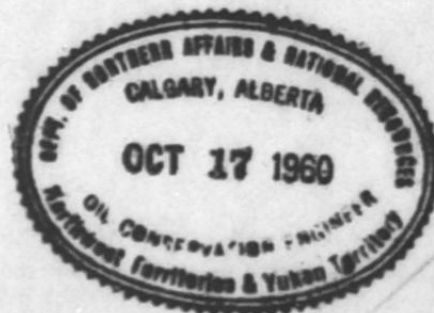


- TITLE PAGE -

**Report on Territorial Oil and Gas
Permits 2148 to 2203 inclusive,
Horn River Basin Area, N. W. T.**

**Progress Report for the period September
16, 1958 to March 16, 1960. Submitted
in support of Application for Credit.
See Affidavit of Work by S. R. Scott
dated June 15, 1960.**



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**Report on Territorial Oil and Gas Permits 2148 to
2203 inclusive, Horn River Basin Area, N. W. T.**

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Four Contour Maps	

- P R O G R E S S R E P O R T -

INTRODUCTION

The terrain in the Horn Mountain Area is fairly flat with gently rolling hills, elevations vary from 500' to 2500' above sea level. The Horn Mountains lie parallel to the south boundary of our permit block and rise to a height of 2820'. The area contains many small lakes and pot holes, the main water bodies being Willow Lake and Hornell Lake. The area is drained by three main systems, the Laferte River which drains the southern slope of the Horn Mountains, the Willowlake River which drains the west half of the permit area and the Horn River which drains the northern and eastern slopes of the Horn Mountains. The north one third of the permit area contains numerous patches of muskeg. Scrub brush, Jackpine and Poplar comprise the main surface cover with heavier timber being encountered in the mountain area to the south and west.

GRAVITY SURVEY

The gravity survey of the Horn River area was carried out primarily to provide information additional to that furnished by the reconnaissance seismic survey. A second purpose was to gain some experience, at a reasonable cost, in ground gravity surveys in the Northwest Territories.

The gravity survey was carried out simultaneously with seismic surveys by Nance Exploration Company (Party 30 and Party 55). Field

work started on January 7, 1959 and finished on March 26, 1959.

The gravity crew consisted of only one operator who was attached at intervals to each of the two seismic crews. In this way, the cost of field maintenance of the operator and his single vehicle was kept to a minimum.

The gravity readings were taken at the seismic shot holes which were about one third of a mile apart. The elevations for the seismic survey were taken with great care, so that a good gravity survey could be obtained.

The instrument used was a Worden temperature compensated gravity meter of the latest design. The instrument was calibrated using Dominion Government and Imperial Oil Limited gravity meter base stations at Peace River on the trip in to the survey area. This calibration was repeated at Peace River on the completion of the survey. From this, it was evident that the meter retained its originally calibrated scale value during the survey.

The starting point for the survey was the Fort Providence Dominion Government pendulum station. This will enable the gravity reading to be converted to absolute gravity at some future date.

A total of 79 days was spent in the field. Seventeen days were non-operating mainly because of weather conditions. The cost of this gravity survey was \$5,929.14. 1,124 stations including 15 base stations were obtained.

SEISMOGRAPH OPERATION - PARTY 30 - 1959

On January 11, 1959 a conventional truck mounted seismic crew, operated by Nance Exploration Co. and under contract to Imperial Oil Limited referred to as Party 30, and using standard technique commenced seismic operations in the area of 62° 17' north latitude and 118° 56' west longitude.

During the first week the record quality was generally fair with fair breaks. Pattern and single holes were tried as well as light and heavy charges. Pattern holes and heavy (3 x 15) charges seemed to give slightly better results. The weather was fair with temperatures between -10° to -30°. Surface conditions were fair although the trails were rough and driving time averaged about three hours per day. Hard formations requiring rock and insert bits slowed drilling operations.

During the second week from January 18 to 24 the crew worked at 62° 17' N and 119° 15' W. Drilling conditions improved and most holes were in clay and boulders with some gravel and sandstone being encountered. The camp was moved 32 miles west on January 19. The trail was blocked with snow and it was necessary to plow ahead of the camp.

The crew worked from 62° 17' N and 119° 15' W west and north to 119° 35' W and 62° 39' N during the week January 25 to January 31. The record quality was fair to good with some improvement in first

breaks. The weather was clear and cold with temperatures of -10° to -55° . Surface conditions were hilly with one bad hill being encountered. Drilling conditions were spotty with most holes in clay and boulders but again some gravel and sandstone was encountered.

During the week of February 1 to February 7 the crew worked from $119^{\circ} 35'$ W and $62^{\circ} 29'$ N west to 120° W. The record quality was fair to good, it deteriorated down to the Willowlake River but picked up coming up the west side. Drilling conditions varied greatly from fair to very rough. Hard cemented gravel and limestone was encountered near the Willowlake River.

During the period February 8 to February 21 the crew worked from 120° W and $62^{\circ} 29'$ N west to $120^{\circ} 28'$ W then, north to $62^{\circ} 50'$ N. Record quality in this area was good with good first breaks. Drilling conditions were fair with most of the holes having been drilled in muskeg, clay and rock with some sand and sandstone being encountered. One flowing hole was drilled and the flow was sufficient for two water trucks to load at once, this was of great assistance and cut down the time required for water hauls. The surface conditions in this area were good.

The crew worked from $120^{\circ} 20'$ W and $62^{\circ} 50'$ N west to $121^{\circ} 45'$ W and $62^{\circ} 48'$ N during the period February 22 to March 7. The record quality was fair with fair to good first breaks on long spreads. Drilling was fair to poor with blind gravel holes and large boulders

hampering production. The weather was fair with about 2 inches of snow. The terrain consisted of very rough muskeg.

During the period March 8 to March 16 the crew worked from 121° 45' W and 62° 48' N west to 122° W also from 121° 34' W and 62° 49' N south to 62° 32' N. The weather during this period was fair with cold nights -30° to -50°. All lines were across rough muskeg. The crew finished the west line on March 8 and completed the tie line to Party 55 on March 15. Party 30 having completed its assignment vacated camp on March 16, 1959. During the above program a total of 539 locations were shot to obtain 1208 profiles. The total footage drilled was 65,150 feet or an average of 40' per hole based on an average 3 hole pattern.

SEISMOGRAPH OPERATIONS - PARTY 55 - 1959

On January 13, 1959 a conventional truck mounted seismic crew operated by Nance Exploration and under contract to Imperial Oil Limited, referred to as Party 55, and using standard technique commenced seismic operations in the area of 118° 30' W and 62° 12' N.

During the first week the record quality was fair. The drilling was rough with clay, boulders, gravel and hard sandstone stringers being encountered. The drilling was done with three cone rock bits and progress was slow. The weather was clear and cold all week with temperatures from -10° to -30°.

The crew worked in the following areas during the week January 18 to January 24, 118° 30' W and 62° 12' N east to 118° 15' W. The record quality was fair to good with the records improving to the east end of the line. No rough country was encountered except one valley with gentle slopes on both sides. The weather remained fairly constant around -30° but heavy winds from January 18 to 20 slowed field crews down as the trails became blocked with snow and had to be plowed each day. The drilling remained rough with clay, rocks and gravel being encountered. Long water hauls also contributed to the slowing down of operations.

During the period January 25 to February 7 the crew worked from 118° 30' W and 62° 12' N west to 118° 55' W and 62° 18' N also from 119° 35' W and 62° 20' N west to 120° 30' W. The record quality was good with production up due to better drilling conditions to the west of Hornell Lake. The surface conditions were ideal with flat country throughout. The weather was good with the exception of extreme cold on January 29 and 30 with temperatures of -50°.

From February 8 to February 21 the crew worked locations from 120° 30' W and 62° 20' N west to 121° 18' W and 62° 18' N. Record quality remained good, drilling was in clay and boulders and seams of gravel except in the 100' refraction holes where 80 feet of gravel was encountered underlain by clay and boulders. The weather and surface conditions remained good throughout.

During the period February 21 to March 7 the crew worked west to 121° 34' W and 62° 21' N, then north to 62° 32' N to tie in with Party 30. They then worked from 121° 34' W and 62° 21' N west to 122° 10' W. The record quality varied from good to fair with poor records in the muskeg areas. The weather and surface conditions were good during the period.

From March 8 to March 21 the crew continued westward from 122° 10' W and 62° 21' N to the east bank of the Mackenzie River at 62° 26' N and 123° 15' W. Record quality in this area was fair to good. The drilling improved on the slope in the Mackenzie River with blue shale and permafrost showing in most holes. Some holes had to be re-drilled as the permafrost was closing them off. Party 30 left the area on March 22 and was off contract on March 26, 1959. During the above program, 507 locations were shot to obtain 1,074 profiles. The total footage drilled was 63,941 feet or an average of 42' per hole based on an average 3 hole pattern.

SEISMIC OPERATIONS - PARTY 30 - 1960

On February 11, 1960 Party 30, a conventional truck mounted seismic crew, operated by Hense Exploration and under contract to Imperial Oil Limited commenced operations on that portion of their program in the Horn River Area.

From February 11 to February 16 the crew worked from 120° 50' W and 61° 50' N, north and west to approximately 121° 20' W and 61° 55' N. The record quality in the area was fair to good. The drilling conditions were fair with some gravel, cemented gravel and shale being encountered, although drilling was mainly in clay and boulders. The terrain was generally flat with a few hills around the Mackenzie River.

