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Consistent Accuracy . . .
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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

January 29, 2015

Dr. Mary Beth Trubitt
Henderson State University
Arkansas Archaeological Survey
P.O. Box H-7841
Arkadelphia, AR 71999
USA

RE: Radiocarbon Dating Results For Samples 2013-325-31, 2013-325-56

Dear Dr. Trubitt:

Enclosed are the radiocarbon dating results for two 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.

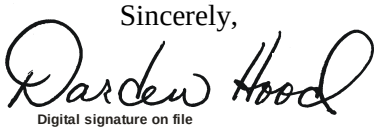
Reported results are accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 standards and all chemistry was performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC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

The cost of the analysis was charged to the VISA card provided. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,



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REPORT OF RADIOCARBON DATING ANALYSES

Dr. Mary Beth Trubitt

Report Date: 1/29/2015

Arkansas Archeological Survey

Material Received: 1/23/2015

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 402612	3800 +/- 30 BP	-25.3 o/oo	3800 +/- 30 BP
SAMPLE : 2013-325-31			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 2335 to 2325 (Cal BP 4285 to 4275) and Cal BC 2300 to 2190 (Cal BP 4250 to 4140) and Cal BC 2180 to 2140 (Cal BP 4130 to 4090)			
Beta - 402613	2140 +/- 30 BP	-25.1 o/oo	2140 +/- 30 BP
SAMPLE : 2013-325-56			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 350 to 305 (Cal BP 2300 to 2255) and Cal BC 210 to 90 (Cal BP 2160 to 2040) and Cal BC 65 to 60 (Cal BP 2015 to 2010)			

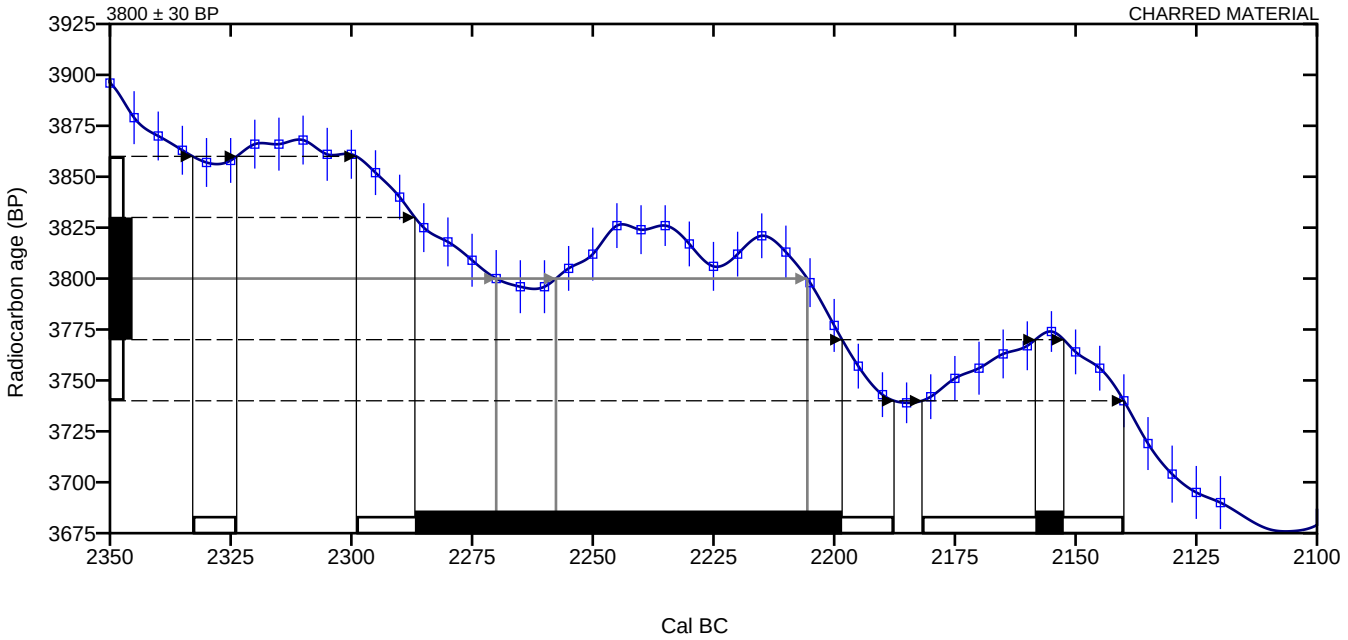
Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 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 = -25.3 o/oo : lab. mult = 1)

Laboratory number	**Beta-402612**
Conventional radiocarbon age	**3800 ± 30 BP**
Calibrated Result (95% Probability)	**Cal BC 2335 to 2325 (Cal BP 4285 to 4275)** **Cal BC 2300 to 2190 (Cal BP 4250 to 4140)** **Cal BC 2180 to 2140 (Cal BP 4130 to 4090)**
Intercept of radiocarbon age with calibration curve	Cal BC 2270 (Cal BP 4220) Cal BC 2260 (Cal BP 4210) Cal BC 2205 (Cal BP 4155)
Calibrated Result (68% Probability)	Cal BC 2285 to 2200 (Cal BP 4235 to 4150) Cal BC 2160 to 2150 (Cal BP 4110 to 4100)



