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December 5, 2014

Mr. Graham Spurr
Museum of London
Archaeology Service
Mortimer Wheeler House
46 Eagle Wharf Road
London, N1 7ED
United Kingdom

RE: Radiocarbon Dating Results For Samples XTI13WS1-202, XTI13WS1-240, XTI13WS1-265

Dear Mr. Spurr:

Enclosed are the radiocarbon dating results for three samples recently sent to us. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable. The Conventional Radiocarbon Ages have all been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

Reported results are accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 standards and all chemistry was performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 program participated in the analyses.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result.

When interpreting the results, please consider any communications you may have had with us regarding the samples. As always, your inquiries are most welcome. If you have any questions or would like further details of the analyses, please do not hesitate to contact us.

Our invoice has been sent separately. Thank you for your prior efforts in arranging payment. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Digital signature on file



REPORT OF RADIOCARBON DATING ANALYSES

Mr. Graham Spurr

Report Date: 12/5/2014

Museum of London

Material Received: 11/17/2014

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 396252 SAMPLE : XTI13WS1-202 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (plant material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 2565 to 2535 (Cal BP 4515 to 4485) and Cal BC 2495 to 2435 (Cal BP 4445 to 4385) and Cal BC 2420 to 2405 (Cal BP 4370 to 4355) and Cal BC 2380 to 2350 (Cal BP 4330 to 4300)	3990 +/- 30 BP	-27.5 o/oo	3950 +/- 30 BP
Beta - 396253 SAMPLE : XTI13WS1-240 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (plant material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 3020 to 2895 (Cal BP 4970 to 4845)	4400 +/- 30 BP	-28.8 o/oo	4340 +/- 30 BP
Beta - 396254 SAMPLE : XTI13WS1-265 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (plant material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 3505 to 3425 (Cal BP 5455 to 5375) and Cal BC 3380 to 3355 (Cal BP 5330 to 5305)	4660 +/- 30 BP	-26.8 o/oo	4630 +/- 30 BP

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "**". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12 = -27.5 o/oo : lab. mult = 1)

