regarding the origin of these low areas would be extremely speculative.

The effect of the forces which resulted in the Richardson Mountains shows up in the map of the Trail River area (Map 36). The strike is roughly north-south and parallel to the Richardsons. The structural picture is complicated by faulting.

In the Snake and Red River areas (Maps 39 and 41) the strike is approximately east-west paralleling the MacKenzie Mountain Front. In that area there are several major anticlinal features. Although the general rule is that faults occur on one limb of the anticline (parallel to the anticlinal axis) there is at least one major anticline which appears to be unfaulted.

The structure in the Fort Norman area (Maps 43-46) is complicated by faulting but the general strike is north-south.

Isochron Maps:

a) Canol to Hume Isochron Maps - In the northern part of the area, Maps 16 and 18 (Canol to Hume Isochron) show that the trend of the western-side of a Hare Indian shale bank is approximately northeast-southwest. Further south, in the Ontonagon River area (Map 31) the same isochron interval was mapped and the trend of the west-edge of a Hare Indian shale mass there is north-south. It should be noted that although all known Kee Scarp reefs (e.g., Norman Wells) are located on thick Hare Indian shale banks, there is a possibility that post-Hume reefs could grow, under special conditions, off Hare Indian highs.

On Maps 29 and 31 in the Ontaratue River area, there is an interesting anomaly. It is a Canol-to-Hume isochron thick which is located west of the Hare Indian shale bank previously mentioned. This anomaly appears to be isolated. Unless a complex deposition and erosion situation is postulated for the area around this anomaly, the anomaly would almost have to be partly reefal in origin. Depending on the nature of the material within the "build-up", it could be prospective.

b) Bear Rock to Cambrian Shale Isochron Maps - In the Arctic Red River-Travaillant Lake-Ontaratue River areas (Maps 20, 23 and 32) this interval changes substantially and there are many anomalies. The anomalies are very pronounced isochron thicks and thins which do not seem to form any trend. At present there is no satisfactory explanation for their origin or nature. More information, chiefly well control, will be necessary before these features are understood. Part of the difficulty may result from deep multiple reflections producing confusing seismic sections. If multiples are in fact a big problem, the acquisition of multi-fold reflection data may help solve the interpretation.

c) Cambrian to Proterozoic Isochron Maps - On Maps 24, 26, and 35, in the Travaillant Lake-Canot Lake-Fort Good Hope area, this isochron interval shows that some large low to moderately high relief isochron thins exist. Some of these anomalies cover large areas and may be prospective. They probably represent areas which

were gently folded during early Cambrian time and along which additional minor folding occurred at various later times. Part of the complexity of the situation may be due to different fold directions causing interference effects.

d) Bear Rock to Base Ronning Isochron Maps - On Maps 38, 40, and 42, in the Wind River-Snake River-Red River area, this isochron interval indicates that the anticlines in this area may have formed close to pre-existing gentle folds. That is, although the obvious folding occurred prior to and during Cretaceous time, the isochron maps indicate that parallel highs may have existed during Bear Rock and late Ronning time.

SUMMARY

The seismic maps which are part of this report show that there are a number of anomalies, in the report area, which may be prospective. Some of the largest features have not yet been drilled. Although some of these anomalous situations are not well understood, the area is still in the primary exploration stage and as more data becomes available the important questions regarding the timing and causes of these features will be answered.


R. O. Grieve - Exploration Manager
Northern Exploration District

December 15, 1971

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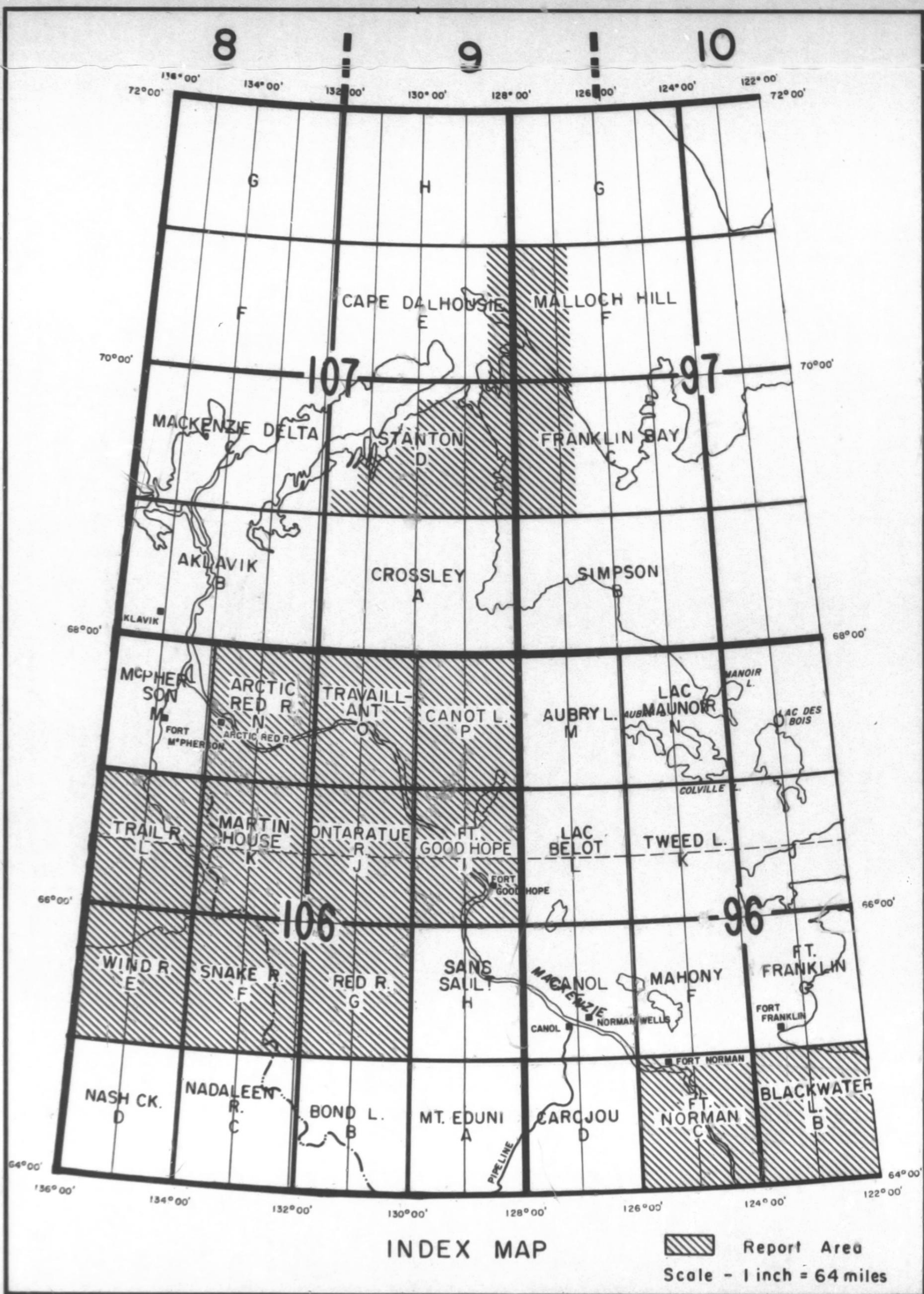
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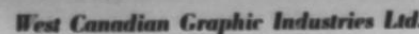
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Northern Exploration District



IMPERIAL OIL LIMITED
EDMONTON - ALBERTA

ZONE 9

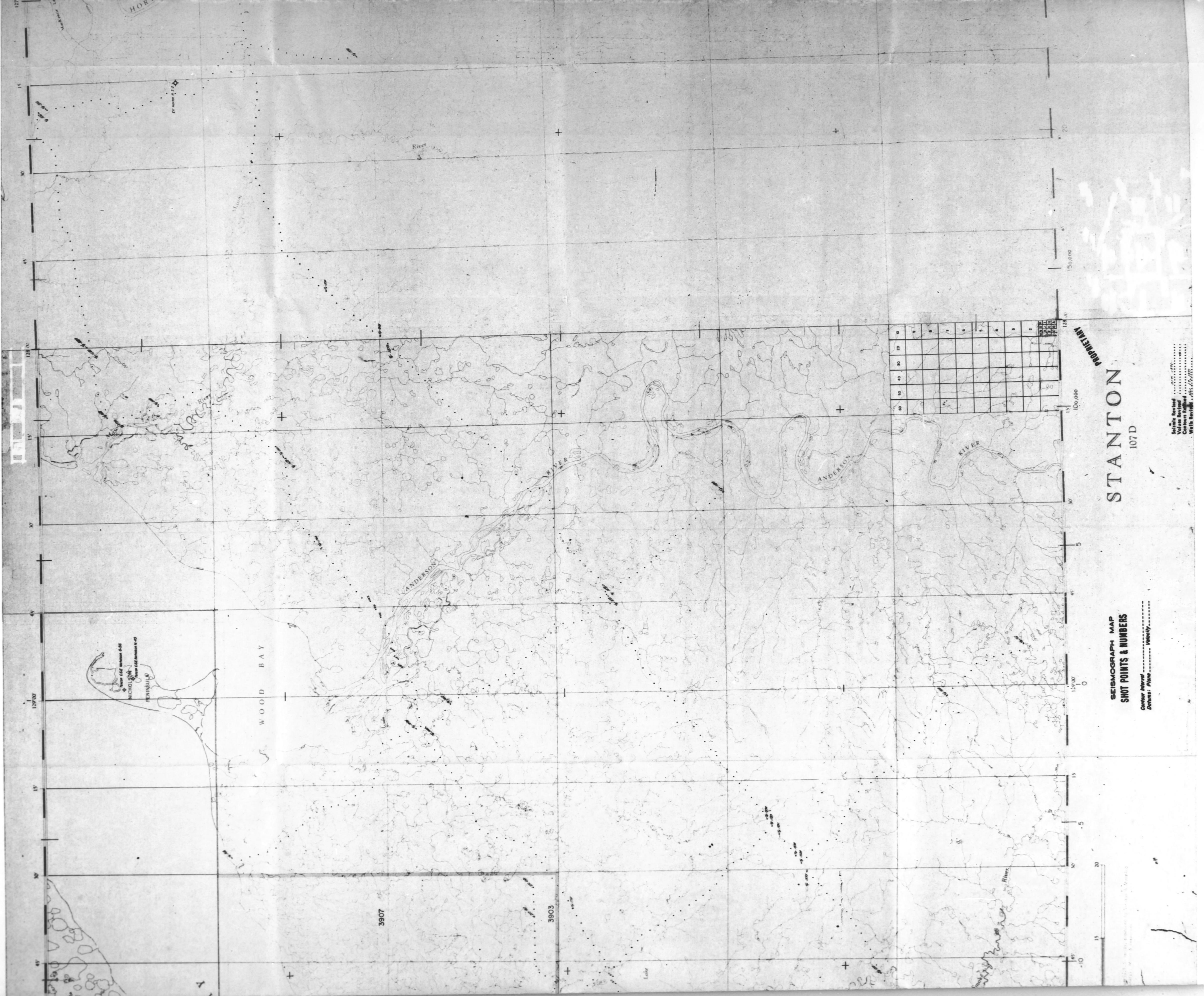


Scale: 1:50,000
Miles 0 5 10 15 20 25 30 35
N
11°N
12°N
13°N
107°W
108°W
109°W

Imperial Oil Limited
Edmonton - Alberta
Zone 9
Scale: 1:50,000
Miles 0 5 10 15 20 25 30 35
N
11°N
12°N
13°N
107°W
108°W
109°W

30x

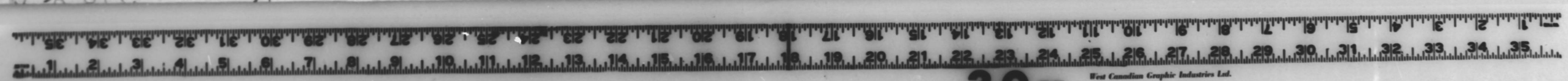
West Canadian Graphic Industries Ltd.



