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REPORT ON ANTICOSTI ISLAND

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Énergie et Ressources naturelles
Québec

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REPORT ON ANTICOSTI ISLAND

FOR

NEW ASSOCIATED DEVELOPMENTS LIMITED

ISLE D'ANTICOSTI Seigneurie

PUBLIC

Ministère des Richesses Naturelles, Québec
30 JAN 1963
SERVICE DES GITES MINÉRAUX
No GM- 12772

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McPHAR GEOPHYSICS LIMITED

REPORT ON ANTICOSTI ISLAND

FOR

NEW ASSOCIATED DEVELOPMENTS LIMITED

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1. INTRODUCTION

Anticosti Island is located in the Gulf of St. Lawrence, Province of Quebec, between latitudes 49°4'N and 49°53'N and longitudes 61°45'W and 61°35'W. It covers an area of nearly 4000 square miles and has a length of 135 miles and a maximum width of 35 miles. The bedrock strata consist of potentially oil and gas bearing Paleozoic sedimentary rocks belonging to the Ordovician and Silurian systems. The Trenton Group limestones, which have been important oil producers in southern Ontario and parts of the United States, are believed to be present at relatively shallow depth and interesting oil seepages have been reported at several places on the Island.

New Associated Developments Limited has obtained from the Department of Natural Resources of the Province of Quebec an oil and gas concession covering the entire Island. The Company has reached an agreement with Consolidated Paper Corporation Limited, through the latter's wholely-owned subsidiary Gamache Exploration & Mining Co. Limited, to carry out an exploration program for oil and gas. Gamache has joined with an Imperial Oil Limited subsidiary, Lowlands Exploration

Limited, to carry out a drilling program. The first well in this program is currently underway, having reached a depth of 1, 960 feet as of December 20, 1962, with a target of 4, 000 feet. Five oil and gas showings have been encountered, but the favourable Trenton limestone has not yet been reached.

2. SUMMARY AND RECOMMENDATIONS

New Associated Developments Limited has obtained an oil and gas concession covering the entire Island of Anticosti totalling 1, 947, 000 acres. The concession is to run for 10 years starting November 2, 1961. If oil and/or gas is found in commercial quantities, then 20 year production leases may be obtained.

An agreement has been signed between Consolidated Paper Corporation Limited, as owners of Anticosti Island, and New Associated Developments Limited, as owners of a Provincial Government issued oil and gas concession covering Anticosti Island, whereby -

A. Consolidated Paper Corporation Limited grants access to and on the Island to New Associated Developments Limited and their farmees and assigns, for the exercise of their exploration and production oil and gas rights.

B. Consolidated Paper Corporation Limited makes available to New Associated Developments Limited and their farmees and assigns all of their facilities and equipment, including wharves, air strip, roads, camps, trucks, tractors, etc., at advantageous terms and conditions.

The Island which is approximately 2, 000, 000 acres, has been divided into 4 equal parts of about 500, 000 acres each, numbered 1, 2, 3, and 4 from west to east.

New Associated Developments Limited grants to Gamache Exploration & Mining Co. Ltd., (wholly owned subsidiary of Consolidated Paper Corporation Limited) :

a) The s/e quarter of part 2 of approximately 125, 000 acres and the n/e quarter of part 4, also of approximately 125, 000 acres, free of any overriding royalties, works obligations and rentals in the initial five years.

b) A 20% participating interest in two free wells, and in 30, 000 acres surrounding such free wells, to be drilled, one in part 2 and the other in part 4 by farmees of New Associated Developments Limited.

c) A 20% participating interest in any other free wells and in 30, 000 acres surrounding such free wells which may be drilled in the future in parts 2 and 4 by farmees of New Associated Developments Limited.

Gamache Exploration & Mining Co. Ltd. has joined with Lowlands Exploration Limited (Imperial Oil Limited's subsidiary) as equal partners and obtained from New Associated Developments Limited a farmout of half the Island, being all of parts 1 and 3 totalling 1, 000, 000 acres for considerations involving a cash payment, exploration and drilling works obligations over a period of years, some free drilling by the farmees for the account of New Associated Developments Limited in

the unfarmed-out portion of the Island, and in the event that oil is found, an overriding royalty to New Associated Developments Limited on all the oil produced and sold.

Drilling by the farmees for New Associated Developments Limited in the center of part 2 on the Jupiter anticline had reached a depth of 1, 960 feet; the well is known as New Associated Conpaper Anticosti #1 with a target of 4, 000 feet. To-date five oil and gas showings have been obtained, at 753.8 - 754.5 feet, 806 - 810 feet, 1, 358 feet, 1, 476 feet, and 1, 871 feet. At its present depth the hole is believed to be about 400 feet above the Trenton limestone which is an important producer in Ontario, Michigan, and Ohio.

The Company intends to carry out geologic mapping on its own acreage to be followed by drilling in the spring or summer of 1963.

3. PHYSIOGRAPHY AND ACCESS

The island is a partly submerged southerly dipping cuesta with a north-facing escarpment. The most conspicuous topographic feature is a series of 20 or more wave-cut terraces which occur on both the north and south sides. They are generally narrow on the north side whereas some on the south side attain a width of several miles. Most are covered with beach gravels. In general, the relief is low but some of the terraces on the north part of the island reach an elevation of over 600 feet.

