

ANCIENT MONUMENTS LABORATORY

GEOPHYSICAL SURVEY AT KIRKBY THORPE, CUMBRIA, 1983

Survey no. G 4/83

Dates of fieldwork: 23-4 Feb 1983

RG: NY 65292

Plans enclosed: 1. Location of survey grid, 1:2500
2. Magnetic and resistivity plots, 1:500

The uneven ground surface of this field suggests the possibility that archaeological features which might be associated with the neighbouring Roman settlement and fort could be present. The area represented by the grid as shown in plan 1 was therefore surveyed using magnetic and resistivity techniques to test for evidence of past occupation, and for structural remains.

MAGNETIC SURVEY

Plan 2(i) shows the magnetometer traverses as plotted in the field at 1m intervals using a $\frac{1}{2}$ m fluxgate magnetometer and chart recorder. There is a generally noisy response caused in part by modern disturbances (drains, fences), and a considerable amount of iron litter. The more clearly defined magnetic anomalies are outlined on the plan, but several of these correspond to surviving earthworks. The anomalies (A) in the SW half of square 2 represent a series of banks which might be associated with the rampart enclosing the Roman site beyond, and the anomaly at the N of square 3 coincides with a visible hollow. This may be a silted ditch, but it appears to terminate at a strong iron anomaly (B). The anomaly (C) through squares 4 and 5 represents the bank which drops to the lower ground in squares 6 and 7.

The relatively slight silting which might be expected alongside an extant bank does not usually respond as well in a magnetic survey as the fill of subsurface features, but at this site there is a strongly magnetic topsoil and conditions appear to be favourable for magnetic detection. (The topsoil magnetic susceptibility is 157×10^{-8} SI units/kg; the site is on Permian sandstone.) It is therefore unlikely that ditches or pits would remain undetected, but there is little evidence for them except for the not very satisfactory features marked in squares 2 and 3. The possible ditches (D) are no stronger than the anomalies recorded from the various banks, and the pit suggested at E could be caused by a piece of iron at greater depth than other pieces elsewhere.

RESISTIVITY SURVEY

Plan 2(ii) is a computer drawn plot of the unprocessed readings, which were collected at 1m intervals in squares 2-5, and at 1.5m intervals in squares 6-8. As with the magnetic survey there is some overall disturbance, but little recognizable detail. The earthworks responded less well than in the magnetic survey, but the bank (C) is visible, and so is a drain through squares 6-8. Other activity in squares 6-8 can probably be accounted for by modern disturbance and variations in ground level.

The only anomalies which show any of the regularity which might be expected from structural remains are the two linear features (F) about 10m apart in square 4. These are not particularly distinct or significantly stronger than variations in the readings elsewhere, and further processing of the data failed to produce any clear enhancement of the two features.

cont/

CONCLUSIONS

The survey provides little evidence for the presence of substantial archaeological remains apart from the superficial features visible in the field, but minor features or dispersed material of archaeological origin might occur. An auger hole arbitrarily placed to test the depth of soil cover (X) produced charcoal specks at a depth of 80-90cm. Such material in quantity could contribute to the noisy magnetic response, although this could as well be accounted for by the naturally magnetic topsoil.

If any trial excavation of the site is proposed then investigation of the magnetic anomalies in square 3 and the resistivity anomalies in square 4 should provide a test of whether significant archaeological features are present.

