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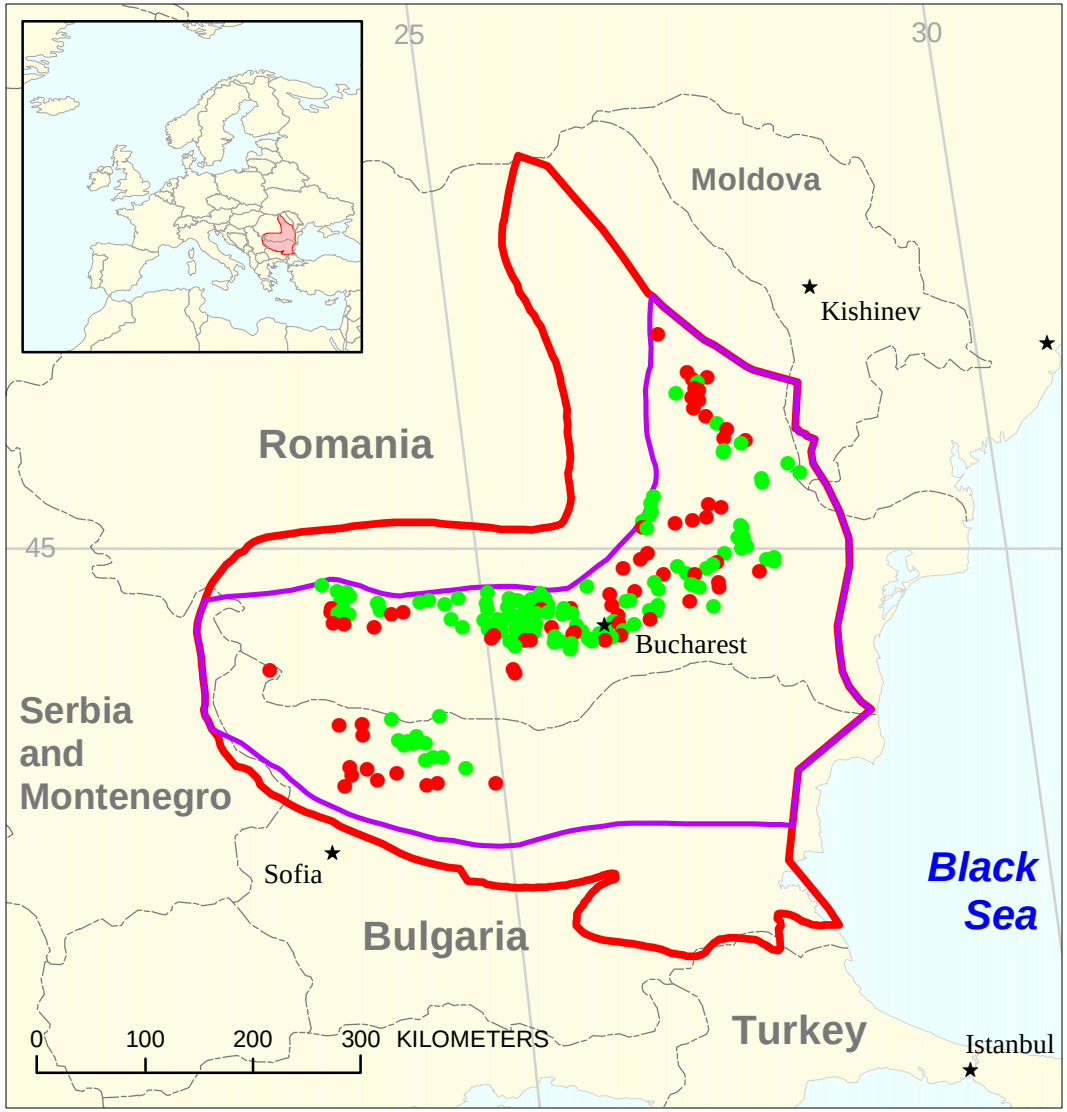
Moesian Platform
Assessment Unit 40610101



Moesian Platform Assessment Unit 40610101

Carpathian-Balkanian Basin Geologic Province 4061

USGS PROVINCE: Carpathian-Balkanian Basin (4061) **GEOLOGIST:** M.J. Pawlewicz

TOTAL PETROLEUM SYSTEM: Moesian Platform Composite (406101)

ASSESSMENT UNIT: Moesian Platform (40610101)

DESCRIPTION: This unit is comprised of the Mesozoic and Cenozoic rocks in the Moesian Platform region of northern Bulgaria and southern Romania, including the Birlad Depression in the northeast platform area.

