Ancient Monuments Laboratory
Report 68/98

NINE LADIES STONE CIRCLE, STANTON MOOR, DERBYSHIRE, REPORT ON GEOPHYSICAL SURVEY, 1998

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Summary

From the 24-26 June 1998, geophysical surveys were conducted over an area immediately around the Nine Ladies Stone Circle and the King Stone on Stanton Moor, Derbyshire, to provide information on any surviving buried archaeological features. A combination of earth resistance and magnetic techniques were applied, and their limited success is attributed largely to factors associated with visitor activity at the site.

Author's address :-

Mr T Horsley
ENGLISH HERITAGE
23 Savile Row
London
W1X 1AB

NINE LADIES STONE CIRCLE, STANTON MOOR, DERBYSHIRE.

Report on geophysical survey, 1998.

Introduction

The Nine Ladies Stone Circle and King Stone are situated on the top of Stanton Moor, Derbyshire in the Peak District National Park (SK 2491 6349: Figure 1). The site lies within a rich archaeological landscape of Bronze Age burial mounds, ring cairns, field boundaries and clearance cairns, the whole complex of which is scheduled (SAM Number 23315). Possible Romano-British, medieval and post-medieval agricultural and industrial activity, as well as 19th- and 20th-century forestry, are also featured in the area.

The following description has been compiled from Barnatt (1978, 137-142) and Smith (1998).

The Nine Ladies

Nine stones stand on the inner edge of a low earthen bank, creating a rough circle 11.5m x 10.5m in diameter. There are two gaps in their arrangement in one of which a fallen tenth stone was discovered in 1977. An eleventh stone is postulated in the southern gap where a possible small stone 'stump' is present; alternatively this might be the location of an entrance. The badly denuded and only partly identifiable bank was probably originally about 2.0m wide, giving an overall external diameter to the monument of about 15.0m.

The low 'ditch' outside the bank is the remains of a foundation trench for a circular wall which surrounded the circle until its removal in 1985.

Within the stone circle is the low rim of a badly mutilated cairn, originally perhaps 5.0m in diameter. Its centre has been removed and it is now a focus for fires.

The King Stone

40m WSW of the stone circle is the King Stone, set on a low stone platform or ring cairn. The stone leans slightly and has suffered fire damage in the past when it too was surrounded by a low stone wall, inside which fires were lit. This wall was also removed in 1985.

An RCHME survey in 1987 identified a small previously unrecognised 'ring bank' within which the King Stone is located, and it was suggested that the monument should be classed as a ring cairn, but the relationship of the King Stone to this cairn is unclear. It may be an integral part of the ring cairn, perhaps the remaining stone of an embanked stone circle, or it may be a separate feature inserted into or subsequently surrounded by the ring cairn construction.

Stanton Moor is in private ownership, part of the Stanton Estate. Footpaths cross the moor and are heavily used by the public. Damage to the monuments includes visitor erosion of the vegetation cover and camp fires on or within the monuments.

Over recent years, erosion surveys have been undertaken by the Trent & Peak Archaeological Trust (T&PAT) to record the nature and extent of erosion caused by visitors.

At the beginning of 1998, and in response to the measured increase in erosion, English Heritage initiated a project to 'discover the archaeological potential of the site which remains vulnerable' (English Heritage 23 January 1998). A geophysical survey of the stone circle, King Stone, and the area between was requested as the first stage of this project.

The underlying geology is Ashover Grits, of the Millstone Grit series (Institute of Geological Sciences 1973).

Method

Both magnetometer and resistivity surveys were undertaken.

A grid, based on that installed by T&PAT, comprising four 30m x 30m squares was established to encompass the stone circle and its outlier (Figure 2). Due to a combination of the density of trees to the north and west of this area, as well as time constraints, it was not possible to survey a greater area.

Magnetometry

Readings were recorded with a Geoscan FM36 fluxgate gradiometer at 0.25m intervals along traverses 0.5m apart. The data is presented here in the form of greyscale and graphical trace plots (Figure 3). In the greyscale plot the data was initially treated with a localised median filter (Scollar *et al.* 1990) in order to reduce the intense response to ferrous litter. It was found that the subsequent application of a Gaussian low-pass filter provided further smoothing and an enhancement of larger weak anomalies.