The crew returned to the Horn River Area on February 27. During the period February 27 to March 5 the crew worked from 120° 50' W and 61° 55' N west and north to 121° 20' W and 62° 10' N. Record quality was generally good. First break quality was generally fair with some poor breaks through muskeg areas. Drilling remained good and water was plentiful. Some perma-frost was encountered. The weather was good with only the odd day of -30°.

From March 6 to March 18 the crew worked from 121° 20' W and 62° N north to 62° 20' N and west from 62° 10' N to 122° W and 62° 15' N. Record quality remained good with the exception of muskeg areas. The terrain was generally flat and rough. Very steep hills were encountered on the southwest line leading to the Mackenzie River, we were unable to get a road through and the line was discontinued. Party 30 completed its program on March 18, 1960. During this program a total of 306 locations were shot in the Horn River Area to obtain 651 profiles. The total footage drilled was 47,441

feet or an average of 52 feet per hole based on an average 3 hole pattern.

SEISMOGRAPH OPERATIONS - PARTY 12 - 1960

On January 24, 1960, Party 12, a conventional truck mounted seismic crew, operated by Farney Exploration and under contract to Imperial Oil Limited commenced operations in the Horn River Area. From January 24 to February 6 the crew worked from 121° 58' W and 62° 22' N north to 62° 31' N. The record quality in this area was good and improved when shorter spreads were employed. The area contains numerous hills and muskeg patches, the trails were very rough. The majority of the drilling was difficult and a considerable amount of mud, bran and rock bits were used.

During the period February 7 to February 13 a line was shot from 122° W and 62° 50' N west to 122° 45' W and 62° 47' N tying in a line shot the previous year by Party 30. Record quality in this area was fair. Drilling conditions remained rough with gravel, rock and sandstone being encountered.

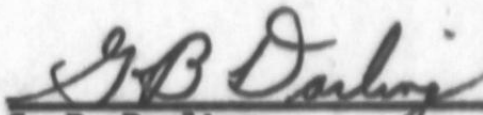
From February 14 to February 27 the crew worked from 121° 58' W and 62° 31' N west to 122° 45' W then south to 62° 15' N. The record quality was fair but improved as the crew moved south. Drilling conditions were good. Surface conditions were hilly along the east west line and muskeg was encountered on the south end towards the Mackenzie River.

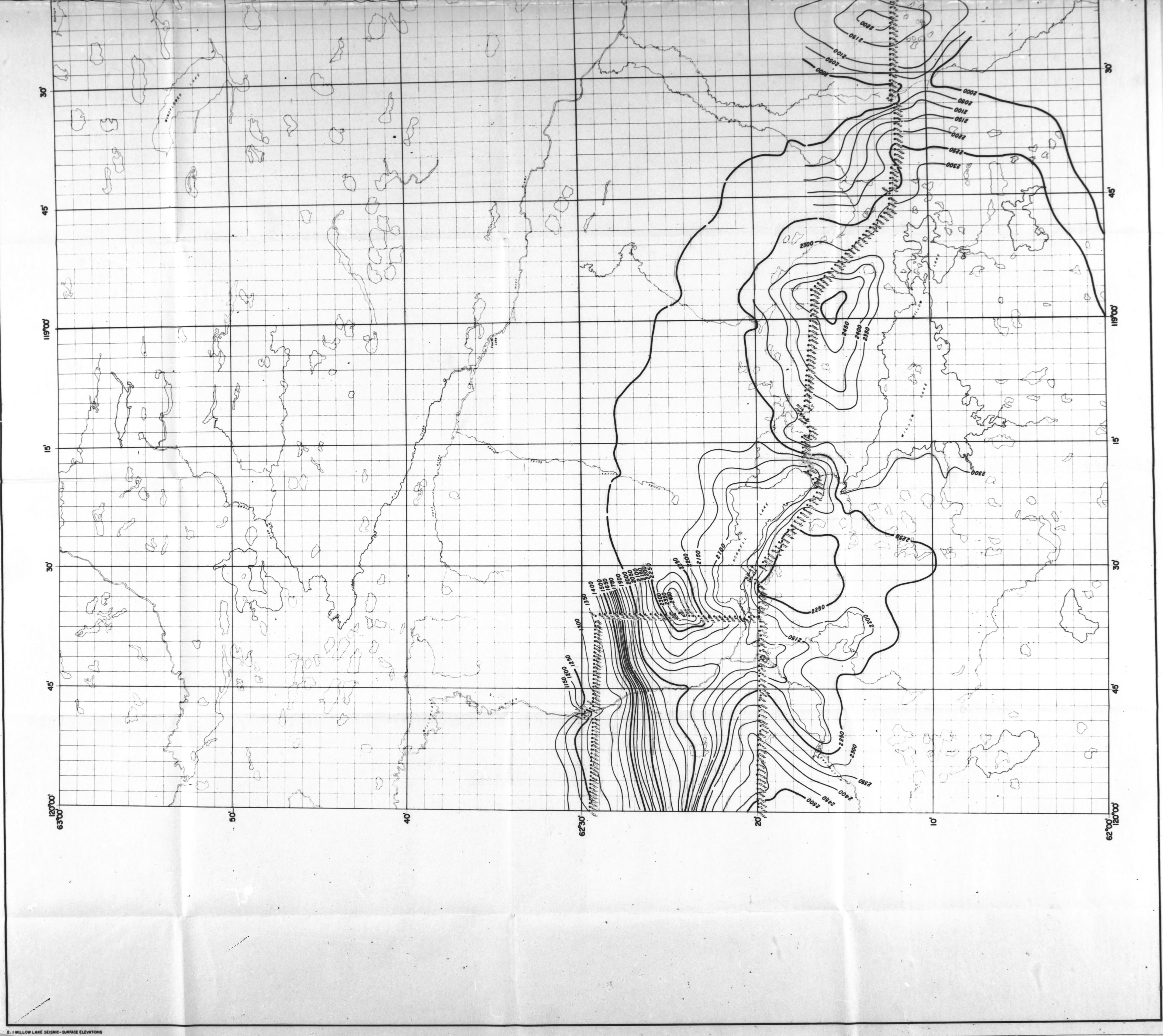
- 10 -

From February 28 to March 12 the crew worked a line from 123° W and 62° 15' N east to 121° 55' W. Record quality for the most part was good. Single hole recordings were employed where the quality was good in order to conserve the drilling water supply. Singles were used on 32 locations before reverting to 3 hole pattern. The surface was mostly muskeg running into heavy timber on the last 5 miles east. Drilling conditions were good with a few isolated gravel and hard rock regions.

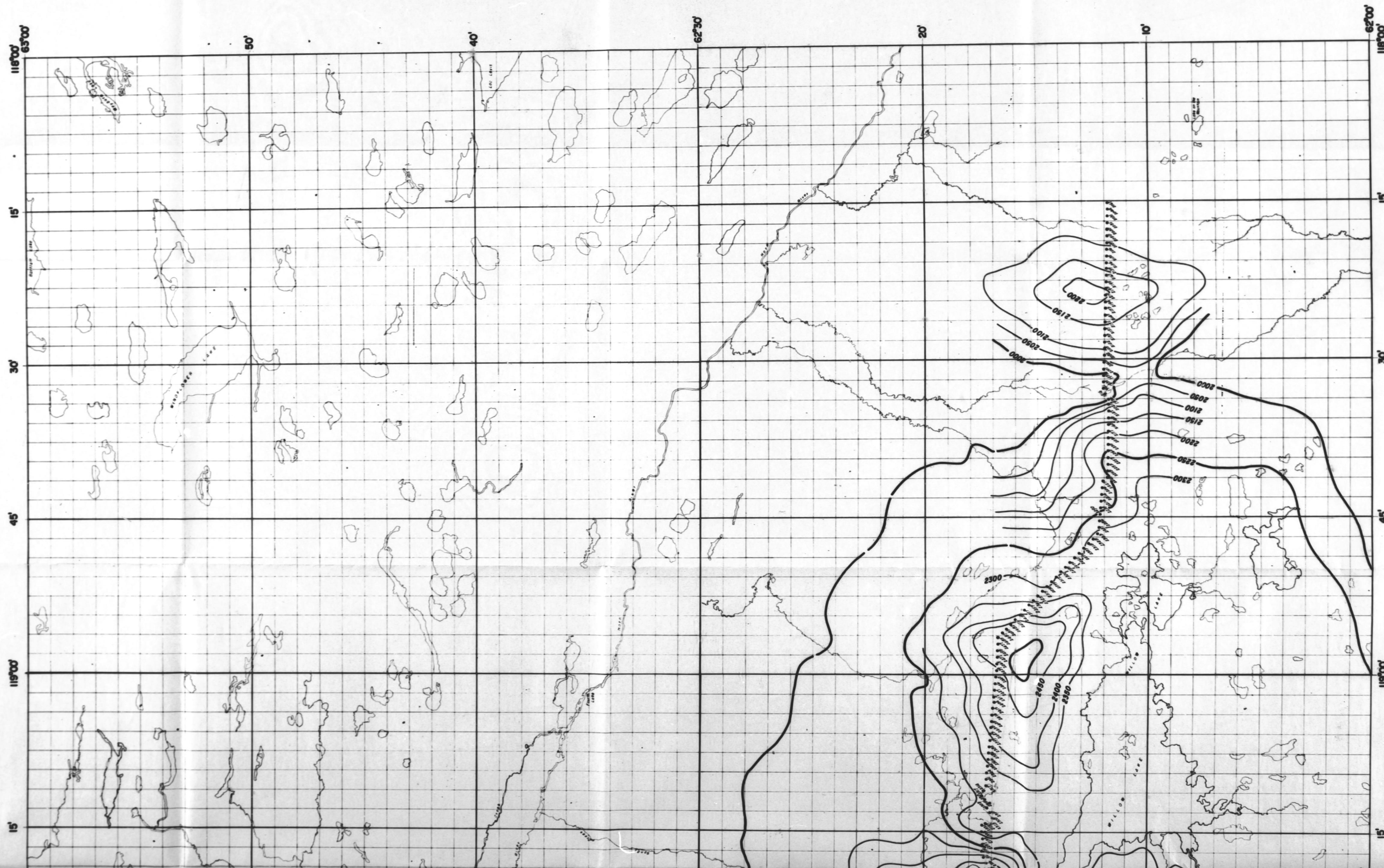
From March 13 to March 17 the crew completed the tie line from 121° 55' W and 62° 15' N to 121° 58' W and 62° 22' N. The record quality was fair. The surface was covered with heavy timber and muskeg patches. During this program a total of 494 locations were shot to obtain 986 profiles. The total footage drilled was 59,429 feet or an average of 42 feet per hole.

