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Pannonian (Upper Miocene) deposits at Steinbrunn (Vienna Basin, Austria)

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The Steinbrunn sand pit is positioned at the southeastern margin of the Neogene Vienna Basin, about 5 km west of Eisenstadt. It exposes Upper Pannonian (Upper Miocene) lacustrine clays, sands and detritic limestones. The mollusc fauna allows a correlation with the latest Lymnocardium schedelianum Zone and the early Mytilopsis neumayri/zahalkai Zone, pointing to an age of c. 10 Ma. In terms of lithostratigraphy, the beds belong to the Upper Miocene Cary Formation (informally termed Neufeld beds). The section measured along a 100 m long quarry wall is structurally located in the gently ENE dipping eastern limb of a NNW-SSE striking anticline. The 24-m-thick succession represents a single coarsening and shallowing upward sequence. Three lithologic units have been distinguished. The lower unit comprises 7 m clays and silts bearing stringers with late Pannonian molluscs such as Mytilopsis neumayri and Melanopsis sturii together with limnocardiid and unionid bivalve shells. Carbonate contents are between 10 and 30The mineralogy of the clay samples was analyzed with X-ray diffraction. The samples contain quartz, minor amounts of feldspar, high amounts of calcite and dolomite, and the clay minerals smectite, muscovite and chlorite. The entire succession has formed within a floodplain environment. The clayey lower part represents lacustrine environments of local ponds. Geophysical logging was performed (gamma-ray and magnetic susceptibility) in order to investigate the depositional cyclicities observed within middle lithological unit. Spectral analysis suggests the presence of sedimentary cycles with a frequency of c. 3 m. Such small scale cycles might be the expression of the 21-ky-precessional cycles. Based on this assumption, the 8 depositional cycles of the succession may represent a total time of 170 ka.