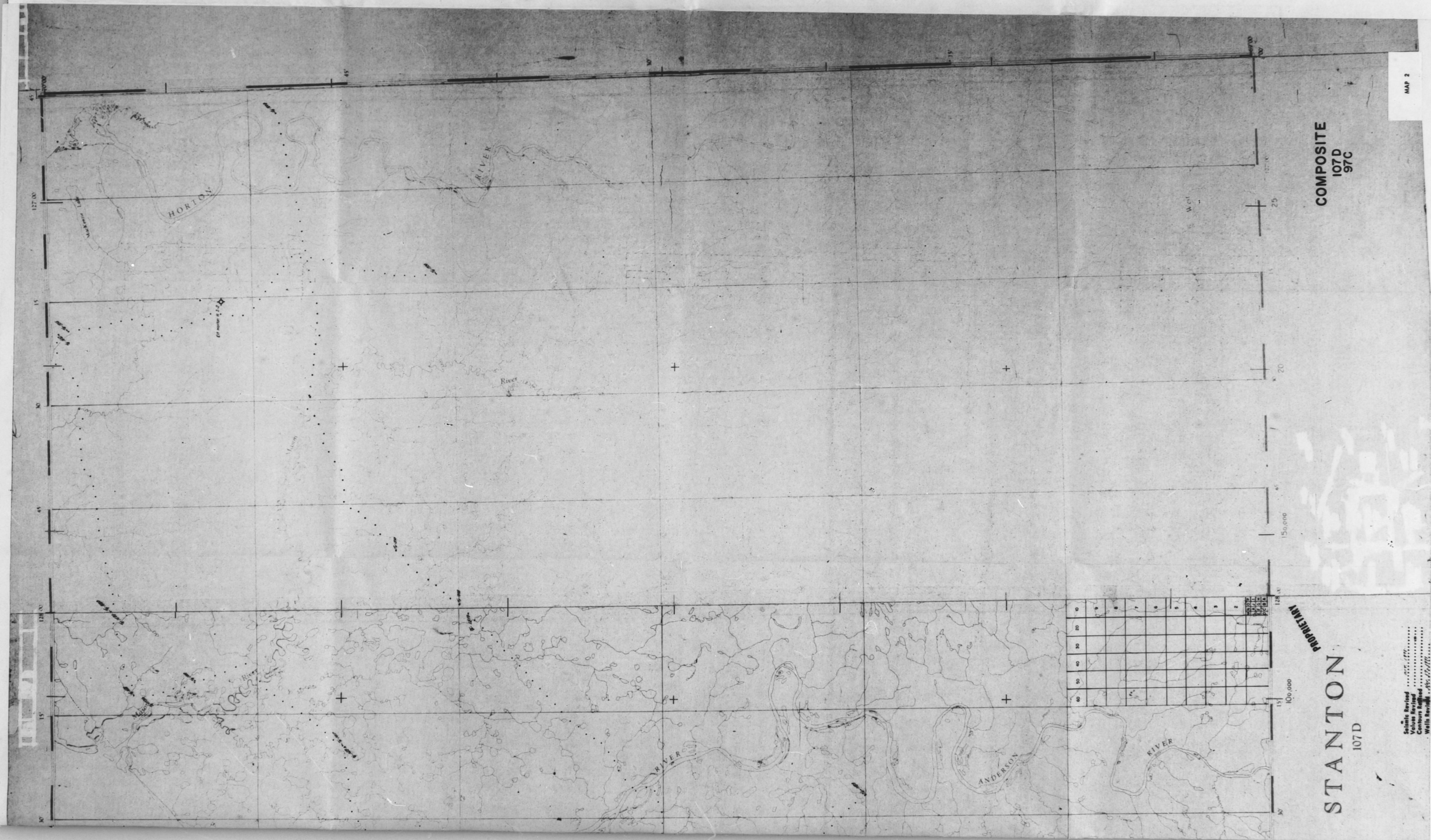
STANTON
107 D

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Seismic Points
Shot Points
Numbers
Contours
Vegetation
Water



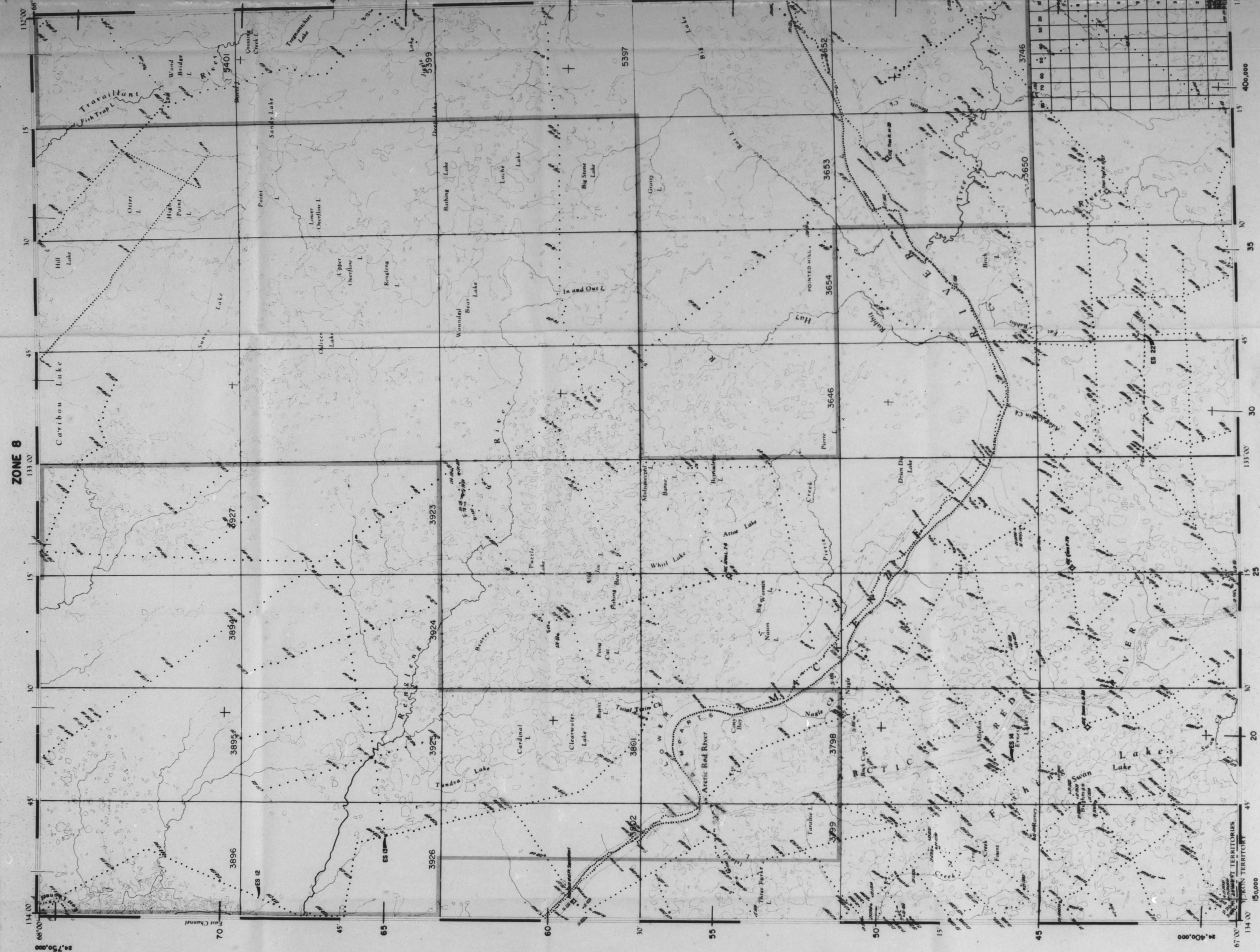
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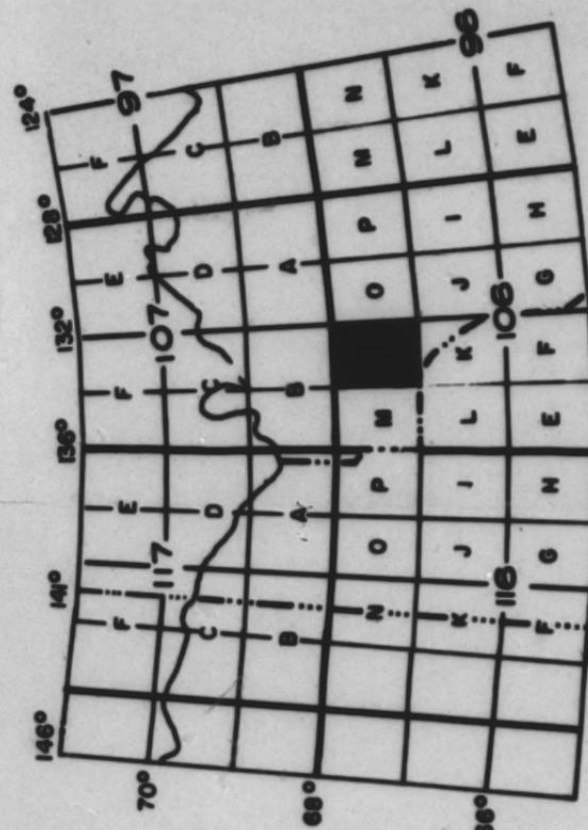
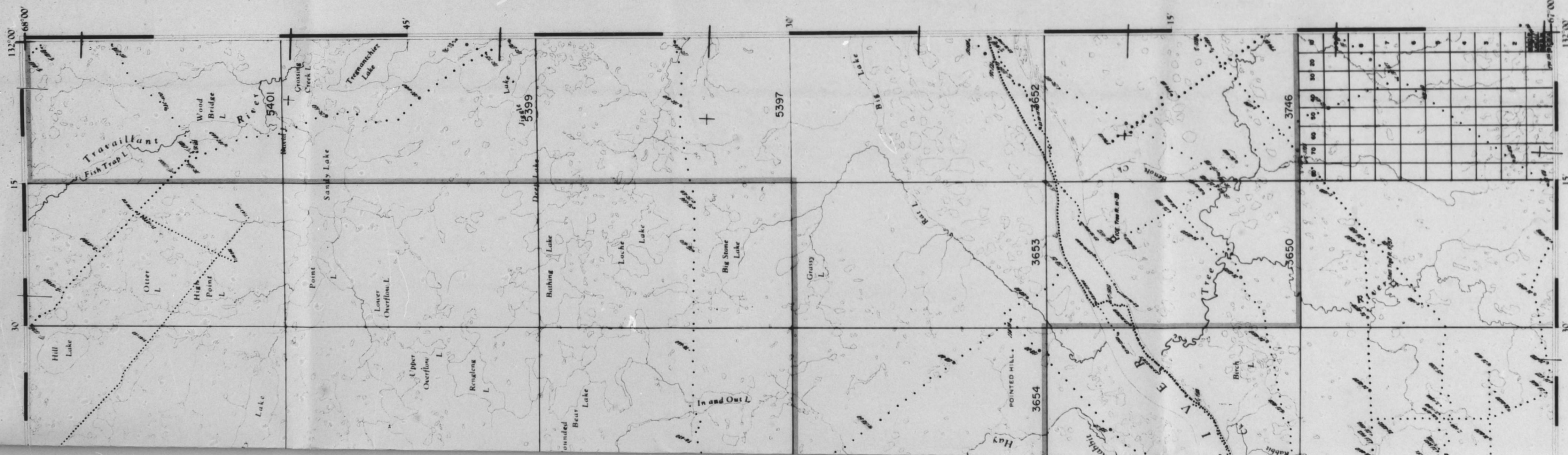
Basic map reproduced from N.T.S. series, produced by Surveys & Mapping
Branch, Department of Energy, Mines & Technical Surveys.



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Gp 106 N LN



50,000 ft. Coordinates, Terrestrial Plane Coordinate System.
Transverse Mercator Projection, 2 Zone.

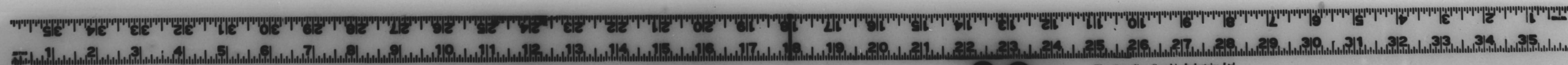
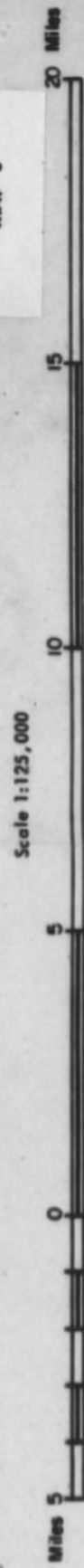
SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Contour Interval: 100 ft.
Datum: Mean Sea Level
Velocity: 1.5 km/sec

Seismic Station: 1975-1976
Contour Interval: 100 ft.
Datum: Mean Sea Level
Velocity: 1.5 km/sec

ARCTIC RED RIVER 106 N

MAP 3



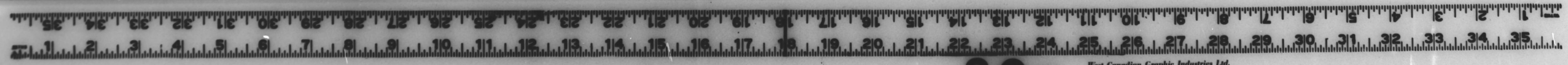
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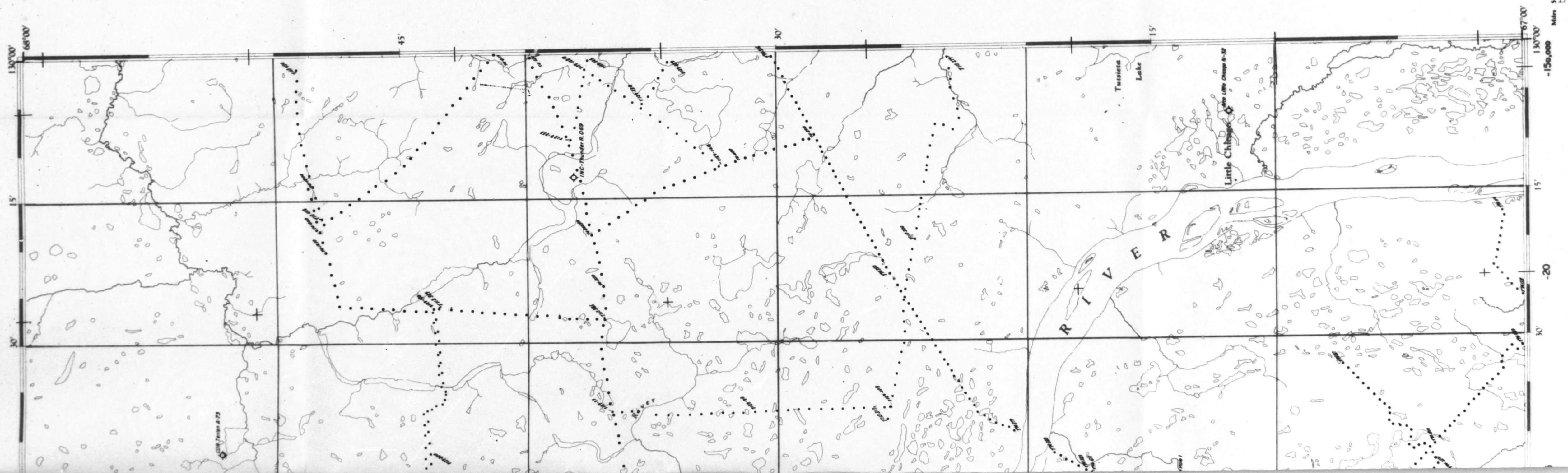
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Gp 106 0 L N



50,000 ft. Coordinates, Transverse Mercator Projection, 6° Zone.

