

Ancient Monuments Laboratory  
Report 46/94

REPORT ON GEOPHYSICAL SURVEYS AT  
CATTERICK, NORTH YORKSHIRE

A D H Bartlett

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### Summary

This report summarises results from a series of geophysical surveys carried out by the Ancient Monuments Laboratory for the Central Excavation Unit at sites near Catterick in 1981-4. The surveys were successful in producing detailed plans of two Roman occupation sites, and also detected Iron Age cropmarks. Comparisons between the survey results and subsequent excavation findings are noted.

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# Report on Geophysical Surveys by Ancient Monuments Laboratory at Catterick, North Yorkshire

## Introduction

Magnetometer surveys were carried out by the Ancient Monuments Laboratory between 1981 and 1984 at a series of sites in the vicinity of Catterick, N. Yorks in support of the excavation programme then being undertaken by the Central Excavation Unit. The surveys were carried out in advance of (sometimes imminent) excavation of the sites, but also with the intention where possible of providing a broader view of the archaeological context and the plan and extent of the site than excavation alone could offer.

The initial survey of the field to the north of Catterick South Junction at Bainesse Farm was fully reported on at the time of the survey (AML report G7/81), but in other cases interim notes or initial plots had to be supplied immediately to the excavators. This material is now brought together here, both as a record of the surveys themselves, and to provide a basis for more detailed comparison with the excavation findings.

The dates of the original fieldwork, and the original AML survey numbers which were allocated at the time were as follows:

10 September 1981:	Bainesse Farm, field S of A1	(G8/81)
22-23 October 1981:	Bainesse Farm, field S of A1 (cont)	(G30/81)
25 February 1983:	Catterick Bridge	(G5/83)
15 March 1983:	Honey Pot Road	(G10/83)
25 - 28 June 1984:	Interior of racecourse	(G12/84)
30 July - 7 Aug 1984:	Area to S of racecourse	"

Results from surveys of closely adjoining areas at Bainesse Farm and Catterick racecourse have been grouped together for convenience in the notes which follow.

## Survey Procedure

Each of the surveys was carried out using the then standard Ancient Monuments Laboratory recording technique in which continuous 30m traverses were plotted at 1m intervals using a fluxgate gradiometer (supplied by Philpot Electronics) connected to a portable chart recorder. The charts were subsequently assembled and copied at reduced scale to give the plots as reproduced here. Shading has been added to some of the stronger magnetic anomalies on the copies of the plots enclosed with this report. This is not an exhaustive interpretation, but it may serve to clarify the plan and extent of the main detected features.

The surveys were each located on a site grid of 30m squares positioned by reference to the field boundaries. Site plans based on 1:2500 map extracts, and showing the areas surveyed (marked by cross-hatching) are enclosed. (The map of the Bainesse Farm site has been enlarged to 1:1250.) The survey charts as provided with this report are in all cases reproduced at a scale of 1:625. The plans and charts included with this report are as follows:

Plan 1:	Bainesse Farm; location plan
Plan 2:	Bainesse Farm; survey chart
Plan 3:	Catterick Bridge and Honey Pot Road; location plan
Plan 4:	Catterick Bridge; survey chart
Plan 5:	Honey Pot Road; survey chart
Plan 6:	Catterick racecourse; location plan
Plan 7A:	Interior of racecourse; survey chart
Plan 7B:	Area south of racecourse; survey chart

Soil samples were collected at each of the sites surveyed, and magnetic susceptibility values were measured. The readings, which are noted in the site descriptions which follow, were in some cases particularly high, and showed strong enhancement from archaeological causes. Conditions on the gravel soils at Catterick are therefore particularly favourable for magnetic surveying, and the response should be strongest where past domestic or industrial activities were most concentrated.

Findings from the surveys were as follows:

#### **Bainesse Farm (CEU site 46)**

The survey here followed an initial trial excavation, and was followed by more extensive excavation by CEU, some of the findings from which are indicated on the location plan (1). The excavations demonstrated the presence of a dense Roman occupation and industrial site with superimposed features including cobbled floors, pits, kilns, postholes and masonry foundations. The magnetometer results are fully consistent with a site of this nature, although not all the features present are directly detectable in a magnetic survey. Both masonry and posthole structures were excavated, but their existence can only be inferred from the survey by the presence of areas of pronounced general disturbance, which are likely to be concentrations of structural and other debris. Disturbances of this kind are most noticeable close to each side of the A1 (which here is crossed obliquely by the Roman Dere Street), which suggests that the site represents a Roman roadside settlement. The more distinct features, as identified by shading on the plot, are likely in most cases to represent pits, ditches, and possibly hearths or kilns. The site is subdivided by ditches into rectangular enclosures, which contain other magnetic anomalies in considerable numbers, but in diminishing concentration away from the road. Some of the anomalies probably represent pits, but others are more diffuse and could represent layers or deposits of magnetically enhanced material, such as the patches of charcoal and burnt clay which were noted in the excavation. Topsoil magnetic susceptibility values of 162 and 248 were obtained from the north field, and would be consistent with the presence of such material. (All susceptibility values quoted are  $\times 10^{-8}$  SI units/kg.)

A previous geophysical survey had been carried out in the field north of the road at Bainesse farm by Bradford University (as described in report 'Catterick South Junction Improvement' by C. Heathcote, dated 2 December 1980). This survey covered a strip of land 20m wide, which was surveyed both magnetically and by resistivity. The magnetic findings were comparable to those noted here. Resistivity is capable of a direct response to masonry foundations, but the survey produced no clearly defined anomalies recognisable as buildings. There were, however, areas of high readings which could indicate paving as found in the excavation.

