

PROGRESS REPORT.

14th May, 1953 to 14th March, 1955.

YUKON AND NORTHWEST TERRITORIES.

Petroleum and Natural Gas Permits #750,  
751, 752, 753, 754, 755, 756, 757.

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95/B and 95/C; 94/N and 94/O.

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- Photogeological structural trends axis; southern part of the Liard Plateau plotted from air photos.  
95/B and 95/C.

Petroleum and Natural Gas Permits.  
Yukon and Northwest Territories.

Nos. 750, 751, 752, 753, 754, 755,  
756, 757.

Dated 14th May, 1953, issued to  
Imperial Oil Limited.

INTRODUCTION

These permits form a rectangular block of 501,828 acres which straddles the Yukon - Northwest Territories border, with the eastern border lying about 32 miles west of Fort Liard, the south border about 11 miles north of the Yukon - B.C. border, with the northeast corner about 30 miles southwest of Nahanni Butte.

The block lies entirely within the physiographic province of the upland known as the Liard Plateau, which is a subdivision of the eastern system of the Canadian Cordillera. The area is one of considerable topography, lying immediately west of the Liard range and including a large portion of the Labiche range, consisting of even parallel ranges of hills, some of which are of mountainous character, striking generally south. The valleys are at an average elevation of 2000 feet, while the average height of the hills and peaks is 4500 feet, although peaks as high as 5000 feet are present in the Permit block.

The area is accessible by canoe and kicker during the summer by way of the Liard and Labiche Rivers. However, the short summer season necessitates the use of conventional and helicopter aircraft in order to perform exploratory work in its primary stages.



The exploratory work devoted to the Permits consisted of surface geological parties, photogeology and planimetric mapping, which is reported on under the appropriate headings hereafter.

In addition thereto, an aeromagnetometer survey (which has been reported on in connection with other Permits held by the Company in the Northwest Territories) covering the north half of the Western Canadian sedimentary basin was completed in the summer of 1953.

#### GEOLOGICAL SURVEY

A reconnaissance geological survey of the Liard River between the Fort Nelson and Petitot Rivers and adjacent country and the lower waters of the Crow and Beaver Rivers was made in the summer of 1954. Sections were located and visited by means of a helicopter and canoe traverse. To obtain the maximum section of Permian-Pennsylvanian rocks, sections on the Labiche Range and Kotaneelee River were examined in detail and surveyed by means of a plane table.

In all, five separate outcrops were investigated. These areas and the ages of the sections are shown on the accompanying map.

Due to the reconnaissance nature of the survey, no detailed structural mapping was attempted. However, some strikes and dips were measured on the Crow and Beaver Rivers. These are shown on the accompanying map.

The following is a description of the above-mentioned five outcrop areas.

Section #1.

Located on the east limb of the Labiche Range, west of Painted Mountain, N.W.T. The upper part of the Permian was also examined on the Kotanelee River immediately to the east. This section was surveyed by plane table.

The section examined is as follows from top to base:

0-100' Lower Cretaceous. Shale, dark grey, fissile.

100-1315' Permian. Sandstone, gray, fine-grained, often laminated with thin interbeds of cherty conglomerate. Minor bands of gray siltstone and brown to black chert.

1315-6715' Pennsylvanian. Sandstone, gray, fine grained, interbedded with minor limestone, dark gray, finely crystalline and dark gray, fissile shale.

6715' - Base of outcrop section.

Section #2.

Located on the east slope of Mt. Merrill on the Beaver River, I.T.

0-158' Permian. Chert, gray to black, massive to thin bedded.

Section #3.

A composite of scattered outcrops on the Beaver River from the Yukon - B.C. border to where the Beaver River flows due south to the Liard River. This section probably includes parts of the Lepine and Scatter River formations of the Fort St. John group. Dips in this section were too variable and the outcrop too scattered to obtain thicknesses.



