

File 106.K.

facræ :- Oil & Gas. Peel Plateau

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Aug 19 1959

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INTER-OFFICE CORRESPONDENCE

Hal
col

FROM Rod Macrae

DATE Aug 17th, 1959

TO E. O. Chisholm, Chief Geologist

SUBJECT Oil-gas- Peel

MESSAGE

(TO BE COMPLETED IN TRIPLICATE)



Dear Ted:

The finding of gas and oil in the Peel by Western Minerals & Leaseholds has been widely advertised by radio and verbal announcement today. I understand this is the second hole drilled and that the petroleum were cut at the 4500 ft horizon in the second hole.

There are no figures on the amounts except that the free flow of gas has been estimated at around 10,000,000 c.f. The pressure flow is not known.

The only information I got last year on the first well was that it was drilled to 9600 ft plus and encountered minor salt water, gas, and oil seeps.

The location of both holes is approx 50 miles south east of Old Crow,

Roderick Macrae

(TO BE COMPLETED IN TRIPLICATE)

gshj

INSTRUCTIONS FOR USE OF THIS FORM

Form to be completed in triplicate by originator. Two copies - No. 1 and No. 2 - to be forwarded to addressee. Copy No. 3 to be retained in originator's file until reply received. Addressee to complete reply in duplicate on reverse side of sheets 1 and 2 and return No. 1 to originator. In following

this procedure both parties have the complete message and reply on one sheet of paper.

August 14, 1959

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106 K
attach to
Petroleum contract
aug 59
by Macree

Memorandum re Gas & Oil Finds of Conwest - Central Patricia Interests in the
EAGLE PLAIN CONCESSION in the Yukon Territory

I have acquired this following information regarding this find. The well being drilled is about 40 miles south and east of the first hole which was drilled in 1957. 120 feet of sand was cut at about 4200 to 4300 feet of depth in the Upper Pennsylvanian formation. This wet gas flow was at a rate of 10 million cubic feet per day. ~~The~~ Oil-bearing shale ^{been} penetrated below the gas-bearing sand. Whether or not it was immediately in contact with it or separated by some other band of rock is not clear. The oil flow was sufficient that the oil rose to within 300 feet of surface.

The next promising formation expected to be intersected is the Mississippian and should be penetrated somewhere within the next 800 feet. This Mississippian sand outcrops about 50 miles to the east and where outcropping is oil-bearing. A third potential oil measure, the Devonian, should also be encountered at about 7,000 feet.

The Mississippian formation is considered to be the most promising of the three horizons but was entirely missing in the first well drilled. Another adverse development in the first well drilled was the fact that the Devonian had received such a strong upward thrust from below that it had been very extensively fractured and the fracturing had then been ^{been} healed with calcite and carbonates which rendered it more or less impermeable.

It is interesting to note that while publicly this well has been called "Peel Plateau", it is actually on the Eagle Plains concession and not on the Peel Plateau square.

Aug. 14, 1959

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Petrofina, when making the deal with Western Leaseholds, were not willing to put a satisfactory evaluation on this concession so Eric Harvey withheld it. Central Patricia has about 6.4% interest and Conwest about 8.4% interest. George Webster's Dalhousie and Central Explorers are thought to have about 1-1/4% each.

The foregoing information is entirely confidential.

WSR:JB

W. S. Row

SUITE 1616
44 KING STREET WEST
TORONTO 1
EMPIRE 6-7951

February 26th, 1953

Yukon Oil
W.S. Row

Dear Bill:

I received your telegram this morning and note your movements. I duly received your telegram in connection with Yukon oil and thanks for making the thing unanimous. We did send a cable to Mr. Dorfman and Mr. Murdoch was worried about his feelings and told him we wanted his approval also, although the matter was then "affaire complet". Mr. Dorfman replied as follows:

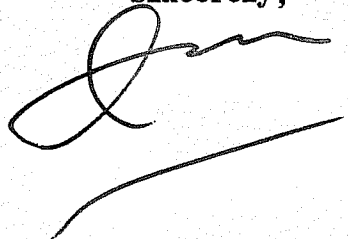
"GREATLY RELIEVED AND GLAD TO LEARN THAT WE ARE NOT TO PARTICIPATE IN YUKON OIL VENTURE REGARDS".

I am pretty sure that he was more relieved than we were and I am awaiting a follow-up letter, which is not yet to hand, but which I am pretty sure he will write. I have made a memo covering the whole business and you will find one at your office when you get back home. Charlie and I were quite convinced from an interview we had on the 12th, and which we discussed at the meeting on the 13th, that Connell had cold feet and had disposed of all his shares and was sitting on his vendor shares.

We all hope that you and Shirley are having a nice holiday and that the weather will be kind to you. You don't mention Las Vegas. Would you by any chance be shooting a little crap in that area, or back in the lucky seven?

Kindest regards,

Sincerely,



Jl:JK

W. S. Row, Esq.,
Mission Motel,
2433 East Van Buren Street,
Phoenix, Ariz.

SENDER IS AWAITING A SPEEDY

answer

PLEASE GIVE IT TO THE MESSENGER OR TELEPHONE

7077-D (6-48)

EASTERN UNION

W. P. MARSHALL, PRESIDENT

FX-1201

25 1/2

SYMBOLS

DL=Day Letter

NL=Night Letter

LT=Int'l Letter Telegram

VLT=Int'l Victoria Letter

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

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1953 FEB 18 AM 10 50

DE TNA234 RX 52=CNT TORONTO ONT 18 119P=

WILLIAM S ROW=

HOTEL STATLER LOSA=

PHELPSDODGE TURNED DOWN YUKON OIL STOP NORANDA RAISED
OBJECTION STOP NEGOTIATIONS BRADFIELD MURDOCH CONNELL
HAVE DECIDED P.A. DOES NOT PARTICIPATE TO ANY EXTENT AND
GETS ITS FIFTY THOUSAND DOLLARS BACK STOP COLEMAN BAKER
PRICE SELF APPROVE UNANIMOUSLY STOP DO YOU AGREE WISH
YOUR APPROVAL AND MAKE IT UANAIMOUS PLEASE REPLY REGARDS=

INGRAM=!

