Channel Tunnel Rail Link

London and Continental Railways

Oxford Wessex Archaeology Joint Venture

The radiocarbon dates from Northumberland Bottom, Gravesend, Kent

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CTRL Specialist Report Series

2006

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1 INTRODUCTION

The primary aim of the radiocarbon programme was to provide some general chronological framework for key undated events and activities, such as cremation burials, and to provide more accurate dates for the last firing date of Bronze Age furnace 1425. Wider project aims were to examine the chronological relationship and contemporaeity of a number of Late Neolithic/Early Bronze Age and Beaker events on this site and among other the excavated sites, to examine if the Beaker graves belong to the same chronological stage in the late 3rd - early 2nd millennia BC. Similarly, later prehistoric ceramic assemblages were examined to help in defining if the Early to Middle Iron Age ceramic phase (500-250 cal BC) was represented by a 150 year phase within this range, or were activities spread throughout this period.

Strict selection and scrutiny of material was made in an attempt to ensure that all items dated specific events (cf. Allen and Bayliss 1995; Allen *et al.* 2004) and were not just datable items.
A subsidiary aim was to provide dates of Iron Age ceramic forms to compare with known dated Continental examples and with dated ranges in Kent.

Five radiocarbon results were obtained and are presented in Table 1 and figures 1 and 2; all have been calibrated with the atmospheric data presented by Stuiver *et al.* (1998) and performed on OxCal ver 3.9 (Bronk Ramsey 1995; 2001) and are expressed at the 95% confidence level with the end points rounded outwards to 10 years following the form recommended by Mook (1986).

2 BRONZE AGE ACTIVITIES

It was considered useful to date the last firing of the Middle Bronze Age (*c.* 1100-700 BC) furnace 1425 to compare with pottery assemblages (context 1314) of 8th-6th century BC. Unfortunately the suitable contexts (inc. 1425) contained no charcoal or datable material.

2.1 Cremation burials

Although one cremation burial (2013) contained the very fragmented base and body sherds (25 sherds 75g) of a flint-tempered typical Middle/Late Bronze Age vessel (but no charred remains), others such as cremation burial (2163) were unaccompanied with any grave or pyre goods. It was difficult to ascribe this cremation burial to any phases or period, and thus making it difficult to attribute it to other phases of recorded activity, and it was though unsafe to assume it was Middle/late Bronze Age without further verification. The unaccompanied cremation burial (2163) was dated using charred small twiggy elements of clematis (*Clematis vitalba*) which were short-lived and assumed to be part of the pyre debris. Although it was assumed to be Later Bronze Age (1300-900 cal BC), it gave a result

of 1968±30 BP which calibrated to 50 cal BC-cal AD 130, with a uniform almost Gaussian radiocarbon distribution (Figure 1). This clearly represents Late Iron Age to Early Romano-British activity rather than later Bronze Age.