0-440' Lower Cretaceous. Interbedded grey, fine to medium grained sandstone and black, fissile to platy shale, minor grey siltstone.

Section #4.

On the southward bend of the Crow River, east of longitude 125° W. Dips up to 12° to the southeast were measured.

0-495' Lower Cretaceous. (Lepine and Scatter formations). Interbedded dark grey, silty shales and grey fine grained sandstone.

Section #5.

A composite of extremely scattered outcrops on the Liard River between Nelson Forks and the N.W.T. border. No thickness determinations were made due to the scattered pattern of the exposures.

Upper Cretaceous.

Interbedded dark brown, fine to coarse grained sandstone and black to grey silty and sandy shales, also containing *Inoceramus* fragments.

PLANIMETRIC MAPPING

As a corollary to Imperial's air magnetometer survey of the north half of the Western Canada sedimentary basin, a series of planimetric maps at a scale of one mile to one inch was compiled.

This work was a planimetric compilation of topography obtained from R.C.A.F. photography, the laydown of which was controlled by shore methods. The laydown and mapping was required in part to locate the results of the aeromagnetometer work and in part for future on-the-ground investigations. Following the mapping of the

main area, fringe areas to the magnetometer survey were also compiled using the same photo laydown for control. This fringe mapping extended the area of planimetry to 254 mapsheets, as shown on the enclosed map references and as a result virtually all permits in the 700 group have now been topographically mapped but uncountoured.

PHOTO GEOLOGY - SOUTHERN PART OF THE LIARD PLATEAU.

Airphoto mosaics of the scales 1" to 1 mile and 1" to 4 miles were made up from R.C.A.F. airphotos for the area bounded by latitudes 60° 00' and 61° 00' N. and longitudes 124° 00' and 126° 00' W. This area lies entirely within the physiographic province of the Liard Plateau. This plateau is a subdivision of the Eastern System of the Canadian Cordillera and its eastern edge marks the contact between the Interior Plains and the Canadian Cordillera. The plateau is an upland characterized by parallel ranges of hills. In its eastern part, the Labiche Ranges are of mountainous character. The average elevation of the plateau is in the vicinity of 4000'.

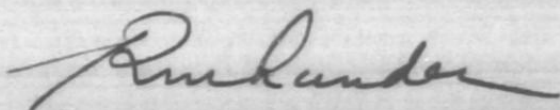
The Beaver, Crow, Labiche and Kotanulu Rivers are the main drainage channels of the southern part of the plateau and flow to the southeast into the Liard River. The Labiche and Kotanulu Rivers appear to be subsequent streams controlled by the Labiche Range structures.

The dominant structural, and hence topographic, features are confined to the Labiche Ranges in the eastern part of the mosaic area. These ranges appear to be north-south trending anticlinal features separated by synclinal valleys which are occupied by the Labiche and Kotanulu Rivers.



West of this area the topography is more subdued, structures are fewer and of lesser magnitude. This western area appears to be one of widely spaced gentle open folds. The axis of these folds parallels in general the Labiche Range structures.

The axis of the more dominant structures are plotted from airphotos on the accompanying map.

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R. W. LANDES, P. ENG.

FCH/as.  
Peace River.  
June, 1955.

CANADA  
PROVINCE OF ALBERTA

TO WIT:

IN THE MATTER OF

A REPORT DATED JUNE 1955  
ON N.W.T. OIL & GAS PERMITS  
NUMBERED:

750	753	756
751	754	757
752	755	

I, **Pierre E. Côté**

of the town of Peace River

in the Province of Alberta

do solemnly declare that 1. I am the Acting District Exploration Manager of Imperial Oil Limited for the Peace River District and as such I have a personal knowledge of the facts hereinafter deposed.

2. Imperial Oil Limited is the operator and Permit holder of the lands contained in the following Northwest Territories and Yukon Territories oil and gas Permits.

