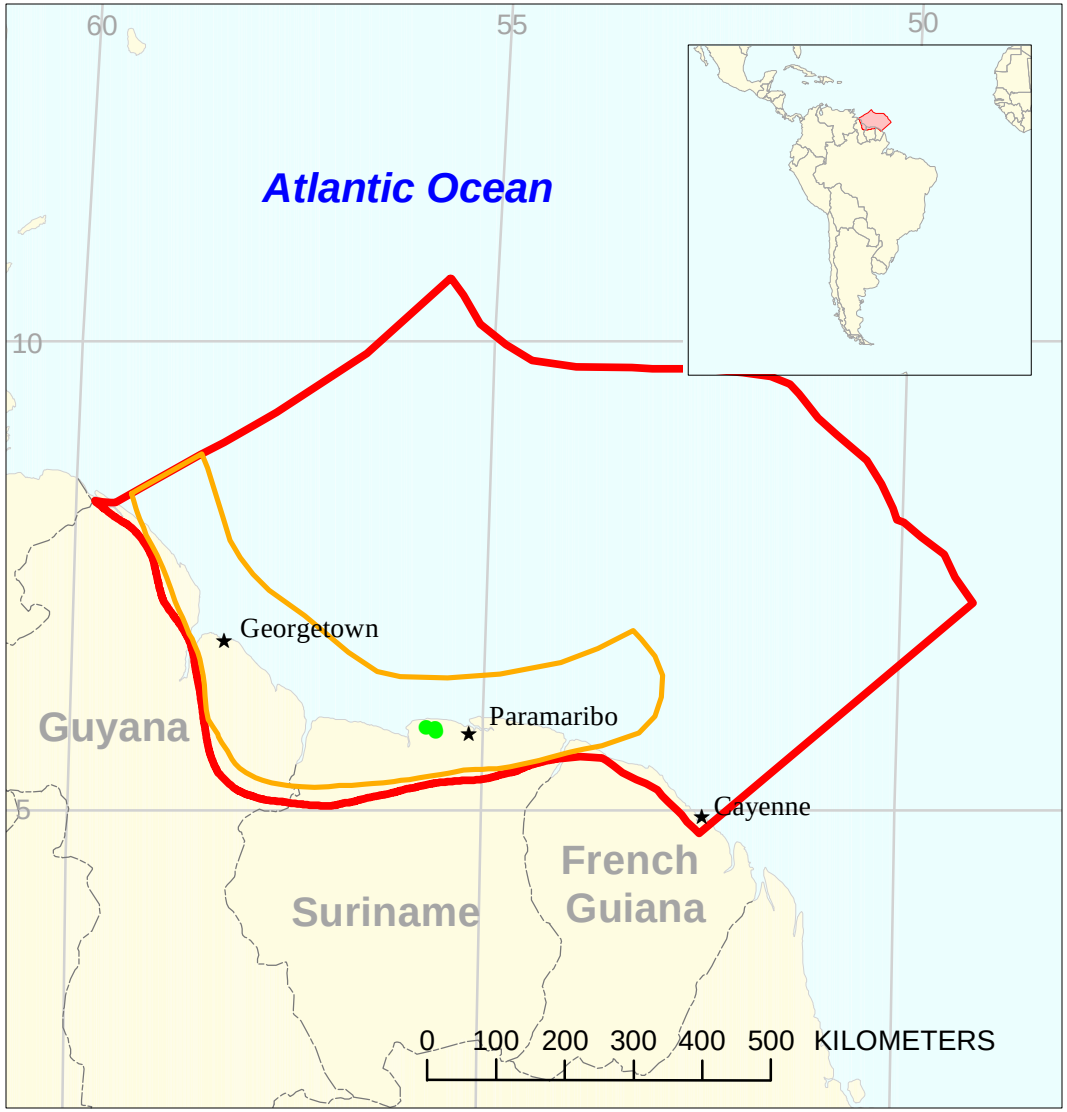
Go to Table of Contents

Go to index map

# Late Cretaceous-Tertiary Nearshore Sandstones
# Assessment Unit 60210103




Late Cretaceous-Tertiary Nearshore Sandstones Assessment Unit 60210103
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 Nearshore Sandstones (60210103)

**DESCRIPTION:** This assessment unit encompasses the nearshore area of fluvial, deltaic, and shallow marine sandstone reservoirs offshore to approximately the 200 m isobath, and from the boundary with the Orinoco assessment unit to the northwest and the Demerara Uplift 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 significantly updip from the source rock, so the principal mode of migration would be lateral from the source rock kitchen in the deep basin south updip to the shallow reservoirs.

