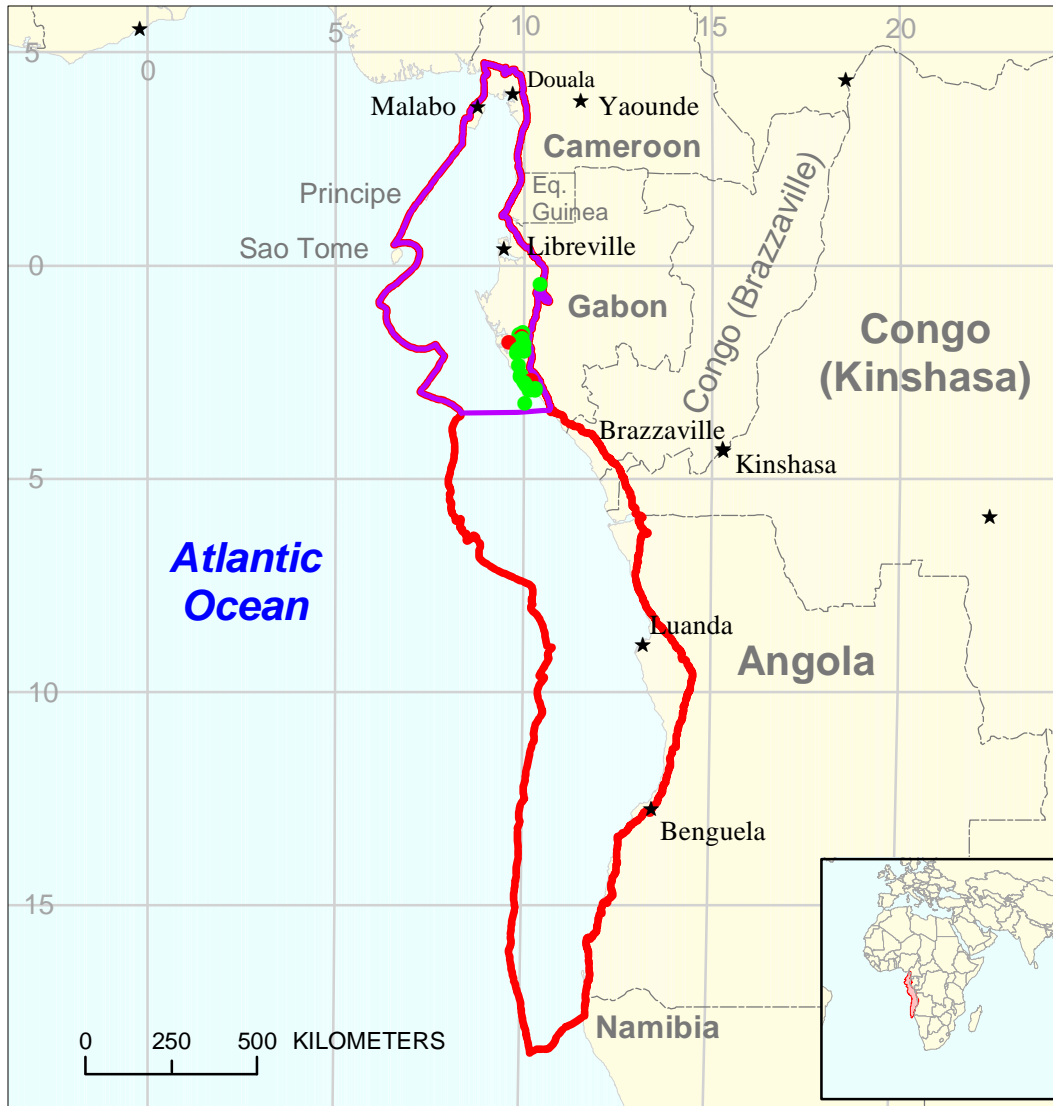




Gabon Subsalt Assessment Unit 72030101



-  Gabon Subsalt Assessment Unit 72030101
-  West-Central Coastal Geologic Province 7203

USGS PROVINCE: West-Central Coastal (7203)

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

TOTAL PETROLEUM SYSTEM: Melania-Gamba (720301)

ASSESSMENT UNIT: Gabon Subsalt (72030101)

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

SOURCE ROCKS: Lacustrine shales of the Neocomian to Barremian Melania Formation. Rich black shale section is 200 to 600 m thick. The TOC averages 6.1 percent (as much as 20 percent). Type I and Type II kerogen. Possible contribution from lacustrine shales of the Neocomian Kissenda Formation. Shales as thick as 1000 m (TOC 1.5 to 2 percent average) with Type III kerogen. Oils are paraffinic.

