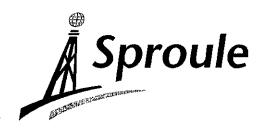
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# RESOURCE ASSESSMENT OF THE MACASTY FORMATION IN CERTAIN PETROLEUM AND NATURAL GAS HOLDINGS ON ANTICOSTI ISLAND FOR PETROLIA INC. AND CORRIDOR RESOURCES INC.

(As of 1 June 2011)



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Project No.:

3180.18168

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# Introduction

This report was prepared during the months of March through May, 2011, by qualified evaluators and auditors of Sproule Associates Limited ("Sproule") at the joint request of Mr. André Proulx, President and CEO, Pétrolia Inc. ("Pétrolia"), of Quebec City, Quebec and Mr. Phillip Knoll, President and CEO, Corridor Resources Inc. ("Corridor"), of Halifax, Nova Scotia. Pétrolia and Corridor are hereinafter referred to jointly as "the Companies". The effective date of this report is June 1, 2011.

The Companies hold joint lands, and Corridor also holds separate 100 percent interest lands, on Anticosti Island, as shown in Figures 1 and 2. Based on previous published studies and data collected on the joint 2010 well Pétrolia Corridor Chaloupe N°1 (PCCh), the Companies jointly requested that Sproule conduct a resource assessment of the hydrocarbon potential of the Macasty Formation which contains shales with a sufficiently high total organic carbon (TOC) content to be considered a hydrocarbon source rock.

This report addresses only the land holdings of the Companies on Anticosti Island. Both companies hold other petroleum and natural gas interests which are not addressed in this report.

This one-volume report contains an Introduction, Summary and Discussion, accompanied by pertinent tables, figures and appendices. The Introduction includes Sproule's disclaimer and pertinent author certificates, the Summary presents a high-level summary of the resource assessment, and the Discussion includes our commentary pertaining to the assessment of the holdings.

The definitions used in this report are those presented in the Canadian Oil and Gas Evaluation Handbook (COGEH), which are compliant with the requirements of National Instrument 51-101 (NI51-101).

#### Disclaimer

This report has been prepared by qualified evaluators and auditors of Sproule Associates Limited, using current geological and engineering knowledge and techniques. It has been prepared within the Code of Ethics of the Association of Professional Engineers, Geologists and Geophysicists of Alberta. Nevertheless, the conclusions presented in this report could be affected by the data received and the procedures used, as qualified below.



- Property descriptions, details of interests held, technical and well data obtained from the Companies or public sources were accepted as represented. No further investigation was made into either the legal titles held or any agreements in place relating to the subject properties.
- 2. In the preparation of this report, a field inspection of the holdings was not undertaken. Relevant geological data were made available by the Companies or were obtained from either public sources or Sproule's non-confidential files.

The certificates of those evaluators involved in the preparation of this report have been included.

#### **Resource Assessment Procedures**

In the resource assessment, all available pertinent factors were considered, including well log data, core analysis data, RockEval data, thermal maturation data, 2D seismic data, geological structures, prospective zones and historical exploration activity.

Two independent methods were used to estimate the present-day volume of hydrocarbons within the Macasty shale. The first was based on mapping of the pyrolysis S1 data and basin modelling, and the second was based on traditional geological mapping using a gross isopach map in conjunction with petrophysical parameters. The pyrolysis data was interpreted to represent the minimum present day residual oil saturation within the Macasty shale, and the volumetric analysis was interpreted to represent the total hydrocarbons that might currently be present within the shale.

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Notwithstanding, Sproule hereby gives permission to release the report for review by potential investors, stock exchanges, securities commissions and other regulatory bodies, and for the filing on SEDAR.



# Certification

# **Report Preparation**

The report entitled "Resource Assessment of the Macasty Formation, in Certain Petroleum and Natural Gas Holdings on Anticosti Island for Pétrolia Inc and Corridor Resources Inc (As of 1 June 2011)" was prepared by the following Sproule personnel:

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# **Sproule Executive Endorsement**

This report has been reviewed and endorsed by the following Executive of Sproule:

Original Signed by John Chipperfield, P.Geol.

John Chipperfield, P.Geol.
Senior Vice-President and Director
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#### **Permit to Practice**

Sproule Associates Limited is a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta and our permit number is P417.



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- I, Douglas J. Carsted, Vice-President, Geoscience, and Director of Sproule, 900, 140 Fourth Ave SW, Calgary, Alberta, declare the following:
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  - b. Canadian Society of Petroleum Geologists (CSPG)
  - c. American Association of Petroleum Geologists (AAPG)
  - d. Society of Petroleum Engineers (SPE)
  - e. Canadian Well Logging Society (CWLS)
  - f. Indonesian Petroleum Association, Professional Division (IPA)
- 4. I am a qualified reserves evaluator and reserves auditor as defined in National Instrument 51-101.
- 5. My contribution to the report entitled "Resource Assessment of the Macasty Formation, in Certain Petroleum and Natural Gas Holdings on Anticosti Island for Pétrolia Inc and Corridor Resources Inc (As of 1 June 2011)" is based on my geological knowledge and the data provided to me by the Company, from public sources, and from the non-confidential files of Sproule. I did not undertake a field inspection of the properties.
- I have no interest, direct or indirect, nor do I expect to receive any interest, direct or indirect, in the properties described in the above-named report or in the securities of Pétrolia Inc. or Corridor Resources Inc.

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  - c. The Society of Petrophysicists and Well Log Analysts (SPWLA)
  - d. Canadian Well Logging Society (CWLS)
- 4. My contribution to the report entitled "Resource Assessment of the Macasty Formation, in Certain Petroleum and Natural Gas Holdings on Anticosti Island for Pétrolia Inc and Corridor Resources Inc (As of 1 June 2011)" is based on my geophysical knowledge and the data provided to me by the Company, from public sources, and from the non-confidential files of Sproule. I did not undertake a field inspection of the properties.
- 5. I have no interest, direct or indirect, nor do I expect to receive any interest, direct or indirect, in the properties described in the above-named report or in the securities of Pétrolia Inc. or Corridor Resources Inc.

Original Sign	ed by	Suryanarayana	Karri,	P. Geoph.
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- 3. I am an applicant of the following professional organization:
  - a. Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA)
- 4. My contribution to the report entitled "Resource Assessment of the Macasty Formation, in Certain Petroleum and Natural Gas Holdings on Anticosti Island for Pétrolia Inc and Corridor Resources Inc (As of 1 June 2011)" is based on my geological knowledge and the data provided to me by the Company, from public sources, and from the non-confidential files of Sproule. I did not undertake a field inspection of the properties.
- 5. I have no interest, direct or indirect, nor do I expect to receive any interest, direct or indirect, in the properties described in the above-named report or in the securities of Pétrolia Inc. or Corridor Resources Inc.

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- 4. I am a qualified reserves evaluator and reserves auditor as defined in National Instrument 51-101.
- 5. My contribution to the report entitled "Resource Assessment of the Macasty Formation, in Certain Petroleum and Natural Gas Holdings on Anticosti Island for Pétrolia Inc and Corridor Resources Inc (As of 1 June 2011)" is based on my geological knowledge and the data provided to me by the Company, from public sources, and from the non-confidential files of Sproule Associates Limited. I did not undertake a field inspection of the properties.
- I have no interest, direct or indirect, nor do I expect to receive any interest, direct or indirect, in the properties described in the above-named report or in the securities of Pétrolia Inc. or Corridor Resources Inc.

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John L. Chipperfield, P.Geol.



# Summary

This report is based on raw and interpreted technical data including geological maps and data, well logs and cross-sections, seismic data, engineering materials other information obtained from the Companies, publications or Sproule's non-confidential files and our personal knowledge of the geology of Anticosti Island.

A summary of the resource assessment is presented in Table S-1.

# Table S-1 Summary of Estimates of Total Petroleum Initially-In-Place<sup>1</sup> Macasty Shale, Anticosti Island, Quebec As June 1, 2011

	Company Gross Land Holdings <sup>2</sup>			Company Working Interest <sup>3</sup>		
Pétrolia Inc.	Low Estimate <sup>5</sup>	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>	Low Estimate <sup>5</sup>	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>
Undiscovered <sup>4</sup> Petroleum Initially-In- Place (MMboe) <sup>8</sup>	19,800	30,900	48,200	9,120	14,100	22,000
Corridor Resources Inc.	Low Estimate <sup>5</sup>	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>	Low Estimate⁵	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>
Undiscovered <sup>4</sup> Petroleum Initially-In- Place (MMboe) <sup>8</sup>	21,420	33,900	53,900	12,300	19,800	31,900

#### Notes:

- 1. Total Petroleum Initially-In-Place (PIIP) is that quantity of petroleum that is estimated to exist originally in naturally occurring accumulations. It includes that quantity of petroleum that is estimated, as of a given date, to be contained in known accumulations, prior to production, plus those estimated quantities in accumulations yet to be discovered.
- 2. Total Undiscovered Petroleum Initially-In-Place on lands in which the Company holds an interest.
- 3. Company working interest in lands held prior to deduction of royalties.
- 4. Undiscovered Petroleum Initially-In-Place (equivalent to Undiscovered Resources) are those quantities of petroleum that are estimated, on a given date, to be contained in accumulations yet to be discovered. The recoverable portion of undiscovered petroleum initially in place is referred to as Prospective Resources, the remainder as Unrecoverable. Undiscovered resources carry discovery and development risks. The reported volumes are unrisked. There is no certainty that any portion of these resources will be discovered. A recovery project cannot be defined for this volume of undiscovered petroleum initially-in-place at this time. There is no certainty that it will be commercially viable to produce any portion of the resources.
- 5. The probability that the quantity actually in place is equal to or greater than the estimate is 90%,
- 6. The probability that the quantity actually in place is equal to or greater than the estimate is 50%.
- 7. The probability that the quantity actually in place is equal to or greater than the estimate is 10%.
- 8. These resources are reported as million of barrels of oil equivalent ("MMboe") to reflect uncertainty of hydrocarbon type across the island.

