



The Triassic-Jurassic boundary in the Central European Basin; first magnetostratigraphic data from the classic Germanic Triassic, Germany

M. Szurlies

Section 3.3 Climate Dynamics and Sediments, GeoForschungsZentrum Potsdam,
Telegrafenberg Haus C, D-14473 Potsdam, Germany (szur@gfz-potsdam.de)

The boundary between the Triassic and Jurassic marks one of the major mass extinctions in the history of life. In the Central European Basin, this interval is indicated by the transition from the mainly continental Keuper (Upper Germanic Triassic) to the marine Liassic (Jurassic). Hitherto, a detailed biostratigraphic correlation of the Keuper, especially of its upper part, with the marine stages is extremely difficult, because of a low-resolution biostratigraphy and the presence of fossil-free intervals. In addition, the Keuper is indicated by several gaps of local or basin-wide importance and mostly unknown duration. Recently, modern correlation schemes for the Keuper lithostratigraphy with the biostratigraphically calibrated marine stages have been proposed revealing the need for additional methods for a more convincing and detailed correlation, e.g. magnetostratigraphy. Based on a magnetostratigraphic feasibility study, the ~21 m thick Kammerbruch section of Central Germany has been sampled, yielding a total of 50 paleomagnetic samples. This section comprises (a) the marine-deltaic middle Upper Keuper, (b) the mainly lacustrine uppermost Upper Keuper, and (c) the lowermost part of the marine Hettangian (Liassic). Rock magnetic experiments reveal the presence of magnetite as carrier of remanence in almost all samples. The intensity of the natural remanent magnetization (NRM) ranges between 0.05 and 45 mA/m. Usually, the NRM of the samples consists of at least two superimposed directions of magnetization. The first component, which is readily removed during demagnetization, is ascribed to a viscous overprint. After bedding tilt correction, the remaining component yielded two antipodal groups of directions: northeasterly (southwesterly) declinations with shallow positive (negative) inclinations, which are interpreted as primary directions. From this, the obtained magnetostratigraphic record

is dominated by normal polarity, with two thin reverse intervals and possibly a third one indicating the lower part of the section, which belongs to the Keuper. Along with available biostratigraphy, the integrated analysis facilitates detailed links with records from the Newark Basin (USA) and St. Audrie's Bay (UK). Based on these promising data, it is intended to establish a detailed geomagnetic polarity record for the Middle Keuper to Sinemurian (Liassic). Extending the record well into the Sinemurian shall hopefully contribute to the currently hotly debated question of further short reverse polarity intervals within the lowermost Jurassic.