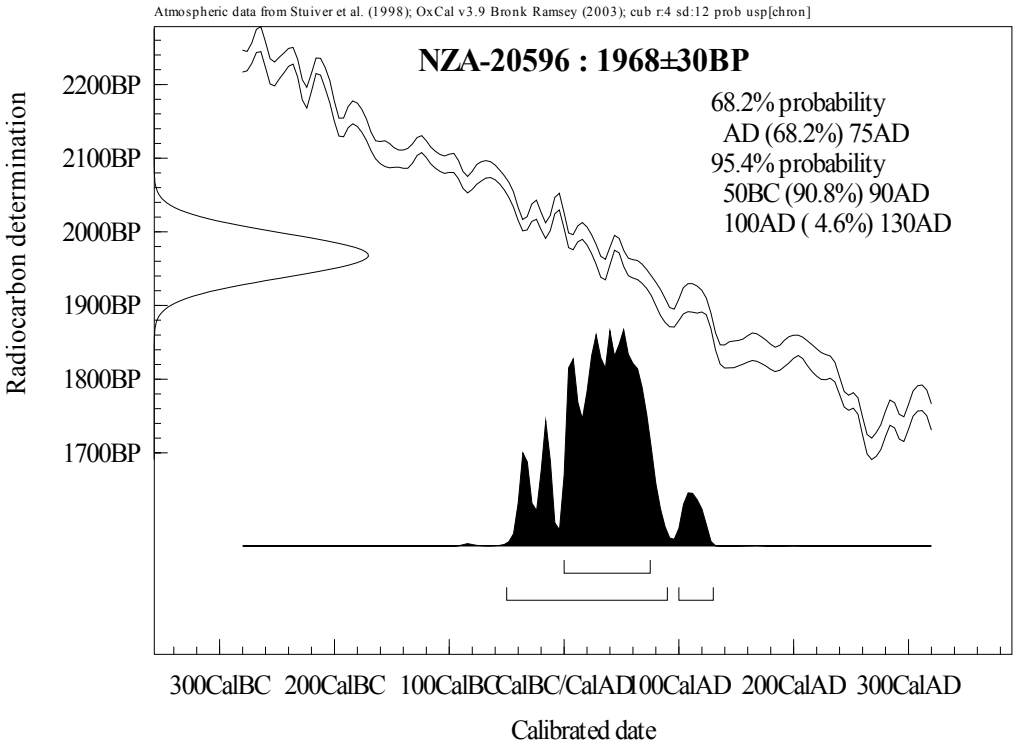

Figure 1. Radiocarbon distribution from cremation burial 2163.

2.2 Late Neolithic/Early Bronze Age and Beaker contemporaneity

Three contexts were radiocarbon dated to examine contemporaneity of Beaker burial practices, and to examine the deliberate deposition (placed deposit) of juvenile calves and headless red deer associated with flintwork and Iron Age pottery. With the Beaker graves, the aim was to ascertain if they belonged to the same chronological stage in the late 3rd-early 2nd millennia BC. With the placed deposit the aim was to determine if it was contemporary with a Late Neolithic/Early Bronze Age barb-and-tanged arrowhead (2400-1500) from the same pit fill (202), or whether the arrowhead was re-deposited and the placed deposit related to the mainly shell-tempered Early to Middle Iron Age pottery from the upper fills (145 and 146) of the pit (only four tiny sherds (5g) of possible Iron Age pottery were recovered from context 202). In view of the similarity of this activity to that dated as a part of the Grooved Ware phase (2800-2400 cal BC) chronological comparison was seen as important.

2.3 Beaker Graves and Iron Age placed deposits

The two flexed inhumations were dated (1203 and 1070) and included a primary female burial (1203) accompanied with Beaker vessel 1205, and a secondary male burial (1070) (Group 40557). They gave results of 3601±40 BP (NZA-22735) and 3743±40 BP (NZA-22736) respectively. These are significantly different at the 95% confidence level (Ward and Wilson 1978), and we can suggest that they are not contemporary within three generations. They calibrate to 2280-1980 and 2120-1780 cal BC confirming that they occur within a phase of the late 3rd-early 2nd millennia BC which may be considered the same chronological stage, although not strictly contemporary with each other and their radiocarbon distributions do not overlap (Figure 2a).The fact the upper secondary grave, is clearly earlier, with little overlap in the radiocarbon distributions (Figure 2a) provides some cause for reflection. There is no cause to doubt the radiocarbon determinations, and given that both skeletons are articulated the upper cannot be redeposited, unless it was mummified (see Chamberlain and Parker Pearson 2001).