September 16, 1960.

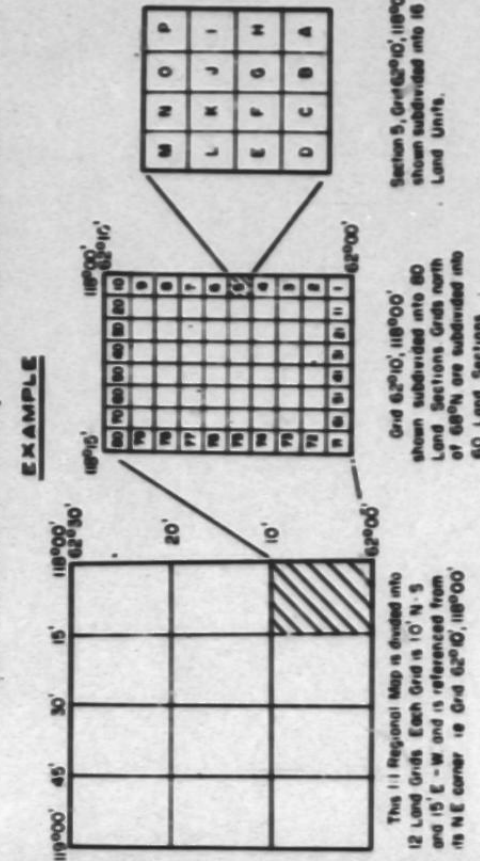

G. B. Darling



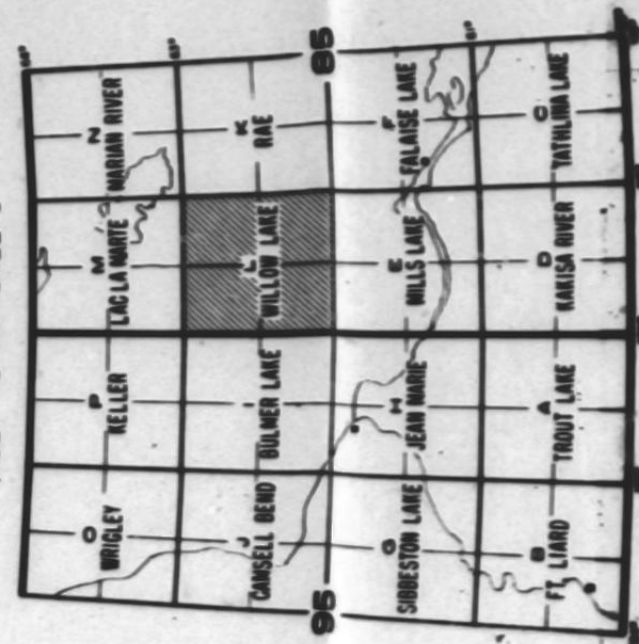
IMPERIAL OIL LIMITED
EXPLORATION DEPARTMENT PEACE RIVER DISTRICT
SURFACE ELEVATIONS



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



INDEX TO MAP SHEETS



IMPERIAL OIL LIMITED
MAP

SCALE: 5 MILES TO 1 INCH

ASSEMBLED CONTOURS: Contour Interval - 20 Feet

QUANTITY: Contours Contour Interval - 20 Feet

QUANTITY: Contours Contour Interval - 20 Feet

QUANTITY: Contours Contour Interval - 20 Feet

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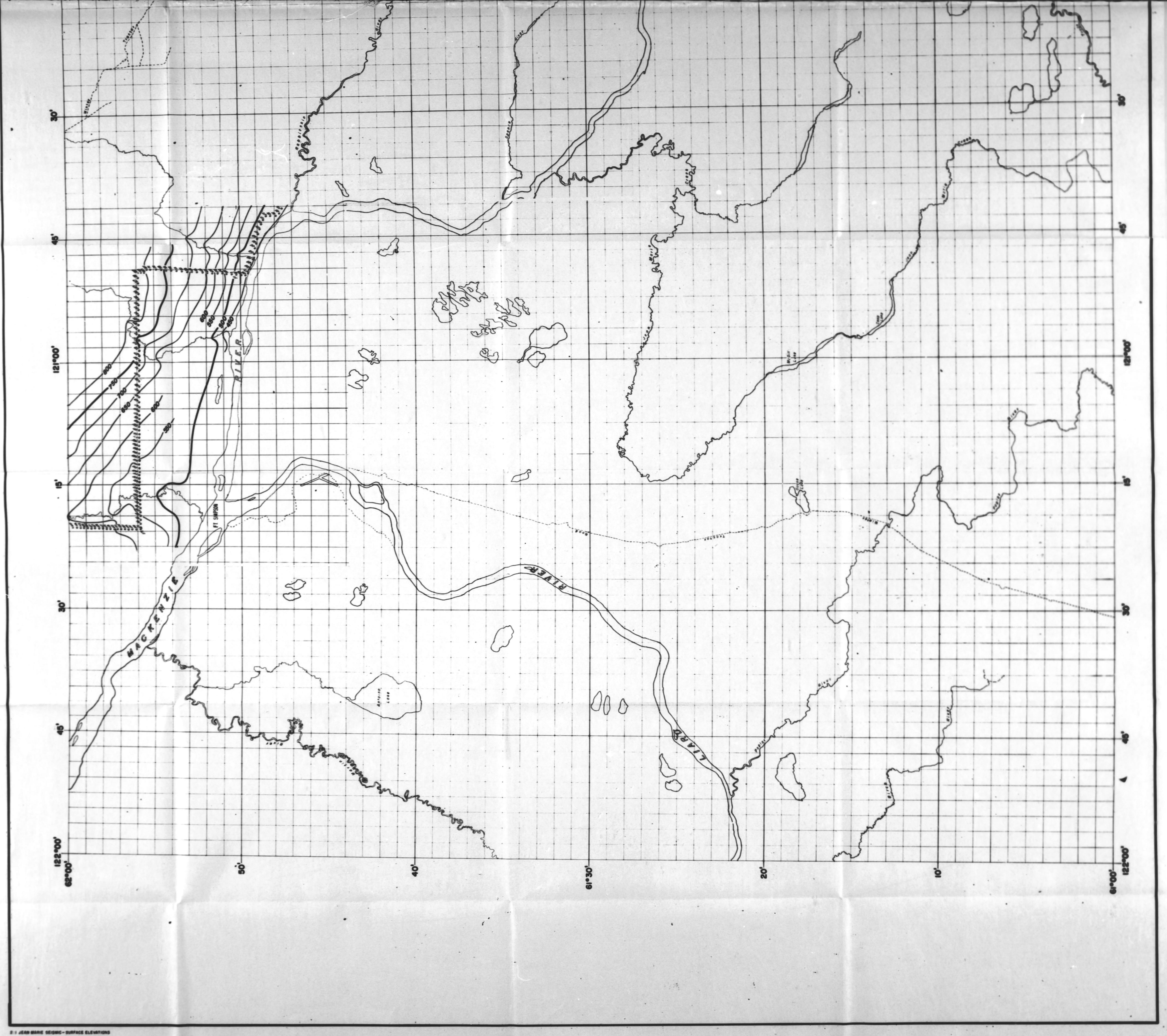
QUANTITY: Contours Contour Interval - 20 Feet