No proved, probable or possible reserves have been assigned to these lands at this time and they have been assessed as unproved properties containing undiscovered petroleum initially-in-place. National Instrument 51-101 disclosure requires that the resource

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estimates must be classified according to Canadian Oil and Gas Evaluation Handbook definitions and disclosed in the most specific category. Under these definitions, Sproule has classified the total petroleum initially-in-place as undiscovered resources, based on the following:

- No moveable oil has yet been discovered within the Macasty Formation on the island and the resources are inferred to exist based on the interpretation and mapping of limited pyrolysis, core, well log and seismic data.
- This is an unconventional shale oil resource that will require a stimulated completion for evaluation and, until an appropriately researched project has been undertaken to identify and evaluate potentially recoverable volumes, it is premature to speculate whether the Macasty contains recoverable or unrecoverable resources.

The value in conducting this assessment lies purely in its use as a basis for determining whether it appears worthwhile for the Companies to conduct further investigation into these resources. The Companies are actively evaluating options regarding further exploration and determination of resource potential in order to ensure that optimal shareholder value is obtained from the ongoing programs. The Anticosti exploration program is at an early stage and further work is required to determine whether there is potential for commercially viable resource recovery, prior to considering development.

Significant positive factors relevant to the estimates are as follows:

- The Macasty shale is a prolific source rock which has not exceeded the oil generation window over approximately three quarters of the island.
- The Macasty core from the Pétrolia Corridor Chaloupe well contained residual oil. This well is located on the high side of the Jupiter fault, where most of the Petrolia and Corridor acreage is located, and where the shale is interpreted to have been within the oil window and to be oil prone.

Significant negative factors relevant to the estimates are:

- To date, there is no direct evidence that the shale contains moveable oil that might potentially be producible.
- The resources are inferred to exist based on the interpretation and mapping of limited pyrolysis, petrophysical and seismic data.

Because these estimates are based on the interpretation and extrapolation of very limited, statistically insignificant datasets across the entire island, these must be treated as scoping level estimates and, as such, must be used with caution. Use of these estimates outside the scope of this study is not appropriate.



# **Discussion**

#### Introduction

In 2010, Pétrolia and its partner Corridor Resources Inc. drilled the Pétrolia Corridor Chaloupe N°1 (PCCh) well in the south-eastern portion of Anticosti Island (Figure 3), to test the Black River Formation. As a secondary objective, a core was cut in the Late Ordovician Macasty Formation that overlies, and is the source rock for, oil encountered in the Black River in parts of the Anticosti Basin. The Macasty core was analysed and shown to be porous and to contain residual oil with an API gravity of 35 degrees. Sproule was subsequently asked to conduct a hydrocarbon resource assessment of the Macasty on the lands that are held both jointly and separately by Pétrolia and Corridor across the island.

Anticosti Island lies in the Gulf of St. Lawrence, 75 km from the coast of the Gaspe Peninsula. It is 220 km in length, up to 48 km in width and occupies an area of approximately 8,000 square kilometers (3,000 square miles).

To date, approximately 1,400 km of 2D seismic has been shot and 20 wells have been drilled on the island by Imperial Oil, Consolidated Paper, Atlantic Richfield, New Associated Developments, Gamache Exploration and Mining, SOQUIP, Shell, Encal, HQPG, Pétrolia and Corridor Resources. The last three wells drilled on the island were in 2010 by Pétrolia and Corridor.

Early exploration focused on the definition of the stratigraphy and structure of the island and established the presence of an active hydrocarbon system. In the mid-1990s, Shell recognized geophysical and geological features indicative of hydrothermal dolomitization. Since then, the primary focus of exploration on the island has been on diagenetic traps.

The seismic data is sparse and, of the approximately 1,400 kilometers (875 miles) of 2D data, only 845 kilometers (528 miles) can be considered modern.

Drilling density is very low, averaging 1 well per 400 km² (1 well per 156 square miles), however, it varies across the island, with 5 wells drilled in the Jupiter area and 4 wells in the Saumon-Chaloupe area. Counting these wells as multiple tests of specific areas, the effective drilling density is approximately 1 well per 880 km² (1 well per 340 mile²). Distance between wells varies from 1 km to 50 km, with an average of 17 km north-south and 30 km east-west (7 and 11 miles respectively), demonstrating that exploration of the island is still in the early stages. As such, any inferences drawn from this resource assessment should be used cautiously.



#### **Geological Setting**

The Anticosti Basin is a large, elongated Paleozoic sedimentary basin that covers the northern portion of the Gulf of St. Lawrence. Anticosti Island is located approximately in the middle of the basin.

The Late Ordovician Macasty shale (Figure 4) was deposited in a deep water marine environment and contains Type II kerogen (Bertrand, 1987). The Macasty directly overlies the Trenton Formation and is in turn overlain by the Vauréal Formation. Based on information available from the well and seismic data, the Macasty Formation is present across the entire island. It occurs at a depth of 300 - 400 meters at the northern coast and dips to the south. About halfway across the island, it is downthrown some 500 meters on the south side of the Jupiter fault and continues to dip southward to a depth of 2,400 meters at the south coast of the island. It varies in thickness along strike, from 10 meters at the eastern end of the island to 140 meters at the western end.

#### **Data Availability and Interpretation**

The data available for the Macasty assessment were very limited, as follows:

- Petrophysical Data: usable logs on 10 of the 17 wells
- Core Data: 27 metres of core cut in the PCCh well; nine Macasty samples analysed
- Schlumberger Shale Oil Advisor for the PCCh well
- Pyrolysis Data: available for 5 of the 17 wells
- Seismic Data: approximately 1400 km of 2D data, of which 845 km is modern
- Reservoir fluid gas chromatograph analyses for extracted oil from PCCh well
- Well Tests: none

#### **Geophysics:**

Sproule interpreted the available 2D seismic data in Schlumberger's Petrel software. Although the data is of relatively poor quality, it does have a fair degree of reflection continuity at the top of the Macasty and the Trenton (base of Macasty).

In order to convert the surfaces and faults from time to depth, a velocity model was generated using the available well control. The resulting depth model matches the intersection of the formation well tops in each of the wells. A gross Macasty shale isopach map was derived from the Macasty and Trenton structure maps.



#### **Petrophysics:**

Sproule conducted a petrophysical analysis for nine wells with full log suites using the Prizm petrophysical module in Landmark's PC-based Geographix software. The Macasty interval was identified using the resistivity and sonic overlay technique (Passey et al., 1990). In some wells, the Macasty interval identified by the overlay technique covers both the Macasty carbonaceous and the Macasty shale intervals, whereas in other wells, the interval covers only the Macasty shale interval. The top and bottom of this interval were used in the geological mapping.

In the analysis, the volume of shale ( $V_{sh}$ ) was computed as the minimum of two indicators: gamma ray and neutron-density combination. The apparent porosity was calculated using the average of the neutron and density porosity values. The effective porosity (PHIE) was calculated by correcting the apparent porosity from logs for the estimated volume of shale within the formation. For the Macasty shale, a value of 0.06 ohm-meters was used for formation water resistivity (Rw). The water saturation (Sw) was calculated using the modified Simandoux equation, with values of a, m and n set to 1, 2, and 2, respectively. The net pay was computed using the cut-off values PHIE >0%;  $V_{sh}$  <100%; and Sw <75%.

#### **Core Analysis:**

Twenty-seven metres of core were cut in the Macasty shale in the PCCh well in August 2010. The core was sampled and nine plugs were analyzed by Weatherford Laboratories in the fall of 2010. Porosity and permeability were determined by Shale Rock Properties analysis on crushed samples that were vacuum dried at 212 °F. The fluid saturations were determined by Shale Rock Properties analysis on received bulk samples.

The results for the nine analyzed samples are summarized as follows:

- Porosity: range 3.12% 6.26%; average 4.9%
- Permeability: range 1.56E-05 4.66E-05 mD; average 2.99E-05 mD
- Oil saturation: 35.22% 48.26%; average 41.9%.

#### **Pyrolysis:**

Pyrolysis data was available for 13 samples from 5 wells distributed across the island, including the recent PCCh well. The tests were conducted using RockEval and Leco and reported TOC, Tmax, S1, S2, S3, HI, and other standard pyrolysis parameters.

