Hungarian Paleogene Basin
Assessment Unit 40480601

Poland

Czech Republic

Krakow ★

Lvov ★

Brno ★

Slovakia

Ukraine

Vienna ★

Bratislava ★

Austria

Budapest ★

Hungary

Romania

Slovenia

Zagreb ★

Croatia

Belgrade ★

Bosnia and Herzegovina

Serbia and Montenegro

0   100   200   300   KILOMETERS

☐ Hungarian Paleogene Basin Assessment Unit 40480601
☐ Pannonian Basin Geologic Province 4048

USGS PROVINCE: Pannonian Basin (4048)   **GEOLOGIST:** G.L. Dolton

TOTAL PETROLEUM SYSTEM: Hungarian Paleogene (404806)

ASSESSMENT UNIT: Hungarian Paleogene Basin (40480601)

DESCRIPTION: This assessment unit deals with traps occurring in Paleogene rocks of the epicontinental Hungarian Paleogene basin, including a suite of structural, stratigraphic and combination types in sequences, which were strongly influenced by syndepositional tectonic controls, and hypothesized to have been charged by associated Paleogene source rocks. Included are underlying basement reservoirs, similarly charged. Paleogene rocks of the Slovenian Paleogene basin, which are presently mostly in outcrop, are not included.

SOURCE ROCKS: The early Oligocene euxinic marine Tard Clay Formation and middle Oligocene Kiscell Clay have are principal sources for oil and gas. The Tard and Kiscell anoxic clay formations have an average TOC content of 0.5 to 1.0 percent, with local concentrations of 0.8 to 1.8 percent. Their kerogen is mostly Types I-II but Type III kerogen is present in the upper part of the sequence.

MATURATION: Given the high thermal gradient in the area and presence of several small oil and gas fields, Paleogene source rocks are considered to be in the oil window at depth. Maturation is hypothesized to have occurred in late Oligocene.

MIGRATION: Timing of migration appears to be favorable with reference to trap formation; however, preservation of hydrocarbons in traps may be a significant problem.

RESERVOIR ROCKS: Reservoirs include Paleogene sandstones, limestones, and marls. Principal reservoirs are the Eocene Szöc Limestone and sandstones of the Oligocene Kiscell Formation, some of which are tuffaceous. Producing reservoirs also include Triassic limestones of the basement.

TRAPS AND SEALS: Structural traps include fault blocks and other structures related to basement tectonics. Unconformities and stratigraphic traps such as sandstone pinchouts are anticipated. Traps are expected to include growth faults and roll-overs, pinchouts in shallow water and turbidite sandstones and conglomerates, fault closures, anticlinal features, and traps associated with strike-slip zones. Locally, traps in the Mesozoic basement beneath the Tertiary unconformity offer potential. Seals are provided by fine-grained rocks in the Mesozoic sequence.

REFERENCES:

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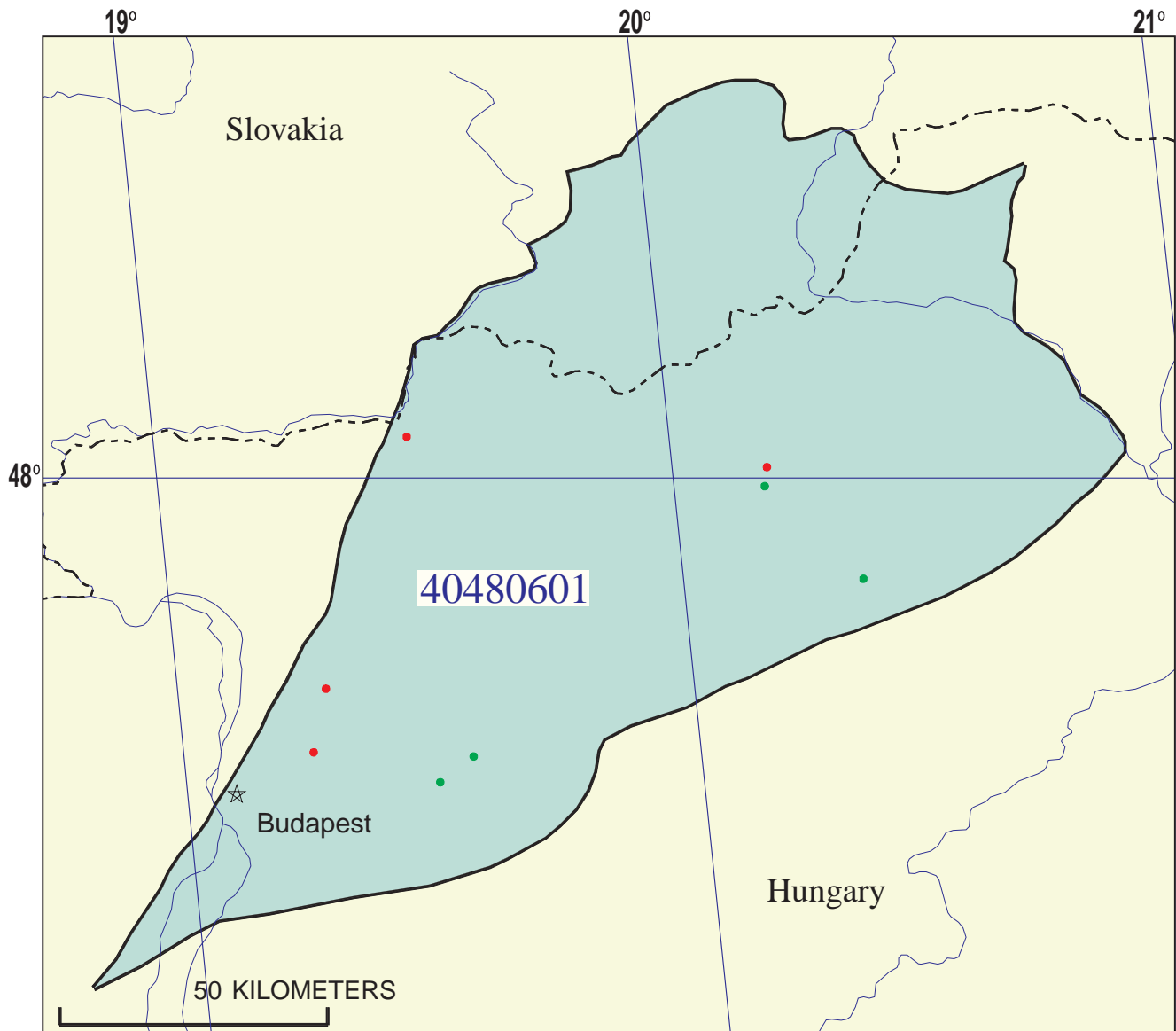
Hungarian Paleogene Basin
Assessment Unit - 40480601

EXPLANATION

⎯⎯ Hydrography

⎯⎯ Shoreline

4048 ⎯⎯ Geologic province code and boundary

- - - Country boundary

● Gas field centerpoint

● Oil field centerpoint

40480601 ⎯⎯ Assessment unit code and boundary

Projection: Robinson. Central meridian: 0

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

Date:……………………….. 6/1/99
Assessment Geologist:…….. G.L. Dolton
Region:……………………... Europe   Number: 4
Province:…………………… Pannonian Basin   Number: 4048
Priority or Boutique………… Priority
Total Petroleum System:…… Hungarian Paleogene   Number: 404806
Assessment Unit:…………… Hungarian Paleogene Basin   Number: 40480601
* Notes from Assessor   Lower 48 growth factor. Greater Hungarian Plains Basin (40480101) as a
                              partial analog.

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

Median size (grown) of discovered oil fields (mmboe):
                              1st 3rd   13.3   2nd 3rd _____   3rd 3rd _____
Median size (grown) of discovered gas fields (bcfg):
                              1st 3rd   11.8   2nd 3rd _____   3rd 3rd _____

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)   1   median no.   9   max no.   25
Gas fields:………………………………min. no. (>0)   1   median no.   9   max no.   25

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   80
Gas in gas fields (bcfg):……………………min. size   6   median size   20   max. size   300

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) …………….....……………..	200	1500	4000
Depth (m) of water (if applicable)……………..…..			

Gas Fields:	minimum	median	maximum
Inert gas content (%)……………………….....……			
CO_2 content (%)…………………………….....…			
Hydrogen-sulfide content (%)………………..…..…			
Drilling Depth (m)……………………………………	200	1500	4000
Depth (m) of water (if applicable)…………………..			