Permit 750  
751  
752  
753  
754  
755  
756  
757

3. That the facts contained in the report on file with the Chief of the Lands Division, Northern Administration and Lands Branch, Department of Northern Affairs and National Resources, Ottawa, Ontario and dated June 1955 are true to the best of my knowledge and belief.

AND I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of "The Canada Evidence Act."

DECLARED before me at the town  
of Peace River

in the Province of Alberta,

this 13th day of July

A.D. 1955.

*Pierre E. Côté*

*R. Chisholm*  
A Commissioner for oaths in and for  
the Province of Alberta



**PRICE WATERHOUSE & CO.**

**301 EIGHTH AVENUE WEST**

**CALGARY, ALBERTA**

**April 14 1955**

Chief, Lands Division,  
Department of Resources and Development,  
Government of Canada,  
Ottawa, Ontario.

We have examined the attached statement of expenditures aggregating \$25,281.78 relating to exploration survey work in the Yukon Territory and Northwest Territories of Canada for the period September 14 1953 to March 13 1955 in respect of Petroleum and Natural Gas Permits Nos. 750 to 757 inclusive issued to Imperial Oil Limited. Our examination included such tests of accounting records and other supporting evidence (such as work orders and maps prepared by the company) as we considered necessary in the circumstances.

Expenditures are included for work of a general exploratory nature carried on outside the permit areas which may only be deemed applicable to the permits at the discretion of the Minister.

In our opinion the attached statement properly presents the expenditures made by Imperial Oil Limited applicable (subject to the reference to off-permit expenditures in the preceding paragraph) to the permits in the Yukon Territory and Northwest Territories of Canada listed above, according to the information and explanations given to us and as shown by the books and records of Imperial Oil Limited

*Price Waterhouse & Co.*  
Chartered Accountants

IMPERIAL OIL LIMITED - PRODUCING DEPARTMENT - WESTERN DIVISION

Statement of Expenditures Incurred by Imperial Oil Limited  
In Respect of Permit Nos. 750 to 757 inclusive  
For the Period September 14, 1953 to March 13, 1955

Photogeology

53,488.48 ✓

Salaries and Wages	\$ 965.50
Supplies and Repairs	1,599.54
Transportation	6.66
Drafting and Photo Blueprinting	<u>916.78</u>

Surface Geology

13,620.18 ✓

Salaries and Wages	\$7,531.58
Transportation and Travel Expense	2,215.33
Supplies and Repairs	1,925.84
Contract Payments	108.18
Aviation Expense (Co. Owned)	<u>1,839.25</u>

