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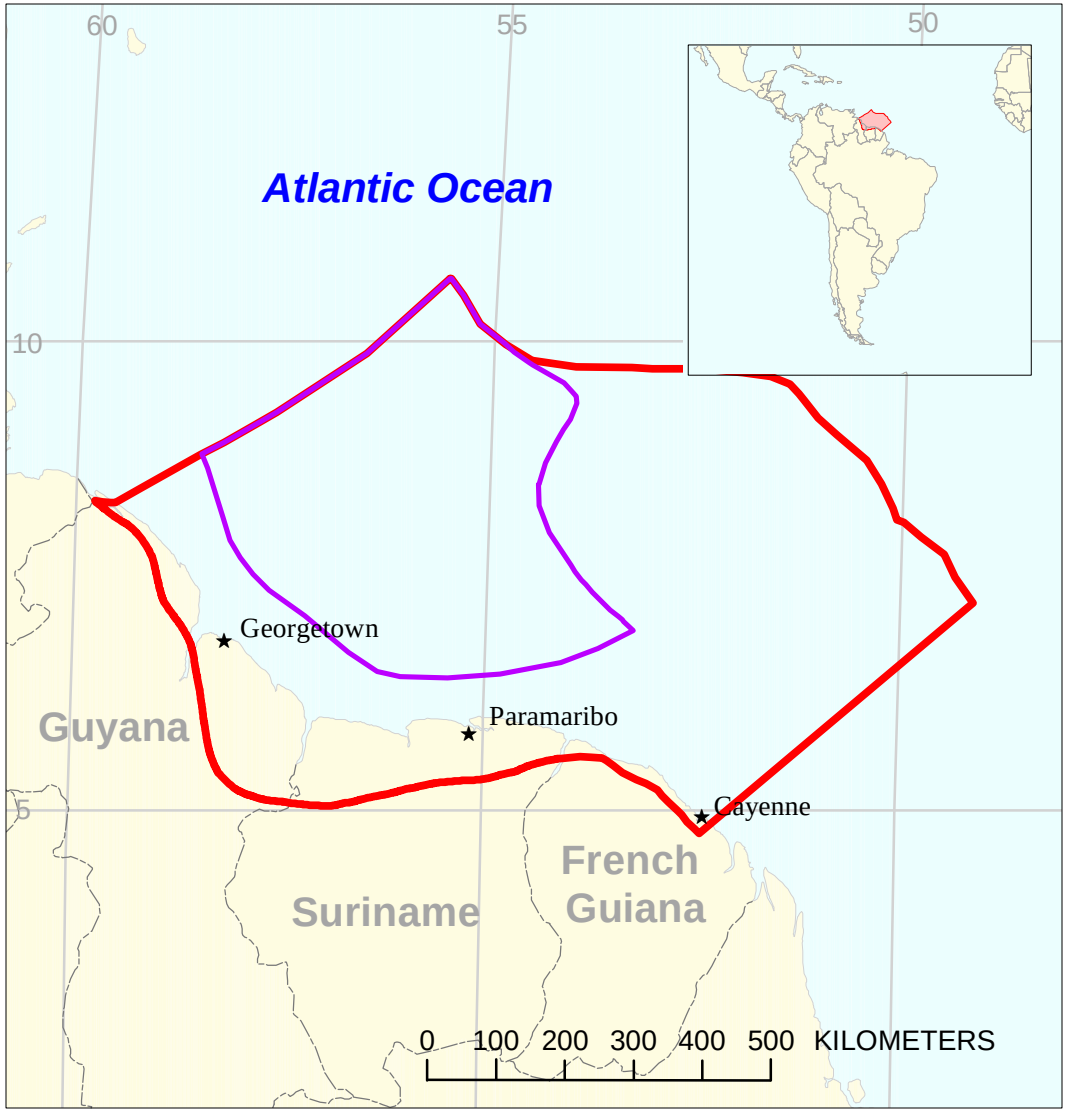
Late Cretaceous-Tertiary Turbidites Assessment Unit 60210101



Late Cretaceous-Tertiary Turbidites Assessment Unit 60210101
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: Late Cretaceous-Tertiary Turbidites (60210101)

DESCRIPTION: This assessment unit encompasses the area of turbidite slope and fan reservoirs from about the 200 m to 4200 m isobaths, and from the boundary with the Orinoco Assessment Unit to the northwest and the Demerara High to the east.

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 suggests the oil window was obtained in the Miocene-Pliocene.

MIGRATION: The reservoirs in this assessment unit lie above the source rock, so the principal mode of migration is vertical; possibly along listric faults developed in several Tertiary progradational units.

RESERVOIRS: The principal reservoirs are turbidite slope-channel and basin floor fans ranging in age from Late Cretaceous to Miocene. Seismic data demonstrate that several significant unconformities are present, indicating sediment by-pass from the shelf to the deep basin. Major unconformities are in the Campanian, Oligocene, and Miocene, similar to other Atlantic basins of South America and western Africa.

