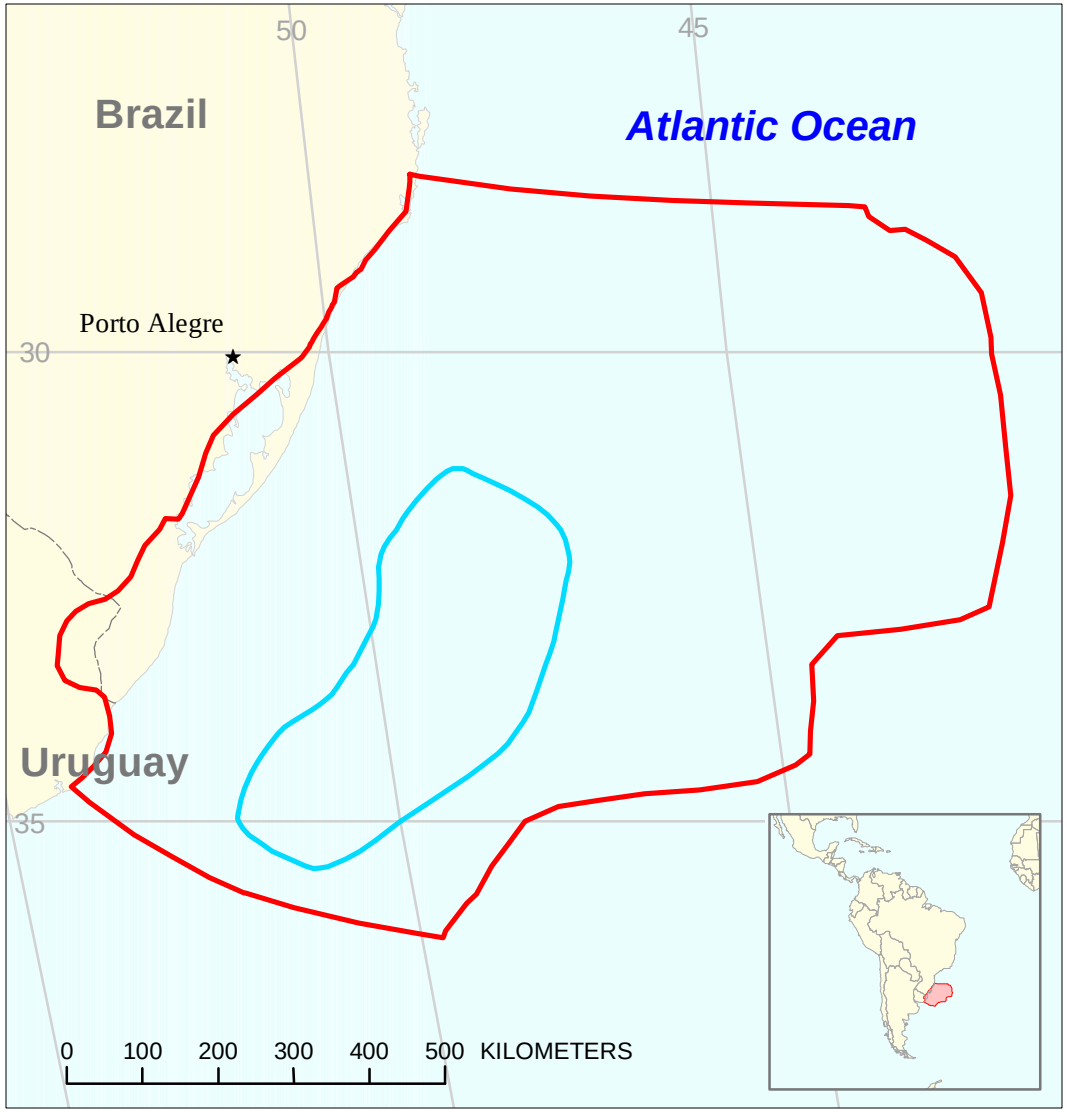
Go to Table of Contents

Go to index map

Offshore Gas Hydrates Assessment Unit 60370102



Geologic Summary

Detailed map of this assessment unit

Assessment Input Data

Assessment Results

This assessment unit was not assessed quantitatively.

