



# Central Carpathian Paleogene Basin Assessment Unit 40480501



-  Central Carpathian Paleogene Basin Assessment Unit 40480501
-  Pannonian Basin Geologic Province 4048

**USGS PROVINCE:** Pannonian basin (4048)

**GEOLOGIST:** G.L. Dolton

**TOTAL PETROLEUM SYSTEM:** Central Carpathian Paleogene (404805)

**ASSESSMENT UNIT:** Central Carpathian Paleogene Basin (40480501)

**DESCRIPTION:** This assessment unit deals with traps occurring in Paleogene rocks of a marginal Carpathian flysch basin, including a suite of structural, stratigraphic and combination trap types in sequences, which were strongly influenced by syndepositional tectonic controls, and hypothesized to have been charged from Paleogene source rocks. The assessment unit encompasses an area north of the Neogene Pannonian basin system and Hungarian Paleogene basin. Source beds in the Paleogene have charged associated Paleogene reservoirs and underlying basement reservoirs. There has been no significant exploration success to date. Because of generally poor reservoir characteristics and a complexly folded and faulted structural setting, it appears not to be a favorable environment for substantial resources and the unit was not quantitatively assessed.

**SOURCE ROCKS:** Source rocks are in the Paleogene Podhale Flysch Formation and equivalents are of fair to excellent quality. They contain as much as 1.5 TOC, although now mostly depleted due to a high thermal history.

**MATURATION:** Rocks have been buried and undergone sufficient thermal heating so that in the peri-Klippen area of Slovakia, the Paleogene maturity corresponds to the end of oil generation and wet gas stages, with vitrinite reflectance over 1.2 percent at the surface and reaching 1.8 at 1 km depth, while underlying Mesozoic rocks are in the wet and dry gas window.

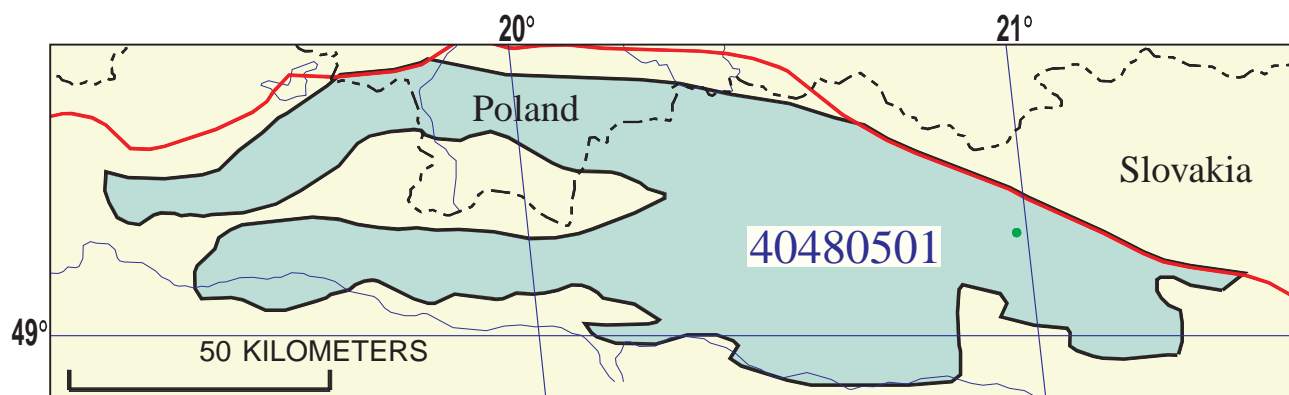
**MIGRATION:** Timing of migration appears favorable and a small amount of oil and gas has been discovered at a single field (Lipany Field). Maximum burial occurred during Oligocene–early Miocene, accompanied by thrusting, followed by uplift and erosion. Traps for hydrocarbons were formed before or contemporaneous with hydrocarbon maturation and expulsion.

**RESERVOIR ROCKS:** Eocene and Oligocene Podhale Flysch and its equivalents provide reservoirs of fair to poor quality. Fractured claystones and marlstones have produced a small amount of oil and gas at Lipany Field and potential reservoirs elsewhere also include fractured sandstones and siltstones, with generally low matrix porosity.

**TRAPS AND SEALS:** A suite of structural, stratigraphic and combination trap types are expected. The only discovery, Lipany, is located on a Mesozoic basement high. Intense compressive structural deformation, beginning in late Oligocene, may adversely affect integrity and size of traps. Seals within the sequence associated with the reservoirs are considered to be satisfactory, where not tectonically ruptured.