Geological Correlation

973.12

Supervision: 18 months @ 50.00 per Permit Month

7,200.00

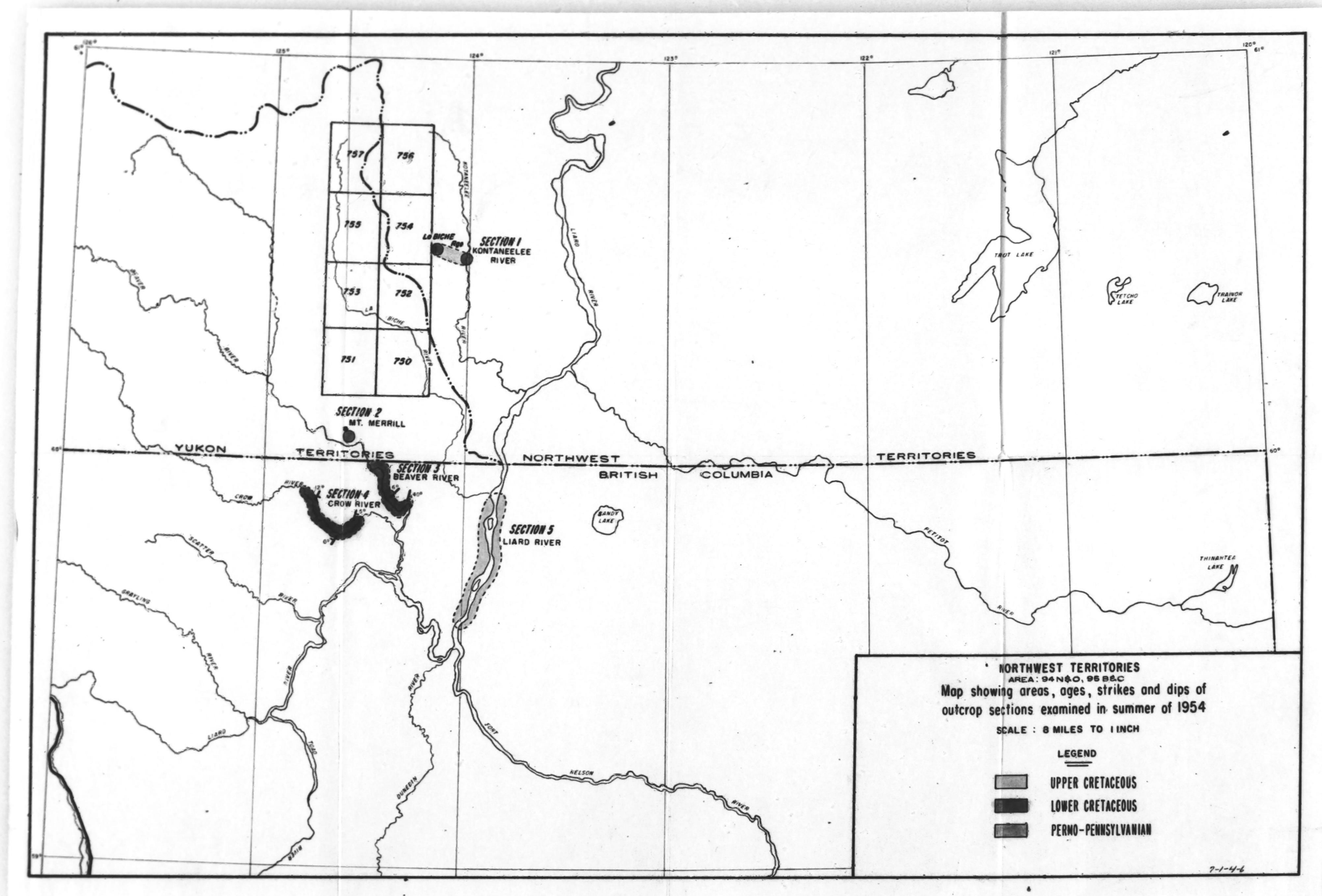
\$25,281.78

Submitted with our report to the Chief, Lands Division,  
Department of Resources and Development, Government of  
Canada, Dated April 14, 1955.

