Gabon Suprasalt Assessment Unit 72030201

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Detailed Assessment Results
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U.S. GEOLOGICAL SURVEY WORLD PETROLEUM ASSESSMENT 2009—DESCRIPTION AND RESULTS
U.S. Geological Survey World Energy Assessment Team
USGS PROVINCE: West-Central Coastal (7203)

GEOLOGISTS: R.R. Charpentier and M.E. Brownfield

TOTAL PETROLEUM SYSTEM: Azile-Senonian (720302)

ASSESSMENT UNIT: Gabon Suprasalt (72030201)

DESCRIPTION: Suprasalt source rocks and reservoirs north of the thick Tertiary Congo Delta.

SOURCE ROCKS: Marine shales of the Turonian Azile Formation with average 3 to 5 percent TOC. Mainly intermediate Type I-Type II kerogen. Possible contribution from shales in Cap Lopez and Madiela Formations. Oils are paraffinic.

MATURATION: Miocene? to Recent

MIGRATION: Miocene? to Recent

RESERVOIR ROCKS: Mainly turbidite sandstones of the Senonian Anguille, Pointe Clarette, and Batanga Formations. Possible Miocene turbidite reservoirs in deeper water offshore. Porosities average 23 percent and permeabilities average 1500 mD.

TRAPS AND SEALS: Most traps are salt-related, primarily nonpiercement domes or turtles, sealed by shales.

REFERENCES:
Gabon Suprasalt
Assessment Unit - 72030201

EXPLANATION

- Hydrography
- Shoreline
- 7203 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint

Assessment unit code and boundary

Projection: Robinson. Central meridian: 0
## CHARACTERISTICS OF ASSESSMENT UNIT

<table>
<thead>
<tr>
<th>Oil (&lt;20,000 cfg/bo overall) or Gas (&gt;20,000 cfg/bo overall):</th>
<th>Oil</th>
</tr>
</thead>
</table>

**What is the minimum field size?**

1 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:**

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

**Median size (grown) of discovered oil fields (mmboe):**

1st 3rd: 10.5
2nd 3rd: 15.9
3rd 3rd: 21.6

**Median size (grown) of discovered gas fields (bcfg):**

1st 3rd: 49.7
2nd 3rd: 7.2
3rd 3rd:

**Assessment-Unit Probabilities:**

1. **CHARGE:** Adequate petroleum charge for an undiscovered field ≥ minimum size

2. **ROCKS:** Adequate reservoirs, traps, and seals for an undiscovered field ≥ minimum size

3. **TIMING OF GEOLOGIC EVENTS:** Favorable timing for an undiscovered field ≥ minimum size

**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) 15 median no. 100 max no. 250

**Gas fields:** min. no. (>0) 2 median no. 35 max no. 75

**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 1 median size 8 max. size 3500

**Gas in gas fields (bcfg):** min. size 6 median size 40 max. size 10000
### 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>Oil Fields:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas/oil ratio (cfg/bo)</td>
<td>700</td>
<td>1400</td>
<td>2100</td>
</tr>
<tr>
<td>NGL/gas ratio (bngl/mmcfg)</td>
<td>25</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>Gas fields:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquids/gas ratio (bngl/mmcfg)</td>
<td>22</td>
<td>44</td>
<td>66</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>Oil Fields:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>API gravity (degrees)</td>
<td>12</td>
<td>30</td>
<td>55</td>
</tr>
<tr>
<td>Sulfur content of oil (%)</td>
<td>0.07</td>
<td>0.35</td>
<td>0.9</td>
</tr>
<tr>
<td>Drilling Depth (m)</td>
<td>400</td>
<td>1750</td>
<td>4000</td>
</tr>
<tr>
<td>Depth (m) of water</td>
<td>0</td>
<td>200</td>
<td>3500</td>
</tr>
<tr>
<td>Gas Fields:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inert gas content (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2 content (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen-sulfide content (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drilling Depth (m)</td>
<td>400</td>
<td>1800</td>
<td>5000</td>
</tr>
<tr>
<td>Depth (m) of water</td>
<td>0</td>
<td>200</td>
<td>4000</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. **Cameroon** represents 8 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. **Equatorial Guinea** represents 29 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. **Gabon** represents 63 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%): …
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Undiscovered Field-Size Distribution

Minimum field size: 1 MMBO

Mean number of undiscovered fields: 107.8

OIL-FIELD SIZE (MMBO)

UNDISCOVERED OIL FIELDS (No.)

1-<2  2-<4  4-<8  8-<16  16-<32  32-<64  64-<128  128-<256  256-<512  512-<1024  1024-<2048  2048-<4096
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Undiscovered Field-Size Distribution

Minimum field size: 6 BCFG

Mean number of undiscovered fields: 36.1

GAS-FIELD SIZE (BCFG)