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

February 24th, 1953
7 cc

YUKON OIL CONCESSIONS

On Thursday, February 19th, I cabled Mr. Dorfman at Cannes, France, notifying him of Mr. Connell's offer us to to withdraw from the Yukon oil venture. I told Mr. Dorfman that the Directors of P. A. and Noranda were generally in agreement and would like his approval also. Mr. Dorfman replied as follows:

"GREATLY RELIEVED AND GLAD TO LEARN THAT WE ARE NOT
TO PARTICIPATE IN YUKON OIL VENTURE REGARDS"

As we are now definitely out of the Yukon oil venture with Conwest, I suggest that you remove all Yukon oil data from your file, in order that it will contain only current information.



JI:JK

J. INGRAM

YUKON OIL CONCESSIONS

On Saturday morning, February 14th, I met Mr. J. R. Bradfield on Eglinton Avenue and he mentioned the Yukon oil situation and said that he intended to see Mr. F. M. Connell, as a Director of Noranda, in regard to Noranda's participation through Prospectors Airways. I gathered from Mr. Bradfield's remarks that they were not accepting participation willingly.

On Monday morning, February 16th, we received a letter from Mr. Page, President of Phelps Dodge Corporation, informing us that it was against their policy to be associated with a venture in which a public offering or sale of stock is made on the basis of an extremely wildcat venture, such as our Yukon oil proposition, and stating that he definitely felt Phelps Dodge could not go ahead with participation. He had talked to Mr. J. Y. Murdoch on the telephone about the matter, and Mr. Murdoch was in agreement that the Phelps Dodge decision was a fair one.

The withdrawal of Wilmington and Phelps Dodge left Prospectors Airways in an extremely awkward situation, with a liability of taking up 400,000 shares at \$1.00 a share and with no other participants who could share part of the burden. I again saw Mr. Bradfield following the receipt of Mr. Page's letter and discussed the matter with him, and decided the only thing to do was to advise Mr. Connell that P. A. simply could not afford to take on this heavy participation. I explained to Mr. Bradfield that the original agreement entered into with Mr. Dorfman and Mr. Connell was that we would put up \$100,000 jointly to the Government as a guarantee of ^{performance} ~~purpose~~ and furnish another \$100,000 jointly for exploration of the concessions this year, further monies to be called as required. I also explained to Mr. Bradfield that after the original agreement was made, Mr. Connell and Mr. Dorfman had agreed to a more extended basis of financing, involving the purchase of one million shares

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of a new company at \$1.00 per share, of which each would take up 500,000.

Later Mr. Dorfman advised me that Mr. Connell had disposed of his 500,000 shares as follows:

Conwest	100,000
Central Patricia	100,000
Reynolds & Co. (New York)	100,000
Western Leaseholds	200,000

During an interview which Mr. Coleman and I had with Mr. Connell on February 12th, however, we gathered from some remarks Mr. Connell made that he had got rid of all the 500,000 shares and was retaining the vendor shares.

At the time these arrangements were made, it was anticipated that our Yukon associates would join us, leaving Prospectors Airways with 250,000 shares, plus its proportion of vendor shares, and it was anticipated that F. A. could dispose of a substantial part of their 250,000 shares, either to other companies or parties or through the market when the shares were listed.

On the morning of February 12th, Mr. Coleman and I had an interview with Mr. Connell in connection with the formation of the new company, and we again brought up the question of listing these shares. Mr. Connell was not at all enthusiastic about listing them and said he would prefer to wait until some encouragement was obtained from exploration of the concessions before putting the shares on the market. We pointed out at this time that the 50 per cent interest was too much for F. A. unless it could get an outlet for the sale of the shares, and offered to supply all the shares necessary for listing purposes. Mr. Connell again expressed his disapproval, as he said he did not want to have a lot of small shareholders, as perhaps the thing might

- 3 -

fold up and nothing would come of the operation. Mr. Coleman and I were quite perturbed at this attitude of Mr. Connell as it placed Prospectors Airways in a worse position than ever.

Mr. Connell also stated that if the geologists were of the opinion, at the end of this season, that further exploration was not justified, the new company could be wound up and the unexpended cash distributed to the shareholders.

During my interview with Mr. Bradfield on the morning of the 16th he said he would phone Mr. Murdoch in connection with the matter and let me have Mr. Murdoch's views. I left for Ottawa on Monday afternoon and on Wednesday Mr. Bradfield phoned me at Ottawa and told me after taking the matter up with Mr. Murdoch, he had seen Mr. Connell and discussed the situation with him and, as a result, Mr. Connell was perfectly willing that Prospectors Airways withdraw entirely from the Yukon oil situation, and we would receive the \$50,000 back.

Mr. Coleman who was with me immediately agreed to this arrangement, and we phoned Mr. J. W. Baker at Kerr-Adison to obtain his opinion as a Director of Prospectors Airways. Mr. Baker expressed his consent and promised to convey the news to Dr. Peter Price at Noranda and obtain his views. We also sent a telegram to Mr. W. S. Row at Los Angeles outlining the new situation and asking his approval. Mr. Row replied in the affirmative and Dr. Price also expressed to Mr. Baker his complete approval of our withdrawal.

