Ardjuna
Assessment Unit 38240201

110

Java
Sea

Sumatra

5

Jakarta ★

Indian
Ocean

Bandung ★

Java

Semarang ★

Indonesia

0   100   200   300   KILOMETERS

Ardjuna Assessment Unit 38240201

Northwest Java Basin Geologic Province 3824

USGS PROVINCE: Northwest Java Basin (3824)   **GEOLOGIST:** M.G. Bishop

TOTAL PETROLEUM SYSTEM: Jatibarang/Talang Akar-Oligocene/Miocene (382402)

ASSESSMENT UNIT: Ardjuna (38240201)

DESCRIPTION: Onshore and offshore oil and gas discoveries in Oligocene through Miocene sandstone and carbonate reservoirs, sourced by Oligocene to Early Miocene lacustrine shales and coals.

SOURCE ROCKS: Talang Akar lower delta-plain coals deposited in and across a series of rift half grabens; TOC 60 to 70 wt. %, HI 260 to 420. Possible contribution from Jatibarang lacustrine shales.

MATURATION: The onset of hydrocarbon maturity was about 11 Ma in Middle Miocene time and continues to the present.

MIGRATION: Lateral, up-dip migration out of the grabens and vertical along faults into overlying sandstones and carbonates and later into Late Miocene carbonates.

RESERVOIR ROCKS: The Miocene Main and Massive Formations consist of sandstones and limestones where clastic source was from the north and marine transgressions were from the south. The best reservoir quality clastic rocks are fluvial/deltaic, shoreline, and reworked, transgressive sandstones separated by thick, tuffaceous marine shale. Talang Akar sandstones and Batu Raja carbonates hold the remaining reserves. Weathered granite basement is a minor reservoir rock.

TRAPS AND SEALS: The majority of the discoveries have been in anticlines with intraformational seals or sealed by regional Miocene Gumai Shale. Carbonate build-ups and reefs sealed by transgressive shales, fault-block traps and stratigraphic traps.

REFERENCES:
Noble, R.A., Pratomo, K.H., Nugrahanto, K., Ibrahim, A.M.T., Prasetya, I., Mujahidin, N., Wu, C.H., and Howes, J.V.C., 1997, Petroleum systems of Northwest Java,, Indonesia, *in* Howes, J.V.C., and Noble, R.A., eds., Proceedings of an International Conference on Petroleum Systems of SE Asia and Australasia: Indonesian Petroleum Association, p. 585-600.
Nugrahanto, K., and Noble, R.A., 1997, Structural control on source rock development and thermal maturity in the Ardjuna Basin, offshore northwest Java, Indonesia, *in* Howes, J.V.C., and Noble, R.A., eds., Proceedings of an International Conference on Petroleum Systems of SE Asia and Australasia: Indonesian Petroleum Association, p. 631-653.
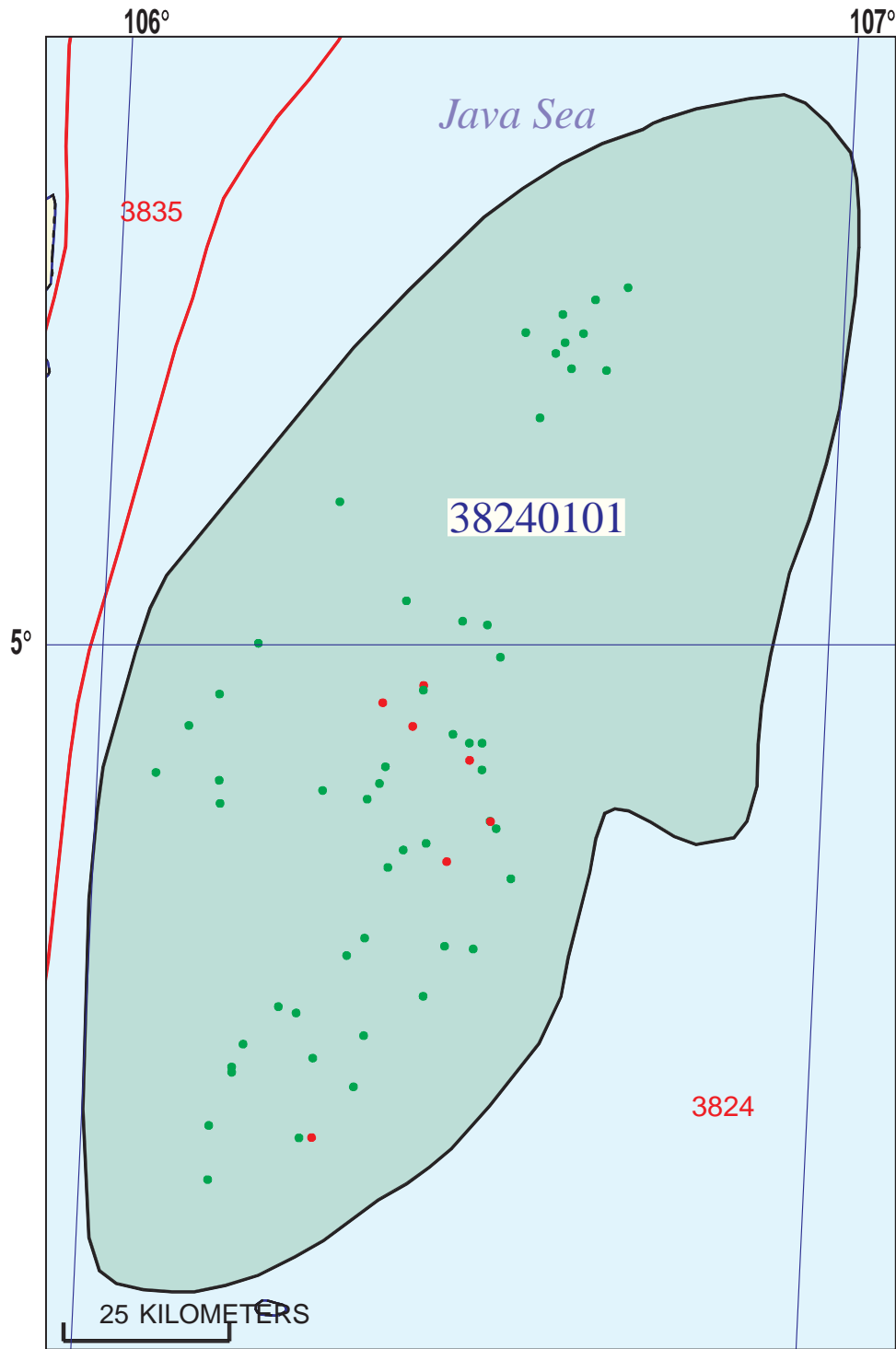
**Sunda/Asri
Assessment Unit - 38240101**