Only the S1 and TOC data were used in the volumetric assessment. The Tmax, S1 and S2 data were used to estimate kerogen maturity and to calibrate the basin history model.



The S1 values were used to estimate the minimum present-day oil saturation within the Macasty. S1 recoveries do not represent all the residual oil within a sample where higher order hydrocarbons are present, because they are not volatilized at the 300 degrees Celsius at which S1 is measured. In addition, S1 values do not account for any volatile hydrocarbons which may have been released in sample collection or preparation. It was observed that the whole core S1 values were approximately twice those measured on samples taken from drill cuttings. This may be due to the release of hydrocarbons during the drilling process.

Reported S1 values were between 0.8 mg hc/gm rock (Arco 1 well) and 4.6 mg hc/gm rock (LGCP and PCCh wells). Values of 0.5 mg hc/gm rock and 5 mg hc/gm rock were selected as the representative range of S1.

These estimates are interpreted to represent the residual oil within the Macasty at the PCCh well at the present time. This oil is not considered to be moveable.

#### **Resource Assessment**

Two independent methods (Figure 5) were used to estimate the present-day volume of hydrocarbons within the Macasty shale. The first was based on mapping of the pyrolysis S1 data and basin modelling, and the second was based on traditional geological mapping using a gross isopach map in conjunction with petrophysical parameters.

The pyrolysis data was interpreted to represent the minimum present-day residual oil saturation within the Macasty shale, and the volumetric analysis was interpreted to represent the total hydrocarbons that might currently be present within the shale.

These two methods are described in the following discussion.

#### **Geo-History Modelling**

The pyrolysis data was incorporated into a basin development history model created using Zetaware's Trinity and Genesis software packages, which are tools for numerical simulation of burial, thermal and hydrocarbon generation history.

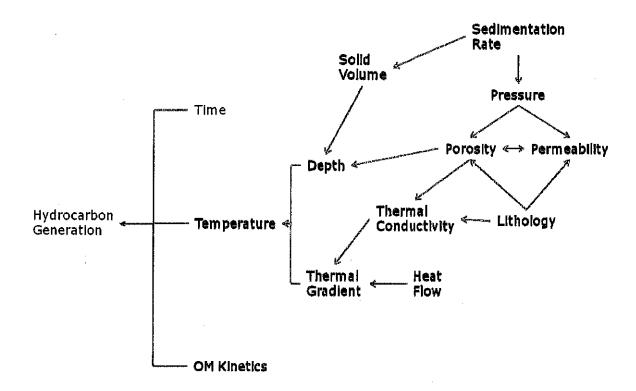
Hydrocarbon generation history is the product of complex interplay among several key variables:

- Lithologic parameters
- Sedimentation/burial rate



- Erosion
- Heat flow
- Organic matter kinetics

A burial history simulation that includes these parameters may reveal the net effect of their interaction. The following diagram shows the interdependences of these parameters.



The lithologic composition of the different lithostratigraphic units is represented by different combinations of shale and platform carbonates. The organic matter was assumed to be represented by Type II Kerogen (Van-Krevelen) or, equivalently, Organofacies B (Pepper and Corvi) (Figure 6). The original TOC represents the value before maturation and was extrapolated from the pyrolysis data by kinetics. No lateral changes in lithology, organofacies or thermal gradient were invoked, due to lack of data. Formation thicknesses are controlled by wells and seismic.

Sediments of Late Carboniferous - Early Permian age are present in Prince Edward Island, which is only 300 km away from Anticosti Island, and we have surmised that the eroded strata in the Anticosti Basin may have been initially deposited during Silurian - Permian time. The amount of erosion (i.e., maximum burial depth) was estimated in the five drill holes (ARCO, LGCP, LCPL, Sandtop and PCCh) by trial and error to achieve the current level



of maturity estimated by pyrolysis. The maturation modeling conducted by Sproule indicates that as much as 2.5 – 3.0 km of sediment was deposited above the Anticosti Group and subsequently eroded.

In general, maturation increases southwesterly across the island, which also correlates positively with present day depth. The basin modelling suggests that the transformation ratio of the kerogen in the Macasty shale varies from 0.3 in the northeastern part of the island to 0.9 in southwestern part (Figure 7a). The isopach map of the Macasty shale derived from both well control and seismic is shown in Figure 7b. A present-day map of S1 values, reflecting the level of maturity, is shown as Figure 7c.

A map of total petroleum initially-in-place (TPIIP) derived from the S1 data is shown as Figure 7d. More detailed maps, showing the land holdings and the volumes associated with the individual Company holdings, are presented in Figures 8 and 9 for Pétrolia and Corridor, respectively.

#### **Geological Mapping**

The geological method uses traditional mapping based on a gross isopach map of the Macasty shale in conjunction with net-to-gross ratio, porosity and saturation values from the well log interpretation.

The gross isopach map of the Macasty shale is shown in Figure 10a. The map was derived from the seismic interpretation described above, using well control and depth-converted seismic structure maps.

A map of net-to-gross ratio (NTG) is shown as Figure 10b. This ratio was determined in the individual wells by the petrophysical interpretation described above. The gross pay was interpreted to represent the section where resistivity and sonic log crossover is observed within the Macasty interval. The net pay within this section was estimated using porosity, volume of shale and water saturation cutoff values.

Porosity and water saturation within the net pay section were estimated from the petrophysical interpretation described above. These parameters were mapped as shown in Figure 10c and Figure 10d.

The parameters were combined to produce the map of total petroleum initially-in-place (TPIIP) shown in Figure 11 and 12, representing TPIIP for Anticosti Island and showing the Pétrolia and Corridor holdings, respectively.



#### **Resource Estimates**

The results of the two methodologies are shown in Figure 13, which combines the TPIIP maps for both the S1-based estimate and the petrophysics-based estimate. Although the magnitudes of the resources are different, as illustrated by using the same colour scale for both maps, the mapped trends are very similar.

These two methodologies result in two deterministic estimates. To reflect uncertainty in resource estimates, however, COGEH recommends that low, best and high estimates be reported. Sproule selected the TPIIP resource estimated from the S1 data as the low estimate and the resource estimated from the petrophysical estimate as the high estimate. These estimates were interpreted to define the P90 and P10 values of a log-normal distribution and a best estimate was chosen as the P50 value of that distribution. Figures 14 and 15 present the TPIIP volumes estimated for the Pétrolia and Corridor holdings, respectively.

The estimates are summarized in Table D1.



# Table D-1 Summary of Estimates of Total Petroleum Initially-In-Place<sup>1</sup> Macasty Shale, Anticosti Island, Quebec As June 1, 2011

	Company Gross Land Holdings <sup>2</sup>			Company Working Interest <sup>3</sup>		
Pétrolia Inc.	Low Estimate⁵	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>	Low Estimate⁵	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>
Undiscovered <sup>4</sup> Petroleum Initially-In- Place (MMboe) <sup>8</sup>	19,800	30,900	48,200	9,120	14,100	22,000
Corridor Resources Inc.	Low Estimate⁵	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>	Low Estimate⁵	Best Estimate <sup>6</sup>	High Estimate <sup>7</sup>
Undiscovered <sup>4</sup> Petroleum Initially-In- Place (MMboe) <sup>8</sup>	21,420	33,900	53,900	12,300	19,800	31,900

#### Notes

- 1. Total Petroleum Initially-In-Place (PIIP) is that quantity of petroleum that is estimated to exist originally in naturally occurring accumulations. It includes that quantity of petroleum that is estimated, as of a given date, to be contained in known accumulations, prior to production, plus those estimated quantities in accumulations yet to be discovered.
- 2. Total Undiscovered Petroleum Initially-In-Place on lands in which the Company holds an interest.
- 3. Company working interest in lands held prior to deduction of royalties.
- 4. Undiscovered Petroleum Initially-In-Place (equivalent to Undiscovered Resources) are those quantities of petroleum that are estimated, on a given date, to be contained in accumulations yet to be discovered. The recoverable portion of undiscovered petroleum initially in place is referred to as Prospective Resources, the remainder as Unrecoverable. Undiscovered resources carry discovery and development risks. The reported volumes are unrisked. There is no certainty that any portion of these resources will be discovered. A recovery project cannot be defined for this volume of undiscovered petroleum initially-in-place at this time. There is no certainty that it will be commercially viable to produce any portion of the resources.
- 5. The probability that the quantity actually in place is equal to or greater than the estimate is 90%.
- 6. The probability that the quantity actually in place is equal to or greater than the estimate is 50%.
- 7. The probability that the quantity actually in place is equal to or greater than the estimate is 10%.
- 8. These resources are reported as million of barrels of oil equivalent ("MMboe") to reflect uncertainty of hydrocarbon type across the island.

These estimates of total petroleum initially-in-place have been classified as undiscovered resources, because

- no oil or gas has yet been recovered from the Macasty shale through testing, and
- the resources are inferred to exist based primarily on petrophysical interpretation.

Further, until an appropriately researched project has been undertaken to identify and evaluate potentially recoverable volumes, it is premature to speculate whether the Macasty contains recoverable or unrecoverable resources.