JI:JK

J. INGRAM

PETROLEUM IN THE NORTHERN YUKON TERRITORY

JANUARY 1953

Introduction

During the past year members of the Conwest Exploration Company staff have made a study of the available information on the petroleum possibilities in the Northern Yukon Territory. This information is well summarized in the following extract from Paper 50-14 of the Geological Survey of Canada by Dr. H. S. Bostock.

An application was made to the Federal Government for the exclusive right to explore for a period of five years the two areas known as the Eagle Plain and Peel Plateau parcels, each of which contains approximately 4,792 square miles. Our application was accepted by the government and tenders were called on the 1st of September, 1952, under the terms set out below. These areas are located as follows:

Peel Plateau

Between the latitudes of 66° North and 67° North and between the longitudes of 132°30' West and 135°00' West, approximately 4,792 square miles

Eagle Plain

Between the latitudes of 66° North and 67° North and between the longitudes of 136°30' West and 139°00' West, approximately 4,792 square miles.

Petroleum in Northern Yukon Territory (H. S. Bostock)

"The region in Yukon Territory north of Ogilvie, Selwyn, and Mackenzie Mountains was almost ignored in the search for oil during the period of the Canol project in 1942 and 1943, chiefly due to remoteness

from the Canol pipe-line. As a result, only those parts of the region east of Richardson Mountains adjoining the Mackenzie River area and along the Arctic Coast have been referred to in publications as having oil possibilities.

"The region lies at the northeastern terminus of the North American Cordillera, where the northwesterly trending structures of Western Canada meet the northeasterly trend of the mountain ranges of Alaska. This circumstance is reflected in the structure and physiography of the region. The dense mass of mountains to the south, with their closely spaced structures, give place here to more open and subdued topography, with broad hollows bordered by low ranges within a terrain commonly regarded as largely mountainous. In this region, some mountain ranges, Richardson Mountains and the easterly parts of British Mountains and Keele Range, may contain local oil reservoirs as they appear to have more open structures than the ranges to the south, their rocks are believed to be mainly marine sediments of Mesozoic and Palaeozoic ages, and intrusions are relatively few or lacking. However, the possibility is remote, and it is the broad piedmont plateaux and intermontane basins and plains, where the sedimentary sections appear to be thicker and the structures more open, that are considered to hold practical possibilities for oil reserves.

"The first evidence of oil in the region was reported by C. Camsell, who described bitumen veins and petroliferous strata along Peel River below the mouth of Wind River. Examinations were made in the vicinity of this discovery during the Canol explorations. The occurrences lie in a structural zone that diverges from Mackenzie Mountains on the southeast and curves northwest and then north into Richardson Mountains.

In it, erosion has exposed Cambrian strata along the main structure, so that this particular locality is probably not a prospective oil reserve.

"To the northeast, however, between Peel River and Richardson Mountains, there is a broad unexplored area in the Peel Plateau within Yukon Territory, 40 miles wide and 80 miles long in its extreme dimensions. The marine Cretaceous and Devonian strata that lie beneath the continental Cretaceous coal measures outcrop along Peel River and are probably continuous throughout the plateau area, which with its flat to gently undulating surface suggests open structures with oil possibilities.

"In the north, the coastal belt in front of British and Richardson Mountains is the eastward end of the Point Barrow area in Alaska where the presence of oil has been established. Though the belt is narrow in Yukon, it contains marine Mesozoic strata at the surface in places and is generally regarded as having oil possibilities.

"From the coast, the Arctic Plateau opens southward through a gap 30 miles wide between British and Richardson Mountains, and to the west and southeast forms a border between these ranges and the Porcupine Plain. Bitumen veins have been found in this gap, on the divide between Blow and Babbage Rivers to the north and Old Crow River to the south, but their occurrence has not been investigated. The surface formations are believed to be the same as those along the coast to the north, and air photographs show many cuestas and mesas that exhibit broad, undulating structures characteristic of many oil fields.

"To the southwest of the Arctic Plateau and west of Richardson Mountains, the Porcupine Plain, 180 miles long and 60 miles wide, forms the outstanding intermontane basin of the region. The bitumen veins on the Arctic divide and those on Peel River, near the two extremities of this

plain, suggest the continuity of petroliferous strata throughout its length, and, particularly in the southern and eastern parts most remote from intrusions, indicate its possibilities as an area of potential oil reserves.

"Published accounts of geological explorations reveal that only one route has been followed across the Porcupine basin, all of which has not yet been covered by air photography.

"Around the borders of the Porcupine Plain, the Richardson Mountains, the Arctic Plateau, and the Porcupine Plateau rise gradually from the plain and contain subdued areas where open structures suggest the possible occurrence of local, potential oil reservoirs. The Porcupine Plain, however, warrants more attention, but as it affords few exposures, its underlying rocks are best judged by those of the surrounding upland areas.

"On the west, along the 141st Meridian in the Keele Range, Precambrian (?) and Lower Palaeozoic strata are capped by Cretaceous beds, which cover large areas to the southwest. To the northwest, in the Old Crow Range, older strata including perhaps Precambrian rocks are invaded by a large intrusion that extends to within a few miles of Old Crow Village at the west edge of the plain. On all other sides, except on the northwest and north, where the relation is uncertain, the topography exposes thick sections, believed to be of Mesozoic and Palaeozoic marine sediments, dipping beneath the plain with outward facing cuestas.

"The Porcupine Plain may be described in greater detail under its several physiographic subdivisions. The Bell basin is in a central position where Bell and Eagle Rivers join and flow into the Porcupine. The Eagle Plain, the largest subdivision, lies to the south and southwest. To

the northwest, opposite the northeast end of the Keele Range, Porcupine River flows north through a narrow, undulating 'waist' in the Porcupine Plain. Beyond this, Driftwood and Porcupine Rivers occupy a depression extending westerly and bordered on the north by low hills on the far side of which lies the broad flat of Old Crow Plain.

