REPORT OF RADIOCARBON DATING ANALYSES

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Miami, Florida

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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

February 21, 2011

Dr. William H. Doelle/Jim Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN10921, LCAFN13472, LCAFN13485, LCAFN13837, LCAFN13945, LCAFN14278, LCAFN14307, LCAFN14606, LCAFN14609

Dear Dr. Doelle and Mr. Vint:

Enclosed are the radiocarbon dating results for nine samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

Note that one of the samples (LCAFN13945, Beta-292149) does not have a Measured Radiocarbon age and 13C/12C Ratio reported. This is because the sample was too small to do a separate 13C/12C ratio and AMS analysis. The only available 13C/12C ratio available to calculate a Conventional Radiocarbon Age was that determined on a small aliquot of graphite. Although this ratio corrects to the appropriate Conventional Radiocarbon Age, it is not reported since it includes laboratory chemical and detector induced fractionation.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
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MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint — Report Date: 2/21/2011

Desert Archaeology, Incorporated — Material Received: 1/25/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 292144	4410 +/- 40 BP	-25.8 o/oo	4400 +/- 40 BP
SAMPLE : LCAFN10921			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 3270 to 3240 (Cal BP 5220 to 5190) AND Cal BC 3110 to 2910 (Cal BP 5060 to 4860)			
Beta - 292145	2590 +/- 30 BP	-11.2 o/oo	2820 +/- 30 BP
SAMPLE : LCAFN13472			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1040 to 910 (Cal BP 2990 to 2860)			
Beta - 292146	2650 +/- 30 BP	-10.4 o/oo	2890 +/- 30 BP
SAMPLE : LCAFN13485			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1190 to 1140 (Cal BP 3140 to 3090) AND Cal BC 1140 to 1000 (Cal BP 3090 to 2940)			
Beta - 292147	2630 +/- 30 BP	-10.4 o/oo	2870 +/- 30 BP
SAMPLE : LCAFN13837			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1120 to 970 (Cal BP 3070 to 2920) AND Cal BC 960 to 940 (Cal BP 2900 to 2890)			

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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint

Report Date: 2/21/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 292149	NA	NA	3050 +/- 40 BP
SAMPLE : LCAFN13945			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1410 to 1210 (Cal BP 3360 to 3160)			
COMMENT: The original sample was too small to provide a 13C/12C ratio on the original material. However, a ratio including both natural and laboratory effects was measured during the 14C detection to calculate the true Conventional Radiocarbon Age.			
Beta - 292150	2970 +/- 40 BP	-15.5 o/oo	3130 +/- 40 BP
SAMPLE : LCAFN14278			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1490 to 1360 (Cal BP 3440 to 3310) AND Cal BC 1350 to 1310 (Cal BP 3300 to 3260)			
Beta - 292151	2650 +/- 30 BP	-10.2 o/oo	2890 +/- 30 BP
SAMPLE : LCAFN14307			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1190 to 1140 (Cal BP 3140 to 3090) AND Cal BC 1140 to 1000 (Cal BP 3090 to 2940)			
Beta - 292153	2300 +/- 30 BP	-10.8 o/oo	2530 +/- 30 BP
SAMPLE : LCAFN14606			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 790 to 730 (Cal BP 2740 to 2680) AND Cal BC 690 to 540 (Cal BP 2640 to 2500)			

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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint

Report Date: 2/21/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 292154	3170 +/- 40 BP	-8.7 o/oo	3440 +/- 40 BP

SAMPLE : LCAFN14609
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal BC 1880 to 1650 (Cal BP 3830 to 3600)

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=-25.8:lab. mult=1)

Laboratory number: **Beta-292144**

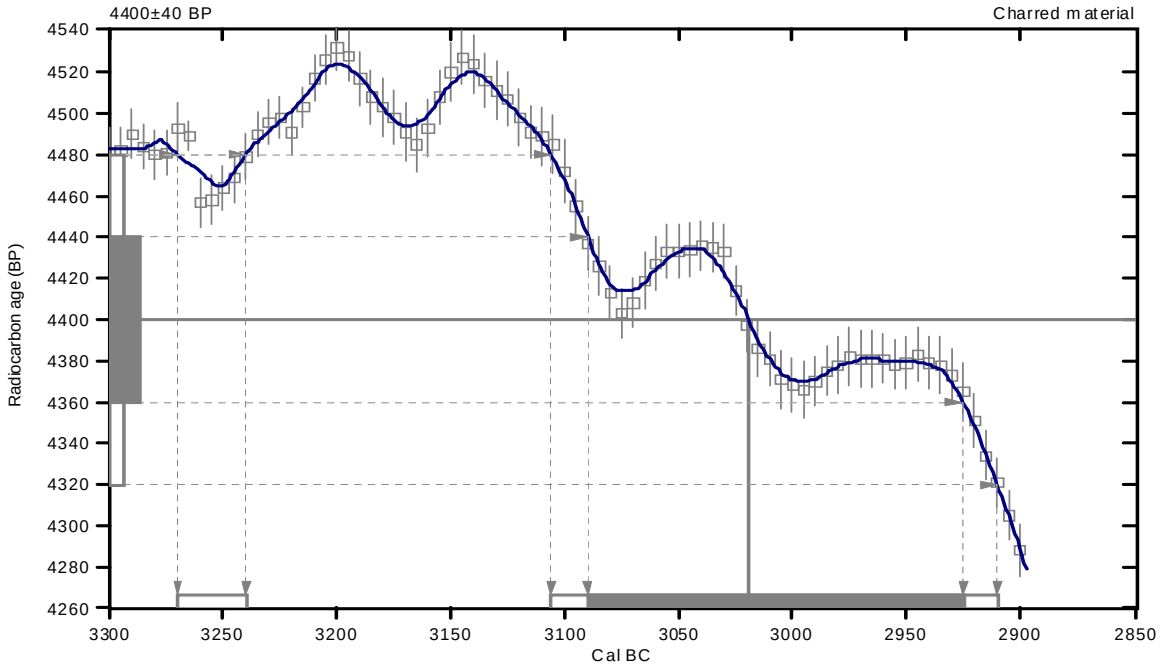
Conventional radiocarbon age: **4400±40 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 3270 to 3240 (Cal BP 5220 to 5190) and Cal BC 3110 to 2910 (Cal BP 5060 to 4860)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 3020 (Cal BP 4970)

1 Sigma calibrated result: (68% probability) Cal BC 3090 to 2920 (Cal BP 5040 to 4880)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.2:lab. mult=1)

