The Role of Palaeotopography and Tectonics in the Stratigraphy of Fluvial Through Shallow-Marine Deposits of the Peruc–Korycany Formation (Cenomanian) in the SE Part of the Bohemian Cretaceous Basin

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The initial phase of deposition in the Bohemian Cretaceous Basin during the Middle-Late Cenomanian was characterized by filling of pre-depositional topography by fluvial and paralic depositional systems. One of the important problems in understanding the evolution of the basin is the relationship between the “passive” topographic elements such as palaeovalleys and the formation of actively subsiding depocentres which dominated the later phases of shallow-marine deposition.

This study focuses on regional stratigraphic patterns in the Peruc–Korycany Formation (Middle to Late Cenomanian) in the southeastern part of the Bohemian Cretaceous Basin, the Svitavy sub-basin according to Uličný (1997). The main data base for our study is a number of regional cross-sections based on well-log, core, and outcrop correlation, and a series of regional isopach maps in time-slices.

The whole sedimentary succession of the Peruc–Korycany Fm. was divided, on the basis of detailed well-log correlation, into four informal stratigraphic units A–D. Unit A corresponds approximately to the lower part of the Peruc Member and it is interpreted as deposits of braided and meandering river systems. Units B and C correspond to the upper (paralic) part of the Peruc Member. Marine microfossils reported from these units by previous studies prove the proximity of epicontinental sea. Unit B comprises sediments deposited in estuarine environment: deposits of bay-head deltas, central basin, and marginal swamps are interpreted as parts of a back-barrier depositional system. Facies of unit C developed almost completely in the deeper central basin of the assumed estuary. Unit D roughly corresponds to the shallow-marine Korycany Member in the study area. Highly glauconitic, bioturbated sandstones and cross-bedded quartz sandstones with mud drapes and reactivation surfaces are typical lithofacies of this unit characterized by strong tidal influence.

The isopach map of the whole thickness of Cenomanian sediments, based on over 600 borehole logs, revealed two main centres of sediment accumulation, generally coinciding with the “depressions” previously described by other authors. However, such map provided no information about the history of deposition and also did not distinguish between filling of pre-existing palaeovalleys and deposition of tectonically active dep-
The Gneissic Complex of the Staré Hory Mts. – Its Hercynian and Alpine History

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Tectonic significance of the Staré Hory Mountains for the evolution of to the Central Western Carpathians has been recognized for a long time. However, the crystalline rocks from this area were not studied in detail for more than thirty years. Because of its enclosing by sedimentary rocks – verrucano and Mesozoic carbonates, this crystalline complex is commonly denoted as the Staré Hory window. The geological structure and tectonic evolution of the mentioned area were a matter of long lasting discussion between advocates of “fixism” – all crystalline basement is autochthonous (granites) and parts of crystalline (gneissic complex) are in tectonic – allochthonous (nappe) position (Koutek 1937; Andrusov 1958; Jaroš 1924; Kubín 1954–1963) and advocates of “mobilism” – part of crystalline basement is autochthonous (granites) and parts of crystalline (gneissic complex) are in tectonic – allochthonous (nappe) position (Koutek 1937; Andrusov 1958; Jaroš 1965, 1971; Vozárová and Vozár 1988). However, gneissic complex was described as an Early Paleozoic “para-crystalline” – sedimentary in origin complex, dominated by muscovite-biotite paragneisses, mica shists and metaquartzites, partly injected by “orthogneissic material” having thus character of banded and augen gneiss (Jaroš 1965, 1971)!

According to the proposed strike-slip depositional model of the Bohemian Cretaceous Basin (Uličný 1997) and the above results, it is assumed that the main structures controlling the basin evolution were NW-NNW – oriented fault zones active in a dextral strike-slip regime. The study area behaved structurally as a pull-apart sub-basin formed between overlapping segments of the principal displacement zone. The intrabasinal high which emerged during the deposition of unit D is probably related to similar phenomena described from pull-apart basins formed at overlapping fault segments by Dooley and McClay (1997).

This presentation is partly based on a MSc thesis by J. Kantara, supported by an AAPG Grant-in-Aid. We are also grateful to GeoFond, Prague, for access to archive well-log data.

References


GeoLines 13 (2001)