

Eocene-Miocene Cambay Deltaic Assessment Unit 80430102



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- ▭ Bombay Geologic Province 8043

USGS PROVINCE: Bombay (8043) India

GEOLOGIST: C.J. Wandrey

TOTAL PETROLEUM SYSTEMS: Eocene-Miocene Composite (804301)

ASSESSMENT UNIT: Eocene-Miocene Cambay Deltaic (80430102)

DESCRIPTION: This oil prone assessment unit is located both on and offshore along the west coast of India. The prospective area consists of a graben created during Late Cretaceous failed rifting and a delta extending southwest from the graben toward the Bombay Shelf.

SOURCE ROCKS: The Eocene Cambay and other shales deposited during the Eocene, Oligocene, and early Miocene are the primary source rocks. The terrestrial sourced shales discussed here have TOC values from 1 to 3 percent where sampled.

MATURATION: Vitrinite reflectance (Ro) values are low (0.4 to 0.6 percent) in rocks younger than the Cambay Shale onshore but are as high as 1.1 percent for Oligocene rocks offshore.

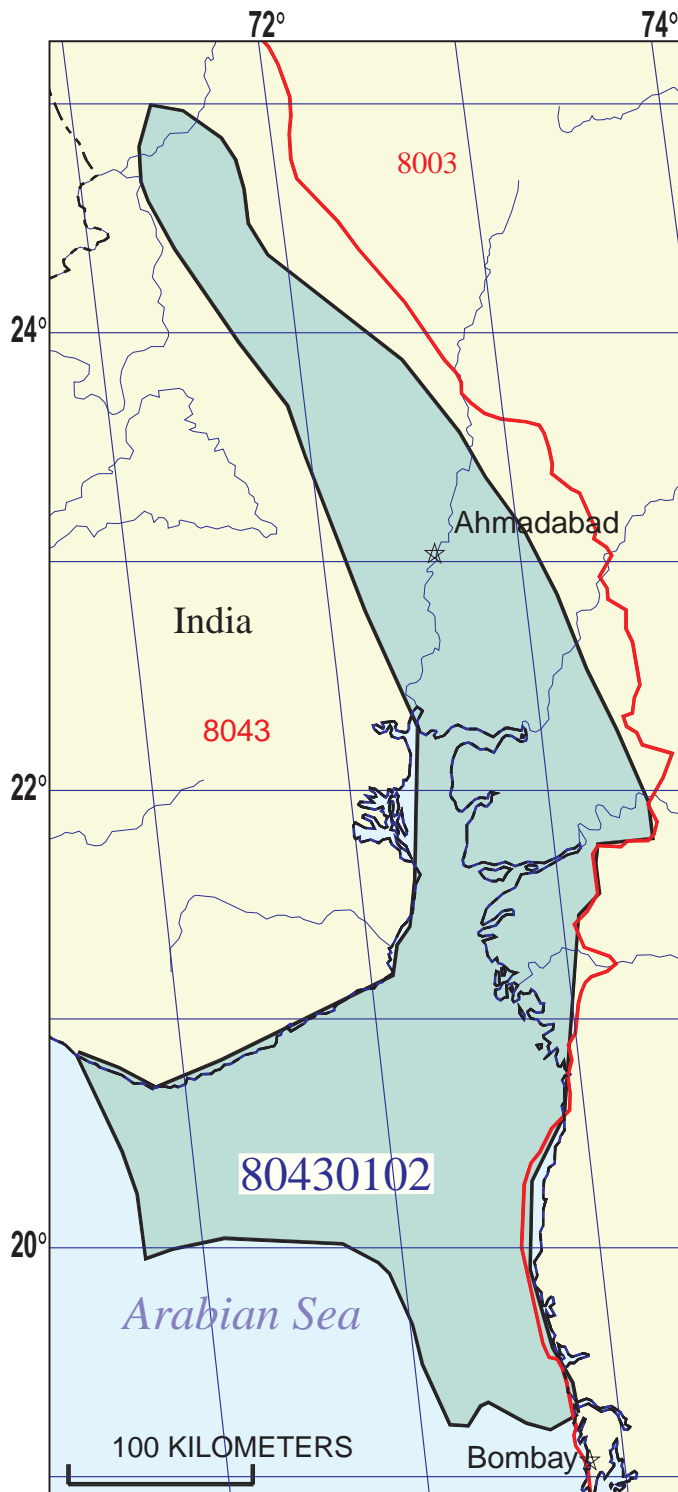
GENERATION AND MIGRATION: Burial history data indicate generation occurred during the Miocene and early Pliocene. Migration is primarily vertical migration along faults and into overlying sandstone reservoirs.

