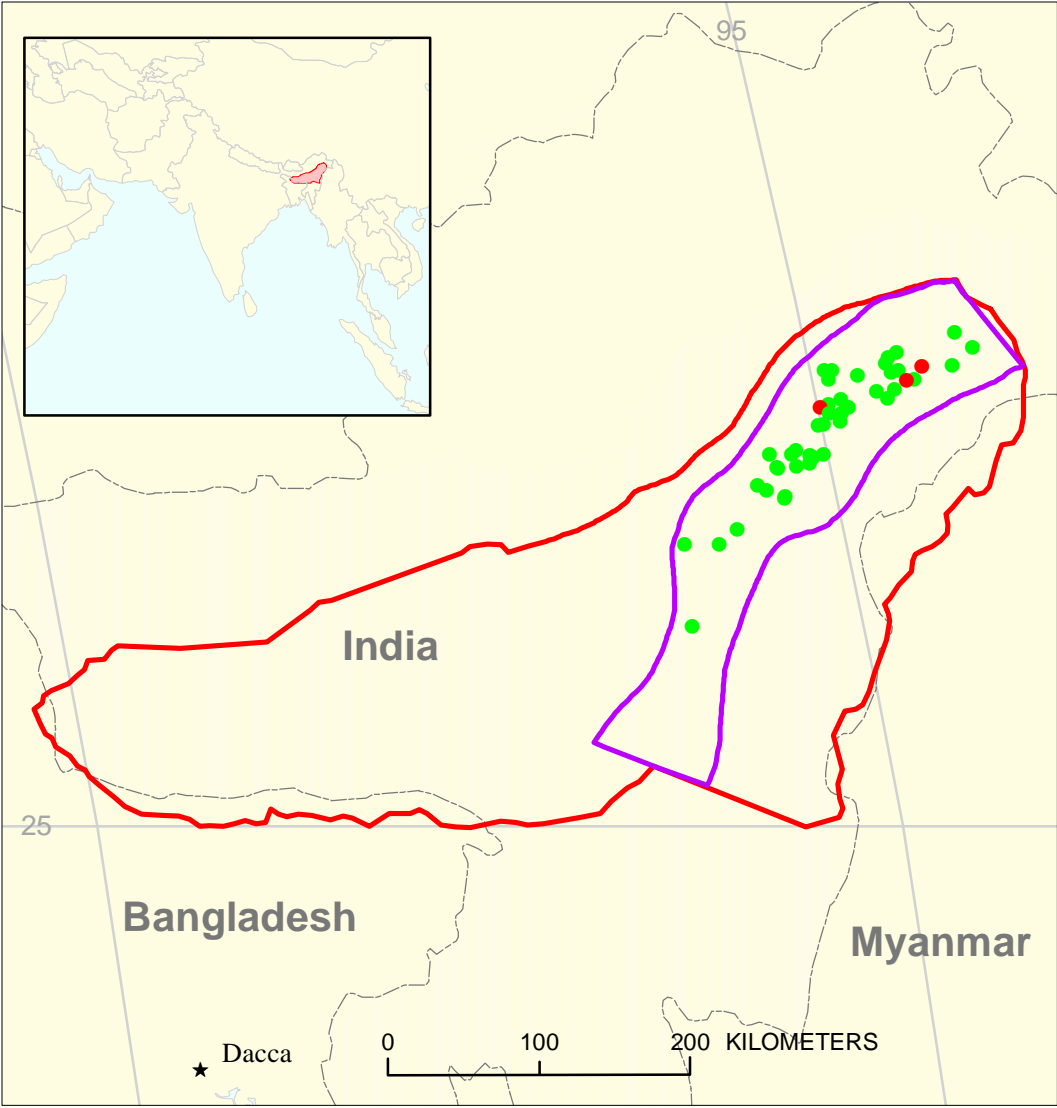




Sylhet-Kopili/Barail-Tipam Composite Assessment Unit 80340101



-  Sylhet-Kopili/Barail-Tipam Composite Assessment Unit 80340101
-  Assam Geologic Province 8034

USGS PROVINCE: Assam (8034) India

GEOLOGIST: C.J. Wandrey

TOTAL PETROLEUM SYSTEM: Sylhet-Kopili/Barail-Tipam Composite (803401)

ASSESSMENT UNIT: Sylhet-Kopili/Barail-Tipam Composite (80340101)

DESCRIPTION: This assessment unit is located in the Assam Province in northeastern most India and includes the Assam shelf south of the Brahmaputra River. The area is primarily a southeast dipping shelf overthrust by the Naga Hills on the southeast and the Himalaya Mountain range to the north. The rocks that comprise this assessment unit are those of the Sylhet-Kopili/Barail-Tipam composite petroleum system. These rocks are part of the Eocene-Oligocene Jaintia Group Sylhet and Kopili Formations, the Oligocene Barail Group, and the Oligocene-Miocene Surma and Tipam Groups. These groups include platform carbonates, shallow marine shales and sandstones, and the sandstones, siltstones, shales, and coals of deltaic and lagoonal facies.

