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Geologic interpretation of geophysical investigations in the Oslip section, Rust Range, Northern Burgenland, Austria

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Following previous investigations (Häusler et al., 2007; Scheibz et al, 2008) south of the Leithagebirge DC geoelectric, seismic and gravimetric measurements have been carried out along a profile east of the village of Oslip, situated east of Eisenstadt and north of St. Margarethen, in the Northern Burgenland. The profile crossed the north-south trending "Ruster Höhenzug" (Rust Range) of the Central Alpine zone which borders the Neogene Eisenstadt Basin. The prominent St. Margarethen fault separates the Eisenstadt Basin in the west from the Rust Range in the east. A section of 1200 m starting from Oslip, crossing the St. Margarethen fault and extending to the Silberberg quarry in the east was investigated.

The seismic structures clearly differ east and west of the St. Margarethen fault, which can be identified in the profile at about 350 m. East of the St. Margarethen fault reflection seismics and refraction tomography reveals anticline and syncline structures in a depth between 50–100m, which is located in the Rust- and Leithakalk formations of the Rust Range. West of this fault some hundred metres of Pannonian beds form an asymmetric syncline, which is deepening towards the fault. From these results we conclude that the St. Margarethen fault probably acted as a synsedimentary fault in Upper Pannonian times. Seismic section with the velocities will be shown in the presentation.The gravimetric measurements along the same profile reveal a gravity anomaly matching the St. Margarethen fault zone.

The high-resolution electrical resistivity tomography section reveals a low resistivity layer down to thirty metres in the western part of the section (< 30 m) which can be interpreted as Upper Pannonian beds. Patches of higher resistivity at 250-300 m close to the surface are interpreted as gravel beds of a paleo Wulka River of Quaternary age. From profile meter 600 on to the east higher resistivities up to 1000 m are interpreted as Leitha limestone of Badenium age as mapped on the surface. Lower resistivity beds below this limestone belong to the Rust Formation, the matrix supported sand and gravel beds of Karpatian age. We interpret the abrupt change from lower to higher resistivities in the eastern geoelectric section as a local subvertical fault separating Leitha limestone beds from the Rust Formation east of the Silberberg quarry.

The geophysical sections clearly reveal the north south trending St. Margarethen fault separating the Miocene Eisenstadt Basin from the horst structure of the Central Alpine Rust Range. Resistivity tomography more resolves the Upper Miocene and in particular Badenian to Pannonian beds of the Rust Range whereas seismics portraits the deeper structures of the Rust Range and the Neogene Eisenstadt Basin and its basement, respectively. Gravimetry clearly portraits the prominent St. Margarethen fault west of the Rust Range where Pannonian beds of the Eisenstadt Basin border the Central Alpine crystalline. These results give a new insight in the geometry of the openly folded Miocene formations south of the Leitha Mountains and the structural development of this seismically active zone (Scheibz et al., 2008; Häusler in press).

Häusler, H.: Erläuterungen zu Blatt 78 Rust.- Geologische Bundesanstalt, Wien (in press).

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EGU, General Assembly, Vienna, Austria, 15-20 April 2007. Geophysical Research Abstracts, Vol. 9, 03754, 2007

Scheibz, J., Häusler, H., Kohlbeck, F., Chwatal, W. & Kostial, D. (2008): Geologic interpretation of shallow and deep geophysical soundings in the section Leithagebirge – Ruster Höhenzug (Northern Burgenland, Austria).- Journal of Alpine Geology, 49 (PANGEO 2008), S. 93-94, Wien.