

## Summary of Geochemical Investigation of Iron-making Slags

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Geochemical analyses of two samples of tap slags was undertaken; Cl 1 (E21 Phase IV) and Cl 2 (U/S). This investigation included geochemical analysis using X-ray Fluorescence (XRF) of fused beads (major elements) and powder pellets (minor and trace elements) and geochemical analysis using Induction Coupled Plasma – Mass Spectrometry (ICP–MS) of solutions (minor and trace elements).

high uranium contents and uranium/thorium ratios; a feature apparently associated with ore sources on the western side of the Forest of Dean rather than the eastern, and which has also been observed in slags from Usk (2 or 6 analysed tap slags) and St. Briavels (2 of 2 analysed tap slags).

### Description

Cl 1 (E21 Phase IV 393b). This specimen appears to be a tapped bloomery slag, although the upper surface is only preserved over a relatively small area and the flow structures are imperfect. The lower part of the slag comprises a coarsely crystalline silicate slag; the upper part is a finer grained material which is rather weathered. The lower part was sampled for the geochemical analysis. Analysis showed a lower iron content than is typical for slags of this type, in fact both samples show iron contents close to the value for a melt of olivine composition; this is reflected in the silicate-rich wüstite-poor mineralogy seen in hand specimen.

Cl 2 (U/S 33.7g). The specimen is a small fragment of bloomery tap slag. The chemical composition of this specimen was broadly typical of tap slags derived from Forest of Dean ores.

### Summary

The samples are geochemically rather similar, although the incompatible elements are enriched in Cl 1. The composition of both samples is close to that of slags from other sites believed to be working Forest of Dean ores (Ariconium, Usk, St. Briavels and Frocester Court). Both samples have a relatively low iron content. The rare earth element (REE) profiles from the specimens are parallel, with Cl 1 being enriched in REE relative to Cl 2. The two samples show characteristic moderately

<sup>1</sup> This report is summarised from Young and Thomas 1997