SOURCE ROCKS: Source rocks include the Sylhet and Kopili Formation shales, Barail Group coals and shales, and in the south the Surma Group shales. Total organic carbon content is generally low, averaging from 0.5 to 1.8 percent, but can be as high as 9 percent in the Barail Coal Shales.

MATURATION: Maturities are generally low, from Ro 0.45 to 0.7 percent where sampled. Maturity increases to the southeast near the Naga thrust fault and can be expected to be higher in the subthrust.

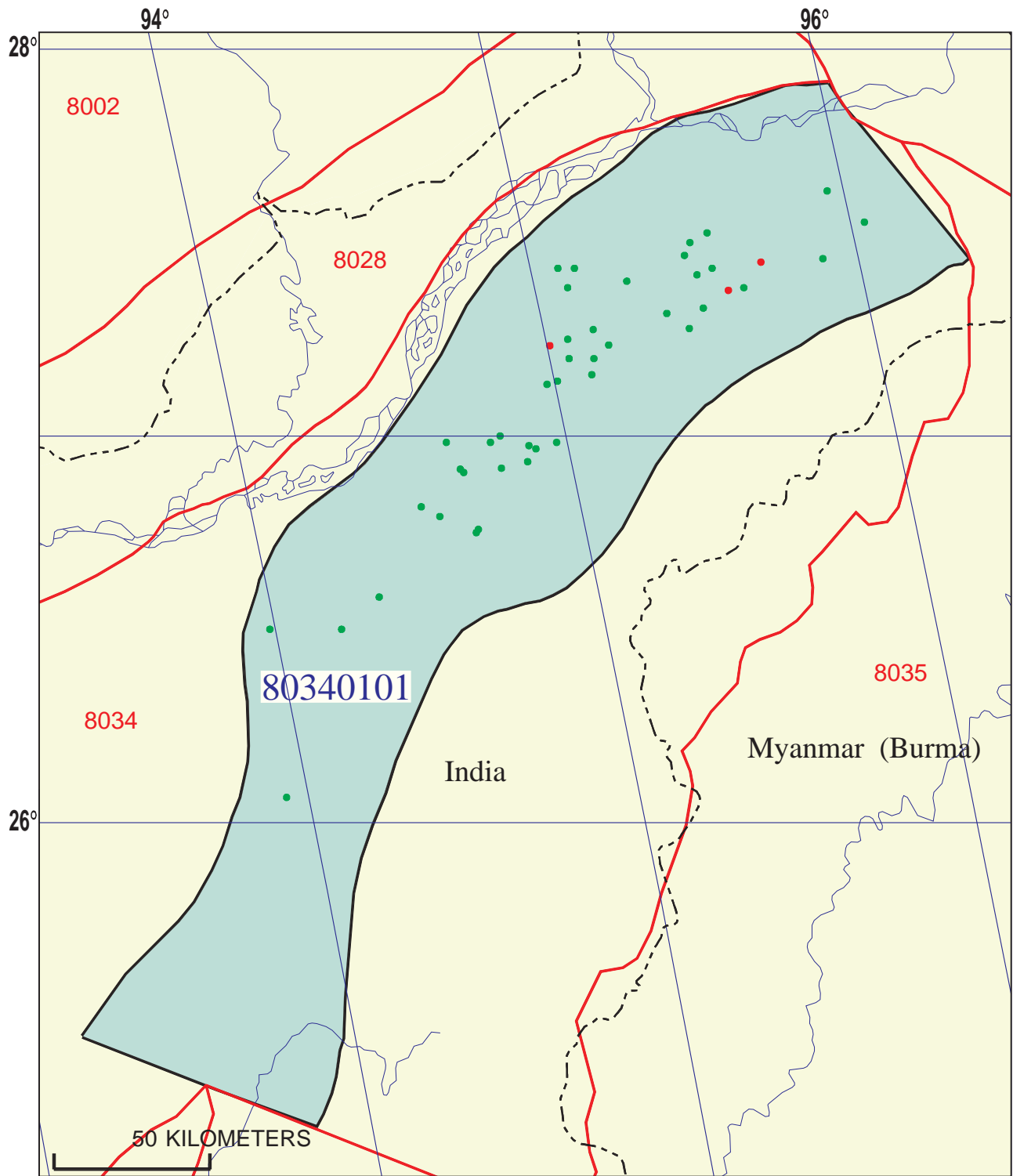
GENERATION AND MIGRATION: Generation began in early Pliocene. Migration is primarily updip to the northwest (< 5 to 15 km) along the northeast-trending slope of the Assam shelf. Vertical migration occurs through reactivated basement rooted faults associated with the plate collisions.

