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GEO-RADAR INVESTIGATIONS AT ASSERIA IN 2006

Summary

The results of geo-radar investigations

Geo-radar investigations were carried out in 2005 with an antenna of 400 Mhz, which has less of a depth range but clearer resolution because of the lesser wavelength of the electromagnetic waves, and hence it offers a clearer image of the contours of potential items of archaeological interest, even very small objects 5-10 cm in size, at depths up to 3 meters.

The geo-radar trench with a surface area of 130 m² (*fig. 1*) was placed in the vicinity of excavated archaeological trenches with excellent results. The remains of walls joining in a right angle were discovered, representing part of a structure of unknown purpose (Skelac 2005).

In 2006, in a trench with a surface area of 250 m², the possibilities of investigation with an antenna of 200 Mhz were tested (*fig 2*), which has almost double the range of measurement (approximately 5 – 8 m).

This antenna has less resolution and the possibility of discovering only small objects ca. 10-20 cm or larger because of the greater wavelength of the electromagnetic waves, but the depth range eliminates the possibility of missing some important architectural structure at greater depths.

Measurements were carried out along the northern edge of the site, at a spot where the outer walls were demolished, indicating a possible small gate or opening.

The trench had an irregular rectangular shape, the largest sides measuring 24 x 13 m. The surface was covered with a sandy humus and grassy vegetation with a large quantity of irregular limestone stones. The surface was covered with sandy humus and grassy vegetation along with a large quantity of irregular limestone stones. The surface had been somewhat leveled, as there was a depression in the middle of the trench that corresponded to the direction of the opening or collapsed section of the walls. The profiles were measured 1 m apart. Fourteen profiles were measured within the trench, oriented southeast-northwest. Three control profiles perpendicular to the trench that extend to the exterior walls were also measured (*fig. 3*).

Analysis of the results of geo-radar measurement showed the presence of large quantities of solid stone material, but their concentrations did not indicate clear anthropogenic

structures. Groupings of solid material could be noted on the plan sectors in the western part of the trench, but their contours can be interpreted only as stone banks or the results of collapse (*fig. 4 and 5*).

The study of individual profiles showed a horizontal firm structure under the collapsed section in the western part of the trench. This structure is located within the frame of the broken line on the plans shown in *fig. 4 and 5*, at an approximate depth of 2 – 2.5 m and is most significant in the context of archaeological excavation, i. e. the placement of a test trench. Experience to the present tells us that such results are measured on highly solid floors or the paving of streets or roads.

Three profiles are shown on *fig. 6* (file 298 – 300) where this feature is marked by arrows. The other firm structures represent geological layers and collapse.

Two profiles were selected from the measurements carried out perpendicular to the trench, extending from the southwest towards the walls (*fig. 7*). The first (file 302) on *fig. 3*, which extends along the northern edge of the geo-radar trench, shows the relation of the geological subsurface and the collapse of the outer wall or rampart (divided by a black vertical line), and the second (file 304) shows in place of a firm background a large quantity of smaller and softer material.

This second profile (file 304) was located at the site where an opening in the wall, i. e. a gate, was hypothesized, and it is possible that this was covered by a mixture of construction material, stone, and humus. The lines marking the boundary between the surface layer of humus and fragmented construction material and the geological or other layers are also marked.