Brightholme Oil
Assessment Unit 52440201

Geologic Summary

Detailed map of this assessment unit

Exploration/Discovery-History Data
Plots of Known Field Sizes
Tables

Assessment Input Data

Assessment Results
Assessment Unit Summary
Detailed Assessment Results
Undiscovered Field-Size Distributions

Brightholme Oil Assessment Unit 52440201
Williston Basin, Canada Geologic Province 5244
USGS PROVINCES: Williston Basin (5244)  

GEOLOGIST: M.E. Henry

TOTAL PETROLEUM SYSTEM: Brightholme (524402)  

ASSESSMENT UNIT: Brightholme Oil (52440201)

DESCRIPTION: This assessment unit covers a relatively small area in the south-central part of the Williston Basin province. It includes the southeastern part of Saskatchewan, and a small southwestern corner of Manitoba. The western boundary was drawn to reflect the expected extent of westward migration. The eastern and northern boundaries approximate the expected extent of effective evaporite seals. The southern boundary is the Canadian-United States International Boundary.

SOURCE ROCKS: The main source rock for this system is the Middle Devonian Brightholme member of the Winnipegosis Formation with some contribution from Ordovician sources.

MATURATION: Source rocks are mature for liquid hydrocarbon generation only in the southern part of the unit. Similar source rocks exist southward across the International Border into the United States.

MIGRATION: The relationship between the distribution of pools assigned to this unit and the extent of thermal maturity suggests limited lateral migration.

RESERVOIR ROCKS: Reservoirs are generally developed in carbonate rocks. The association between Winnipegosis reefs and the source rock deposited between them create an ideal situation for local migration.

TRAPS AND SEALS: Only seven pools larger than 0.5 million barrels of oil equivalent appear in the database used for this assessment. Four of these are reported to occur in reef mounds and two are reportedly related to salt collapse features. Overlying evaporites generally forms seals.

REFERENCES:


Brightholme Oil
Assessment Unit - 52440201

EXPLANATION

- Hydrography
- Shoreline
- Geologic province code and boundary
- Country boundary
- Gas pool centerpoint
- Oil pool centerpoint

Date:………………………….. 10/19/99  
Assessment Geologist:…….. M.E. Henry  
Region:……………………….. North America  
Province:……………………… Williston Basin, Canada  
Priority or Boutique........... Priority  
Total Petroleum System:…… Britholme  
Assessment Unit:…………… Britholme Oil  

* Notes from Assessor No growth function applied. Only Canadian pools are considered.

CHARACTERISTICS OF ASSESSMENT UNIT

Oil (<20,000 cfg/bo overall) or Gas (>20,000 cfg/bo overall):… Oil

What is the minimum field size?……….  0.5 mmboe (grown) (≥1mmboe) (the smallest field that has potential to be added to reserves in the next 30 years)

Number of discovered fields exceeding minimum size:………. Oil: 7 Gas: 0

Established (>13 fields) Frontier (1-13 fields) Hypothetical (no fields)

Median size (grown) of discovered oil fields (mmboe):  
1st 3rd 2.2 2nd 3rd 1.4 3rd 3rd

Median size (grown) of discovered gas fields (bcfg):  
1st 3rd 2 nd 3rd 3rd 3rd

Assessment-Unit Probabilities:

Attribute Probability of occurrence (0-1.0)
1. CHARGE: Adequate petroleum charge for an undiscovered field > minimum size……………… 1.0
2. ROCKS: Adequate reservoirs, traps, and seals for an undiscovered field > minimum size…… 1.0
3. TIMING OF GEOLOGIC EVENTS: Favorable timing for an undiscovered field > minimum size 1.0

Assessment-Unit GEOLOGIC Probability (Product of 1, 2, and 3):…………………. 1.0

4. ACCESSIBILITY: Adequate location to allow exploration for an undiscovered field > minimum size…………………………………………………………………………………….. 1.0

UNDISCOVERED FIELDS

Number of Undiscovered Fields: How many undiscovered fields exist that are ≥ minimum size?: (uncertainty of fixed but unknown values)

Oil fields:………………………………min. no. (>0) 1 median no. 7 max no. 20
Gas fields:………………………………min. no. (>0) median no. max no.

Size of Undiscovered Fields: What are the anticipated sizes (grown) of the above fields?: (variations in the sizes of undiscovered fields)

Oil in oil fields (mmbo)………………………min. size 0.5 median size 0.8 max. size 7
Gas in gas fields (bcfg):………………………min. size median size max. size
### Average Ratios for Undiscovered Fields, to Assess Coproducts

(uncertainty of fixed but unknown values)

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>median</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oil Fields:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas/oil ratio (cfg/bo)</td>
<td>350</td>
<td>700</td>
<td>1050</td>
</tr>
<tr>
<td>NGL/gas ratio (bngl/mmcf)</td>
<td>30</td>
<td>60</td>
<td>90</td>
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<tr>
<td><strong>Gas fields:</strong></td>
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<td></td>
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<tr>
<td>Liquids/gas ratio (bngl/mmcf)</td>
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<tr>
<td>Oil/gas ratio (bo/mmcf)</td>
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### Selected Ancillary Data for Undiscovered Fields

(variations in the properties of undiscovered fields)

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<tbody>
<tr>
<td><strong>Oil Fields:</strong></td>
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</tr>
<tr>
<td>API gravity (degrees)</td>
<td>30</td>
<td>35</td>
<td>50</td>
</tr>
<tr>
<td>Sulfur content of oil (%)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Drilling Depth (m)</td>
<td>600</td>
<td>2300</td>
<td>3000</td>
</tr>
<tr>
<td>Depth (m) of water (if applicable)</td>
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<td></td>
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<tr>
<td><strong>Gas Fields:</strong></td>
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<tr>
<td>Inert gas content (%)</td>
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<tr>
<td>CO$_2$ content (%)</td>
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<tr>
<td>Hydrogen-sulfide content (%)</td>
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<td>Drilling Depth (m)</td>
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ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT  
TO COUNTRIES OR OTHER LAND PARCELS (uncertainty of fixed but unknown values)

1.  Canada  represents  100  areal % of the total assessment unit

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<tr>
<td><strong>Oil in Oil Fields:</strong></td>
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<tr>
<td>Richness factor (unitless multiplier):</td>
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<tr>
<td>Volume % in parcel (areal % x richness factor):</td>
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<td>100</td>
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<tr>
<td>Portion of volume % that is offshore (0-100%):</td>
<td></td>
<td>0</td>
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<td>Richness factor (unitless multiplier):</td>
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Brightholme Oil, AU 52440201
Undiscovered Field-Size Distribution

Minimum field size: 0.5 MMBO
Mean number of undiscovered fields: 7.7