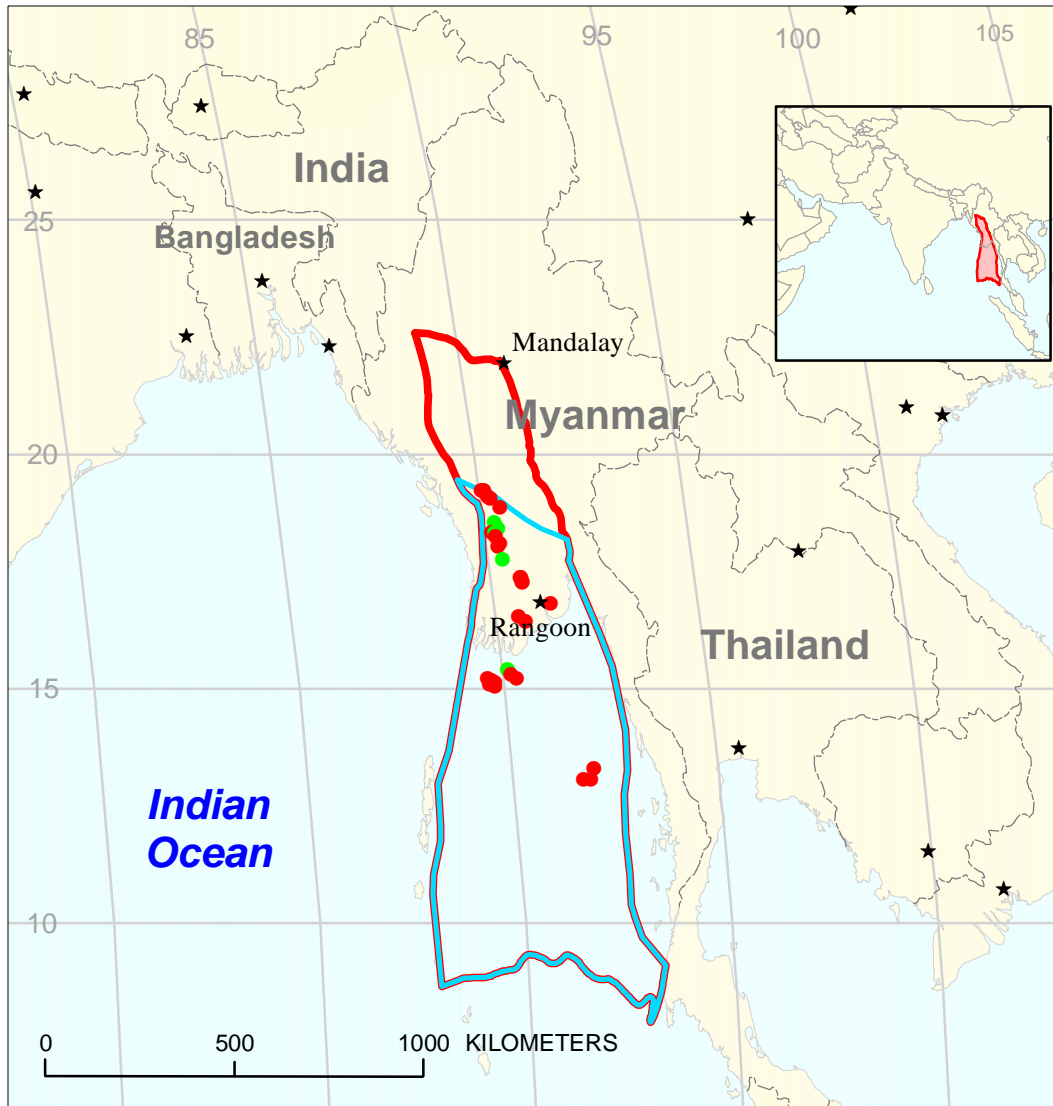


Irrawaddy-Andaman Assessment Unit 80480102



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 Irrawaddy Geologic Province 8048

USGS PROVINCE: Irrawaddy (8048) Myanmar

GEOLOGIST: C.J. Wandrey

TOTAL PETROLEUM SYSTEMS: Eocene-Miocene Composite (804801)

ASSESSMENT UNIT: Irrawaddy-Andaman (80480102)

DESCRIPTION: This assessment unit is located in the southern central basin of Myanmar, the Irrawaddy delta and Andaman basin. It is a gas prone on and offshore basin developed sub-parallel to the converging continental and marine plate boundaries. The rocks that comprise this assessment unit include Eocene sandstones and shales and the Oligocene-Miocene Pegu Group, which exceeds 6500 m in places. This group is made up of interbedded, shallow marine shales, limestones, and sandstones, and the sandstones, shales, and coals of deltaic and lagoonal facies.

