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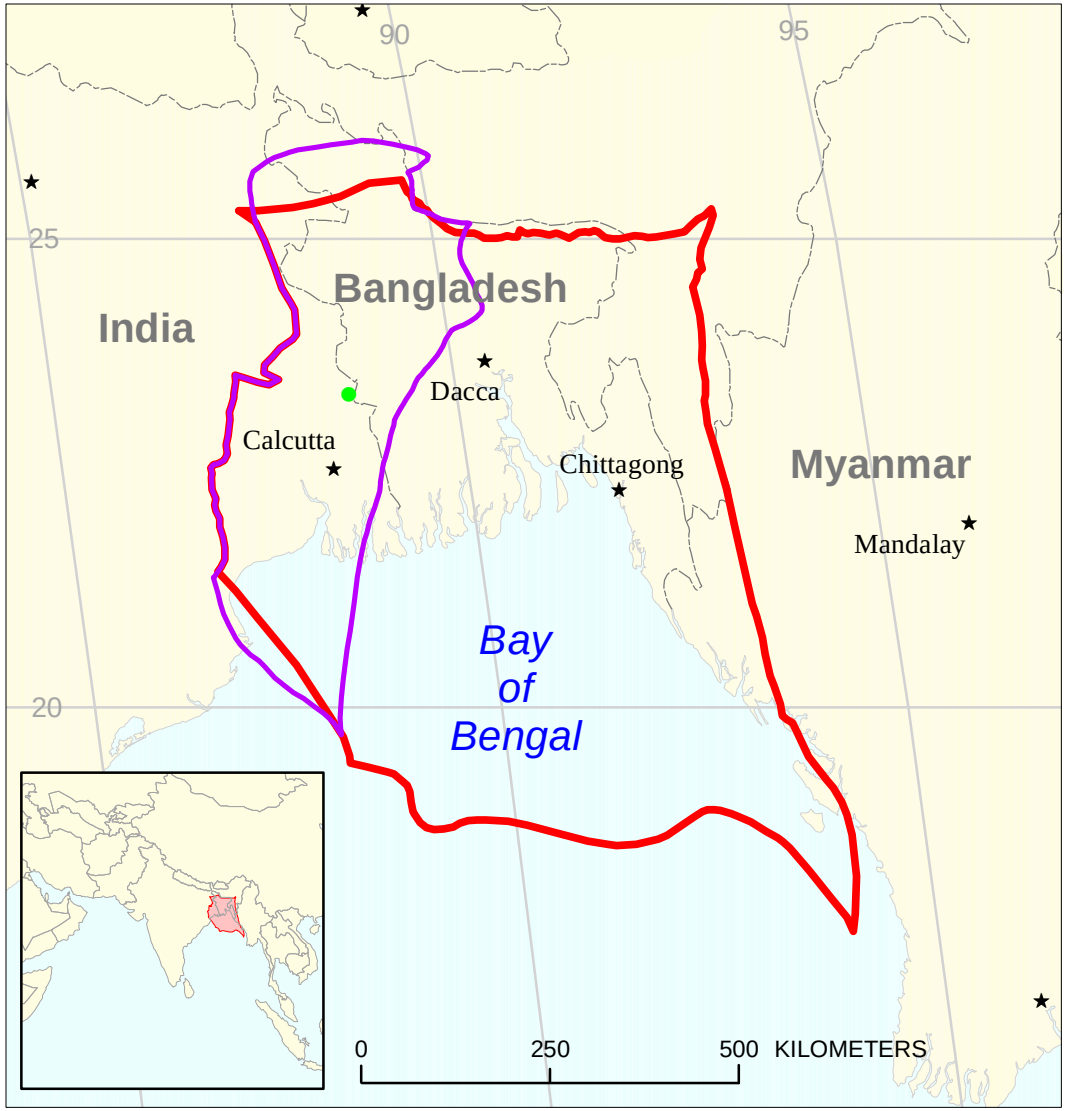
Western Shelf and Slope Assessment Unit 80470201



