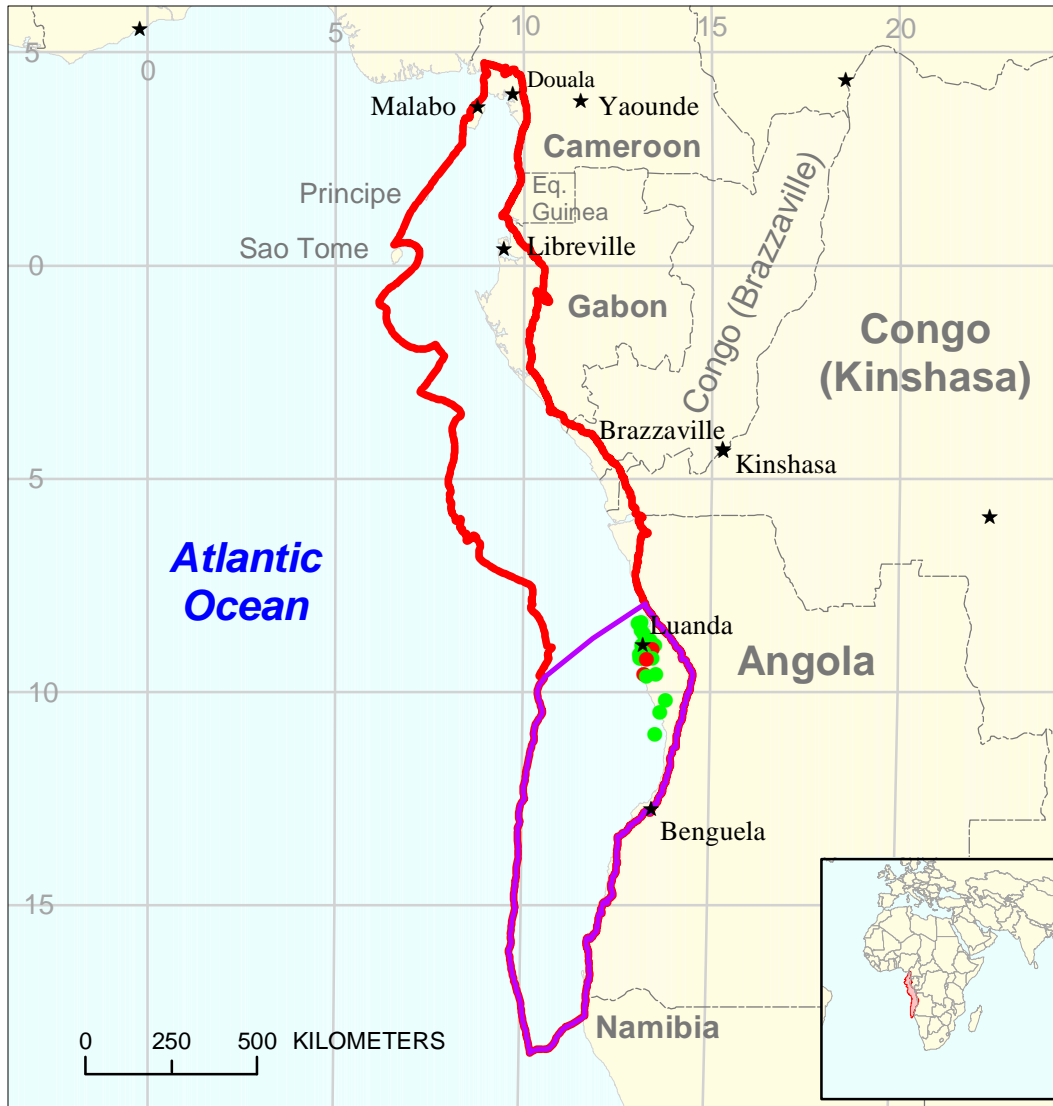




# Cuanza-Namibe Assessment Unit 72030401



-  Cuanza-Namibe Assessment Unit 72030401
-  West-Central Coastal Geologic Province 7203

**USGS PROVINCE:** West-Central Coastal (7203)

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

**TOTAL PETROLEUM SYSTEM:** Cuanza Composite (720304)

**ASSESSMENT UNIT:** Cuanza-Namibe (72030401)

**DESCRIPTION:** Source rocks and reservoirs in the Mesozoic and Cenozoic rocks from the Cuanza Basin of Angola, south to the Walvis Ridge.