Resistivity

For the resistivity survey a Geoscan RM15 meter and MPX-15 multiplexer were used, employing the Twin Electrode configuration with a 0.5m mobile probe separation. Readings were recorded at 0.5m intervals along traverses 0.5m apart. Figure 4 presents the data as both greyscale and trace plots; the greyscale plot of the data was found to be improved by the application of a Gaussian high-pass filter which removes the low frequency, large scale spatial detail, thereby lessening the effect of geological variation.

Results

Magnetometry

As anticipated, ferrous litter on the site has resulted in the detection of much magnetic 'noise', as indicated on Figure 3 (**a**). In addition, the T&PAT grid pegs, also being ferrous, have each produced an intense magnetic anomaly (**b**) over 3m in diameter (but note that the peg to the

SW of the stone circle has been removed).

A magnetic anomaly (**c**) has been detected in the centre of the stone circle and possibly relates to the badly mutilated cairn recorded at this position. However, a more probable explanation is that the anomaly is caused by the recent lighting of fires here. A similar magnetic anomaly is seen at (**d**) and is also probably due to a hearth.

A very distinct positive magnetic anomaly (> 30nT), the origin of which is unclear, is present at (**e**). The traceplot reveals that the causative feature is probably near the surface, although there is no equivalent resistance anomaly (see below). The anomaly is unusual in not having negative magnetic values to the north of the positive peak values. While an archaeological source should not be ruled out, it seems most likely, on balance, to be of modern origin.

Resistivity

The low resistance circular anomaly (Figure 4: **a**) around the stone circle may indicate a former ditch around the monument, but is probably simply the response to the foundation trench of the stone wall mentioned above. A similar but far less intense anomaly (**b**) is present around the King Stone, and is presumably also the position of a removed wall.

Within the low resistance ring around the stone circle is a high resistance circle (**c**) corresponding to the slight bank into which the stones are set; this response is probably enhanced by the soil compaction associated with the path taken by visitors as they walk from stone to stone. In a similar way, the linear high resistance anomaly (**d**) between the stone circle and King Stone marks the position of a well-trodden path linking the two. In Figure 5, where the resistivity data is overlaid on the RCHME topographical survey, it is immediately apparent that the wall trenches, bank and path match up.

The position of the central cairn within the stone circle is indicated by a discrete area of low resistance at (**e**). Unfortunately the recent activity, primarily the setting of fires and soil erosion, renders it impossible to determine whether the anomaly here is of ancient or modern origin - although the latter is again more probable.

There are two discrete low resistance anomalies (**f** and **g**) lying outside the stone circle. These could indicate the positions of pits, although whether these are archaeological or modern in origin is yet again uncertain. Anomaly (**f**) is within an area of magnetic disturbance and corresponds with the position of a hearth visible when the survey was undertaken. No such feature was visible at (**g**), however, and both anomalies would require excavation to be understood.

The discrete high resistance anomaly (**h**) lies some 4m to the west of the positive magnetic anomaly (**e**); the two are therefore due to different sources. It was noted during the survey that the underlying Millstone Grit is very shallow (outcropping in places), and this could cause such an anomaly.

Other less intense variations in resistivity are interpreted as being geological in origin.

Conclusion

The geophysical survey at the Nine Ladies Stone Circle and King Stone was not successful in locating any anomalies which could confidently be identified as being the response to contemporary archaeological features. The 'ring bank' identified in the RCHME survey was not detected. The recent intense level of activity from visitors to the site has resulted in geophysical anomalies which may well mask those of a more subtle archaeological nature. Such features may, in any case, fall below the detection limits of the techniques used.

Geophysical surveys were therefore unable to provide unequivocal new information about the prehistory of the site and it is unlikely that further coverage will be any more revealing.

Surveyed by: E Bray
T J Horsley

Dates: 22-24th June 1998.

Reported by: T J Horsley

July 1998

Archaeometry Branch
Ancient Monuments Laboratory

References

Barnatt, J. 1978. *Stone Circles of the Peak.* Turnstone Books, London.

Institute of Geological Sciences (British Geological Survey). 1973. 1:50 000 map, *Geological Survey of Great Britain, Sheet 296, Glastonbury - Solid and Drift.*

Smith, K. 1998. *The Nine Ladies Stone Circle and King Stone, Stanton-in-Peak, Derbyshire, in the Peak District National Park -A Research Design.* Unpublished.