Note that the resources have been reported as barrels of oil equivalent because there is uncertainty regarding the type of hydrocarbon expected to be present within the Macasty

Sproule

shale across the island. The PCCh well, which encountered residual oil in the Macasty core, lies on the high side of the Jupiter fault, where the shale is interpreted to have been within the oil window. South of this fault, the Macasty shale is interpreted to have been within the gas condensate window; however, no hydrocarbon has been reported from the Macasty in this area. As a result, the resource volumes have been reported as barrels of oil equivalent.

Because they are based on the interpretation and extrapolation of very limited, statistically insignificant datasets across the entire island, these resource estimates must be treated as scoping-level estimates and, as such, must be used with caution. Use of these estimates outside the scope of this study is not appropriate.

The value in conducting such an assessment lies purely in its use as a basis for determining whether it appears worthwhile for the Companies to conduct further investigation into these resources and, if so, to assist in the identification of the types of data to be acquired and the definition of a work program with which to acquire them. Such investigations are beyond the scope of this report but are expected to include the drilling of a vertical Macasty well, coring the entire shale section, conducting state-of-the-art core analysis, acquiring state-of-the-art well log data and, if warranted, a completion within the shale. If vertical well results are encouraging, a second phase would likely involve the drilling and completion of a horizontal test well.



# Appendix A

#### References

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# **Appendix B**

#### **Resource Definitions**

This discussion has been excerpted from Sections 5.2 and 5.3 of the *Canadian Oil and Gas Evaluation Handbook*, Second Edition, September, 2007.

The following definitions relate to the subdivisions in the SPE-PRMS resources classification framework and use the primary nomenclature and concepts contained in the 2007 SPE-PRMS, with direct excerpts shown in italics.

Total Petroleum Initially-In-Place (PIIP) is that quantity of petroleum that is estimated to exist originally in naturally occurring accumulations. It includes that quantity of petroleum that is estimated, as of a given date, to be contained in known accumulations, prior to production, plus those estimated quantities in accumulations yet to be discovered (equivalent to "total resources").

Discovered Petroleum Initially-In-Place (equivalent to discovered resources) is that quantity of petroleum that is estimated, as of a given date, to be contained in known accumulations prior to production. The recoverable portion of discovered petroleum initially in place includes production, reserves, and contingent resources; the remainder is unrecoverable.

Production is the cumulative quantity of petroleum that has been recovered at a given date.

Reserves are estimated remaining quantities of oil and natural gas and related substances anticipated to be recoverable from known accumulations, as of a given date, based on the analysis of drilling, geological, geophysical, and engineering data; the use of established technology; and specified economic conditions, which are generally accepted as being reasonable. Reserves are further classified according to the level of certainty associated with the estimates and may be subclassified based on development and production status.

Contingent Resources are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations using established technology or technology under development, but which are not currently considered to be commercially recoverable due to one or more contingencies. Contingencies may include factors such as economic, legal, environmental, political, and regulatory matters, or a lack of markets. It is



also appropriate to classify as contingent resources the estimated discovered recoverable quantities associated with a project in the early evaluation stage. Contingent Resources are further classified in accordance with the level of certainty associated with the estimates and may be subclassified based on project maturity and/or characterized by their economic status.

Unrecoverable is that portion of Discovered or Undiscovered PIIP quantities which is estimated, as of a given date, not to be recoverable by future development projects. A portion of these quantities may become recoverable in the future as commercial circumstances change or technological developments occur; the remaining portion may never be recovered due to the physical/chemical constraints represented by subsurface interaction of fluids and reservoir rocks.

Undiscovered Petroleum Initially-In-Place (equivalent to undiscovered resources) is that quantity of petroleum that is estimated, on a given date, to be contained in accumulations yet to be discovered. The recoverable portion of undiscovered petroleum initially in place is referred to as "prospective resources," the remainder as "unrecoverable."

Prospective Resources are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects. Prospective resources have both an associated chance of discovery and a chance of development. Prospective Resources are further subdivided in accordance with the level of certainty associated with recoverable estimates assuming their discovery and development and may be subclassified based on project maturity.

# **Resource Categories**

Due to the high uncertainty in estimating resources, evaluations of these assets require some type of probabilistic methodology. Expected value concepts and decision-tree analyses are routine; however, in high-risk, high-reward projects, Monte Carlo simulation can be used. In any event, three success cases plus a failure case should be included in the evaluation of the resources (see Section 9 of the *Canadian Oil and Gas Evaluation Handbook* for details on these methods).

When evaluating resources (in particular, contingent and prospective resources) the following mutually-exclusive categories are recommended:



- Low Estimate: This is considered to be a conservative estimate of the quantity that will actually be recovered from the accumulation. If probabilistic methods are used, this term reflects a P<sub>90</sub> confidence level.
- Best Estimate: This is considered to be the best estimate of the quantity that will
  actually be recovered from the accumulation. If probabilistic methods are used, this
  term is a measure of central tendency of the uncertainty distribution (most
  likely/mode, P<sub>50</sub>/median, or arithmetic average/mean).
- High Estimate: This is considered to be an optimistic estimate of the quantity that will actually be recovered from the accumulation. If probabilistic methods are used, this term reflects a P<sub>10</sub> confidence level.

**Company Gross Contingent Resources** are the Company's working interest share of the contingent resources, before deduction of any royalties.

**Company Net Contingent Resources** are the gross contingent resources of the properties in which the Company has an interest, less all Crown, freehold, and overriding royalties and interests owned by others.

**Fair Market Value** is defined as the price at which a purchaser seeking an economic and commercial return on investment would be willing to buy, and a vendor would be willing to sell, where neither is under compulsion to buy or sell and both are competent and have reasonable knowledge of the facts.



# **Appendix C**

# National Instrument 51-101, Disclosure of Resources

The following text has been excerpted from Sections 5.9 and 5.10 of National Instrument 51-101, Standards of Disclosure for Oil and Gas Activities, May 2008.

#### 5.9 Disclosure of Resources

- (1) If a reporting issuer discloses anticipated results from resources which are not currently classified as reserves, the reporting issuer must also disclose in writing, in the same document or in a supporting filing:
  - (a) the reporting issuer's interest in the resources;
  - (b) the location of the resources;
  - (c) the product types reasonably expected;
  - (d) the risks and the level of uncertainty associated with recovery of the resources; and
  - (e) in the case of unproved property, if its value is disclosed,
    - (i) the basis of the calculation of its value; and
    - (ii) whether the value was prepared by an *independent* party.
- (2) If disclosure referred to in subsection (1) includes an estimate of a quantity of resources in which the reporting issuer has an interest or intends to acquire an interest, or an estimated value attributable to an estimated quantity, the estimate must
  - (a) have been prepared or audited by a qualified reserves evaluator or auditor;
  - (b) relate to the most specific category of resources in which the resources can be classified, as set out in the COGE Handbook, and must identify what portion of the estimate is attributable to each category; and
  - (c) be accompanied by the following information:



- (i) a definition of the resources category used for the estimate;
- (ii) the effective date of the estimate;
- (iii) the significant positive and negative factors relevant to the estimate;
- (iv) in respect of *contingent resources*, the specific contingencies which prevent the classification of the *resources* as *reserves*; and
- (v) a cautionary statement that is proximate to the estimate to the effect that:
  - (A) in the case of *discovered resources* or a subcategory of *discovered resources* other than *reserves*:

"There is no certainty that it will be commercially viable to produce any portion of the resources."; or

(B) in the case of *undiscovered resources* or a subcategory of *undiscovered resources*:

"There is no certainty that any portion of the resources will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of the resources."

- (3) Paragraphs 5.9(1)(d) and (e) and subparagraphs 5.9(2)(c)(iii) and (iv) do not apply if:
  - (a) the *reporting issuer* includes in the written disclosure a reference to the title and date of a previously filed document that complies with those requirements; and
  - (b) the resources in the written disclosure, taking into account the specific properties and interests reflected in the resources estimate or other anticipated result, are materially the same resources addressed in the previously filed document.



#### 5.10 Analogous Information

- (1) Sections 5.2, 5.3 and 5.9 do not apply to the disclosure of *analogous information* provided that the *reporting issuer* discloses the following:
  - (a) the source and date of the analogous information;
  - (b) whether the source of the analogous information was independent;
  - (c) if the *reporting issuer* is unable to confirm that the *analogous information* was prepared by a *qualified reserves evaluator or auditor* or in accordance with the *COGE Handbook*, a cautionary statement to that effect proximate to the disclosure of the *analogous information*; and
  - (d) the relevance of the analogous information to the reporting issuer's oil and gas activities
- (2) For greater certainty, if a reporting issuer discloses information that is an anticipated result, an estimate of a quantity of reserves or resources, or an estimate of value attributable to an estimated quantity of reserves or resources for an area in which it has an interest or intends to acquire an interest, that is based on an extrapolation from analogous information, sections 5.2, 5.3 and 5.9 apply to the disclosure of the information.



# Appendix D — Abbreviations

This appendix contains a list of abbreviations that may be found in Sproule reports, as well as a table comparing Imperial and Metric units. Two conversion tables, used to prepare this report, are also provided.