"The only geological explorations followed Bell and Porcupine Rivers through Bell basin, across the 'waist' and down the depression past Old Crow village. The outcrops along the rivers exhibit a thick section of Mesozoic, mainly marine strata, including some Cretaceous continental beds, overlain near Old Crow village, by synclines of continental Tertiary beds and underlain by Palaeozoic marine strata, the last exposed in a broad anticline at the 'waist'. The surfaces of Bell basin and Old Crow Plain give little clue to their underlying structures, but suggest basins of Tertiary beds similar to those along Porcupine River, mantled by younger unconsolidated deposits and underlain by the same Mesozoic and Palaeozoic strata.

"Eagle Plain has the largest area of all the subdivisions of the Porcupine Plain. It is believed to be underlain by the same Mesozoic and Palaeozoic formations that contain petroliferous beds on Peel River to the southeast, but it also remains almost unexplored. Its drainage pattern, plotted from air photographs, suggests gently undulating structures that may form oil reservoirs."

To the northwest of the concession on the Arctic Coastal Plain of Alaska, 350 miles or so, the United States Government has set aside a sizeable area known as Naval Petroleum Reserve No. 4. Considerable money has been spent and some oil horizons have been encountered in the lower Cretaceous-Devonian regions, bordering the northern slopes of the mountains. Further north as drilling progressed toward the Arctic Ocean, a thickening

of the Cretaceous up to 20,000 feet was established.

However, no such depths are anticipated in the concessions held by this company; productive horizons are assumed to be more in the order of 4,000 to 6,000 feet.

In conclusion, the potentialities for oil in northern Yukon can only be appraised from meagre information, but this indicates some possibilities of oil reservoirs. Eagle Plain, occupying an area of about 5,000 square miles, and Peel Plateau of equal size, east of Richardson Mountains are regarded with the most favour.

Summary of the Petroleum and Natural Gas Regulations
Applicable to the Northwest Territories and Yukon Territory
Amended to July 4, 1951

Having completed our preliminary work under the grant, we would then be required to take out permits and leases as outlined in the Dominion Lands Act, a summary of which follows. It will be noted that leases in one block may be taken on 35% of the permit area. The remaining 65% presumably reverts to the Crown, but is not covered in the Act. It would be possible, with the backing of the Minister to obtain further permits or leases under a different staker. This would not be written into any concession granted.

Yukon and N.W.T. permits are for a minimum of 32,000 acres, a maximum of 64,000 acres (100 square miles), with a maximum of eight permits per person. The staking fee is \$250.00. A permit is valid for three years, and is renewable for a further three years. Initial deposit, for 18 months' period is 5¢ per acre. Second 18 months calls for a deposit of 25¢/acre. On renewal of a permit, a deposit of 30¢/acre is required with 40¢/acre at the start of the fifth year and 50¢/acre at the start of the sixth and final year.

Minimum exploration expenditures required in each period are the amount of deposit for that period. Funds spent in excess of deposit will be allowed on succeeding years. Fifty per cent of the expenditures on the permit can be applied on the yearly rental of any leases acquired.

Leases may be acquired up to 35% of the permit area, i.e. 179,200 acres or 280 square miles. Minimum and maximum areas of location are 1,280 acres and 2,560 acres. These may be grouped up to a maximum of 30,720 acres for purposes of work, provided they are not separated by more than two miles. The whole lease area may be in one block.

Lease rental for the first year is 50¢ per acre with \$1.00 per acre in succeeding years. A staking fee of \$5.00 per location is required. Lease term is for 21 years or as long thereafter as production obtains. The surface lease rental is \$1.00 per acre for land required. Expenditures for geological, geophysical and drilling work, including depreciation on equipment, but excluding cost of machinery and casing recovered, are allowed as credit on lease rentals.

If a lease proves productive, the royalty payable will be 10% for the first three years and 12½% thereafter. Royalty paid in excess of 50¢ per acre will be allowed on account of lease rental.

Summary of Minimum Expenditures Required

<u>Reservation</u>	<u>Eagle Plain</u>	<u>Peel Plateau</u>	<u>Total</u>
First 2 years	\$ 50,000	\$ 50,000	\$ 100,000
3rd year	50,000	50,000	100,000
4th year	50,000	50,000	100,000
5th year	50,000	50,000	<u>100,000</u>
			\$ 400,000

<u>Permits (800 Sq. Mi. Per Parcel)</u>	<u>Eagle Plain</u>	<u>Peel Plateau</u>	<u>Total</u>
\$250/permit - 8 permits	\$ 2,000	\$ 2,000	\$ 4,000
First 18 months deposit 5¢/acre	25,600	25,600	51,200
Second 18 months " 25¢/acre	128,000	128,000	256,000
Fourth year deposit 30¢/acre	153,600	153,600	307,200
Fifth " " 40¢/acre	204,800	204,800	409,600
Sixth " " 50¢/acre	<u>256,000</u>	<u>256,000</u>	<u>512,000</u>
	\$770,000	\$ 770,000	\$1,540,000
<u>Lease (280 Sq. Mi. Per Parcel)</u>			
\$5.00 staking fee for 70 locations	\$ 350	\$ 350	\$ 700
First year 50¢/acre	89,600	89,600	179,200
Second year \$1.00/acre	179,200	179,200	358,400

(Note: 50% of expenditures made on permits may be credited to Lease Rentals)

It is anticipated this season's work will cost between \$225,000 and \$250,000 depending on the number of flying hours.

Any excess expenditure in one year can be carried forward to succeeding years and the expenditure contemplated during the first year will protect the concessions until the end of 1955.

General Notes on the Area

1. Eagle Plain

(i) Geology: This area is underlain by Mesozoic and Palaeozoic formations which contain petroliferous beds on the Peel River. It is doubtful if any Devonian rocks outcrop in the area. Geological sections will have to be made in Richardson and Ogilvie Mountains.

