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Old Sarum 'Chapel Site', Wiltshire : Report on Geophysical Survey 2003

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Old Sarum 'Chapel Site', Wiltshire : Report on Geophysical Survey 2003

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Summary

The area surrounding the remains of a medieval chapel, which was previously found in a pipe trench, was investigated by resistivity and magnetometer surveying. A number of resistivity anomalies were detected, together with linear magnetic anomalies possibly indicating ditches or channels.

The distribution of resistivity findings suggests that remains of other structures forming part of the medieval hospital complex are likely to be present within the survey area, but their disturbed and amorphous character would be consistent with the effects of suspected deep ploughing at the site. It may be the case that intact wall footings survive only at a depth greater than the depth of penetration of the survey (c.0.5m).

Some of the magnetometer findings may relate to water courses or drainage within the hospital site.

Keywords

Geophysical Survey

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OLD SARUM 'CHAPEL SITE', WILTSHIRE

Report on Geophysical Survey 2003

Abstract

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The distribution of resistivity findings suggests that remains of other structures forming part of the medieval hospital complex are likely to be present within the survey area, but their disturbed and amorphous character would be consistent with the effects of suspected deep ploughing at the site. It may be the case that intact wall footings survive only at a depth greater than the depth of penetration of the survey (c. 0.5m).

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Old Sarum 'Chapel Site', Wiltshire

Report on Geophysical Survey 2003

Introduction

This survey covers an area adjacent to the remains of a medieval chapel near Old Sarum, Salisbury. This is possibly the chapel of St John's Hospital, a leper hospital known from documentary sources, but not previously located. The remains were discovered in a pipe trench dug by Wessex Water. The pipe has been re-routed, and the site evaluated by Wessex Archaeology, but little is known of its context or extent.

An area of 0.5ha centred on the chapel remains (at SU 14550 32700) was investigated by resistivity surveying to test for any detectable evidence of wall foundations. A magnetometer survey was also carried out across the surrounding 2ha.

The survey was commissioned by the Archaeometry Branch of the English Heritage Centre for Archaeology, Portsmouth, and fieldwork for the survey was carried out on 10-11 March 2003.

Survey Procedure

Both the magnetometer and resistivity surveys followed standard procedures as specified in the project brief.

Magnetometer readings were recorded at 25 cm intervals along lines 1m apart using fluxgate magnetometers. The x-y (graphical) plot represents the initial data after preliminary smoothing and correction for irregularities in line spacing caused by variations in the instrument zero setting. Additional 2D low pass filtering has been applied to the grey scale plot (figure 2) to reduce background noise levels. Outlines indicating the location of selected magnetic anomalies are shown superimposed on the x-y survey plot, and on a separate interpretative plan, figure 5.

The magnetometer survey was supplemented by magnetic susceptibility readings, which were taken at 12.5m intervals using a Bartington MS2 meter and field sensor loop. The results are presented as shaded plots inset with the magnetometer survey interpretation in figure 5. Susceptibility measurements can provide a broad indication of areas in which archaeological debris, and particularly burnt material associated with past human activity, has become dispersed in the soil. They can provide useful supplementary evidence when interpreting a magnetometer survey, but are also affected by non-archaeological factors, including geology, past and present land use, and modern disturbances.

Ground resistance measurements were taken using a Geoscan RM15 resistivity meter with the twin electrode probe configuration and a mobile probe spacing on 0.5m. A Geoscan multiplexer was used to permit the collection of two readings at each survey station. The remote probes were placed at a sufficiently wide separation (10m +) to give readings of constant minimum value, and so avoid discontinuities between sections of the survey.

The survey grid was set out and located at the required national grid co-ordinates by means of a sub-1m accuracy GPS system. Pegs marking positions measured from survey grid points were also left in place at the field boundaries at two positions as indicated on figure 5.

Results

The location of the pipe trench can be seen in the resistivity plots, where the backfilled trench shows as a strong positive anomaly, and on figure 5 which incorporates a plan of the excavated features found in the trench, as supplied to English Heritage by Wessex Archaeology. The magnetometer survey also shows strong interference from these recent disturbances. Elsewhere the magnetometer plots show a number of findings, but there are also interruptions from a fence towards the west of the site, and interference from a pipe to the east. There is further interference from two electric fences lying on the ground, one of which corresponds to a fence line as shown on the OS map.

The remainder of the site is relatively undisturbed, and shows a limited number of potentially significant findings. These include strong linear anomalies A and B (as labelled on figure 5). These could represent such features as ditches or land drains. A number of possible pit-like features are also outlined. Some quite distinct examples lie close to the excavated site, but others are weak and widely dispersed.