**RESERVOIRS:** The principal reservoirs are fluvial, deltaic, and nearshore marine sandstones ranging in age from Paleocene to Miocene. The sands updip are generally unconsolidated, and recovery problems exist due to sanding. The updip reservoirs contain oil with an average API gravity of 15 degrees, caused by biodegradation during fresh-water washing from outcrop.

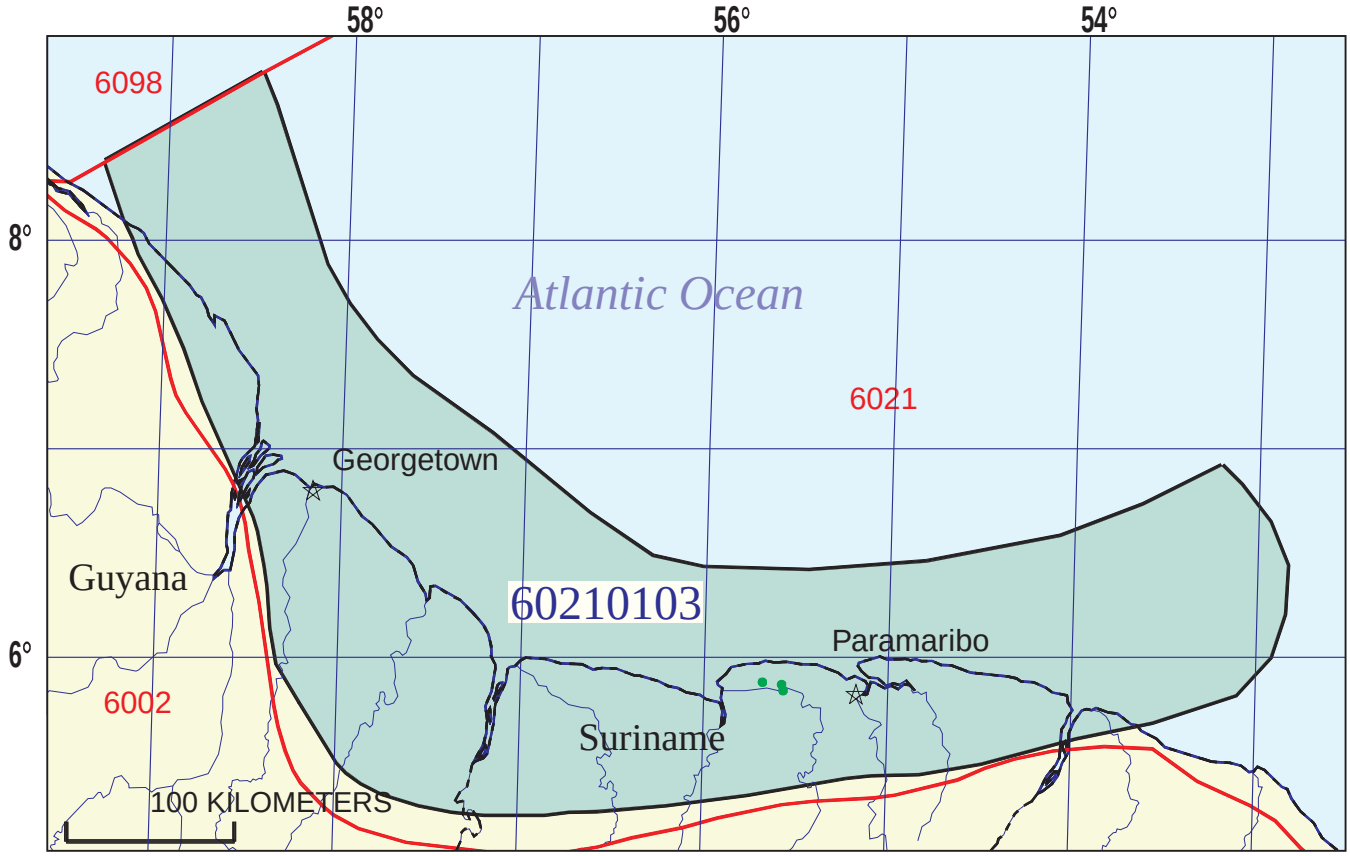
**TRAPS AND SEALS:** The main type of trap for the channel sandstones is stratigraphic, although combination traps may also exist where sands are juxtaposed with mudstones along small faults. Adequate seals are the main problem in this assessment unit.