Features reported in the excavation which took place subsequent to the surveys included metal smelting furnaces and corn driers in the field west of the A1. These could account, given the association which usually applies between magnetic enhancement and burning, for some of the stronger detected features. The excavation also confirmed that settlement activity was concentrated close to the road.

#### **Catterick Bridge and Honey Pot Road (CEU sites 240 and 251)**

These two sites lie a few hundred metres apart to either side of Dere Street as indicated on plan 3, and were surveyed to test for the presence of ditches which could form part of the projected 'Bridgehead Defence' which has been postulated to lie to the north of Cataractonium (see shaded lines on plan 3). These ditches were not in fact detected in the surveys of either site, nor were they found in the subsequent excavation.

The excavation at Catterick Bridge (site 240) did produce evidence of occupation of the 3rd or 4th C including timber structures, stone platforms and hearths, but these lay to the north of a riverside revetment and outside the area surveyed. Nothing of significance appears to have been detected in the survey except perhaps a pipe near the south east corner (indicated by arrow on plan 4). One small anomaly (shaded on plan 4) was tested with an auger and produced specks of charcoal in the topsoil, but clean subsoil. A topsoil sample here gave enhanced susceptibility (97 SI), but readings elsewhere from the site were much lower (40 and 50 SI).

The survey chart for the Honey Pot Road site (plan 5) shows a broad east-west undulation in the magnetic response, which is presumably the result of cultivation, but few specific features. The most substantial finding was the ditch-like anomaly at the east side of the site, which was later confirmed by excavation and shown to be a ditch some 1.8m deep. No other features were found to be associated with the ditch, and the significance of the two isolated pit-like anomalies indicated on the plot is unclear. The very strong anomaly X was tested with an auger in case it proved to be a kiln, but it produced only clean gravelly subsoil, and so is likely to be interference from a piece of buried iron.

### Catterick Racecourse (CEU site 273)

Surveys were carried out on different occasions both within the circuit of the racecourse, which adjoins Dere Street to its west, and of an area to the south where there are cropmarks of apparent Iron Age date. The cropmarks as previously recorded are noted on the location plan (6). The survey successfully located an area of occupation close to Dere Street, as seen to the west of the survey plot 7A. The magnetic anomalies again form rectangular subdivisions of the site as seen at Bainesse Farm, and the activity is bounded by a ditch to its east. Only a few anomalies which probably represent the larger pits are identifiable individually within this area, but there is again a noticeable increase in the general level of disturbance towards the western edge of the survey, which also lies nearest to the Roman road.

The presence of ditches and of occupation features and associated burnt material, together with cobbled surfaces, was confirmed by subsequent trial excavation. Some weaker ditch-like features were however not confirmed, and may therefore represent the effect of superficial ground disturbances on a magnetically highly responsive site.

Topsoil magnetic susceptibility values were high in the western part of this site (89 and 118 SI), but they diminished in the area surveyed to the east of the racecourse, where relatively few features were found by the survey. (Readings here were 67 and 68 SI). The only considerable feature seen at the east side of the survey was the ditch-like anomaly as shaded (at RHS of plan 7A). This may be associated with the Roman marching camp which is known to extend in this direction from the field to the east of the road, but it was found to be only a simple ditch when excavated. A large circular (and perhaps modern) cropmark in the eastern part of the survey was not detected. There is also interference of modern origin across the northern corner of the plot.

The survey at the south end of the racecourse site (plot 7B) clearly detected the main cropmark enclosure, and perhaps some outlying fragments of ditches, but it failed to produce any evidence for the smaller enclosure towards the east of the site as indicated by the cropmarks (plan 6). There are at least three circular features, perhaps representing ring ditches or roundhouses, within the large detected enclosure. Other features, except perhaps for one or two pits, are difficult to identify. Susceptibility values here compare with those seen at the Roman occupation sites, and also show significant localized enhancement. (A maximum reading of 177 SI was obtained from near the centre of the survey within the large enclosure, and values of 97 and 98 elsewhere.)

The presence of one of the roundhouses was subsequently confirmed by excavation. Another trial trench in an area lacking magnetic anomalies towards the south of the site failed to produce any features.

### Conclusions

Conditions at Catterick are highly favourable for magnetic surveying, and the surveys appear to have been responsive and reliable. The survey findings, both from productive and from relatively blank areas, have in all substantial respects been confirmed by subsequent excavations. The strongest magnetic response was obtained from the Roman domestic and industrial sites at Bainesse Farm and the racecourse, but the Iron Age cropmark site at the racecourse also produced some distinct features. The comparative lack of findings from the surveys at Honey Pot Road and Catterick Bridge was again consistent with the excavation evidence.

The results of these surveys do, however, perhaps demonstrate the limitations of magnetic data alone when there is a need to interpret the dense and perhaps superimposed features of substantial settlement sites. The magnetometer is very effective for determining the presence and extent of such sites, but provides only limited information concerning the character of individual features. Resistivity surveying was used here only to a limited extent in the 1980 Bradford survey, and it is not a technique which it would be practical to employ on the same scale as magnetic surveying. Some resistivity coverage of the more intensively disturbed areas of sites such as these could however be of value, and could indicate the extent to which surviving structural features contribute to the broader picture of archaeological disturbances provided by the magnetometer.

