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Salt Dome Province Tertiary Sandstones
Assessment Unit 60350103

Salt Dome Province Tertiary Sandstones Assessment Unit 60350103
Campos Basin Geologic Province 6035

Geologic Summary

Detailed map of this assessment unit

Assessment Input Data

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

USGS PROVINCE: Campos Basin (6035) **GEOLOGIST:** C.J. Schenk

TOTAL PETROLEUM SYSTEM: Lagoa Feia-Carapebus (603501)

ASSESSMENT UNIT: Salt Dome Province Tertiary Sandstones (60350103)

DESCRIPTION: This hypothetical assessment unit is defined by turbidite reservoirs of Tertiary age that occur in the area underlain by salt structures in ultra-deep waters of the Campos Basin (2200 to 4000 m).

SOURCE ROCKS: Source rocks are postulated to be lacustrine mudstones of the Neocomian Lagoa Feia Formation, and also possibly marine mudstones of the Middle Cretaceous.

MATURATION: Lagoa Feia mudstones reached generative maturity in the Miocene, and potential Cretaceous mudstones may have reached generation in the Miocene-Pliocene, and generation continues to the present.

MIGRATION: Hydrocarbons are postulated to have migrated up listric faults into the turbidite reservoirs.

RESERVOIR ROCKS: Major reservoirs are Tertiary turbidite sandstones deposited between salt structures in the distal portion of the basin.

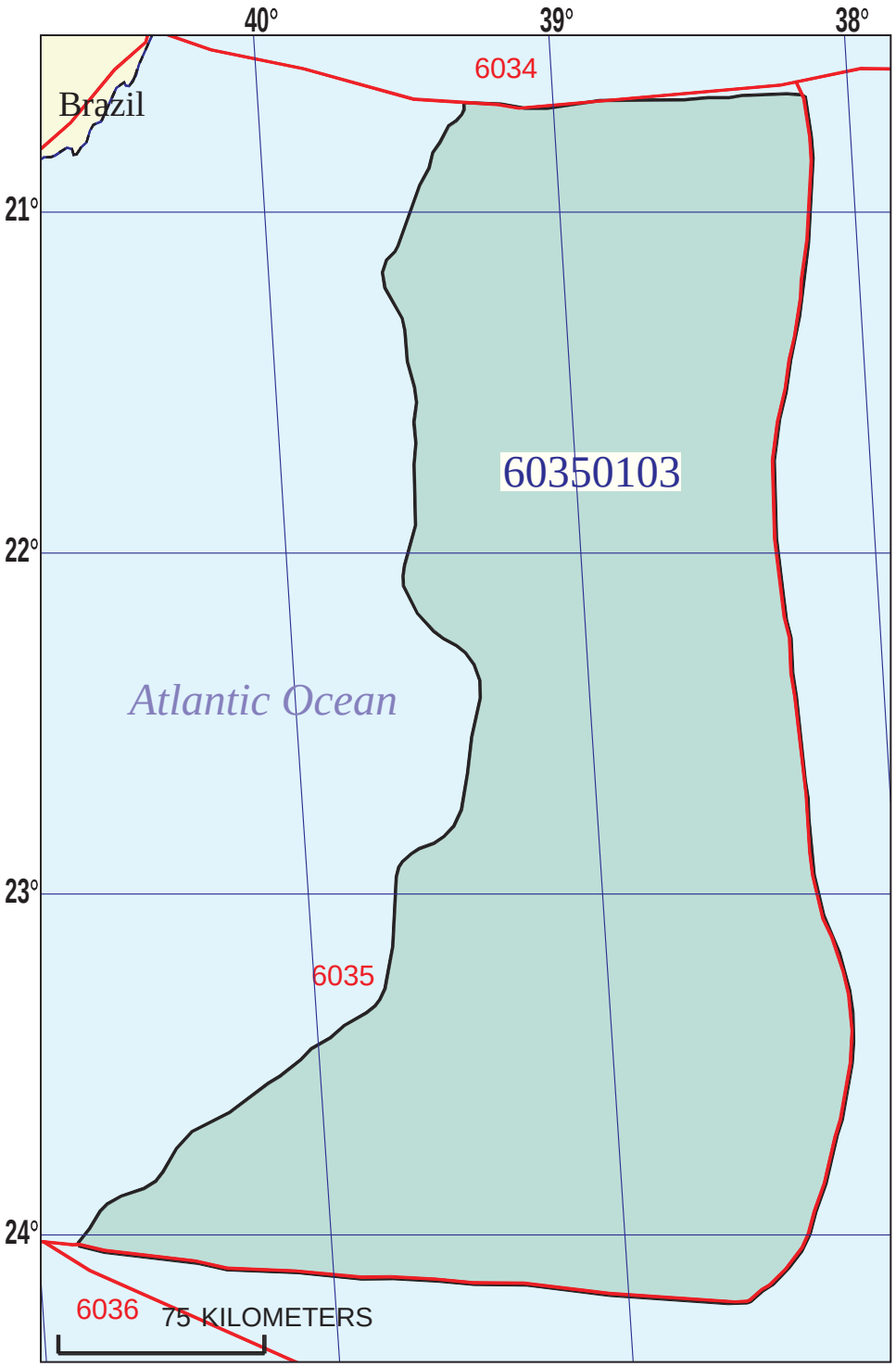
TRAPS AND SEALS: Traps in this assessment unit are postulated to be related to salt structures, and to reservoirs juxtaposed along listric faults. Seals are mainly intraformational mudstones.