MATURATION: Eocene? to Recent

MIGRATION: Eocene? to Recent

RESERVOIR ROCKS: Primarily fluvial and shoreface sandstones in the Gamba Sandstone. Some lacustrine deltaic sandstones of the Dentale Sandstone and lacustrine turbiditic sandstones of the Melania and Lucina Formations. Porosities average 26 percent and permeabilities average 2050 mD.

TRAPS AND SEALS: Mostly broad anticlines in the Gamba Formation; some rift structures. Regional salt seal.

REFERENCES:

- Boeuf, M.A.G., Cliff, W.J., and Hombroek, J.A.R., 1992, Discovery and development of the Rabi-Kounga field—A giant oil field in a rift basin onshore Gabon, *in* Thirteenth World Petroleum Congress, Buenos Aires, 1991: John Wiley and Sons, v. 2, p. 33-46.
- Brink, A.H., 1974, Petroleum Geology of Gabon basin: American Association of Petroleum Geologists Bulletin, v. 58, no. 2, p. 216-235.
- Teisserenc, P., and Villemin, J., 1989, Sedimentary basin of Gabon—Geology and oil systems, *in* Edwards, J.D., and Santogrossi, P.A., Divergent/passive margin basins: American Association of Petroleum Geologists Memoir 48, p. 117-199.



Gabon Subsalt Assessment Unit - 72030101

EXPLANATION

- Hydrography
- Shoreline
- 7203 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 72030101 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

**SEVENTH APPROXIMATION
NEW MILLENNIUM WORLD PETROLEUM ASSESSMENT
DATA FORM FOR CONVENTIONAL ASSESSMENT UNITS**

Date:..... 9/21/99
 Assessment Geologist:..... R.R. Charpentier and M.E. Brownfield
 Region:..... Sub-Saharan Africa and Antarctica Number: 7
 Province:..... West-Central Coastal Number: 7203
 Priority or Boutique..... Priority
 Total Petroleum System:..... Melania-Gamba Number: 720301
 Assessment Unit:..... Gabon Subsalt Number: 72030101
 * Notes from Assessor MMS growth function.

CHARACTERISTICS OF ASSESSMENT UNIT

Oil (<20,000 cfg/bo overall) **or** Gas ($\geq 20,000$ cfg/bo overall):... Oil

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

Number of discovered fields exceeding minimum size:..... Oil: 17 Gas: 2
 Established (>13 fields) X Frontier (1-13 fields) Hypothetical (no fields) _____

Median size (grown) of discovered oil fields (mmboe):
 1st 3rd 53.9 2nd 3rd 32.9 3rd 3rd 12.4
 Median size (grown) of discovered gas fields (bcfg):
 1st 3rd 644.8 2nd 3rd 45.1 3rd 3rd _____

Assessment-Unit Probabilities:

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

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

4. ACCESSIBILITY: Adequate location to allow exploration for an undiscovered field \geq minimum size.....	<u>1.0</u>
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UNDISCOVERED FIELDS

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

Oil fields:.....	min. no. (>0)	<u>4</u>	median no.	<u>35</u>	max no.	<u>70</u>
Gas fields:.....	min. no. (>0)	<u>1</u>	median no.	<u>20</u>	max no.	<u>60</u>

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	<u>1</u>	median size	<u>8</u>	max. size	<u>650</u>
Gas in gas fields (bcfg):.....	min. size	<u>6</u>	median size	<u>40</u>	max. size	<u>2500</u>

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

<u>Oil Fields:</u>	minimum	median	maximum
Gas/oil ratio (cfg/bo).....	1125	2250	3375
NGL/gas ratio (bnl/mmcf).....	25	50	75
<u>Gas fields:</u>	minimum	median	maximum
Liquids/gas ratio (bnl/mmcf).....	22	44	66
Oil/gas ratio (bo/mmcf).....			

SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS

(variations in the properties of undiscovered fields)

<u>Oil Fields:</u>	minimum	median	maximum
API gravity (degrees).....	25	33	40
Sulfur content of oil (%).....	0.01	0.1	0.2
Drilling Depth (m)	800	1500	4000
Depth (m) of water (if applicable).....	0	100	2000
<u>Gas Fields:</u>	minimum	median	maximum
Inert gas content (%).....			
CO ₂ content (%).....			
Hydrogen-sulfide content (%).....			
Drilling Depth (m).....	800	1600	5000
Depth (m) of water (if applicable).....	0	100	2000

**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

<u>Oil in Oil Fields:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	0	_____
Portion of volume % that is offshore (0-100%):.....	_____	0	_____
 <u>Gas in Gas Fields:</u>	 minimum	 median	 maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	0	_____
Portion of volume % that is offshore (0-100%):.....	_____	0	_____