## REFERENCES:

- Blizkovsky, M., Kocak, A., Morkovsky, M., Novotny, A., Gaza, B., Kostelnicek, P., Hlavaty, V., Lunga, S., Vass, D., Francu, J. and Muller, P., 1994, Exploration history, geology and hydrocarbon potential in the Czech Republic and Slovakia, Chapter 3, *in* Popescu, B.M., ed., Hydrocarbons of eastern central Europe–Habitat, exploration and production history: Berlin, Springer-Verlag, p. 71-117.
- Nemcok, M., Keith, J.F., and Neese, D.G., 1996, Development and hydrocarbon potential of the Central Carpathian Paleogen Basin, West Carpathians, Slovak Republic, *in* Ziegler, P.A., and Horváth, F., eds., Structure and prospects of alpine basins and forelands: Paris, Editions du Museum National d'Histoire Naturelle, Peri-Tethys Memoir 2, Memoires du Museum national d'Histoire naturelle v. 170 Geologie, p. 321-342.
- Royden, L.H., and Báldi, T., 1988, Early Cenozoic tectonics and paleogeography of the Pannonian and surrounding regions, *in* Royden, L.H., and Horváth, F. eds., The Pannonian Basin—a study in basin evolution: American Association of Petroleum Geologists Memoir 45, p. 1-16.



## Central Carpathian Paleogene Basin Assessment Unit - 40480501

### EXPLANATION

- Hydrography
- Shoreline
- 4048 — Geologic province code and boundary
- Country boundary
- Gas field centerpoint
- Oil field centerpoint
- 40480501 — 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:..... Central Carpathian Paleogene Number: 404805  
 Assessment Unit:..... Central Carpathian Paleogene Basin Number: 40480501  
 \* Notes from Assessor

**CHARACTERISTICS OF ASSESSMENT UNIT**

Oil (<20,000 cfg/bo overall) **or** Gas (≥20,000 cfg/bo overall):... \_\_\_\_\_

What is the minimum field size?..... \_\_\_\_\_ mmmboe grown (≥1 mmmboe)  
 (the smallest field that has potential to be added to reserves in the next 30 years)

Number of discovered fields exceeding minimum size:..... Oil: \_\_\_\_\_ Gas: \_\_\_\_\_  
 Established (>13 fields) \_\_\_\_\_ Frontier (1-13 fields) \_\_\_\_\_ Hypothetical (no fields) \_\_\_\_\_

Median size (grown) of discovered oil fields (mmmboe):  
 1st 3rd \_\_\_\_\_ 2nd 3rd \_\_\_\_\_ 3rd 3rd \_\_\_\_\_  
 Median size (grown) of discovered gas fields (bcfg):  
 1st 3rd \_\_\_\_\_ 2nd 3rd \_\_\_\_\_ 3rd 3rd \_\_\_\_\_

**Assessment-Unit Probabilities:**

- | <u>Attribute</u>   | <u>Probability of occurrence (0-1.0)</u> |
|--|--|
| 1. <b>CHARGE:</b> Adequate petroleum charge for an undiscovered field ≥ minimum size.....            | _____                                    |
| 2. <b>ROCKS:</b> Adequate reservoirs, traps, and seals for an undiscovered field ≥ minimum size..... | _____                                    |
| 3. <b>TIMING OF GEOLOGIC EVENTS:</b> Favorable timing for an undiscovered field ≥ minimum size       | _____                                    |

**Assessment-Unit GEOLOGIC Probability** (Product of 1, 2, and 3):..... \_\_\_\_\_

4. **ACCESSIBILITY:** Adequate location to allow exploration for an undiscovered field  
 ≥ minimum size..... \_\_\_\_\_

**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) \_\_\_\_\_ median no. \_\_\_\_\_ max no. \_\_\_\_\_  
 Gas fields:.....min. no. (>0) \_\_\_\_\_ median no. \_\_\_\_\_ max no. \_\_\_\_\_

**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 \_\_\_\_\_ median size \_\_\_\_\_ max. size \_\_\_\_\_  
 Gas in gas fields (bcfg):.....min. size \_\_\_\_\_ median size \_\_\_\_\_ max. size \_\_\_\_\_

**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).....	_____	_____	_____
NGL/gas ratio (bnl/mmcf).....	_____	_____	_____
<u>Gas fields:</u>	minimum	median	maximum
Liquids/gas ratio (bnl/mmcf).....	_____	_____	_____
Oil/gas ratio (bo/mmcf).....	_____	_____	_____

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**SELECTED ANCILLARY DATA FOR UNDISCOVERED FIELDS**

(variations in the properties of undiscovered fields)

<u>Oil Fields:</u>	minimum	median	maximum
API gravity (degrees).....	_____	_____	_____
Sulfur content of oil (%).....	_____	_____	_____
Drilling Depth (m) .....	_____	_____	_____
Depth (m) of water (if applicable).....	_____	_____	_____
<u>Gas Fields:</u>	minimum	median	maximum
Inert gas content (%).....	_____	_____	_____
CO <sub>2</sub> content (%).....	_____	_____	_____
Hydrogen-sulfide content (%).....	_____	_____	_____
Drilling Depth (m).....	_____	_____	_____
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. \_\_\_\_\_ represents \_\_\_\_\_ 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):...	_____	_____	_____
Portion of volume % that is offshore (0-100%):.....	_____	_____	_____
 <u>Gas in Gas Fields:</u>	 minimum	 median	 maximum
Richness factor (unitless multiplier):.....	_____	_____	_____
Volume % in parcel (areal % x richness factor):...	_____	_____	_____
Portion of volume % that is offshore (0-100%):.....	_____	_____	_____