AOF absolute open flow

ARTC Alberta Royalty Tax Credit BOE barrels of oil equivalent bopd barrels of oil per day bwpd barrels of water per day

Cr Crown

DCQ daily contract quantity
DSU drilling spacing unit

FH Freehold

GCA gas cost allowance

GOR gas-oil ratio

GORR gross overriding royalty LPG liquid petroleum gas

McfGE thousands of cubic feet of gas equivalent

Mcfpd thousands of cubic feet per day

MPR maximum permissive rate MRL maximum rate limitation

NC 'new' Crown

NCI net carried interest
NGL natural gas liquids
NORR net overriding royalty
NPI net profits interest

OC 'old' Crown

ORRI overriding royalty interest P&NG petroleum and natural gas PSU production spacing unit

PVT pressure-volume-temperature
TCGSL TransCanada Gas Services Limited

UOCR Unit Operating Cost Rates for operating gas cost allowance

WI working interest



	Imperial Units			Metric Units
M (10³)	one thousand	Prefixes	k (10³)	one thousand
MM (10 <sup>6</sup> )	million		M (10 <sup>6</sup> )	million
B (10 <sup>9</sup> )	one billion		G (10°)	one billion
T (10 <sup>12</sup> )	one trillion		T (10 <sup>12</sup> )	one trillion
•			E (10 <sup>18</sup> )	one milliard
ln.	inches	Length	cm	centimetres
ft	feet		m	metres
mi	mile		km	kilometres
ft²	square feet	Area	m²	square metres
ac	acres		ha	hectares
cf or ft <sup>3</sup>	cubic feet	Volume	m³	cubic metres
scf	standard cubic feet			
gal	gallons		Ĺ	litres
Mcf	thousand cubic feet			
Mcfpđ	thousand cubic feet per day			
MMcf	million cubic feet			
MMcfpd	million cubic feet per day			
Bcf	billion cubic feet (10°)			
bbl	barrels		m³	cubic metre
мьы	thousand barrels			
stb	stock tank barrel		stm³	stock tank cubic metres
bbl/d	barrels per day		m³/d	cubic metre per day
bbl/mo	barrels per month			·
Btu	British thermal units	Energy	J	joules
			MJ/m³	megajoules per cubic metre (10 <sup>6</sup> )
			TJ/d	terajoule per day (10 <sup>12</sup> )
oz	ounce	Mass	ġ	gram
lb	pounds		kg	kilograms
ton	ton		t	tonne
lt	long tons			
MIt	thousand long tons			
psi	pounds per square inch	Pressure	Pa	pascals
			kPa	kilopascals (10 <sup>3</sup> )
psia	pounds per square inch absolute			
psig	pounds per square inch gauge			
°F	degrees Fahrenheit	Temperature	°C	degrees Celsius
°R	degrees Rankine		К	Kelvin
M\$	thousand dollars	Dollars	k\$	thousand dollars



	Imperial Units			Metric Units	
sec	second	Time	s	second	
min	minute		min	minute	
hr	hour	<u> </u>	h	hour	
day	day		d	day	
wk	week			week	
mo	month			month	
yr	year		a	annum	

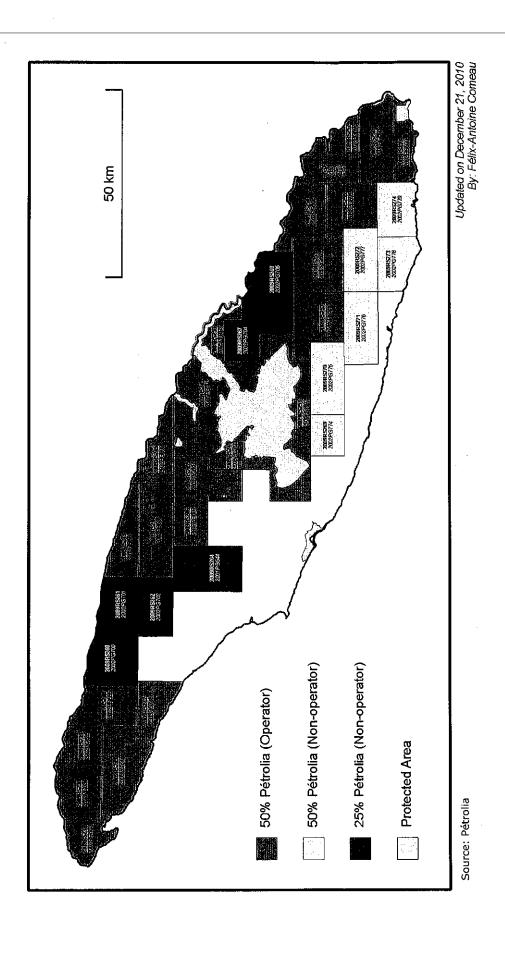


Conversion Factors — Metric to Imperial					
cubic metres (m³) (@ 15°C)	x 6.29010	= barrels (bbl) (@ 60°F), water			
m³ (@ 15°C)	x 6.3300	= bbl (@ 60°F), Ethane			
m³ (@ 15°C)	x 6.30001	= bbl (@ 60°F), Propane			
m³ (@ 15°C)	x 6.29683	= bbl (@ 60°F), Butanes			
m³ (@ 15°C)	x 6.29287	= bbl (@ 60°F), oil, Pentanes Plus			
m³ (@ 101.325 kPaa, 15°C)	x 0.0354937	= thousands of cubic feet (Mcf) (@ 14.65 psia, 60°F)			
1,000 cubic metres (10 <sup>3</sup> m <sup>3</sup> ) (@ 101.325 kPaa, 15°C)	x 35.49373	= Mcf (@ 14.65 psia, 60°F)			
hectares (ha)	x 2.4710541	= acres			
1,000 square metres (10 <sup>3</sup> m <sup>2</sup> )	x 0.2471054	= acres			
10,000 cubic metres (ha'm)	x 8.107133	= acre feet (ac-ft)			
m³/10³m³ (@ 101.325 kPaa, 15° C)	x 0.0437809	= Mcf/Ac.ft. (@ 14.65 psia, 60°F)			
joules (j)	x 0.000948213	= Btu			
megajoules per cubic metre (M3/m³)	x 26.714952	= British thermal units per standard cubic foot (Btu/scf)			
(@ 101.325 kPaa, 15°C)		(@ 14.65 psla, 60°F)			
dollars per gigajoule (\$/GJ)	x 1.054615	= \$/Mcf (1,000 Btu gas)			
metres (m)	x 3.28084	= feet (ft)			
kilometres (km)	× 0.6213712	= miles (mi)			
dollars per 1,000 cubic metres (\$/10³m³)	x 0.0288951	= dollars per thousand cubic feet (\$/Mcf) (@ 15.025 psia) B.C.			
(\$/10 <sup>3</sup> m <sup>3</sup> )	x 0.02817399	= \$/Mcf (@ 14.65 psia) Alta.			
dollars per cubic metre (\$/m³)	x 0.158910	= dollars per barrel (\$/bbl)			
gas/oil ratio (GOR) (m³/m³)	x 5,640309	= GOR (scf/bbl)			
kilowatts (kW)	x 1.341022	= horsepower			
kilopascals (kPa)	x 0.145038	= psi			
tonnes (t)	x 0.9842064	= long tons (LT)			
kilograms (kg)	x 2.204624	= pounds (lb)			
litres (L)	x 0.2199692	= gallons (Imperial)			
litres (L)	x 0.264172	= gallons (U.S.)			
cubic metres per million cubic metres (m³/106m³) (C3)	x 0.177496	= barrels per million cubic feet (bbl/MMcf) (@ 14.65 psia)			
$m^3/10^6m^3$ ) (C <sub>4</sub> )	x 0.1774069	= bbl/MMcf (@ 14.65 psia)			
m <sup>3</sup> /10 <sup>6</sup> m <sup>3</sup> ) (C <sub>5+</sub> )	x 0.1772953	= bbl/MMcf (@ 14.65 psia)			
tonnes per million cubic metres (t/106m3) (sulphur)	x 0.0277290	= LT/MMcf (@ 14.65 psia)			
millilitres per cubic meter (mL/m³) (C <sub>5+</sub> )	x 0.0061974	= gallons (Imperial) per thousand cubic feet (gal (Imp)/Mcf)			
$(mL/m^3)$ $(C_{5+})$	x 0.0074428	= gallons (U.S.) per thousand cubic feet (gal (U.S.)/Mcf)			
Kelvin (K)	× 1.8	= degrees Rankine (°R)			
millipascal seconds (mPa's)	x 1.0	= centipoise			



