Geophysical Research Abstracts, Vol. 9, 04238, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04238

Magneto-biostratigraphy of the VikinghFm, Central Svalbard and the geomagnetic polarity timescale for the Lower Triassic

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A composite magneto-biostratigraphy for the Lower Triassic is constructed, using as a framework the high resolution ammonoid biostratigraphy available for arctic Boreal successions, using new data from Spitsbergen and published data from the Sverdrup basin. The magneto-biostratigraphy through the Vikinghødga Fm has been determined in central Spitsbergen, using the type section in Deltadalen, with additional sampling from an additional section at Milne Edwardsfjellet some 15 km distant. The successions here are horizontally bedded and essentially undeformed, and can be closely related to several nearby sections on the southern flanks of Sassendalen. Combined thermal and alternating field demagnetisation is effective in isolating characteristic Triassic directions, whose mean directions fall close to the European apparent polar wander path for the Lower Triassic. However, the Triassic reversed and normal directions are partially overprinted with a frequently strong, probably recent magnetisation. The remanence appears to be predominantly carried by magnetite, although an unidentified magnetic sulphide is important in some intervals (particularly the Vendomdalen Mbr). The polarity stratigraphy from the Vikinghødga Fm, when integrated with the ammonoid and meager conodont data is similar to that previously determined from the Canadian arctic successions. Together, these allow the construction of a composite boreal magneto-biostratigraphy for the Lower Triassic tied to the boreal ammonoid zonations.

In the Vikinghødga Fm the Permian Triassic boundary cannot be accurately located, occurring between 1.7- ∼10 m above the base of the Deltadalen Mbr either below or at about the level with an *Otoceras boreale* fauna. The Late Griesbachian to the early part of the *E. romunderi* Zone is mostly reverse polarity, with 3 substantive normal polarity intervals. The mid and upper Smithian (lower Olenekian) part of the Vikinghøgda Fm, which has the best ammonoid age control, is dominantly normal polarity, and can be closely correlated to that in the Sverdrup Basin. Integrating data through the Spathian (upper Olenekian) is complicated by poor biostratigraphic age control in the Sverdrup basin, and large changes in sedimentation rate in the Spitsbergen succession. The Spathian appears to be dominantly normal polarity, with evidence of at least 3 major reverse polarity intervals.