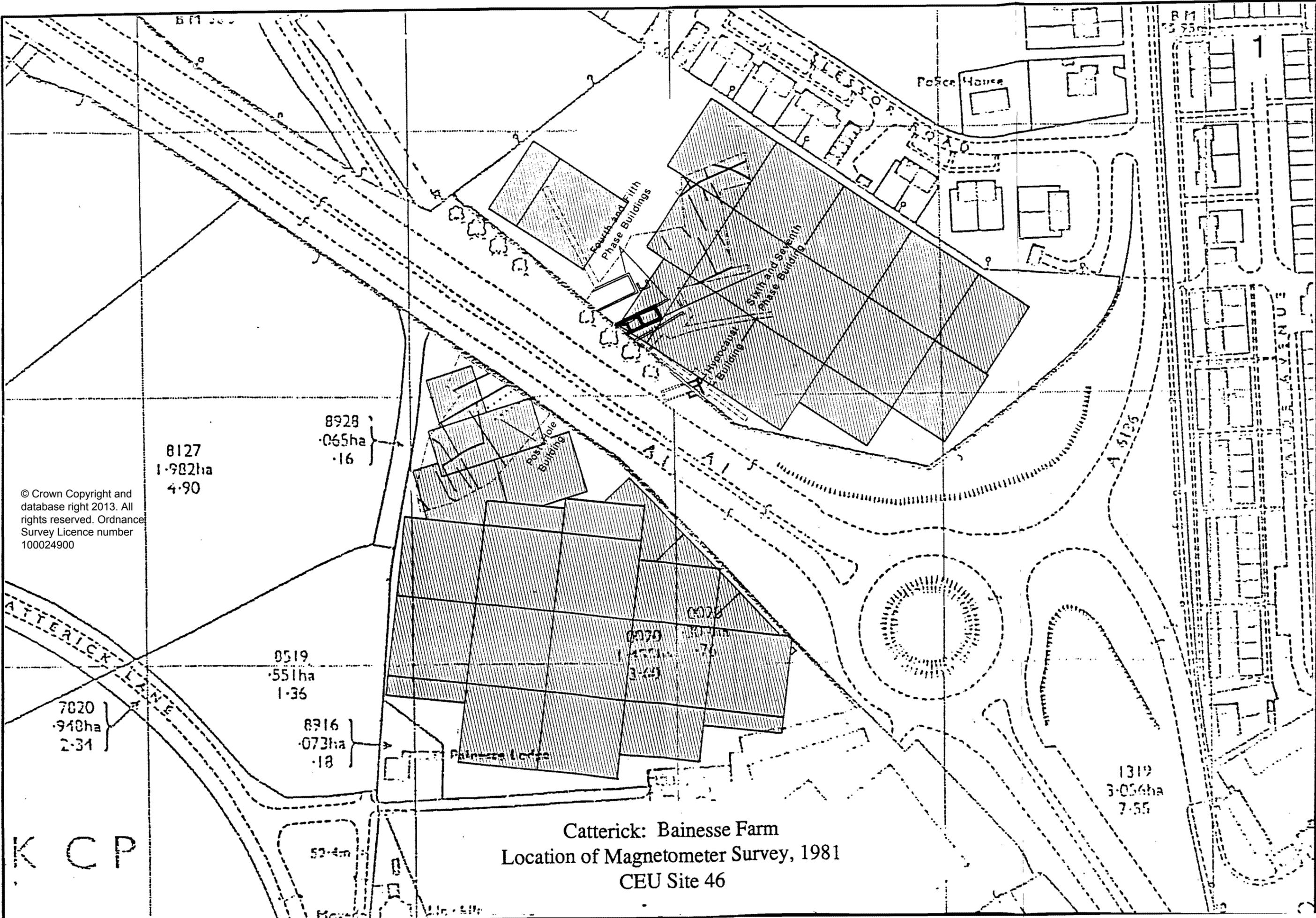
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**Date of report:**