Seismic Revised - Apr. 1970
Values Revised
Contours Revised
Wells Revised

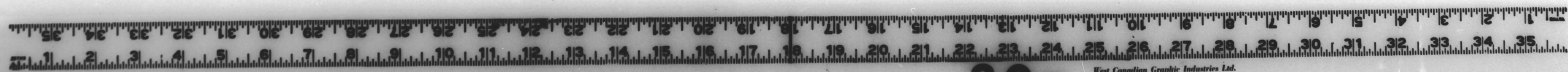
SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Control Interval
Datum: Mean
Velocity

TRAVAILLANT LAKE 106-0

PROPRIETARY

Scale 1:125,000
MAP 4
20 Miles



30x

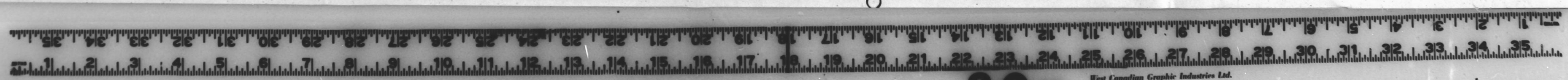
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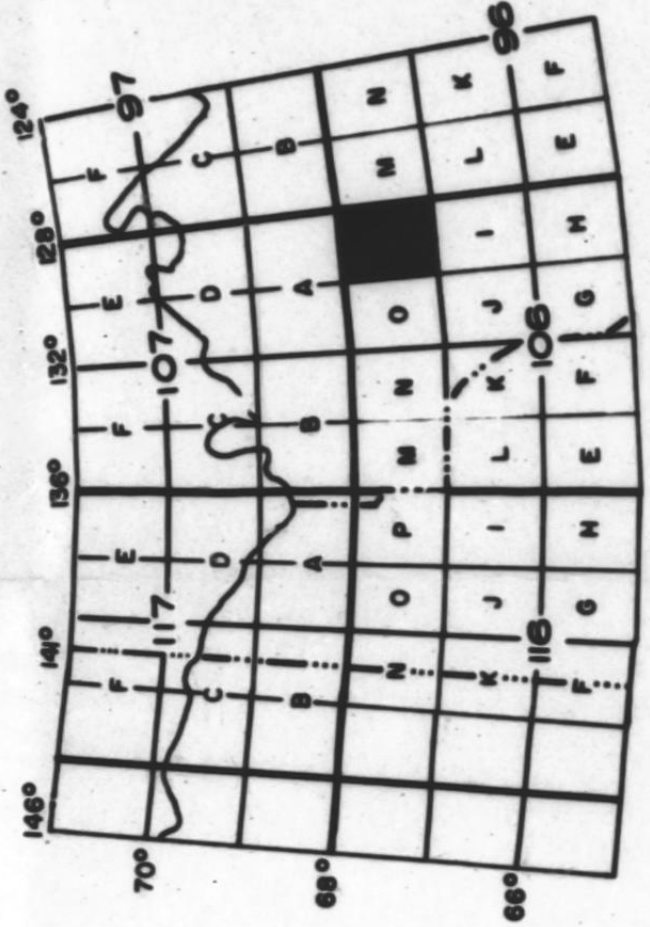
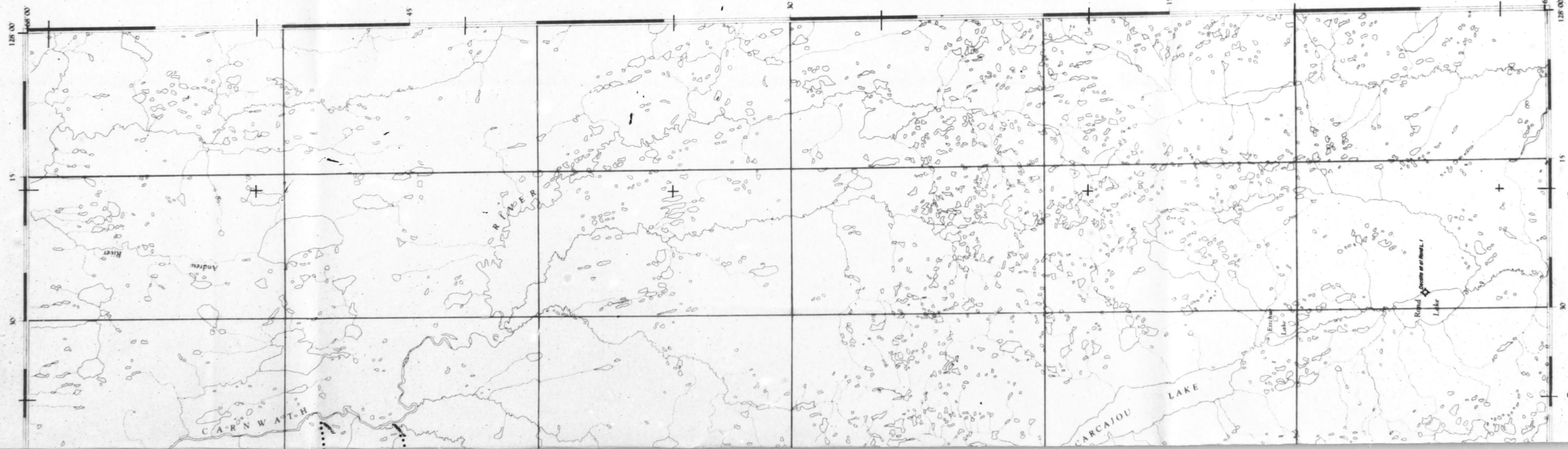
ZONE 9



Basic map reproduced from N.T.S. writer, produced by Surveys & Mapping
Branch, Department of Energy, Mines & Resources.



Gp 106 P N



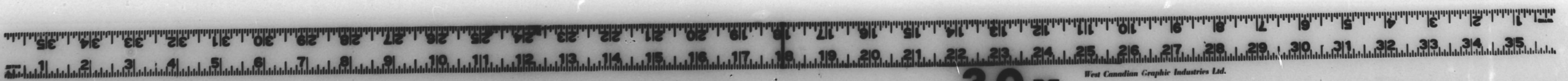
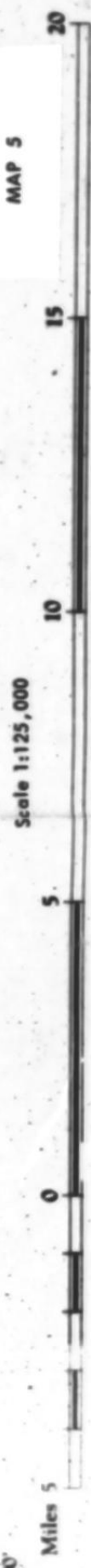
10,000 ft. Contours, Tentative Plane Coordinate System.
Transverse Mercator Projection, 4° Zone.

Scale Revised 1/10,000
Values Revised
Contours Revised
Wells Revised 1/1,000

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Center: 106° 00' W, 50° 00' N
Datum: 1950
Scale: 1:125,000

CANOT LAKE
106 P



30x

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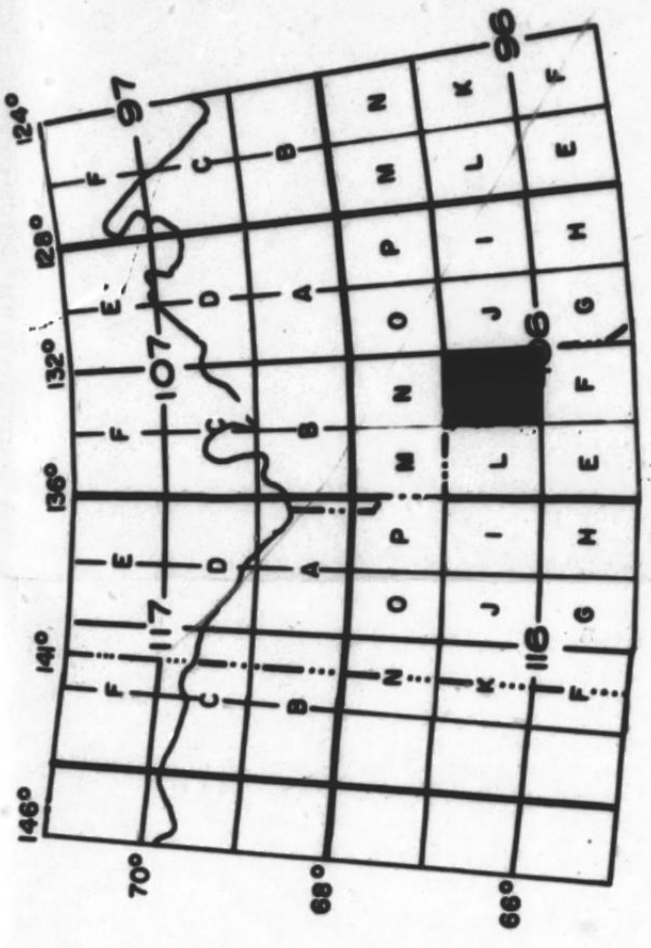
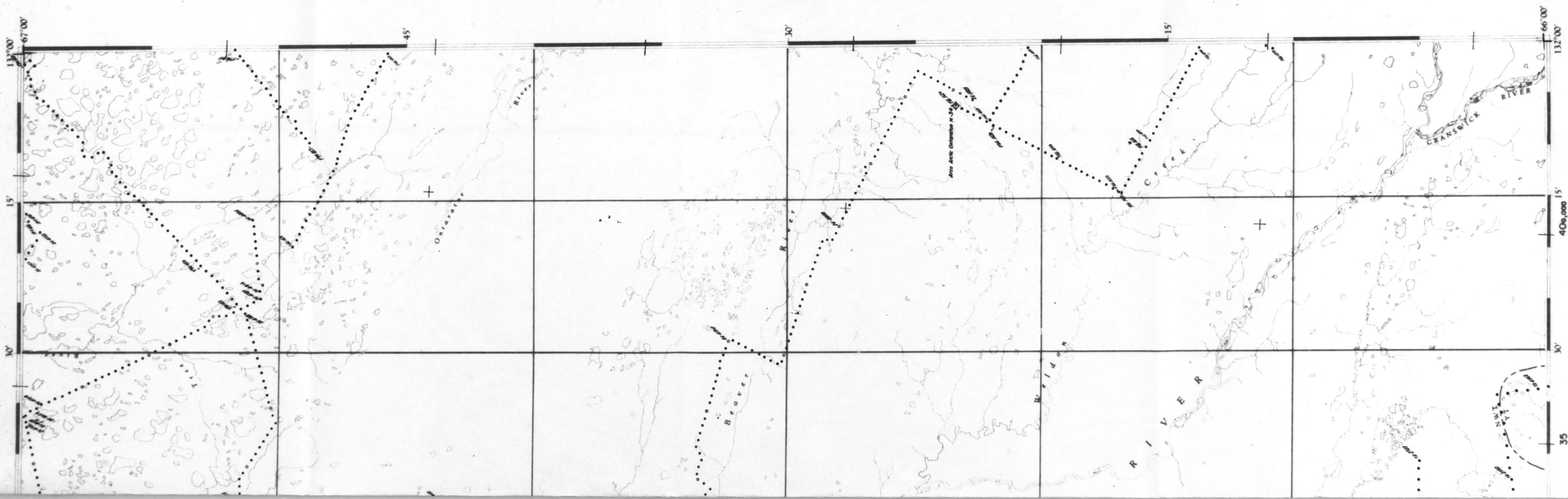
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EDMONTON - ALBERTA

ZONE 8



Basic map reproduced from N.T.S. series, produced by Surveys & Mapping
Branch, Department of Energy, Mines & Resources.

Gp 106 K N



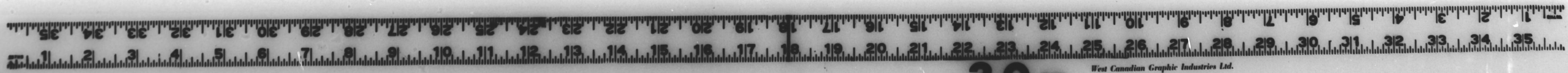
50,000 ft. Coordinates, Transverse Mercator Projection, 6° Zones.