Laboratory number: **Beta-292145**

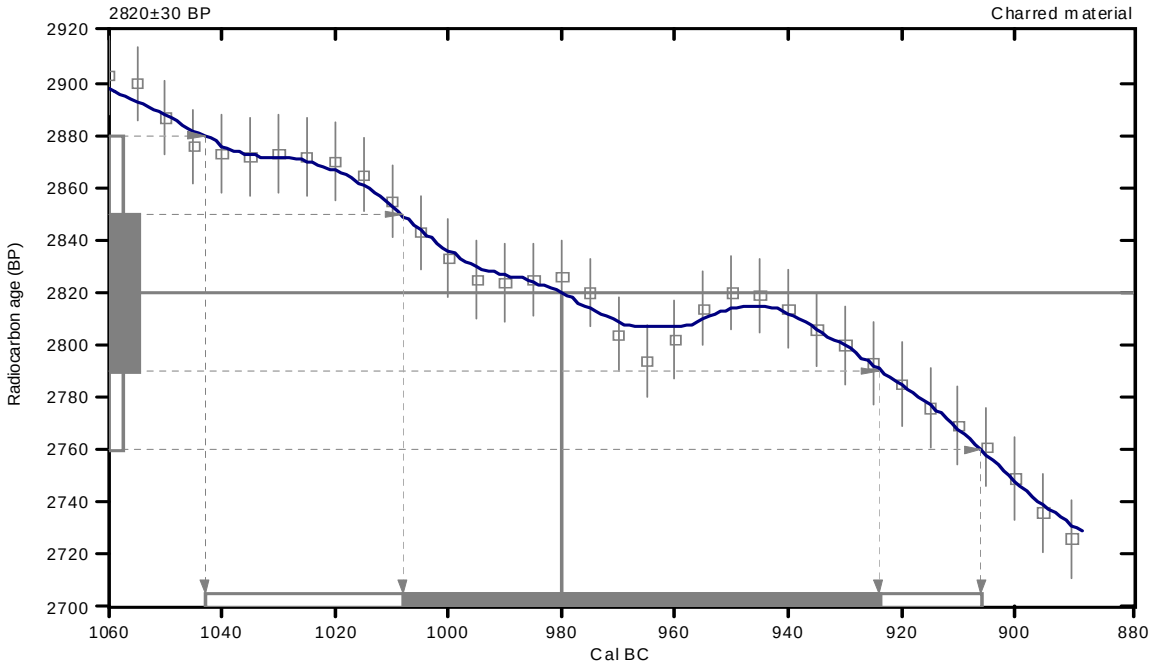
Conventional radiocarbon age: **2820±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1040 to 910 (Cal BP 2990 to 2860)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 980 (Cal BP 2930)

1 Sigma calibrated result: (68% probability) Cal BC 1010 to 920 (Cal BP 2960 to 2870)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.4:lab. mult=1)

Laboratory number: **Beta-292146**

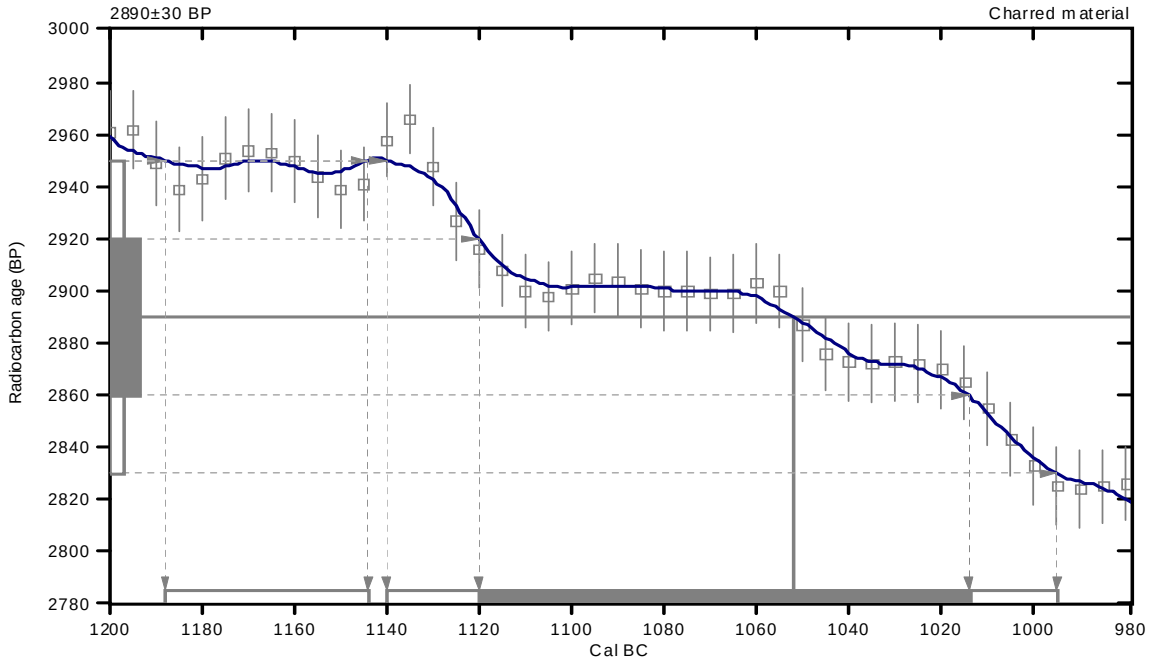
Conventional radiocarbon age: **2890±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and Cal BC 1140 to 1000 (Cal BP 3090 to 2940)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1050 (Cal BP 3000)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1010 (Cal BP 3070 to 2960)



References:

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.4:lab. mult=1)

Laboratory number: **Beta-292147**

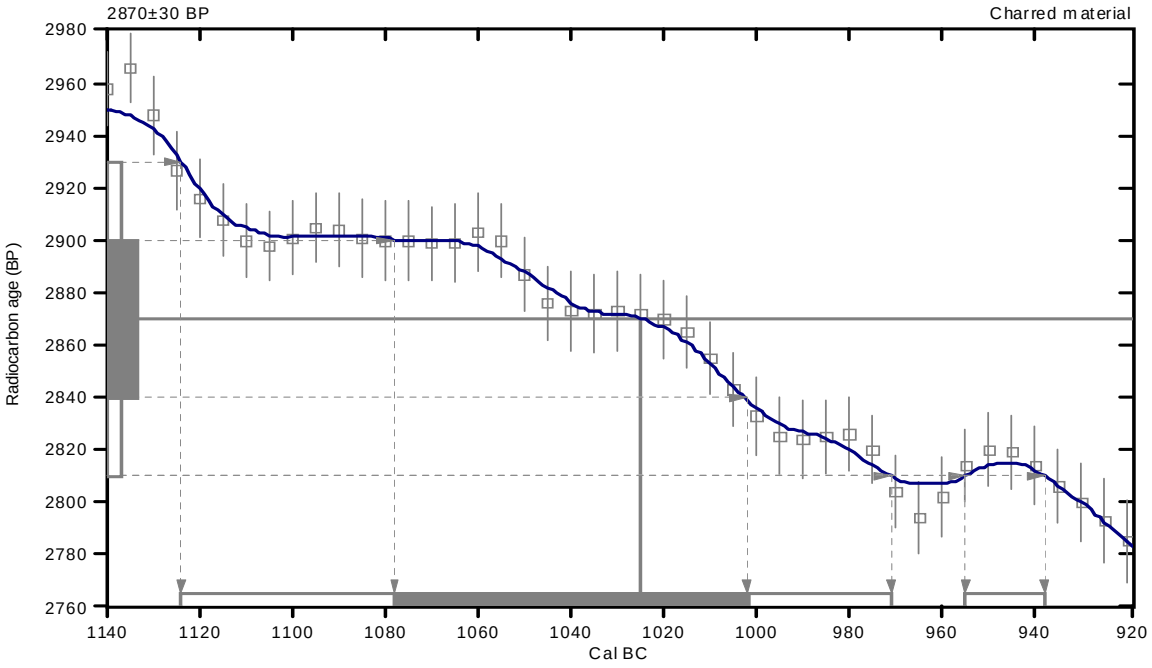
Conventional radiocarbon age: **2870±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1120 to 970 (Cal BP 3070 to 2920) and Cal BC 960 to 940 (Cal BP 2900 to 2890)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1020 (Cal BP 2980)

1 Sigma calibrated result: (68% probability) Cal BC 1080 to 1000 (Cal BP 3030 to 2950)



References:

Database used

INTCAL04

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=N/A:lab. mult=1)