29 January 1991

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1.982ha  
4.90

8928  
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8519  
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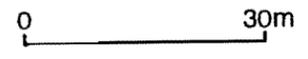
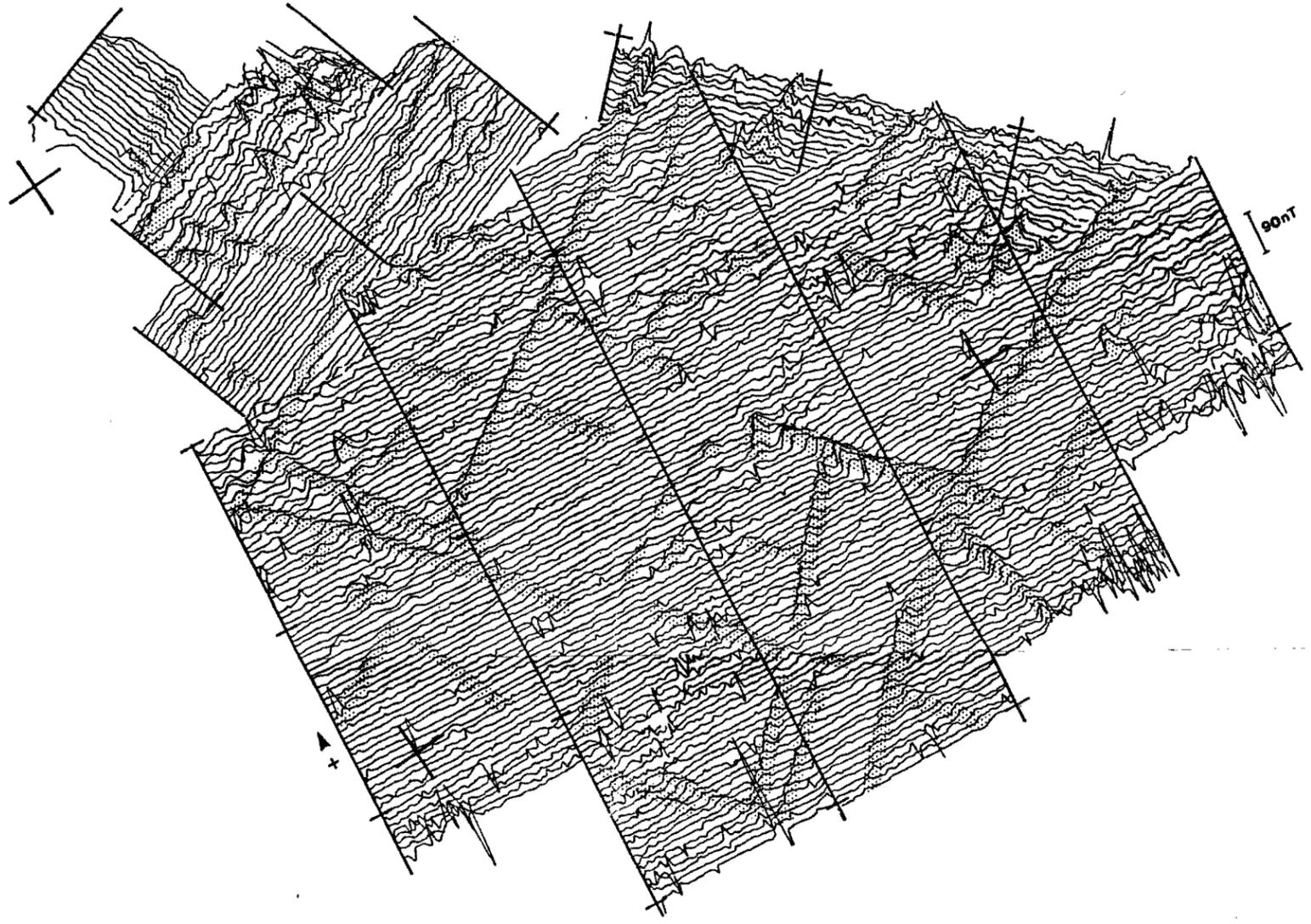