85-L-WILLOW LAKE

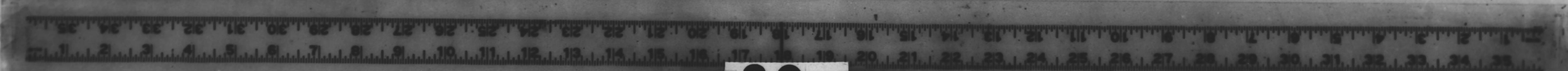
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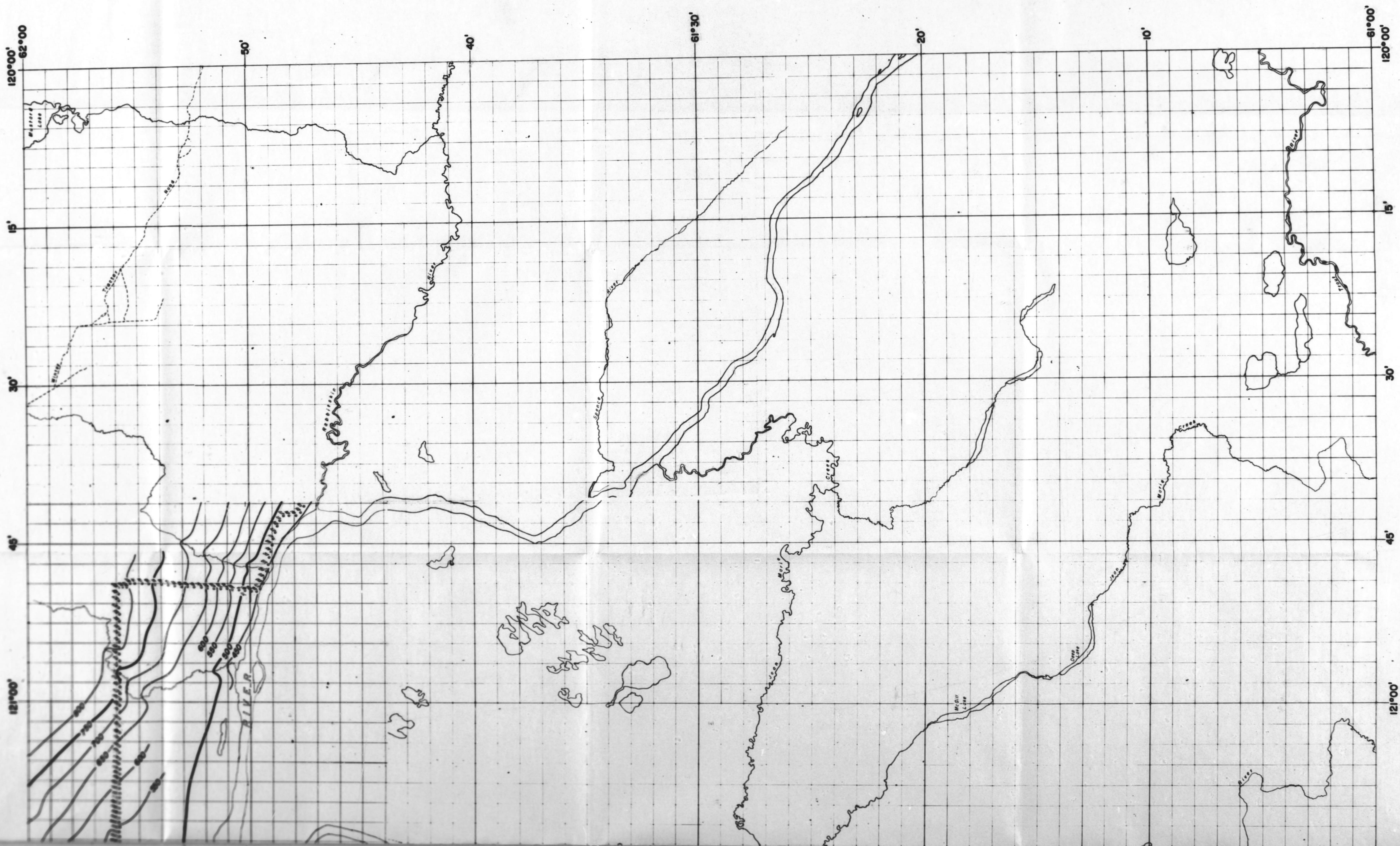
2:1 LAND BARE GROUND - SURFACE ELEVATIONS



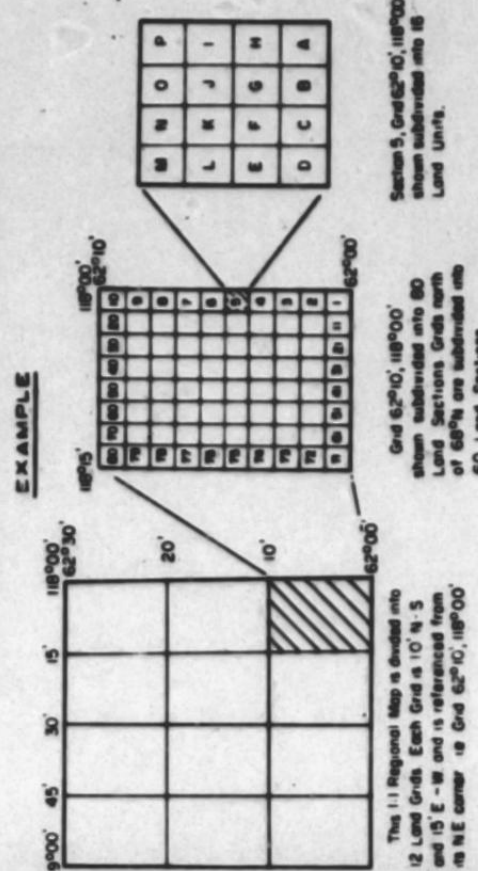
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West Canadian Graphic Industries Ltd.

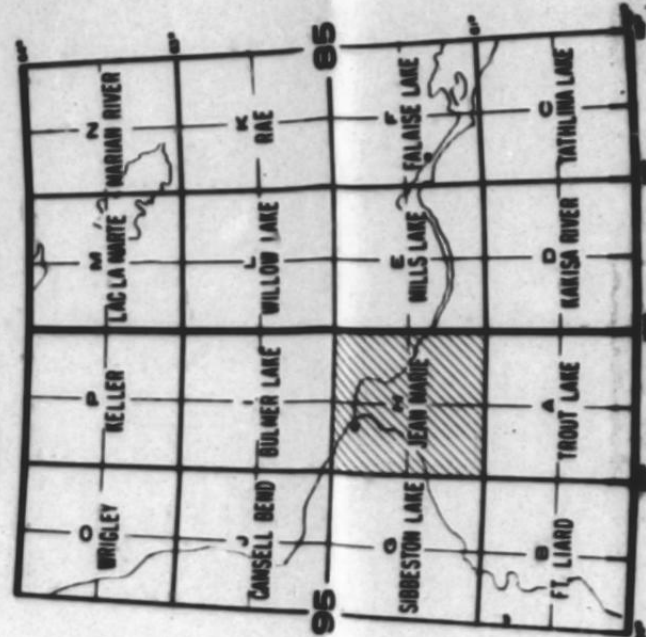
IMPERIAL OIL LIMITED
EXPLORATION DEPARTMENT PEACE RIVER DISTRICT
SURFACE ELEVATIONS



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



INDEX TO MAP SHEETS



IMPERIAL OIL LIMITED
MAP OF
SCALE: 2 MILES TO 1 INCH
AEROMAGNETIC CONTOURS Contour Interval - 20 Feet
GRAVITY STATION LOCATIONS & ELEVATIONS
GRAVITY FINAL VALUES
TIME VALUES & ELEVATIONS
REFRACTION PROFILES
SEPT. MAP - CONTINUED ON
PEACE RIVER DISTRICT
JULY, 1950

IMPERIAL OIL LIMITED
SEISMOGRAPH MAP
SURFACE TOPOGRAPHY
SCALE: 2 MILES TO 1 INCH
Contour Interval - 20 Feet
Datum Plane - SEA LEVEL
Datum Height

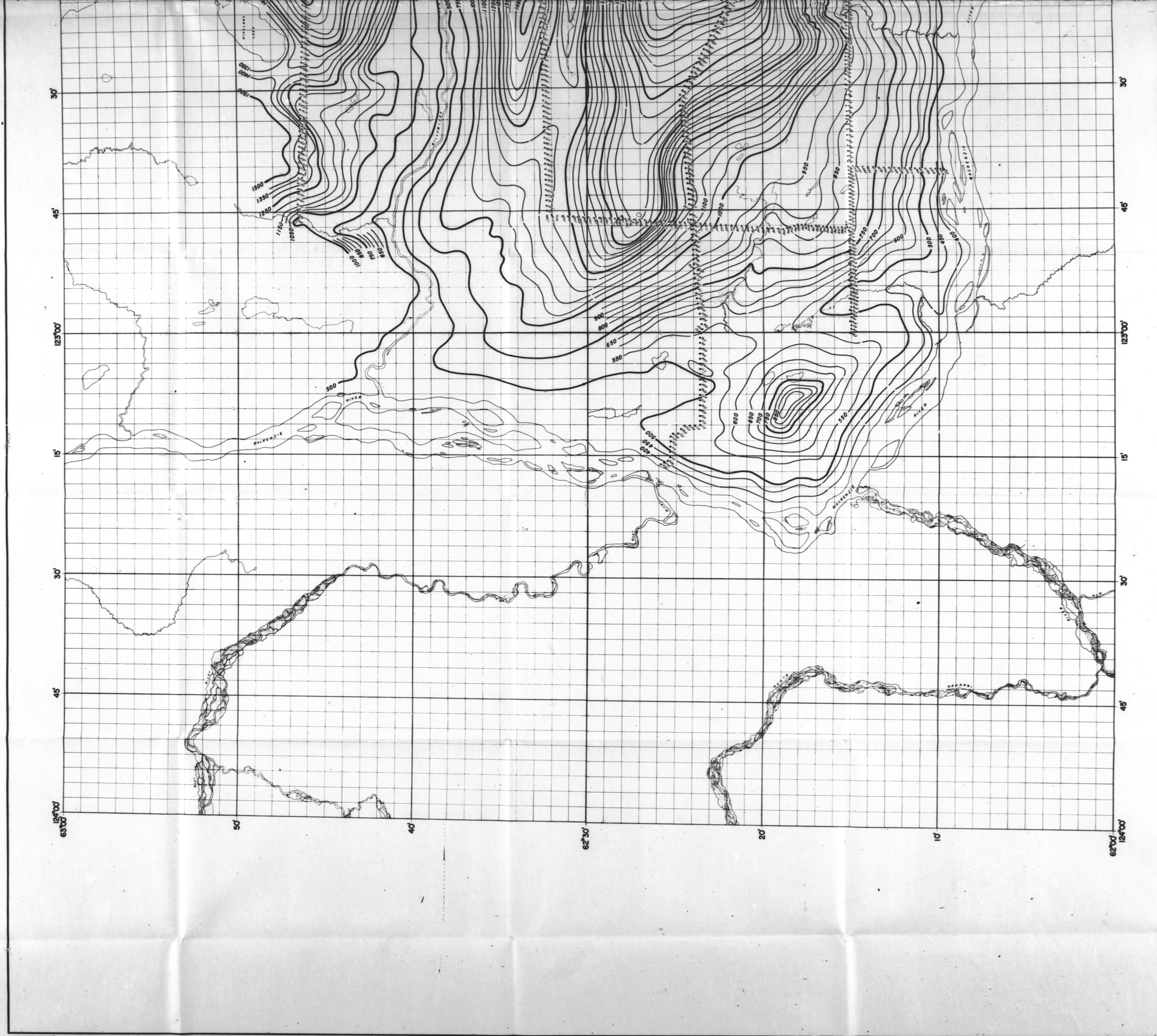
95H JEAN MARIE
2 MILES TO 1 INCH
Scale: 2 miles to 1 inch

CC

30x

West Canadian Graphic Industries Ltd.