Seismic Revised - 1965-1970
Values Revised
Contours Revised
Wells Revised

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS
Contours: Depth
Contours: Velocity

MARTIN HOUSE
106 K

Scale 1:125,000
Miles 0 5 10 15 20
Kilometers 0 5 10 15 20
MAP 6



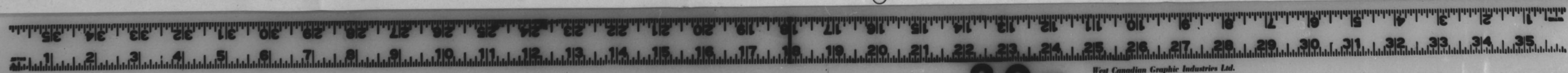
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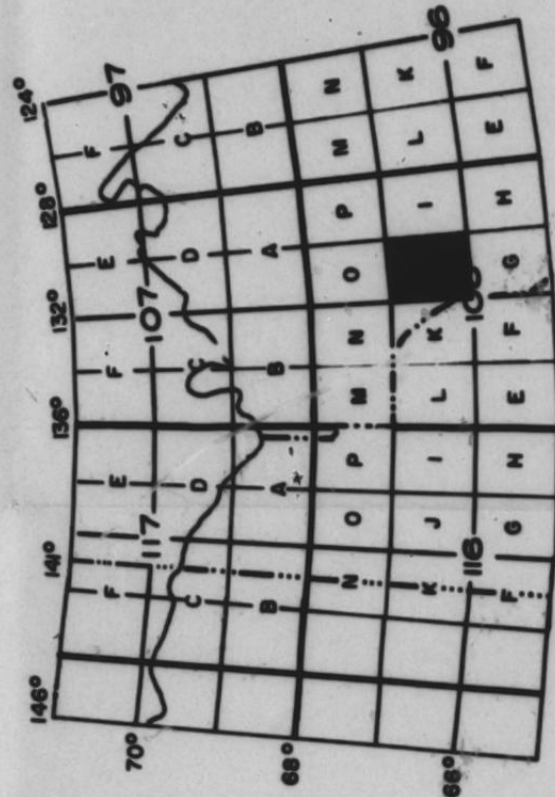
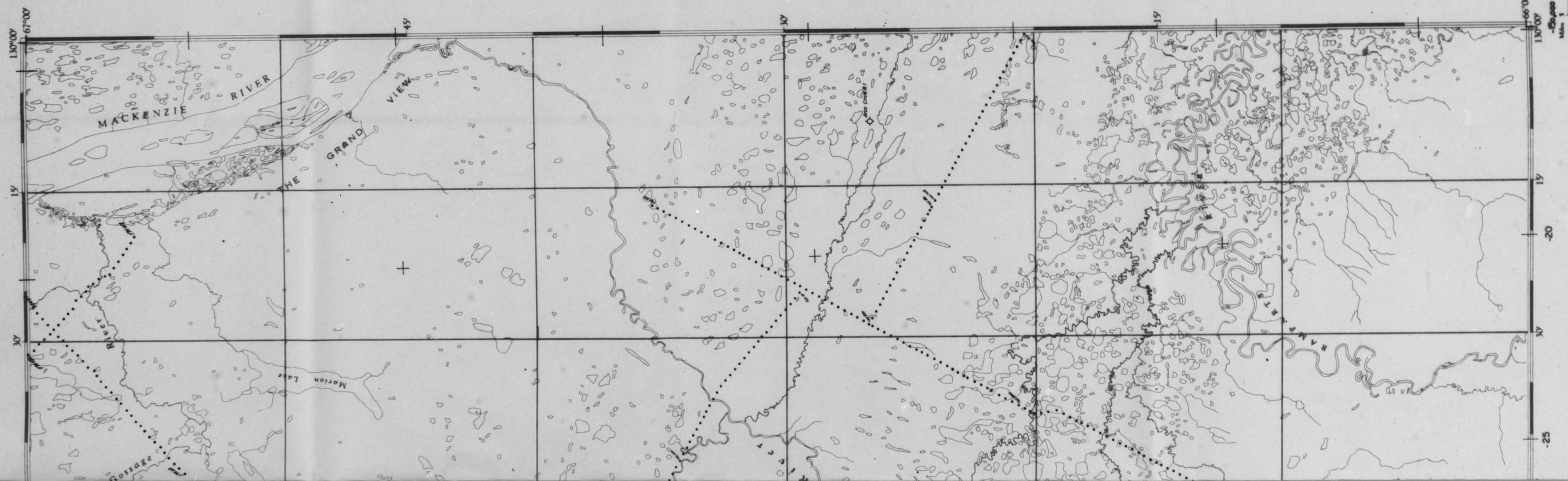
Basic map reproduced from N.T.S. series, produced by Survey & Mapping
Branch, Department of Energy, Mines & Resources.



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Gp 106J N



50,000 ft. Contours, Territorial Plane Coordinate System.
Transverse Mercator Projection, 6° Zones.

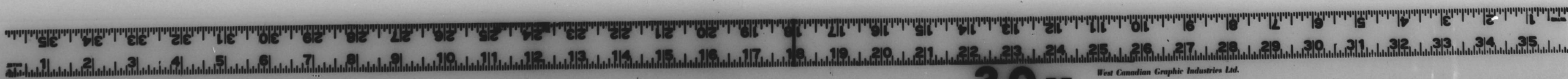
Seismic Profile
Wellhead
Contour Interval
Wellhead

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS
Contour Interval
Wellhead

ONTARATUE RIVER

106 J

Scale 1:125,000
MAP 7

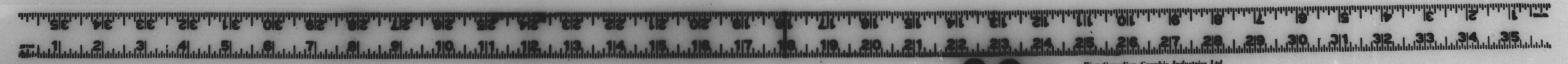


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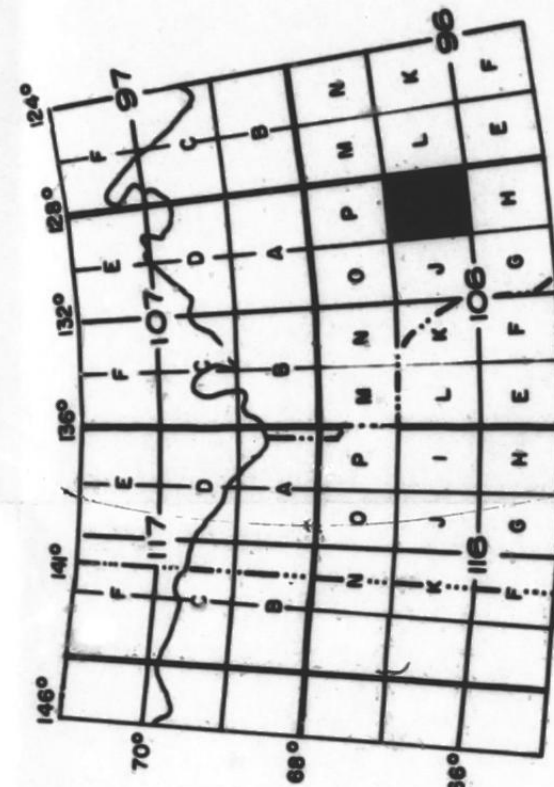
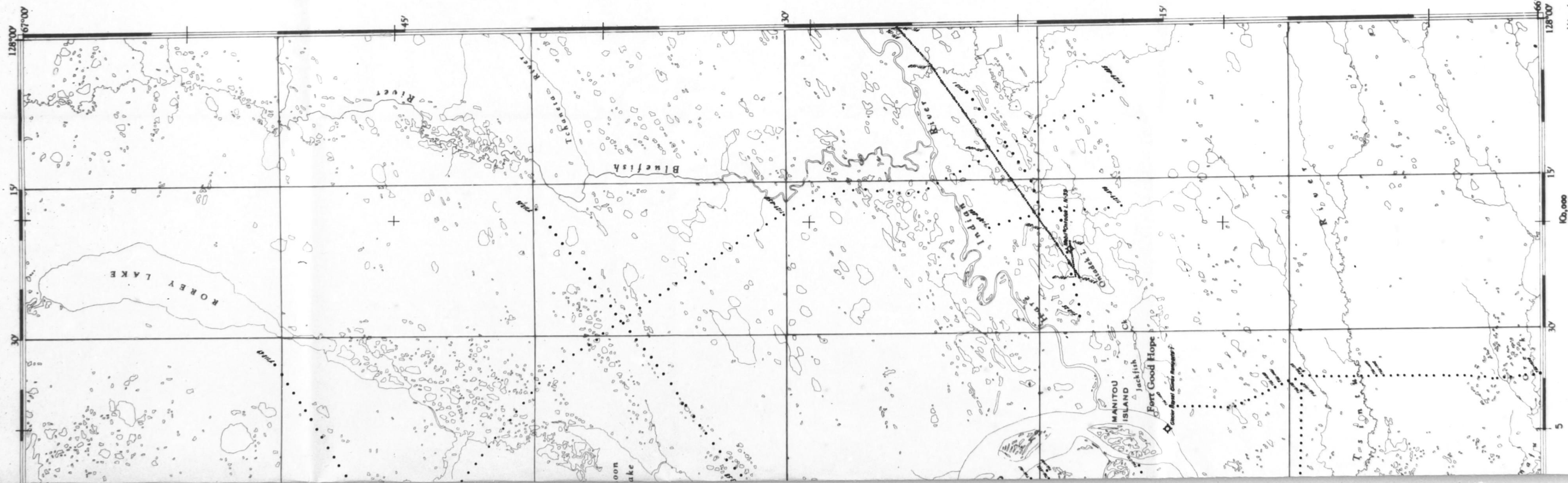
Basic map reproduced from N.T.S. series, produced by Survey & Mapping
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Gp 106 I N



50,000 ft. Coordinates, Terrestrial Plane Coordinate System.
Transverse Mercator Projection, 4° Zone.

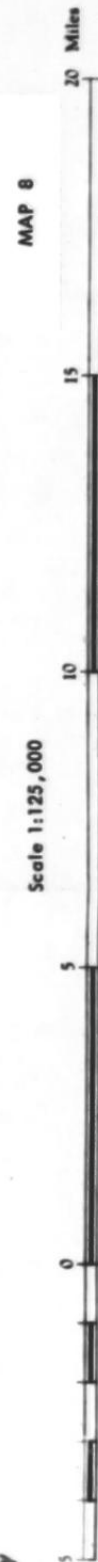
Seismic Revised
Cultural Revised
Cultural Revised
Well Revised

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Other Shot
Other Shot
Other Shot

FORT GOOD HOPE 106-1

PROPRIETARY

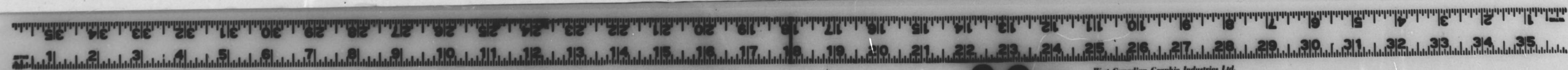


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ZONE 8

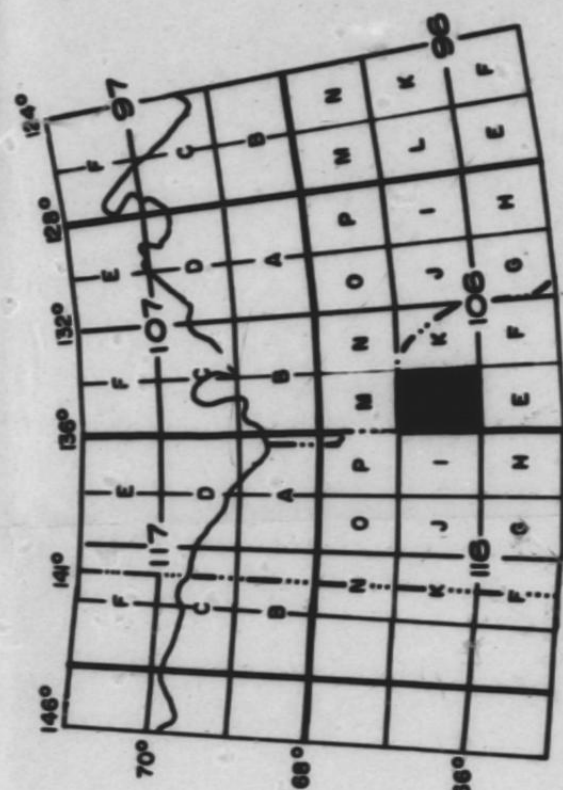
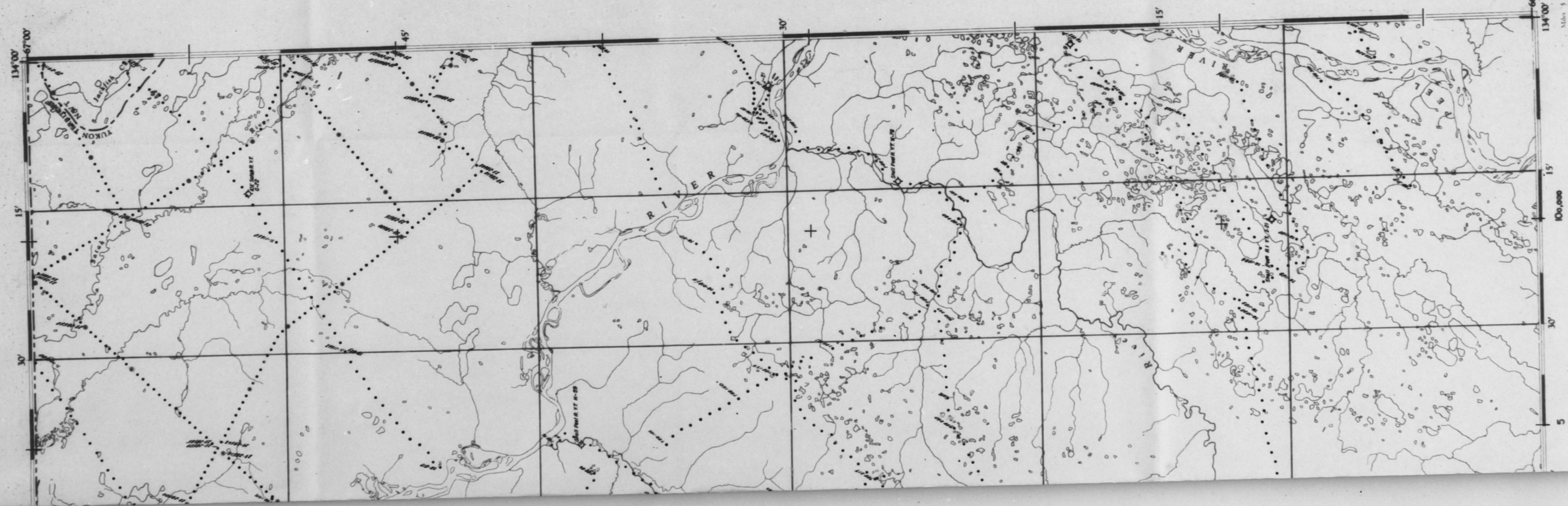
Basic map reproduced from N.T.S. series, produced by Surveys & Mapping Branch, Department of Energy, Mines & Resources.