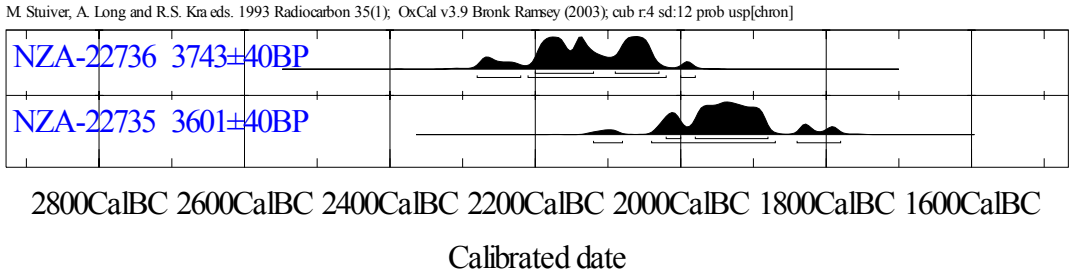

Figure 2a. Radiocarbon distributions of the two flexed Beaker inhumations

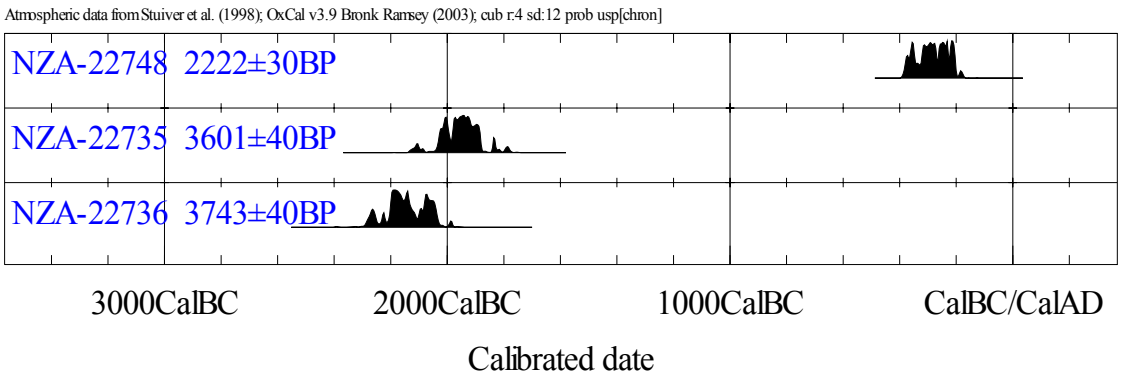

Figure 2b. Radiocarbon distributions of earlier prehistoric events

The radiocarbon result from the placed deposit of calves and headless red deer (context 202) in pit 147 clearly demonstrates that this is not associated with the manufacture of the late Neolithic/Early Bronze Age barbed-and-tanged arrowhead (2400-1500 cal BC), nor with other placed animal deposits such as

those at White Horse Stone which have been dated to the Grooved Ware phase. Instead, this result (2222±30, NZA-22748) calibrates to 370-190 cal BC and suggests that the date of the deposit can be refined to the Middle, rather than the broader Early to Middle Iron Age date indicated by the fabrics and a single rim form represented in the pottery from the pit (context 202, secondary fill, 4 sherds 5g, context 146, tertiary fill, 12 sherds 59g, context 145, top fill, 23 sherds 146g). It also confirms that earlier items such as the Late-Neolithic/Early Bronze Age barb-and-tanged arrowhead may have been residual from the earlier (Beaker) events or specifically retained as a keepsake and purposely deposited with these Middle Iron Age offerings.

2.4 Early to Middle Iron Age activity phase

A number of Early to Middle Iron Age activities within the project which were thought to be contemporary with those at Northumberland Bottom (e.g. those at Tollgate). They were dated to attempt to define if they represent a coherent chronological phase within this period (500-250 cal BC), and to determine if they all fell within the same 150 year time span, or if they cover this entire period or fall within the earlier or later part of the period. In addition, the dating of saltworking activity was deemed important to relate this to other dated events in this project and the United Kingdom generally.

Pit 156 contained a typical Early/Middle Iron Age pottery assemblage, and a group of stakeholes was present at the base of the pit with signs of wattle/daub lining. It is assumed that the charcoal represents the burning of this wattle lining. Wattle and daub lined pits have been directly associated with salt production in other areas (e.g. Droitwich, see Morris).

The pit contained a fill (context 149) described as ‘as organic / charcoal rich containing very large burnt daub fragments’. This was sealed context and contained both charred grain and relatively large amounts of charcoal, and appears to be a single-event dump or discard of material. Charcoal of twiggy and short-lived taxa (*Prunus*) which may have been used as sails or wattle was selected from this dump and submitted. It yielded a result of 2509±35 BP (NZA-22728) which calibrates to 800-420 cal BC.

