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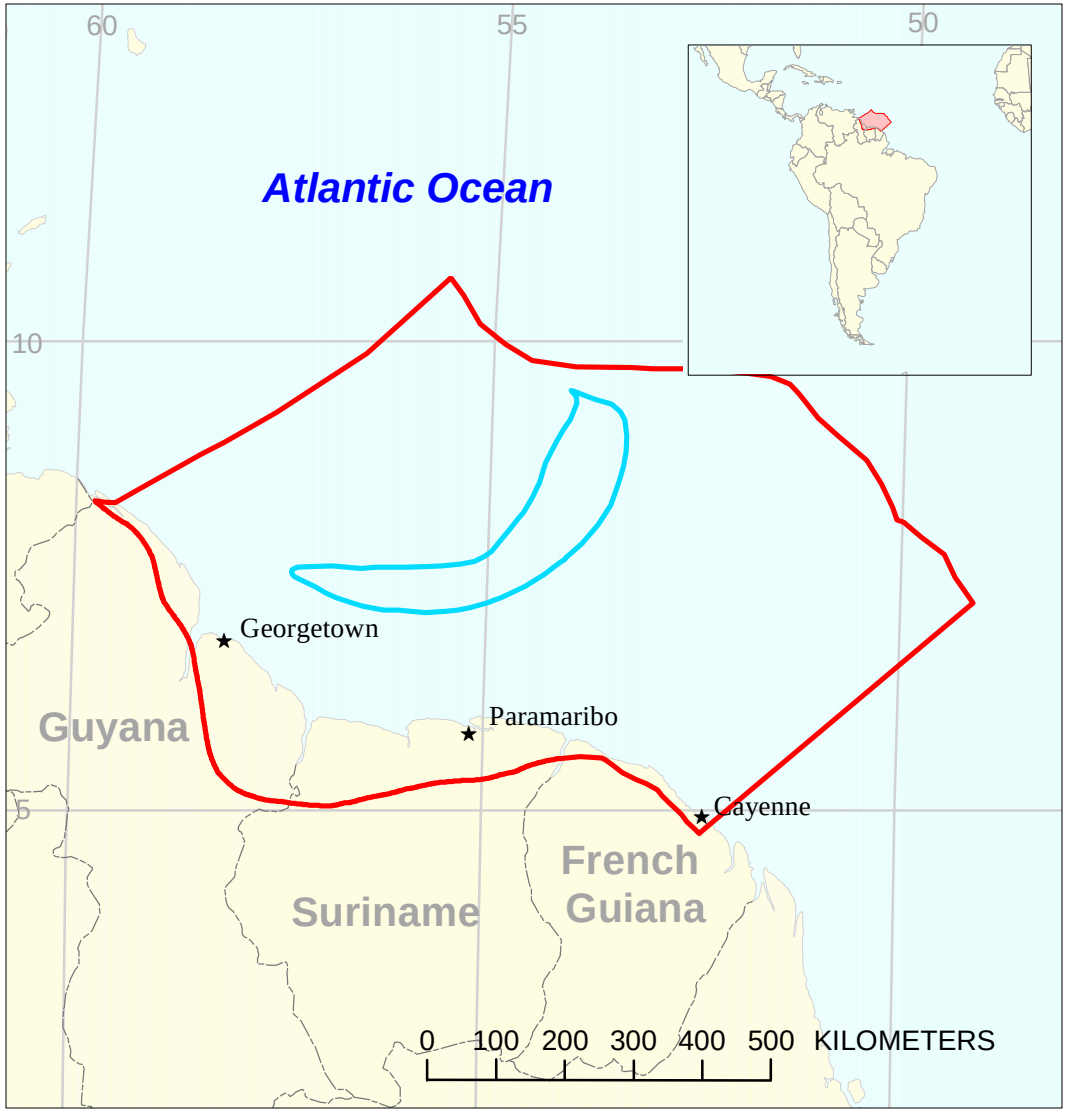
Cretaceous Carbonates
Assessment Unit 60210102



Cretaceous Carbonates Assessment Unit 60210102

Guyana-Suriname Basin Geologic Province 6021

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: Guyana-Suriname Basin (6021) **GEOLOGIST:** C.J. Schenk

TOTAL PETROLEUM SYSTEM: Cenomanian-Turonian (602101)

ASSESSMENT UNIT: Cretaceous Carbonates (60210102)

DESCRIPTION: This assessment unit encompasses the area of Lower and Upper Cretaceous platform carbonates developed along the western flank of the Demerara High in the Guyana-Suriname offshore.

SOURCE ROCKS: Source rocks are demonstrated to be marine mudstones of the Cenomanian-Turonian deposited in deep marine conditions following the initial opening of the proto-Caribbean ocean. Total organic carbon values range from 4 to 7 weight percent carbon, and are as thick as 150 m.

MATURATION: A large part of the source rock in the Guyana-Suriname Basin is in the maturation zone for oil, but less so for gas. Timing of maturation is not well constrained, but limited data suggest the oil window was obtained in the Miocene-Pliocene.

MIGRATION: The reservoirs in this assessment unit lie east of the area of mature source rock, so the principal mode of migration would be lateral from the deeper basinal area eastward and upwards into the carbonate reservoirs flanking the Demerara Uplift.

RESERVOIRS: The principal reservoirs are platform carbonates ranging from Lower to Upper Cretaceous. A significant test well demonstrated adequate reservoir porosity and permeability, but did not encounter hydrocarbons.