"There are few if any outcrops in the area, except as shown on the accompanying map. The drainage pattern suggests undulating structures which may form oil reservoirs." Bostock.

(ii) Topography: The area is bushed (or burned bush) and has a wet muskeg type of bottom. Travel is difficult - a rate of one mile per hour is estimated. Scattered trees grow to 30 - 40 feet in height and there is an undergrowth of buck brush and "niggerhead"

type of muskeg, as well as alders,

- (iii) Transportation: Both the Eagle and Porcupine are probably navigable by small canoe throughout the area. There may be several lift-overs on the Eagle River.

Horses cannot be used in the area as there is insufficient feed. Caterpillar tractors could get around if lines were cut. Snowmobiles could not be used, except on semi-cleared roads, owing to niggerheads.

Float planes can be used on parts of the river - i. e. 40 miles above Big Bend is good for floats up to August 1st. There are two Indian Camps in the area.

2. Peel Plateau

- (i) Geology: Cretaceous and Devonian strata, which lie beneath the continental Cretaceous coal measures, outcrop along the Peel River. These are probably continuous throughout the area, which with its gently undulating surface suggests open structures with oil possibilities. The rocks show a gentle dip south. On the Artic River the amount of closure in the Cretaceous on the north flank of the anticline in the Upper River is small. (Bostock & Link)
- (ii) Topography: The plain has a fairly even surface and is actually a large narrow sloping step in front of the Richardson Mountains. The river banks are from 600 - 800 feet in height. There are outcrops along the Peel in the lower part of the area.

The Caribou, Trail and Road Rivers all show some outcrop along their banks.

The area between the Arctic and the Peel is wet and has considerable muskeg.

(iii) Transportation: Flat boats can navigate the Peel throughout the concession and probably up to the Wind River. Boats can be obtained at Fort McPherson.

Again Caterpillar tractors could be used while the frost is in the ground in the area but only along the watersheds as the river banks are much too steep.

Horses cannot be used above the 65° parallel.

Administrative Arrangements

The following paragraphs describe in a general way what has been done in preparation for the 1953 season.

1. Aircraft

These have been contracted for from Kenting Aviation Limited, Oshawa.

Two helicopters (Hillers) on floats.

Pay load at 2,000 ft.	400 lbs.
Pay load at 5,000 ft.	210 lbs.

(Highest peaks in the area not over 5,000 ft.)

Range - approximately 60 miles out, 60 miles back,
Speed - 60 M.P.H.
Gas Consumption - 10 gals. per hour.

Costs:	\$10,000 on signing Contract	\$10,000
	\$25,000 on testing aircraft at Whitehorse	25,000
	Minimum contract for 400 hours for two	60,000

One Beaver service aircraft contracted for on a guarantee of \$300 per hour, at \$90 per hour gas and oil supplied at Mayo

31,500

Minimum Total for Aircraft

\$126,500

2. Personnel

A petroleum geologist to act as chief of the operation has been engaged. This man, Mr. R. G. Perry of Calgary, has had wide experience in the Middle East, South America, and five years in Alberta oil fields. He is well versed in surface and sub-surface geology. He comes to the company highly recommended by several able oil men in Canada. He will be retained as permanent staff.

- (i) Geological Assistants: Tentatively 5 geological two-man parties are being engaged. Each party consists of one senior graduate student either working towards a Ph.D. or an M.Sc. in stratigraphy and an assistant who is either a third year or fourth year undergraduate. These men are engaged for the four-month season only.

The program has not been developed in detail but Mr. Perry is contemplating having one or two parties engaged in making stratigraphic sections and three or four, as the case may be, on reconnaissance work.

3. Aerial Photographs

Complete sets of aerial photographs covering the two concessions have been ordered.

Mr. Perry will study these in detail in the period left before departure to the field.

4. Maps

Several sets of maps on 8 miles and 16 miles to the inch have been obtained. These are not too accurate but the Department of Mines and Technical Surveys assured us they will have a preliminary base map out by April 1st to which geological data may be tied with a fair degree of accuracy.

5. Equipment

Necessary camp equipment, instruments and other supplies will be provided at Mayo by June 10th.

6. Supplies

Food supplies will be purchased in Edmonton or Whitehorse and flown into the area from Mayo. Mayo will be the "end of road" base from which all supplies will be flown.

(1) Gasoline for the helicopters will be available in Whitehorse in 4 gal. cans. This will be moved to Mayo by the company and flown to the interior by the Beaver aircraft.

7. Communications

The two helicopters are supplied with short range F. M. radio sets in addition, a set will be maintained in the base camp.

A long range, short wave set will also be used in contact with Army Signals at Mayo on a regular schedule. An expediter will be stationed in Mayo where warehousing facilities are available.

8. Costs

It is estimated that the 1953 season will cost between \$225,000 and \$250,000 depending on weather and serviceability of aircraft.

.....
B. I. F. Breakey

Toronto, Ontario,
February 4, 1953.

PETROLEUM IN THE NORTHERN YUKON TERRITORY

SEPTEMBER 1952

BY

J.D. CHRISTIAN

Introduction

During the past year members of the Conwest Exploration Company staff have made a study of the available information on the petroleum possibilities in the Northern Yukon Territory. This information is well summarized in the following extract from Paper 50-14 of the Geological Survey of Canada by Mr. H. S. Bostock.

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Petroleum in Northern Yukon Territory (H.S. Bostock)

The region in Yukon Territory north of Ogilvie, Selwyn, and Mackenzie Mountains was almost ignored in the search for oil during the period of the Canol project in 1942 and 1943, chiefly due to remoteness from the Canol pipe-line. As a result, only those parts of the region east of Richardson Mountains adjoining the Mackenzie River area and along the Arctic Coast have been referred to in publications as having oil possibilities.

