

ANCIENT MONUMENTS LABORATORY GEOPHYSICS SECTION

REPORT ON MAGNETOMETER SURVEY

SURVEY: NORTH ELMHAM, NORFOLK

DATE: 14-15 Sept, 1979

Report no. 20/79

1. SITE

OS grid reference: TF 982194

Field no. -

Location: Survey adjoins Spong Hill excavation 1 mile S of  
North Elmham village.

Geology: Glacial gravel on chalk

Archaeological evidence: Saxon cemetery under excavation

2. SURVEY

Object: To test whether the cremation burials are detectable and so  
whether the extent of the cemetery could be determined by  
magnetic survey.

(a) Magnetic survey

A grid of 8 30m squares adjoining the current excavation trench  
was surveyed with traverses plotted at 1m intervals.

Magnetometer: Littlemore fluxgate gradiometer

Plotting sensitivity (vertical scale of chart): 12.5 gamma/cm  
(as reproduced)

(b) Other tests

(i) Magnetic susceptibility:

topsoil: 38	subsoil: 25	fill: -	$\times 10^{-6}$ emu/gm (ac bridge readings)
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(ii) -

Survey grid measured to:

Survey tied to site grid by measurement to pegs at 165/430  
and 185/395 as marked on plan.

Plans/charts enclosed:

Survey chart with magnetic anomalies outlined and showing  
location relative to site grid.

### 3. RESULTS

Cemeteries are among the least tractable of archaeological sites for geophysical investigation. A grave when compared with a naturally silted feature represents only a minimal physical change in soil composition and so is rarely detectable by magnetic surveying. It is therefore unusual to locate more than the boundary ditches or other ancilliary features in a cemetery, although there may occasionally be some overall change in noise level between heavily dug ground and the undisturbed surroundings.

Here at Spong Hill, despite the many cremations at shallow depth, it is clear from the chart that no such pattern has emerged. The only well-defined magnetic anomalies to be detected represent two of the ditches known from air photographs and partly excavated elsewhere on the site. The ditches run N-S through squares 1-3 and across square 6. There is a moderate contrast in the magnetic susceptibility readings between topsoil and subsoil, which means that conditions are quite favourable for the detection of such features.

The chart also shows a strongly disturbed area from the recently filled pit in square 3. Elsewhere there are various small local anomalies of amplitudes which merge into the background noise. Some of the weaker ones are shown on the chart by dotted outlines. Such anomalies could possibly represent graves but their density of distribution is much less than of the excavated burials. If the cemetery extends across the survey most of the graves must therefore be undetected. It is likely that the anomalies represent those pits which have a filling distinct from the natural rather than the cremations themselves. The cremation urns will be magnetic like all burnt clay, but of insufficient bulk to be detectable.

Some weak anomalies also align to give the appearance of sections of curved ditches, notably in square 7. The response is marginal, but these may compare with the circular features excavated.

In conclusion, the response to the survey was inadequate to permit any reliable estimate of the plan of the site. There may be more disturbance to the E and to the W of the excavation than to the S, but even a more extensive magnetic survey would be unlikely to allow any exact prediction of the extent of the cemetery.

#### Kiln sampling

Orientated clay samples were collected from the walls and central pillar of an excavated kiln during this site visit. Archaeomagnetic dating measurements will be made at this Laboratory and the results reported on separately.

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**For:** Norfolk Archaeological Unit

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