Laboratory number: **Beta-292149**

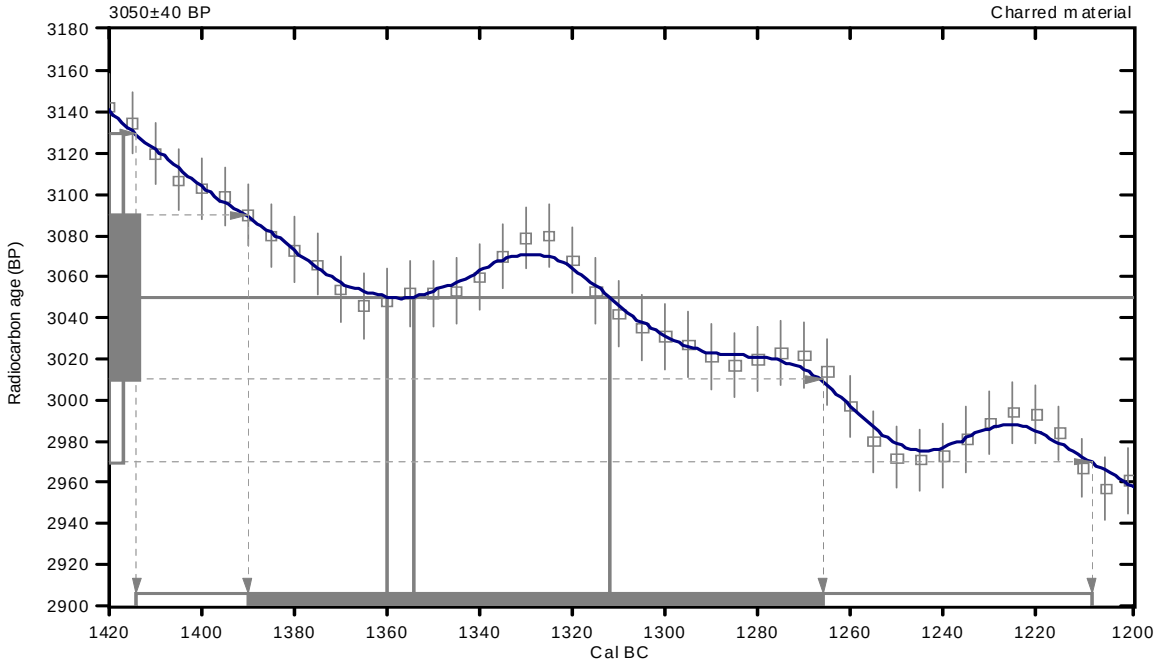
Conventional radiocarbon age: **3050±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1410 to 1210 (Cal BP 3360 to 3160)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 1360 (Cal BP 3310) and
Cal BC 1350 (Cal BP 3300) and
Cal BC 1310 (Cal BP 3260)

1 Sigma calibrated result: (68% probability) Cal BC 1390 to 1270 (Cal BP 3340 to 3220)



References:

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-15.5:lab. mult=1)

Laboratory number: **Beta-292150**

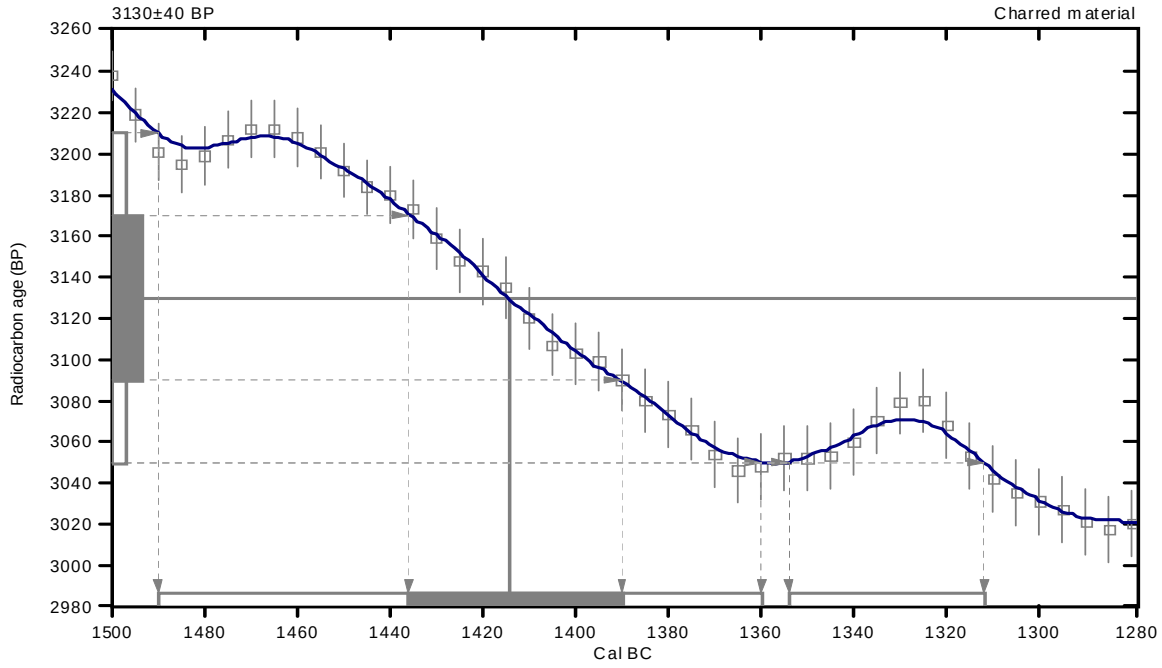
Conventional radiocarbon age: **3130±40 BP**

2 Sigma calibrated results: **Cal BC 1490 to 1360 (Cal BP 3440 to 3310) and**
(95% probability) **Cal BC 1350 to 1310 (Cal BP 3300 to 3260)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1410 (Cal BP 3360)

1 Sigma calibrated result: (68% probability) Cal BC 1440 to 1390 (Cal BP 3390 to 3340)



References:

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INTCAL04

Calibration Database

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.2:lab. mult=1)

Laboratory number: **Beta-292151**

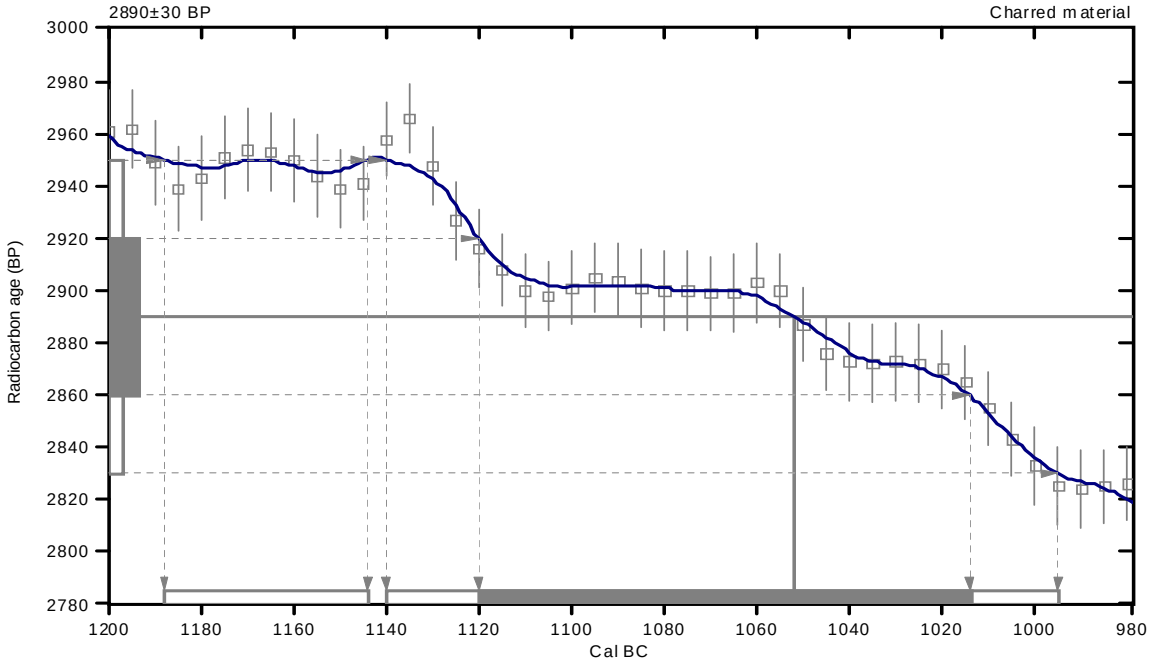
Conventional radiocarbon age: **2890±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and Cal BC 1140 to 1000 (Cal BP 3090 to 2940)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1050 (Cal BP 3000)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1010 (Cal BP 3070 to 2960)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.8:lab. mult=1)