30x

West Canadian Graphic Industries Ltd.

Gp 106 L N



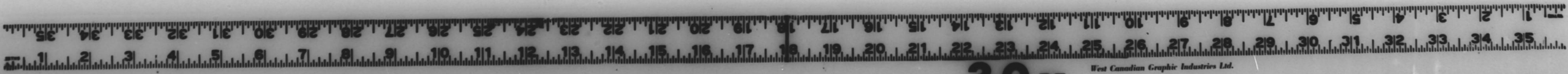
30,000 ft. Contours, Territorial Plane Coordinate System.
Transverse Mercator Projection, 6° Zone.

Scientific Name
Common Name
Well Name
Date 17, 1977

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS
Outline Area
Drillings: Point Velocity

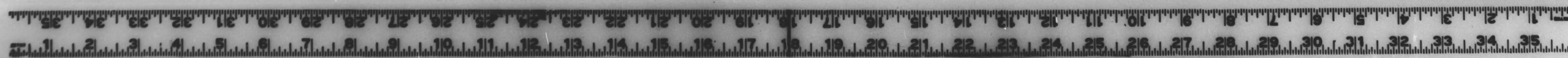
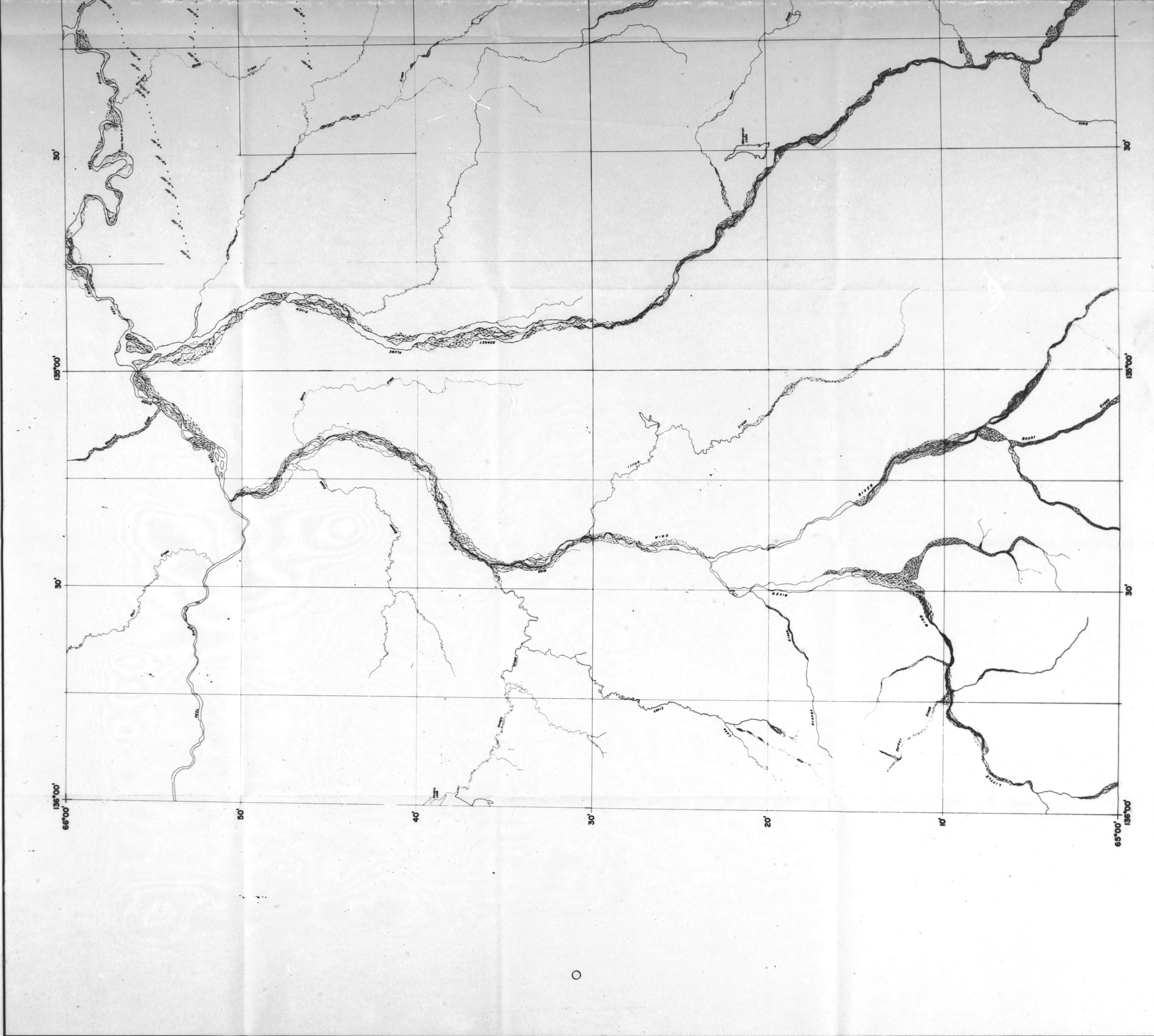
TRAIL RIVER
106 L

Scale 1:125,000
Miles 0 5 10 15 20
Kilometers 0 5 10 15 20
MAP 9



30x

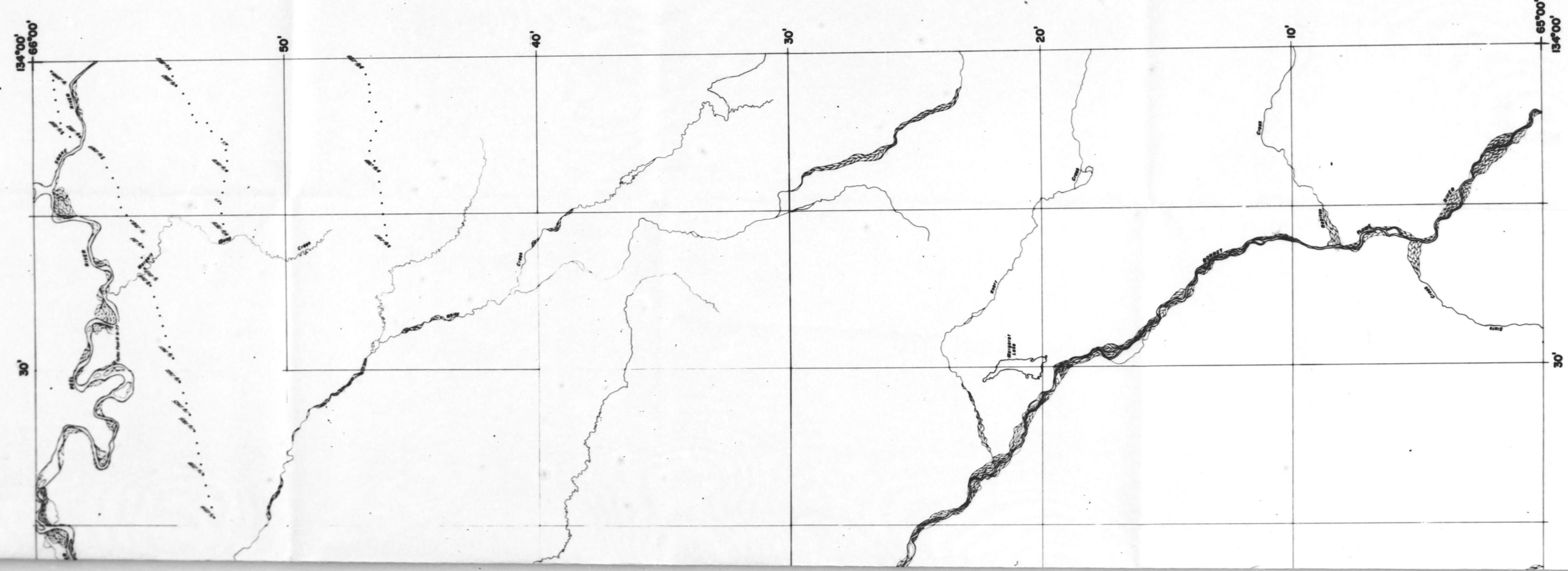
West Canadian Graphic Industries Ltd.



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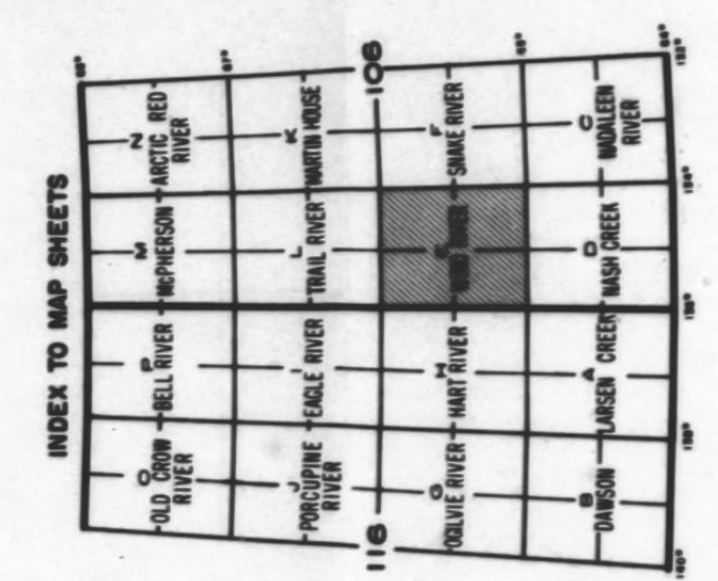
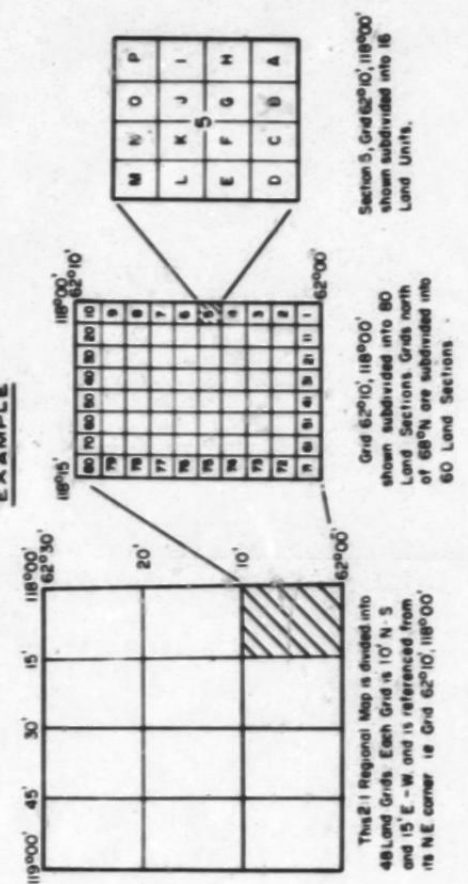
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Gp 106 E N



- WELL LEGEND**
- LOCATION
 - SUSPENDED
 - OIL WELL
 - OIL & GAS WELL
 - DISTILLATE OR CONDENSATE
 - ◇ DRY HOLE
 - ABANDONED OIL WELL
 - ABANDONED GAS WELL
 - ABANDONED DIST OR COND
 - ABANDONED WITH OIL SHOW
 - ABANDONED WITH GAS SHOW
 - ABANDONED WITH OIL & GAS SHOW
 - WATER INJECTION WELL
 - GAS INJECTION WELL
 - SALT WATER DISPOSAL

N.W.T. LAND REFERENCING SYSTEM
AS APPLIED TO
TERRITORIAL OIL & GAS REGULATIONS



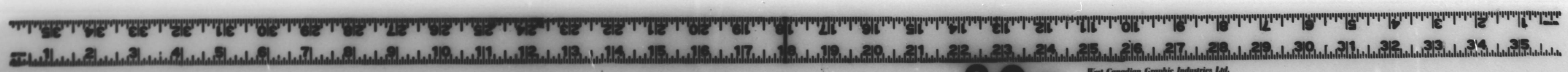
SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Outline Map
Distance: Feet
Velocity: Feet/Second