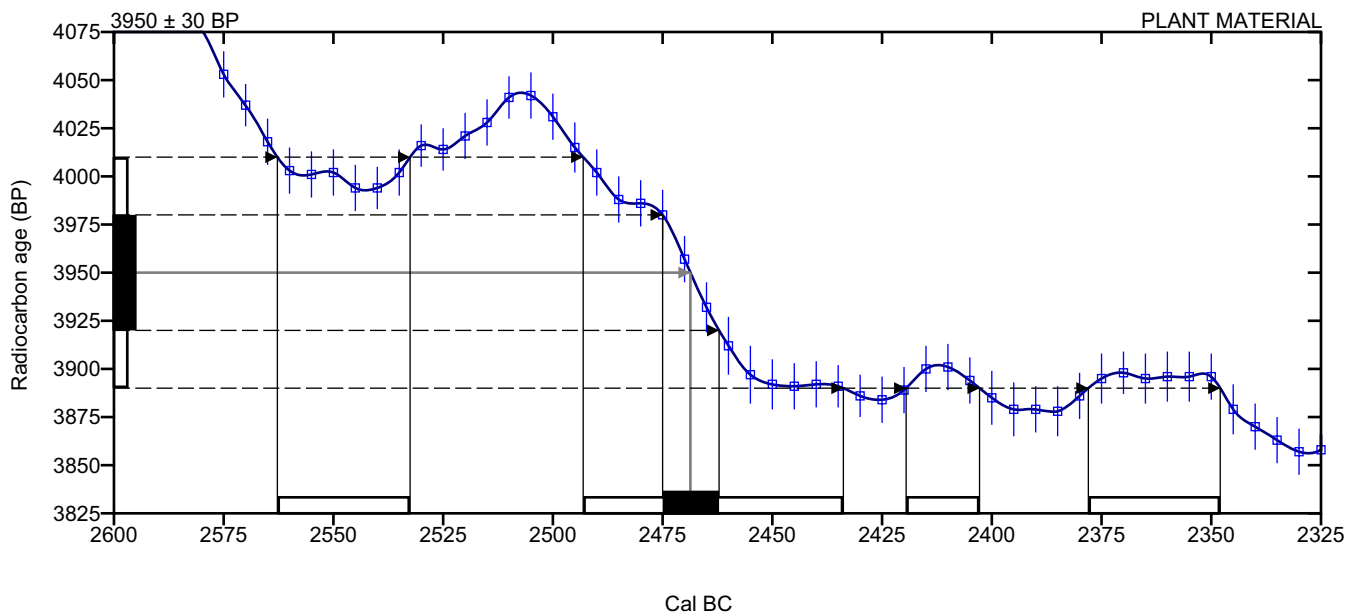
Laboratory number **Beta-396252**

Conventional radiocarbon age **3950 ± 30 BP**

2 Sigma calibrated result **Cal BC 2565 to 2535 (Cal BP 4515 to 4485)**
95% probability **Cal BC 2495 to 2435 (Cal BP 4445 to 4385)**
 Cal BC 2420 to 2405 (Cal BP 4370 to 4355)
 Cal BC 2380 to 2350 (Cal BP 4330 to 4300)

Intercept of radiocarbon age with calibration curve Cal BC 2470 (Cal BP 4420)

1 Sigma calibrated results Cal BC 2475 to 2460 (Cal BP 4425 to 4410)
68% probability



Database used
INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

Reimer PJ et al. IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP. Radiocarbon 55(4):1869–1887.

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12 = -28.8 o/oo : lab. mult = 1)

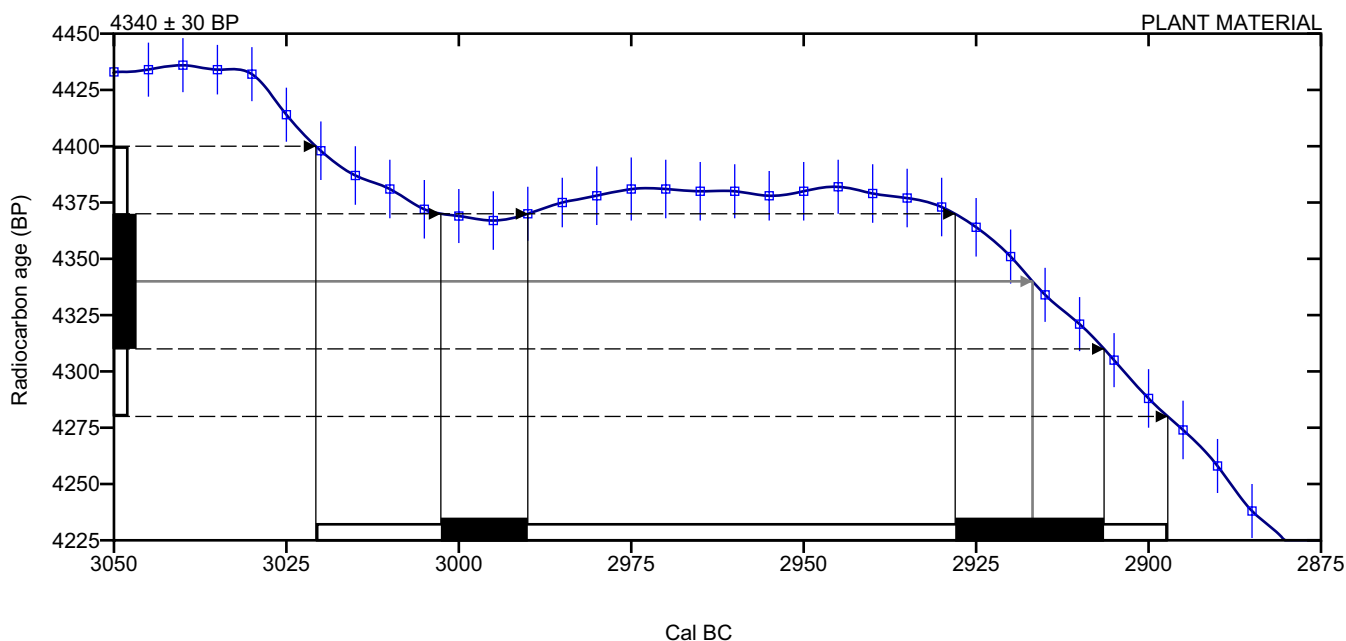
Laboratory number **Beta-396253**

Conventional radiocarbon age **4340 ± 30 BP**

2 Sigma calibrated result **Cal BC 3020 to 2895 (Cal BP 4970 to 4845)**
95% probability

Intercept of radiocarbon age with calibration curve Cal BC 2915 (Cal BP 4865)

1 Sigma calibrated results Cal BC 3005 to 2990 (Cal BP 4955 to 4940)
68% probability Cal BC 2930 to 2905 (Cal BP 4880 to 4855)



Database used
INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

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