Western Shelf and Slope Assessment Unit 80470201

Ganges-Brahmaputra Delta Geologic Province 8047

Geologic Summary

Detailed map of this assessment unit

Assessment Input Data

Assessment Results

- Assessment Unit Summary
- Detailed Assessment Results

USGS PROVINCE: Ganges-Brahmaputra Delta (8047) Bangladesh, India

GEOLOGIST: R.C. Milici

TOTAL PETROLEUM SYSTEM: Jalangi-Sylhet/Burdwan Composite (804702)

ASSESSMENT UNIT: Western Shelf and Slope (80470201)

DESCRIPTION: Assessment unit extends from the western edge of the Bengal fan, where it laps over a basement of Precambrian to Mesozoic igneous, metamorphic, and sedimentary rocks, eastward to the Paleocene-Eocene shelf edge and slope. The eastward extent of the assessment unit is defined by the distribution of the Jalangi Formation (200 to 1000 m thick), which in part is a source rock of Paleocene and Eocene age. Potential reservoirs occur in the overlying Kalighat (Sylhet) Limestone (Eocene, 500 to 1000 m thick) and in sandstones of the Burdwan Formation (Oligocene, 200 to 750 m thick). The Burdwan is overlain by the Diamond Harbour (Pandua) Formation (Oligocene/Miocene, 3500 m thick), which consists mainly of siltstone, sandstone, and carbonaceous shale. The Hoogley (Kopili) Formation (Late Eocene, 30 to 3100 m thick) occurs above the Kalighat and locally may serve as a seal.

SOURCE ROCKS: Source rocks probably include the lignite and carbonaceous shales of the Paleocene/Eocene Jalangi Formation. Organic matter content ranges generally from about 1 to 5 percent and vitrinite reflectance (Ro) ranges generally from 0.6 to 1.3 along the shelf edge and out onto the upper part of the slope and most likely is Type III. In addition, some of the shows of gas observed in exploration drill holes might represent deposits that have migrated out of the deeper part of the basin, westward onto the shelf.

MATURATION: Thermal maturation is sufficient to generate natural gas and oil

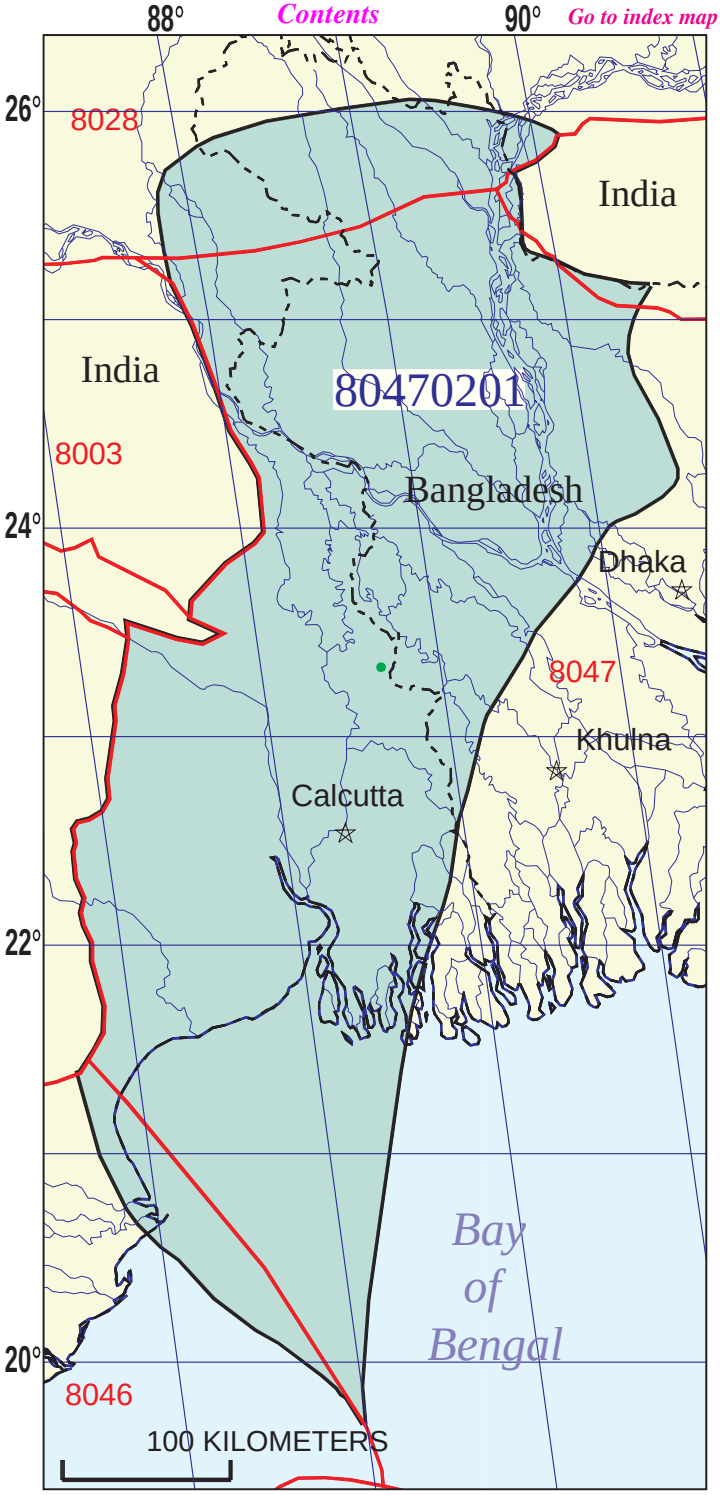
MIGRATION: Migration is generally vertical along fractures and through porous media and horizontally along bedded sandstones.