PROPRIETARY

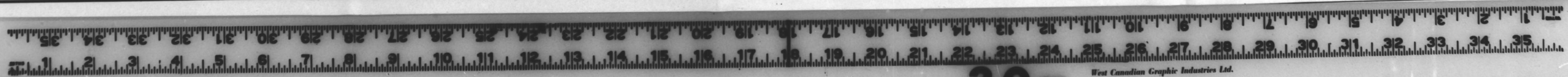
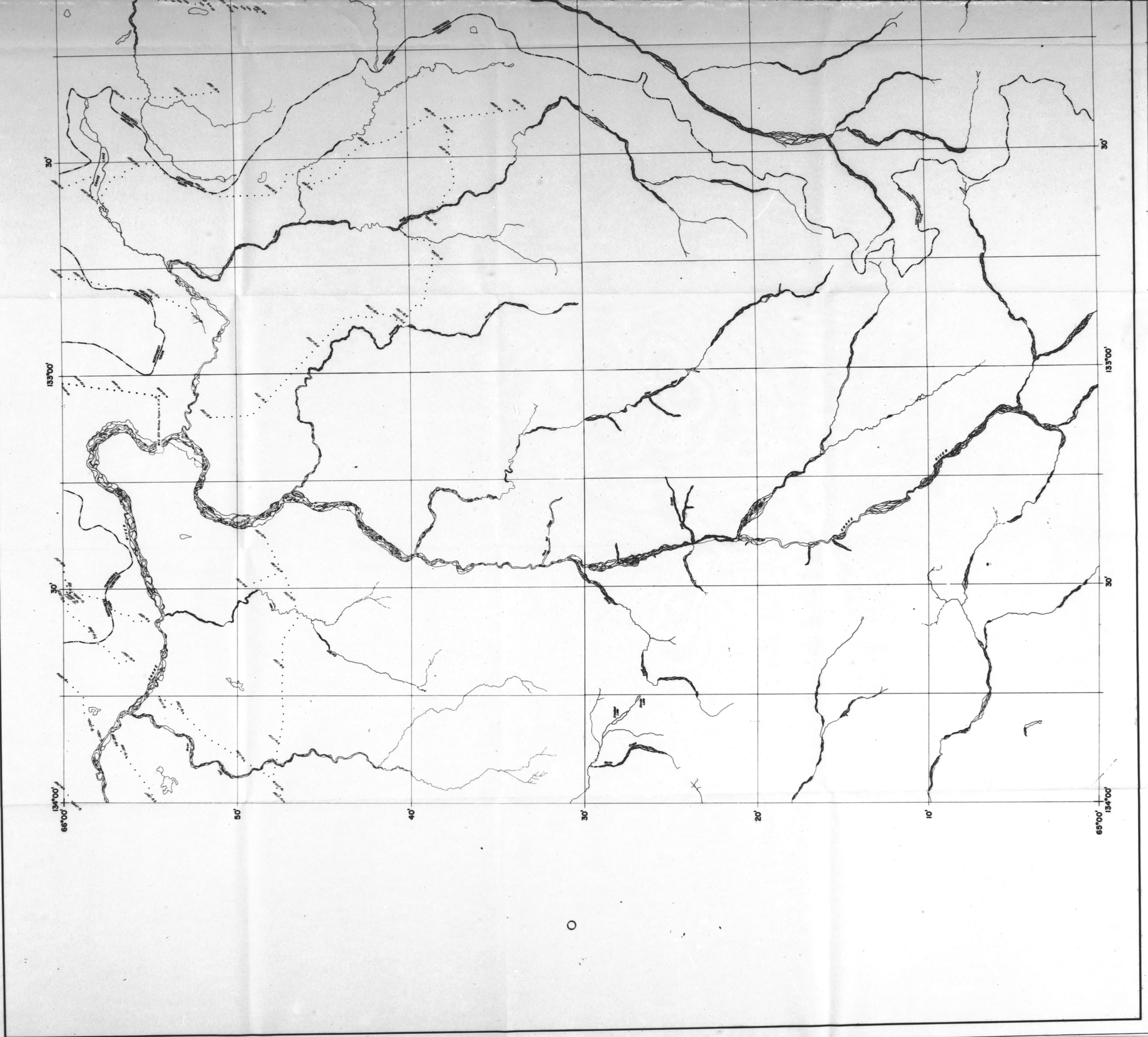
106 E WIND RIVER
2 MILES TO 1 INCH

MAP 10

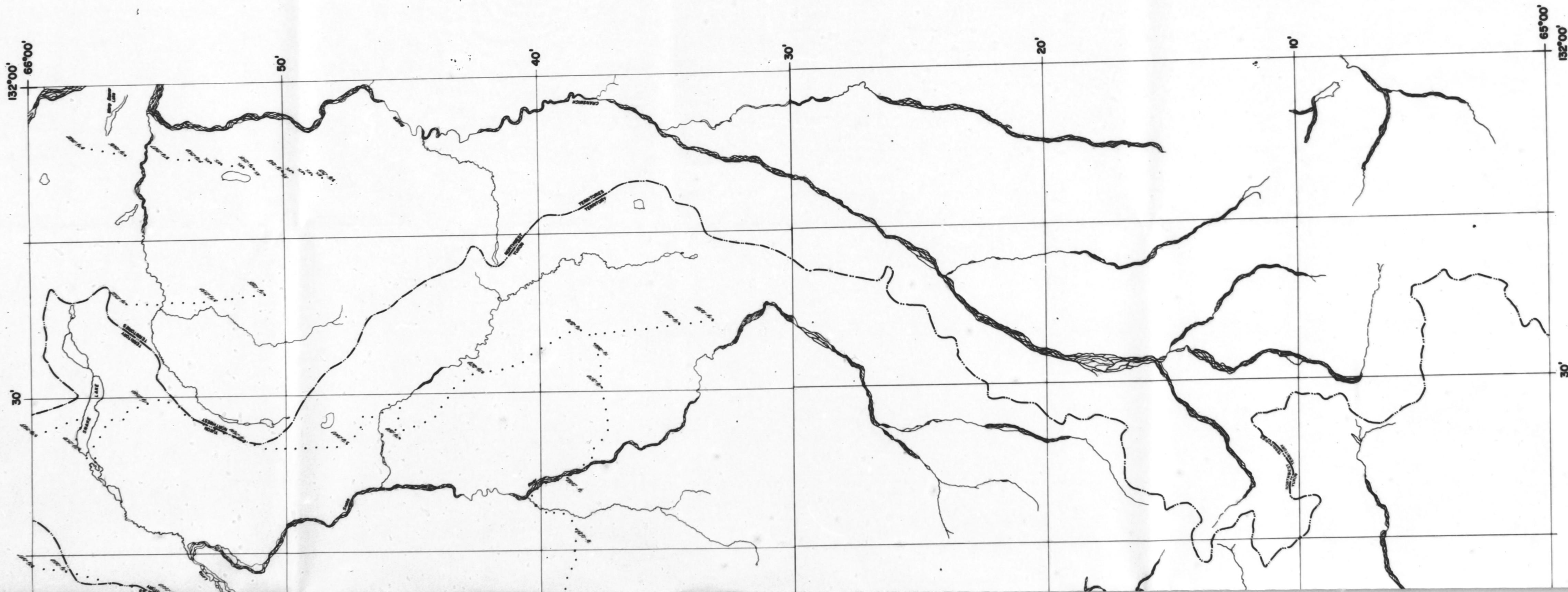


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West Canadian Graphic Industries Ltd.

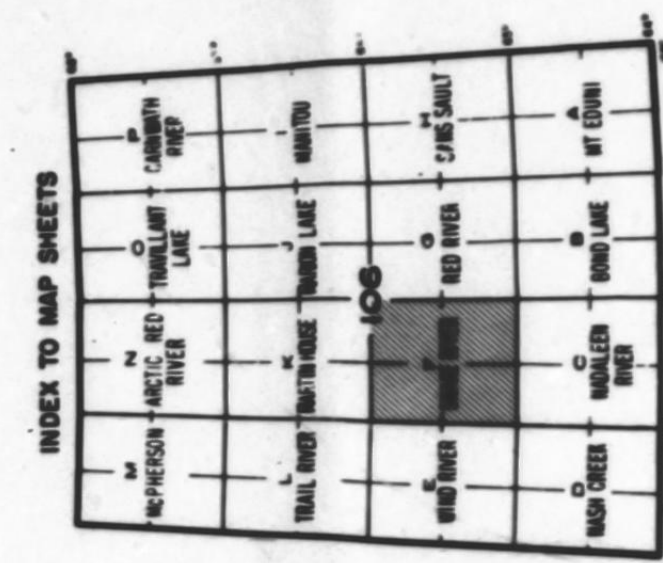
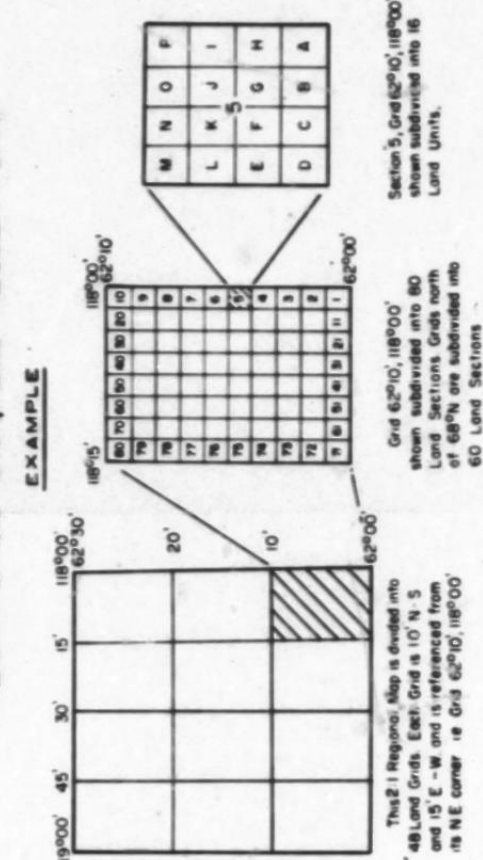


Gp 106 F N



- WELL LEGEND**
- LOCATION
 - SUSPENDED
 - OIL WELL
 - GAS WELL
 - OIL & GAS WELL
 - DISTILLATE OR CONDENSATE
 - ◇ DRY HOLE
 - ◇ ABANDONED OIL WELL
 - ◇ ABANDONED GAS WELL
 - ◇ ABANDONED DIST OR COND
 - ◇ ABANDONED WITH OIL SHOW
 - ◇ ABANDONED WITH GAS SHOW
 - ◇ ABANDONED WITH OIL & GAS SHOW
 - WATER INJECTION WELL
 - GAS INJECTION WELL
 - SALT WATER DISPOSAL

N.W.T. LAND REFERENCING SYSTEM
TERRITORIAL OIL & GAS REGULATIONS



SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Contour Interval: 100 Feet
Shot Point: 100
Velocity: 10000 FT/SEC
REVISION: 10/1/77

106 F SNAKE RIVER
2 MILES TO 1 INCH

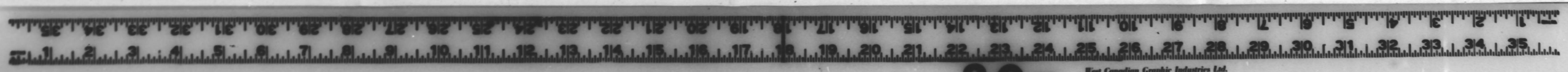
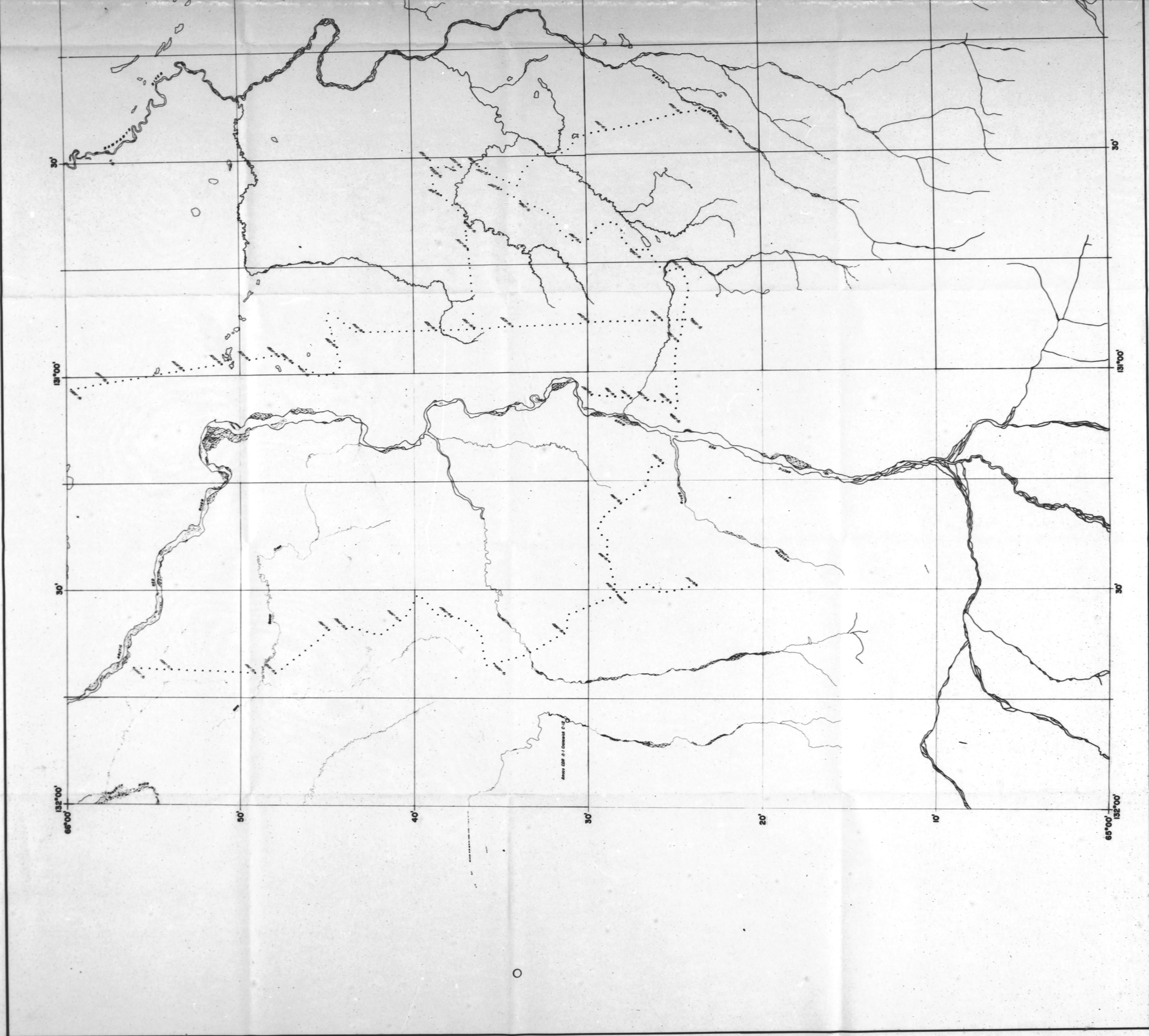
MAP II