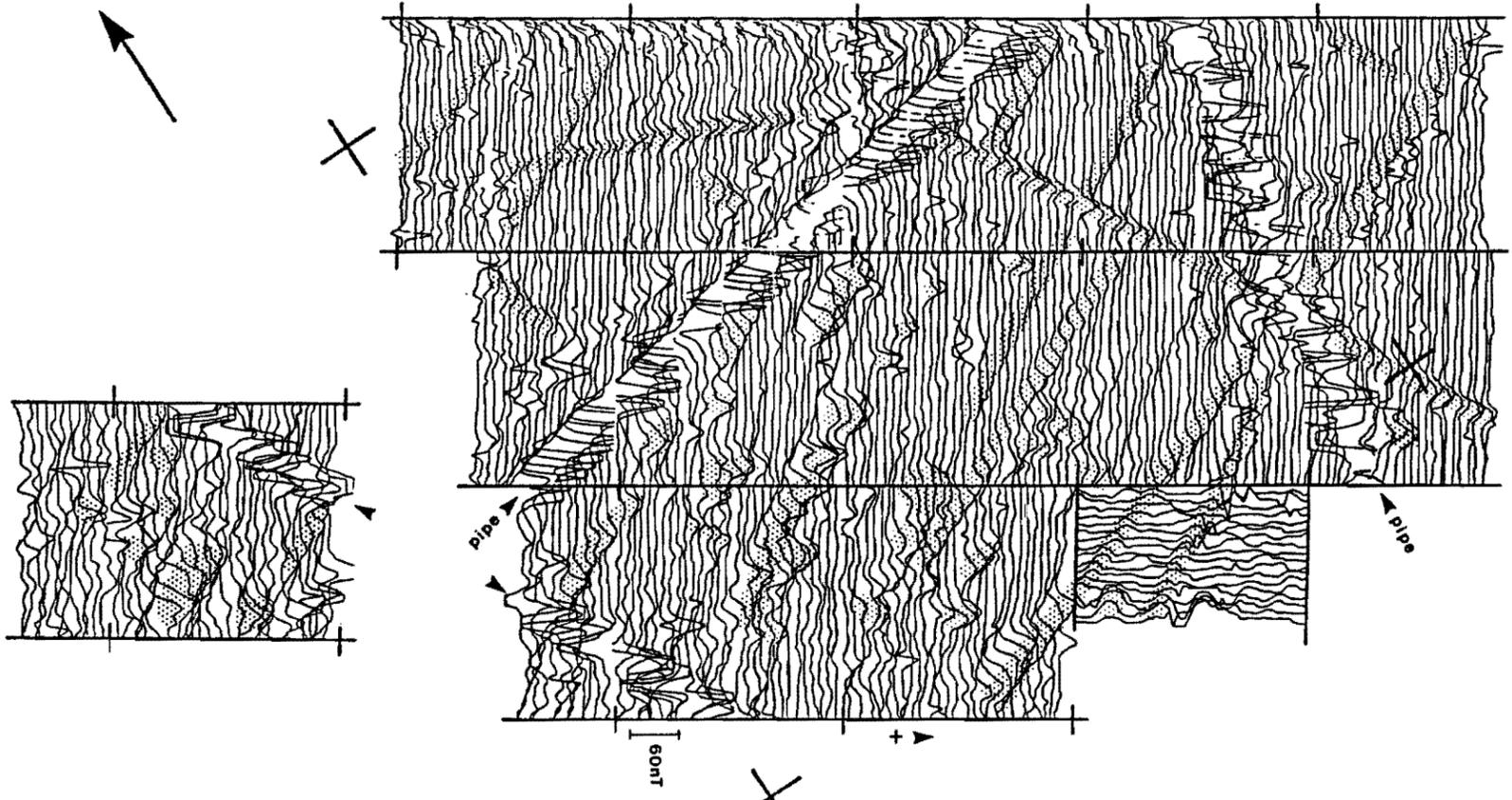
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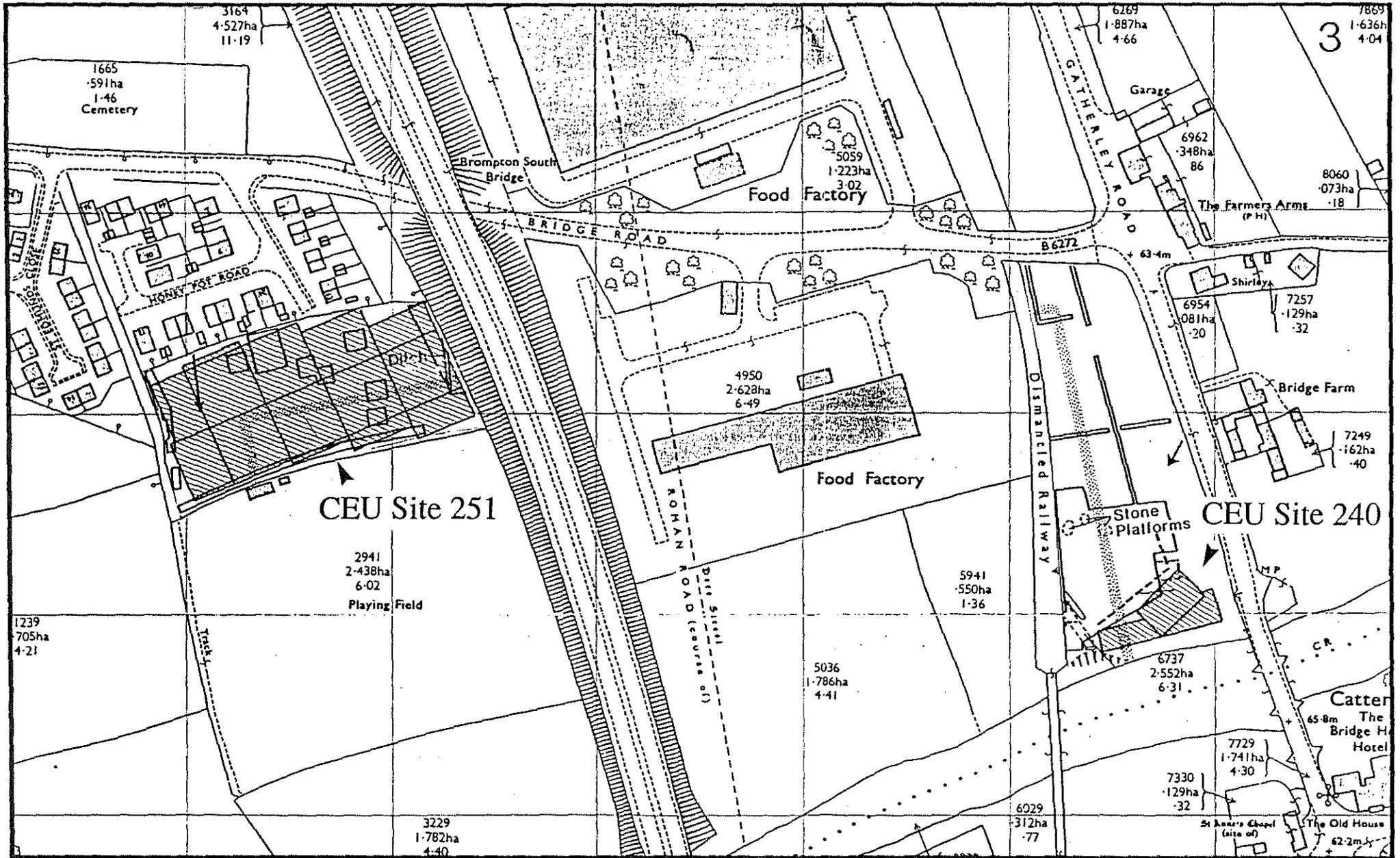
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Catterick: Baines Farm  
Location of Magnetometer Survey, 1981  
CEU Site 46