The magnetic susceptibility survey (plots inset on figure 5) gave relatively high, but uniform, readings (mean = 28 SI, standard deviation = 4). This confirms that the chalk-based geology of the site should provide favourable conditions for magnetometer surveying.

The resistivity survey also produced a relatively uniform response, other than from the backfilled trench, as seen in the unfiltered plot (figure 3). The filtered data (see grey scale and colour versions on figure 4) has been plotted using a narrow display range around the mean of the data to emphasise any weak anomalies which may be present.

The most conspicuous finding is a north-south band of slightly raised readings at the west side of the survey, which turns through 90 degrees (at C as labelled on figure 5) to continue approximately east-west. This feature is probably a little too narrow (5-6m wide) to represent a range of buildings, and the corner (C) is not quite a right angle. The overall plan of the site is not sufficiently distinct for the significance of this feature to be clearly apparent, but it could well be of archaeological interest.

Other resistivity findings include the possible narrow linear anomalies at D and E. These are perhaps of a suitable size to represent wall footings. Feature E is faintly visible in the unfiltered plot (figure 3), but D is perhaps an artefact of the high-contrast filtered plot. There are other linear resistivity anomalies (broken green lines) within an area of high readings at F. These probably relate to the linear magnetic anomalies (A). The features at G are irregular in plan, but lie close to the excavated remains.

Conclusions

It is mentioned in the project brief that the site has been subjected to subsoiling and plough damage, which would be consistent with the apparently incomplete and fragmentary resistivity response. It may well be the case that wall footings within the depth of penetration of the survey are damaged or dispersed, but some positive findings were obtained.

The linear magnetic anomalies A and B may be of more recent date, but could well indicate drains or watercourses associated with the hospital. It would be speculative to ask whether the correspondence between the magnetometer and resistivity findings could indicate a watercourse (A) supplying a reredorter (F). The dimensions and plan of the linear resistivity anomaly C may not be ideal for a range of buildings, but it could perhaps indicate a road or paving. The resistivity anomalies at D, E, and perhaps others near the excavation trench could well indicate the presence of additional structural remains near to those already excavated.

Report by:

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11 April 2003

P. Cottrell and D. Lewis carried out the fieldwork for this project.

1

414500E

1327 00N

82.9m

82.6m

82.0m

BM 81.10m

Stone

ROMAN ROAD

50 nT

magnetic anomalies

pipe

fences

Castle Hill

ED and Ward Bdy

Def

1:1000

0 50m

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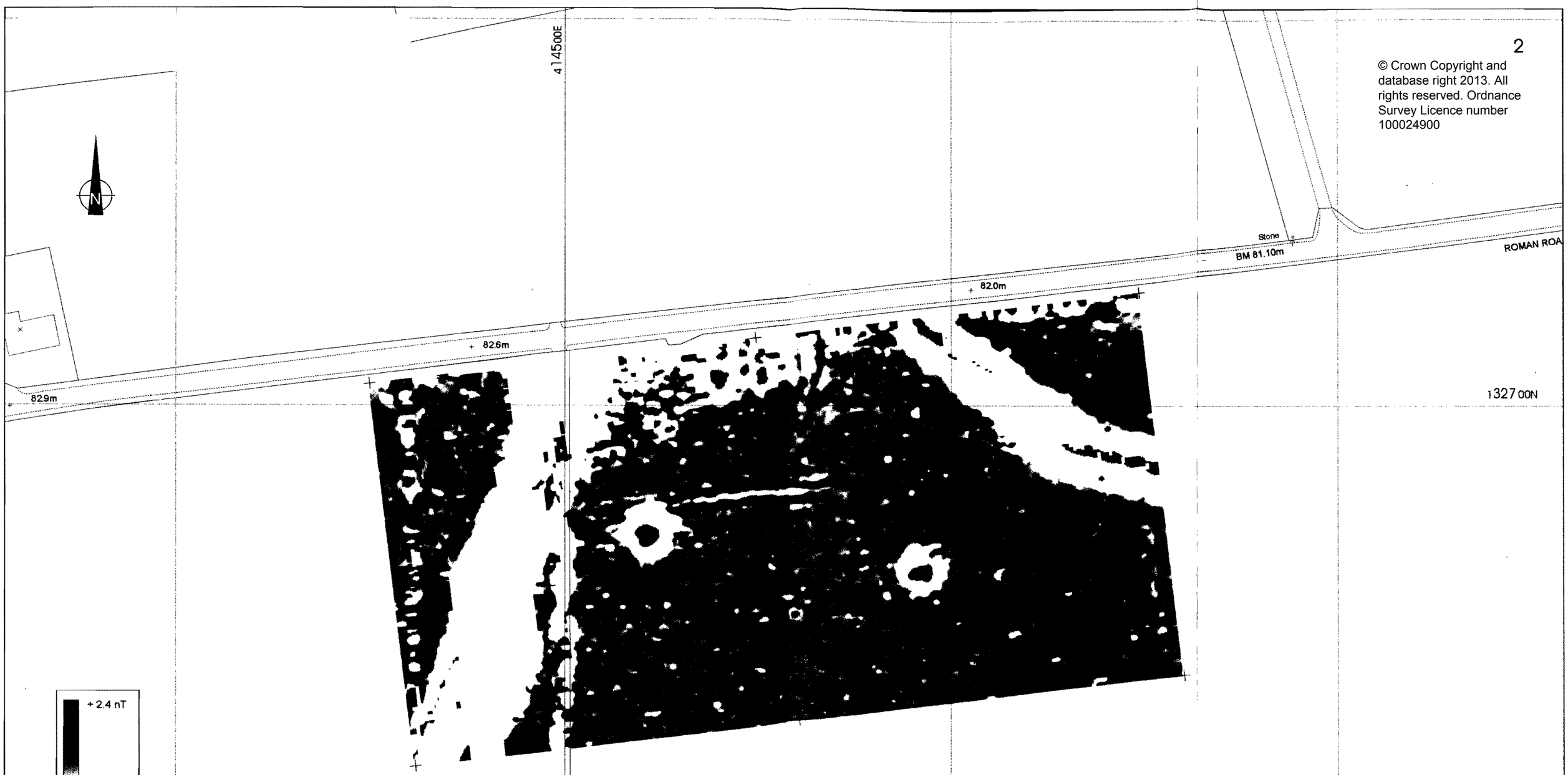
Old Sarum ' Chapel Site', Wiltshire
Archaeological Geophysical Survey, 2003

