NORTHERN CANADA
The Next Petroleum Province
Hydrocarbon Potential and Exploration Play Trends

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ACKNOWLEDGEMENT

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HYDROCARBON POTENTIAL AND EXPLORATION PLAY TRENDS NORTHWEST TERRITORIES AND YUKON
A Technical Inventory and Geological Review
July, 2000

The authors would like to acknowledge and thank Sproule Associates Limited for permission to present this paper.
OBJECTIVES

➤ TO COMPARE HYDROCARBON PROSPECTIVITY AND RESOURCE POTENTIAL OF THE DIFFERENT REGIONS

➤ TO HIGHLIGHT THOSE REGIONS THAT ALREADY CONTAIN SUBSTANTIAL DISCOVERED RESOURCES

➤ TO HIGHLIGHT THOSE REGIONS OR BASINS THOUGHT TO HAVE SIGNIFICANT UPSIDE RESOURCE POTENTIAL - NOT YET DISCOVERED
CONVENTIONAL MARKETABLE GAS
CANADA (DECEMBER 31, 2002)

UNDISCOVERED
438 (65%)

RESERVES
56 (8%)

RESOURCES
47 (7%)

CUM PROD
134 (20%)

ULTIMATE RESOURCE (675 TCF)

- WCSB 286 (43%)
- ARCTIC 111 (16%)
- OTHER EAST COAST 131 (19%)
- MACKENZIE-BEAUFORT 59 (9%)
- OFFSHORE BC 30 (4%)
- SCOTIAN SHELF 19 (3%)
- OTHER 27 (4%)
- MAINLAND NWT 12 (2%)
YUKON AND NORTHWEST TERRITORIES
NUMBER EXPLORATION WELLS BY AREA
YUKON/ NORTHEAST TERRITORIES
ANNUAL GAS PRODUCTION

CUM. 627 BCF
DEC 31, 2002

BILLION CUBIC FEET


CAMERON
HILLS
IKHILL
LIARD
KOTANEELEE
POINTED
MOUNTAIN

ANNUAL GAS PRODUCTION

CUM. 627 BCF
DEC 31, 2002
YUKON / NORTHWEST TERRITORIES
DISCOVERED RESOURCES BY STRATIGRAPHIC SYSTEM

- MIOCENE
- OLIGOCENE
- EOCENE
- PRE-TERTIARY
  - EAGLE PLAIN
  - PERMO-CARB
- MACKENZIE PL.
- DEVONIAN
- LIARD PL./PLATEAU
- DEVONIAN
- COLVILLE HILLS
- CAMBRIAN

0 500 1000 1500
MILLION BOE

OIL
GAS (BOE)
(6 MCF/BOE)
YUKON - NORTHWEST TERRITORIES
ULTIMATE RECOVERABLE GAS RESOURCES

MACKENZIE - TCF
BEAUFORT  63.0
MAINLAND  23.0
TOTAL    86.0

UNDISCOVERED
74.1 TCF

DISCOVERED
11.9 TCF
YUKON - NORTHWEST TERRITORIES
ULTIMATE OIL RESOURCES

MACKENZIE - BB
BEAUFORT  6.4
MAINLAND  0.6
TOTAL     7.0

UNDISCOVERED
5.7 BB
DISCOVERED
1.3 BB
GAS FIELDS OF THE LIARD AREA

RESOURCES
DISCOVERED
1.3 TCF
UNDISCOVERED
4.1 TCF
FORT LIARD, NWT

Production to August 31, 2003

<table>
<thead>
<tr>
<th>Field</th>
<th>Production (bcf)</th>
</tr>
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<tbody>
<tr>
<td>K-29</td>
<td>38.9</td>
</tr>
<tr>
<td>M-25</td>
<td>28.4</td>
</tr>
<tr>
<td>F-25A</td>
<td>4.2</td>
</tr>
<tr>
<td>2K-29</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>73.5 bcf</strong></td>
</tr>
</tbody>
</table>

(Sales gas)

Gross raw gas to date: 105 bcf

PEL Current Production: 15.5 mmcf/d (sales gas)

From: Purcellenergy.com
FORT LIARD CROSS SECTION

- Water traveling vertically up M-25 fractures and entering well bore
- M-25 successful recompletion in August 2003 increased rate to over 15 mmcf/d raw gas
- M-25 has sidetrack potential
- 3K-29 & 2M-25 to be drilled during 2004

From: Purcellenergy.com
CUM. PRODUCTION = 107.3 BCF
MACKENZIE PLAIN BASIN

UNDISCOVERED RESOURCES
- 107 MMB OIL
- 1.5 TCF GAS

Modified from NOGD, 1995
Mackenzie Plain

Mackenzie Mts.

Norman Wells

Great Bear Basin

Franklin Mts.