Laboratory number: **Beta-292153**

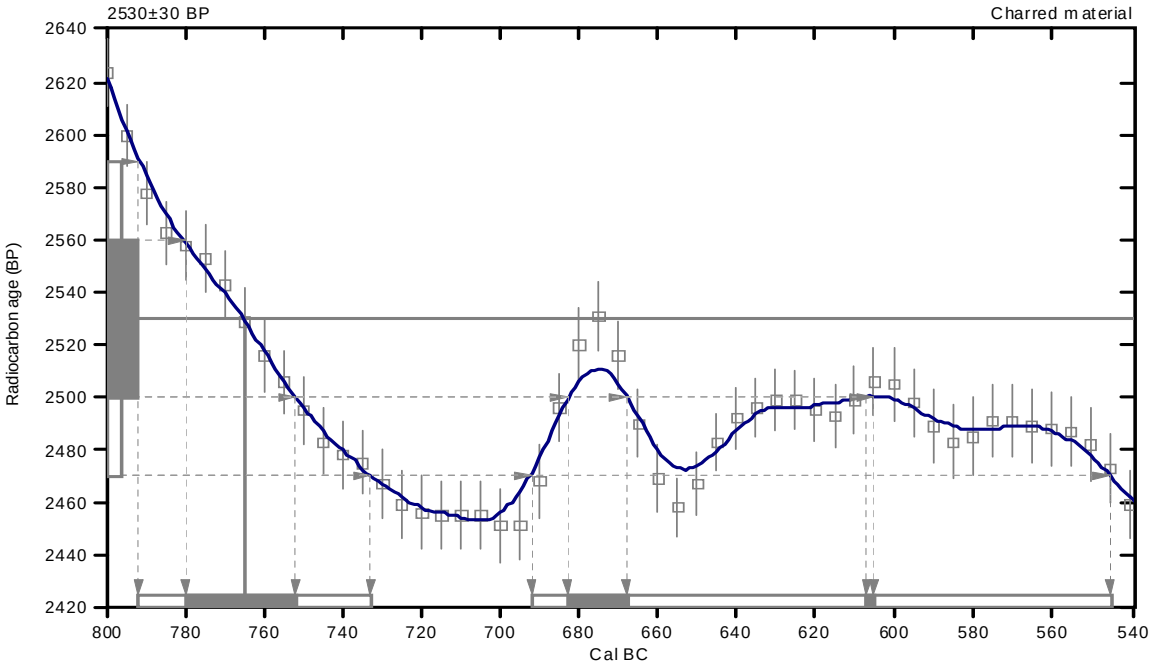
Conventional radiocarbon age: **2530±30 BP**

2 Sigma calibrated results: **Cal BC 790 to 730 (Cal BP 2740 to 2680) and**
(95% probability) **Cal BC 690 to 540 (Cal BP 2640 to 2500)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 760 (Cal BP 2720)

1 Sigma calibrated results: Cal BC 780 to 750 (Cal BP 2730 to 2700) and
(68% probability) Cal BC 680 to 670 (Cal BP 2630 to 2620) and
Cal BC 610 to 600 (Cal BP 2560 to 2560)



References:

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-8.7:lab. mult=1)

Laboratory number: **Beta-292154**

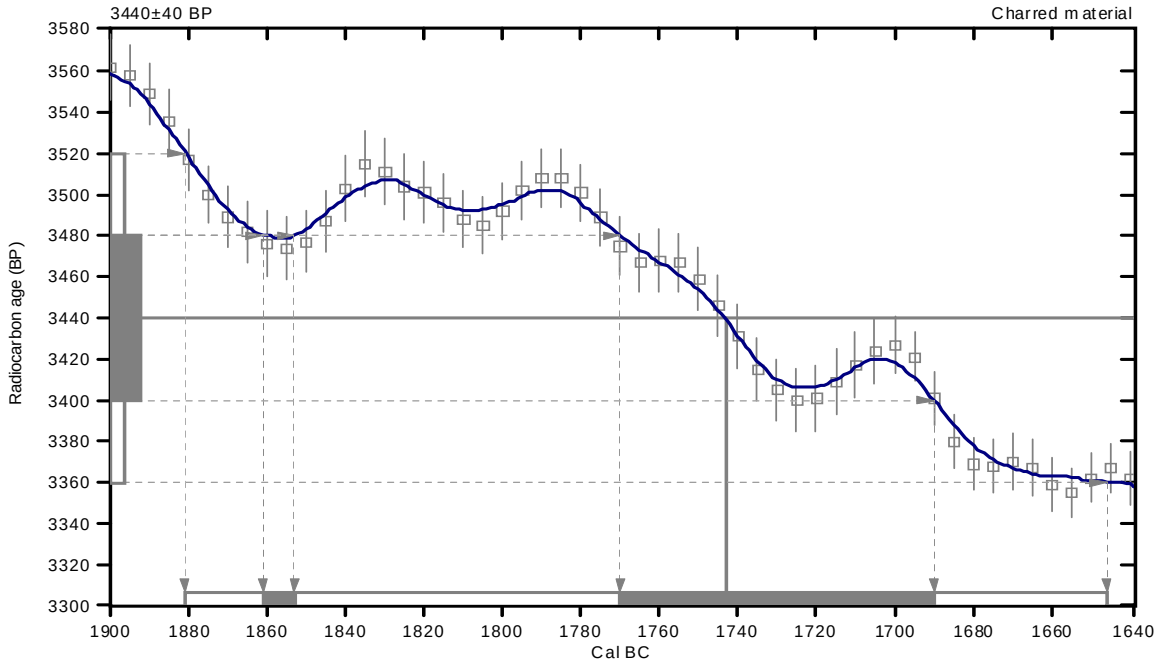
Conventional radiocarbon age: **3440±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1880 to 1650 (Cal BP 3830 to 3600)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1740 (Cal BP 3690)

1 Sigma calibrated results: (68% probability) Cal BC 1860 to 1850 (Cal BP 3810 to 3800) and Cal BC 1770 to 1690 (Cal BP 3720 to 3640)



References:

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President

Ronald Hatfield
Christopher Patrick
Deputy Directors

October 6, 2011

Dr. William H. Doelle/J. Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN1455, LCAFN1673, LCAFN4610, LCAFN4981, LCAFN4985, LCAFN6981, LCAFN7593, LCAFN8185, LCAFN8965, LCAFN10144, LCAFN10181, LCAFN11137, LCAFN11178, LCAFN11548, LCAFN11909

Dear Dr. Doelle and Mr. Vint:

Enclosed are the radiocarbon dating results for 15 samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/J. Vint — Report Date: 10/6/2011

Desert Archaeology, Incorporated — Material Received: 9/28/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 306683	2510 +/- 30 BP	-22.3 o/oo	2550 +/- 30 BP
SAMPLE : LCAFN1455			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 800 to 750 (Cal BP 2750 to 2700) AND Cal BC 690 to 660 (Cal BP 2640 to 2610) Cal BC 640 to 590 (Cal BP 2590 to 2540)			
Beta - 306684	2210 +/- 30 BP	-10.6 o/oo	2450 +/- 30 BP
SAMPLE : LCAFN1673			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 760 to 680 (Cal BP 2710 to 2630) AND Cal BC 670 to 410 (Cal BP 2620 to 2360)			
Beta - 306685	2710 +/- 30 BP	-12.6 o/oo	2910 +/- 30 BP
SAMPLE : LCAFN4610			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1210 to 1010 (Cal BP 3160 to 2960)			
Beta - 306686	2550 +/- 30 BP	-10.6 o/oo	2790 +/- 30 BP
SAMPLE : LCAFN4981			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1010 to 890 (Cal BP 2960 to 2840) AND Cal BC 870 to 850 (Cal BP 2820 to 2800)			

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.