EXPLANATION

— Hydrography

— Shoreline

3824 — Geologic province code and boundary

--- Country boundary

• Gas field centerpoint

• Oil field centerpoint

38240101 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:…………………………. 5/26/99
Assessment Geologist:…….. R.T. Ryder
Region:………………………. Asia Pacific   Number: 3
Province:……………………… Northwest Java Basin   Number: 3824
Priority or Boutique…………. Priority
Total Petroleum System:…… Jatibarang/Talang Akar-Oligocene/Miocene   Number: 382402
Assessment Unit:…………… Ardjuna   Number: 38240201
* Notes from Assessor   MMS 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: __78__   Gas: __47__
          Established (>13 fields)   __X__   Frontier (1-13 fields) _____   Hypothetical (no fields) _____

Median size (grown) of discovered oil fields (mmboe):
          1st 3rd __17__   2nd 3rd __7__   3rd 3rd __10__
Median size (grown) of discovered gas fields (bcfg):
          1st 3rd __72__   2nd 3rd __68__   3rd 3rd __139__

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)   __10__   median no.   __25__   max no.   __50__
Gas fields:…………………………….min. no. (>0)   __15__   median no.   __50__   max no.   __100__

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   __4__   max. size   __150__
Gas in gas fields (bcfg):……………………min. size   __6__   median size   __60__   max. size   __2500__

AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS
(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)…………………….....………	1000	2000	3000
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)………………….……………	19	36	55
Sulfur content of oil (%)……………………....…...	0.03	0.1	0.6
Drilling Depth (m) …………….....………………...	500	1500	3500
Depth (m) of water (if applicable)……………..…..	0	40	400

