

IN THE MATTER of the Dominion Lands Act,  
Revised Statutes of Canada, 1927,  
Chapter 113 and Amendments thereto; and  
Regulations Respecting the Administration  
and Leasing of Oil and Gas Rights in the  
Northwest Territories and the Yukon  
Territory P.C. 1953-525 of April 2nd,  
1953; and

IN THE MATTER of Oil and Gas Permits #628,  
629, 630, 631, 632, and 633.

AFFIDAVIT

I, George Edward Schultis, of the Town of Peace  
River, in the Province of Alberta, do solemnly declare:

1. THAT I am the Peace River District Exploration  
Manager of Imperial Oil Limited and as such, I have a personal  
knowledge of the facts herein deposed.

2. THAT Imperial Oil Limited is the operating  
company upon the lands contained in the following Northwest  
Territories and Yukon Territory Oil and Gas Permits which were  
issued to the company noted below and subsequently assigned to  
Imperial Oil Limited.

628 Sirius Petroleum Limited  
629 Sirius Petroleum Limited  
630 Sirius Petroleum Limited

631 Sirius Petroleum Limited  
632 Sirius Petroleum Limited  
633 Sirius Petroleum Limited

3. THAT attached hereto and marked Exhibit 'A' to  
my declaration is an Exploration Report in regard to the Northwest  
Territories and Yukon Territory Oil and Gas Permits, more specifically  
enumerated in the next preceding paragraph, the facts of which are  
true to the best of my knowledge and belief.

Sworn before me at the Town of  
Peace River, in the Province of  
Alberta, this 27 day of August  
A.D., 1954. }  
B. McLean  
A Commissioner for Oaths in and for  
the Province of Alberta.

G. E. Schultis

EXPLORATION REPORT  
NORTHWEST TERRITORIES AND YUKON TERRITORY  
Oil and Gas Permits Nos. 628 to 639, inclusive.

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## INTRODUCTION

Northwest Territories Petroleum and Natural Gas Permits Nos. 628, 629, 630, 631, 632, and 633 comprise a total of 315,554 acres, more or less, and were issued effective December 13, 1952. These permits were originally held by Sirius Petroleum Limited and were subsequently assigned to Imperial Oil Limited.

Since the date of issue, Imperial Oil Limited having been the operator of these permits, has conducted certain Surface Geological surveys in the area, both on and off the permits noted above.

## GEOLOGICAL SURVEYS

In addition to previous geological surveys carried out between Latitudes  $60^{\circ}$  to  $63^{\circ}$  N and longitudes  $113^{\circ}$  to  $125^{\circ}$  W, another survey was run during the summer of 1953. This survey located and examined outcrop sections along the Buffalo, Little Buffalo, and Slave Rivers.

Outcrops in the Great Slave - Buffalo Lake area were reached by canoe traverse. An aircraft was used for reconnaissance preceding the canoe traverse. Thus very good surface coverage was obtained between  $60^{\circ}$  and  $62^{\circ}$  of latitude and  $112^{\circ}$  and  $118^{\circ}$  of longitude. The outcrop areas examined are shown on the map.

The purpose of this latter survey was to investigate the Middle Devonian stratigraphy of the area and to determine the relationship of these rocks with rocks of the same age in Alberta. No significant structures have been defined in the Great Slave area. This may be due to the rather discontinuous and scattered nature of the outcrop. However

numerous small anticlinal undulations have been noted in Middle Devonian carbonates along the south shore of Great Slave Lake. These structures generally strike approximately N - S but are considered to be too small to be of consequence.

Rocks of Silurian, Middle and Upper Devonian age were examined. Cretaceous sediments are present to the west and south but are completely eroded in the Great Slave - Buffalo Lake region.

The permit areas under consideration lie within 130 miles of the Precambrian Shield. The surface rocks over the permit areas consist of shales and limestones of Upper Devonian age, progressively older rocks lie exposed to the northeast.

The sediments dip gently and thicken to the west and southwest from the Shield edge. Dips vary from about 15° to 30° per mile.

Silurian rocks directly overlie the Precambrian in the area, some Ordovician may also be present, but the aggregate thickness of the Silurian and Ordovician seldom exceeds 300'. These rocks are exposed along the edge of the Precambrian Shield on the shores of Great Slave Lake and the Slave River.

Middle Devonian sediments considered to be the equivalents of the Elk Point formation of Alberta, lie exposed on the south and west shores of Great Slave Lake and on the Slave River. These rocks include the Presqu'ile formation which is reefal. This reefal facies is known to extend from approximately Pine Point on the south shore of Great Slave Lake westward for at least 70 miles. At its outcrop, the Presqu'ile

formation gives rise to numerous oil and sulphur water seeps and cores of this formation from bore holes to the west of the lake have exhibited oil staining. This formation appears promising as an oil reservoir where it is overlain by sufficient Upper Devonian shales to provide a cap. Further west in the Ft. Simpson area, the Middle Devonian consists again of an evaporitic facies similar to the Elk Point formation of Alberta.