REFERENCES:

Guardado, L.R., Gamboa, L.A.P., and Lucchesi, C.F., 1990, Petroleum geology of the Campos Basin, Brazil–a model for a producing Atlantic-type basin, *in* Edwards, J.D., and Santogrossi, P.A., eds., Divergent-passive margin basins: American Association of Petroleum Geologists Memoir 48, p. 3-80.

Mello, M., Koutsoukos, E.A.M., Mohriak, W.U., and Bacoccoli, G., 1994, Selected petroleum systems of Brazil, *in* Magoon, L.B., and Dow, W.G., eds., The Petroleum System–from source to trap: American Association of Petroleum Geologists Memoir 60, p. 499-512.

Mohriak, W.U., Mello, M., Dewey, J.F., and Maxwell, J.R., 1990, Petroleum geology of the Campos Basin, offshore Brazil, *in* Brooks, J., ed., Classic petroleum provinces: Geological Society of London Special Publication 50, p. 119-141.



Salt Dome Province Tertiary Sandstones Assessment Unit - 60350103

EXPLANATION

- Hydrography
- Shoreline
- 6035 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 60350103 Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……..	11/5/99		
Assessment Geologist:……..	C.J. Schenk		
Region:……..	Central and South America	Number:	6
Province:……..	Campos Basin	Number:	6035
Priority or Boutique……	Priority		
Total Petroleum System:……	Lagoa Feia-Carapebus	Number:	603501
Assessment Unit:……..	Salt Dome Province Tertiary Sandstones	Number:	60350103
* Notes from Assessor			

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 8 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: 0 Gas: 0
Established (>13 fields) _____ Frontier (1-13 fields) _____ Hypothetical (no fields) X

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

Assessment-Unit Probabilities:

Attribute	Probability of occurrence (0-1.0)
1. **CHARGE:** Adequate petroleum charge for an undiscovered field ≥ minimum size……	0.6
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):…….. 0.6

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.	32	max no.	80
Gas fields:……min. no. (>0)	1	median no.	6	max no.	18

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	8	median size	80	max. size	7500
Gas in gas fields (bcfg):……	min. size	48	median size	120	max. size	4800

Assessment Unit (name, no.)
Salt Dome Province Tertiary Sandstones, 60350103

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	350	700	1050
NGL/gas ratio (bngl/mmcfg)……	15	30	45

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	11	22	33
Oil/gas ratio (bo/mmcfg)……			

SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS

(variations in the properties of undiscovered fields)

Oil Fields:	minimum	median	maximum
API gravity (degrees)……	15	26	35
Sulfur content of oil (%)……	0.2	0.5	1.8
Drilling Depth (m) ……	10000	14000	18000
Depth (m) of water (if applicable)……	7000	9000	11000

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content(%)……			
Drilling Depth (m)……	10000	14000	18000
Depth (m) of water (if applicable)……	7000	9000	11000