NINE LADIES STONE CIRCLE, STANTON MOOR DERBYSHIRE

Figure 5: Resistivity Survey overlaid on the RCHME Survey
(Processing: 0.5m Gaussian high-pass filter)

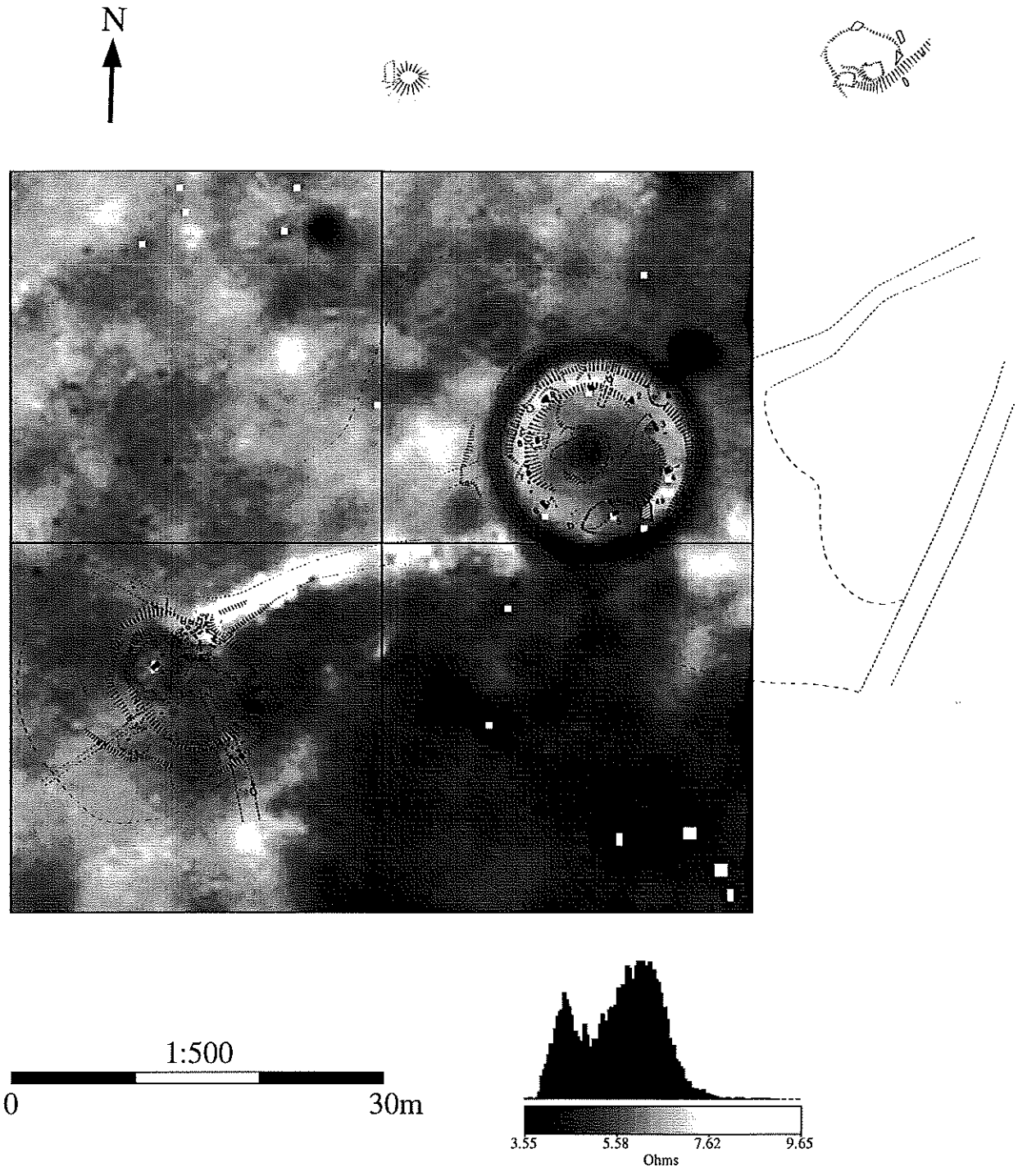

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Figure 1: Location of Geophysical Survey Grid, June 1998.