Figure 1: Magnetometer Survey (with interpretation)

1:1000



Castle Hill

ED and Ward Bdy

Def

Old Sarum ' Chapel Site', Wiltshire
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Figure 2: Magnetometer Survey
(grey scale plot)

1:1000

4145 00E

1327 00N

82.9m

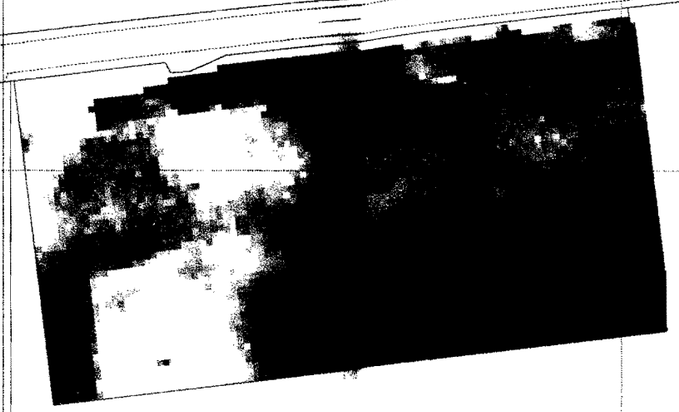
82.6m

82.0m

BM 81.10m

Stone

ROMAN ROA



Unfiltered data

30 ohms

16 ohms

Castle Hill

ED and Ward Boy

Def

1:1000

0

50m

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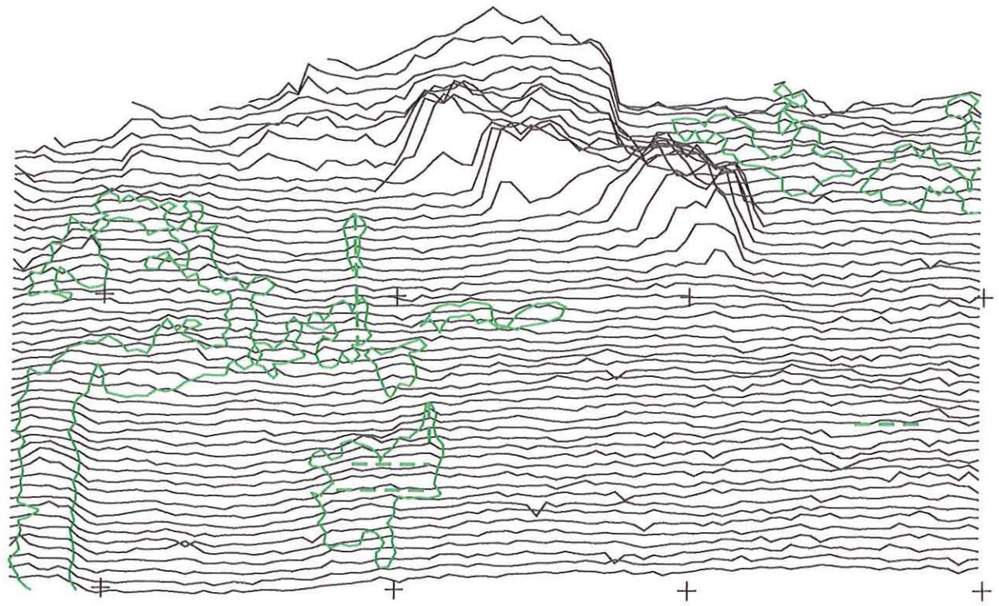
Figure 3: Resistivity Survey (grey scale plot)