SOURCE ROCKS: In Romania, Mid-Devonian, Middle Jurassic, Albian and Neogene stratigraphic intervals contain potential source rocks. The lithologies are both carbonates and clastics (bituminous clays). In Bulgaria, the Middle and Upper Jurassic shales are considered the most probable sources for generation of the major part of the oil and gas. In the Birlad Depression area, Neogene pelitic intercalations are considered to have the best potential for source rocks.

MATURATION: With the nonspecific nature of the naming of the source rocks, the maturation is indefinite. The earliest maturation probably occurred by Cretaceous time for part of the Jurassic rocks and Miocene time for the Albian age source rocks. For the Birlad region, the maturation may be at its maximum.

MIGRATION: Short vertical distance into structural traps and lateral distances into stratigraphic traps.

RESERVOIR ROCKS: Bulgaria has Tertiary porous carbonate reservoirs. In Romania, Neogene sands and sandstones with average porosity 15 to 25 percent, and permeability from 5 to 400 mD.

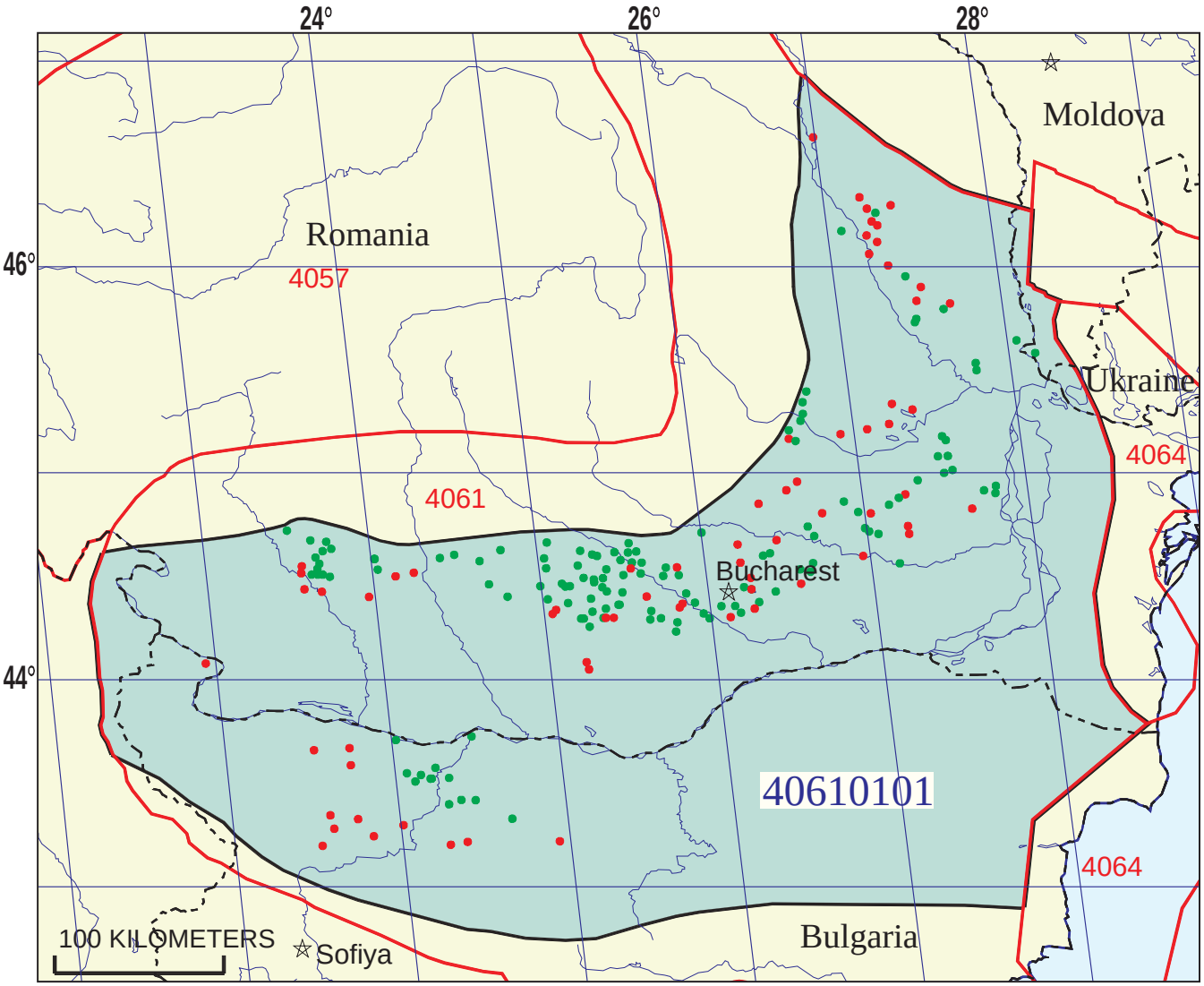
TRAPS AND SEALS: For Romania and Bulgaria they are normal and faulted anticlines, faulted monoclines, pinch-outs, unconformities and paleoreliefs. Average size of structures range from1 to 4 km^2 in the Birlad region, and 2 to 15 km^2 in the Platform region.