RESERVOIR ROCKS: Potential reservoir rocks are Oligocene deltaic sands of the Burdwan Formation, which appear to have had their source on the western craton, and marine limestones of the Kalighat Formation. Thus far, thick saturated Oligocene sands and porous limestones have not been found.

TRAPS AND SEALS: Traps are primarily stratigraphic in deltaic sandstone and shale units, and in porous marine limestones, if the porosity has not been destroyed by secondary cementation.

REFERENCES:

Indian Journal of Geology, 1997, v. 69, no. 1 and 2.



Western Shelf and Slope Assessment Unit - 80470201

EXPLANATION

- Hydrography
- Shoreline
- 8047 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 80470201 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……..	8/24/99		
Assessment Geologist:……..	R.C. Milici		
Region:……..	South Asia	Number:	8
Province:……..	Ganges-Brahmaputra Delta	Number:	8047
Priority or Boutique……	Boutique		
Total Petroleum System:……	Jalangi-Sylhet/Burdwan Composite	Number:	804702
Assessment Unit:……..	Western Shelf and Slope	Number:	80470201
* Notes from Assessor	Lower 48-mean growth function.		

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?……. 2 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 2.5 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)	2	median no.	8	max no.	20
Gas fields:……min. no. (>0)	3	median no.	40	max no.	110

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	2	median size	5	max. size	90
Gas in gas fields (bcfg):……min. size	12	median size	35	max. size	4500

Assessment Unit (name, no.)
Western Shelf and Slope, 80470201

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	1100	2200	3300
NGL/gas ratio (bngl/mmcfg)……	30	60	90

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	5	10	20
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) ……	1000	2500	4500
Depth (m) of water (if applicable)……	0	400	2000

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	1000	2500	6000
Depth (m) of water (if applicable)……	0	400	2000

Assessment Unit (name, no.)
Western Shelf and Slope, 80470201

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

1. Bangladesh represents 40 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		20	
Portion of volume % that is offshore (0-100%)……		0	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		25	
Portion of volume % that is offshore (0-100%)……		0	

2. India represents 60 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		80	
Portion of volume % that is offshore (0-100%)……		20	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		75	
Portion of volume % that is offshore (0-100%)……		50	