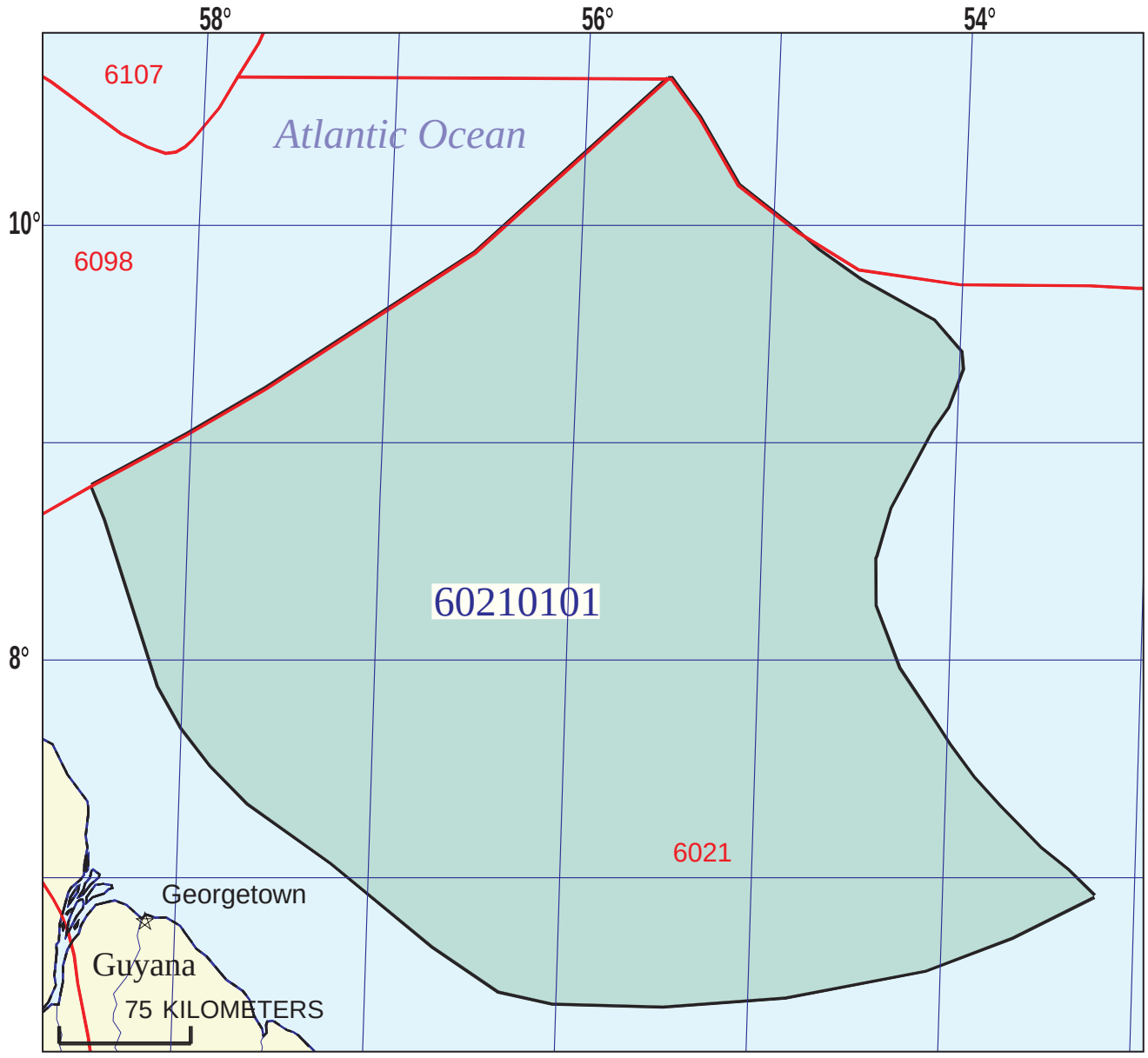
TRAPS AND SEALS: The main type of trap for the turbidite sandstones is stratigraphic, although combination traps may also exist where sands are juxtaposed with mudstones along listric faults.

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.



Late Cretaceous-Tertiary Turbidites Assessment Unit - 60210101

EXPLANATION

- Hydrography
- Shoreline
- 6021 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 60210101 — 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:……..	Late Cretaceous-Tertiary Turbidites	Number:	60210101
* Notes from Assessor	Partial analog Campos Basin, Late Cretaceous-Tertiary Turbidites (60350101).		