KCP

Catterick: Magnetometer Survey at Bainesse Farm, 1981





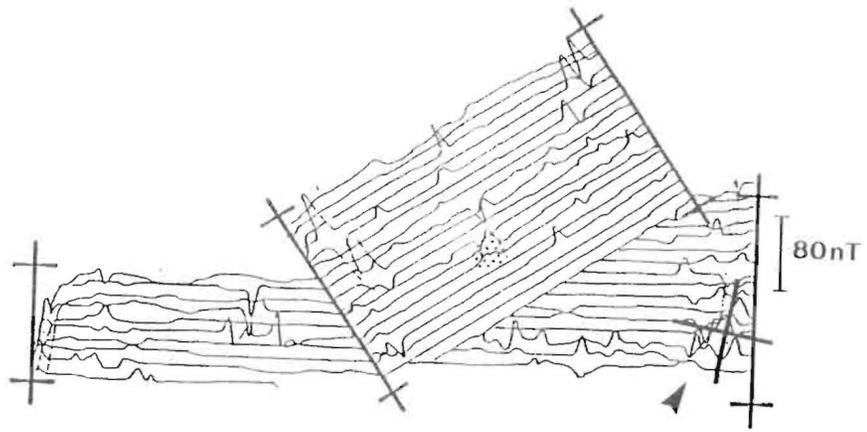
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## Catterick Bridge and Honey Pot Road Location of Magnetometer Surveys, 1983