The Upper Devonian conformably overlies the Middle Devonian. In the Great Slave area erosion has removed all the Upper Devonian, however it is present a short distance to the southwest and is of considerable thickness over the Buffalo Lake permit areas. No good reservoir rock is contained in the Upper Devonian in the area. The bulk of these sediments consist of shales, although some limestones and dense organic growths are present near the top.

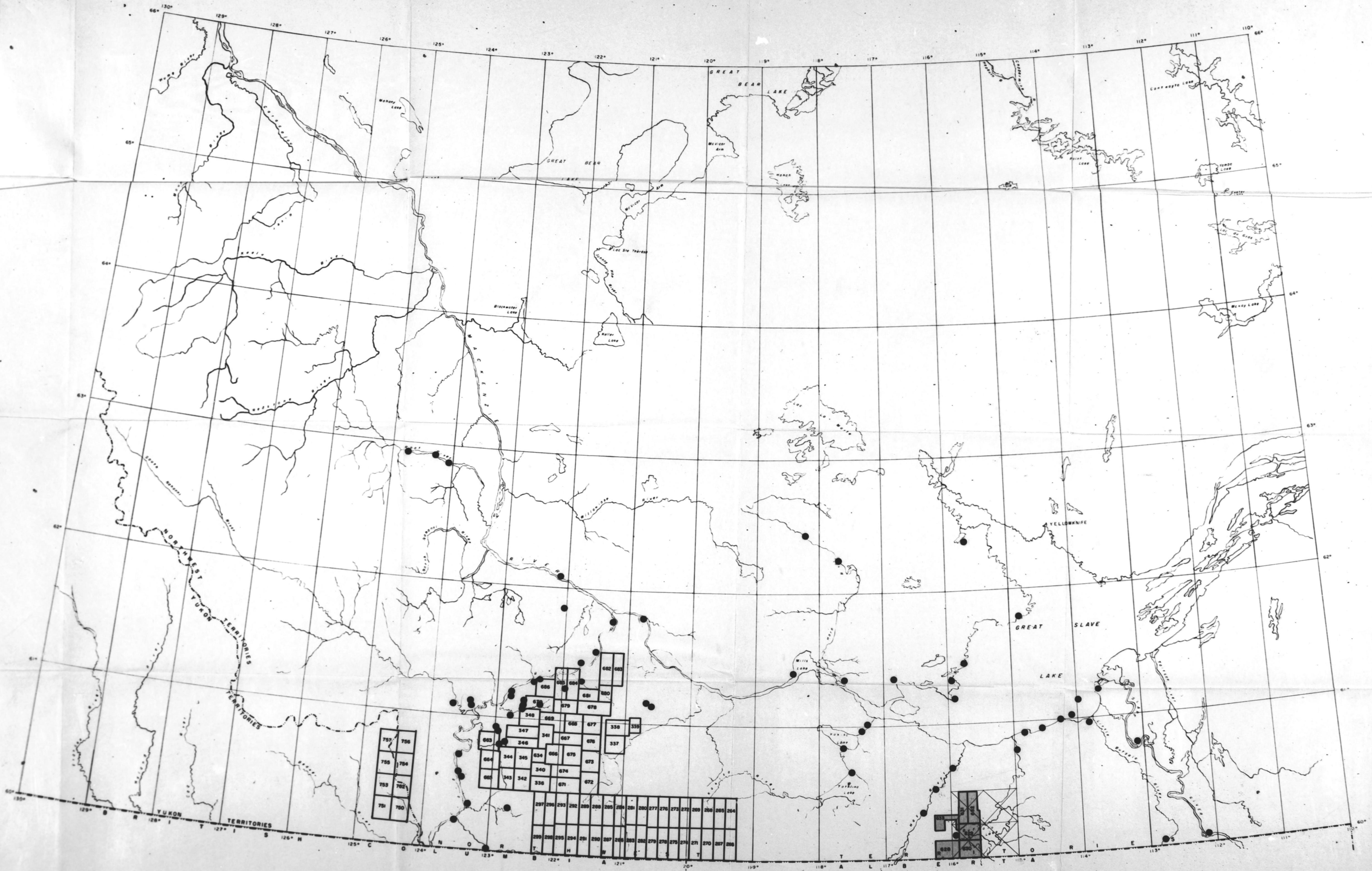
Mississippian rocks are absent in the area but do occur a considerable distance to the west.