**SOURCE ROCKS:** Postsalt marine shales, possible subsalt lacustrine shales. Oils are paraffinic.

**MATURATION:** Subsalt sources may have become mature in Late Cretaceous; postsalt shales in early to mid Tertiary.

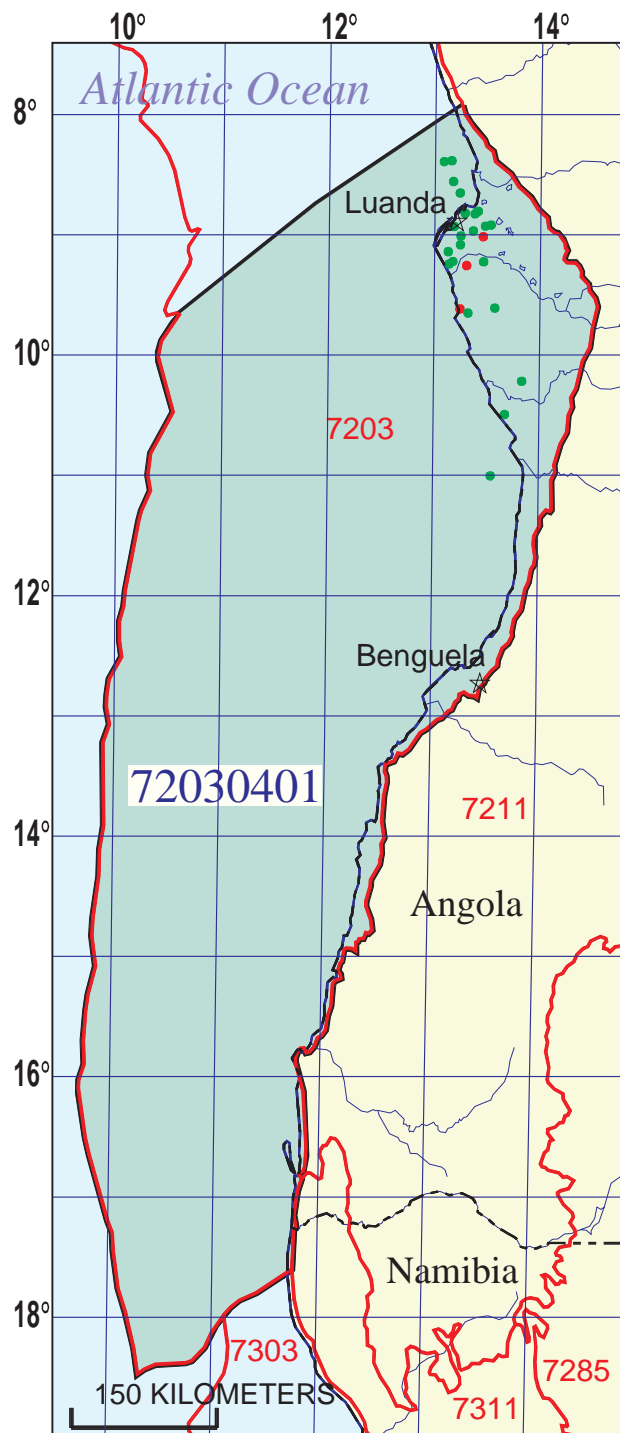
**MIGRATION:** Pathways are mostly fault related.

**RESERVOIR ROCKS:** Both carbonate and clastic reservoirs. Porosities average 14 percent and permeabilities average 162 mD. Some Oligocene/Miocene turbidites in deeper water possible.

**TRAPS AND SEALS:** Primarily anticlinal traps. Turbidites may be trapped stratigraphically.

**REFERENCES:**

- Brognon, G.P., and Verrier, G.R., 1966, Oil and geology in Cuanza basin of Angola: American Association of Petroleum Geologists Bulletin, v. 50, no. 1, p. 108-158.
- Duval, Bernard, and Cramez, Carlos, 1992, Raft tectonics in the Kwanza Basin, Angola: Marine and Petroleum Geology, v. 9, no. 4, p. 389-404.
- Lunde, Geir, Aubert, Kristin, Lauritzen, Ornulf, and Lorange, Erik, 1992, Tertiary uplift of the Kwanza basin in Angola, *in* Curnelle, R., ed., Géologie Africaine, 1<sup>er</sup> Colloque de Stratigraphie et de Paléogéographie des Bassins Sédimentaires Ouest-Africains, 2<sup>e</sup> Colloque Africain de Micropaléontologie, Libreville, Gabon, 1991, Recueil des Communications: Bousens, Elf Aquitaine, p.99-117.
- Lundin, E.R., 1992, Thin-skinned extensional tectonics on a salt detachment, northern Kwanza Basin, Angola: Marine and Petroleum Geology, v. 9, no. 4, p. 405-411.