SOURCE ROCKS: Source rocks include the Lower Oligocene shales of the Yaw, Shwezetaung and Okhmintaung Formations and shales of the Pegu group. Total organic carbon content is generally low (<1.75) where sampled. Organic material is primarily terrestrially derived Type III kerogen.

MATURATION: Maturities are generally low, from Ro 0.2 to 1.5 where sampled in the Gulf of Martaban. Maturities are likely higher in areas of the basin where burial depths are greater.

GENERATION AND MIGRATION: Significant generation commenced during the Pliocene. Migration is primarily vertical through fault and fracture systems associated with the plate collision. These fault systems have been periodically reactivated through the present. Short updip migration along the flanks of the basin is also likely.

RESERVOIR ROCKS: Primary reservoir rocks are interbedded sandstones of the Pegu Group. Permeability ranges from less than 32 mD to as high as 3200 mD. Porosity ranges from less than 20 percent to 30 percent. Reservoir quality is fracture enhanced in many cases.

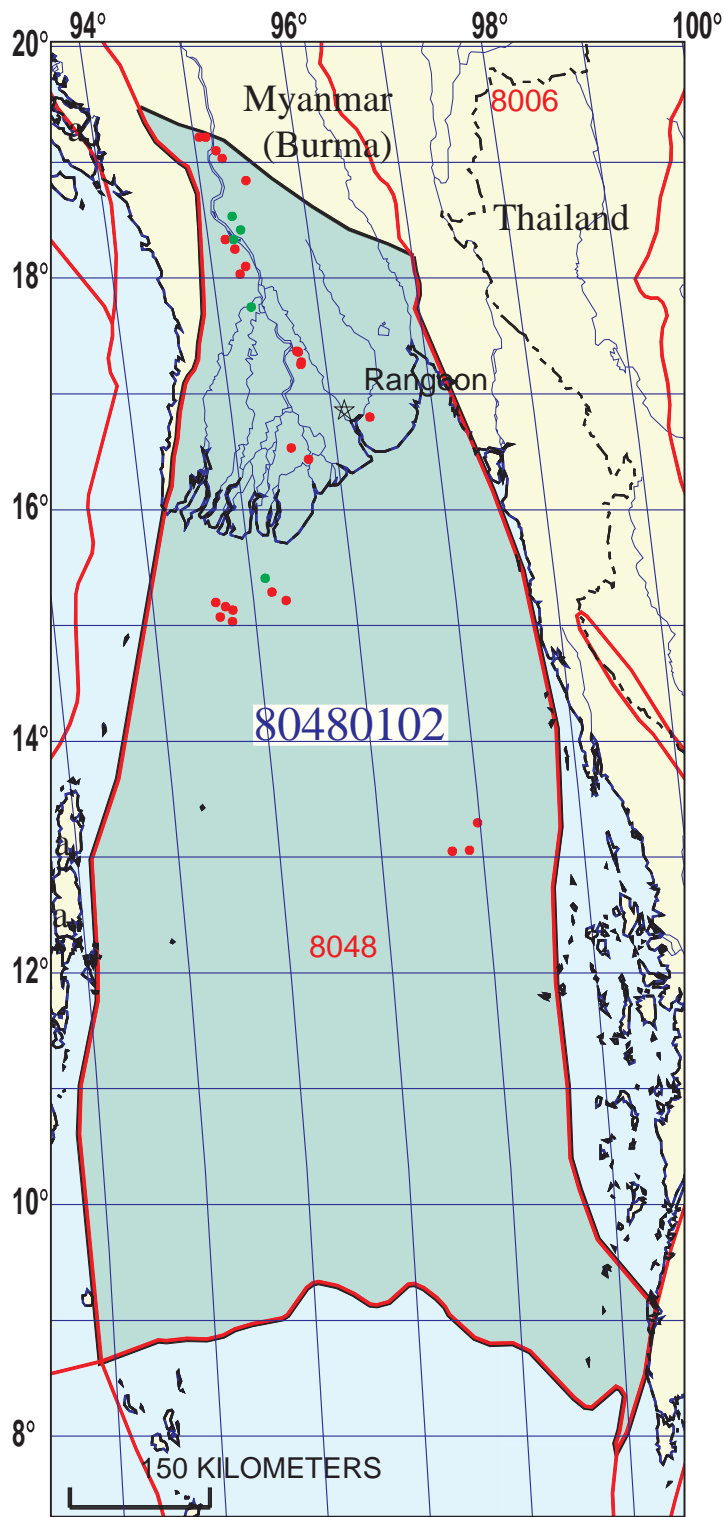
TRAPS AND SEALS: Traps include anticlines, faulted anticlines, and a few stratigraphic traps. Seals include interbedded Oligocene and Miocene shales and clays, and the thick clays of the Upper Miocene-Pliocene Irrawaddy Group. While few stratigraphic traps have been discovered and there is potential for more discoveries in the deltaic sequences. There is also potential for growth fault related traps and in the offshore fans.