RESERVOIR ROCKS: Carbonates of the Sylhet Formation, interbedded sandstones of the Kopili Formation and sandstones of the Barail, Surma, and Tipam Groups. Permeability ranges from less than 8 mD to as high as 800 mD in the Tipam Group. Porosity ranges from less than 7 percent to 30 percent.

TRAPS AND SEALS: Primarily anticlines and faulted anticlines with a few subtle stratigraphic traps. There is also a likelihood of anticlinal traps in the subthrust. Seals include interbedded Oligocene and Miocene shales and clays and the thick clays of the Pliocene Gurjan Group.

REFERENCES:

Reddy, B.R.P., Basumatary, J.K., Rizvi, S.F.H., and Kumar, Kishan, 1995, Contribution of Tertiary Coals towards Commercial Hydrocarbon Deposits in a Part of Upper Assam Basin, India, Proceedings of the First International Petroleum Conference and Exhibition (PETROTECH95): New Dehli, India, Oil and Natural Gas Corporation Limited, Volume II, p. 279-282.



Sylhet-Kopili/Barail-Tipam Composite Assessment Unit - 80340101

EXPLANATION

- Hydrography
- Shoreline
- 8034 Geologic province code and boundary
- - - Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 80340101 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:..... 3/25/99
 Assessment Geologist:..... C.J. Wandrey
 Region:..... South Asia Number: 8
 Province:..... Assam Number: 8034
 Priority or Boutique..... Priority
 Total Petroleum System:..... Sylhet-Kopili/Barail-Tipam Composite Number: 803401
 Assessment Unit:..... Sylhet-Kopili/Barail-Tipam Composite Number: 80340101
 * Notes from Assessor MMS growth factor. Petroleum systems were combined because the production data is reported by field not by individual reservoir.

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 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: 44 Gas: 2
 Established (>13 fields) X Frontier (1-13 fields) Hypothetical (no fields)

Median size (grown) of discovered oil fields (mmboe):
 1st 3rd 95.2 2nd 3rd 10.2 3rd 3rd 11.3
 Median size (grown) of discovered gas fields (bcfg):
 1st 3rd 579 2nd 3rd 21 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.....	<u>1.0</u>
2. ROCKS: Adequate reservoirs, traps, and seals for an undiscovered field ≥ minimum size.....	<u>1.0</u>
3. TIMING OF GEOLOGIC EVENTS: Favorable timing for an undiscovered field ≥ minimum size	<u>1.0</u>

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) 10 median no. 32 max no. 70
 Gas fields:.....min. no. (>0) 1 median no. 5 max no. 14

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 8 max. size 130
 Gas in gas fields (bcfg):..... min. size 6 median size 20 max. size 700

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).....	<u>1225</u>	<u>2450</u>	<u>3675</u>
NGL/gas ratio (bnl/mmcf).....	<u>30</u>	<u>60</u>	<u>90</u>
<u>Gas fields:</u>	minimum	median	maximum
Liquids/gas ratio (bnl/mmcf).....	<u>22</u>	<u>44</u>	<u>66</u>
Oil/gas ratio (bo/mmcf).....	<u> </u>	<u> </u>	<u> </u>

SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS

(variations in the properties of undiscovered fields)

<u>Oil Fields:</u>	minimum	median	maximum
API gravity (degrees).....	<u>20.8</u>	<u>31.1</u>	<u>38</u>
Sulfur content of oil (%).....	<u>0.5</u>	<u>0.75</u>	<u>1.5</u>
Drilling Depth (m)	<u>1000</u>	<u>2750</u>	<u>6500</u>
Depth (m) of water (if applicable).....	<u> </u>	<u> </u>	<u> </u>
<u>Gas Fields:</u>	minimum	median	maximum
Inert gas content (%).....	<u> </u>	<u> </u>	<u> </u>
CO ₂ content (%).....	<u> </u>	<u> </u>	<u> </u>
Hydrogen-sulfide content (%).....	<u> </u>	<u> </u>	<u> </u>
Drilling Depth (m).....	<u>1000</u>	<u>2750</u>	<u>6500</u>
Depth (m) of water (if applicable).....	<u> </u>	<u> </u>	<u> </u>