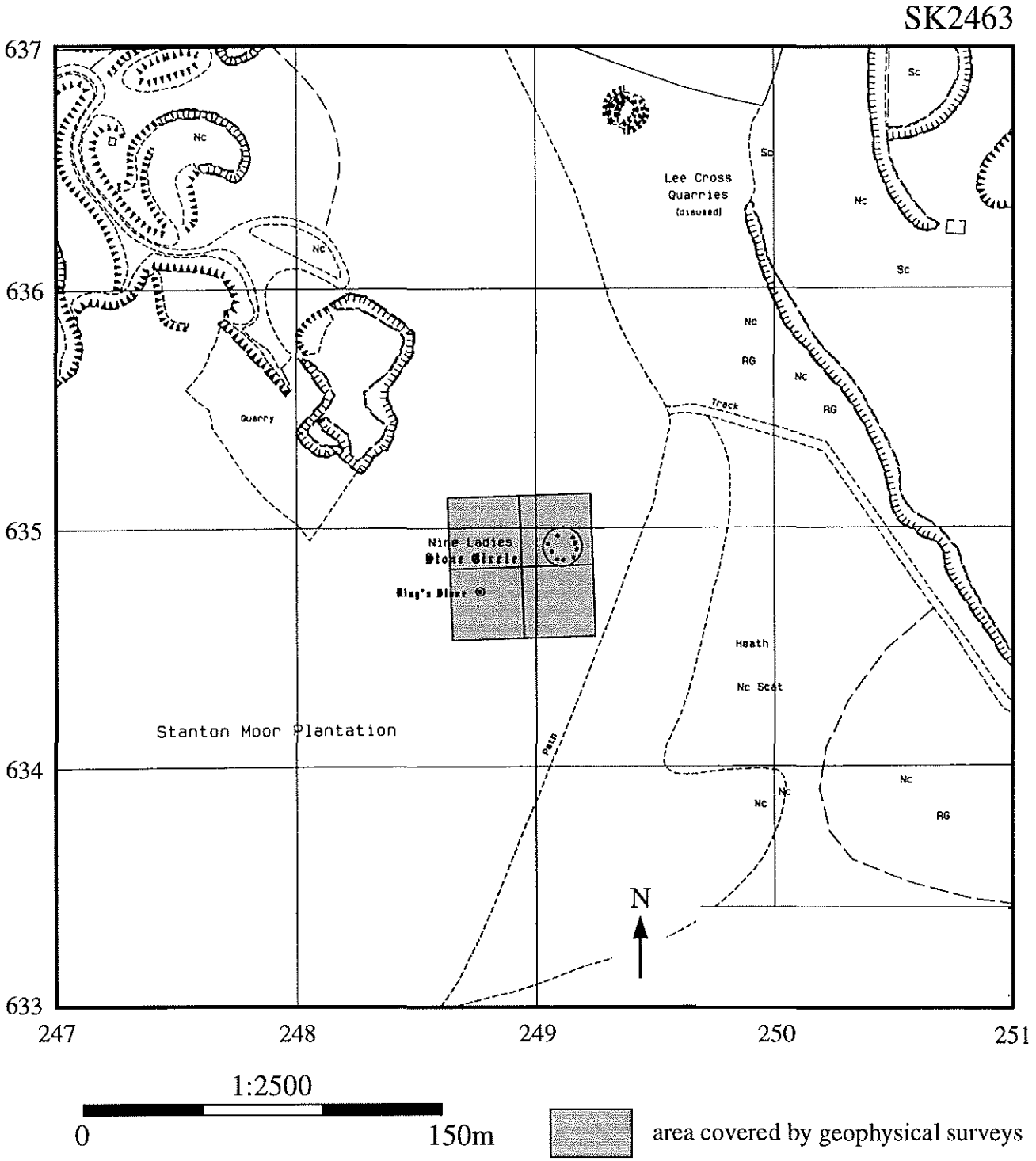

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Figure 2: Relative position of the 1998 Geophysical Surveys to the RCHME Topographical Survey and T&PAT grid pegs.

