

Magnetostratigraphy of the Carboniferous to Permian bedded chert sequences from the Tamba Belt, Sasayama area, Japan.

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The Permo-Carboniferous Reverse Superchron (PCRS, or Kiaman superchron), spanning approximately 50–60 myr, is known as a long period of reversed polarity of Earth's magnetic field (Irving and Parry, 1964). The Superchron has been recognized from the Upper Carboniferous to Upper Permian successions in USA, Russia, and Germany. These magnetostratigraphy, however, contain some questionable polarized zones with short normal polarized zones in Early Permian. Here, we present the Late Carboniferous to Middle Permian magnetostratigraphy established in two bedded chert successions of the Tamba Belt in Japan, which are considered to have accumulated in a mid-oceanic basin of the Panthalassa Ocean.

We studied the stratigraphic intervals from the Upper Carboniferous to Middle Permian in the Hatayama and Fujioka-oku sections in the Sasayama area, where radiolarian biostratigraphy has been examined (Yamanaka, 2001). Hatayama section (ca. 2.6 m) is located at 2 km to the northeast of Sasayama, Hyogo Prefecture. The section comprises red bedded chert and Moscovian (Late Carboniferous) conodonts occurred from middle part of the section. Fujioka-oku section (ca. 16 m) consists of mainly red bedded chert. Several grey thick chert beds are intercalated in the upper part of the section. The middle part is discontinuous due to a strongly deformed zone. From the upper part of the section, Asserian (Early Permian)–Capitanian (Middle Permian) radiolarians were obtained.

Magnetostratigraphic results delineate 6 substantive normal and reverse magnetozones, defined by measurement of 62 samples. The magnetostratigraphy of samples in Moscovian (Late Carboniferous) and Asserian (Early Permian)–Capitanian (Middle Permian) interval are almost correlatable with that of other sections in USA, Russia, and Germany. This correlation shows that the bedded chert of Sasayama area was deposited in the Southern Hemisphere, assuming that the rocks in the European sections were deposited in the Northern Hemisphere. Our magnetostratigraphy is mainly consists of reverse magnetozones, which is correlated with the Kiaman superchron. However, some short normal magnetozones are recognized in Early Permian interval. These normal magnetozones may be correlatable to some normal polarity zones within the lower Kiaman superchron reported from eastern Germany.

Keywords: Carboniferous, Permian, magnetostratigraphy, bedded chert, Tamba belt, Kiaman superchron