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

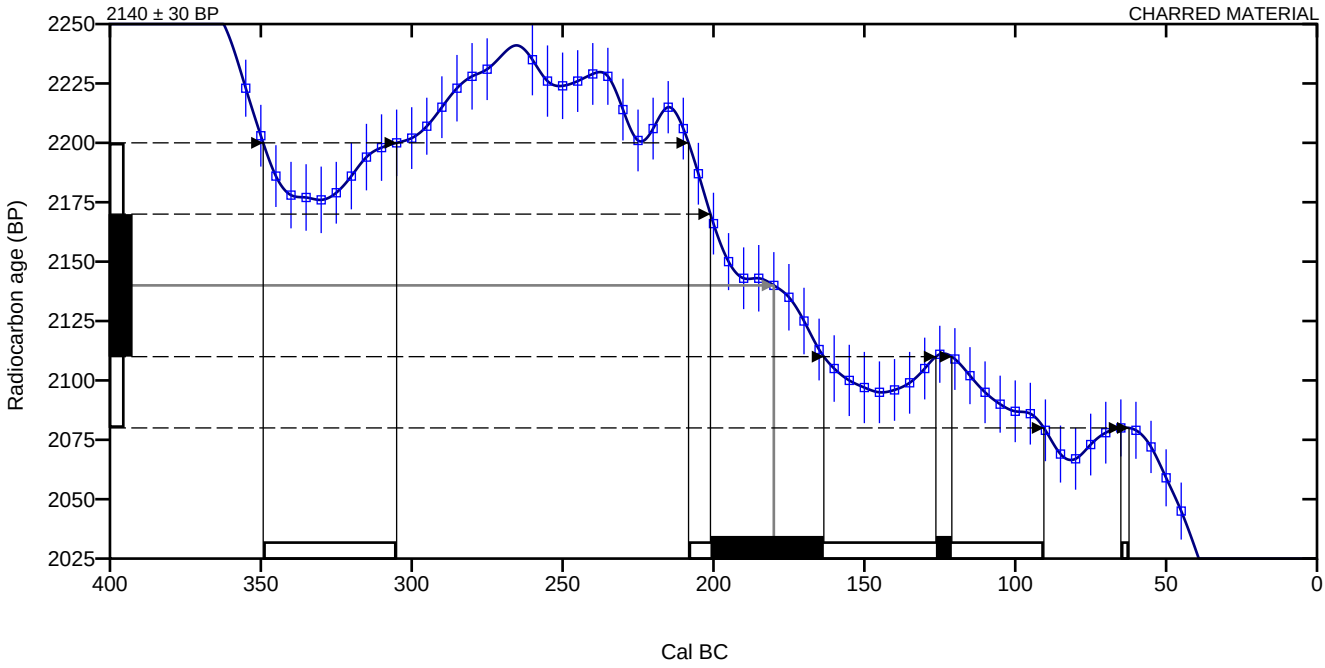
References to INTCAL13 database

Reimer PJ et al. IntCal13 and Marine13 radiocarbon age calibration curves 0– 50,000 years cal BP. Radiocarbon 55(4):1869– 1887., 2013.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12 = -25.1 o/oo : lab. mult = 1)

Laboratory number	**Beta-402613**
Conventional radiocarbon age	**2140 ± 30 BP**
Calibrated Result (95% Probability)	**Cal BC 350 to 305 (Cal BP 2300 to 2255)** **Cal BC 210 to 90 (Cal BP 2160 to 2040)** **Cal BC 65 to 60 (Cal BP 2015 to 2010)**
Intercept of radiocarbon age with calibration curve	Cal BC 180 (Cal BP 2130)
Calibrated Result (68% Probability)	Cal BC 200 to 165 (Cal BP 2150 to 2115) Cal BC 125 to 120 (Cal BP 2075 to 2070)



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The Radiocarbon Laboratory Accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423

Quality Assurance Report

This report provides the results of reference materials used to validate radiocarbon analyses prior to reporting. Known value reference materials were analyzed quasi-simultaneously with the unknowns. Results are reported as expected values vs measured values. Reported values are calculated relative to NIST SRM-4990B and corrected for isotopic fractionation. Results are reported using the direct analytical measure percent modern carbon (pMC) with one relative standard deviation.

Report Date: January 30, 2015
Submitter : Dr. Mary Beth Trubitt

QA MEASUREMENTS

Reference 1	Expected Value:	96.8 +/- 0.5 pMC
	Measured Value:	96.6 +/- 0.4 pMC
	Agreement:	Accepted
Reference 2	Expected Value:	47.9 +/- 0.3
	Measured Value:	47.9 +/- 0.2 pMC
	Agreement:	Accepted
Reference 3	Expected Value:	27.4 +/- 0.2
	Measured Value:	27.5 +/- 0.1 pMC
	Agreement:	Accepted

COMMENT: All measurements passed acceptance tests.

Validation: Darden Hood Date: January 30, 2015