Keele Arch

CANOL

CRET

IMPERIAL

KEE SCARP

MT KINDLE / FRANKLIN MT

SALT

CAMBRIAN

PRECAMBRIAN

20 Km

Modified from NOGD, 1995
COLVILLE HILLS, NWT SHOWING LOCATION OF CAMBRIAN SANDSTONE GAS DISCOVERIES

DISCOVERED - 620 BCF
UNDISCOVER - 4586 BCF

Adapted from: NOGD, 1995
EAGLE PLAIN BASIN

DISCOVERED
OIL - 11.7 MMB
GAS - 83.7 BCF

UNDISCOVERED
OIL - 28.2 MMB
GAS - 1.0 TCF

Modified from Yukon Ec. Dev., NEB, 1994
EAGLE PLAIN BASIN - POTENTIAL RESERVOIRS AND TRAPS

Modified From: Hambelin, 1990
PEEL BASIN AND PLATEAU

UNDISCOVERED
45 MMB OIL
3.1 TCF GAS

Modified from NOGD, 1995
BEAUFORT - MACKENZIE BASIN
DISCOVERED OIL AND GAS FIELDS

53 DISCOVERIES
1.0 BB OIL
9.7 TCF GAS

UNDISCOVERED
RESOURCES
5.4 BB OIL
53.3 TCF GAS

100 Km
BEAUFORT-MACKENZIE BASIN
STRATIGRAPHIC POSITION OF 30 DISCOVERIES

Adapted from: Hitcheon, et al, 1990
PARSONS LAKE GAS FIELD

Adapted from: R.A. Meneley, 1986
TAGLU FIELD
2,080 BCF

Adapted from: G.R MORRELL, 1996
IKHIL GAS FIELD PRODUCTION

CUM. PRODUCTION = 1,857 MMCF

MILLION CUBIC FEET

J-35
K-35

Jul-99 Nov-99 Mar-00 Jul-00 Nov-00 Mar-01 Jul-01 Nov-01 Mar-02 Jul-02 Nov-02 Mar-03 Jul-03
MACKENZIE DELTA / BEAUFORT SEA ULTIMATE RECOVERABLE GAS RESOURCE 63.0 TCF

- Undiscovered Beaufort Sea: 40.4 TCF (64.1%)
- Undiscovered Onshore/Nearshore: 12.9 TCF (20.5%)
- Discovered Beaufort Sea: 4.4 TCF (6.9%)
- Discovered Onshore/Nearshore: 5.3 TCF (8.4%)

Source: Discovered - NEB, 1988, Undiscovered - GSC, 1994
<table>
<thead>
<tr>
<th>Area</th>
<th>DISCOV OIL (MMB)</th>
<th>UNDISCOV OIL (MMB)</th>
<th>DISCOV GAS (BCF)</th>
<th>UNDISCOV GAS (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIARD/ S. NWT</td>
<td>0</td>
<td>0</td>
<td>1,371</td>
<td>7,292</td>
</tr>
<tr>
<td>MACKENZIE PLAIN</td>
<td>302</td>
<td>107</td>
<td>156</td>
<td>1,500</td>
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<tr>
<td>COLVILLE HILLS</td>
<td>0</td>
<td>28</td>
<td>620</td>
<td>4,586</td>
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<tr>
<td>PEEL BASIN</td>
<td>0</td>
<td>45</td>
<td>0</td>
<td>3,149</td>
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<tr>
<td>EAGLE PLAINS</td>
<td>12</td>
<td>28</td>
<td>84</td>
<td>1,103</td>
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<tr>
<td>MACKENZIE DELTA</td>
<td>248</td>
<td>1,050</td>
<td>5,319</td>
<td>12,600</td>
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<tr>
<td>BEAUFORT SEA</td>
<td>767</td>
<td>4,350</td>
<td>4,376</td>
<td>40,700</td>
</tr>
<tr>
<td>TOTAL (+ OTHERS)</td>
<td>1,329</td>
<td>5,736</td>
<td>11,925</td>
<td>74,119</td>
</tr>
</tbody>
</table>
CONCLUSIONS

- DISCOVERED OIL AND GAS OCCUR IN CAMBRIAN, DEVONIAN, PERMO-CARBONIF, CRETACEOUS AND TERTIARY AGE STRATA.

- MAJOR OIL DISCOVERIES IN MACKENZIE PLAIN AND THE MACKENZIE/BEAUFORT.

- MAJOR GAS DISCOVERIES IN LIARD, COLVILLE HILLS & MACKENZIE/BEAUFORT.

- FUTURE DISCOVERIES EXPECTED IN LIARD, COLVILLE HILLS, MACKENZIE PLAIN, PEEL BASIN, EAGLE PLAIN AND MACK/BEAUFORT.