The region lies at the northeastern terminus of the North American Cordillera, where the northwesterly trending structures of Western Canada meet the northeasterly trend of the mountain ranges of Alaska. This circumstance is reflected in the structure and physiography of the region. The dense mass of mountains to the south, with their closely spaced structures, give place here to more open and subdued topography, with broad hollows bordered by low ranges within a terrain commonly regarded as largely mountainous. In this region, some mountain ranges, Richardson Mountains and the easterly parts of British Mountains and Keele Range, may contain local oil reservoirs as they appear to have more open structures than the ranges to the south, their rocks are believed to be mainly marine sediments of Mesozoic and Palaeozoic ages, and intrusions are relatively few or lacking. However, the possibility is remote, and it is the broad piedmont plateaux and intermontane basins and plains, where the sedimentary sections appear to be thicker and the structures more open, that are considered to hold practical possibilities for oil reserves.

The first evidence of oil in the region was reported by C. Camsell, who described bitumen veins and petroliferous strata along Peel River below the mouth of Wind River. Examinations were made in the vicinity of this discovery during the Canol explorations. The occurrences

lie in a structural zone that diverges from Mackenzie Mountains on the southeast and curves northwest and then north into Richardson Mountains. In it, erosion has exposed Cambrian strata along the main structure, so that this particular locality is probably not a prospective oil reserve.

To the northeast, however, between Peel River and Richardson Mountains, there is a broad unexplored area in the Peel Plateau within Yukon Territory, 40 miles wide and 80 miles long in its extreme dimensions. The marine Cretaceous and Devonian strata that lie beneath the continental Cretaceous coal measures outcrop along Peel River and are probably continuous throughout the plateau area, which with its flat to gently undulating surface suggests open structures with oil possibilities.

In the north, the coastal belt in front of British and Richardson Mountains is the eastward end of the Point Barrow area in Alaska where the presence of oil has been established. Though the belt is narrow in Yukon, it contains marine Mesozoic strata at the surface in places and is generally regarded as having oil possibilities.

From the coast, the Arctic Plateau opens southward through a gap 30 miles wide between British and Richardson Mountains, and to the west and southeast forms a border between these ranges and the Porcupine Plain. Bitumen veins have been found in this gap, on the divide between Blow and Babbage Rivers to the north and Old Crow River to the south, but their occurrence has not been investigated. The surface formations are believed to be the same as those along the coast to the north, and air photographs show many cuestas and mesas that exhibit broad, undulating structures characteristic of many oil fields.

To the southwest of the Arctic Plateau and west of Richardson Mountains, the Porcupine Plain, 180 miles long and 60 miles wide, forms the outstanding intermontane basin of the region. The bitumen veins on the Arctic divide and those on Peel River, near the two extremities of this plain, suggest the continuity of petroliferous strata throughout its length, and, particularly in the southern and eastern parts most remote from intrusions, indicate its possibilities as an area of potential oil reserves.

Published accounts of geological explorations reveal that only one route has been followed across the Porcupine basin, all of which has not yet been covered by air photography.

Around the borders of the Porcupine Plain, the Richardson Mountains, the Arctic Plateau, and the Porcupine Plateau rise gradually from the plain and contain subdued areas where open structures suggest the possible occurrence of local, potential oil reservoirs. The Porcupine Plain, however, warrants more attention, but as it affords few exposures, its underlying rocks are best judged by those of the surrounding upland areas.

On the west, along the 141st Meridian in the Keele Range, Precambrian (?) and Lower Palaeozoic strata are capped by Cretaceous

beds, which cover large areas to the southwest. To the northwest, in the Old Crow Range, older strata including perhaps Precambrian rocks are invaded by a large intrusion that extends to within a few miles of Old Crow Village at the west edge of the plain. On all other sides, except on the northwest and north, where the relation is uncertain, the topography exposes thick sections, believed to be of Mesozoic and Palaeozoic marine sediments, dipping beneath the plain with outward facing cuestas.

The Porcupine Plain may be described in greater detail under its several physiographic subdivisions. The Bell basin is in a central position where Bell and Eagle Rivers join and flow into the Porcupine. The Eagle Plain, the largest subdivision, lies to the south and southwest. To the northwest, opposite the northeast end of the Keele Range, Porcupine River flows north through a narrow, undulating 'waist' in the Porcupine Plain. Beyond this, Driftwood and Porcupine Rivers occupy a depression extending westerly and bordered on the north by low hills on the far side of which lies the broad flat of Old Crow Plain.

The only geological explorations followed Bell and Porcupine Rivers through Bell basin, across the 'waist' and down the depression past Old Crow village. The outcrops along the rivers exhibit a thick section of Mesozoic, mainly marine strata, including some Cretaceous continental beds, overlain, near Old Crow village, by synclines of continental Tertiary beds and underlain by Palaeozoic marine strata, the last exposed in a broad anticline at the 'waist'. The surfaces of Bell basin and Old Crow Plain give little clue to their underlying structures, but suggest basins of Tertiary beds similar to those along Porcupine River, mantled by younger unconsolidated deposits and underlain by the same Mesozoic and Palaeozoic strata.

Eagle Plain has the largest area of all the subdivisions of the Porcupine Plain. It is believed to be underlain by the same Mesozoic and Palaeozoic formations that contain petroliferous beds on Peel River to the southeast, but it also remains almost unexplored. Its drainage pattern, plotted from air photographs, suggests gently undulating structures that may form oil reservoirs.

In conclusion, the potentialities for oil in northern Yukon can only be appraised from meagre information, but this indicates some possibilities of oil reservoirs. Eagle Plain, occupying an area of about 5,000 square miles, and Peel Plateau east of Richardson Mountains are regarded with the most favor, but the border areas on the east, north-east, and south of Porcupine Plain as a whole also have possibilities.

