

Magnetic survey for archaeological old kilns at Sayama area of Bizen city, Okayama

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We have been excavating ancient old kilns of Sueki type potteries in Sayama area of Bizen city, Okayama prefecture. In this area, there are many old kilns buried in forest, which were investigated by the distribution of the archaeological remains such as pottery fragments. In this program, we have had magnetic surveys for searching exact position of buried kilns. Here we report the settings and results of magnetic surveys, presumption of kilns under the ground and the actual properties of the excavated kiln.

There is a back ground noise less than 20 nT in the magnetic observation, so that it is likely that this region is suitable for the magnetic survey. We used an Overhauser type magnetometer GSM-19 (by GEM Systems in Canada).

We observed the magnetic field intensity at 0, 45, 90 cm above the surface and in every 90cm spacing. We discovered a magnetized object below the surface with several tens of nT signal. The signal shows the large positive anomaly regions located narrow negative anomaly band, which indicates that the object was magnetized by northward magnetic field. This feature is typical one generated by a thermoremanent magnetization of baked remains. The size of the anomaly region shows that the object are about 2m width and about 4m length, and the difference between intensity of signals in each height shows that the depth of the object would be less than 1m. Actually we excavated a well baked old kiln floor from 20-50cm depth in this region. The floor at the entrance of the kiln was collapsed and lost so that the exact length of the kiln is unknown. There were some fragment blocks of the roof. This kiln was named "Sayama Higashiyama-Oku" old kiln and many archaeological samples, potteries, were discovered. Paleomagnetic studies of direction and intensity were also done by Kitahara et al. (detailed in His talk in this meeting).

As stated above, it is likely that magnetic survey is very effective for preliminary investigation of archaeology on silicic or sedimental basement in environs of provincial cities such as the southern area of Okayama prefecture. We have also measured in another location of Sayama area and discovered a similar magnetic anomaly, and will excavate in this spring. We will also give a report of this location in the session.

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