## Cuanza-Namibe Assessment Unit - 72030401

### EXPLANATION

- Hydrography
- Shoreline
- 7203 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 72030401 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:..... 9/22/99  
 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:..... Cuanza Composite Number: 720304  
 Assessment Unit:..... Cuanza-Namibe Number: 72030401  
 \* Notes from Assessor MMS growth function.

**CHARACTERISTICS OF ASSESSMENT UNIT**

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

What is the minimum field size?..... 1 mmmboe 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: 11 Gas: 0  
 Established (>13 fields) \_\_\_\_\_ Frontier (1-13 fields) X Hypothetical (no fields) \_\_\_\_\_

Median size (grown) of discovered oil fields (mmboe):  
 1st 3rd 5.6 2nd 3rd 4 3rd 3rd \_\_\_\_\_  
 Median size (grown) of discovered gas fields (bcfg):  
 1st 3rd \_\_\_\_\_ 2nd 3rd \_\_\_\_\_ 3rd 3rd \_\_\_\_\_

**Assessment-Unit Probabilities:**

| <u>Attribute</u>   | <u>Probability of occurrence (0-1.0)</u> |
|--|--|
| 1. <b>CHARGE:</b> Adequate petroleum charge for an undiscovered field ≥ minimum size.....            | <u>1.0</u>                               |
| 2. <b>ROCKS:</b> Adequate reservoirs, traps, and seals for an undiscovered field ≥ minimum size..... | <u>1.0</u>                               |
| 3. <b>TIMING OF GEOLOGIC EVENTS:</b> Favorable timing for an undiscovered field ≥ 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  
 ≥ 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) 3 median no. 30 max no. 85  
 Gas fields:.....min. no. (>0) 1 median no. 8 max no. 20

**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 4 max. size 2000  
 Gas in gas fields (bcfg):.....min. size 6 median size 20 max. size 6000

**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).....       | 500     | 1000   | 1500    |
| 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).....              | 15      | 30     | 40      |
| Sulfur content of oil (%).....          | 0.06    | 0.7    | 1.6     |
| Drilling Depth (m) .....                | 600     | 2000   | 4500    |
| Depth (m) of water (if applicable)..... | 0       | 200    | 4000    |
| <u>Gas Fields:</u>                      | minimum | median | maximum |
| Inert gas content (%).....              |         |        |         |
| CO <sub>2</sub> content (%).....        |         |        |         |
| Hydrogen-sulfide content (%).....       |         |        |         |
| Drilling Depth (m).....                 | 600     | 2200   | 5000    |
| Depth (m) of water (if applicable)..... | 0       | 200    | 4000    |

**ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT  
TO COUNTRIES OR OTHER LAND PARCELS** (uncertainty of fixed but unknown values)