WELLS REVISED: 10/1/77



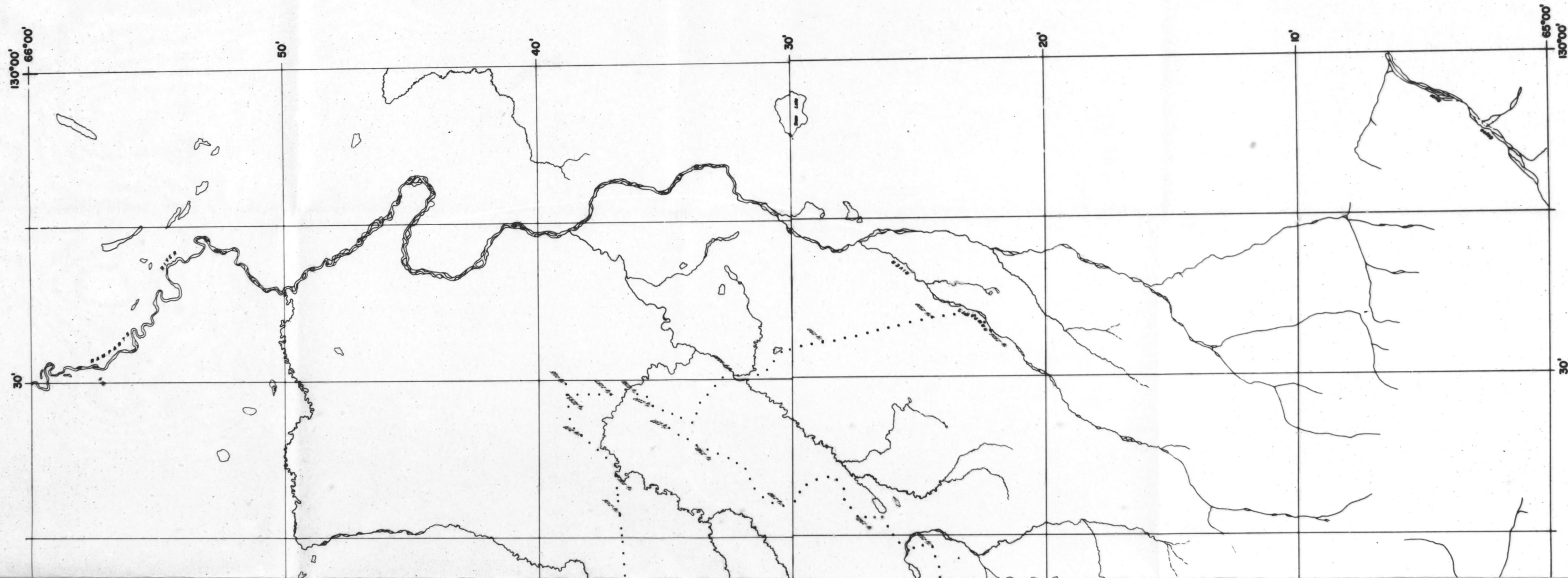
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West Canadian Graphic Industries Ltd.



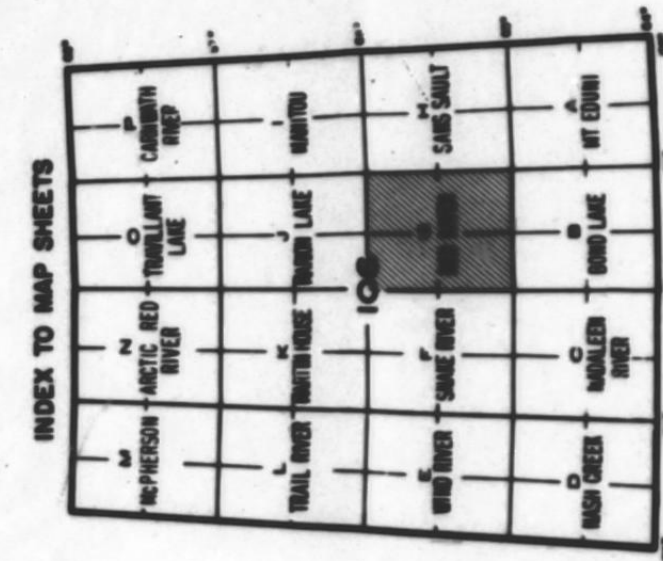
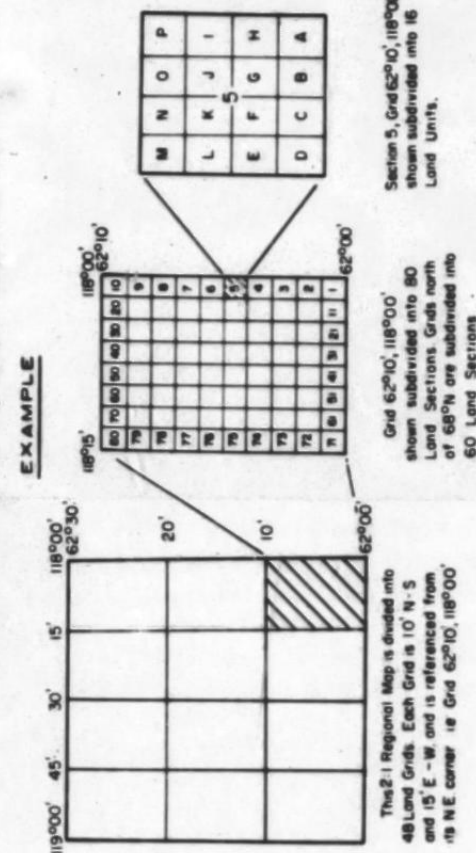
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Gp 106 G N



- WELL LEGEND
- LOCATION
 - SUSPENDED
 - OIL WELL
 - GAS WELL
 - OIL & GAS WELL
 - ◇ DISTILLATE OR CONDENSATE
 - ◇ DRY HOLE
 - ABANDONED OIL WELL
 - ABANDONED GAS WELL
 - ABANDONED DIST OR COND
 - ABANDONED WITH OIL SHOW
 - ABANDONED WITH GAS SHOW
 - ABANDONED WITH OIL & GAS SHOW
 - WATER INJECTION WELL
 - GAS INJECTION WELL
 - SALT WATER DISPOSAL

N.W.T. LAND REFERENCING SYSTEM
AS APPLIED TO
TERRITORIAL OIL & GAS REGULATIONS



SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

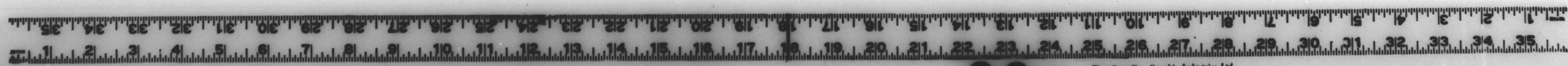
Outline Interval
Distance: Feet Velocity: Feet/Sec

PROPRIETARY

106 G RED RIVER
2 MILES TO 1 INCH

MAY 12

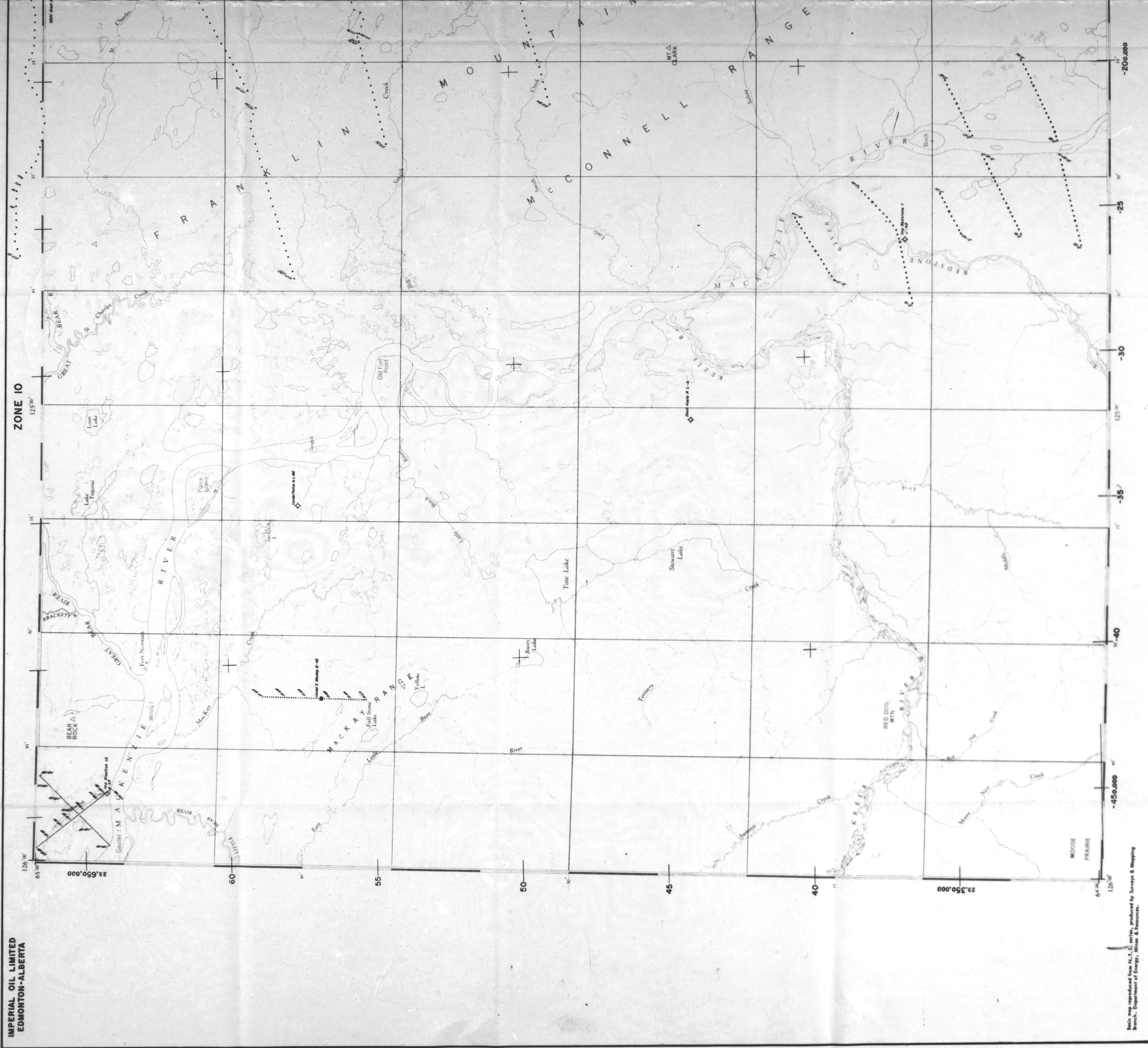
WELL 106 G



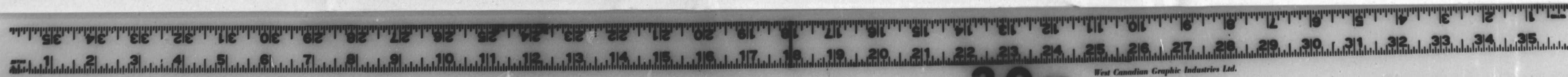
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West Canadian Graphic Industries Ltd.