RESERVOIR ROCKS: Oil and gas is produced from Eocene to early Oligocene deltaic sandstone reservoirs, siltstones of the Cambay shale, and lower Miocene sandstones such as the Babaguru.

TRAPS AND SEALS: Traps include faulted anticlines, fault blocks, combination and stratigraphic traps. Stratigraphic traps associated with deltaic and alluvial sequences may hold much of the future potential for this assessment unit. The most likely seals are early Oligocene marine and early and middle Miocene marine to fluvial-deltaic shales.








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- Singh, Dhruvendra, Srivastava, D.K., Gupta, V.P., and Singh, N.P., 1995, Thermal maturation modeling, hydrocarbon generation and hydrocarbon prospect in Gulf of Cambay, Cambay basin, India, *in* Proceedings of the first international petroleum conference and exhibition, Petrotech-95, Volume 2: Delhi, B.R. Publishing, p. 171-182.



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EXPLANATION

-  Hydrography
-  Shoreline
- 8043**  Geologic province code and boundary
-  Country boundary
-  Gas field centerpoint
-  Oil field centerpoint
- 80430102**  Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:..... 8/19/99
 Assessment Geologist:..... C.J. Wandrey
 Region:..... South Asia Number: 8
 Province:..... Bombay Number: 8043
 Priority or Boutique..... Priority
 Total Petroleum System:..... Eocene-Miocene Composite Number: 804301
 Assessment Unit:..... Eocene-Miocene Cambay Deltaic Number: 80430102
 * Notes from Assessor Lower 48-all growth function.

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: 54 Gas: 19
 Established (>13 fields) X Frontier (1-13 fields) Hypothetical (no fields)

Median size (grown) of discovered oil fields (mmboe):
 1st 3rd 25.2 2nd 3rd 8.9 3rd 3rd 5.4
 Median size (grown) of discovered gas fields (bcfg):
 1st 3rd 41.6 2nd 3rd 75.3 3rd 3rd 62.9

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)	7	median no.	35	max no.	95
Gas fields:.....min. no. (>0)	5	median no.	25	max no.	68

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	5	max. size	400
Gas in gas fields (bcfg):.....min. size	6	median size	40	max. size	2000

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).....	1400	2800	4200
NGL/gas ratio (bnl/mmcf).....	30	60	90
 <u>Gas fields:</u>	 minimum	 median	 maximum
Liquids/gas ratio (bnl/mmcf).....	8	16	24
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).....	20	42	52
Sulfur content of oil (%).....	0.01	0.05	0.1
Drilling Depth (m)	500	1350	5000
Depth (m) of water (if applicable).....	0	60	150
 <u>Gas Fields:</u>	 minimum	 median	 maximum
Inert gas content (%).....			
CO ₂ content (%).....			
Hydrogen-sulfide content (%).....			
Drilling Depth (m).....	500	1750	5000
Depth (m) of water (if applicable).....	0	60	150