**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 Nearshore Sandstones Assessment Unit - 60210103

EXPLANATION

- Hydrography
- Shoreline
- 6021 Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 60210103 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 Nearshore Sandstones | Number: | 60210103 |
| * 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?……. 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: 1 Gas: 0
Established (>13 fields) _____ Frontier (1-13 fields) X Hypothetical (no fields) _____

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 90 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. | 30 | max no. | 70 |
| Gas fields:……min. no. (>0) | 1 | median no. | 7 | 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 | 1 | median size | 4 | max. size | 300 |
| Gas in gas fields (bcfg):……min. size | 6 | median size | 24 | max. size | 1500 |

Assessment Unit (name, no.)
Late Cretaceous-Tertiary Nearshore Sandstones, 60210103

## AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

| Oil Fields: | minimum | median | maximum |
|---|---|---|---|
| Gas/oil ratio (cfg/bo)…… | 700 | 1400 | 2100 |
| NGL/gas ratio (bngl/mmcfg)…… | 25 | 50 | 75 |

| Gas fields: | minimum | median | maximum |
|---|---|---|---|
| Liquids/gas ratio (bngl/mmcfg)…… | 18 | 36 | 52 |
| 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 | 30 | 50 |
| Sulfur content of oil (%)…… | | | |
| Drilling Depth (m) …… | 500 | 1500 | 5000 |
| Depth (m) of water (if applicable)…… | 0 | 70 | 200 |

| Gas Fields: | minimum | median | maximum |
|---|---|---|---|
| Inert gas content (%)…… | | | |
| $CO_2$ content (%)…… | | | |
| Hydrogen-sulfide content (%)…… | | | |
| Drilling Depth (m)…… | 500 | 1500 | 5500 |
| Depth (m) of water (if applicable)…… | 0 | 70 | 200 |

Assessment Unit (name, no.)
Late Cretaceous-Tertiary Nearshore Sandstones, 60210103

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

1. Suriname represents 44 areal % of the total assessment unit

| Oil in Oil Fields: | minimum | median | maximum |
|---|---|---|---|
| Richness factor (unitless multiplier):…… | | | |
| Volume % in parcel (areal % x richness factor):… | | 70 | |
| Portion of volume % that is offshore (0-100%)…… | | 70 | |

| Gas in Gas Fields: | minimum | median | maximum |
|---|---|---|---|
| Richness factor (unitless multiplier):…… | | | |
| Volume % in parcel (areal % x richness factor):… | | 70 | |
| Portion of volume % that is offshore (0-100%)…… | | 70 | |

2. Guyana represents 48 areal % of the total assessment unit

| Oil in Oil Fields: | minimum | median | maximum |
|---|---|---|---|
| Richness factor (unitless multiplier):…… | | | |
| Volume % in parcel (areal % x richness factor):… | | 26 | |
| Portion of volume % that is offshore (0-100%)…… | | 70 | |