REFERENCES:

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Curray, J.R., Moore, D.G., Lawver, L.A., Emmel, F.J., Raitt, R.W., Henry, M., and Kieckhefer, R., 1979, Tectonics of the Andaman Sea and Burma, *in* Watkins, J. S., Montadert, L. and Dickerson, P. W., eds., Geological and geophysical investigations of continental margins: American Association of Petroleum Geologists Memoir 29, p. 189-198.

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Irrawaddy-Andaman Assessment Unit - 80480102

EXPLANATION

- Hydrography
- Shoreline
- 8048 — Geologic province code and boundary
- - - Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 80480102 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:..... 8/18/99
 Assessment Geologist:..... C.J. Wandrey
 Region:..... South Asia Number: 8
 Province:..... Irrawaddy Number: 8048
 Priority or Boutique:..... Boutique
 Total Petroleum System:..... Eocene to Miocene Composite Number: 804801
 Assessment Unit:..... Irrawaddy-Andaman Number: 80480102
 * 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):... Gas

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: 4 Gas: 23
 Established (>13 fields) X Frontier (1-13 fields) Hypothetical (no fields)

Median size (grown) of discovered oil fields (mmboe):
 1st 3rd 28.5 2nd 3rd 24.6 3rd 3rd
 Median size (grown) of discovered gas fields (bcfg):
 1st 3rd 70 2nd 3rd 23 3rd 3rd 56

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)	<u>2</u>	median no.	<u>15</u>	max no.	<u>45</u>
Gas fields:.....min. no. (>0)	<u>20</u>	median no.	<u>90</u>	max no.	<u>250</u>

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	<u>1</u>	median size	<u>6</u>	max. size	<u>300</u>
Gas in gas fields (bcfg):.....min. size	<u>6</u>	median size	<u>40</u>	max. size	<u>10000</u>

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).....	3750	7500	11250
NGL/gas ratio (bnl/mmcf).....	30	60	90
 <u>Gas fields:</u>	 minimum	 median	 maximum
Liquids/gas ratio (bnl/mmcf).....	20	35	50
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).....	17	34	51
Sulfur content of oil (%).....	0.01	0.03	0.23
Drilling Depth (m)	400	1200	3500
Depth (m) of water (if applicable).....	0	100	500
 <u>Gas Fields:</u>	 minimum	 median	 maximum
Inert gas content (%).....			
CO ₂ content (%).....			
Hydrogen-sulfide content (%).....			
Drilling Depth (m).....	400	2500	5000
Depth (m) of water (if applicable).....	0	100	500