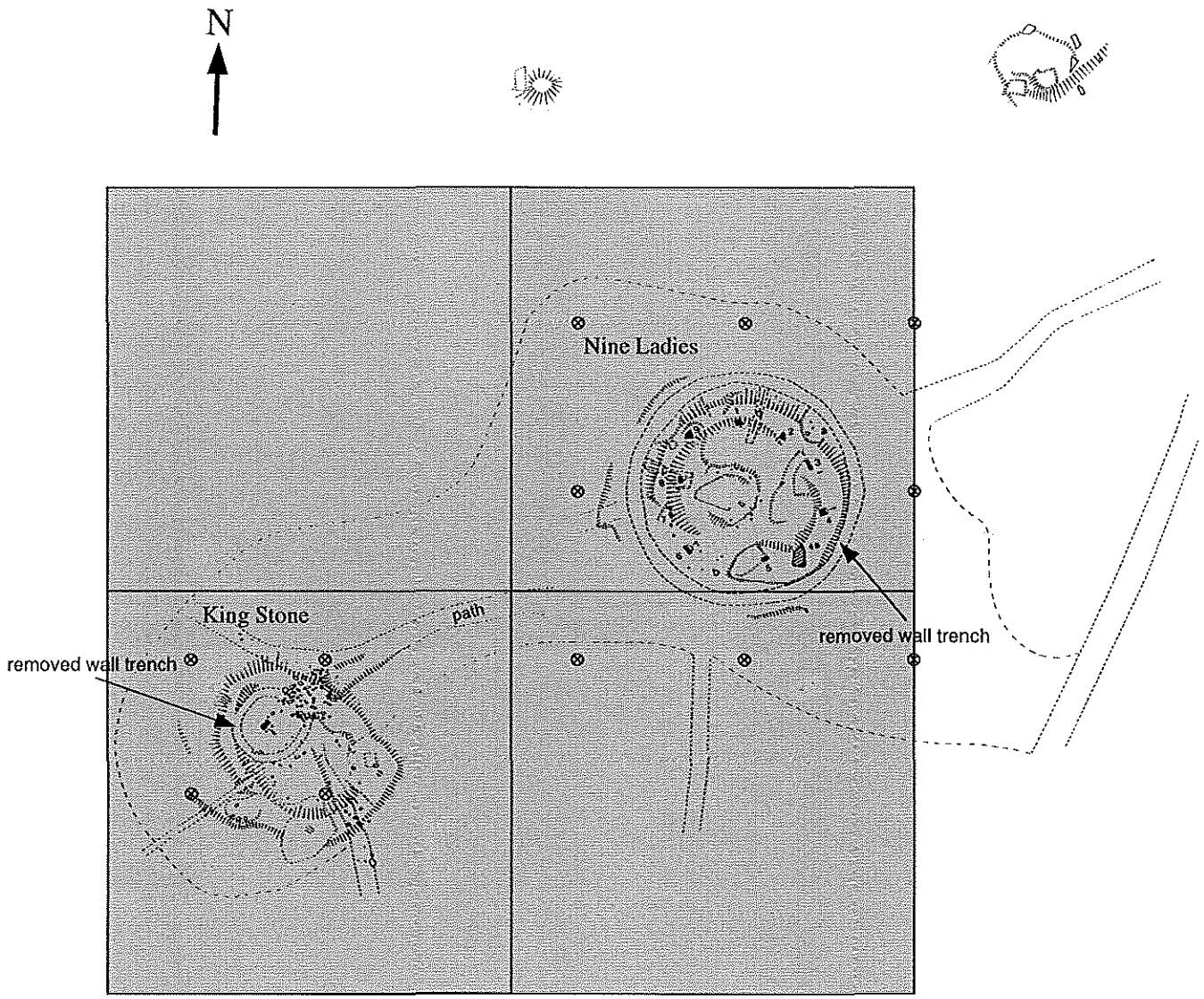

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