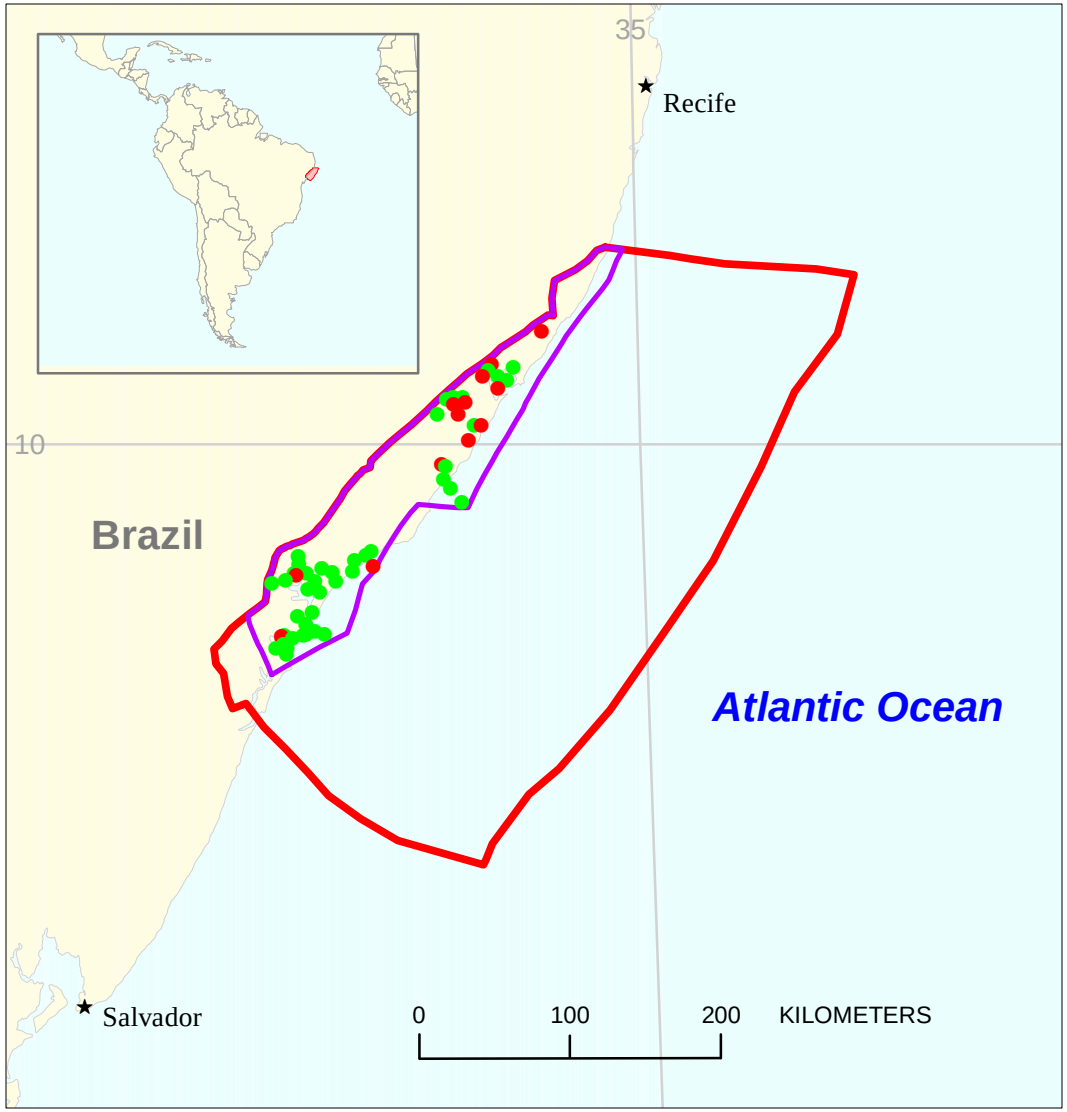
Go to Table of Contents

Go to index map

Western Pre-Aptian Reservoirs
Assessment Unit 60290101



Western Pre-Aptian Reservoirs Assessment Unit 60290101
Sergipe-Alagosas Basin Geologic Province 6029