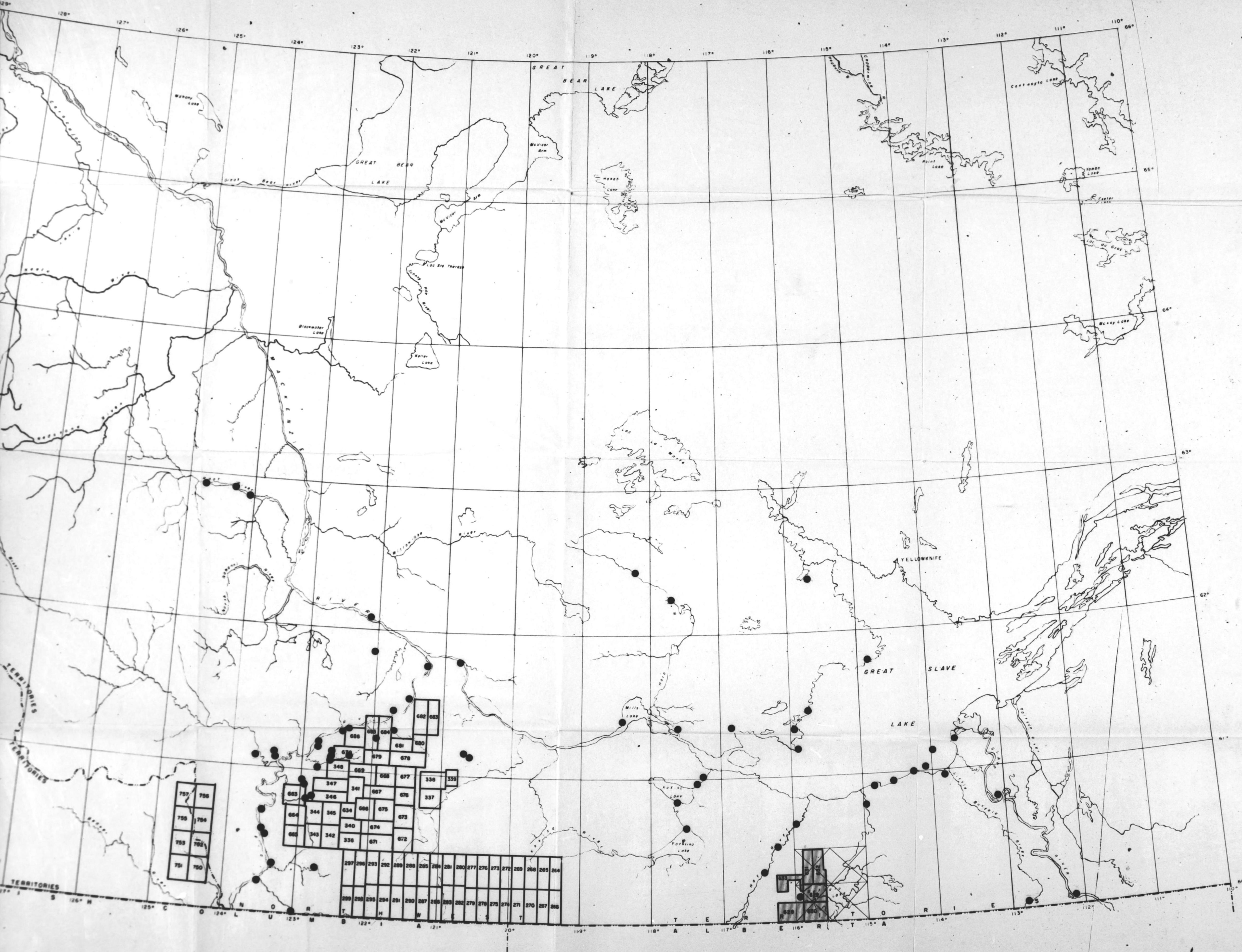
Cretaceous sediments have been eroded in the Great Slave - Buffalo area but a thin wedge of Lower Cretaceous Loon River formation shales are present a short distance to the south in Alberta.

The area has been scoured by glaciation which has modified the topography and concealed much of the outcrop with boulder clays. Great Slave Lake was much larger at the close of the glaciation period than it is today and raised beaches and lake sands extend southward for several miles from the present lake shore. These old beaches and shore-sands have also obliterated much of the bedrock surface features.

PLANIMETRIC MAPPING

Planimetric mapping has been completed over the area as outlined on map #1. Within this area there are 34 map sheets, each of scale 1 inch to the mile and each covering 15 minutes of latitude and 30 minutes of longitude.





**NORTHWEST TERRITORIES  
P. & N.G. ACREAGE**

SCALE  
IMPERIAL OIL LIMITED  
EXPLORATION DEPT. PEACE RIVER DISTRICT

**—LEGEND—**

- GEOLOGICAL SURFACE SECTION
- APPLICABLE PERMITS
- ▨ IN. TO 1 MI. PLANIMETRIC MAPPING