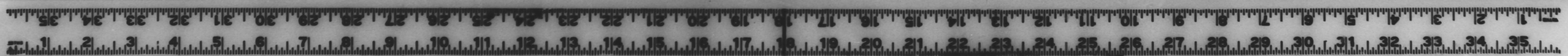
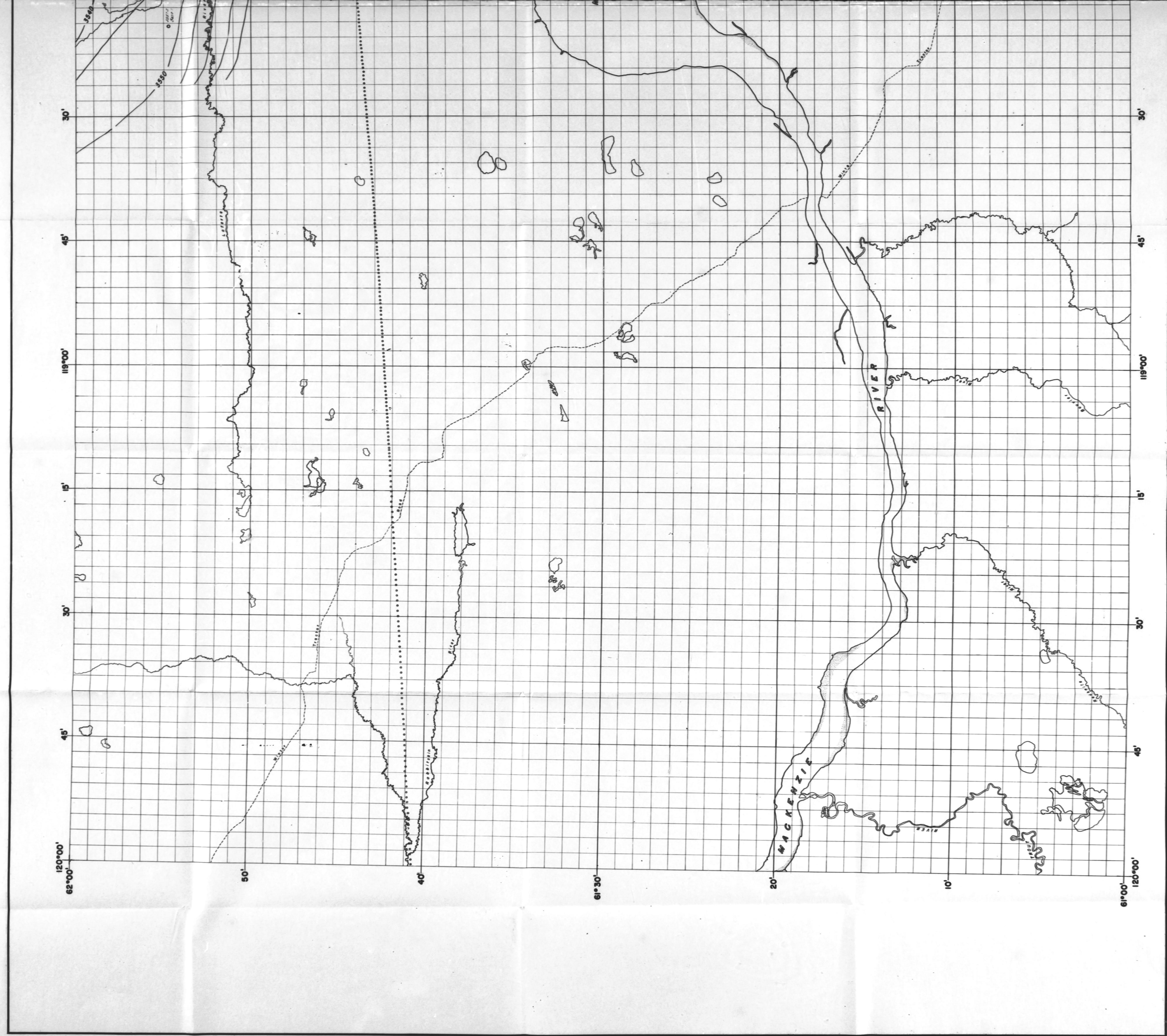




2.1 GANDELL BEND SEISMIC - SURFACE ELEVATIONS



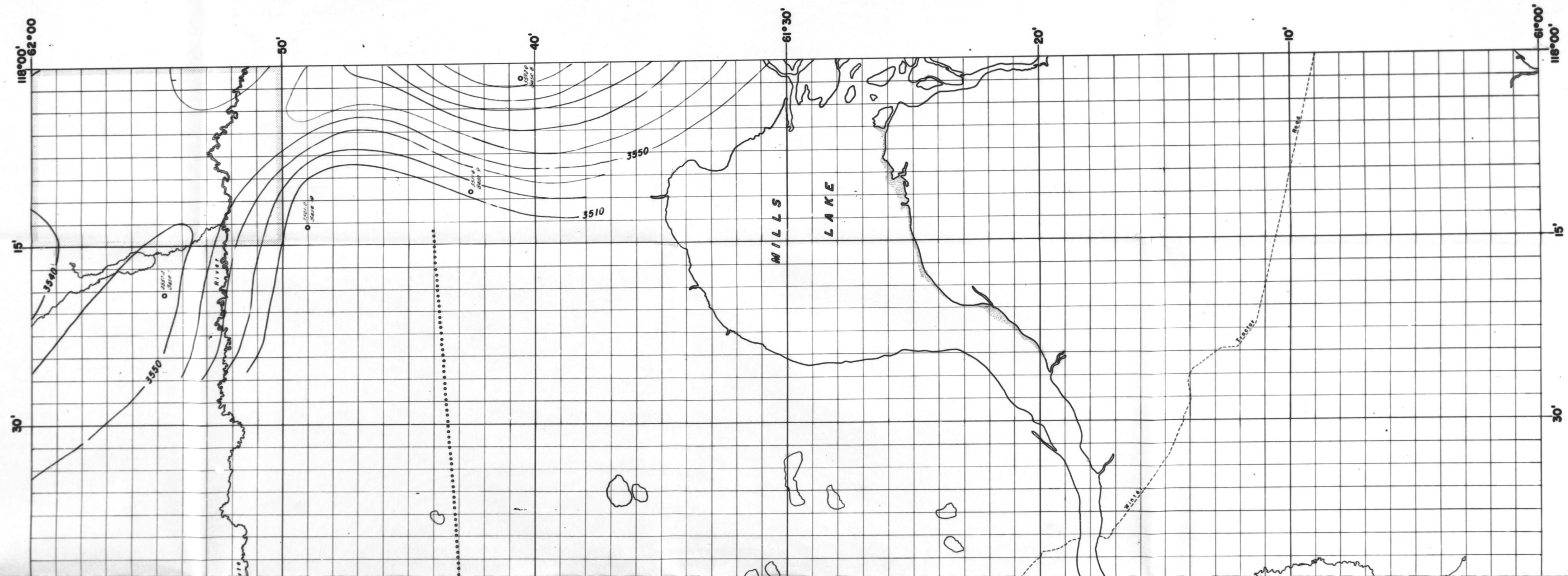
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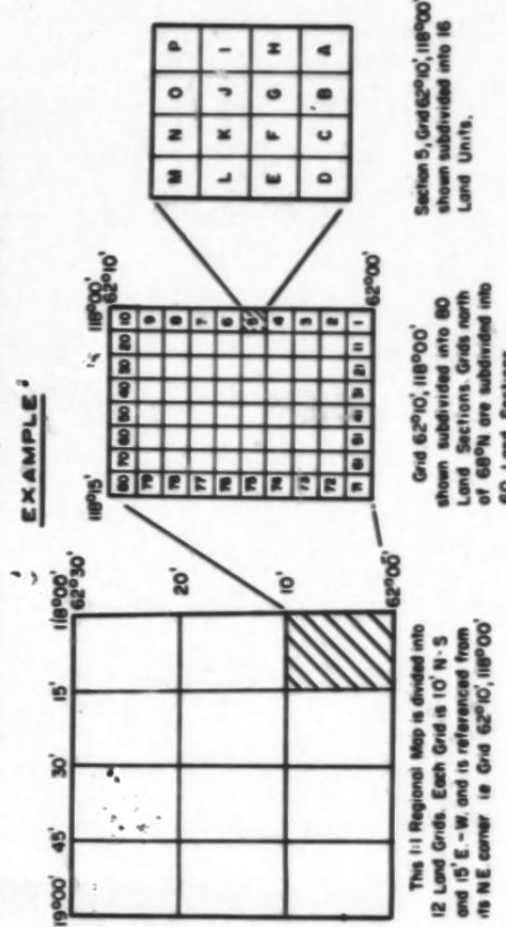
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IMPERIAL OIL LIMITED
EXPLORATION DEPARTMENT PEACE RIVER DISTRICT



