Main Direction of Exploration for Pools of Oil and Gas Condensate in the Inner Zone of the Cis-Carpathian Downwarp

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(Нефтяная и Газовая Промышленность, No. 4, 1975, p. 5–8)

Within the Inner Zone of the Cis-Carpathian downwarp the main oil-gas bearing unit is the Paleogene flysch. Within the flysch there are two natural reservoirs: Oligocene and Eocene-Paleocene. The Oligocene reservoir is from 100 to 1200 m thick and is bounded by regional isolating units; above is Miocene molasse and below is the Bystrits shale of the upper Eocene. The second reservoir is 200-600 m thick and is marked by the absence of isolating covers within.

In the early stage of the post-war era of exploration, structures of the upper stage of folds in the belt in front of the Beregovo overthrust of the folded Carpathians were drilled; the flysch occurred here at the least depths. Exploration here was successful; several oil and gas condensate pools were discovered: Dolina, Bitkov, Ulichno-Orov, Spas, Strutin, Gvizd. See Fig. 1.

Subsequently, as the backlog of structures in the upper stage was exhausted, ideas as to further exploration became mixed. Most investigators thought that the main, as yet undiscovered oil-gas bearing folds of the Inner Zone should be located to the south, that is, further beneath the overthrust of the folded Carpathians. Therefore, all the extra-deep parametric wells were located in order to study the geology of this territory.

Other investigators on a basis of study of systematic distribution of folding in the downwarp and the conditions of formation and preservation of hydrocarbon accumulations held that the most favorable targets for oil and gas were the flysch folds in lower stages of the belt of already known fields. Unfortunately, super-deep wells that could have disclosed these folds were not drilled.

The high favorability of the Paleogene folds of the lower stages where fields are already known in the upper stages has been demonstrated in principle where they occur at relatively shallow depth. For example, a pool in the Borislav subthrust has been found beneath the oil pool of the Borislav deep fold. At Popel the folds of both stages were tested simultaneously, and oil pools were found in both. At Ivanik a gas condensate pool was discovered in the second stage beneath the far southeast pericline of the Borislav fold. Such a pool was found at Rosel beneath the fold of the Maydan oil deposit, and beneath the Bitkov oil-gas-condensate field occurs the Pasechnyan structure with oil and gas condensate pools.

All this confirms the necessity for drilling in the belt of already known fields of the Inner Zone of the Cis-Carpathian downwarp targeted on highly favorable Paleogene folds of the lower stage at depths of 5-7 km.