1:1000



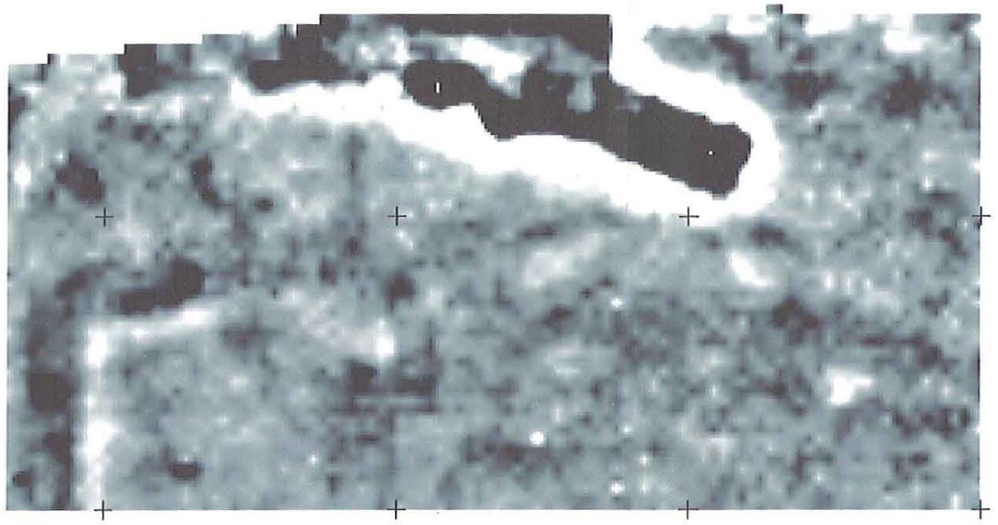
Resistivity survey: selected anomalies outlined

resistivity anomalies

linear features ?

1:625

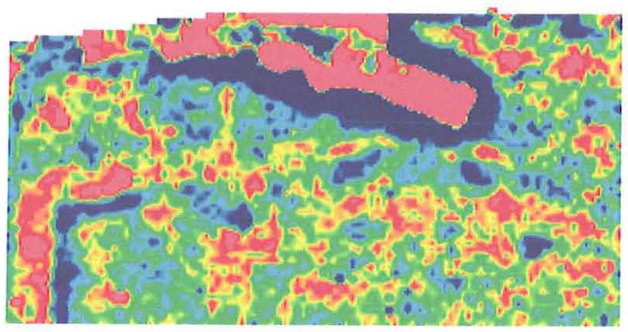
0 25m



Resistivity survey: filtered data

mean of data + 1.6 ohms

mean of data - 2 ohms



mean of data + 1.6 ohms

mean of data - 2 ohms

Resistivity survey: filtered data

1:1000

0 50m

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Figure 4: Resistivity Survey
(additional plots)

Trench plan supplied by Wessex Archaeology

414500E

1327 00N

82.9m

82.6m

82.0m

1.2m

1m

BM 81.10m

Stone

ROMAN ROAD

A

B

C

D

E

F

G

magnetometer survey

resistivity survey

magnetic anomalies

pipe

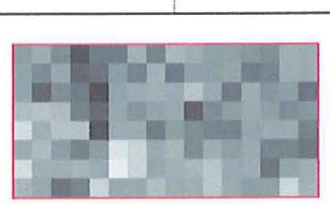
fences

resistivity anomalies

linear features ?

excavated features

pegs left in place



Magnetic susceptibility survey 1:4000

Castle Hill

ED and Ward Bdy

Def

1:1000

0 50m

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Figure 5: Summary of findings
(with magnetic susceptibility survey)
1:1000

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