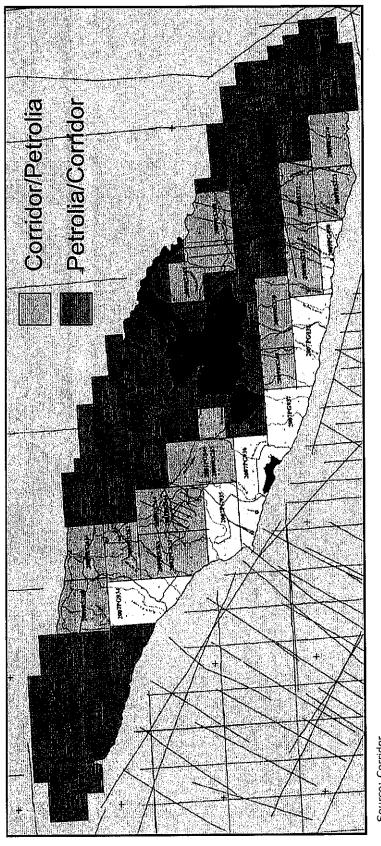
Conversion Factors — Imperial to Metric				
hammala (hbl) (@ 2005)	O 15000	untic motives (m3) (6) 4500) uniter		
barrels (bbl) (@ 60°F)	x 0.15898	= cubic metres (m³) (@ 15°C), water		
bbl (@ 60°F)	x 0.15798	= m <sup>3</sup> (@ 15°C), Ethane		
bbl (@ 60°F)	x 0.15873	= m <sup>3</sup> (@ 15°C), Propane		
bbl (@ 60°F)	x 0.15881	= m³ (@ 15°C), Butanes		
bbl (@ 60°F)	x 0.15891	= m³ (@ 15°C), oil, Pentanes Plus		
thousands of cubic feet (Mcf) (@ 14.65 psia, 60°F)	x 28.17399	= m <sup>3</sup> (@ 101.325 kPaa, 15°C)		
Mcf (@ 14.65 psia, 60°F)	x 0.02817399	= 1,000 cubic metres (10 <sup>3</sup> m <sup>3</sup> ) (@ 101.325 kPaa, 15°C)		
acres ·	x 0.4046856	= hectares (ha)		
acres	x 4.046856	= 1,000 square metres (10 <sup>3</sup> m <sup>2</sup> )		
acre feet (ac-ft)	x 0.123348	= 10,000 cubic metres (10 <sup>4</sup> m³) (ha·m)		
Mcf/ac-ft (@ 14.65 psia, 60°F)	x 22.841028	= 10 <sup>3</sup> m <sup>3</sup> /m <sup>3</sup> (@ 101.325 kPaa, 15°C)		
Btu	x 1054.615	= joules (J)		
British thermal units per standard cubic foot (Btu/Scf)	x 0.03743222	= megajoules per cubic metre (MJ/m³)		
(@ 14.65 psla, 60°F)		(@ 101.325 kPaa, 15°C)		
\$/Mcf (1,000 Btu gas)	x 0.9482133	= dollars per gigajoule (\$/GJ)		
\$/Mcf (@ 14.65 psia, 60°F) Alta.	x 35.49373	= \$/10 <sup>3</sup> m <sup>3</sup> (@ 101.325 kPaa, 15°C)		
\$/Mcf (@ 15.025 psia, 60°F), B.C.	x 34.607860	= \$/10 <sup>3</sup> m <sup>3</sup> (@ 101.325 kPaa, 15°C)		
feet (ft)	x 0.3048	= metres (m)		
miles (mi)	x 1.609344	= kilometres (km)		
\$/bbl	× 6.29287	= \$/m³ (average for 30°-50° API)		
GOR (scf/bbl)	x 0.177295	= gas/oil ratio (GOR) (m³/m³)		
horsepower	x 0.7456999	= kilowatts (kW)		
psi	x 6.894757	= kilopascais (kPa)		
long tons (LT)	x 1.016047	= tonnes (t)		
pounds (łb)	x 0.453592	≠ kilograms (kg)		
gallons (Imperial)	x 4.54609	= litres (L) (.001 m³)		
gallons (U.S.)	x 3.785412	= litres (L) (.001 m³)		
barrels per million cubic feet (bbl/MMcf) (@ 14.65 psia) (C <sub>3</sub> )	x 5.6339198	= cubic metres per million cubic metres (m³/106m³)		
bbl/MMcf (C <sub>4</sub> )	x 5.6367593	$=(m^3/10^6m^3)$		
bbl/MMcf (Cs+)	x 5.6403087	$= (m^3/10^6 m^3)$		
LT/MMcf (sulphur)	x 36.063298	= tonnes per million cubic metres (t/10 <sup>6</sup> m <sup>3</sup> )		
gallons (Imperial) per thousand cubic feet (gal (Imp)/Mcf) (C <sub>5+</sub> )	x 161.3577	= millilitres per cubic meter (mL/m³)		
gallons (U.S.) per thousand cubic feet (gal (U.S.)/Mcf) (C <sub>5+</sub> )	x 134.3584	= (mL/m³)		
degrees Rankine (°R)	x 0.555556	= Kelvin (K)		
centipoises	x 1.0	= millipascal seconds (mPa*s)		





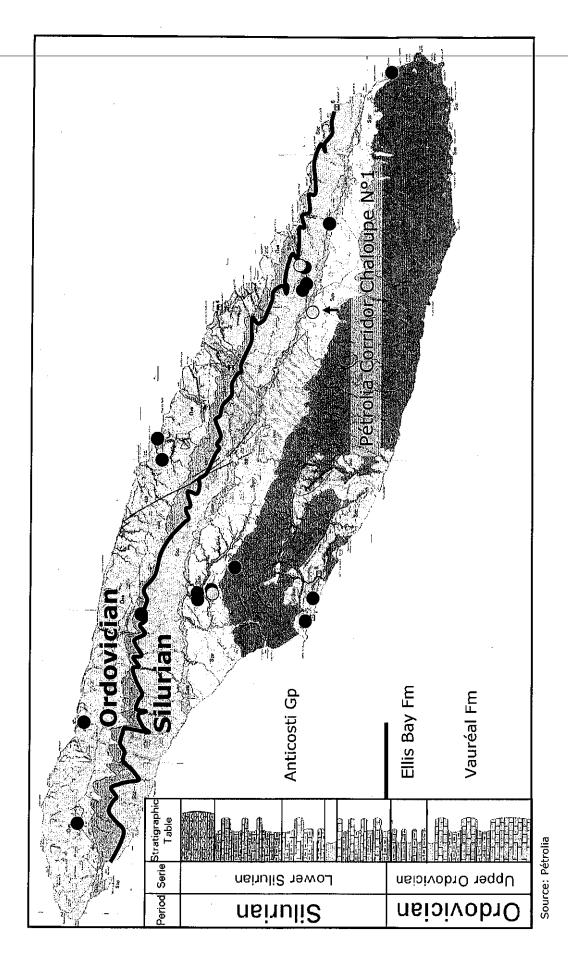


Pétrolia Inc., Anticosti Island Holdings



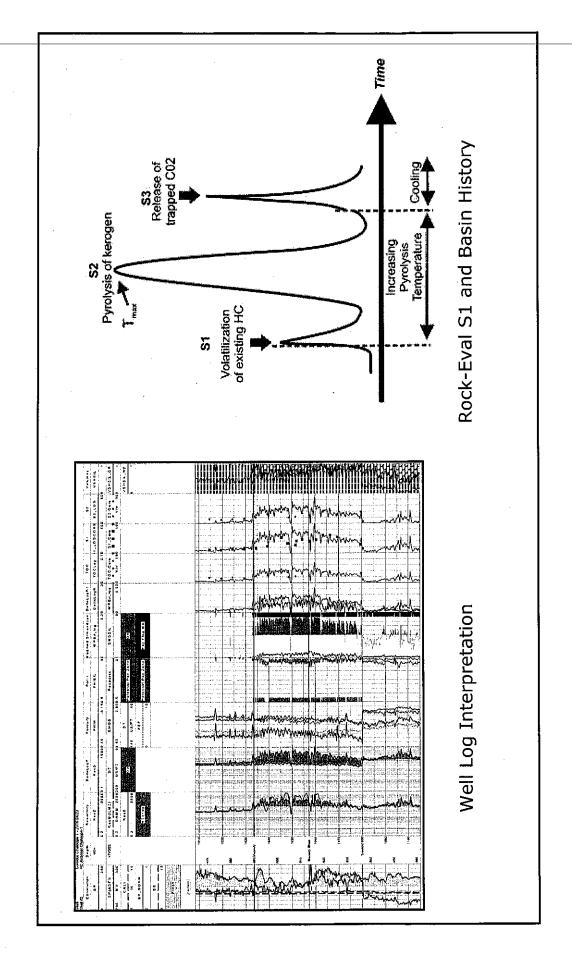
Source: Corridor

## Corridor Resources Inc., Anticosti Island Holdings



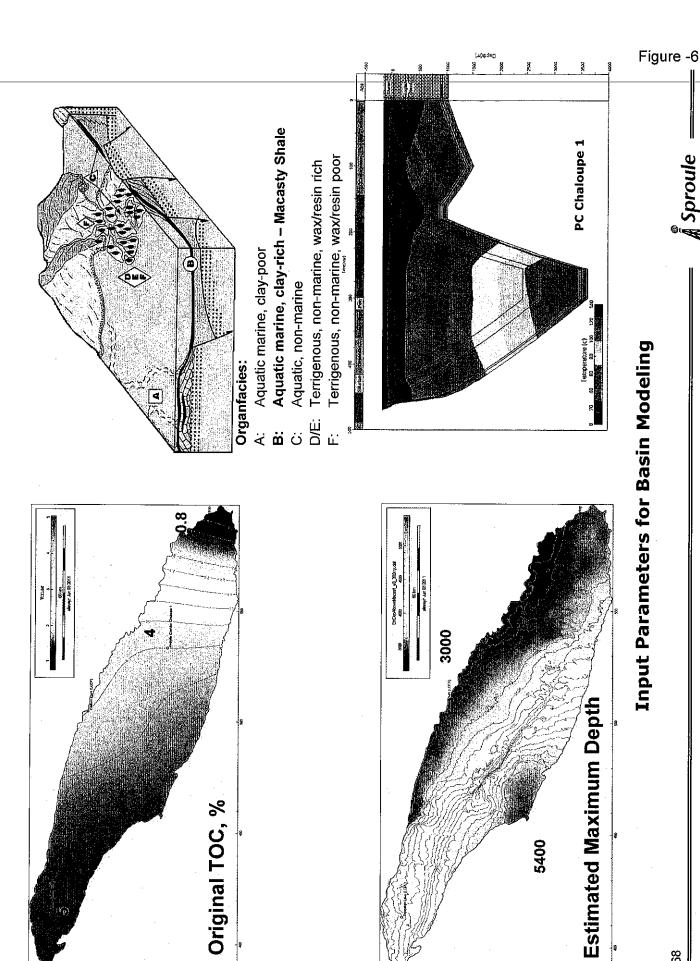
Location Map of Pétrolia Corridor Chaloupe Nº1