Unfortunately this result falls onto the Iron Age radiocarbon plateau (Figure 3) giving a large, and not very useful, probable date range. Nevertheless it is clear that if the date of this event does fall within the predicted range of 500-250 cal BC, then it must lie in the earlier part of this span. We cannot, however, discount the possibility that the true date lies earlier than our predicted period.

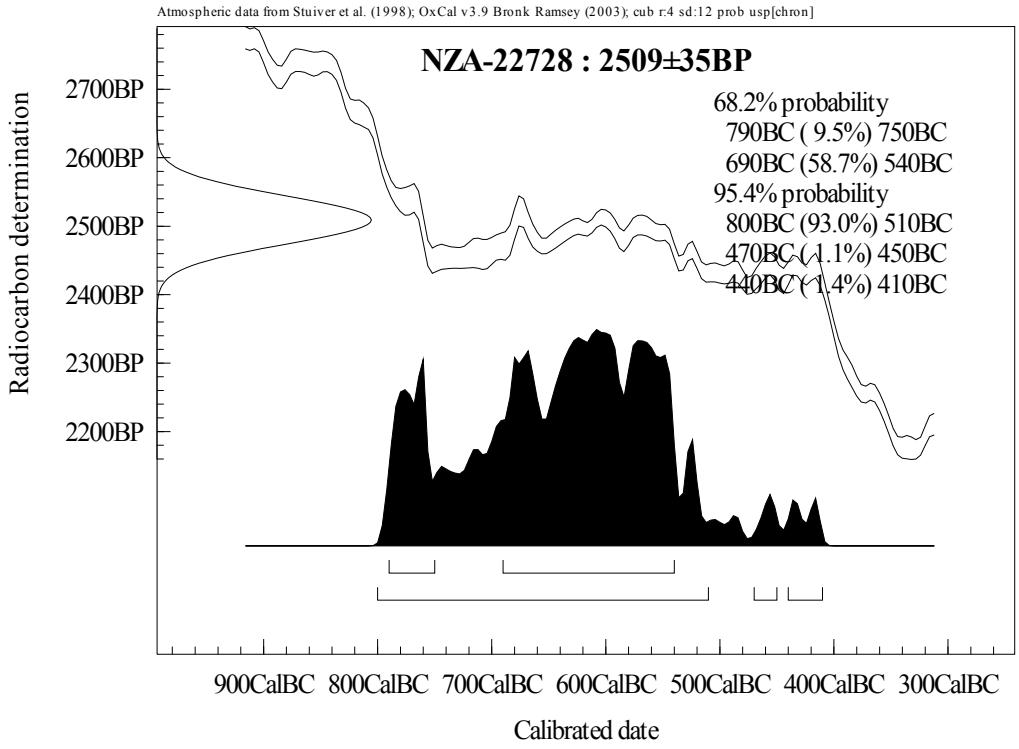

Figure 3. Radiocarbon distribution from pit 156

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Feature	*context*	*sample*	*context details*	*material*	*result no.*	*δ C^{13}*	*result BP*	*cal*	*estimate*
Cremation burial 2163		81	pyre debris	charred *Clematis vitalba*	NZA-20596	-26.16	1968±30	50BC-130AD	1300-900 BC
Pit 156	149	21	Sealed pit fill	charcoal *Prunus* + Maloideae	NZA-22728	-25.9	2509±35	800-420 BC	500-250 BC
Grave	1203		primary female burial	R femur human	NZA-22735	-21.5	3601±40	2120-1780	2600-2200
Grave	1070		secondary male burial	R femur human	NZA-22736	-21.2	3743±40	2280-1980	2600-2200
Pit 147	202		placed deposit calves & headless red deer	red deer tibia	NZA-22748	-21.6	2222±30	370-190	2800-2400

Table 1. Radiocarbon results from Northumberland Bottom