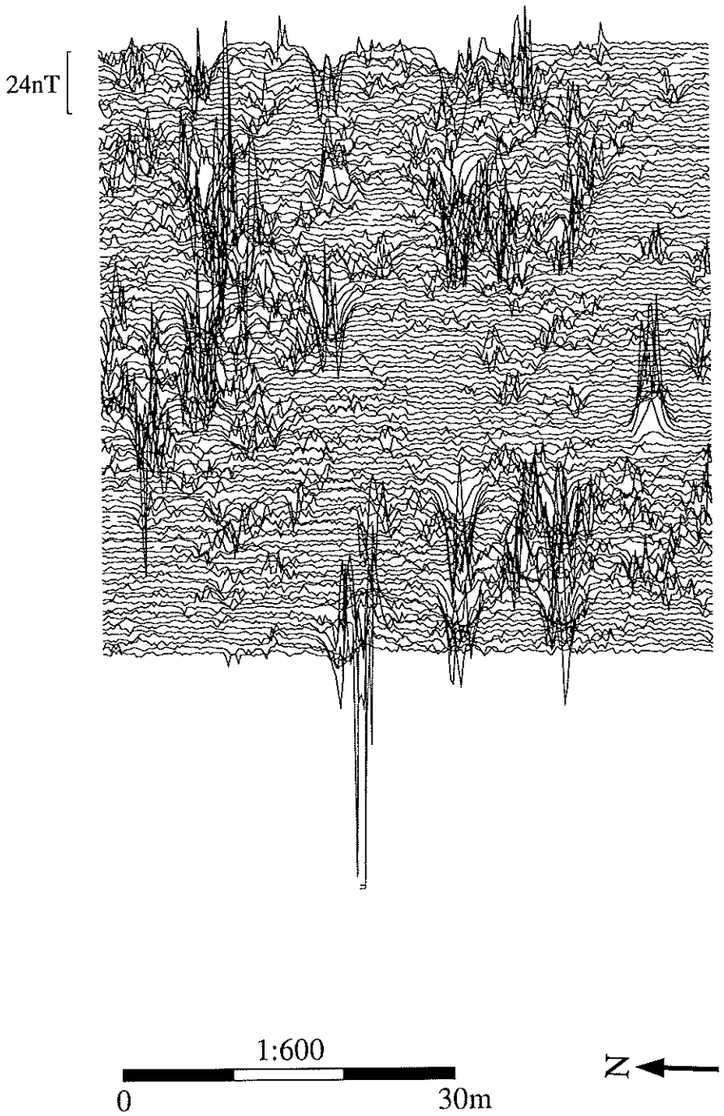
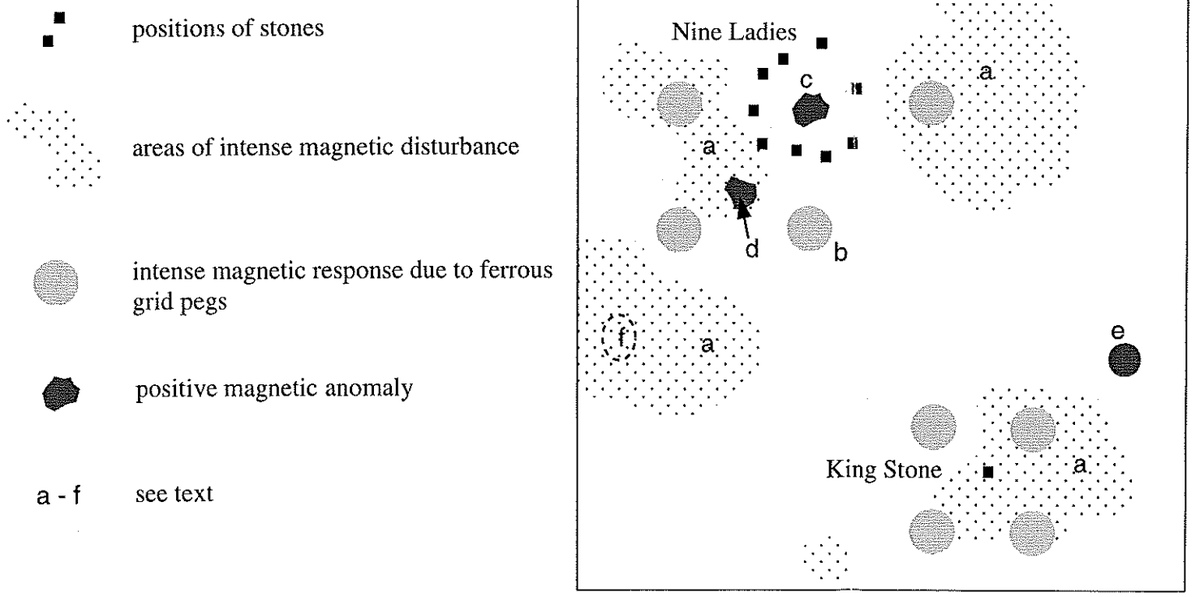
Figure 3: Magnetometer Survey, June, 1998.