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beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/J. Vint

Report Date: 10/6/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 306687	2490 +/- 30 BP	-10.6 o/oo	2730 +/- 30 BP
SAMPLE : LCAFN4985			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 920 to 810 (Cal BP 2870 to 2760)			
Beta - 306688	2630 +/- 30 BP	-10.5 o/oo	2870 +/- 30 BP
SAMPLE : LCAFN6981			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1120 to 970 (Cal BP 3070 to 2920) AND Cal BC 960 to 940 (Cal BP 2900 to 2890)			
Beta - 306689	2610 +/- 30 BP	-10.4 o/oo	2850 +/- 30 BP
SAMPLE : LCAFN7593			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1120 to 920 (Cal BP 3060 to 2870)			
Beta - 306690	2920 +/- 30 BP	-24.3 o/oo	2930 +/- 30 BP
SAMPLE : LCAFN8185			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1260 to 1020 (Cal BP 3210 to 2980)			

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.

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Report Date: 10/6/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 306691 SAMPLE : LCAFN8965 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 930 to 820 (Cal BP 2880 to 2770)	2500 +/- 30 BP	-10.3 o/oo	2740 +/- 30 BP
Beta - 306692 SAMPLE : LCAFN10144 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1000 to 840 (Cal BP 2940 to 2790)	2520 +/- 30 BP	-9.6 o/oo	2770 +/- 30 BP
Beta - 306693 SAMPLE : LCAFN10181 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 920 to 810 (Cal BP 2870 to 2760)	2500 +/- 30 BP	-10.9 o/oo	2730 +/- 30 BP
Beta - 306694 SAMPLE : LCAFN11137 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1000 to 840 (Cal BP 2940 to 2790)	2530 +/- 30 BP	-10.5 o/oo	2770 +/- 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.

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Report Date: 10/6/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 306695 SAMPLE : LCAFN11178 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1130 to 980 (Cal BP 3080 to 2930)	2650 +/- 30 BP	-11.0 o/oo	2880 +/- 30 BP
Beta - 306696 SAMPLE : LCAFN11548 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1300 to 1120 (Cal BP 3250 to 3060)	2930 +/- 30 BP	-22.6 o/oo	2970 +/- 30 BP
Beta - 306697 SAMPLE : LCAFN11909 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1300 to 1120 (Cal BP 3250 to 3060)	2950 +/- 30 BP	-23.6 o/oo	2970 +/- 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=-22.3:lab. mult=1)

Laboratory number: **Beta-306683**

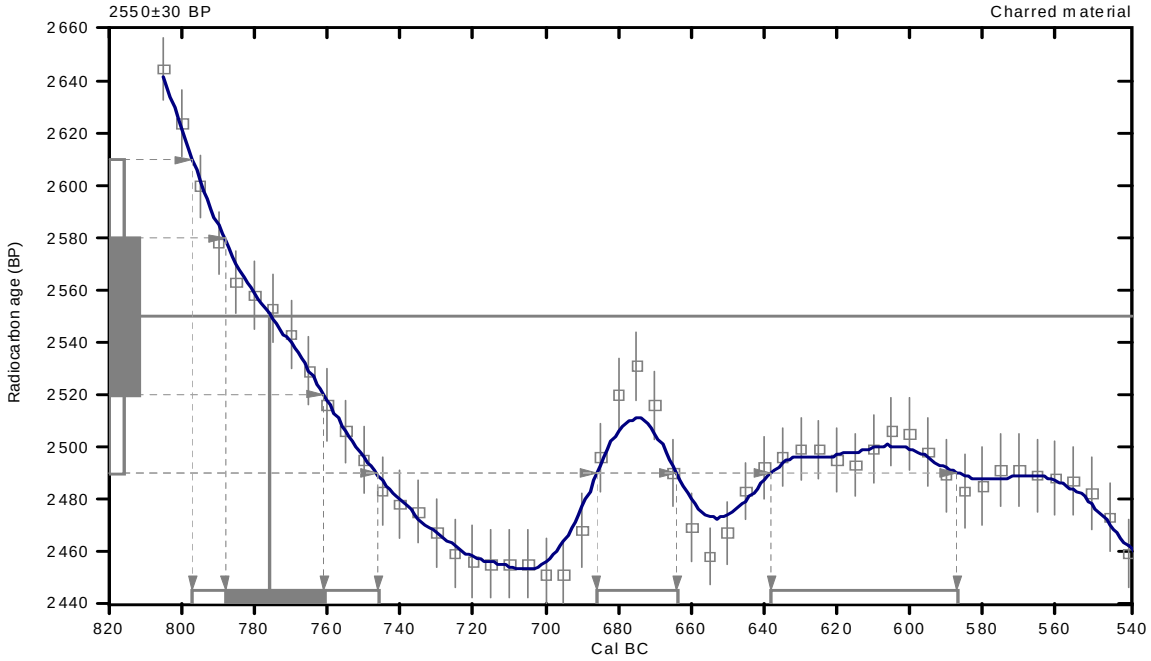
Conventional radiocarbon age: **2550±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 800 to 750 (Cal BP 2750 to 2700) and Cal BC 690 to 660 (Cal BP 2640 to 2610) and Cal BC 640 to 590 (Cal BP 2590 to 2540)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 780 (Cal BP 2730)

1 Sigma calibrated result: (68% probability) Cal BC 790 to 760 (Cal BP 2740 to 2710)



References:

Database used

INTCAL04

Calibration Database

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.6:lab. mult=1)

Laboratory number: **Beta-306684**

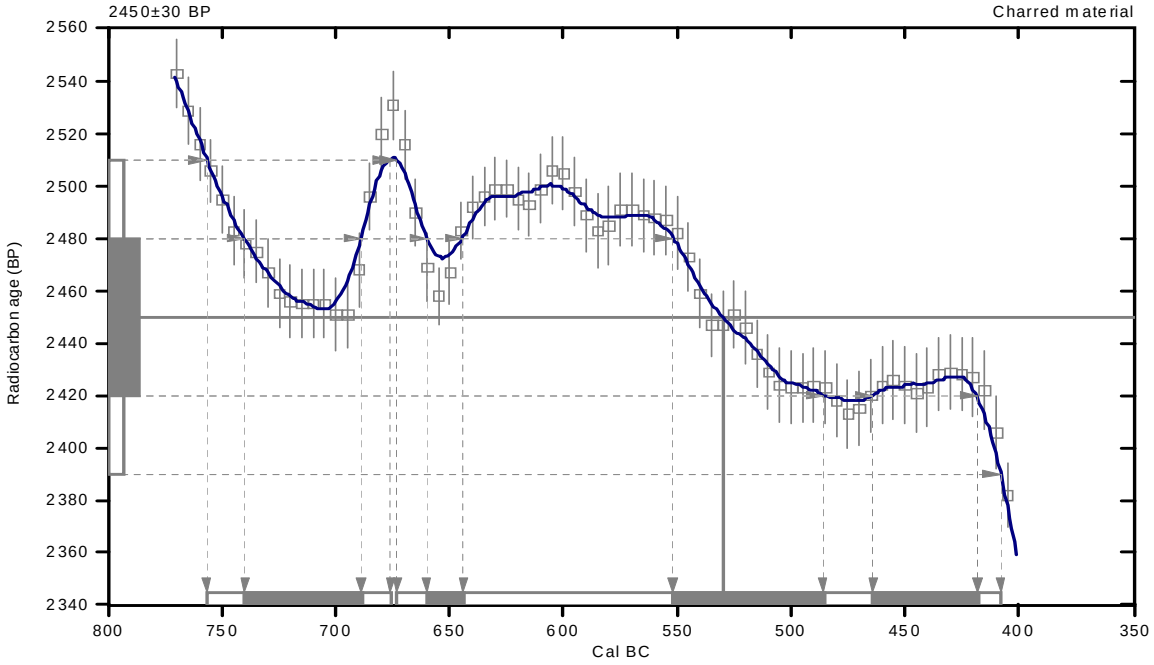
Conventional radiocarbon age: **2450±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 760 to 680 (Cal BP 2710 to 2630) and Cal BC 670 to 410 (Cal BP 2620 to 2360)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 530 (Cal BP 2480)

