

MAGNETIC PROSPECTION FOR DETECTION OF ARCHEOLOGICAL SITES

H. Lindner (1), B. Wagenbreth (1) and R. K ppler (1)

(1) Institute of Geophysics, Freiberg University for Mining and Technology

lin@geophysik.tu-freiberg.de / Fax: +49- 03731-293626

Usage of geomagnetical methods in archeological surveys is well known. They are qualified by low cost for both detailed exploration and prospection of huge archeological sites. Mostly are used Fluxgate and Cesium magnetometers as vertical gradiometer which allow high accuracy measurements.

The demonstrated results of a magnetic prospecting show rests of cave-houses of high-middle ages in a territory of a miner settlement near Frankenberg in Saxony. The detection of the houses was only possible by localisation of the housed fire place because the loam used for these fire places got thermoremanent magnetization with high coercitive force. The prospection was done in a 1×1 m raster. Numerous anomalies > 400 nT were detected. They were interpreted as fire places. The measured susceptibilities reach values up to $500 \cdot 10^{-5}$. Additional geoelectrical soundings detected a moat in the surrounding as low resistivity anomaly.

Further geomagnetical measurements were carried out in the Niederlausitz-area, eastern of Elbe-river. The prospection was done in a area of 25.6 ha for searching of iron smelters (ovens) for torf-ore processing in the period between early iron-time to 12th century A.D. The expensive prospection was carried out in a raster of 1×1 m. Hereby a lot for archeologist suspected plains with anomalies > 100 nT/m were detected. Samples of a founded smelt, weight of 36 kg, give 12 nT/m, increasing value cause by collection of such blocks in oven-batteries. Susceptibilities of torf-ore reach values lower than $139 \cdot 10^{-5}$, the ovens up to $3850 \cdot 10^{-5}$.