Assessment Unit (name, no.)
Salt Dome Province Tertiary Sandstones, 60350103

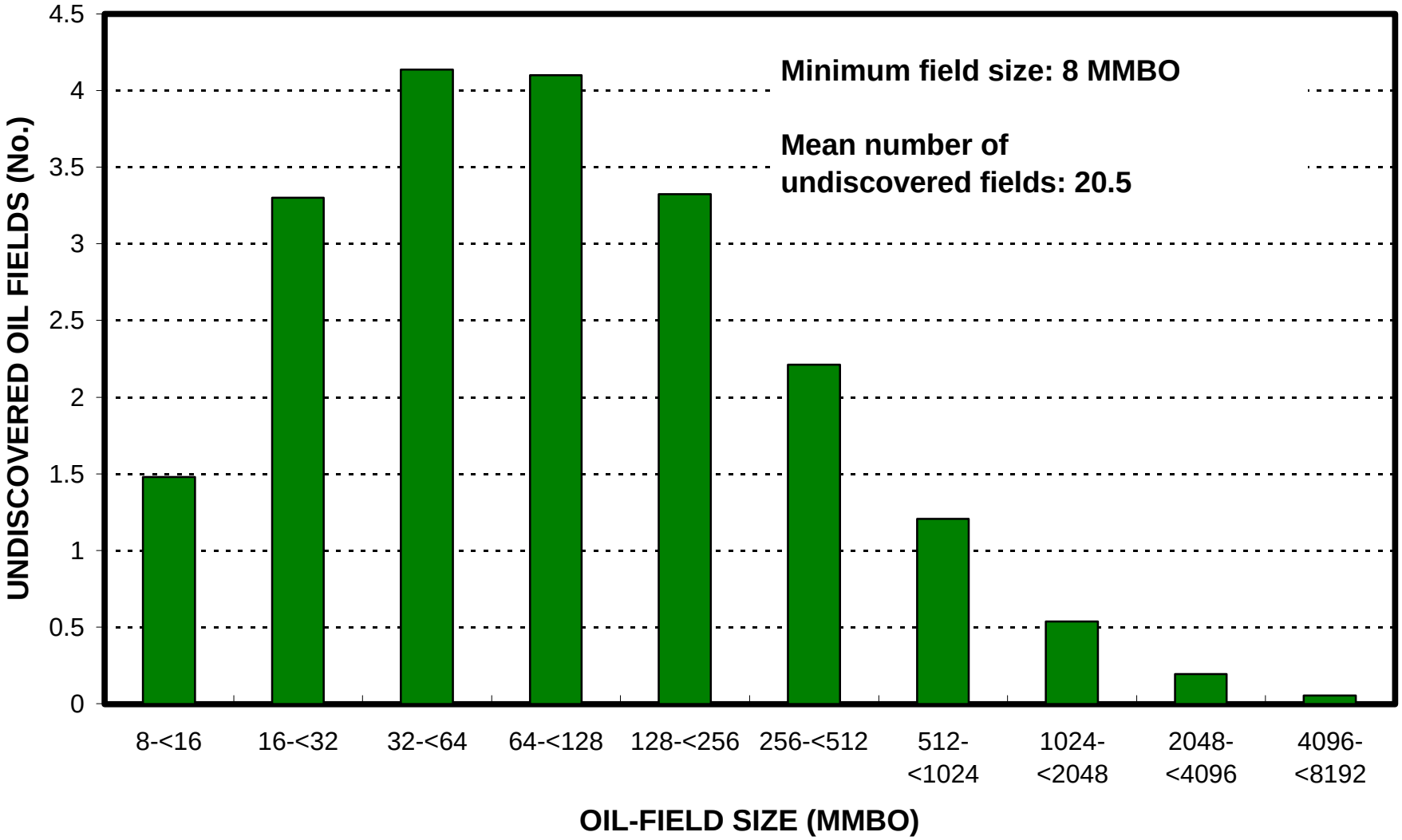
ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT TO COUNTRIES OR OTHER LAND PARCELS (uncertainty of fixed but unknown values)

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

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		100	
Portion of volume % that is offshore (0-100%)……		100	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		100	
Portion of volume % that is offshore (0-100%)……		100	

Salt Dome Province Tertiary Sandstones, AU 60350103
Undiscovered Field-Size Distribution



Salt Dome Province Tertiary Sandstones, AU 60350103
Undiscovered Field-Size Distribution