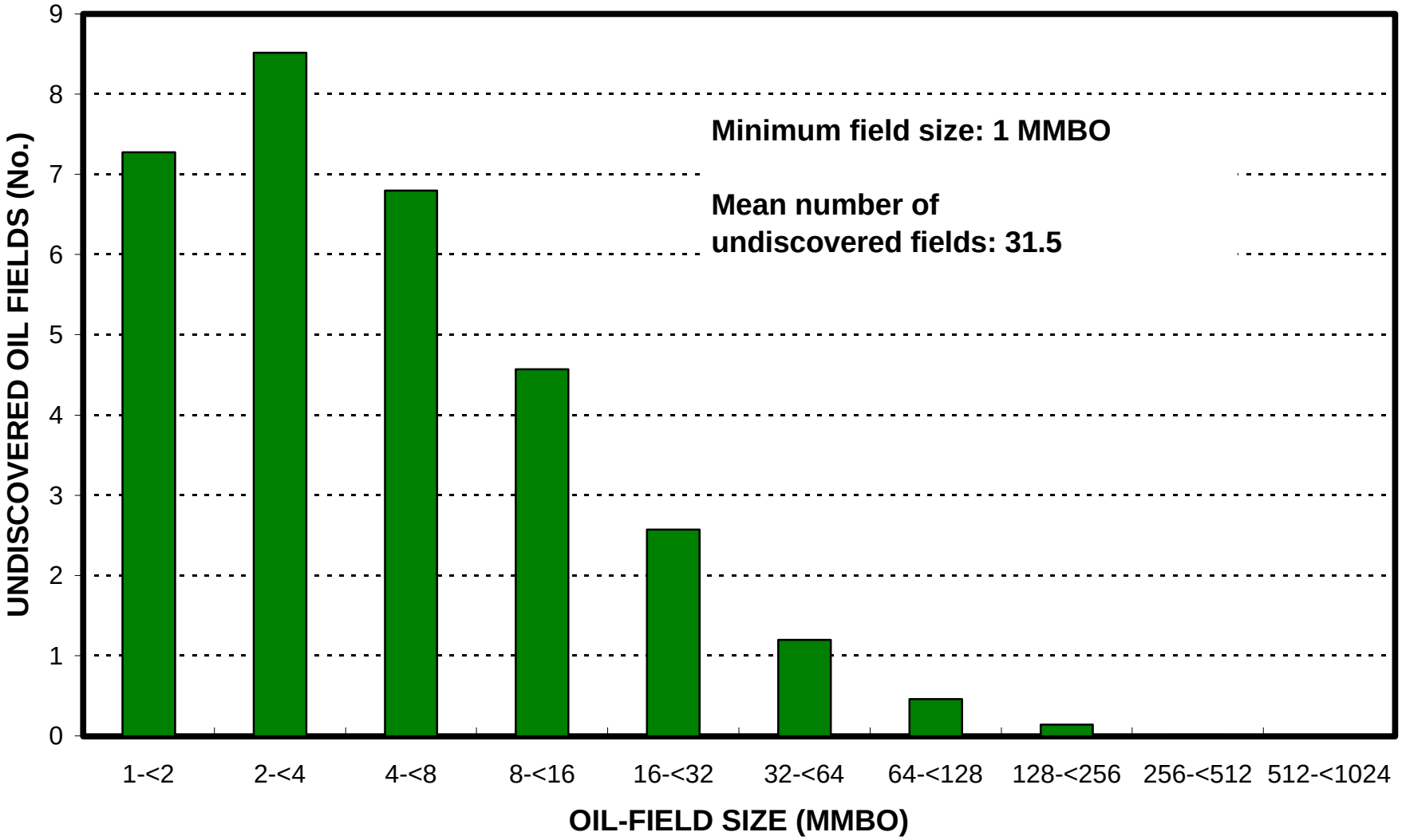
| Gas in Gas Fields: | minimum | median | maximum |
|---|---|---|---|
| Richness factor (unitless multiplier):…… | | | |
| Volume % in parcel (areal % x richness factor):… | | 26 | |
| Portion of volume % that is offshore (0-100%)…… | | 70 | |

3. French Guiana represents 8 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 | |

# Late Cretaceous-Tertiary Nearshore Sandstones, AU 60210103
## Undiscovered Field-Size Distribution



# Late Cretaceous-Tertiary Nearshore Sandstones, AU 60210103
## Undiscovered Field-Size Distribution