Combined Triassic/Jurassic Gas Assessment Unit 52430401

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

Combined Triassic/Jurassic Gas Assessment Unit 52430401
Alberta Basin Geologic Province 5243
Other geologic province boundary
USGS PROVINCES: Alberta Basin and Rocky Mountain Deformed Belt (5243 and 5245)

GEOLOGIST: M.E. Henry

TOTAL PETROLEUM SYSTEM: Combined Triassic/Jurassic (524304)

ASSESSMENT UNIT: Combined Triassic/Jurassic Gas (52430401)

DESCRIPTION: This gas assessment unit includes areas of the deformed belt where thermally mature Triassic and Jurassic source rocks are known or are likely to exist and a small part of the Alberta Basin in northeast British Columbia. The boundary was drawn to enclose an area in which gas is expected to dominate future hydrocarbon discoveries.

SOURCE ROCKS: Principal source rocks for this unit include the Middle Triassic Doig Formation and the Lower Jurassic "Nordegg" member of the Fernie Formation. Recent work suggests that several other Triassic rock units have source potential in this assessment unit.

MATURATION: Source rocks within this unit are almost entirely overmature with respect to liquid petroleum generation.

MIGRATION: The distribution of gas pools assigned to this unit in relation to the distribution of mature source rocks indicates that long distance migration is not necessary. Published detailed geochemical analyses suggest, however, that Jurassic oils may have contributed minor volumes to nearby, unconventional, bitumen deposits.

RESERVOIR ROCKS: The predominant reservoir rock type in this unit is carbonate but sandstone reservoirs are common. Triassic reservoirs are evenly divided between sandstone and carbonate and Jurassic reservoirs are almost exclusively sandstone.

TRAPS AND SEALS: Traps in the unit are evenly divided between structural and stratigraphic types. Structural traps are most common for Triassic pools and combination traps are most common for Jurassic pools. Evaporites and shales generally form seals in this unit.

REFERENCES:
Combined Triassic/Jurassic Gas Assessment Unit - 52430401

EXPLANATION

- Hydrography
- Shoreline

5243 Geologic province code and boundary

- Country boundary
  - Gas pool centerpoint
  - Oil pool centerpoint

Assessment unit code and boundary

### CHARACTERISTICS OF ASSESSMENT UNIT

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

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)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Probability of occurrence (0-1.0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CHARGE: Adequate petroleum charge for an undiscovered field ≥ minimum size</td>
<td>1.0</td>
</tr>
<tr>
<td>2. ROCKS: Adequate reservoirs, traps, and seals for an undiscovered field ≥ minimum size</td>
<td>1.0</td>
</tr>
<tr>
<td>3. TIMING OF GEOLOGIC EVENTS: Favorable timing for an undiscovered field ≥ minimum size</td>
<td>1.0</td>
</tr>
</tbody>
</table>

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

**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)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>min. no.</th>
<th>median no.</th>
<th>max no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil fields:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas fields:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Attribute</th>
<th>min. size</th>
<th>median size</th>
<th>max. size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil in oil fields</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas in gas fields</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGL/gas ratio (bngl/mmcfg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gas fields:</strong></td>
<td>minimum</td>
<td>median</td>
<td>maximum</td>
</tr>
<tr>
<td>Liquids/gas ratio (bngl/mmcfg)</td>
<td>11</td>
<td>22</td>
<td>33</td>
</tr>
<tr>
<td>Oil/gas ratio (bo/mmcfg)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS
(variations in the properties of undiscovered fields)

<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>API gravity (degrees)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur content of oil (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drilling Depth (m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth (m) of water (if applicable)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gas Fields:</strong></td>
<td>minimum</td>
<td>median</td>
<td>maximum</td>
</tr>
<tr>
<td>Inert gas content (%)</td>
<td>0</td>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>CO₂ content (%)</td>
<td>0</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Hydrogen-sulfide content (%)</td>
<td>0</td>
<td>2</td>
<td>51</td>
</tr>
<tr>
<td>Drilling Depth (m)</td>
<td>700</td>
<td>2500</td>
<td>5000</td>
</tr>
<tr>
<td>Depth (m) of water (if applicable)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 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

   **Oil in Oil Fields:**
   - Richness factor (unitless multiplier):\_
   - Volume % in parcel (areal % x richness factor):\_\_
   - Portion of volume % that is offshore (0-100%):\_\_

   **Gas in Gas Fields:**
   - Richness factor (unitless multiplier):\_
   - Volume % in parcel (areal % x richness factor):\_\_
   - Portion of volume % that is offshore (0-100%):\_\_

2. **Province 5243** represents 60 areal % of the total assessment unit

   **Oil in Oil Fields:**
   - Richness factor (unitless multiplier):\_
   - Volume % in parcel (areal % x richness factor):\_\_
   - Portion of volume % that is offshore (0-100%):\_\_

   **Gas in Gas Fields:**
   - Richness factor (unitless multiplier):\_
   - Volume % in parcel (areal % x richness factor):\_\_
   - Portion of volume % that is offshore (0-100%):\_\_

3. **Province 5245** represents 40 areal % of the total assessment unit

   **Oil in Oil Fields:**
   - Richness factor (unitless multiplier):\_
   - Volume % in parcel (areal % x richness factor):\_\_
   - Portion of volume % that is offshore (0-100%):\_\_

   **Gas in Gas Fields:**
   - Richness factor (unitless multiplier):\_
   - Volume % in parcel (areal % x richness factor):\_\_
   - Portion of volume % that is offshore (0-100%):\_\_
Combined Triassic/Jurassic Gas, AU 52430401
Undiscovered Field-Size Distribution

Minimum field size: 3 BCFG
Mean number of undiscovered fields: 84.4

GAS-FIELD SIZE (BCFG)

UNDISCOVERED GAS FIELDS (No.)