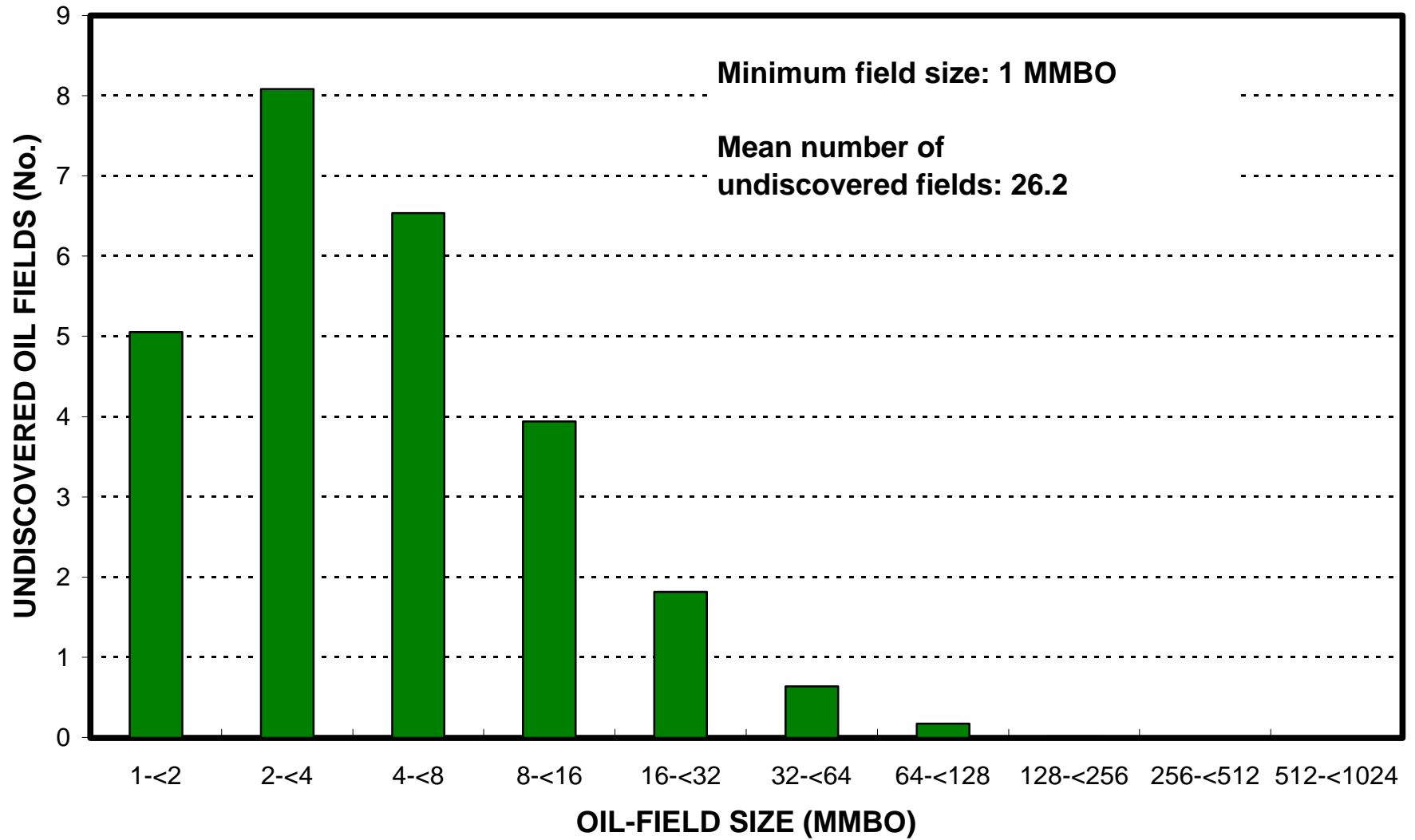| Gas Fields:	minimum	median	maximum
Inert gas content (%)………………….......…....……	0.2	1.3	12.1
CO_2 content (%)……………….……………......……	0.2	3.5	58
Hydrogen-sulfide content (%)………………..…..….	0	0	0
Drilling Depth (m)……………………………………	500	2000	3000
Depth (m) of water (if applicable)………………….	0	40	400

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

1. Indonesia   represents   100   areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):………....…			
Volume % in parcel (areal % x richness factor):…		100	
Portion of volume % that is offshore (0-100%)……		60	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):………..……			
Volume % in parcel (areal % x richness factor):…		100	
Portion of volume % that is offshore (0-100%)……		60	

Ardjuna, AU 38240201
Undiscovered Field-Size Distribution

Minimum field size: 1 MMBO

Mean number of undiscovered fields: 26.2

UNDISCOVERED OIL FIELDS (No.)

OIL-FIELD SIZE (MMBO)

Ardjuna, AU 38240201
Undiscovered Field-Size Distribution

Minimum field size: 6 BCFG

Mean number of
undiscovered fields: 52.1

UNDISCOVERED GAS FIELDS (No.)

GAS-FIELD SIZE (BCFG)