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Devonian-Carboniferous Facies Development as a Result of the Basin Tectonic Deformation Stages, Central Part of Lublin Basin (SE Poland)

2D seismic survey and E&P wells covering Ciecierzyn-Melgiew gas field gave a representative example of Variscan tectonic-related facies evolution of the central part of Devonian-Carboniferous Lublin Basin (East European Craton SW slope). Early-Middle Devonian plate bending towards W/SW revealed in deposition of thick to 1500m clastic alluvial-shoreface deposits building several sequences. Extensional/transensional tectonic activity dominated during Late Devonian resulted in development of the Frasnian-Famennian pull-apart basin. This was recorded by development of extensional faults, which induced Givetian peritidal-sabkha facies pattern (LST/TST), linear trends of late Frasnian (TST) patch reefs, and latter during Famennian basin deepening (TST/HST) debris flow fans deposition. Lublin Basin of the end of Devonian-Early Carboniferous was subject to significant differential uplift/erosion, partly with a deposits gap to 3000m, which process lasted to Late Viséan. Being then peripheral area, Lublin Basin was only place of several thin late Famennian (LST) clastic clinoform deposition. Due to the second extension phase, leading to fault system penetrability the Lublin Basin was flooded by Late Viséan basalt traps. Carboniferous was a period of deposition of carbonate ramp (TST) and next thick deltaic sequences (TST/HST) in upper part with several incised valleys (LST) of Namurian to early Westphalian age and next (HST) alluvial complex. Reverse synsedimentary faults indicate Namurian change of the tectonic regime into compressional, which was expressed also by fault-connected growth of Waulsortian-like mounds. Late Westphalian-Early Permian was a period of big magnitude uplift and erosion of Lublin Basin as a result of transpressional/compressional deformations of the broad Variscan orogen foreland.