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



INDEX TO MAP SHEETS



IMPERIAL OIL LIMITED
MAP OF

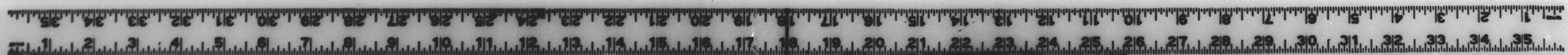
SCALE: 1 MILE TO 1 INCH

SYMBOLS

- Topographic Contours: Interval - 20 feet
- Gravity Station Locations & Elevations: Center Interval - 0.5 miligals
- Geological Features: Shaded areas indicate specific geological formations
- Corrected Time Values: Indicated by specific symbols
- Gravel Shows & Depths: Indicated by specific symbols

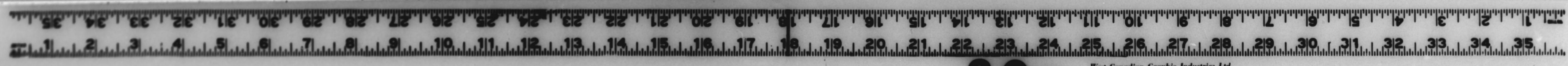
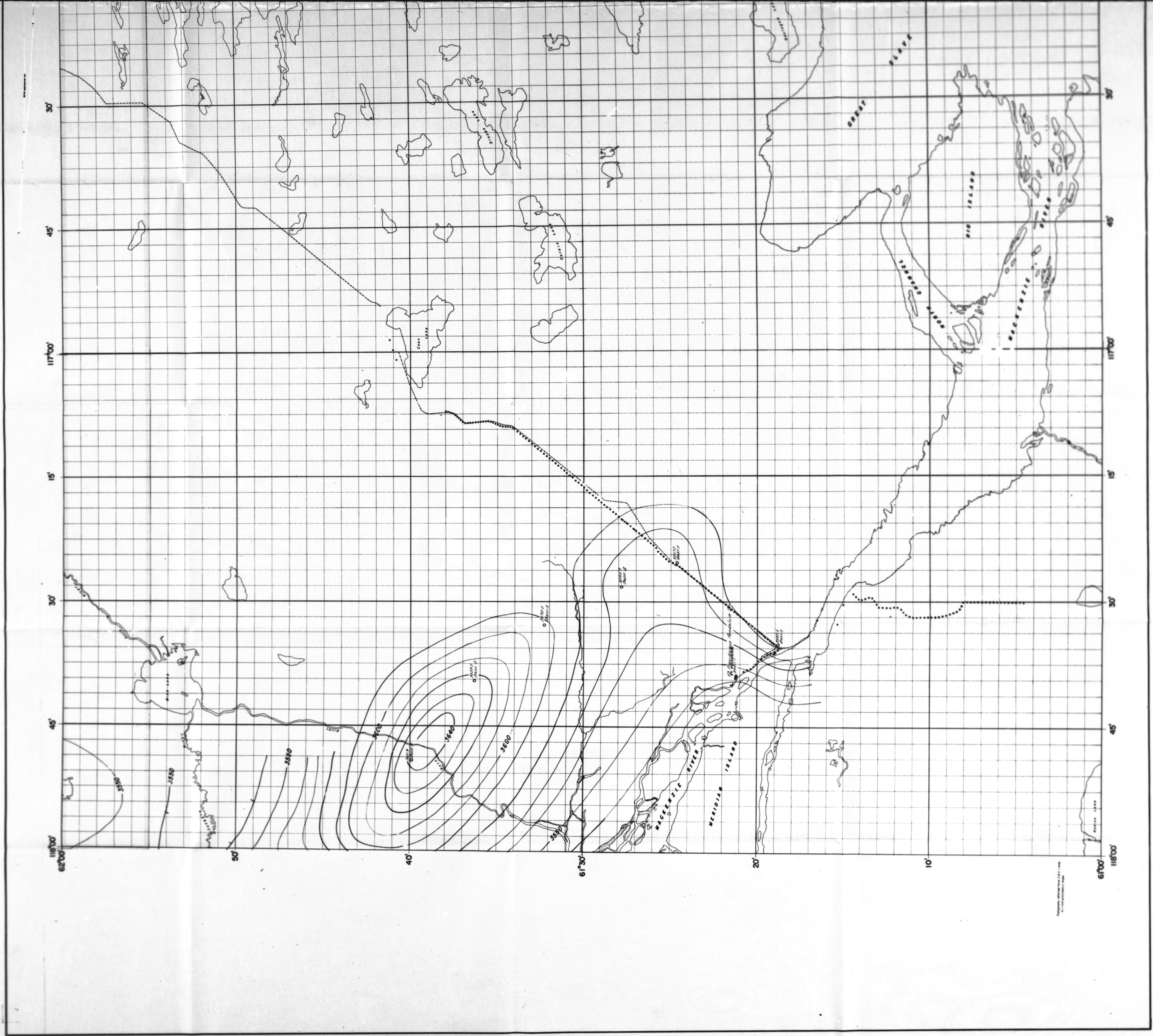
PEACE RIVER DISTRICT

85E MILLS LAKE
2 MILES TO 1 INCH



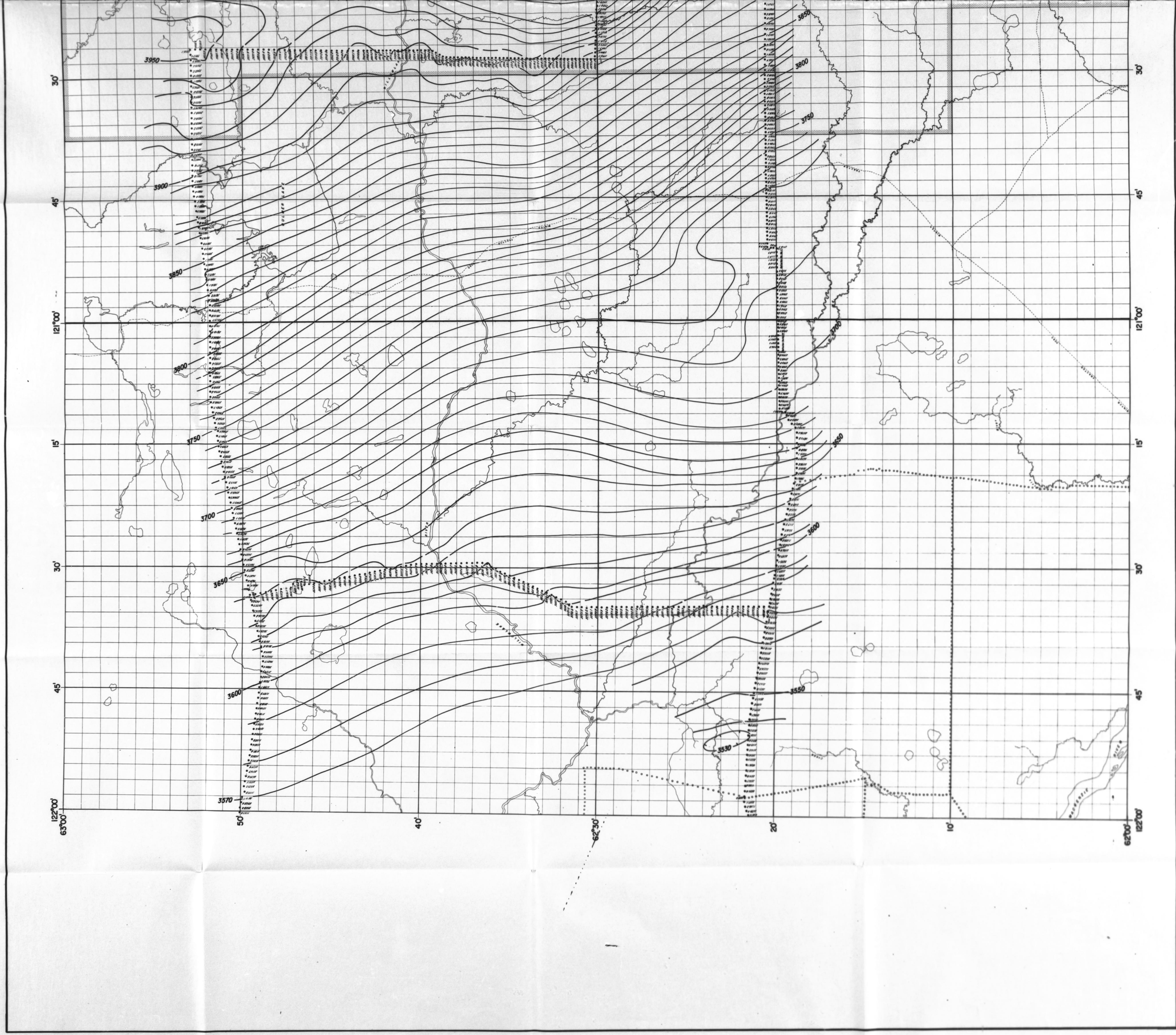
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West Canadian Graphic Industries Ltd.