Catterick Bridge  
Magnetometer Survey, 1983

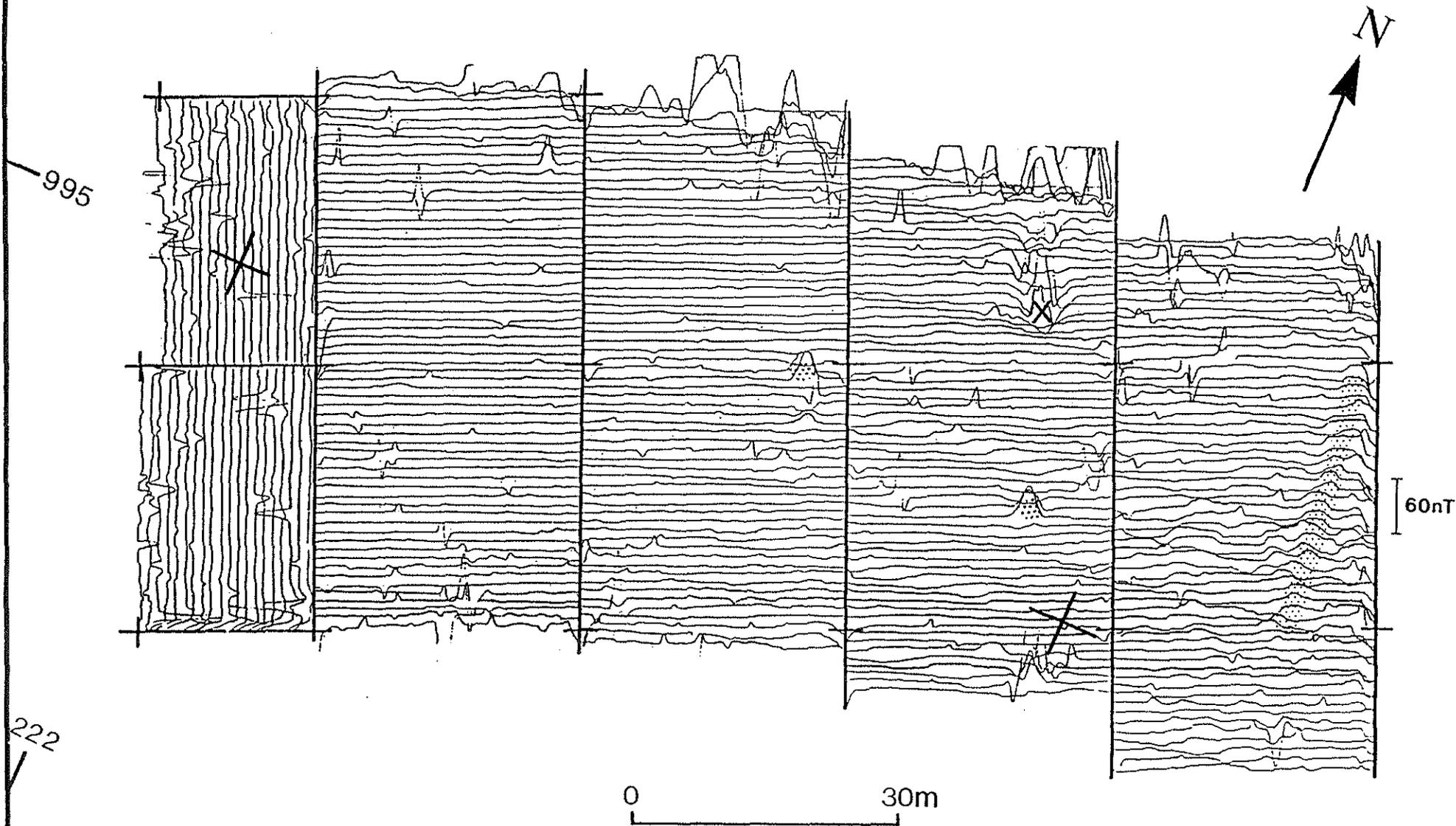


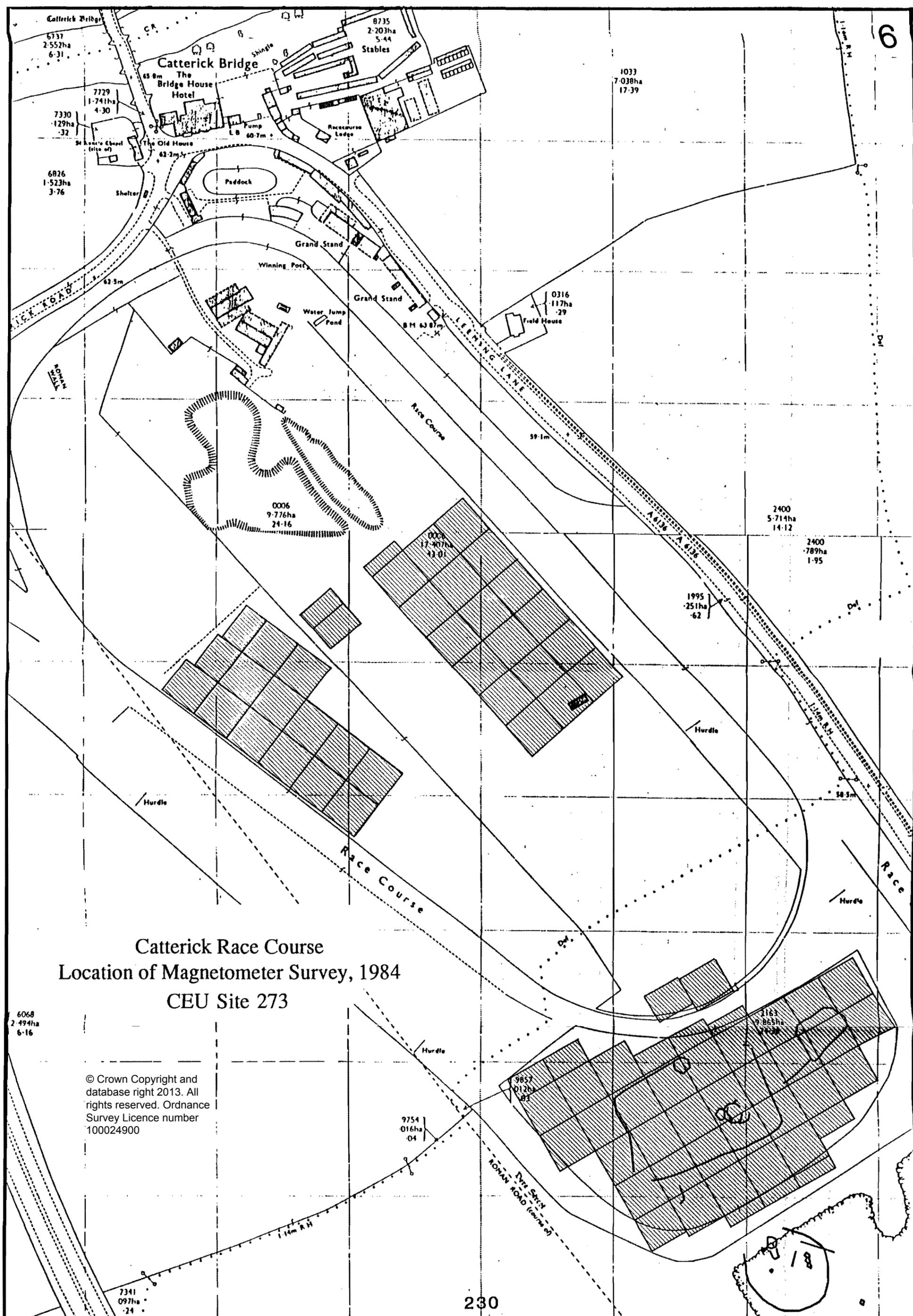
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Catterick: Honey Pot Road  
Magnetometer Survey, 1983