1 Sigma calibrated results: (68% probability) Cal BC 740 to 690 (Cal BP 2690 to 2640) and Cal BC 660 to 640 (Cal BP 2610 to 2590) and Cal BC 550 to 490 (Cal BP 2500 to 2440) and Cal BC 460 to 420 (Cal BP 2410 to 2370)



References:

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-12.6:lab. mult=1)

Laboratory number: **Beta-306685**

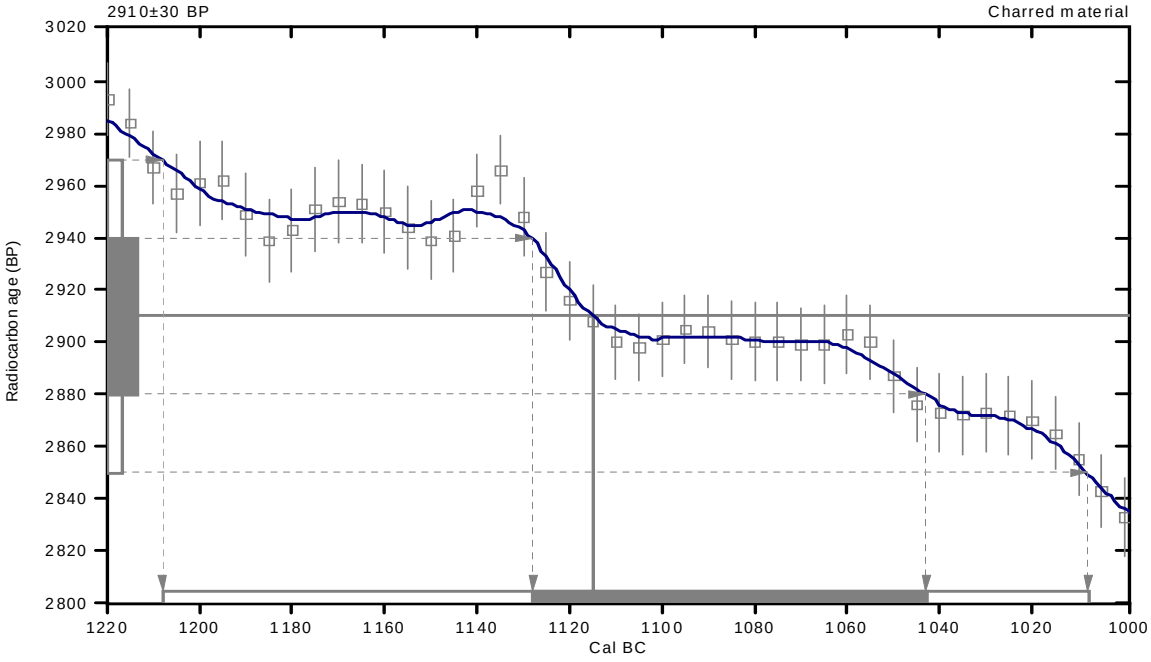
Conventional radiocarbon age: **2910±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1210 to 1010 (Cal BP 3160 to 2960)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3060)

1 Sigma calibrated result: (68% probability) Cal BC 1130 to 1040 (Cal BP 3080 to 2990)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.6:lab. mult=1)

Laboratory number: **Beta-306686**

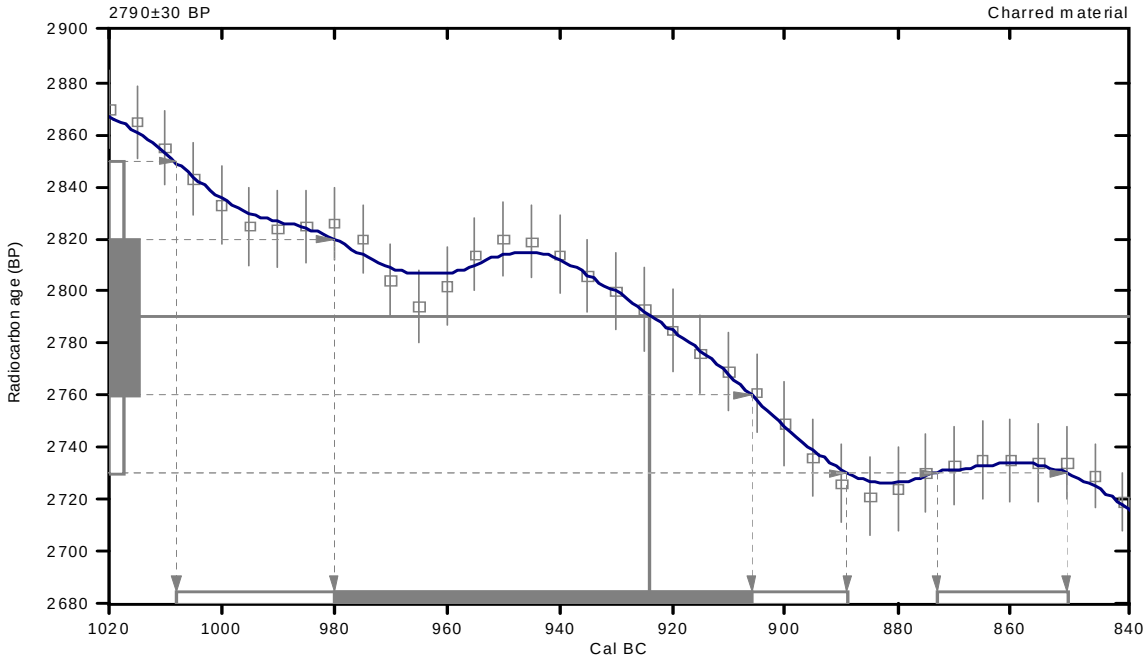
Conventional radiocarbon age: **2790±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1010 to 890 (Cal BP 2960 to 2840) and Cal BC 870 to 850 (Cal BP 2820 to 2800)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 920 (Cal BP 2870)

1 Sigma calibrated result: (68% probability) Cal BC 980 to 910 (Cal BP 2930 to 2860)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.6:lab. mult=1)

