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Report 2016/14

Assessment of possible
archaeometallurgical residues from
LBMM13 Site 14E405

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31st May 2016

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Abstract

The submitted material comprised a single small fragment from c204 weighing just 0.6g. C204 is recorded as a layer of grey clayey silt, a deposit within the Steine River basin predating AD1660-1680 and probably of the early seventeenth century.

The material was magnetic. It probably represents a partially melted iron-rich rock fragment. The mostly likely origin of such material would be as clinker – the partially-melted residue produced from the impurities of coal at high temperature. Iron-rich rocks are commonly found associated with coal seams and will therefore commonly occur as 'dirt' in fuel coal.

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Methods

All materials were examined visually with a low-powered binocular microscope where required. As an evaluation, the materials were not subjected to any high-magnification optical inspection, not to any form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

This project was commissioned by Carmelita Troy of Rubicon Heritage.

Results

The single piece of pyrotechnological residue comprised a small fragment of a dense curved sheet of very fine-grained material, with a few sub-spherical rounded vesicles. The sheet shows a gradation in colour from maroon through most of the thickness to grey close to one face.

The maroon surface (the concave side of the sheet) is slightly and finely dimpled. The opposite, dominantly grey, side of the piece shows overgrowth by a thin crust-like layer with rounded outgrowths, which curves around one edge of the fragment, enclosing a large rounded void between this grey 'crust' and the dense maroon body.

Interpretation

The piece has a morphology suggestive of a partially melted rock, the rounded vesicles suggesting vesicles generated during partial melting, rather than the piece having a primary rock texture. The strongly magnetic nature of the piece would also support an interpretation of an origin in high temperature alteration.

The high temperature alteration of small fragments of iron-rich rock might occur in a variety of circumstances, but is very common during the formation of clinker – a high temperature partially melted residue from the burning of impure coal. Coal commonly contains intercalated ironstone, as well as iron sulphides. The formation of clinker during the burning of coal is not linked to any particular process and is not necessarily indicative of metallurgical activity.

Conclusion

The piece is probably, but not certainly, a high-temperature residue from the burning of coal and is not indicative of any particular process. It is likely that the piece would probably not yield further useful information on detailed analysis, so no further analysis is recommended.

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