Geologic Summary

Detailed map of this assessment unit

Exploration/Discovery-History Data
- Plots of Known Field Sizes
- Plots of Grown Resources
- Tables

Assessment Input Data

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

USGS PROVINCE: Sergipe-Alagoas Basin (6029) **GEOLOGIST:** C.J. Schenk

TOTAL PETROLEUM SYSTEM: Neocomian to Turonian Composite (602901)

ASSESSMENT UNIT: Western Pre-Aptian Reservoirs (60290101)

DESCRIPTION: This assessment unit is defined by the rift-related block-faulted section of the proximal part of the Sergipe-Alagoas Basin, which extends from the Sergipe Fracture Zone in the south to the Pernambuco/Parnaiba Fracture Zone in the north, to approximately the Aptian hingeline fault zone in the east.

SOURCE ROCKS: Source rocks are dominated by synrift lacustrine mudstones of the Neocomian-Barremian Barra de Ituiba Formation (Alagoas sub-basin) and the proto-marine shales of the Aptian Ibura Formation (Sergipe sub-basin), and source rocks possibly may include marine shales of the Albian-Turonian interval.

MATURATION: Hydrocarbon maturation is estimated to have peaked in the Late Oligocene in most of the assessment unit, and some generation may be occurring now.

MIGRATION: Migration was predominantly lateral such that the updip reservoirs must have been charged by deeper source rocks that matured in the downdip area of the assessment unit.

RESERVOIR ROCKS: Major reservoirs include pre-rift Jurassic fluvial and eolian? sandstones, Lower Cretaceous fluvial, alluvial fan, and fan-delta sandstones, and possibly Aptian sandstones.

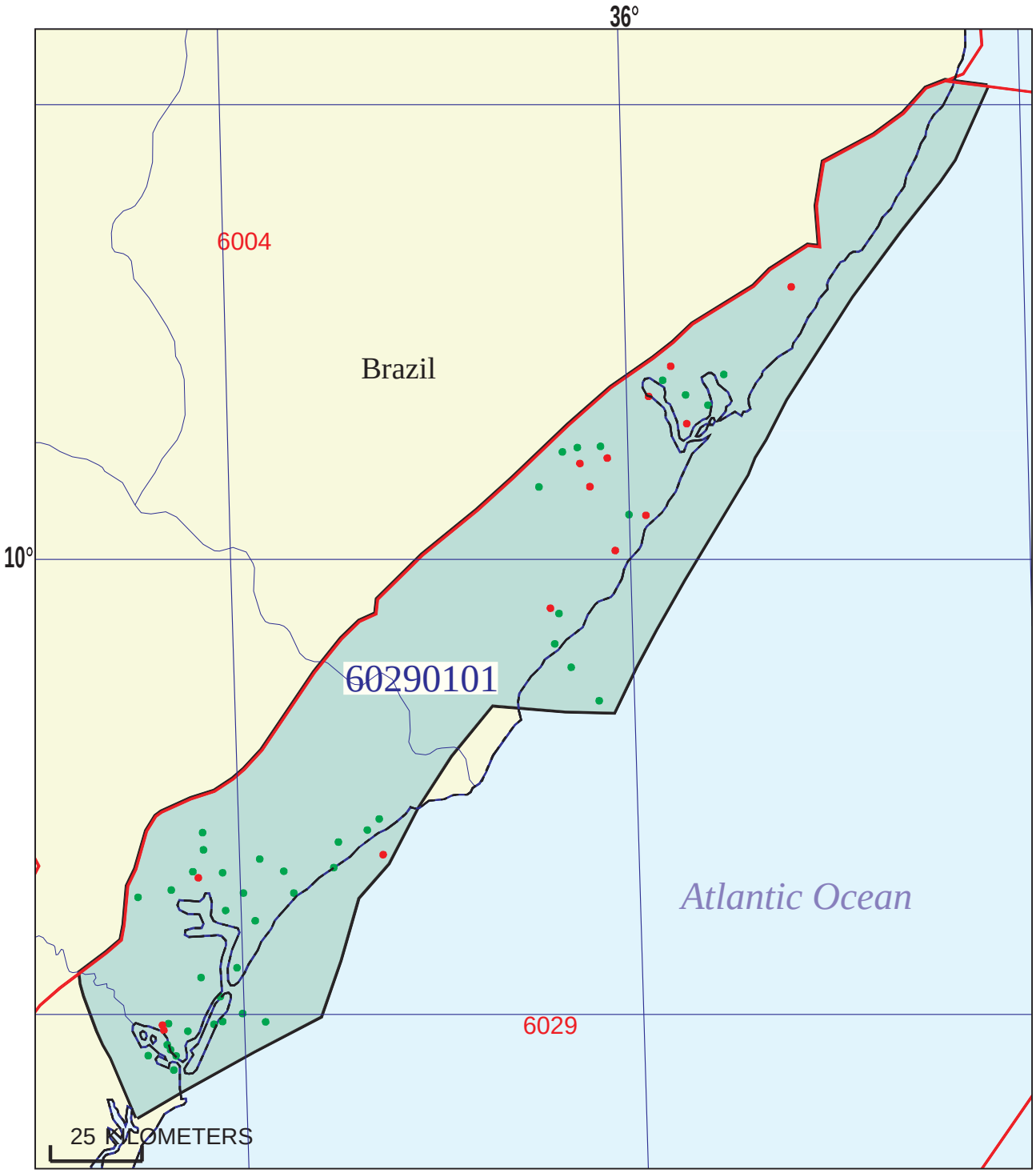
TRAPS AND SEALS: Traps are predominantly structural, and are predominantly related to fault block traps formed during rifting. The salt and anhydrite of the Aptian interval mainly provide seals in this assessment unit.

