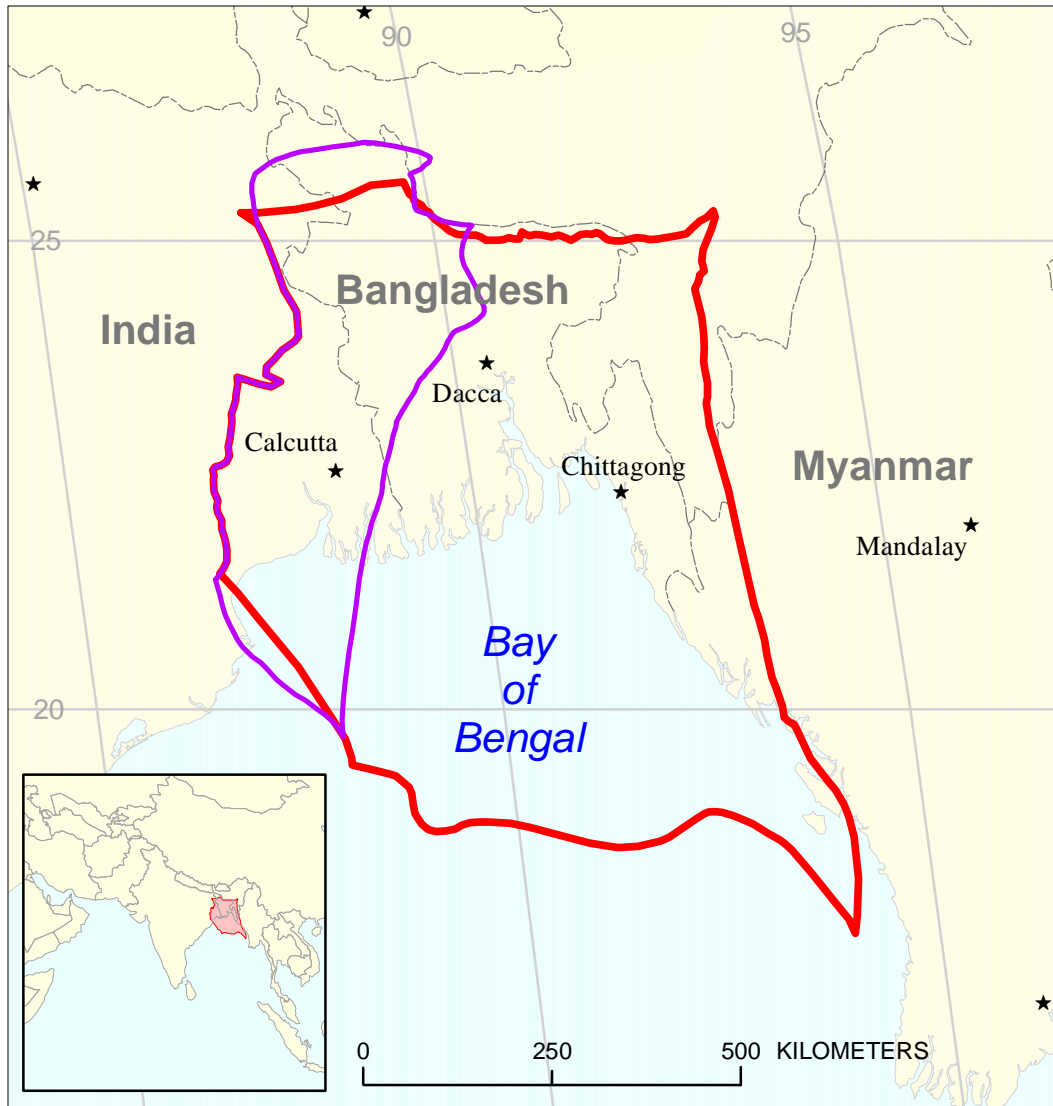




Coalbed Gas Assessment Unit 80470101



-  Coalbed Gas Assessment Unit 80470101
-  Ganges-Brahmaputra Delta Geologic Province 8047

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

GEOLOGIST: R.C. Milici

TOTAL PETROLEUM SYSTEM: Permian Coal (804701)

ASSESSMENT UNIT: Coalbed Gas (80470101)

DESCRIPTION: Assessment unit is in the coal-bearing Permian formations of the Gondwana Supergroup. The coal measures are exposed in grabens and half-grabens in the Damodar Valley coalfields on the northeast side of the delta and seismic evidence has verified their extent into the subsurface beneath western part of the delta. The eastward limit of the Gondwana coal beds is the limit of thinned and extended continental crust somewhere beneath the deltaic sediments.

SOURCE ROCKS: Source rocks are the carbonaceous shales and the coal beds themselves. Four wells that have penetrated the Permian yield organic carbon contents that range from 2.17 to 17.76 percent. Kerogen is most likely Type III derived from coal-forming plant material.

MATURATION: Thermal maturation for the samples from these four wells ranges from a little less than 0.6 Ro to about 1.3 Ro, which is sufficient to generate gas.