IMPERIAL OIL LIMITED
EDMONTON-ALBERTA



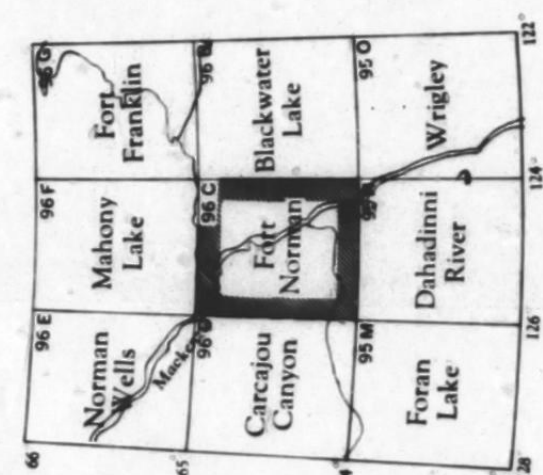
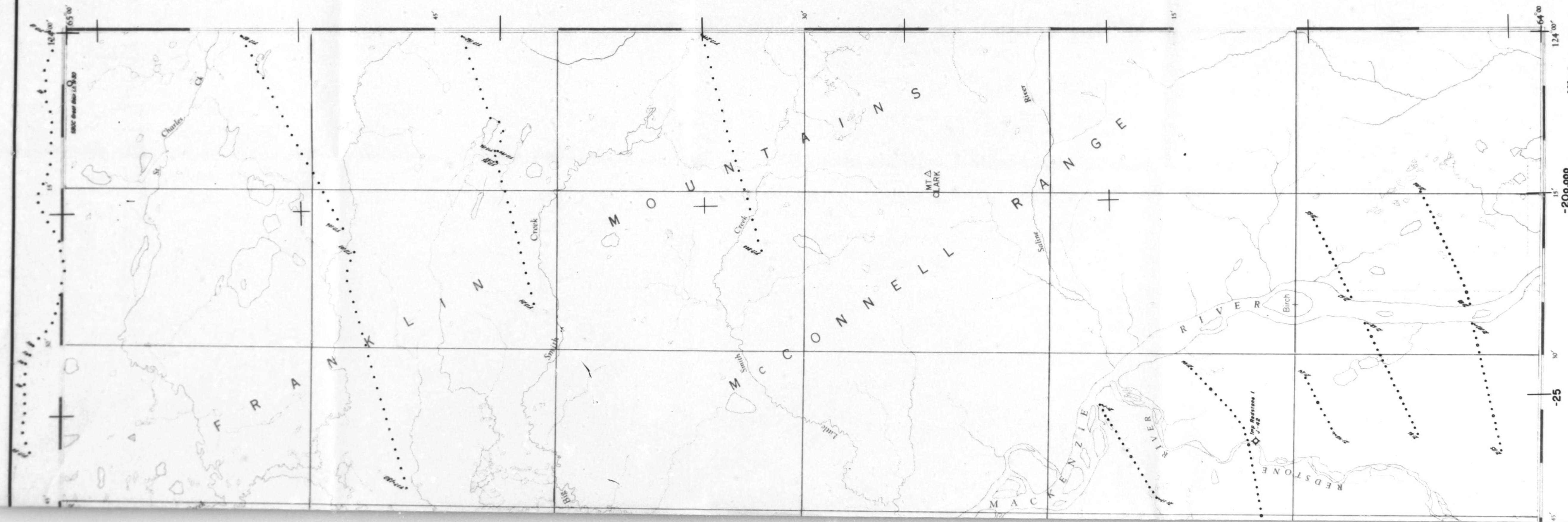
Basic map reproduced from N.T.S. series, produced by Surveys & Mapping
Branch, Department of Energy, Mines & Resources.



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West Canadian Graphic Industries Ltd.

Gp 96C N



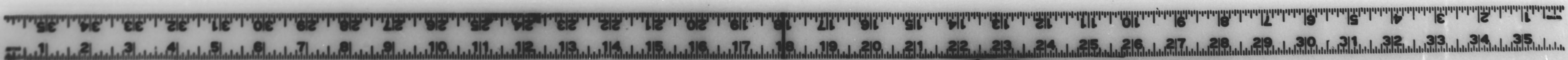
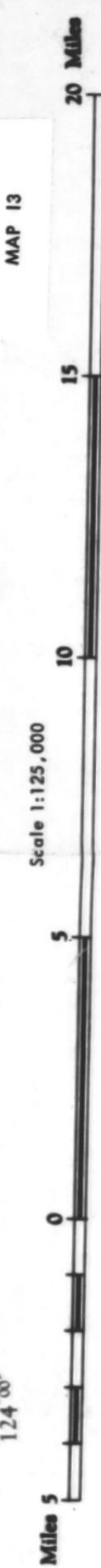
50,000 ft. Coordinates, Territorial Plane Coordinates System.
Transverse Mercator Projection, 6° Zone.

Seismic Revised Apr. 1971
Values Revised
Contours Revised
Wells Revised

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Center Interval
Drums: Phase Velocity

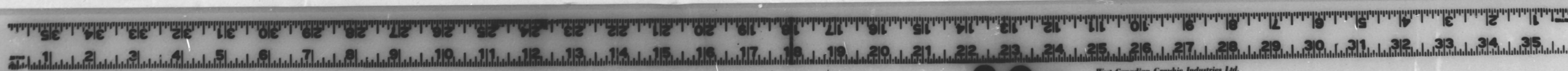
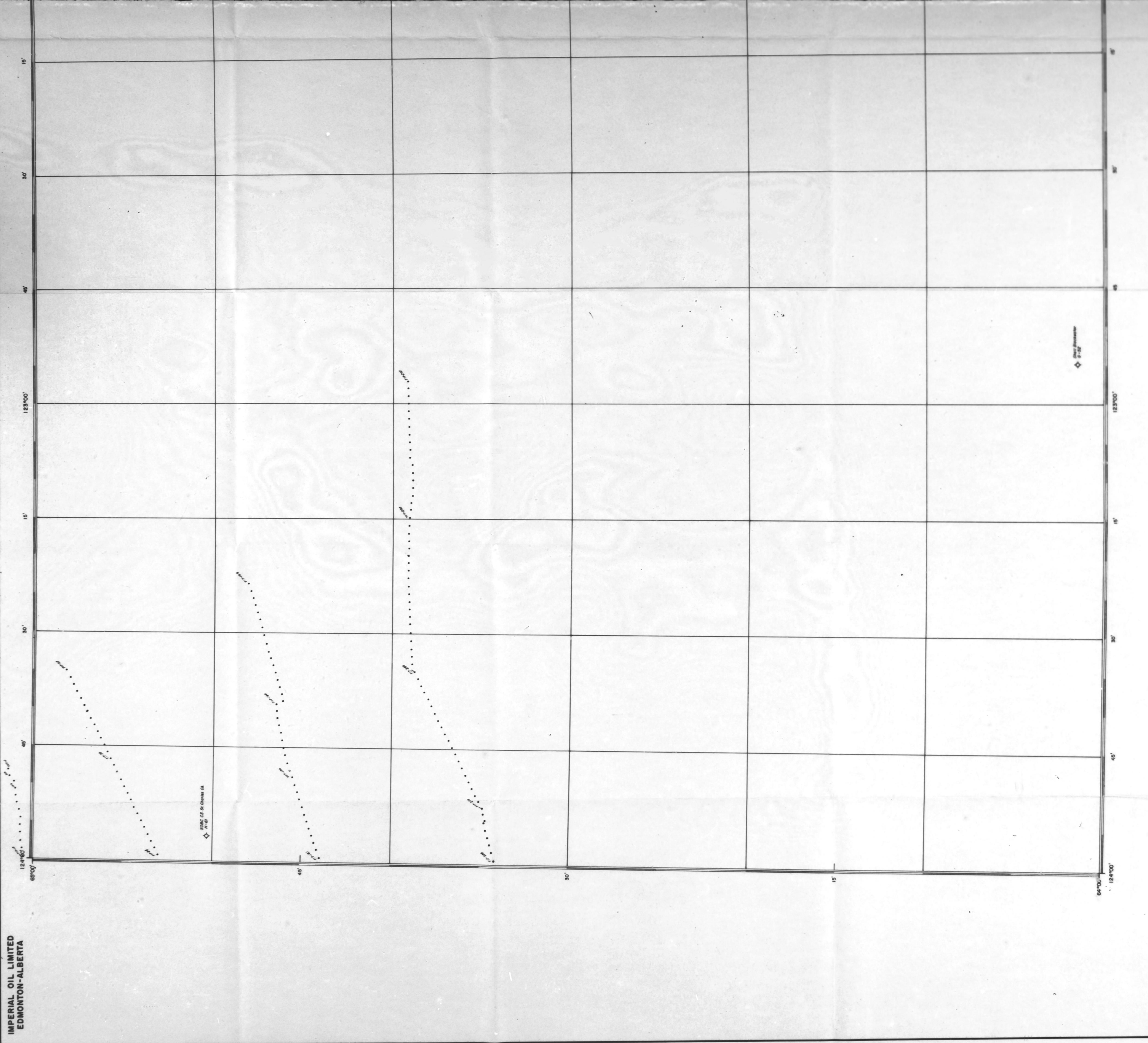
FORT NORMAN 96C



30x

West Canadian Graphic Industries Ltd.

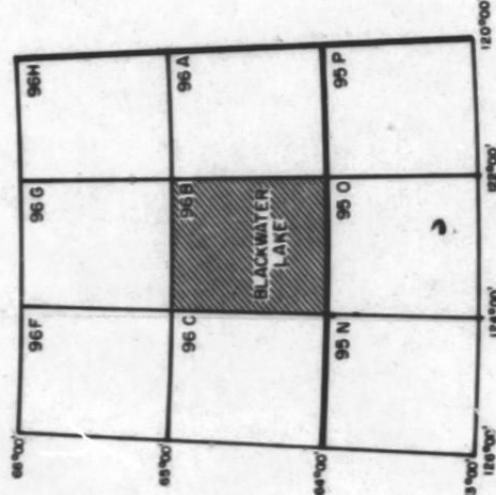
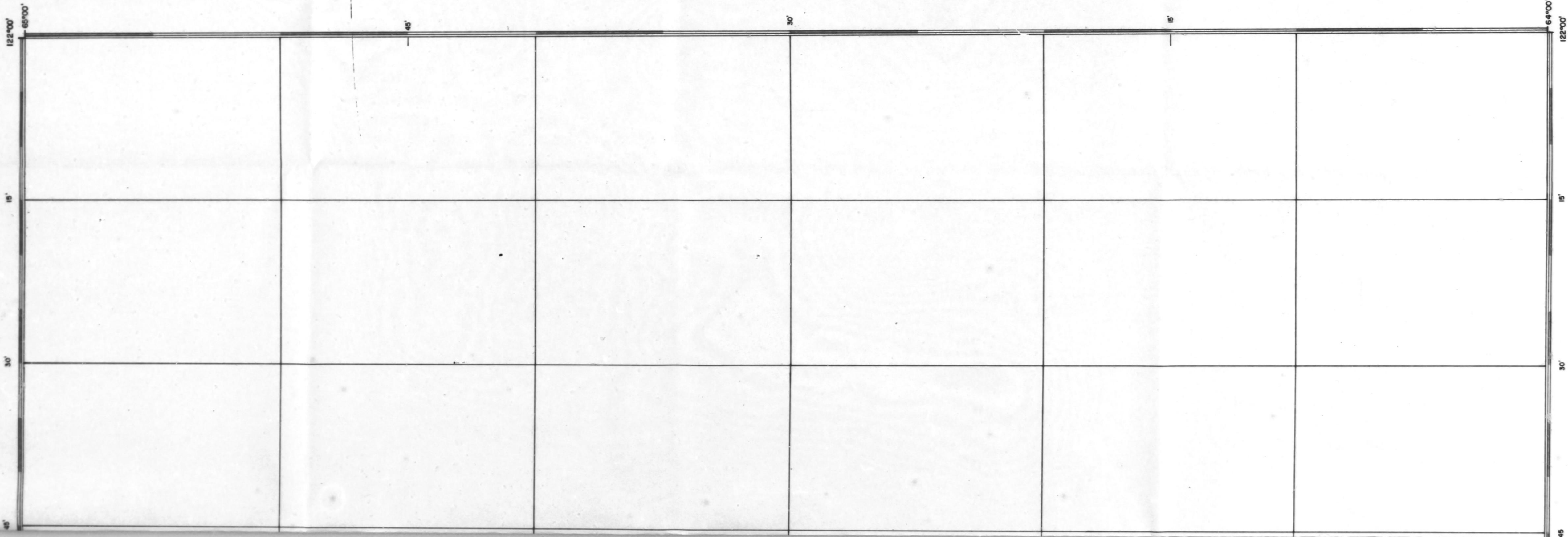
IMPERIAL OIL LIMITED
EDMONTON-ALBERTA



30x

West Canadian Graphic Industries Ltd.

Gp 96B N

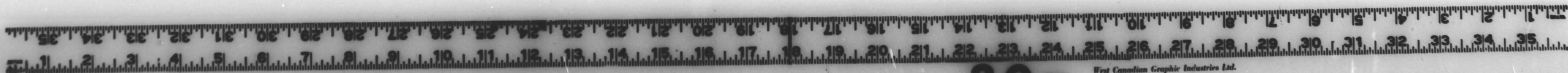
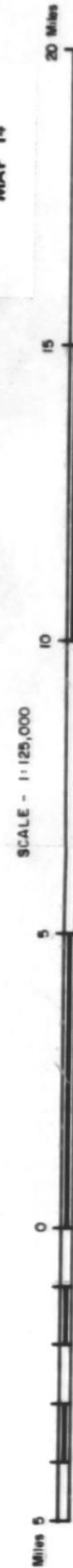


Seismic Revised
Values Revised
Contours Revised

SEISMOGRAPH MAP
SHOT POINTS & NUMBERS

Contours Revised
Contours: Plane
Contours: Velocity

BLACKWATER LAKE
96B



30x

West Canadian Graphic Industries Ltd.