REFERENCES:

Cainelli, C., and Mohriak, W.U., 1998, Geology of Atlantic eastern Brazilian basins; Brazilian Geology Part 2: 1998 American Association of Petroleum Geologists International Conference and Exhibition, Short Course, Rio de Janeiro, chapter paginated.

Mello, M.R., Mohriak, W.U., Koutsoukos, E.A.M., and Bacoccoli, G., 1994, Selected petroleum systems in 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.R., Bassetto, M., Vieira, I.S., and Koutsoukos, E.A.M., 1997, Crustal structure, sedimentation, and petroleum systems in the Sergipe/Alagoas Basin, northeastern Brazil, *in* Mello, M., and Katz, B., eds., Petroleum Systems of the South Atlantic Margin: Hedberg Research Symposium, Extended Abstracts Volume, 5 p.



Western Pre-Aptian Reservoirs Assessment Unit - 60290101

EXPLANATION

- Hydrography
- Shoreline
- 6029 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 60290101 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

USGS science for a changing world

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

Date:……..	11/23/99		
Assessment Geologist:……..	C.J. Schenk		
Region:……..	Central and South America	Number:	6
Province:……..	Sergipe-Alagoas Basin	Number:	6029
Priority or Boutique……..	Boutique		
Total Petroleum System:……	Neocomian to Turonian Composite	Number:	602901
Assessment Unit:……..	Western Pre-Aptian Reservoirs	Number:	60290101
* 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 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: 22 Gas: 8

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

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 13.9 2nd 3rd 7.8 3rd 3rd 1.9

Median size (grown) of discovered gas fields (bcfg):
1st 3rd 65.5 2nd 3rd 28.7 3rd 3rd _____

Assessment-Unit Probabilities:

Attribute	Probability of occurrence (0-1.0)
1. **CHARGE:** Adequate petroleum charge for an undiscovered field ≥ minimum size……	1.0
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):…….. 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)	1	median no.	10	max no.	25
Gas fields:……min. no. (>0)	1	median no.	4	max no.	10

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	2	max. size	35
Gas in gas fields (bcfg):……min. size	6	median size	20	max. size	150

Assessment Unit (name, no.)
Western Pre-Aptian Reservoirs, 60290101

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	1000	2000	3000
NGL/gas ratio (bngl/mmcfg)……	20	40	60

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	10	20	30
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)……	20	30	45
Sulfur content of oil (%)……			
Drilling Depth (m) ……	1000	2000	3500
Depth (m) of water (if applicable)……	0	25	50

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	1000	2500	4500
Depth (m) of water (if applicable)……	0	25	50

