



Archaeomagnetic studies in the Gorgan Plain in Northern Iran

Catherine M. Batt (1), David Greenwood (1), Hamid Omrani Rekavandi (2), and Eberhard Sauer (3)

(1) University of Bradford, Dept. of Archaeological Sciences, Bradford, West Yorkshire BD7 1DP, United Kingdom (C.M.BATT@BRADFORD.AC.UK, 0044-1274-), (2) Iranian Cultural Heritage and Tourism Organisation, Tehran, Iran, (3) School of History, Classics and Archaeology, University of Edinburgh, Edinburgh, EH8 9JX, UK

This paper will report on new directional magnetic data obtained from recent studies of fired archaeological materials and sediments from northern Iran. It will discuss the palaeosecular variation record available in this poorly covered region and will address the archaeological questions that can be answered by such studies.

Samples for magnetic directional studies have been obtained from archaeological features in the Gorgan Plain of northern Iran, including ovens, hearths, brick kilns and water-lain sediments. These are shown to retain a stable record of the past magnetic field, with well-defined and precise magnetic directions, and to provide an indication of palaeosecular variation. All the features are associated with the Gorgan Wall which, at over 195km in length and with over 30 associated forts, is arguably the grandest ancient defensive barrier between central Europe and China. Radiocarbon dating has established that the Gorgan and nearby Tammishe Walls and associated forts (all explored in an Iranian/British fieldwork project since 2005) were all built sometime between the early fifth and the first third of the sixth century AD. Dating these installations to such a long time span leaves many unanswered archaeological questions which are addressed by this archaeomagnetic study. Were the forts built simultaneously or over a long period of time? Was the Gorgan Wall built from west to east (as suggested by different brick and kiln sizes)? How long did it take to complete this immense building programme? What is the time interval between the early kilns used to produce bricks to build the walls and the ovens used during later phases of occupation within the forts?

In addition, new radiocarbon and optically stimulated luminescence dates for the features investigated allow comparison with the existing, sparse palaeosecular variation data for the region. This research not only adds data to global models of geomagnetic change, it provides a snapshot of the past geomagnetic field and therefore establishes the foundations for a new dating method for the region.