a) Traceplot of raw data



b) Greyscale plot of 0.5 Gaussian low-pass filtered data

c) Interpretation



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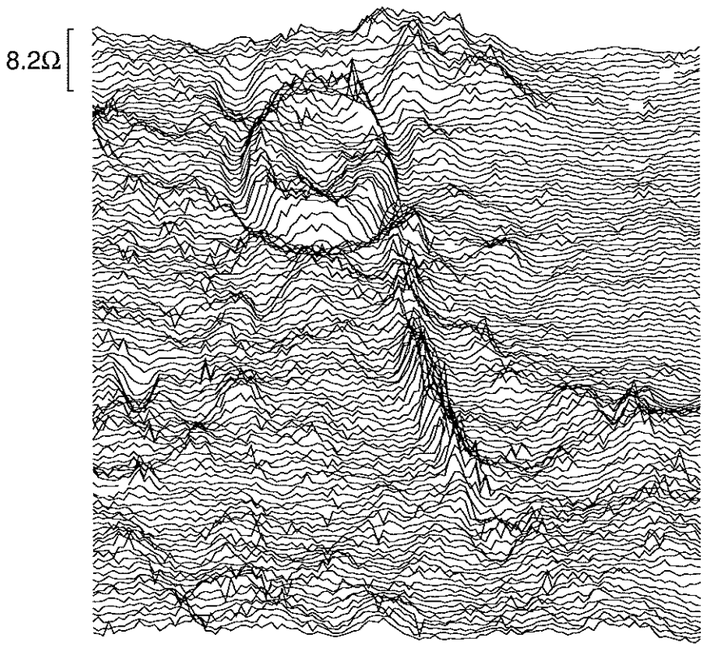
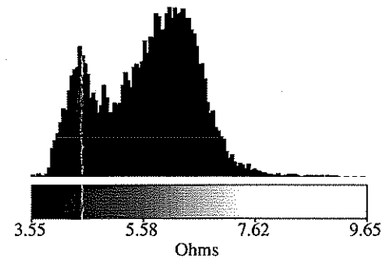
NINE LADIES STONE CIRCLE, STANTON MOOR DERBYSHIRE

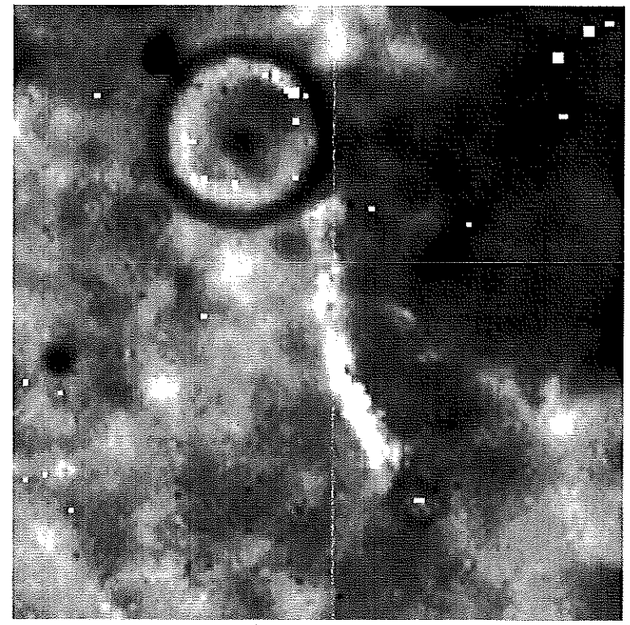
Figure 4: Resistivity Survey, June, 1998.

a) Traceplot of raw data



b) Greyscale plot of 0.5m Gaussian high-pass filtered data





c) Interpretation

position of stones

areas of anomalous high resistance

discrete areas of anomalous low resistance

areas of anomalous low resistance

a - h see text

1:600

0 30m

N

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