1. Angola represents 95 areal % of the total assessment unit

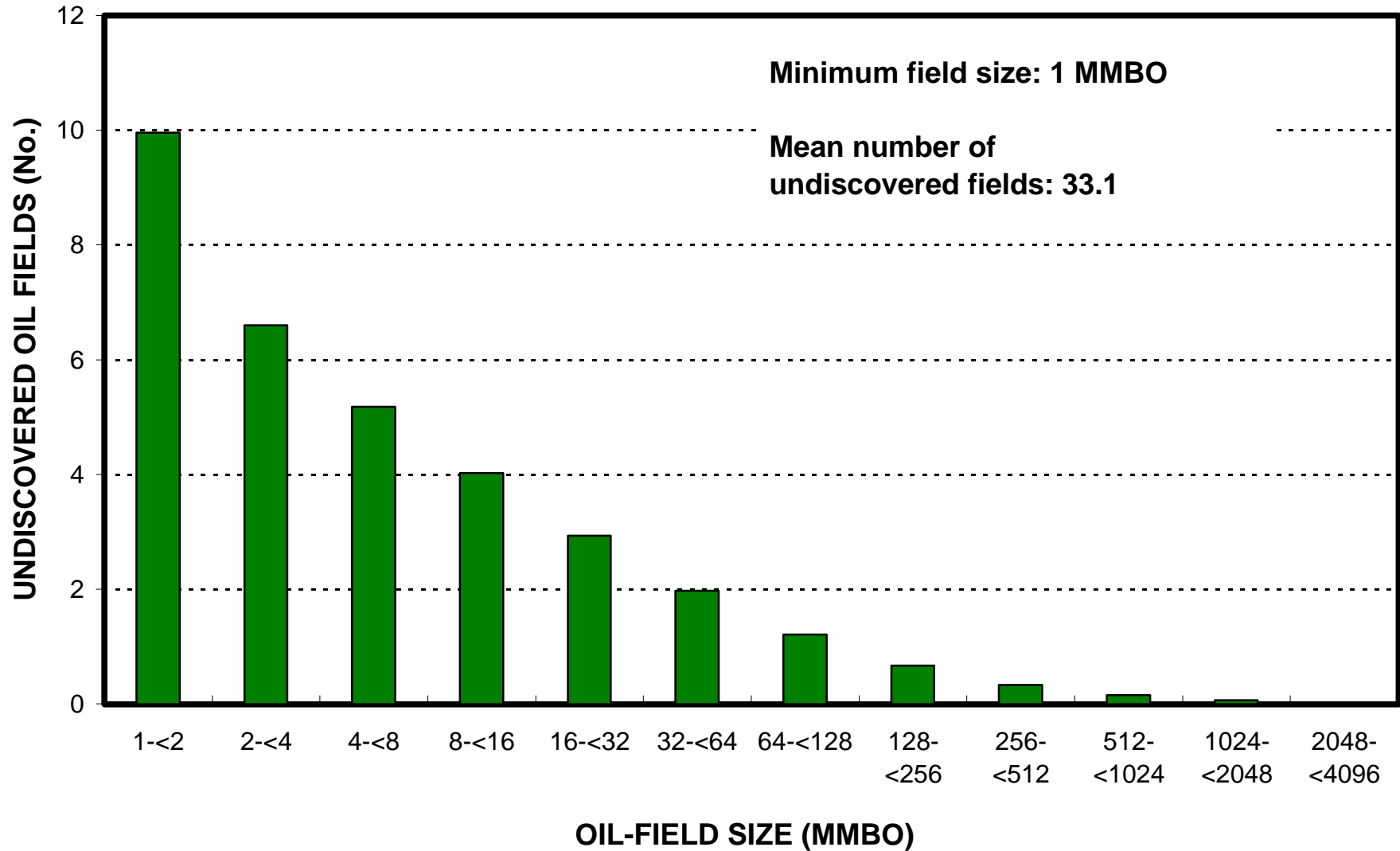
| <u>Oil in Oil Fields:</u>                           | minimum     | median     | maximum     |
|---|-------------|------------|-------------|
| Richness factor (unitless multiplier):.....         | _____       | _____      | _____       |
| Volume % in parcel (areal % x richness factor):...  | _____       | 99         | _____       |
| Portion of volume % that is offshore (0-100%):..... | _____       | 90         | _____       |
| <br><u>Gas in Gas Fields:</u>                       | <br>minimum | <br>median | <br>maximum |
| Richness factor (unitless multiplier):.....         | _____       | _____      | _____       |
| Volume % in parcel (areal % x richness factor):...  | _____       | 99         | _____       |
| Portion of volume % that is offshore (0-100%):..... | _____       | 90         | _____       |

2. Namibia represents 5 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):...  | _____       | 1          | _____       |
| Portion of volume % that is offshore (0-100%):..... | _____       | 100        | _____       |
| <br><u>Gas in Gas Fields:</u>                       | <br>minimum | <br>median | <br>maximum |
| Richness factor (unitless multiplier):.....         | _____       | _____      | _____       |
| Volume % in parcel (areal % x richness factor):...  | _____       | 1          | _____       |
| Portion of volume % that is offshore (0-100%):..... | _____       | 100        | _____       |

# Cuanza-Namibe, AU 72030401

## Undiscovered Field-Size Distribution



# Cuanza-Namibe, AU 72030401

## Undiscovered Field-Size Distribution