USGS PROVINCE: Pelotas Basin (6037) **GEOLOGIST:** C.J. Schenk

TOTAL PETROLEUM SYSTEM: Cenomanian-Turonian-Tertiary Composite (603701)

ASSESSMENT UNIT: Offshore Gas Hydrates (60370102)

DESCRIPTION: This assessment unit is defined by the presence of a Bottom Simulating Reflector (BSR) on seismic in the area of the Rio Grande Cone in the Pelotas Basin. The possible area of hydrate encompasses the 500 to 3600 m water depths.

SOURCE ROCKS: Source rocks are interpreted to be marine mudstones of the Cenomanian-Turonian and possibly the Early Tertiary interval.

MATURATION: Maturation of the Cenomanian-Turonian and Early Tertiary interval possibly reached maturity in mid-Tertiary time based on thickness of section on seismic lines.

MIGRATION: In addition to biogenic gas, the hydrate may have a component from thermogenic gas, indicating that vertical migration occurred in the area centered on the Rio Grande Cone.

RESERVOIR ROCKS: Hydrates are hosted by Miocene to Recent sedimentary rocks over a wide area centered on the Rio Grande Cone.

TRAPS AND SEALS: The potential hydrate accumulation is a self-sealing deposit, in that the formation of clathrate in the hydrate stability zone led to the formation of more hydrate, possibly as thermogenic gas migrated vertically, eventually leading to a 600 m thick interval of hydrate intercalated with clastic intervals.

