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Report 2008/14

Evaluation of archaeometallurgical
residues from the M74 Completion:
WP3-LP4 Dundas St Foundry

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Abstract

The report provides an assessment of potential for the archaeometallurgical residues sampled at the Dundas Street Brass Foundry (WP3, LP4). The assessment has been broadly conducted according to the MAP2 principles and this report contains recommendations for those samples to be taken forward to further analysis, with details and justification of the recommended analysis.

8 samples taken from WP3-LP4 were assessed and 4 of those are recommended for further investigation.

The Dundas Street brass foundry was represented by a complex of crucible furnace, flues and a probable firebox which were not associated with other metallurgical deposits. Sampling was necessarily rather limited.

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Two of the samples comprised fired brick, neither of which appeared to offer much assistance in the determination of kiln use.

Evaluation of potential

The samples from this foundry are not closely linked to "run-of-the-mill" production, so are not well placed to add significant understanding of process or structure. Some limited knowledge of the nature of the metals being worked may be obtained through analysis of metal prills and slags from the furnaces, but there is only a small amount of material available for investigation; the furnaces appeared to have been kept clean prior to their demolition. Accordingly only a very limited amount of analysis is suggested.

Two samples have been selected because they may assist with determining the nature of the alloys being cast. Two samples have been chosen because they may shed light on the significance of the sand deposits— and the possibility that they may have been associated with a casting bed.

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

The samples containing true archaeometallurgical residues are restricted to demolition deposits containing a small proportion of slag and the backfill of one flue which contains slag and possibly some copper-alloy prills. These slags and prills are interpreted as being associated with the final period of use of the furnace.

In addition to the archaeometallurgical residues, deposits of sand, in particular adjacent to the southern furnace, which were interpreted as possible remnants of casting sand. These sands are markedly different from the moulding sands present on other sites in this project, being apparently degraded gneiss.

Summary Catalogue

<i>sample</i>	<i>context</i>	<i>notes</i>
50002	50268	dirty coarse sand, with granules of brick, mortar, stone an occasional Cu slag - disuse material
50005	50244	layered/laminated sand deposit, sand is quartz sand rich in biotite. Completely different from LP3 moulding sands.
50006	50405	coarse sand, again a granitic sand, lots of clumps of white material - not clear what all of this might be. Some larger fragments show at least some of the white material to be feldspar and is interlaminated with quartz-biotite laminae - suggesting that the grains are gneissic
50008	50423	sandy and ashy demolition rubble with brick fragments, window glass,, stones and slag fragments. Many of the stone pieces look deeply vitrified, but weathering is strong
50010	50275	ashy rubbly deposit, lots of brick fragments, coke, quartz, some vesicular slag pieces, coal
50001	50261	ashy sand with rounded lumps of slag.. Also piece of red slate
50011	50057	vitrified brick. Shows thin black surface overlying white-yellow brick, orange in brick core.
50012	50254	deeply vitrified brick - dark almost to core with yellow speckled zone in centre

Table 1: summary catalogue

Samples proposed for further investigation

<i>Sample</i>	<i>Context</i>	<i>Nature</i>	<i>Location</i>	<i>Objective</i>
5001	50261	copper alloy metal/slag	backfill of flue	check for and analyse prills and slag
5005	50244	sand	sand; possible casting bed	describe sand
5006	50405	sand	sand; possible casting bed	describe sand
5010	50275	Cu-alloy slag	backfill around furnace 50164	describe and analyse slag

Table 2: samples proposed for further investigation during the analysis phase

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