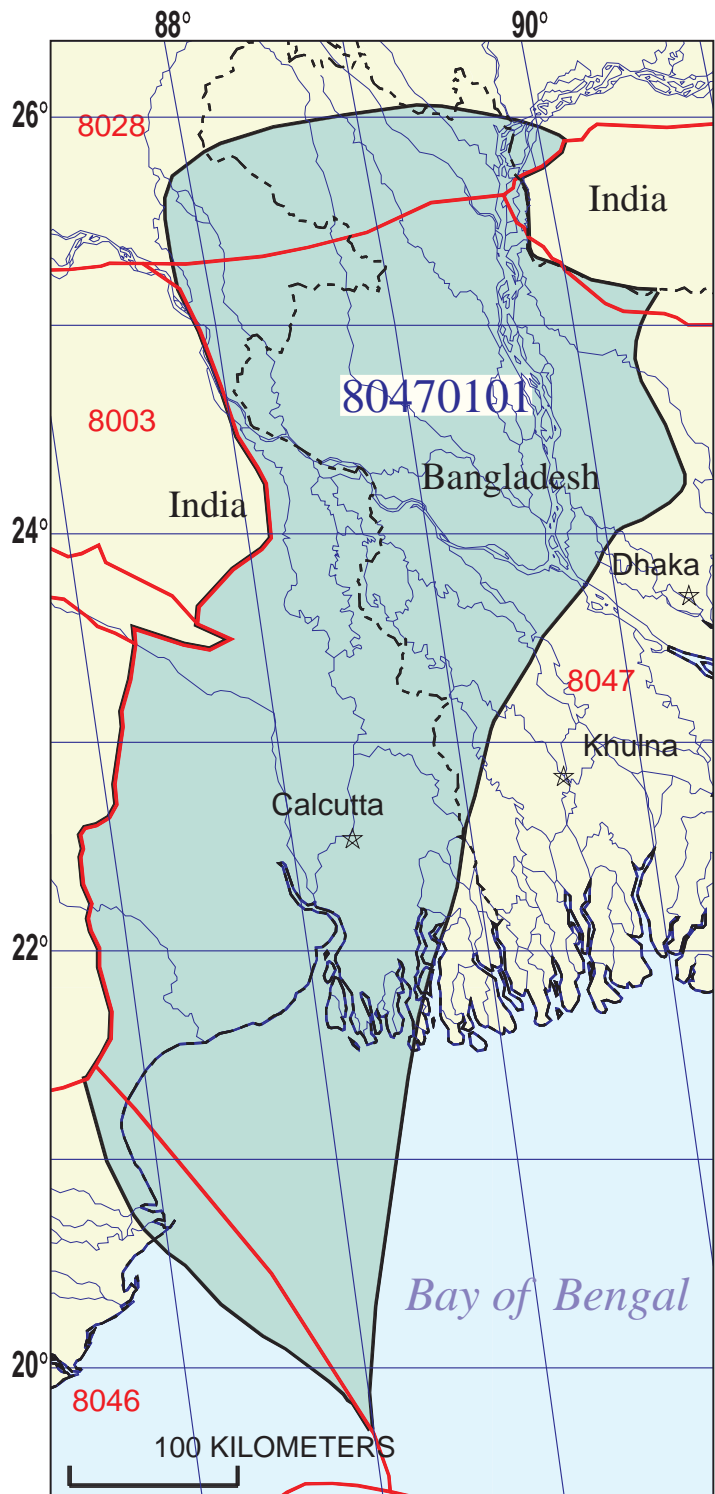
MIGRATION: Migration is generally for short distances within the coal beds or perhaps vertically into sandstones adjacent to the coal beds.

RESERVOIR ROCKS: Reservoir rocks are chiefly the coal beds themselves or porous sandstones nearby.

TRAPS AND SEALS: The accumulation is in continuous “unconventional” reservoirs that would be sealed in the coal by formation waters contained within the coal reservoir or by shale beds within the Permian strata.

REFERENCES:

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



Coalbed Gas Assessment Unit - 80470101

EXPLANATION

- Hydrography
- Shoreline
- 8047 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 80470101 — 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:..... Permian Coal Number: 804701
 Assessment Unit:..... Coalbed Gas Number: 80470101
 * Notes from Assessor Continuous gas accumulation.

CHARACTERISTICS OF ASSESSMENT UNIT

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

What is the minimum field size?..... _____ mmmboe 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:

- | <u>Attribute</u> | <u>Probability of occurrence (0-1.0)</u> |
|--|--|
| 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 _____

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

<u>Oil Fields:</u>	minimum	median	maximum
Gas/oil ratio (cfg/bo).....	_____	_____	_____
NGL/gas ratio (bnl/mmcf).....	_____	_____	_____
 <u>Gas fields:</u>	 minimum	 median	 maximum
Liquids/gas ratio (bnl/mmcf).....	_____	_____	_____
Oil/gas ratio (bo/mmcf).....	_____	_____	_____

SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS

(variations in the properties of undiscovered fields)

<u>Oil Fields:</u>	minimum	median	maximum
API gravity (degrees).....	_____	_____	_____
Sulfur content of oil (%).....	_____	_____	_____
Drilling Depth (m)	_____	_____	_____
Depth (m) of water (if applicable).....	_____	_____	_____
 <u>Gas Fields:</u>	 minimum	 median	 maximum
Inert gas content (%).....	_____	_____	_____
CO ₂ content (%).....	_____	_____	_____
Hydrogen-sulfide content (%).....	_____	_____	_____
Drilling Depth (m).....	_____	_____	_____
Depth (m) of water (if applicable).....	_____	_____	_____

**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

<u>Oil in Oil Fields:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	_____	_____
Portion of volume % that is offshore (0-100%):.....	_____	_____	_____
 <u>Gas in Gas Fields:</u>	 minimum	 median	 maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	_____	_____
Portion of volume % that is offshore (0-100%):.....	_____	_____	_____