Summary of the Petroleum and Nature Gas Regulations
Applicable to the Northwest Territories and Yukon Territory
Amended to July 4, 1951

Having completed our preliminary work under the grant, we would then be required to take out permits and leases as outlined in the Dominion Lands Act, a summary of which follows. It will be noted that leases in one block may be taken on 35% of the permit area. The remaining 65% presumably reverts to the Crown, but is not covered in the Act. It would be possible, with the backing of the Minister to obtain further permits or leases under a different staker. This would not be written into any concession granted.

Yukon and N.W.T. permits are for a minimum of 32,000 acres, a maximum of 64,000 acres (100 sq. miles), with a maximum of eight permits per person. The staking fee is \$250.00. A permit is valid for three years, and is renewable for a further three years. Initial deposit, for 18 months period is 5¢ per acre. Second 18 months calls for a deposit of 25¢/acre. On renewal of a permit, a deposit of 30¢/acre is required with 40¢ per acre at the start of the fifth year and 50¢ per acre at the start of the sixth and final year.

Minimum exploration expenditures required in each period are the amount of deposit for that period. Funds spent in excess of deposit will be allowed on succeeding years. Fifty per cent of the expenditures on the permit can be applied on the yearly rental of any leases acquired.

Leases may be acquired up to 35% of the permit area i.e. 179,200 acres or 280 sq. miles. Minimum and maximum areas of location are 1,280 acres and 2,560 acres. These may be grouped up to a maximum of 30,720 acres for purposes of work, provided they are not separated by more than two miles. The whole lease area may be in one block.

Lease rental for the first year is 50¢ per acre with \$1.00 per acre in succeeding years. A staking fee of \$5.00 per location is required. Lease term is for 21 years or as long thereafter as production obtains. The surface lease rental is \$1.00 per acre for land required. Expenditures for geological, geophysical and drilling work, including depreciation on equipment, but excluding cost of machinery and casing recovered, are allowed as credit on lease rentals.

If a lease proves productive, the royalty payable will be 10% for the first three years and 12½% thereafter. Royalty paid in excess of 50¢ per acre will be allowed on account of lease rental.

Summary of Probable Expenditures

	<u>Eagle Plain</u>	<u>Peel Plateau</u>	<u>Total</u>
<u>Reservation</u>			
First 2 years	\$62,500	\$62,500	\$125,000
3rd year	62,500	62,500	125,000
4th year	62,500	62,500	125,000
5th year	62,500	62,500	125,000
			<u>\$500,000</u>
<u>Permits (800 sq. mi. per Parcel)</u>			
\$250/permit - 8 permits	\$ 2,000	\$ 2,000	\$ 4,000
First 18 months deposit 5¢/acre	25,600	25,600	51,200
Second 18 " " 25¢/acre	128,000	128,000	256,000
Fourth year deposit 30¢/acre	153,600	153,600	307,200
Fifth " " 40¢/acre	204,800	204,800	409,600
Sixth " " 50¢/acre	256,000	256,000	512,000
	<u>\$770,000</u>	<u>\$770,000</u>	<u>\$1,540,000</u>
<u>Lease (280 sq. mi. per Parcel)</u>			
\$5.00 staking fee for 70 locations	\$ 350	\$ 350	\$ 700
First year 50¢/acre	89,600	89,600	179,200
Second year \$1.00/acre	179,200	179,200	358,400

(Note: 50% of expenditures made on permits may be credited to Lease Rentals)

Conclusions

Eagle Plain:

Geology: This area is underlain by Mesozoic and Palaeozoic formations which contain petroliferous beds on the Peel River. It is doubtful if any Devonian rocks outcrop in the area. Geological sections will have to be made in Richardson and Ogilvie Mountains.

"There are few if any outcrops in the area, except as shown on the accompanying map. The drainage pattern suggests undulating structures which may form oil reservoirs." Bostock.

Topography: The area is bushed (or burned bush) and has a wet muskeg type of bottom. Travel is difficult - a rate of one mile per hour is estimated. Scattered trees grow to 30 - 40 feet in height and there is an undergrowth of buck brush and "niggerhead" type of muskeg, as well as alders.

Transportation: Both the Eagle and Porcupine are probably navigable by small canoe throughout the area. There may be several lift-overs on the Eagle River.

Horses cannot be used in the area as there is insufficient feed. Caterpillar tractors could get around if lines were cut. Snowmobiles could not be used, except on semi-cleared roads, owing to niggerheads.

Float planes can be used on parts of the river - i.e. 40 miles above Big Bend is good for floats up to August 1st.

There are two Indian Camps in the area.

Peel Plateau:

Geology: Cretaceous and Devonian strata which lie beneath the continental Cretaceous coal measures outcrop along the Peel River. These are probably continuous throughout the area, which with its gently undulating surface suggests open structures with oil possibilities. The rocks show a gentle dip south. On the Arctic River the amount of closure in the Cretaceous on the north flank of the anticline in the Upper River is small. (Bostock & Link)

Topography: The plain has a fairly even surface and is actually a large narrow sloping step in front of the Richardson Mountains. The river banks are from 600 - 800 feet in height. There are outcrops along the Peel in the lower part of the area.

The Caribou, Trill and Road rivers all show some outcrop along their banks.

The area between the Arctic and the Peel is wet and has considerable muskeg.

Transportation: Flat boats can navigate the Peel throughout the concession and probably up to the Wind River. Boats can be obtained at Fort Macpherson.

Again Caterpillar tractors could be used while the frost is in the ground in the area but only along the watersheds as the river banks are much too steep.

Horses cannot be used above the 65° parallel.