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

1.   Hungary   represents   82   areal % of the total assessment unit
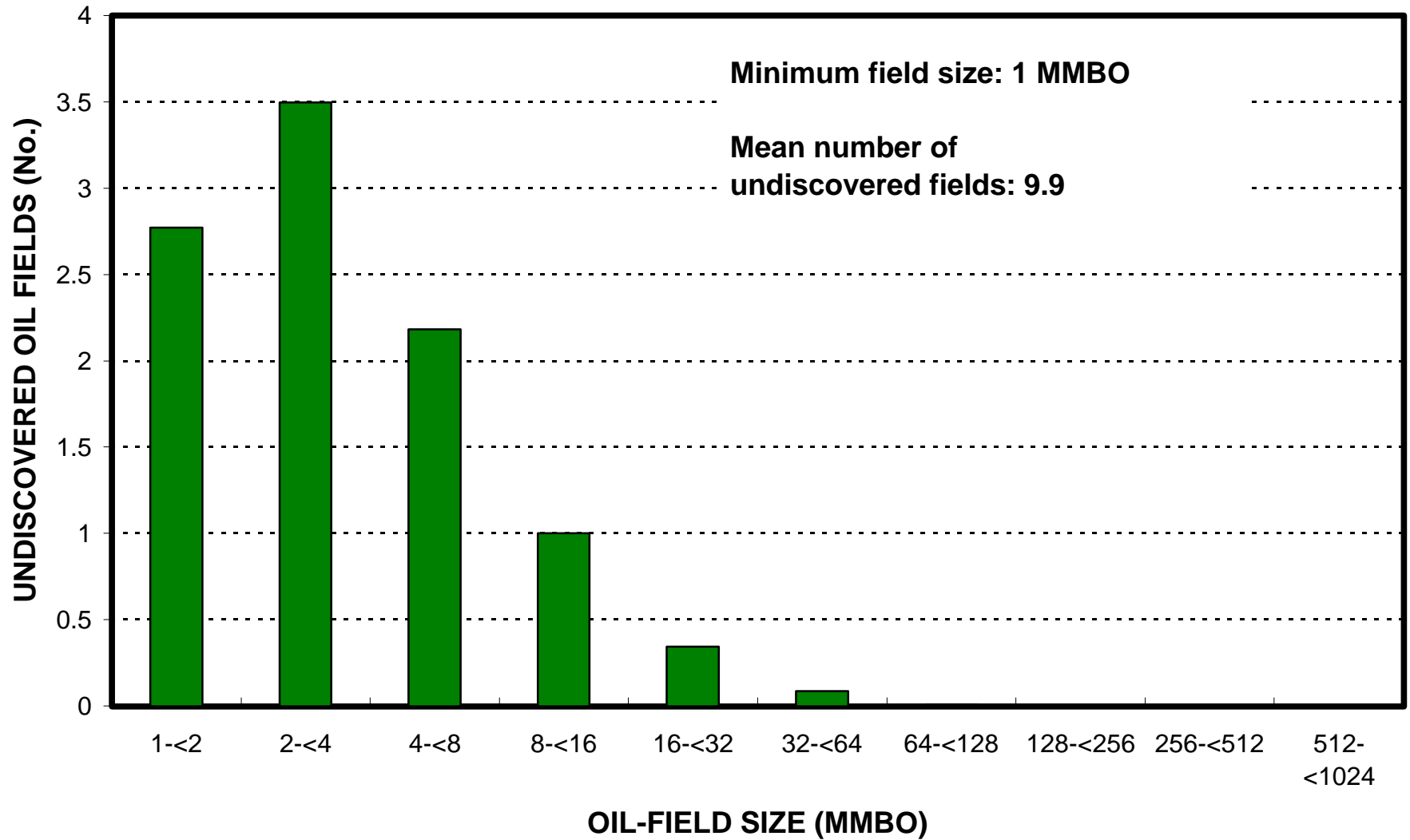
Oil in Oil Fields:	minimum	median	maximum
Richness factor (unitless multiplier):…………..…			
Volume % in parcel (areal % x richness factor):…		80	
Portion of volume % that is offshore (0-100%)……		0	

Gas in Gas Fields:	minimum	median	maximum
Richness factor (unitless multiplier):…………..…			
Volume % in parcel (areal % x richness factor):…		80	
Portion of volume % that is offshore (0-100%)……		0	

2.   Slovakia   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):…		20	
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):…		20	
Portion of volume % that is offshore (0-100%)……		0	

**Hungarian Paleogene Basin, AU 40480601
Undiscovered Field-Size Distribution**

Minimum field size: 1 MMBO

Mean number of
undiscovered fields: 9.9

UNDISCOVERED OIL FIELDS (No.)

OIL-FIELD SIZE (MMBO)

Hungarian Paleogene Basin, AU 40480601
Undiscovered Field-Size Distribution

Minimum field size: 6 BCFG

Mean number of undiscovered fields: 9.9