MAR 19690029: NORTH ALBERTA

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PHOTOGEOLOGIC MAPPING
of
CANADA SOUTHERN PETROLEUM LTD.
PERMIT NO. 89
NORTH ALBERTA

Prepared for

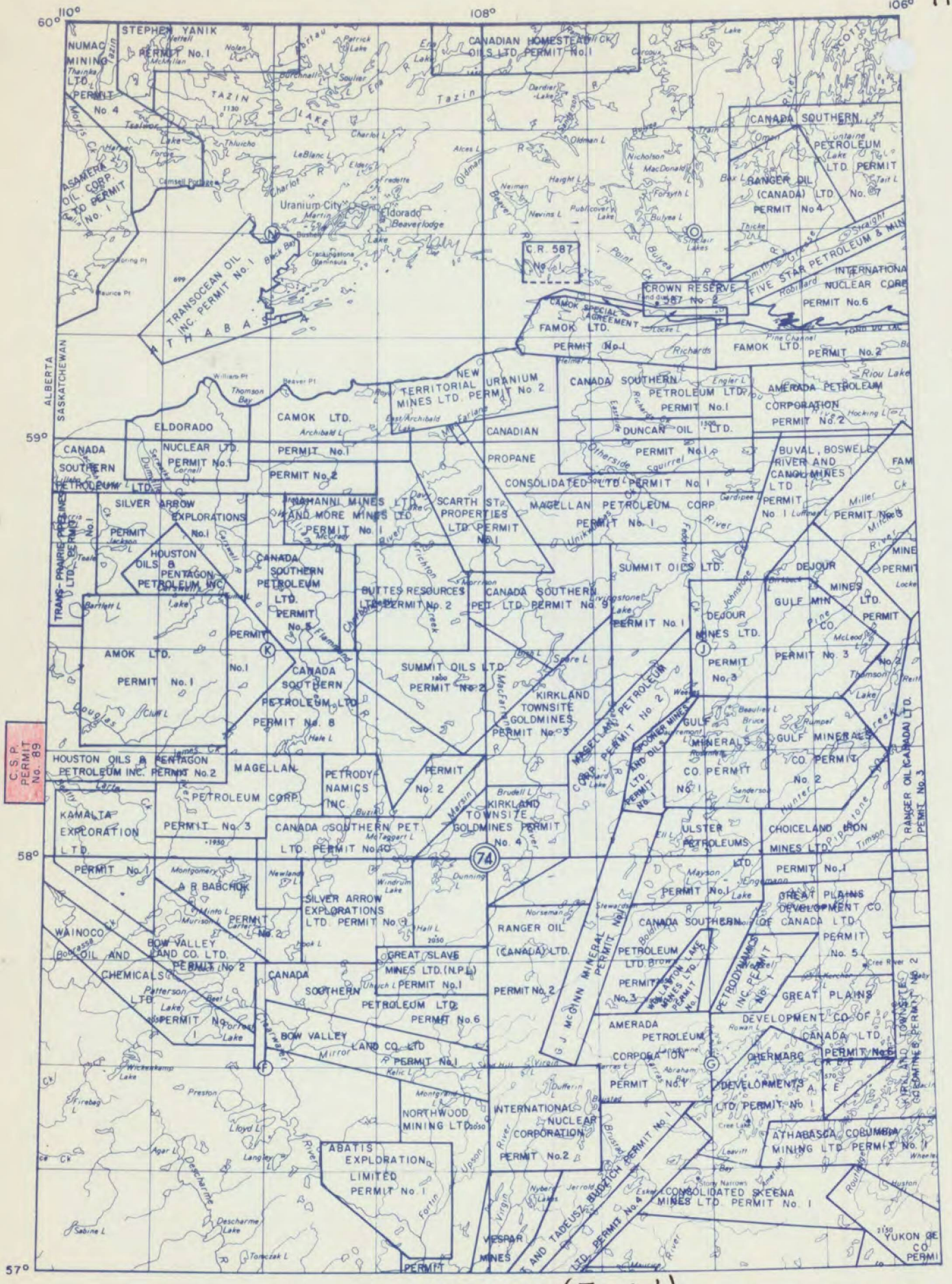
CANADA SOUTHERN PETROLEUM LTD.

