

AAPG HEDBERG CONFERENCE
“*Deformation, Fluid Flow and Reservoir Appraisal in Foreland Fold and Thrust Belts*”
May 14-18, 2002, Palermo – Mondello (Sicily, Italy)

**TECTONIC STRUCTURES DISTRIBUTION
IN THE INTERNAL ZONE OF PRECARPATHIAN FOREDEEP**

Orlov A.A., Mykhayliv I.R., Omeltchenko V.G., Trubenko A.N.

Ivano-Frankivsk National Technical University of Oil and Gas,

15, Karpatska Str., Ivano-Frankivsk, 284018, Ukraine

E-mail: geotom@ifdtung.if.ua

The general layout of the Internal zone structure is made of linear-elongated anticline folds overthrusting each other in NE direction and broken by the system of faults, strike-slip faults, upthrusts and thrusts. By the elongation criterion folds are turning into one another due to fold bends undulation and form fold lines. By the deep criterion (basing on the ideas about initial position till the moment of their accumulation into stages) in the structure of Internal zone three tectonic stages are revealed: first, second and the third.

The learning of tectonic structures of folders zones has the large value because of quantitative criteria, by which they are characterized, considerably influences on natural reservoirs characteristics. For example there is directly proportion between anomalistic formation pressures from ratio of folders compression, which is estimate with intensity structure coefficient. $i=h/s$ h-amplitude of structure, S - its square inside the last isohypse

By the genesis all the folds of the Internal zone are consedimental paleogenic, which got their modern look because of Carpathian geosyncline inversion at the end of early sarmatian, when thrusting of structural-tectonic elements on one another took place.

So far as one of the important factors for the accumulation and storage of hydrocarbon deposits is structural-tectonic, it's worth to pay more attention to the structure of local tectonic structures of these structural-tectonic subdivisions.

Exploring the modern plan of the Internal zone we must say, that folds are characterised by the different degree of shape integrity, that is by the degree of structure completeness they can be divided into:

I type - integer folds. For the folds of this type the presence of all structural elements (arch, sides and periclinal) are characteristic, that is it's possible to trace the fold shape. However, some elements could be missing (for example, pericline or NE side). These folds have large linear dimensions and heights. To this type belong such folds as Staro-Sambirska, Dolynska, Pivnichnodlynska, Lukvynska, Rosilnyanska and other.

II type - relatively integer folds. Folds of this type are more destructed than previous ones: the presence of arch and sides and complete absence of pericline parts. Moreover, arch and sides can be partly destroyed by local tectonic dislocations. This folds have less dimensions and heights. To this type belong such folds as Blazhivska, Dovbushanska, Bystrytska, Gvizdetska, Pivdennergvizdetska and other.

III type - destroyed folds. For this folds the great destructive degree is characteristic and only some element could be traced in their structure: arch, side or pericline. Folds of this type are of small dimensions and heights. To this type belong Boryslavska, Oriv-Ulichnyanska, Strelbitska, Semygynivska, Yankivska and other.

IV type - completely destroyed folds. Folds are hardly destructed, in their structure only separate fragments of structural elements (for example, sides, periclinal axes as well) can be traced. To this type belong such folds as Popelska, Pivdenpopelska, Obolonska, Babchenska, Molod'kivska.

Distribution of different types of folds in the structure of the Internal zone, in our opinion, depends on the influence and amplitude of the thrust of one structural-tectonic element on other. So, the structure of the first stage is more rebuilt, because the stage has moved to the bigger distance compare to others and in its structure all 4 types are noticed. Such layout is clearly expressed especially in borders of Boryslavsky petroleum field district. This fact can be explained by the inclusion of the first stage overlapped by the thrust of Skibova zone of the Carpathians in the Tanyavsky block. Dolynsky and partly Nadvirnyansky districts are characterised with the development of folds of type I and II and only over the Manyavsky fault folds of type III are developed. The folds of the second stage are characterised with different degree of integrity as well. Thus, for instance, in Boryslavsky and Dolynsky districts folds of all types are presented. This could be explained, that the first stage completely overlaps the second one up to the Pereginsky block with the amplitude 5-14 km. Folds of Nadvirnyansky mostly belong to the first type, but over the Lubizhnyansky fault they are more destroyed and belong to the II and III type, because of being partly or completely overlapped by the thrust. Folds of the third stage take the position close to initial, which the stage has been occupying before the thrusts formation (thrusting amplitude on the autochthon is 0,5-5 km), that's why folds which take part in its structure mostly belong to the type I and III, excluding those located between Boryslavsky and Dolynsky petroleum field districts, where small folds of type III are detected.

It's worth mentioning that the character of fold integrity has influence on the character of its productivity. Thus, folds of type I have deposits of different phase content. For example, in the Boryslavsky district oil (Staro-Sambirske) and oil/gas/condensate (Ivanykivske field) are known. In Dolynsky district oil deposits (Dolynske) are known, and in folds, which have underthrust sides, gas capes are presented (Pivnichnodolynske). In Nadvirnyansky district folds of the third stage are productive. They contain oil/gas/condensate (Bytkivske) and oil/gas (Kosmatske) deposits. In folds of type II oil fields in Boryslavsky district (Boryslavske) and oil/gas/condensate fields (Pivdennogvizardetske) of Nadvirnyansky district. Folds of type III contain only oil fields in Boryslavsky and Dolynsky district. Folds of type IV contain oil and oil/gas/condensate deposits in Boryslavsky, Dolynsky and Nadvirnyansky districts.