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……	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.	60	max no.	150
Gas fields:……min. no. (>0)	1	median no.	15	max no.	35

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	60	max. size	9000
Gas in gas fields (bcfg):……min. size	60	median size	240	max. size	18000

Assessment Unit (name, no.)
Late Cretaceous-Tertiary Turbidites, 60210101

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)……	20	35	50
Sulfur content of oil (%)……			
Drilling Depth (m) ……	2000	3000	6000
Depth (m) of water (if applicable)……	200	1000	4000

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	2000	3000	6500
Depth (m) of water (if applicable)……	200	1000	4000

Assessment Unit (name, no.)
Late Cretaceous-Tertiary Turbidites, 60210101

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

1. Suriname represents 84 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		84	
Portion of volume % that is offshore (0-100%)……		100	

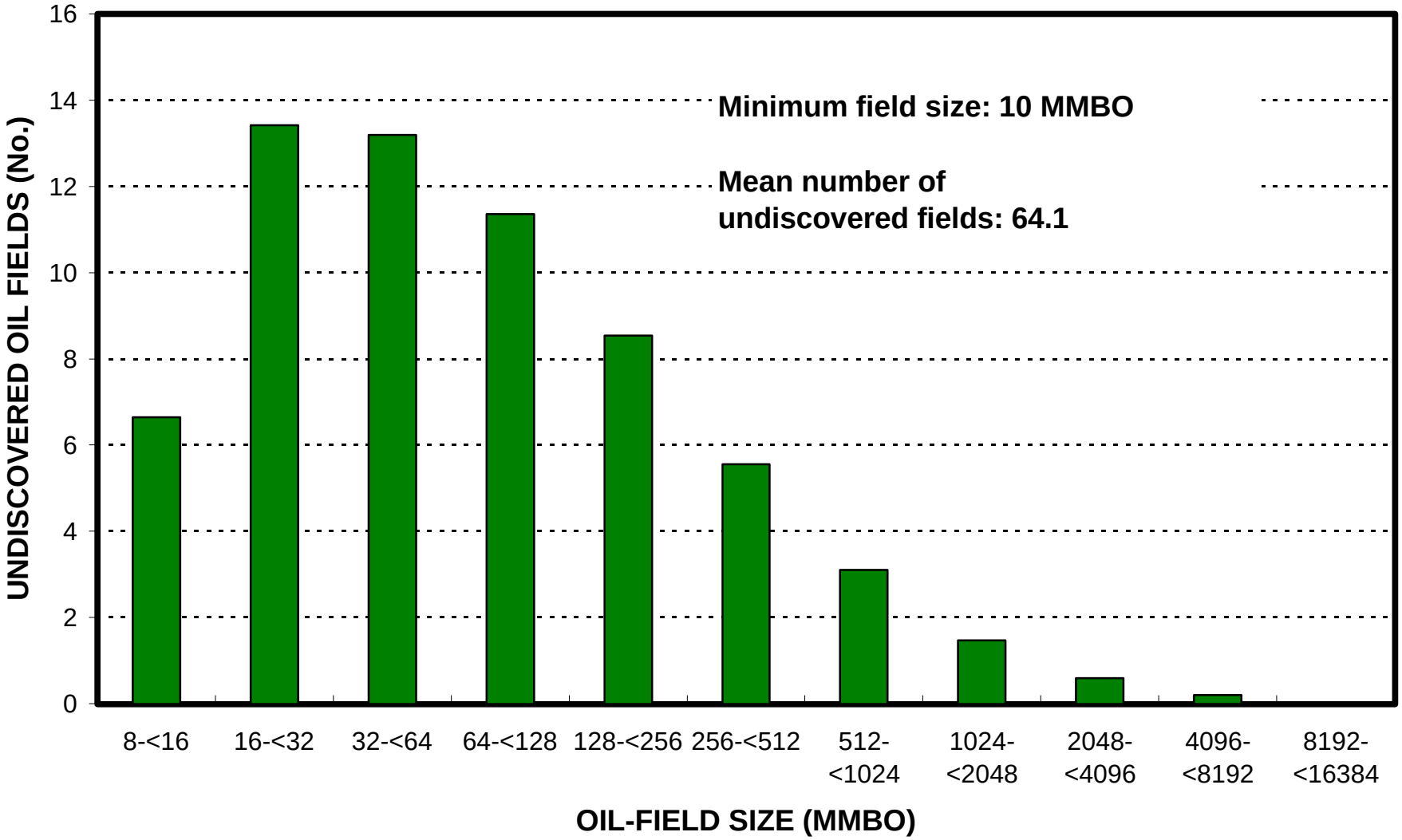
Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		84	
Portion of volume % that is offshore (0-100%)……		100	

2. Guyana represents 16 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		16	
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):…		16	
Portion of volume % that is offshore (0-100%)……		100	

Late Cretaceous-Tertiary Turbidites, AU 60210101
Undiscovered Field-Size Distribution



Late Cretaceous-Tertiary Turbidites, AU 60210101
Undiscovered Field-Size Distribution