By

GEOPHOTO SERVICES LTD
GEOPHOTO
CALGARY ALBERTA CANADA

July, 1969.

19690029



INDEX MAP (Figure 1)

CANADA SOUTHERN PETROLEUM LTD. PERMIT 89—NORTH ALBERTA

Permit Area

GEOPHOTO SERVICES LTD.

SCALE: 1 INCH = 22 MILES APPROX.

INTRODUCTION

This memorandum report describes the results of photogeologic mapping (mainly surficial) of Canada Southern Petroleum Ltd. Permit No. 89 Northeast Alberta. For location of the permit see the enclosed index map. → Figure 1

The study was undertaken to delineate outcrops, map surficial deposits, delineate major lineaments, and any other features of geologic interest in the area. Detailed mapping of drainage and muskeg areas was included in the study.

PHOTOGRAPHY AND MAP COMPILATION

Vertical air photographs obtained from the Alberta Government were used in the study. These photographs were flown in 1951-52 at an approximate scale of 1:40,000 and are of good quality.

Uncontrolled, stapled mosaics of the area were prepared by Geophoto Services, Ltd. These mosaics were made by carefully matching topographic and hydrographic detail between photographs while using a topographic map at a scale of 1:250,000 for gross control. Some mismatch of detail was unavoidable due to scale variations between photographs; scale variations between adjacent flight strips were often considerable. The mosaics were photographically reproduced in sheets corresponding to the numbered

quadrants of the National Topographic System at a scale of 1:63,360. The mosaic sheets required to cover the permit were spliced together.

The base map was prepared by tracing the drainage from the mosaics and annotated air photographs. A permascale copy of the resulting drainage map was used as a base map. The available geological data were ink-drafted onto the base map and a pencil colored ozalid print serves as the final presentation.

GEOLOGY

The permit area is wholly within the outcrop outline of the Athabasca Formation. No outcrops were located within the permit area.

Glaciation affected the entire area. The glacial deposits are mostly recessional moraine and glacial outwash. As noted on the map, outwash deposits and fluted moraine occur across the north margin of the permit. To the south of this area hummocky recessional moraine and glacial outwash is present. A recessional moraine front with conspicous northwest - southeast recessional moraine ridges extends from Bowen Lake to MacLennan Lake. South of this front a band of glacial outwash deposits is present. In the vicinity of Helene Lake and southward recessional moraine ridges are again conspicous, mixed with varying amounts of glacial outwash deposits. The fluted moraine in the north-east part of the permit indicates that the last ice advance was southwesterly in

this area. Several eskers are present, particularly in the southern part of the permit.

Numerous lakes and small areas of muskeg are scattered over the eastern part of the permit area, with muskeg most abundant in the northern and southern areas of recessional moraine.

A few lineaments were mapped. The abundant muskeg, glacial outwash, and recessional ridges were a considerable deterrent to the mapping of lineaments.

PROCEDURE

The air photographs were sterescopically examined to delineate outcrops, to determine the nature of the surficial deposits, delineate drainage and muskeg, and to check lineaments and glacial lineations. Muskeg was delineated with respect to soil moisture, not trafficability. Only definite streams were delineated through muskeg areas.

The mosaics were used to delineate major lineaments, as well as to delineate major drainage features and to check for any other features of possible significance. Recessional moraine ridges and glacial lineations had to be considered while mapping lineaments so that possible structural significance would not be assigned to surficial features. Lineaments were expressed as drainage, vegetation, or topographic alignements.

SUMMARY

Photogeologic mapping of the permit was accomplished. No outcrops were located. Most indications of structure were masked by glacial deposits.

Detailed delineation of drainage and muskeg areas, delineation of a few lineaments, and mapping of surficial features was completed.

Respectfully submitted,

GEOPHOTO SERVICES, LTD.

John B. Thigpen

[redacted]

Eric Hooke

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Hobson, G.B., and H.A. MacAulay, 1969, A seismic reconnaissance survey of the Athabasca Formation, Alberta and Saskatchewan: Geol. Surv. Canada, Paper 69-18.

QUARTZ MINERAL EXPLORATION PERMIT No. 89

(744/148)

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CALGARY 2, ALBERTA.

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