Surveyed and reported by: A. Bartlett

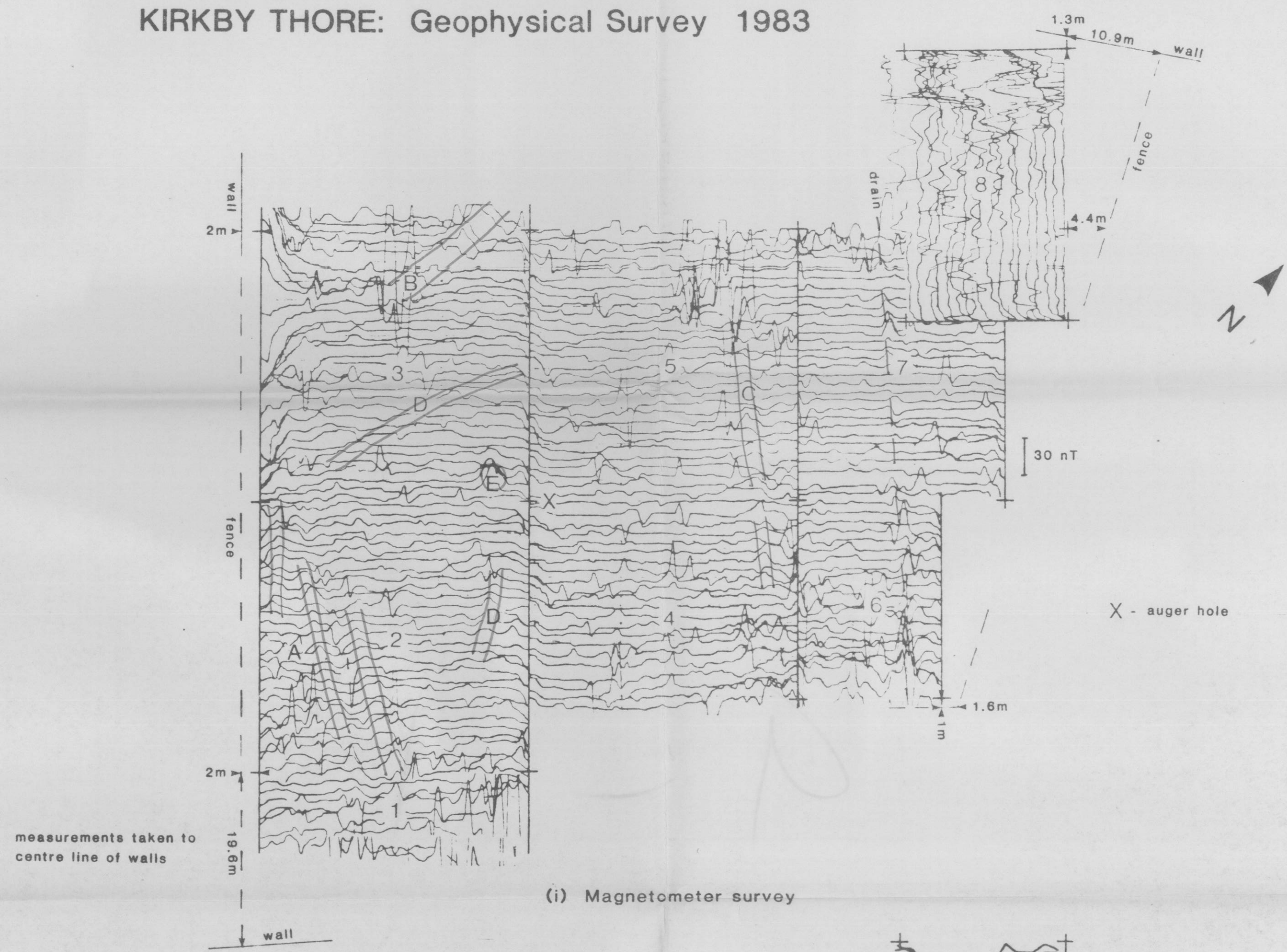
with: D. Bolton

Date of report: 6 June 1983

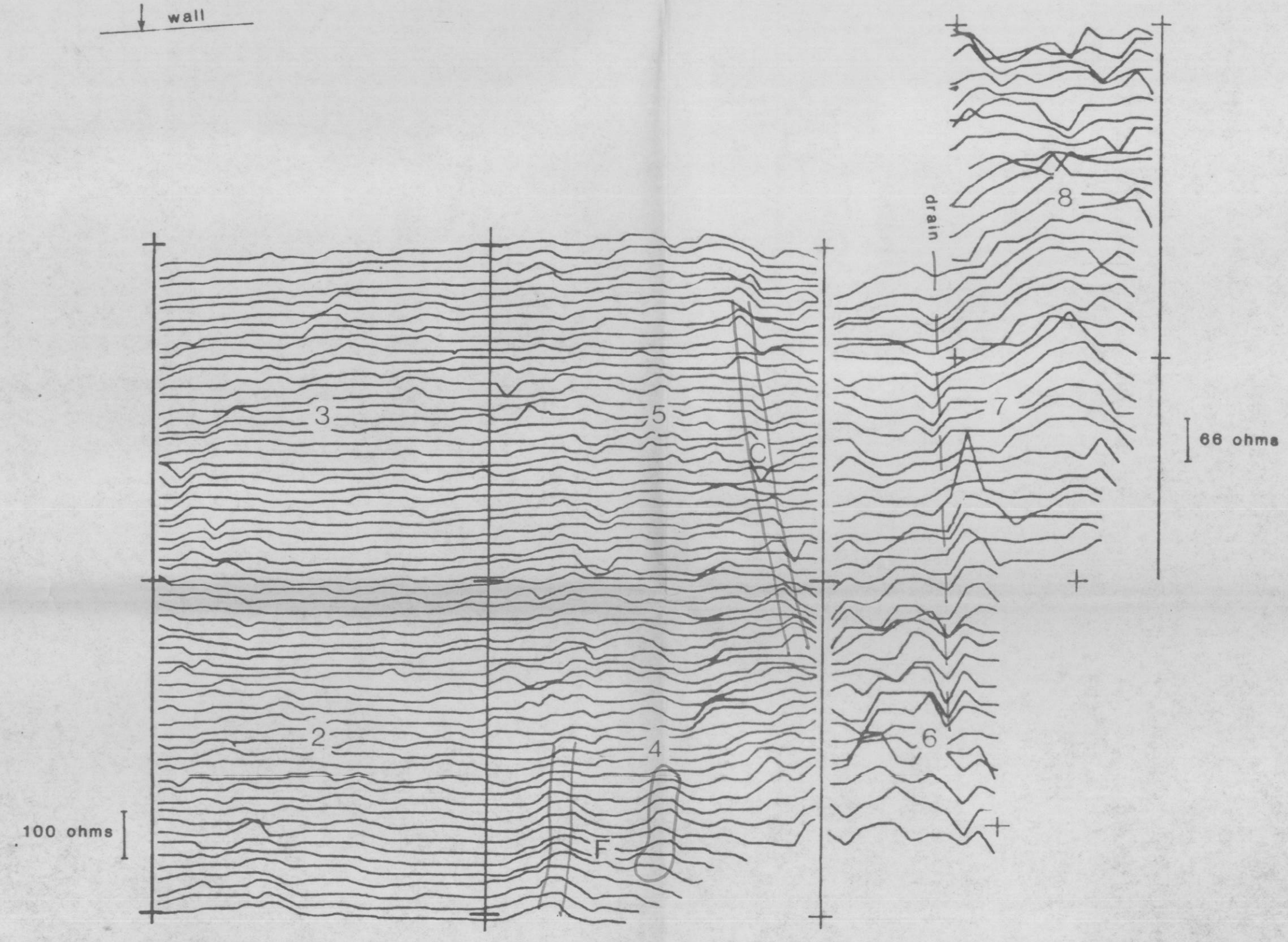
Ancient Monuments Laboratory Geophysics Section
Department of the Environment
Fortress House
23 Savile Row
London W1X 2HE

01-734 6010 ext 531

KIRKBY THORE: Geophysical Survey 1983



(i) Magnetometer survey



(ii) Resistivity survey (twin electrode: probe spacing 0.5m)

anomalies outlined