Laboratory number: **Beta-306687**

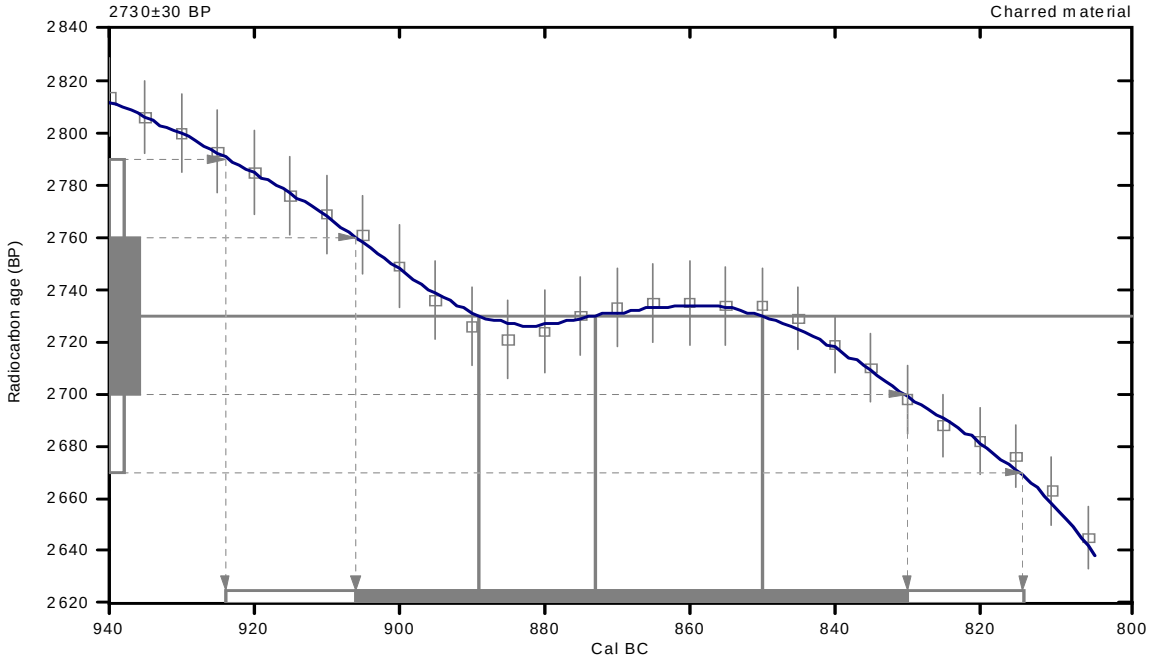
Conventional radiocarbon age: **2730±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 920 to 810 (Cal BP 2870 to 2760)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 890 (Cal BP 2840) and
Cal BC 870 (Cal BP 2820) and
Cal BC 850 (Cal BP 2800)

1 Sigma calibrated result: (68% probability) Cal BC 910 to 830 (Cal BP 2860 to 2780)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.5:lab. mult=1)

Laboratory number: **Beta-306688**

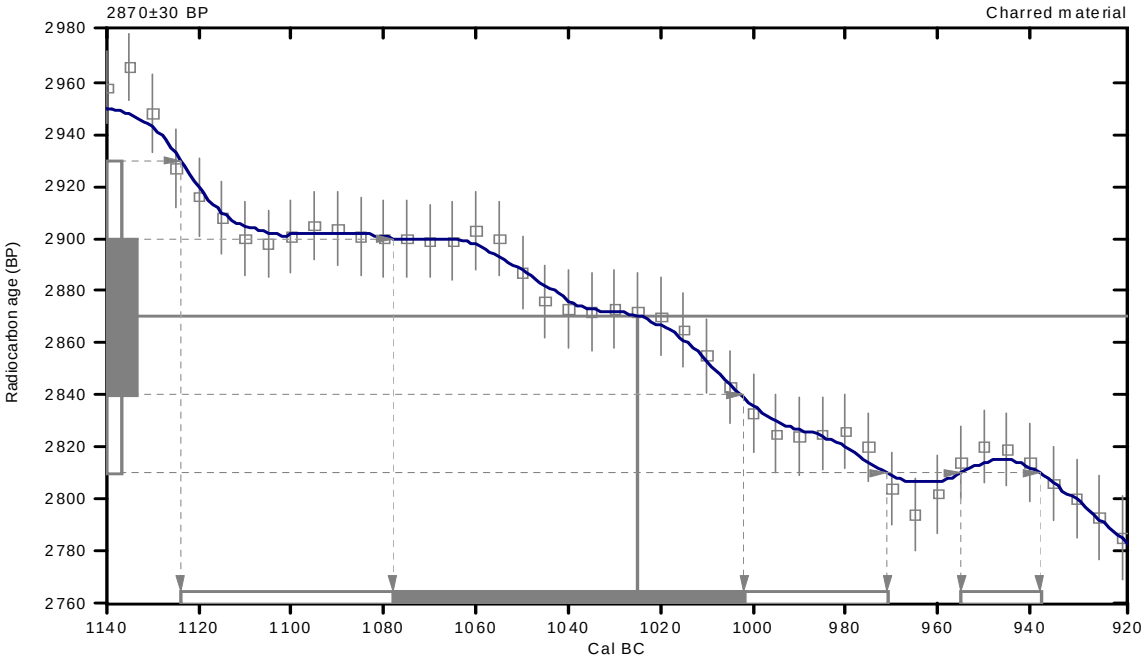
Conventional radiocarbon age: **2870±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1120 to 970 (Cal BP 3070 to 2920) and Cal BC 960 to 940 (Cal BP 2900 to 2890)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1020 (Cal BP 2980)

1 Sigma calibrated result: (68% probability) Cal BC 1080 to 1000 (Cal BP 3030 to 2950)



References:

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.4:lab. mult=1)

Laboratory number: **Beta-306689**

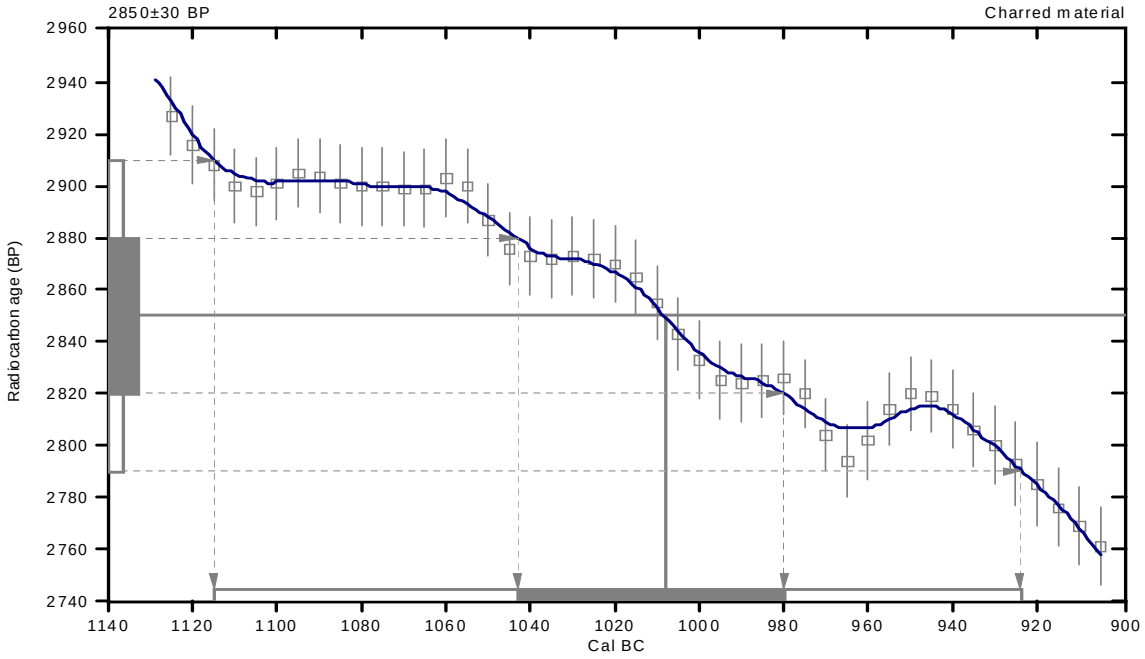
Conventional radiocarbon age: **2850±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1120 to 920 (Cal BP 3060 to 2870)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1010 (Cal BP 2960)

1 Sigma calibrated result: (68% probability) Cal BC 1040 to 980 (Cal BP 2990 to 2930)



References:

Database used

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.3:lab. mult=1)