5

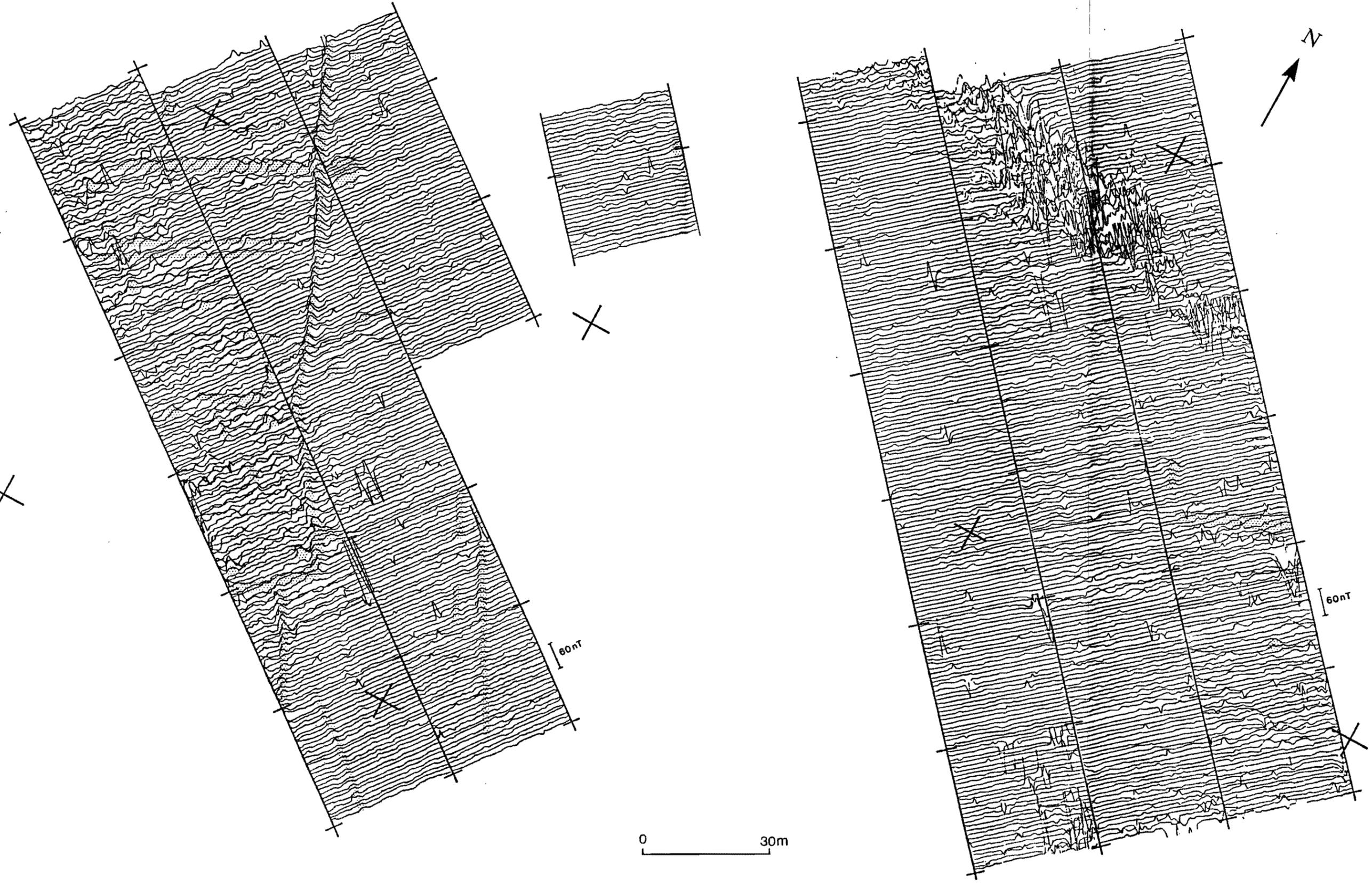




Catterick Race Course  
 Location of Magnetometer Survey, 1984  
 CEU Site 273

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Catterick Race Course: Magnetometer Survey, 1984



989

990

988

228

60nT

0 30m

60nT

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229

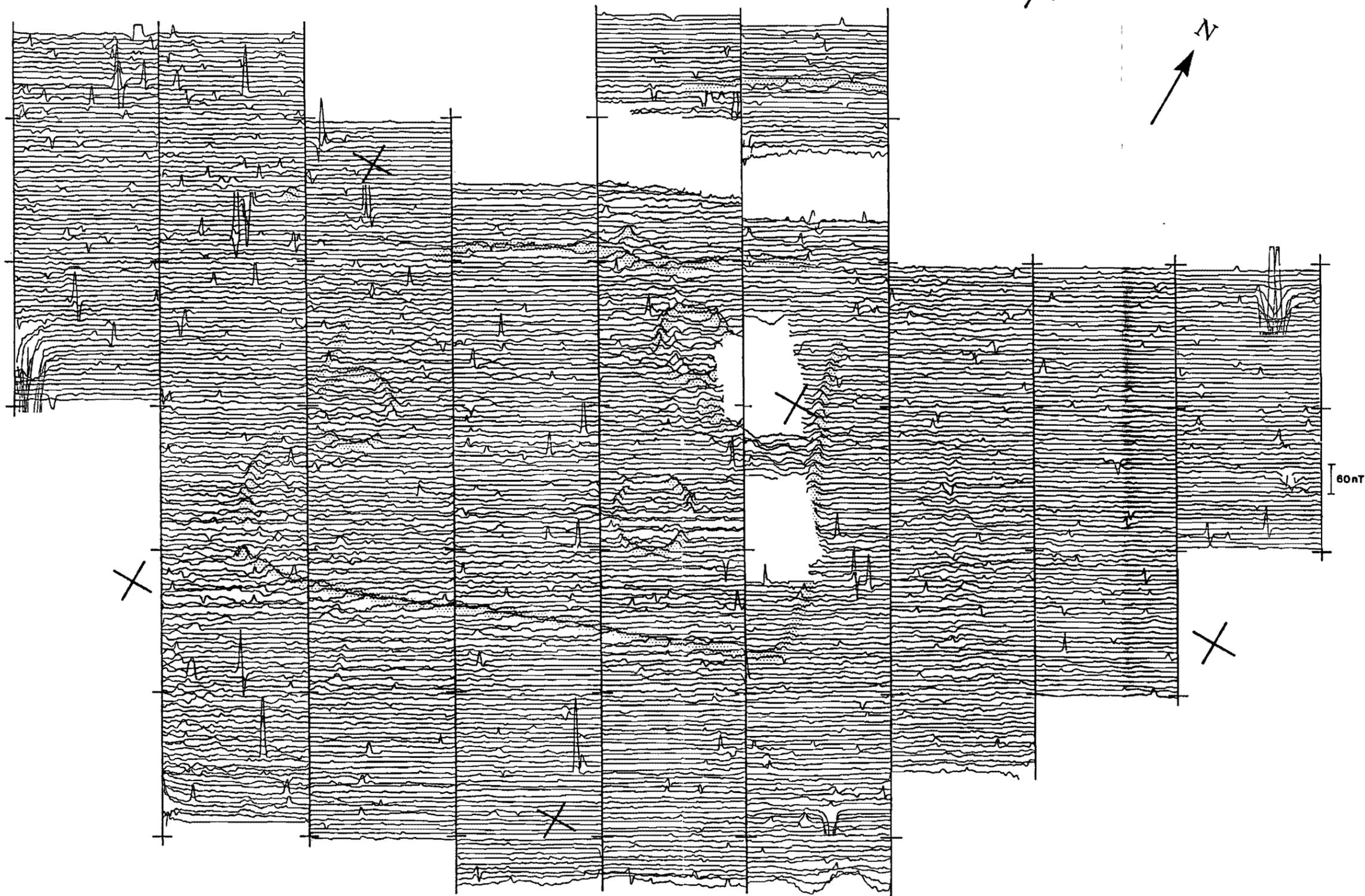
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231



Catterick Race Course: Magnetometer Survey, 1984

7B



986

985

984

987

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232

233

231