There are numerous streams, which generally flow at right angles to the shoreline, but no large rivers. Due to the large number of

falls and rapids none of the streams are navigable. Small lakes occur at almost all altitudes but are most abundant in the northern half of the island. Much of the area is dotted with swamp, particularly along the south coast and around the eastern section.

Few good outcrops occur in the interior. The best exposures are along the banks of the larger streams and along the sides of the numerous terraces.

The island is accessible by both sea and air. The Anticosti Shipping Company operates a summer service from Quebec City and Gaspe to Port Menier at the western end of the island. Air service is provided by Quebec-Air from Gaspe and Seven Islands. Boats may be chartered for travel around the island and there is a small network of timber roads in the western section centered at Port Menier.

4. GEOLOGY

Anticosti Island comprises a portion of the St. Lawrence Lowlands and is underlain by sedimentary rocks of Ordovician and Silurian age. The strata dip gently southward at angles up to 5-6 degrees, averaging less than 2 degrees. Strikes vary from N40W to N80W and average N65W. No major faults are known to occur on the island although there are several open folds, or undulations, of small amplitude whose axes trend N-S.

The sediments have a combined thickness of about 2, 600 feet at the north side of the island, increasing to 5, 000 feet at the south side.

A list of the formations with their thicknesses is given in Table #1.

The oldest rocks on the island are black bituminous shales of the Ordovician Macasty formation. These have not been found in place, but are represented by blocks and boulders along the north shore, presumably thrown up by wave action.

TABLE #1

GEOLOGICAL SECTION, ANTICOSTI ISLAND

PERIOD	FORMATION	DESCRIPTION	THICKNESS IN FEET
Silurian	Chicotte	crinoidal and reef limestone	70
	Jupiter	limestone and shale	650
	Gun River	alternating limestone and shale	310
	Becscie	limestone with shale partings	190
Ordovician	Ellis Bay	shale and limestone in south; sandstone & limestone in north	200
	Vaureal	interbedded limestone & shale	1000
	English Head	limestone and shale	230
	Macasty	black shale	?

The oldest exposed strata are a continuous sequence of limestone and shale about 950 feet thick exposed along the north coast. This sequence has been divided on the basis of fossil assemblages into

two formations, the English Head and the overlying Vaureal.

The Vaureal formation is succeeded by 200 feet of limestone containing some beds of sandstone and a quartz-pebble conglomerate, comprising the Ellis Bay formation. This is of interest since it bridges the gap between the Ordovician and Silurian systems.

The Becscie formation overlies the Ellis Bay and consists of a basal limestone conglomerate followed by grey limestone with shale partings measuring 190 feet in thickness.

Overlying the Becscie is 300 feet of alternating limestone and shale of the Green River formation followed by 650 feet of limestone and shale of the Jupiter formation. The youngest strata are crinoidal and reef limestones of the Chicotte formation. It should be pointed out that some of these units are difficult to recognize in the field as they are defined primarily on the basis of faunal assemblages.

Included with this report is a generalized geologic map of the Island and an interpretive north-south structure section showing the location of the New Associated - Conpaper Anticosti #1 Well. These have been prepared from published and unpublished reports which are believed to be reliable but the exact formation thicknesses and boundaries have not been authenticated by us.

5. PREVIOUS WORK

Evidently very little work has been carried out in the past. The earliest recorded work was a reconnaissance geological survey in 1856 by James Richardson of the Geological Survey of Canada. A more

detailed study was made in 1919 by W. H. Twenhofel, the results of which were published in G.S.C. Memoir #154.

Many geological surveys have been conducted over and on the island by various bodies including the provincial and federal governments, Consolidated Paper Corporation, Imperial Oil Limited, and New Associated Developments Limited. As a result of the above a great deal is already known about the island, even though it now remains the only important undrilled section of sedimentary rock in the North American Continent.

6. CONCLUSIONS

1. Anticosti Island is made up of sedimentary formations which produce and/or have produced oil and gas in commercial quantities in Ontario, Ohio, and Michigan.

2. The numerous oil and gas showings obtained in the present well being drilled confirm the belief that the formations of the island are capable of generating crude oil and gas.

3. So far in the well wherever porosity was encountered it was found to contain hydrocarbons.

Four types of oil structures may be looked for and penetrated on the island and particularly in Blocks 2 and 4, retained and unfarmed by New Associated Developments Limited.

a) An anticlinal structure such as the one on which the well is being drilled.

CERTIFICATE

I, Robert Alan Bell, of the City of Toronto, Province of Ontario, do hereby certify that :

1. I am a geologist residing at 50 Hemford Crescent, Don Mills (Toronto) Ontario.

2. I am a graduate of the University of Toronto in Physics and Geology with the degree of Bachelor of Arts (1949); and a graduate of the University of Wisconsin in Economic Geology with the degree of Ph.D. (1952).

3. I am a member of the Society of Economic Geologists and a fellow of the Geological Association of Canada.

4. I have been practising my profession for over ten years.

5. I have no direct or indirect interest, nor do I expect to receive any interest directly or indirectly, in the property or securities of New Associated Developments Limited.

6. The statements made in this report are based on a study of published geological literature and unpublished private reports.

Dated at Toronto

This 17th day of January, 1963

Robert A. Bell

Robert A. Bell, Ph.D.

CERTIFICATE

I, Robert Alan Bell, of the City of Toronto, Province of Ontario, do hereby certify that :

1. I am a geologist residing at 50 Hemford Crescent, Don Mills (Toronto) Ontario.

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