2. Equatorial Guinea represents 29 areal % of the total assessment unit

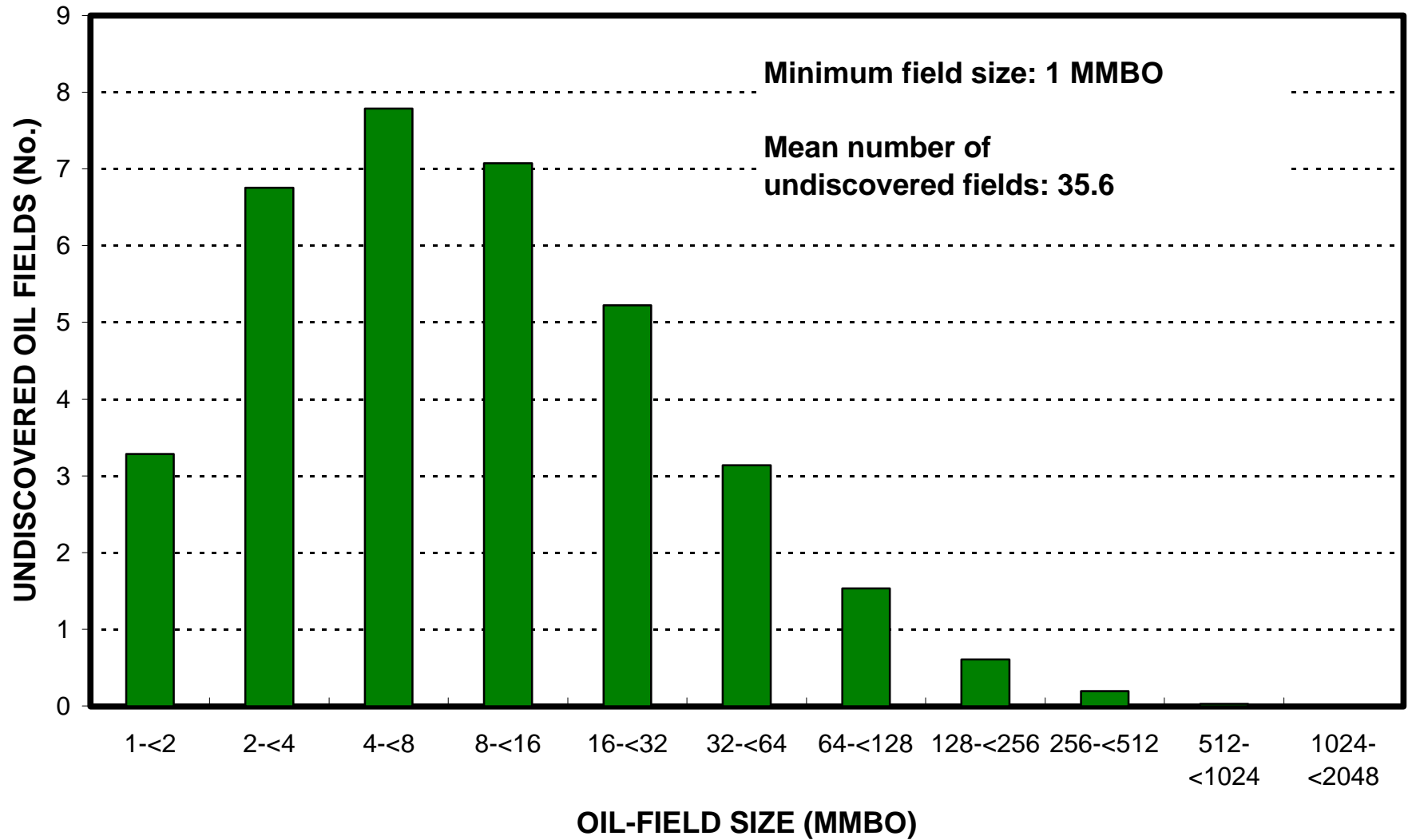
<u>Oil in Oil Fields:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	8	_____
Portion of volume % that is offshore (0-100%):.....	_____	100	_____
 <u>Gas in Gas Fields:</u>	 minimum	 median	 maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	8	_____
Portion of volume % that is offshore (0-100%):.....	_____	100	_____

3. Gabon represents 63 areal % of the total assessment unit

<u>Oil in Oil Fields:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	92	_____
Portion of volume % that is offshore (0-100%):.....	_____	35	_____
 <u>Gas in Gas Fields:</u>	 minimum	 median	 maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	92	_____
Portion of volume % that is offshore (0-100%):.....	_____	65	_____

Gabon Subsalt, AU 72030101

Undiscovered Field-Size Distribution



Gabon Subsalt, AU 72030101

Undiscovered Field-Size Distribution