REFERENCES:

Ionescu, Nelu, 1993, Exploration history and hydrocarbon prospects in Romania, *in* Popescu, B.M., ed., Hydrocarbons of Eastern Central Europe–Habitat, exploration and production history: Berlin, Springer-Verlag, p. 217-248.

Dicea, O., 1996, Tectonic setting and hydrocarbon habitat of the Romanian external Carpathians, *in* Zeigler, P.A., and Horvath, F., eds., Peri-Tethys Memoir2–Structure and prospects of alpine basins and forelands: Paris, Mem. Mus. Natn. Hist. Nat., p 403-425.

Vuchev, V. and others, 1994, Geologic structure, petroleum exploration development and hydrocarbon potential of Bulgaria, *in* Popescu, B., ed. Hydrocarbons of Eastern Central Europe–Habitat, exploration and production history: Berlin, Springer-Verlag, p. 29-69.



Moesian Platform
Assessment Unit - 40610101

EXPLANATION

- Hydrography
- Shoreline
- 4061 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 40610101 — Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……..	5/20/99		
Assessment Geologist:……..	M.J. Pawlewicz		
Region:……..	Europe	Number:	4
Province:……..	Carpathian-Balkanian Basin	Number:	4061
Priority or Boutique……	Priority		
Total Petroleum System:……	Moesian Platform Composite	Number:	406101
Assessment Unit:……	Moesian Platform	Number:	40610101
* Notes from Assessor	Lower 48 growth factor.		

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: 95 Gas: 24
Established (>13 fields) X Frontier (1-13 fields) _____ Hypothetical (no fields) _____

Median size (grown) of discovered oil fields (mmboe):
1st 3rd 20 2nd 3rd 7 3rd 3rd 2
Median size (grown) of discovered gas fields (bcfg):
1st 3rd 135 2nd 3rd 26 3rd 3rd 25

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.	35	max no.	80
Gas fields:……min. no. (>0)	3	median no.	12	max no.	30

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	3	max. size	60
Gas in gas fields (bcfg):……min. size	6	median size	18	max. size	360

Assessment Unit (name, no.)
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AVERAGE RATIOS FOR UNDISCOVERED FIELDS, TO ASSESS COPRODUCTS

(uncertainty of fixed but unknown values)

Oil Fields:	minimum	median	maximum
Gas/oil ratio (cfg/bo)……	600	1200	1800
NGL/gas ratio (bngl/mmcfg)……	15	30	45

Gas fields:	minimum	median	maximum
Liquids/gas ratio (bngl/mmcfg)……	20	40	60
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)……			
Sulfur content of oil (%)……			
Drilling Depth (m) ……	500	2000	6000
Depth (m) of water (if applicable)……			

Gas Fields:	minimum	median	maximum
Inert gas content (%)……			
CO_2 content (%)……			
Hydrogen-sulfide content (%)……			
Drilling Depth (m)……	300	2500	6000
Depth (m) of water (if applicable)……			

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

1. Romania represents 82 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		95	
Portion of volume % that is offshore (0-100%)……		0	