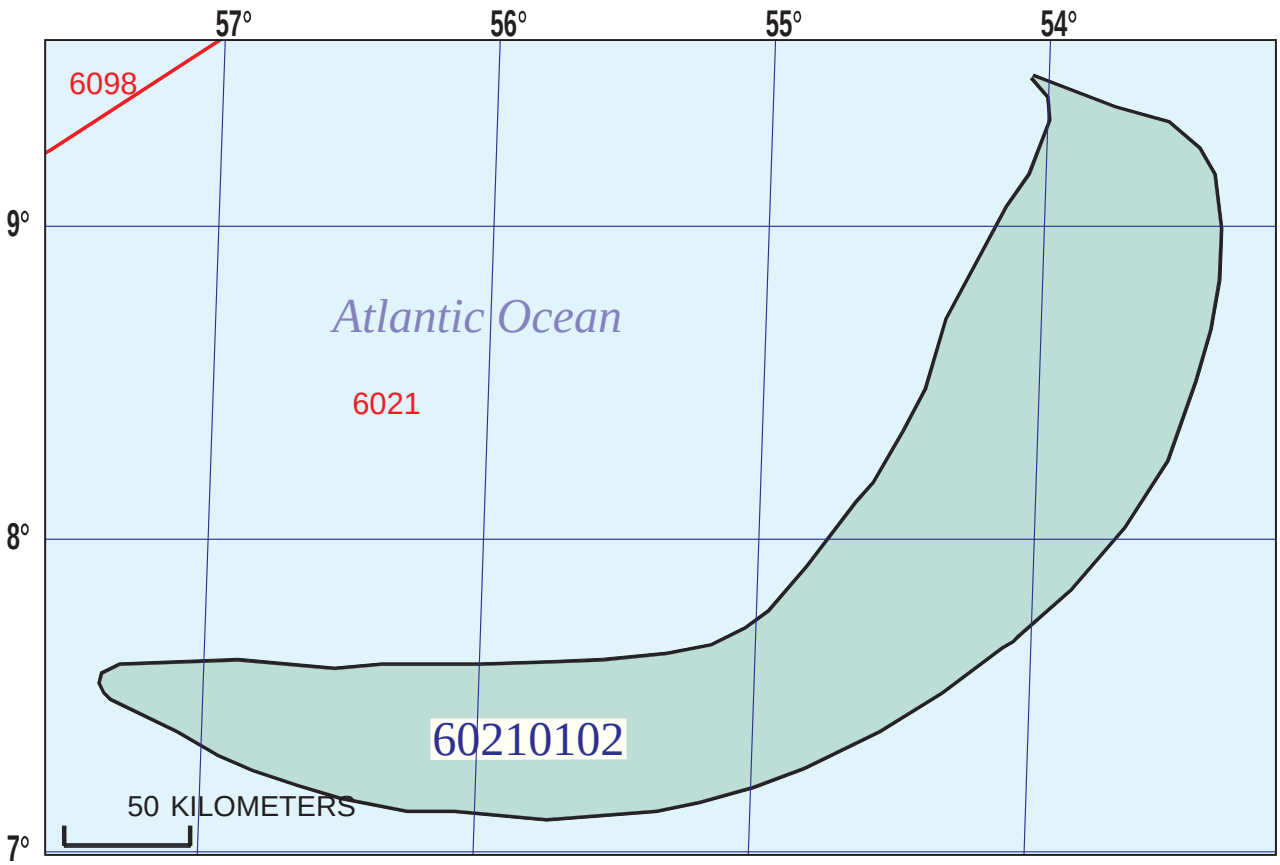
TRAPS AND SEALS: The main type of trap for the carbonate reservoirs is stratigraphic and diagenetic, where platform margin facies are encased in mudstones.

REFERENCES:

Pecten Suriname Ltd., 1995, Offshore Suriname Technical Study–South America: unpaginated report.

Staatsolie, 1999a, Geological Information–Suriname Near-shore hydrocarbon basin: Staatsolie Web Site, 5 p.

Staatsolie, 1999b, Geological Information–Suriname deep-offshore hydrocarbon basin: Staatsolie Web Site, 9 p.



Cretaceous Carbonates
Assessment Unit - 60210102

EXPLANATION

- Hydrography
- Shoreline
- 6021 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 60210102 Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……..	10/29/99		
Assessment Geologist:……..	C.J. Schenk		
Region:……..	Central and South America	Number:	6
Province:……..	Guyana-Suriname Basin	Number:	6021
Priority or Boutique……	Boutique		
Total Petroleum System:……	Cenomanian-Turonian	Number:	602101
Assessment Unit:……..	Cretaceous Carbonates	Number:	60210102
* Notes from Assessor	Partial analog Campos Basin, Cretaceous Carbonates (60350102); Permian Basin, 5044; San Andres-Clearfork, Central Basin Platform and Ozone Arch and San Andres-Clearfork, Northwestern and Eastern Shelves (U.S. plays 4411, 4410).		

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 10 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……	0.8
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):…….. 0.8

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.	25	max no.	60
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	10	median size	45	max. size	3000
Gas in gas fields (bcfg):……min. size	60	median size	180	max. size	6000

Assessment Unit (name, no.)
Cretaceous Carbonates, 60210102

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)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	22	44	66
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)……	25	35	50
Sulfur content of oil (%)……			
Drilling Depth (m) ……	1500	3000	6000
Depth (m) of water (if applicable)……	800	1600	3000

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	1500	3000	6500
Depth (m) of water (if applicable)……	800	1600	3000

Assessment Unit (name, no.)
Cretaceous Carbonates, 60210102

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

1. Suriname represents 96 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		96	
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):…		96	
Portion of volume % that is offshore (0-100%)……		100	

2. Guyana represents 4 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		4	
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):…		4	
Portion of volume % that is offshore (0-100%)……		100	

Cretaceous Carbonates, AU 60210102
Undiscovered Field-Size Distribution