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Evaluation of archaeometallurgical residues from Truro College Playing Fields, Truro (TCF 05)

Dr Tim Young
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Dr T.P. Young

Abstract

A small quantity of "slag" was recovered from the area (B2) of Early-Middle Iron Age activity. Some of this, from Structure 3 and Ditch 2010, was an extremely low density sinter-like material, reminiscent of materials from domestic hearths or ovens on other sites and is possible not to have had a metallurgical origin. Two small pieces of slag from Ditch 2022 were similar to some of the lining-influenced slags from the Late Iron Age metalworking contexts and may have had a similar origin, but are not diagnostic of process.

Area B1 yielded 42g of residues from the arcuate Ditch C1005 and 687g of residues from the ringditch of Structure 1. This assemblage is slightly larger than that obtained from the adjacent House 1 on the Richard Lander School site, but shares a similar mixture of materials numerically dominated by iron smelting slags, but bearing a single large block of smithing slag.

The evidence adds to that from the Richard Lander School site for Late Iron Age iron production and iron working, but provides little evidence for similar activities earlier in the Iron Age.

Contents

Methods

All the macroscopic material from the collection was inspected visually (and with a low-powered stereo-microscope where necessary) and recorded to a spreadsheet. Descriptions and interpretations of material are necessarily limited by this approach.

Results

Residue description

Iron smelting residues

Residues identified as being derived from iron smelting include dense slags bearing moulds of large charcoal pieces (C1040, C1048), pieces of dense descending prill (C1055). None of these pieces is entirely intrinsically demonstrative of iron smelting, but they are very similar to material in the larger iron smelting assemblages from the Richard Lander School site.

Iron working residues

The only reasonably certain piece of iron-working slag is what is probably the majority of a moderately large smithing hearth cake (SHC) from C1037. The surface of the 324g cake fragment is largely hidden by accreted material, so details of morphology are unclear. The accreted material seems to be reddened, and therefore the piece may have been burnt at period after its initial discard.

Tuyères

A block of variegated, heterogeneous lining slag attached to, and partially enclosing some oxidised-fired ceramic material from C1037, may represent a highly slagged tuyère tip, although this is not certain.

Other archaeometallurgical ceramics

Small pieces of vitrified ceramic, presumably hearth/furnace lining were recovered from C1021 in Area B1 and also from C2134 in Area B2. These fragments are not certainly referable to metallurgical process, but are very likely to have been derived from the walls of smelting furnace or smithing hearth.

Other residues

Small pieces of iron slag from Area B1 are not attributable to a specific process with certainty.

One small flow lobe of slag from Ditch 2022 (Area B2) is probably from an iron working process, and taken together with the vitrified hearth lining from this ditch provides some small evidence for iron working on the site in the earlier Iron Age.

A group of residues from Structure 3 is reminiscent of material from Houses 3 and 4 on the Richard Lander School site, in having a texture of fused (sintered) globules of melted material and sediment particles. The material may be sinter produced by grains of quartz and feldspar reacting with fuel ash at high temperature. Somewhat similar material was recorded from hearth and a corn-drying kiln at Bornais (S. Uist; Young 2005a).

Other material

Included with the archaeometallurgical materials were a small piece of coked material, probably bone (C2088), and a small stone (C1021).

Interpretation

The data from the TCF05 site provides some supporting data to that produced by the RLS04 site.

The mixed, sparse, assemblage of both smelting and smithing slags from Area B1, associated with House 1 of the RLS site, augments the assemblage from that house. As with much of the RLS site, there was no evidence for in-situ metallurgical activity. The slag from Area B1 does not add significantly to the technological evidence from House 1.

Material from the enclosed earlier Iron Age settlement was extremely sparse, and much of it might have been produced in non-metallurgical hearths or ovens. The small amount of possible iron-working residue from this area amounted to only 16g, which is likely to indicate that iron-working was not being undertaken in the immediate area.

Evaluation of potential

The assemblage from Area B2 has little to recommend further analytical investigation.

The material from Area B1, particularly that produced during iron smelting, might be worthy of analysis, since it was House 1 on the RLS site that produced moderate quantities of iron ore, and therefore the smelting might perhaps be related to the smelting of similar material. The smelting slag assemblage from RLS House 1, that might otherwise have been used to compare with the ore, was rather poor, and contained little slag that had not interacted with the furnace floor.

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				smelting slag	smithing slag	indet. slag	lining	natural	iron
Area B1									
Lower fill of ditch 1005 (near RLS house 1)									
1021		10.53	greyish lining slag, 3 pieces				10.53		
		28.16	dark vesicular slag from base of hearth/furnace, with lots of slate chips on base, small charcoal moulds on top			28.16			
		2.93	small pebble					2.93	
Ringditch of Structure 1 close to RLS 04 House 1									
1037		324	large slag mass with smooth blown surface over much of the piece, rest accreted. Probably part of a moderately large SHC. Concretionary material is red - has the piece been reheated?		324				
1040		18	reddened piece of probable iron smelting slag, dense slag piece between large charcoal moulds	18					
1043		214	mass of lining slag attached to a lump (just possibly tuyère tip) of red oxidised clay. The slag is of variegated glass with clasts, locally being finely crystalline, as noted in the RLS04 material			214			
1044		14.65	corroded iron artefact - bent nail or part of ring?						14.65
1048		48.64	dense irregular slag with charcoal moulds - most likely a smelting slag	48.64					
1050		8.99	c8 pieces of weathered grey slag, probably lining influenced			8.99			
1055		54	4 pieces of brittle dense descending prill. Dark in colour tending towards purple. Iron smelting slag	54					
1055	sl13	4.31	very worn fragment of vesicular dense iron slag			4.31			
Area B2									
Fill of stakehole 2087									
2088		1.66	coked bone?						
Deposits in ditch 2022									
2134		7.15	3 pieces probably associated, with grey vesicular slag associated with black glassy crystal-hash lining slag				7.15		
2248		7.58	small broken flow lobe of Fe-slag, part glassy part crystalline			7.58			
Deposit in ditch 2010									
2217		0.96	vertical prill of lining material rather similar to the material from 2253/2229			0.96			

Structure 3										
fill of posthole 2228 (charcoal rich)										
2229	50	18 pieces of extremely low density material reminiscent of that from Bornais. Comprises fused blebs of "lining" slag and fused coarse particles. A high temperature ash…? Encased in ashy residue, some of the glass fresh and black but most pale			50					
fill of posthole 2252 ?S3										
2253	1.25	5 pieces of low density material cf 2229			1.25					
			totals	*120.64*	*324*	*315.25*	*17.68*	*2.93*	*14.65*	***795.2***

Table 1. Catalogue of material submitted as archaeometallurgical resides from TCF05.

GeoArch

geoarchaeological, archaeometallurgical & geophysical investigations

54 Heol y Cadno,
Thornhill,
Cardiff,
CF14 9DY.

Mobile: 07802 413704
Fax: 08700 547366
E-Mail: Tim.Young@GeoArch.co.uk
Web: www.GeoArch.co.uk