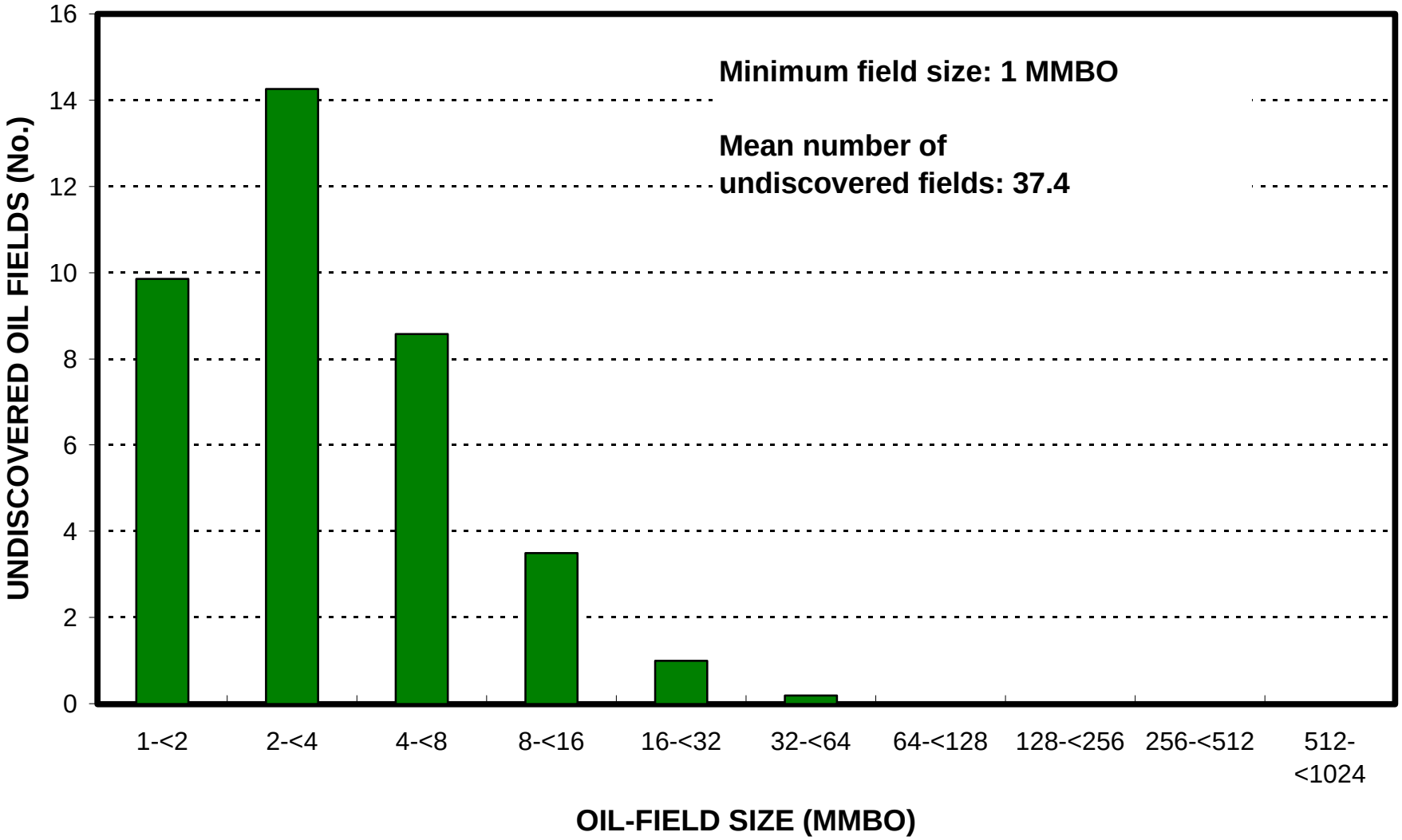
Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		95	
Portion of volume % that is offshore (0-100%)……		0	

2. Bulgaria represents 18 areal % of the total assessment unit

Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		5	
Portion of volume % that is offshore (0-100%)……		0	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):……			
Volume % in parcel (areal % x richness factor):…		5	
Portion of volume % that is offshore (0-100%)……		0	

Moesian Platform, AU 40610101
Undiscovered Field-Size Distribution



Moesian Platform, AU 40610101
Undiscovered Field-Size Distribution