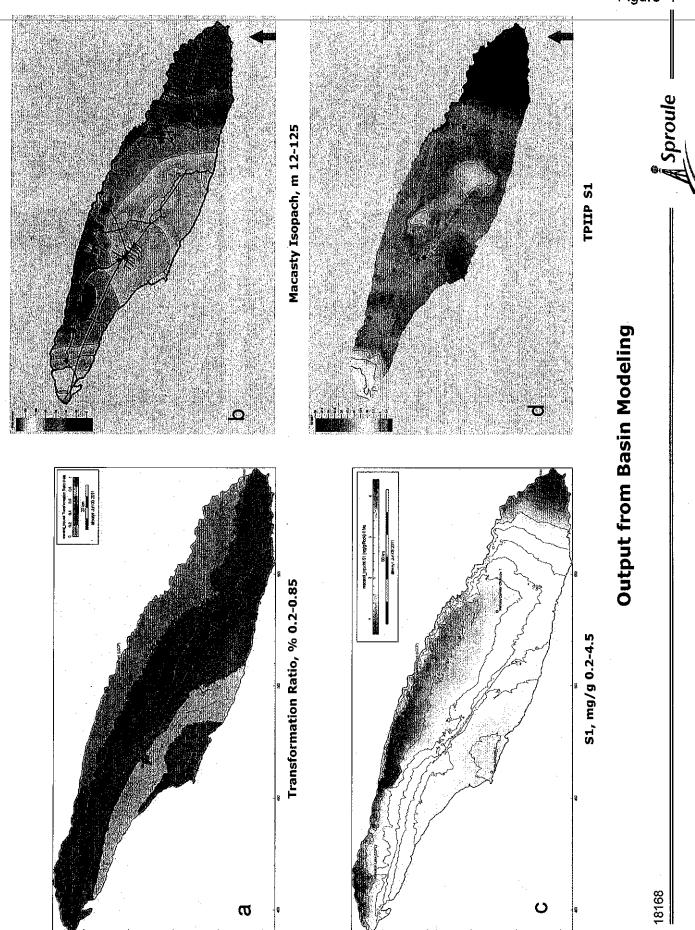
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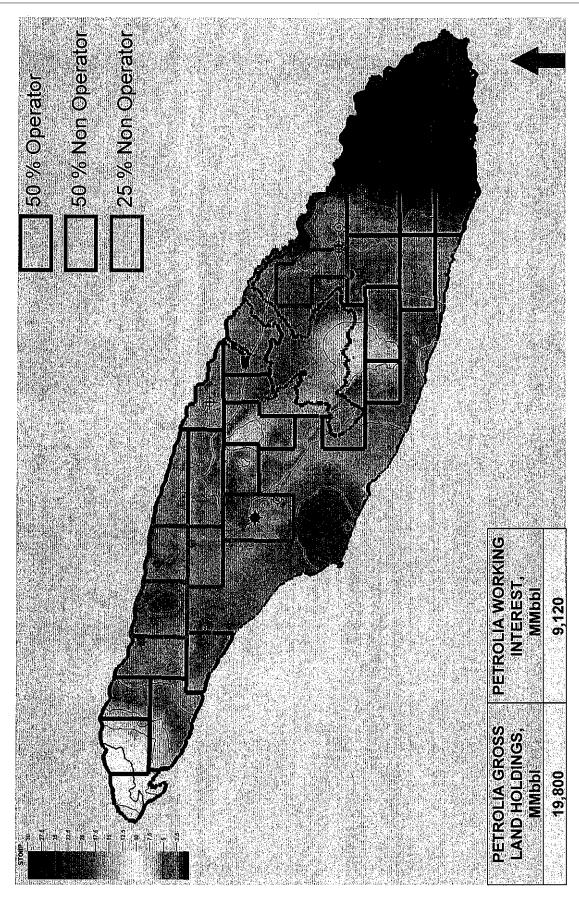


