



Main morphogenetic types of Mississippian carbonate buildups in the Dnieper-Donets basin (their structure and paleogeography)

S. Vakarchuk, T. Dovzhok., P. Chepil

Scientific Research Institute of Oil and Gas Industry (Naukanaftogaz) of National Joint-Stock Company "Naftogaz of Ukraine", Kiev, Ukraine, (e-mail: vakarchuk@naukanaftogaz.kiev.ua / Fax: +38 044 236-31-61 / Phone: +38 044 5850219)

For the section of Mississippian sediments in the Dnieper-Donets basin (DDB) it is proved a presence of Tournaisian, Lower Viséan, and Lower Serpukhovian carbonate buildups.

Tournaisian carbonate buildups. Carbonate sediments are widespread in the central and southeastern parts of the Dnieper-Donets basin. It is recognized that sedimentation of carbonates occurred within its three paleostructural elements: a depression, gentle slope and broad shallow-water shelf. The most favorable conditions for buildups formation existed there in the shelfal zone. The studies conducted have revealed two main types of buildups among them: 1) large complex intrashelfal biohermal massifs of 100 to 300 m thickness and 2) small (3-15 m) accumulative bodies like banks. Main skeleton forms of those reefs of first type are bryozoans, crinoids, colonies of girwanellas, and blue-green algae. Carbonate buildups of the second type are made from brachiopodal and crinoidal remnants.

Lower Viséan carbonate buildups. Carbonate sediments of Lower Viséan sub-stage are found in most of structural zones of the DDB. The thickness of carbonate sediments varies from 30-40 m to 300-400 m. Previous studies (Vakarchuk, 2000, 2006) allow the full range of litho-facies zones (basinal, slope, reefal, shallow marine, littoral and lagoonal) to recognize in those carbonates. Buildups localize within three facies zones, namely in basinal, reefal and shelfal ones. Pinnacle-reefs occur in the basinal parts. The altitude of reef bodies is 150-160 m and their size is of 2 ÷ 2.5 km. Reefal – marginal carbonate massifs are characteristic of the reefal part. Their altitude is 150-

180 m and size ranges from 1.5-2 to 5-6 km. Bioherms of outer and interior shelf has a height of 50-70 m and size of 1.5 ÷ 2.5 ê. Reef-building organisms for Lower Viséan buildups are the same as for Tournaisian ones (algae, crinoids and bryozoans).

Serpukhovian carbonate buildups are localized only in the most southeastern part of the basin. Morphologically, these Serpukhovian buildups resemble typical barrier reefs that formed large reef bars along with inter-reefal channels stretching for several kilometers. Internal structure of these massifs is characterized by complex differentiation of facies appearance. In the section it is clearly seen facies of reefal core, back-reef sediments and fore-reef fans. The high of barrier bodies is of 100-150 m, sometimes reaching of 300-350 m.