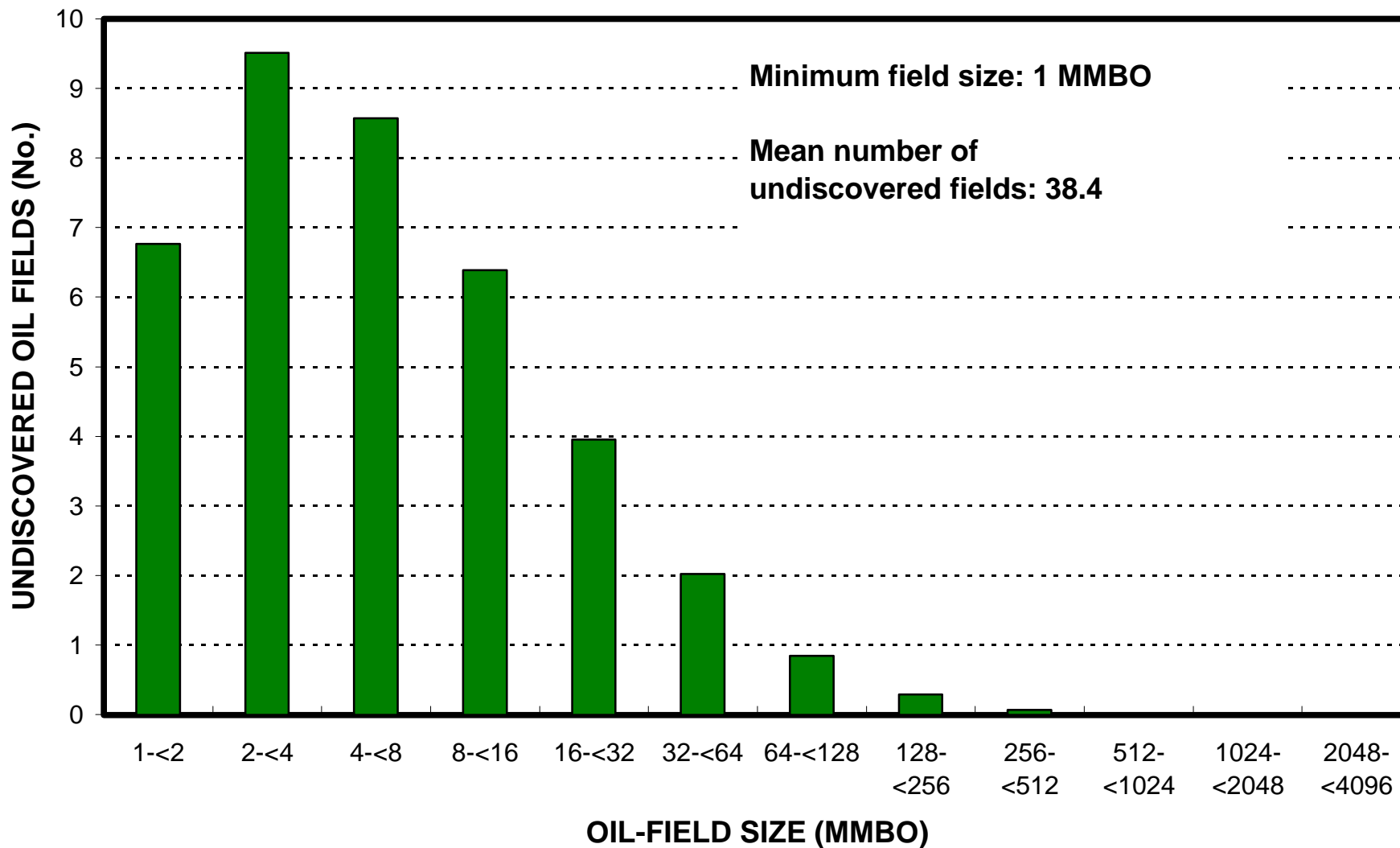
**ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT
 TO COUNTRIES OR OTHER LAND PARCELS** (uncertainty of fixed but unknown values)

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):...	_____	<u>100</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>30</u>	_____
<u>Gas in Gas Fields:</u>	minimum	median	maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	<u>100</u>	_____
Portion of volume % that is offshore (0-100%):.....	_____	<u>65</u>	_____

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Undiscovered Field-Size Distribution



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Undiscovered Field-Size Distribution

