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Evaluation of Archaeometallurgical residues from the M7/M8 Contract 2: Bushfield 3 (E2224)

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Abstract

Bushfield 3 yielded a small quantity of iron slag (576g) from a single context, a spread F309, associated with several pits with burnt fills. The archaeometallurgical residues are rather strongly weathered. They include a variety of small indeterminate scraps, but also two probable smithing hearth cakes (SHCs) of very small size, compatible with residues from light blacksmithing.

The text report refers to three iron slag pieces from this context (309:1-3) whereas the material seen for this report comprises finds 309:4-10, so it seems likely there was a small amount of additional material not examined for this report.. The possibility that the associated pits might be smithing hearths could be tested through examination for micro-residues in the environmental samples.

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Methods

All investigated materials were examined visually, using a low-powered binocular microscope where necessary. All significant materials were summarily described and recorded to a database (Table 1). As an evaluation, the materials were not subjected to any high-magnification optical inspection, nor to any other form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

Results

Residue description

The assemblage comprised ten pieces of iron slag and one fragment of vitrified ceramic.

Two of the slag pieces are probably smithing hearth cakes. These two pieces have weights of 140 and 120g, although in neither case is the cake certainly complete. The other slag lumps are of indeterminate origin, but three pieces show fuel-contact dimples and two of these appear twisted. Such features are common in small pieces of slag which have formed in the smithing hearth and which have been removed by the smith with tongs when they were hot.

The single fragment of vitrified ceramic is insufficient to determine whether it is from the hearth structure or

from a tuyère, although the latter is far more likely for ceramic in a smithing assemblage of this age (15th-17th century AD).

Feature description

The archaeometallurgical residues all derive from F309, a spread containing a variety of burnt material.

The spread was associated with two pits, F303 and F305, with dimensions 0.56m x 0.50m x 0.23m and 0.74m x 0.58m x 0.25m respectively. These have tentatively been assigned an origin as charcoal production pits in the draft prelim report, but their small size and mixed fills (suggesting disposal of waste) seem to argue against this interpretation. An association of bone with iron working temperature control does not seem a very likely hypothesis.

The size of these features is broadly compatible with them serving as smithing hearths, so an examination for any microresidues in their fills would be desirable to evaluate this possibility.

Interpretation

The small quantity of archaeometallurgical residues suggests that this site was a short-lived locus of blacksmithing. Without further investigation it is not possible to determine whether one or both of the adjacent pits might have been the hearth in which this smithing was undertaken.

Evaluation of potential

This site has a very incomplete record of some blacksmithing activity. The residues are poorly preserved, being apparently quite strongly leached. No further analysis would be recommended of this material. Should the three missing slag finds be located they should be examined to complete the description of the assemblage. It would be useful if any environmental samples from the pits are rechecked to determine whether they might contain any smithing microresidues. The assemblage does not appear to require particular priority for retention.

F	sample	context wt	wt	no	notes	Proportion.	Original wt.
309	4	576	140	1	dense mushroom-shaped slag lump - possibly a small SHC	1	140
309	5		30	1	twisted dimpled slag lump		
309	6		26	1	ashy pale-weathered thin dimpled sheet		
309	6		22	1	dimpled weathered twisted lump. Some maroon surface remains - otherwise almost white		
309	6		6	1	weathered grey vesicular slag fragment with remnants of glassy surface		
309	6		2	1	slag bleb		
309	7		18	1	lobate pale ashy slag lump	1	120
309	8		120	1	double layered slag, possibly a whole tiny SHC?		
309	9		170	1	amorphous rounded dense slag lump		
309	10		2	1	lining slag bleb		
309	10		40	1	vitrified ceramic (hearth lining or tuyère)		

Table 1. Summary catalogue

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geoarchaeological, archaeometallurgical & geophysical investigations

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