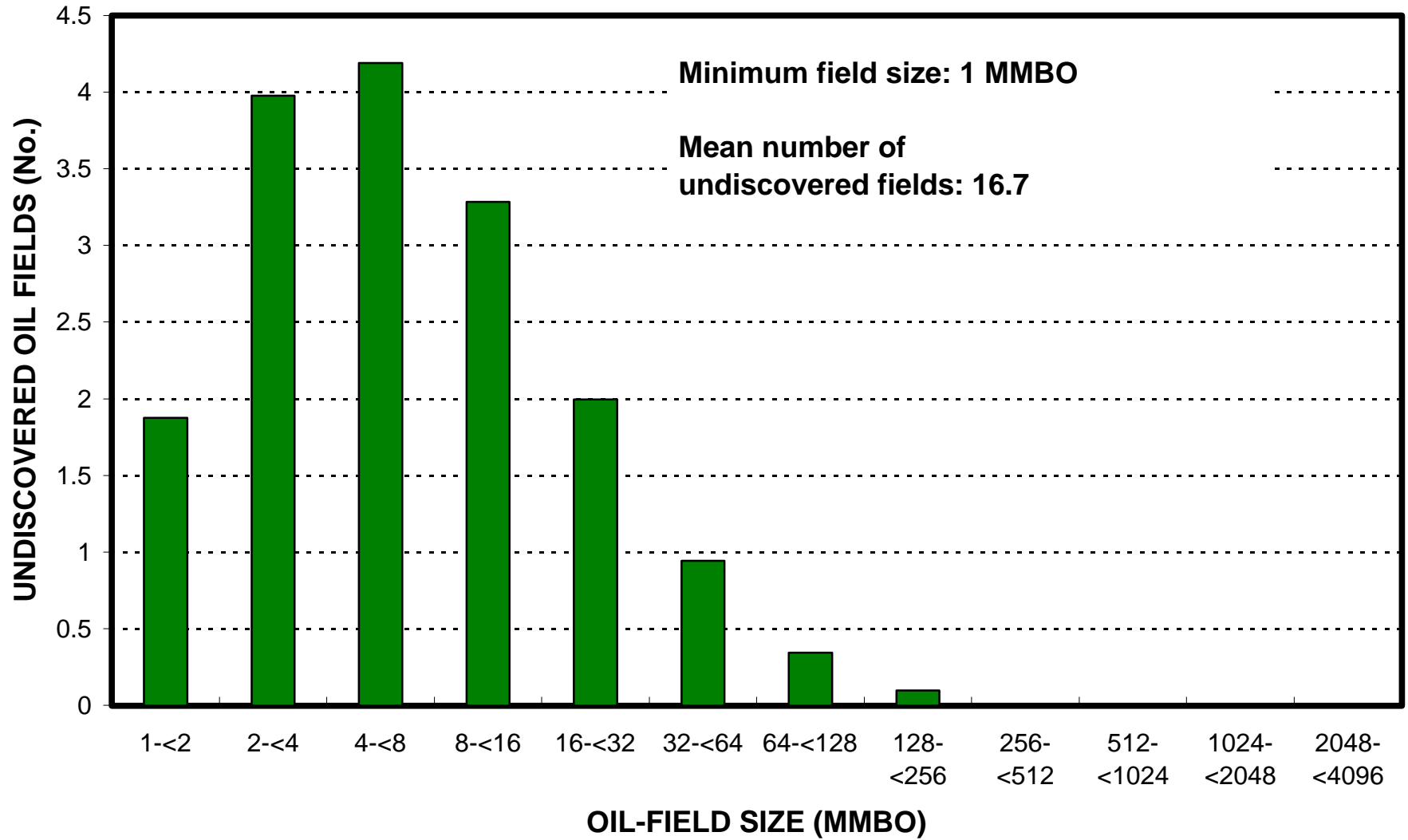
**ALLOCATION OF UNDISCOVERED RESOURCES IN THE ASSESSMENT UNIT
TO COUNTRIES OR OTHER LAND PARCELS** (uncertainty of fixed but unknown values)

1. Myanmar 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>60</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>80</u>	_____

Irrawaddy-Andaman, AU 80480102

Undiscovered Field-Size Distribution



Irrawaddy-Andaman, AU 80480102

Undiscovered Field-Size Distribution