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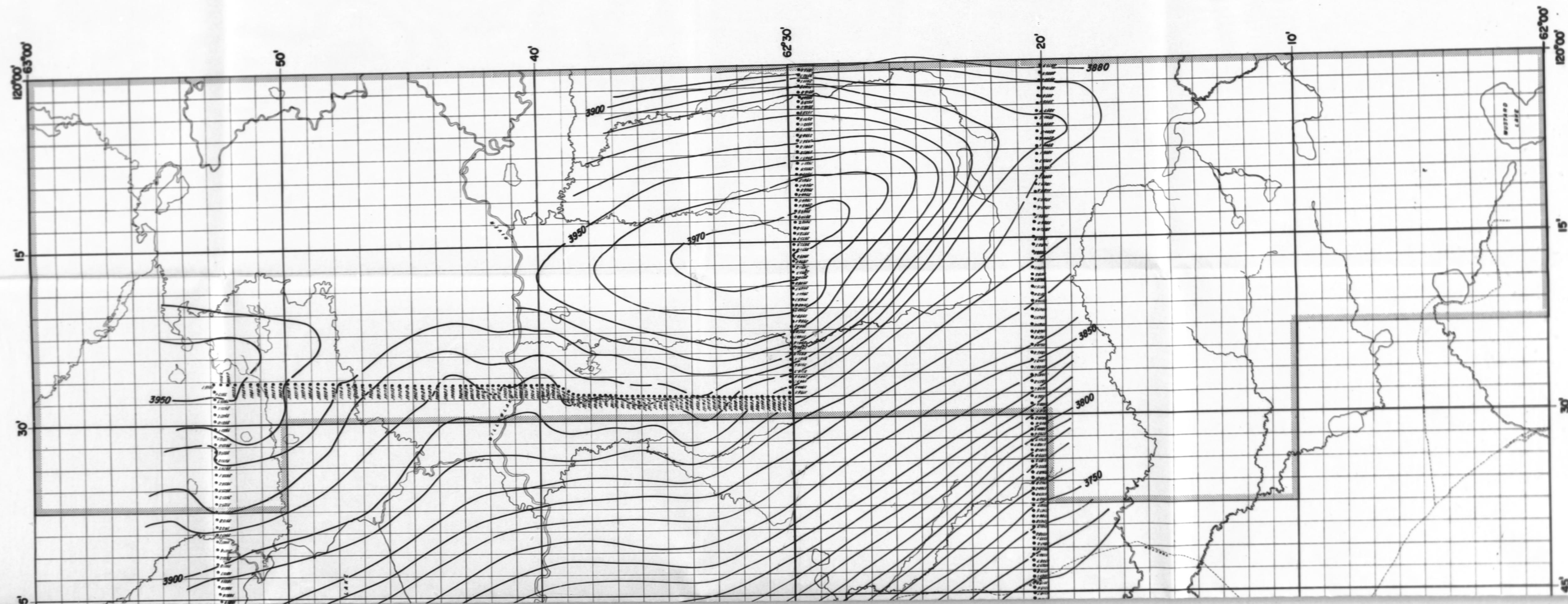
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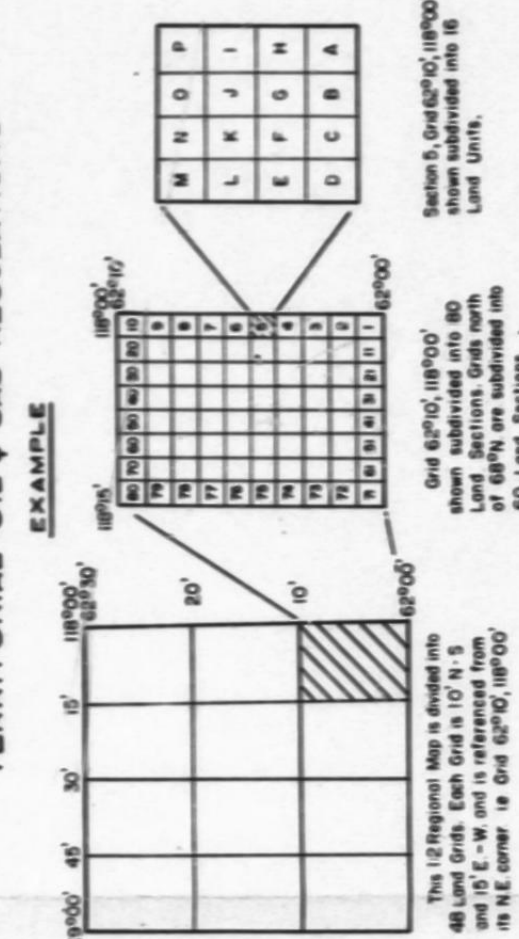
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West Canadian Graphic Industries Ltd.

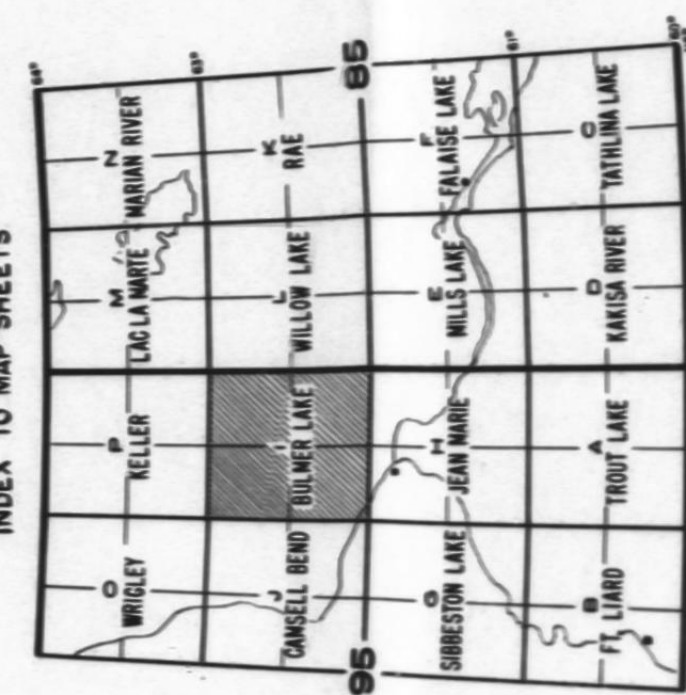
IMPERIAL OIL LIMITED
EXPLORATION DEPARTMENT PEACE RIVER DISTRICT



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



INDEX TO MAP SHEETS



IMPERIAL OIL LIMITED
MAP OF
SCALE: 2 MILES TO 1 INCH

SHOWS

- ADJACENT CONTIGUOUS - Contour interval - 20 feet.
- GRAVITY STATION LOCATIONS, & ELEVATIONS.
- GRAVITY FINAL VALUES.
- TIME VALUES & CONTOUR ON.
- REFRACTION PROFILES.
- DEPTH MAP - CONTOUR ON.
- C-COAL SIGNS & DEPTHS.

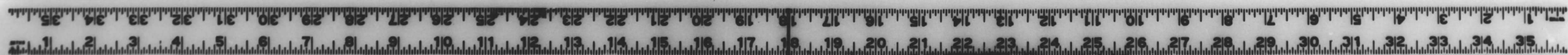
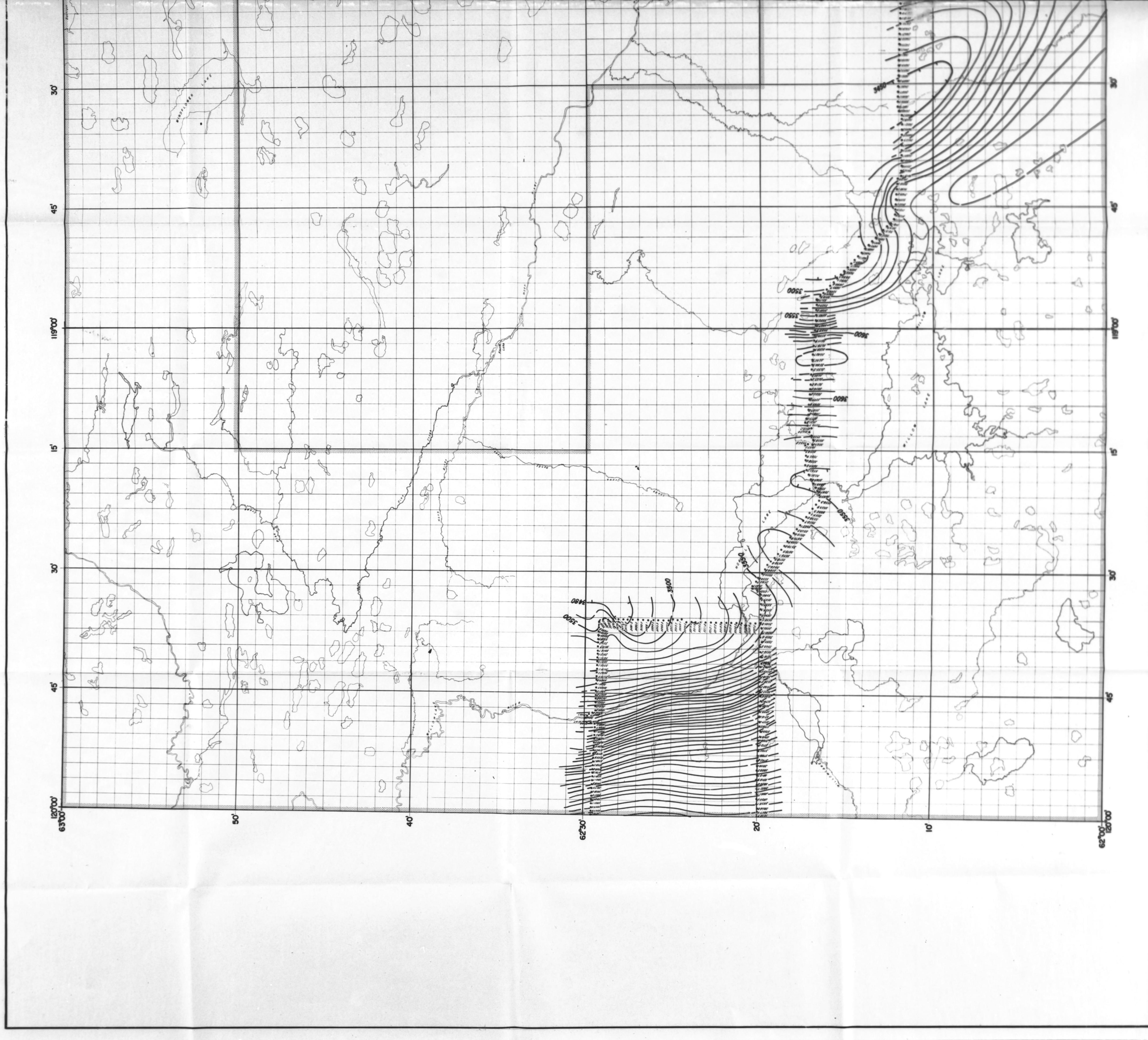
PEACE RIVER DISTRICT
JULY, 1960