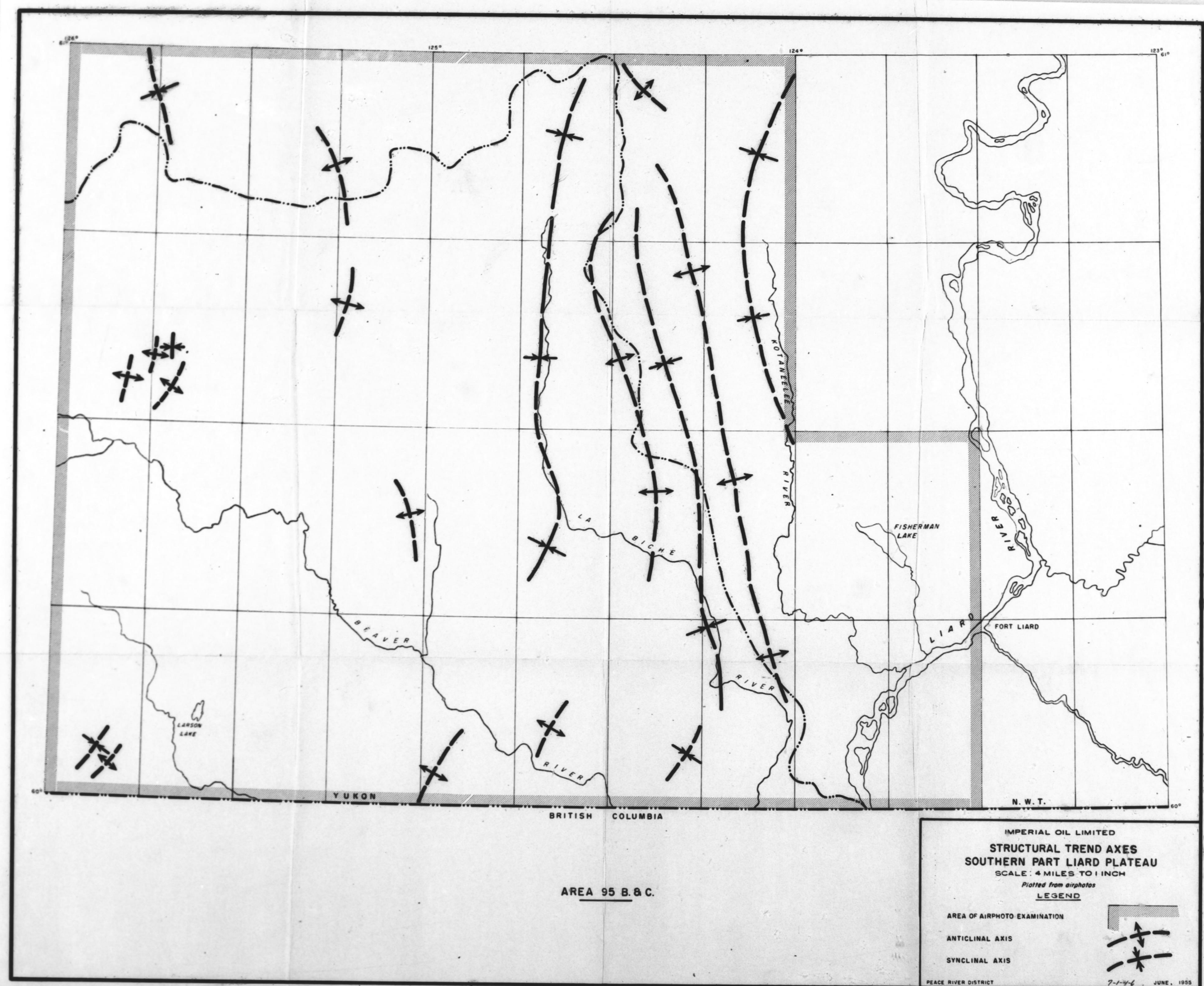
*Price Waterhouse & Co.*

CHARTERED ACCOUNTANTS

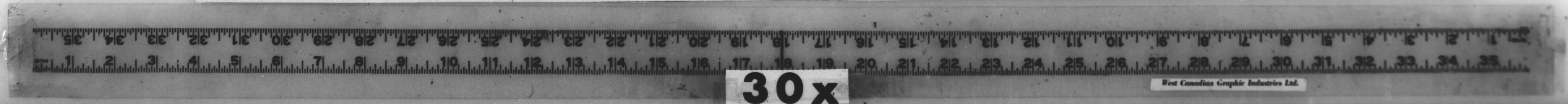
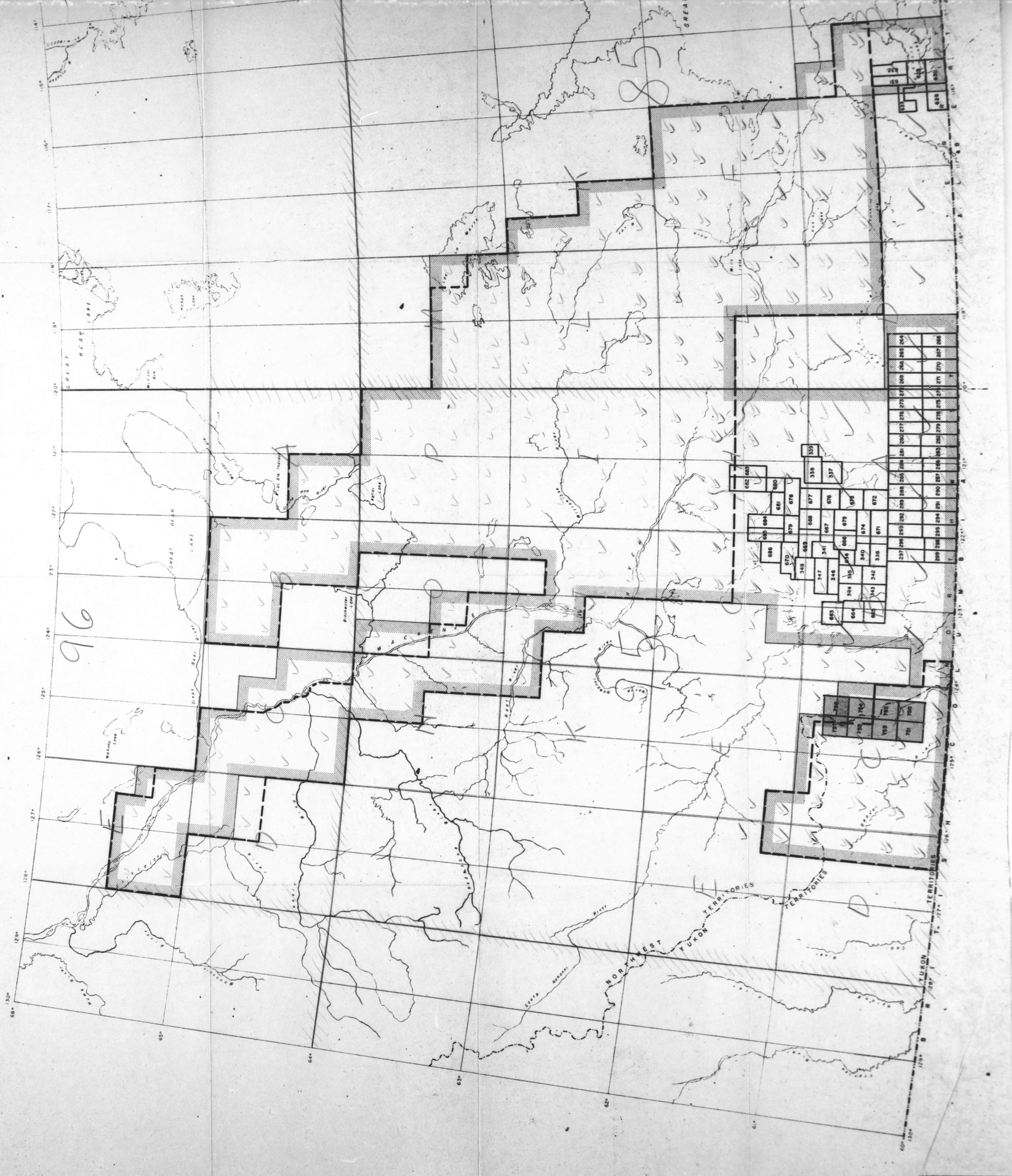














Planimetric & remagnetite  
shots checked last.

EXPLORATION DEPT. PEACE RIVER DISTRICT

EXPLORATION DEPT. PEACE RIVER DISTRICT

**- LEGEND -**

**APPLICABLE PERMITS**

1 MILE TO 1 INCH PLANIMETRIC

## MAPPING

## AREA OF AEROMAGNETIC COVERAGE

7-1-4-6

Planimetric sheets.  
Geomagnetic.

MAY, 1955

**30x**

West Canadian Graphic Industries Ltd.