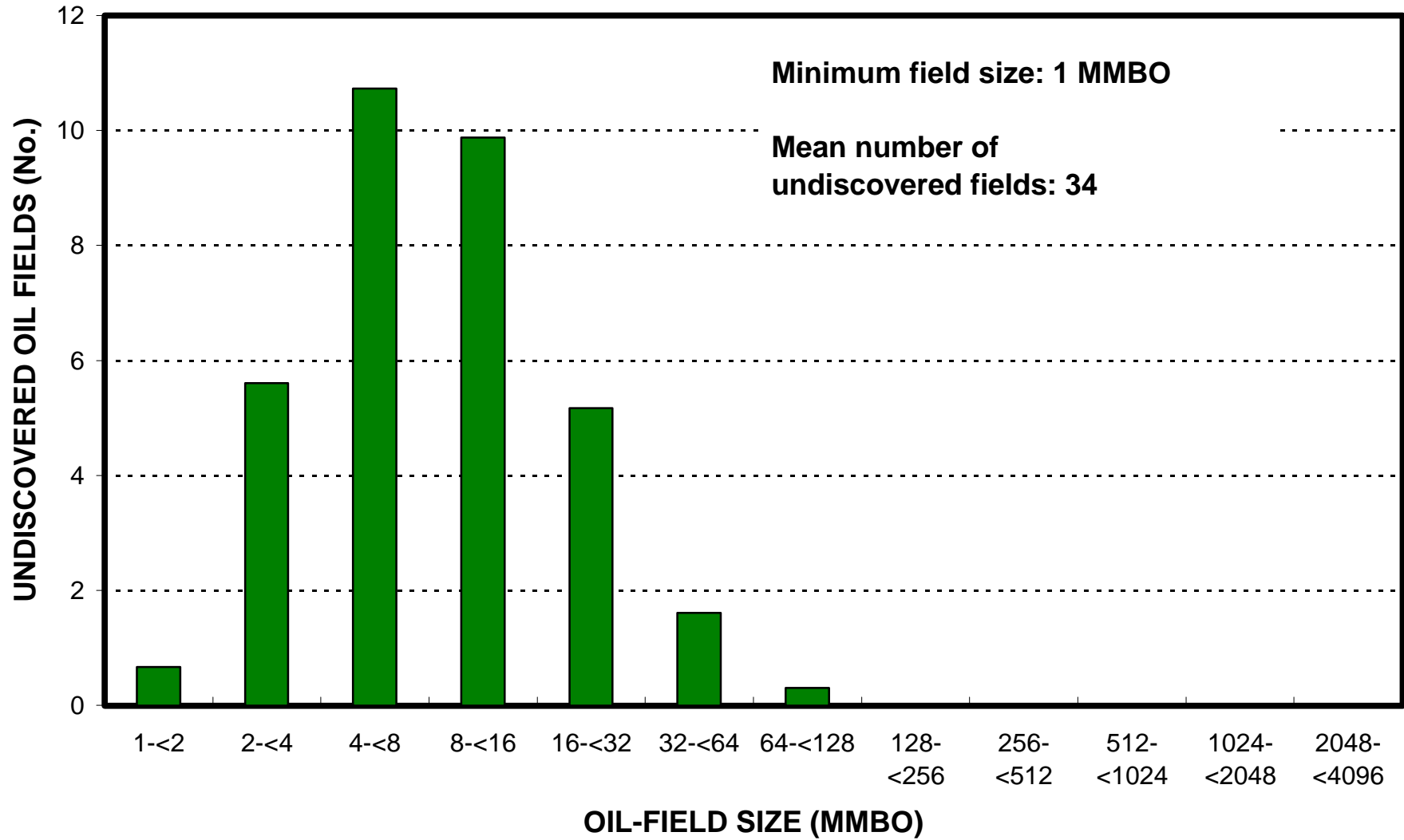
**ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT
 TO COUNTRIES OR OTHER LAND PARCELS** (uncertainty of fixed but unknown values)

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

Sylhet-Kopili/Barail-Tipam Composite, AU 80340101

Undiscovered Field-Size Distribution



Sylhet-Kopili/Barail-Tipam Composite, AU 80340101
Undiscovered Field-Size Distribution