Two Methodologies for Estimating Total Petroleum Initially In Place

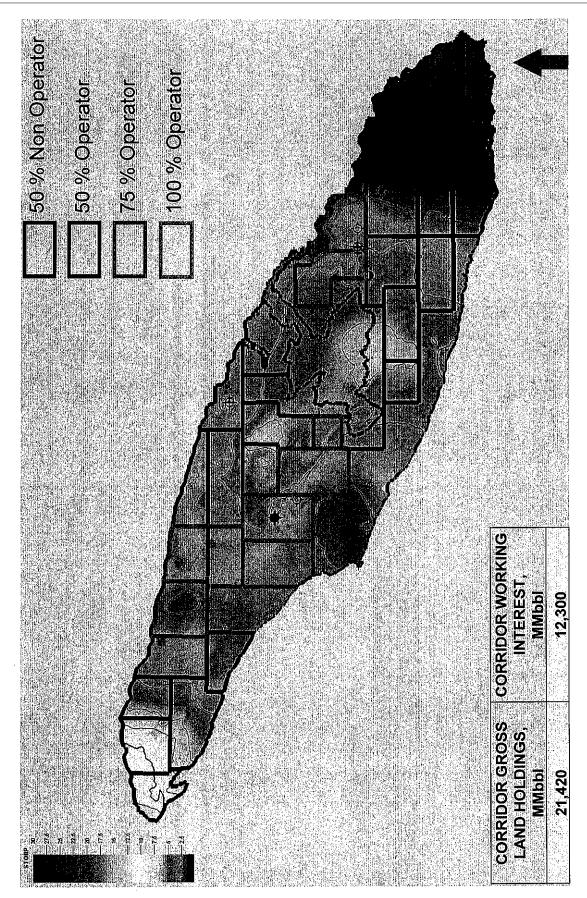




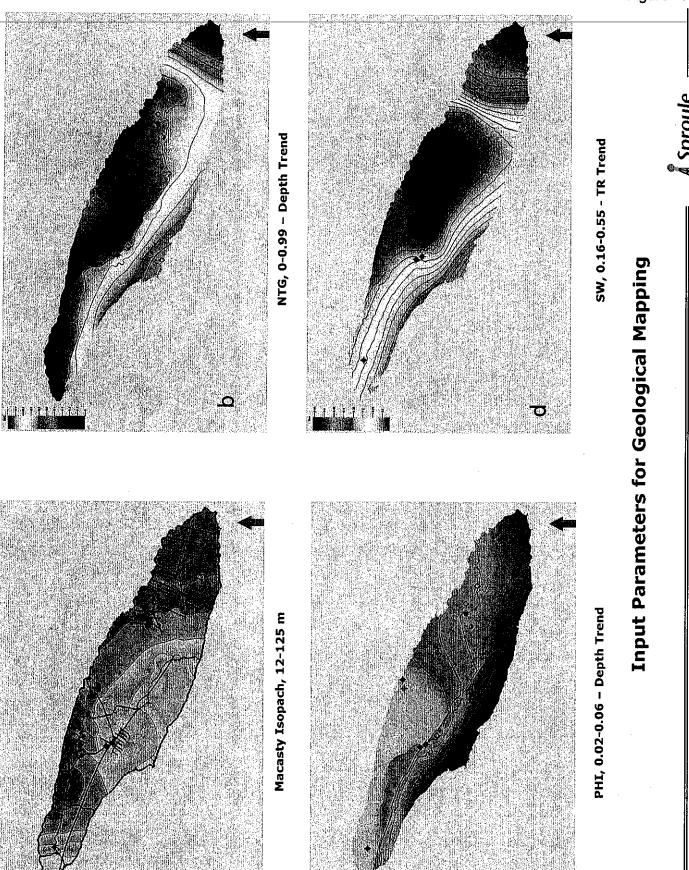


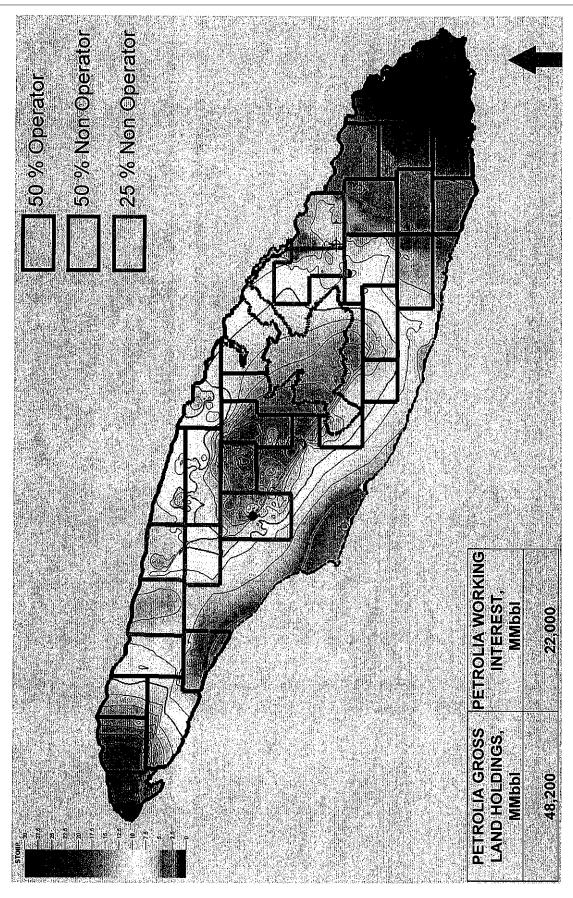


Total Petroleum Initially In Place, S1 Based, Petrolia Holdings



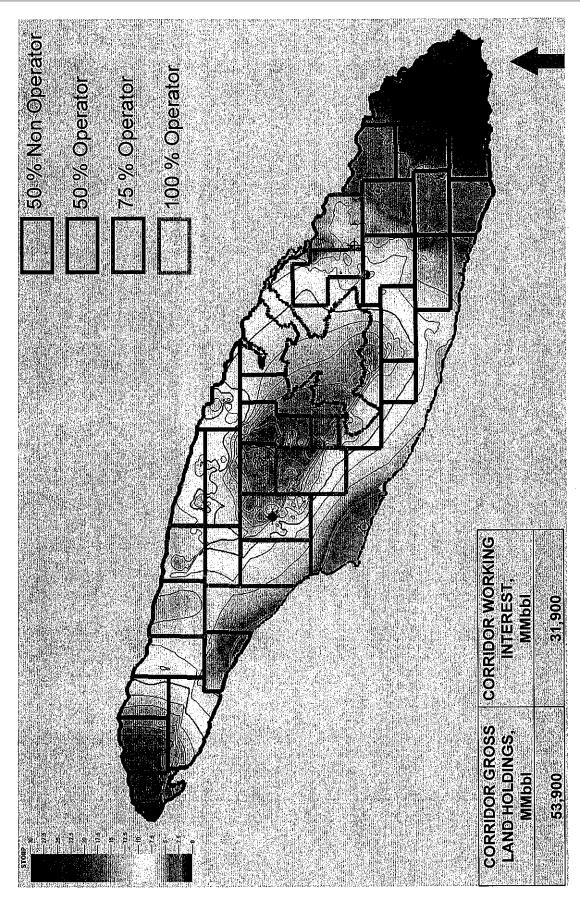
Sproule Total Petroleum Initially In Place, S1 Based, Corridor Holdings





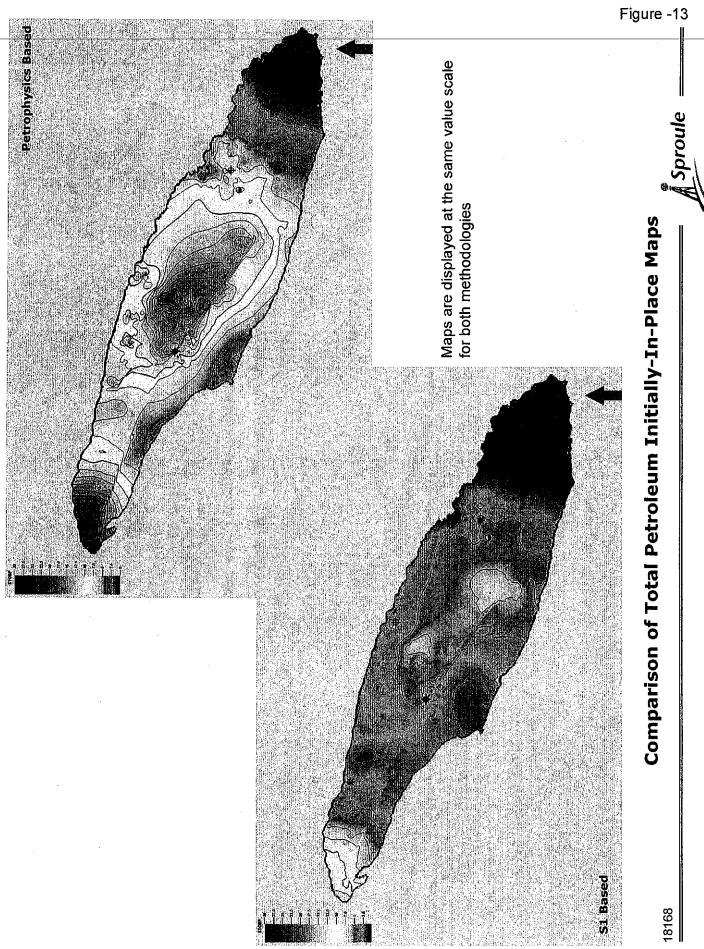
## Total Petroleum Initially In Place, Petrophysics Based, Petrolia Holdings

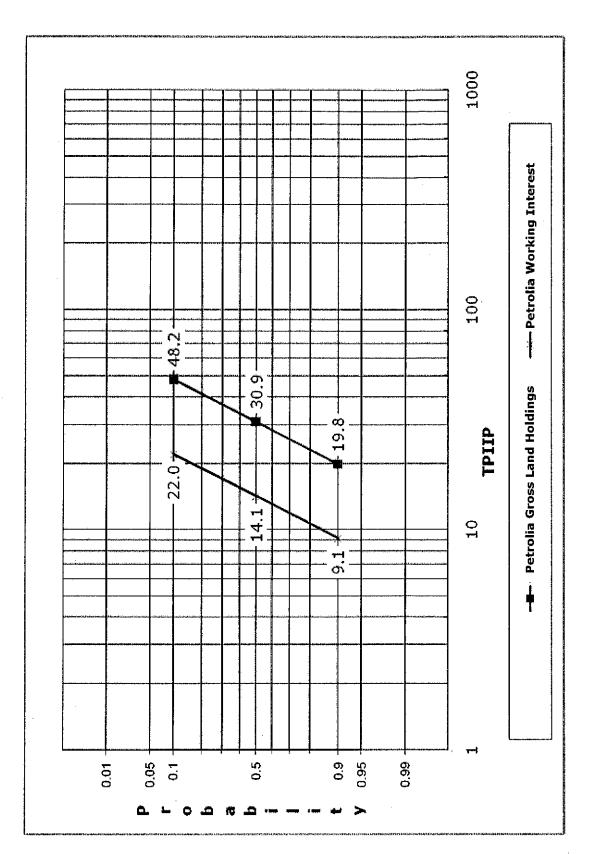




Total Petroleum Initially In Place, Petrophysics Based, Corridor Holdings

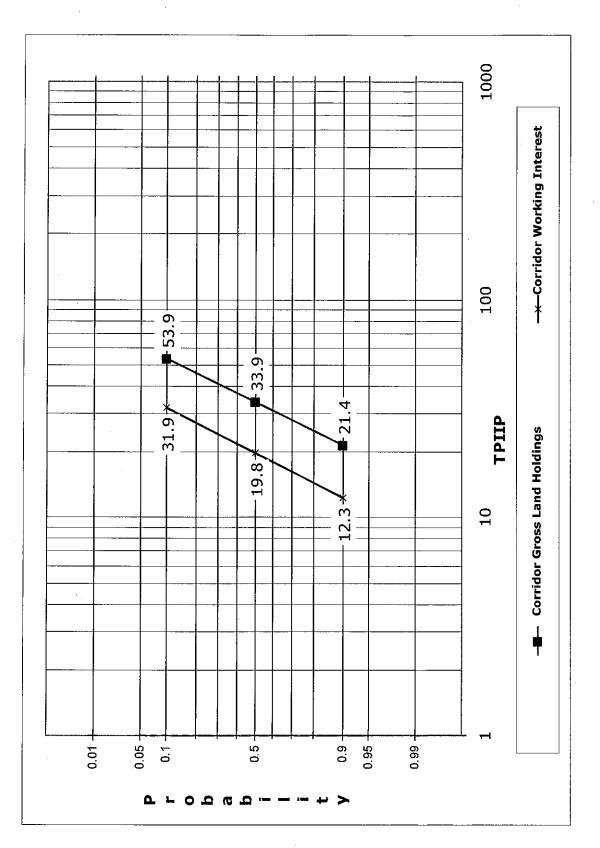






Total Petroleum Initially-In-Place Distribution, Petrolia Holdings





Total Petroleum Initially-In-Place Distribution, Corridor Holdings