Organization:

Possible organization might consist of -

1. A qualified petroleum geologist in charge of the operation.
2. Four parties of four men each, with at least one experienced bush man per party.
3. One helicopter serviced by conventional aircraft will probably be required.
4. Good radio communications should be maintained throughout the parties and with base headquarters.

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J. D. Christian

Conwest Exploration Co. Ltd.,
Toronto, Ontario,
September 20, 1952.

EAGLE PLAIN AND PEEL PLATEAU RESERVATIONS

HER MAJESTY the Queen in right of Canada, subject to the conditions hereinafter set forth, invites separate tenders for:

1. The exclusive right to explore during the five years commencing the first day of November 1952 for Petroleum and Natural Gas on vacant Territorial Lands, within one or both of the parcels hereinafter described, and,
2. The exclusive right for the successful tenderer on a parcel to stake at any time within the said five years not more than eight permits within the boundaries of that parcel, the areas of which are to be of the shape and size defined in the Petroleum and Natural Gas Regulations applicable to the Northwest Territories and Yukon Territory.

The parcels above referred to are described as follows:

Eagle Plain Parcel: The whole of the block situated in the Yukon Territory and bounded by Latitudes 66°00' North and 67°00' North and Longitudes 136°30' West and 139°00' West containing by computation approximately 4,792 square miles.

Peel Plateau Parcel: The whole of the block situated in the Northwest Territories and Yukon Territory bounded by latitude 66°00' North and 67°00' North and longitudes 132°30' West and 135°00' West containing by computation approximately 4,792 square miles.

The conditions to which the above rights are subject are as follows:

(a) One-quarter of the proposed expenditure shall be made in the period of the first two years, and one-quarter of the proposed expenditure shall be made in each of the periods of the third, fourth and fifth years;

(b) Any excess of the required expenditure made in any of the first three periods may be applied on account of the required expenditure for the next succeeding period;

(c) The successful applicant will be required at the beginning of the third, fourth and fifth years to forward a certified cheque, bonds of the Government of Canada or bonds unconditionally guaranteed by the Government of Canada, or a surety bond in the amount of one-quarter of his bid.

(d) If a certified cheque or bonds are deposited, the condition of the deposit of such cheque or bonds shall be that if the required expenditure on or in connection with the exploratory work on a parcel is made by the applicant in that period, the amount of the deposit or bonds will be returned to the applicant, but if the expenditure on or in connection with the exploratory work on the parcel during that period does not equal the amount of the deposit or the face value of the bonds, then the difference between the expenditure made and the amount of the deposit or the face value of the bonds will be retained by the Crown.

(e) If a surety bond is forwarded by the applicant, the condition of the obligation of such surety bond shall be that if the applicant makes the required expenditure on or in connection with the exploratory work on a parcel in that period, the bond will be void, but if the expenditure made on or in connection with the exploratory work on the parcel during that period does not equal the amount of the bond, then the bond shall become due and payable to Her Majesty

to the extent of the difference between the expenditures made and the amount of the bond.

(f) The expenditures made by the applicant on or in connection with exploratory work on a parcel in any period shall be determined by the Minister upon evidence of expenditure submitted to him by the applicant and such other evidence as the Minister may require and the decision of the Minister shall be final.

(g) The whole or any part of the deposit may be refunded during the period for which it is made on proof satisfactory to the Minister that the expenditure has been made.

(h) Failure to make the required expenditure in any period or failure to make the required deposit shall render the rights subject to immediate cancellation by the Minister.

(i) Prior to the end of any period the successful tenderer upon making the required expenditure for that period may surrender the rights granted to him and receive such number of permits in the parcel calculated as follows:

The number of permits which he may receive in a parcel shall be as nearly as possible in the same proportion to the total permits he may receive on that parcel as the total expenditure made by him on or in connection with the exploratory work on that parcel is to the total expenditure which he undertook to make on or in connection with the exploratory work on that parcel, subject to the limitation that he may not receive more than eight permits in a parcel.

(j) Such permit areas shall be staked and applied for in the manner provided by the said Regulations and the fees to be paid shall be as prescribed in said Regulations and for the purpose of determining the deposit to be made in respect of such a permit and the duration the permit shall be considered as a permit entering the second eighteen months under the said Regulations.

(k) No expenditure shall be used more than once in any of the computations to be made to determine the rights of the successful tenderer.

(l) The successful tenderer shall supply to the Minister copies of all aerial photographs and maps produced from the same and certified copies of all geological, geophysical and other scientific and technical plans and reports completed during each of the periods together with full details of all drilling and other sub-surface work undertaken:

(m) Except as in the conditions above set forth, permits granted to the successful tenderer shall be subject to all the provisions of the said Regulations.

If a person tenders for both parcels separate tenders, together with separate deposits or surety bonds, shall be forwarded in respect of each parcel.

Each tenderer shall forward with his bid a certified cheque, bearer bonds of Canada, or bearer bonds unconditionally guaranteed by Canada or a surety bond in the amount of one-quarter of his bid.

The initial deposit or surety bond of a successful tenderer will be subject to the conditions as set forth in paragraphs (d) or (e) above stated.

The deposit or surety bond of an unsuccessful tenderer will be returned to him.

The highest or any tender need not necessarily be accepted.

Tenders in the amount which the tenderer undertakes to spend on exploration during the period of the five years referred to will be received up to twelve o'clock noon October 1st, 1952.

Tenders must be in plain envelope marked "Petroleum and Natural Gas Reservation, Northwest Territories" or "Yukon Territory" as the case may be.

Address tenders and enquiries to:

Chief, Lands Division,
Northern Administration
and Lands Branch,
Department of Resources
and Development,
OTTAWA, Ontario.

Dated at Ottawa, Ontario,
this Eleventh Day of
August, 1952.