Assessment Unit (name, no.)
Western Pre-Aptian Reservoirs, 60290101

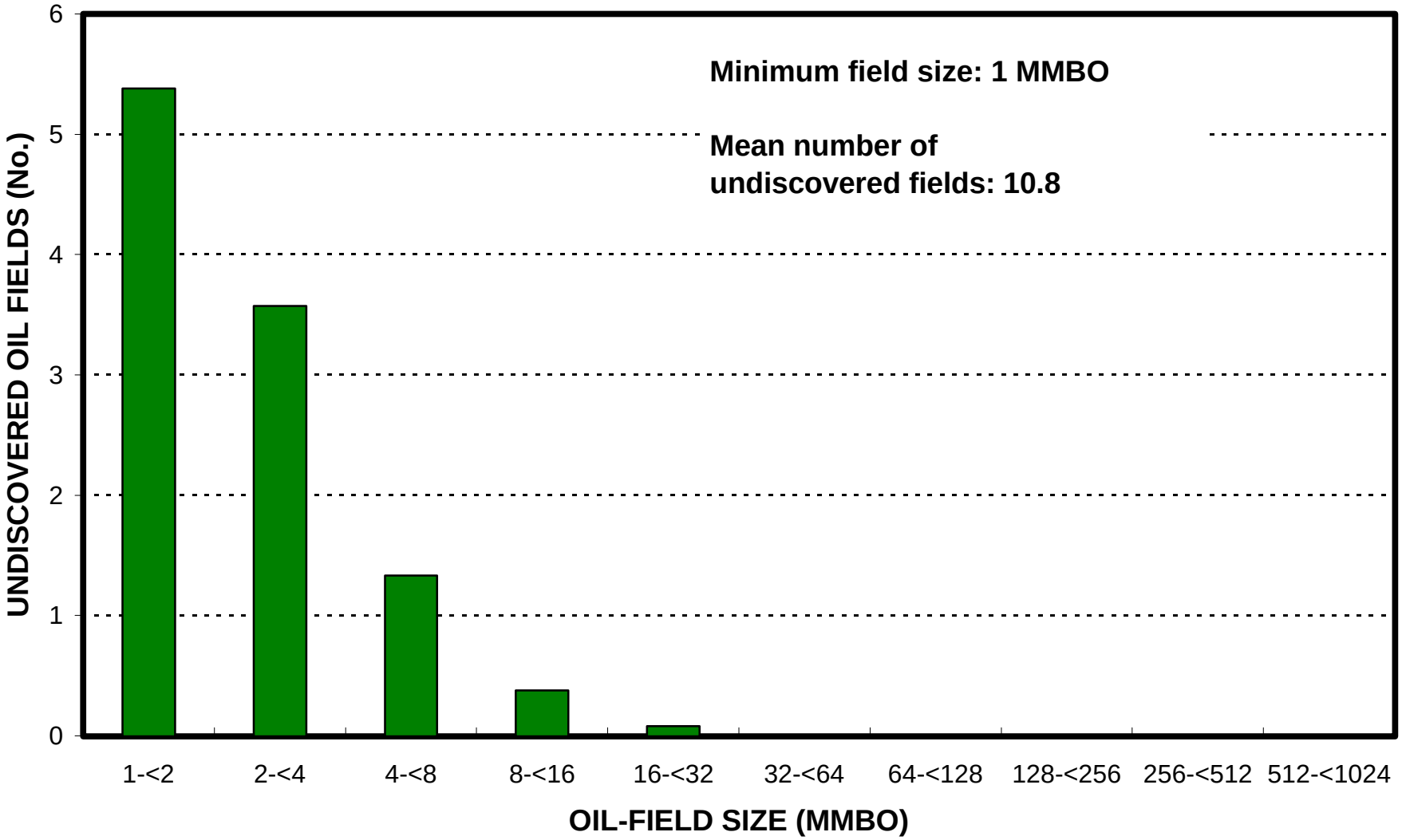
ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT TO COUNTRIES OR OTHER LAND PARCELS (uncertainty of fixed but unknown values)

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%)……		30	

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%)……		30	

Western Pre-Aptian Reservoirs, AU 60290101
Undiscovered Field-Size Distribution



Western Pre-Aptian Reservoirs, AU 60290101
Undiscovered Field-Size Distribution