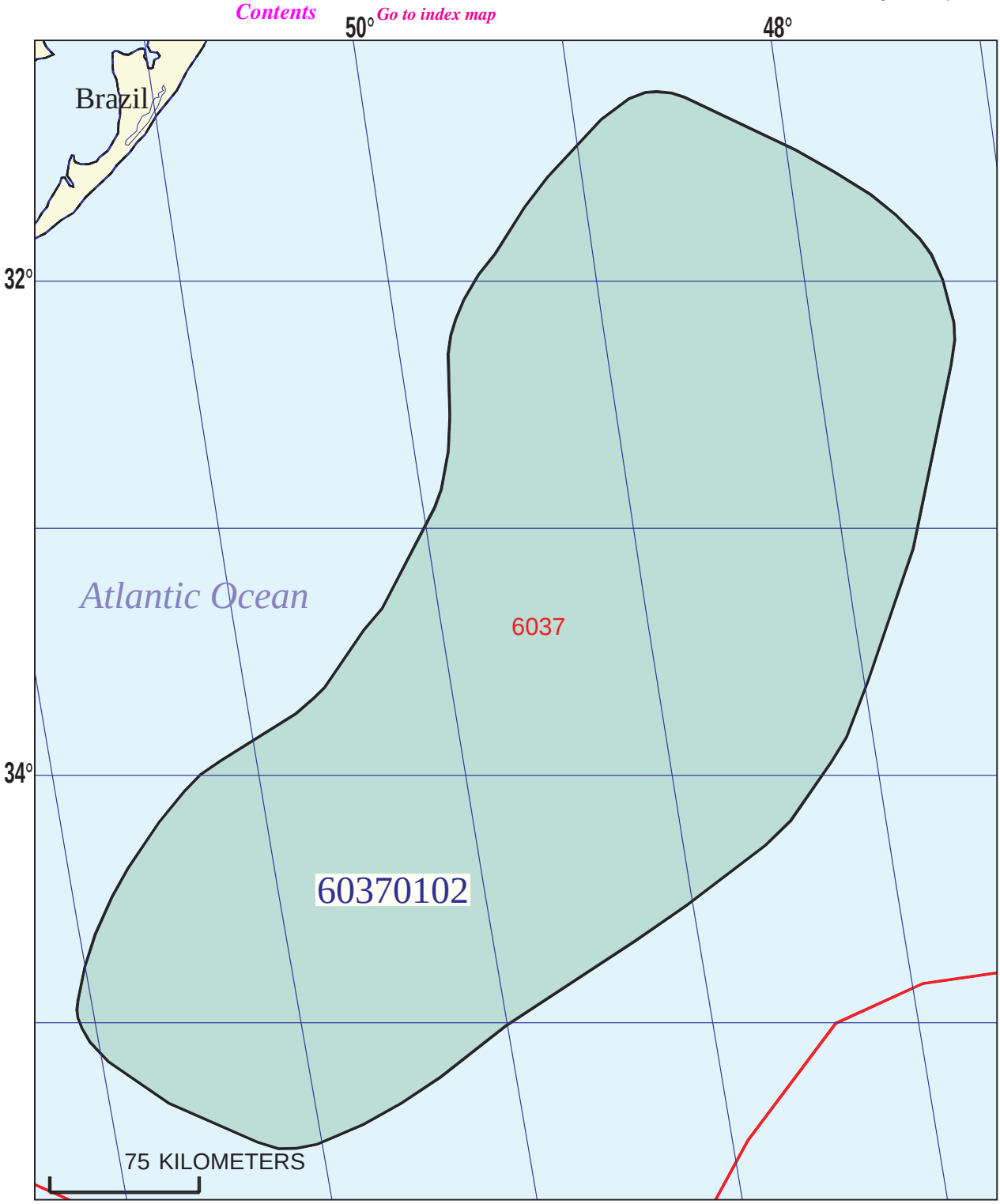
REFERENCES

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.

Cunningham, R., Lindholm, R.M., and Holl, J.E., 1997, Constraints on gas hydrate formation, offshore West Africa, *in* Mello, M., and Katz, B., eds., Petroleum Systems of the South Atlantic Margin: Hedberg Research Symposium, Rio de Janeiro: Extended Abstracts Volume, 6 p.

Fontana, R.L., and Mussumeci, A., 1994, Hydrates offshore Brazil, *in* Sloan, E.D., Happel, J., and Hnatow, M.A., eds., International Conference on Natural Gas Hydrates: Annals of the New York Academy of Sciences, v. 715, p. 106-113.

Sad, A.R.E., Silveira, D.P., Silva, S.R.P., Maciel, R.R., and Machado, M.A.P., 1998, Marine gas hydrates along the Brazilian margin, *in* Mello, M.R., and Yilmaz, P.O., eds., 1998 American Association of Petroleum Geologists International Conference and Exhibition, Rio de Janeiro: Extended Abstracts Volume, p. 146-147.



Offshore Gas Hydrates
Assessment Unit - 60370102

EXPLANATION

- Hydrography
- Shoreline
- 6037 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 60370102 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:…….. 11/17/99
Assessment Geologist:…….. C.J. Schenk
Region:…….. Central and South America Number: 6
Province:…….. Pelotas Basin Number: 6037
Priority or Boutique…… Boutique
Total Petroleum System:…… Cenomanian-Turonian-Tertiary Composite Number: 603701
Assessment Unit:…… Offshore Gas Hydrates Number: 60370102
* Notes from Assessor

CHARACTERISTICS OF ASSESSMENT UNIT

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

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

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……	
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):……..	
4. **ACCESSIBILITY:** Adequate location to allow exploration for an undiscovered field ≥ minimum size……	

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) _____ median no. _____ max no. _____
Gas fields:……min. no. (>0) _____ median no. _____ max no. _____

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 _____ median size _____ max. size _____
Gas in gas fields (bcfg):……min. size _____ median size _____ max. size _____

Assessment Unit (name, no.)
Offshore Gas Hydrates, 60370102

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……			
NGL/gas ratio (bngl/mmcfg)……			

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……			
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)……			
Sulfur content of oil (%)……			
Drilling Depth (m) ……			
Depth (m) of water (if applicable)……			

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

Assessment Unit (name, no.)
Offshore Gas Hydrates, 60370102

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

1. _____ represents _____ areal % of the total assessment unit

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

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