

# Decoupling of deformation in the Skole nappe near Strzyżów (Outer Carpathians, SE Poland)

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The Skole nappe is the most external, completely detached nappe occurring in the Outer Carpathians fold-and-thrust belt. Analyses of the field and 2D seismic reflection data made by the Polish Oil and Gas Company showed that during NE–SW shortening a series of longitudinal NW–SE-trending folds was formed, e.g. Strzyżów syncline and Babica anticline comprising the Inoceramian Beds and the Menilite and Krosno formations (Nescieruk et al., 1995). The Inoceramian Beds (Upper Cretaceous–Paleocene) are represented by the thick-bedded turbiditic sandstones with intercalations of grey shales and marls (Kotlarczyk, 1978). Menilite Beds consist of black and brown shales and cherts with intercalations of sandstones. The Krosno Formation (Oligocene–Miocene), which is the youngest lithostratigraphic unit in the area, is dominated by medium- to thin-bedded, calcareous sandstones and grey shales (Jucha and Kotlarczyk, 1961).

Analysis of seismic data suggests that a dual internal structure may be distinguished within one of the most significant folds, i.e. the 15 km wide Strzyżów syncline. The structure is subdivided by a detachment horizon occurring at the depth of about 300 m below the surface. Above this depth there occurs an upper level, consisting of the Krosno and Menilite formations and below is the lower level comprising the Inoceramian Beds. The upper level is dominated by box folds that are several hundred meters wide, whereas the lower level comprises duplicated thrust sheets of rocks and fault-bend folds. Detachment folds

with the box shape geometry, occurring in the upper level, suggest that the layer-parallel shortening prevailed during folding. The presence of duplexes in the lower level of the Skole nappe indicates the possible occurrence of simple shearing.

The dual internal structure of the Skole nappe near Strzyżów may be interpreted as being controlled by differences in mechanical stratigraphy. Location of the detachment folds was favoured in the upper level, where the weak thin-bedded sandstones and shales were present during the development of the sheet thrusting in the stronger rock units. Seismic data suggest that the major boundary, along which the style of deformation changes, corresponds to a detachment level rooted in the Menilite Formation.

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