95-1-BULMER LAKE



30x

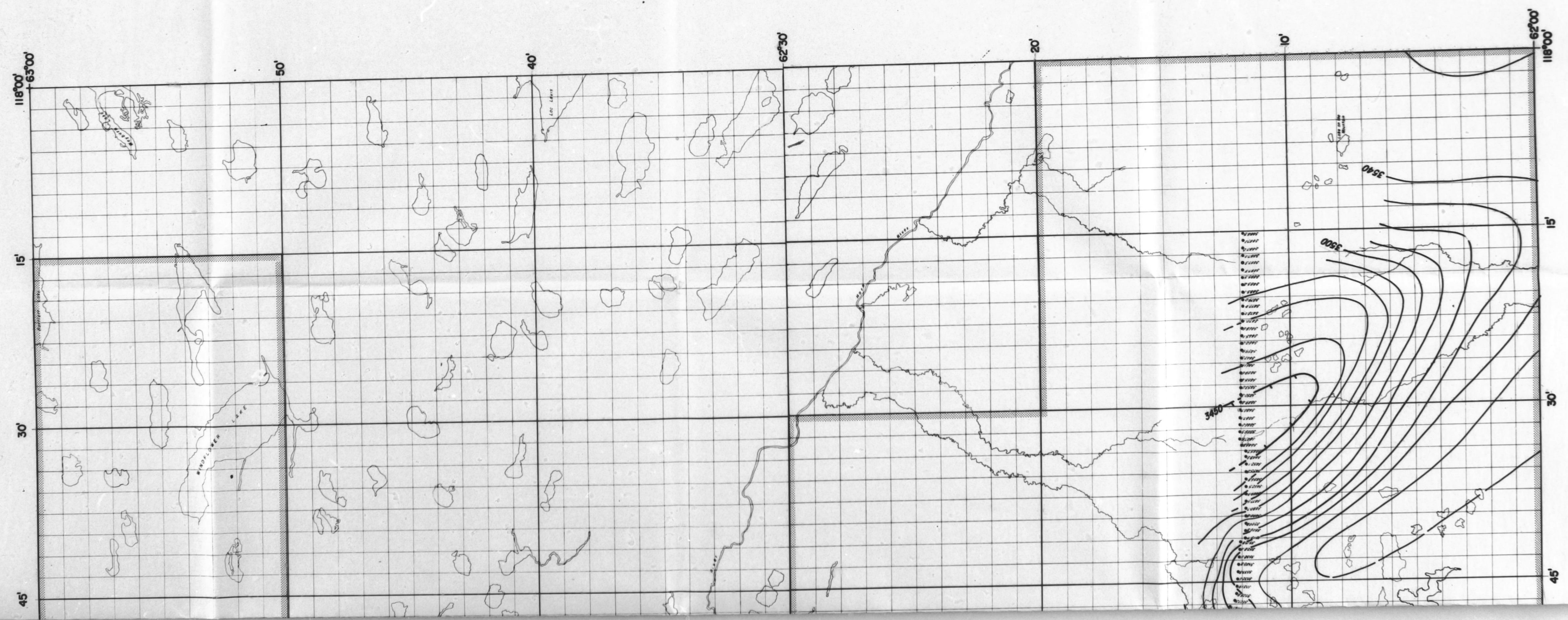
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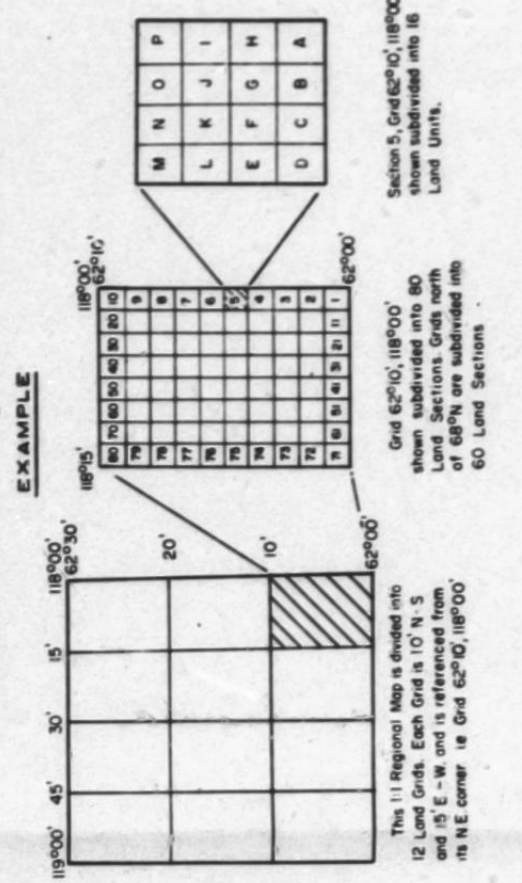
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West Canadian Graphic Industries Ltd.

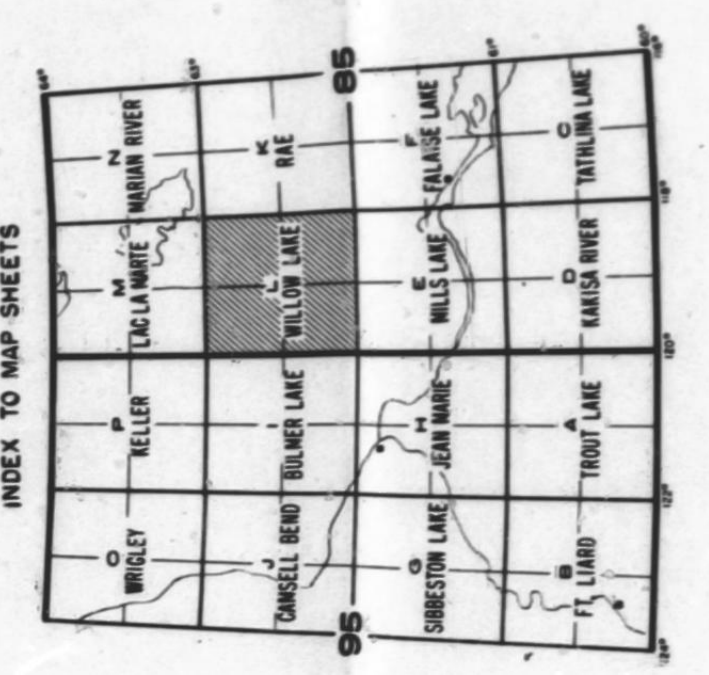
IMPERIAL OIL LIMITED
EXPLORATION DEPARTMENT PEACE RIVER DISTRICT



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



INDEX TO MAP SHEETS

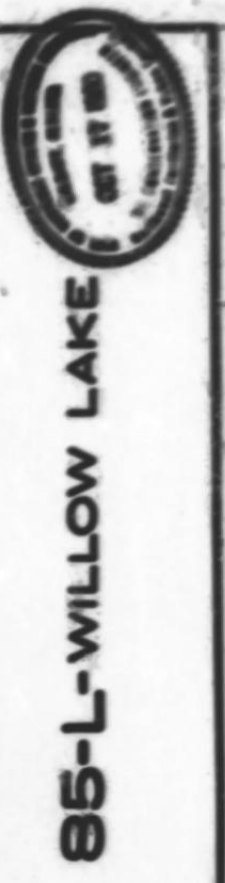


IMPERIAL OIL LIMITED
MAP OF

SCALE: 2 MILES TO 1 INCH

SYMBOLS:

- ASSEMBLY CONTOURS
- GRAVITY STATION LOCATIONS, & ELEVATIONS
- SEISMIC SHOT HOLE LOCATIONS, ELEVATIONS & TOTAL DEPTHS
- REFRACTION PROFILES
- DEPTH MAP - CONTOURS ON
- PEACE RIVER DISTRICT
- 6-COAL SHOPS & DEPTHS



85-L-WILLOW LAKE