Laboratory number: **Beta-306690**

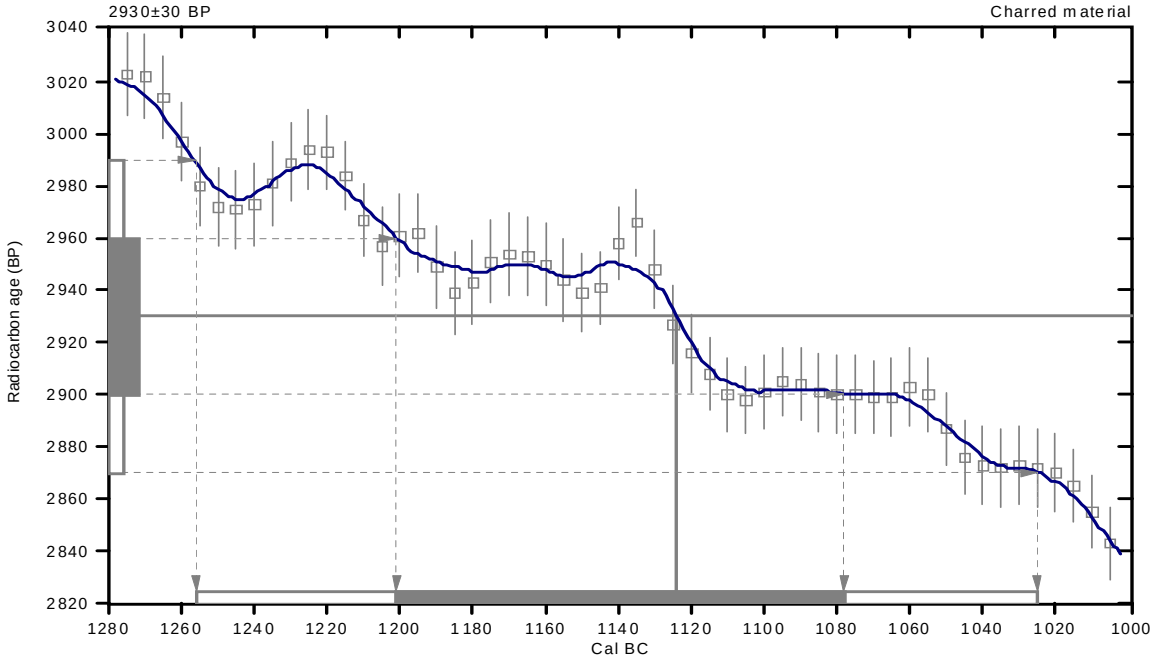
Conventional radiocarbon age: **2930±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1260 to 1020 (Cal BP 3210 to 2980)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3070)

1 Sigma calibrated result: (68% probability) Cal BC 1200 to 1080 (Cal BP 3150 to 3030)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.3:lab. mult=1)

Laboratory number: **Beta-306691**

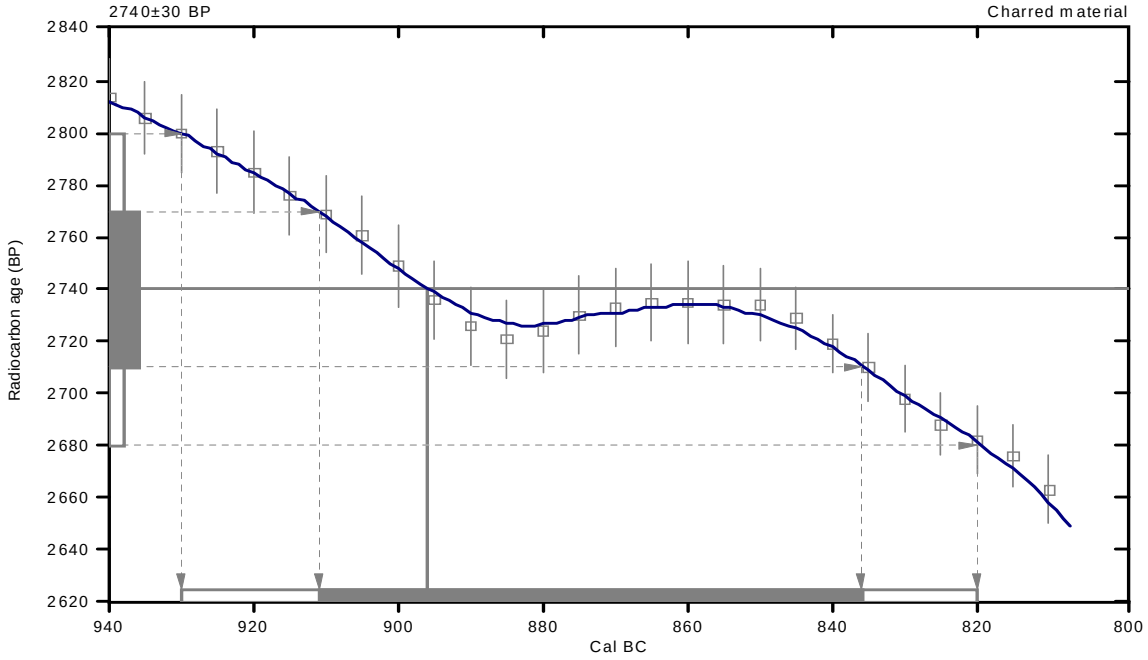
Conventional radiocarbon age: **2740±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 930 to 820 (Cal BP 2880 to 2770)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 900 (Cal BP 2850)

1 Sigma calibrated result: (68% probability) Cal BC 910 to 840 (Cal BP 2860 to 2790)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-9.6:lab. mult=1)

Laboratory number: **Beta-306692**

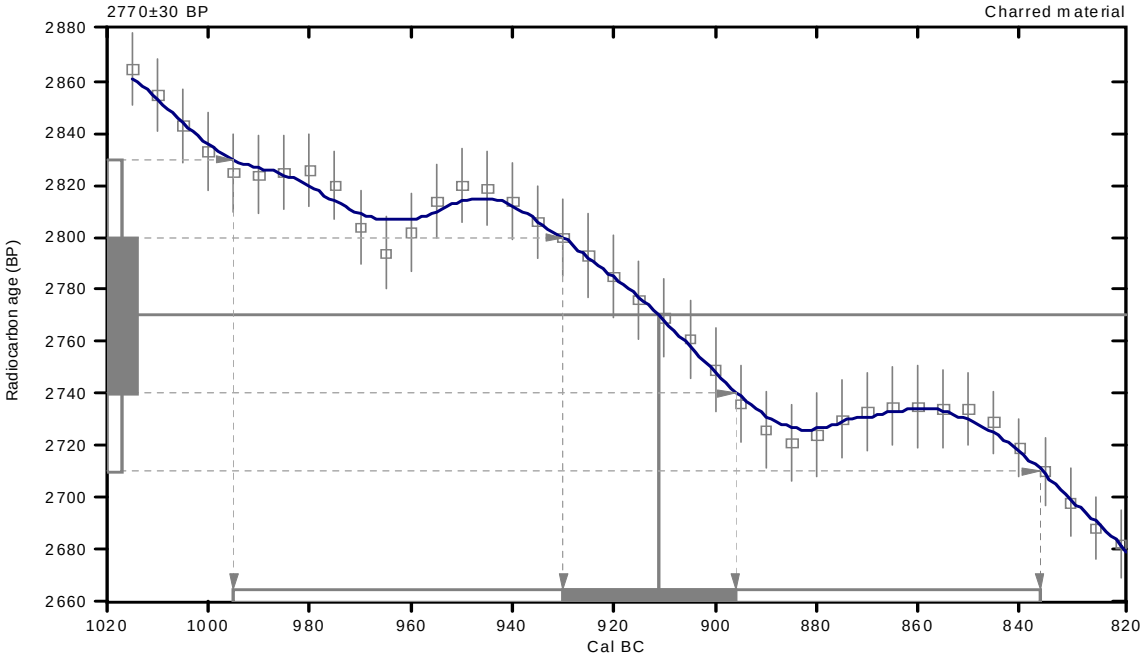
Conventional radiocarbon age: **2770±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1000 to 840 (Cal BP 2940 to 2790)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 910 (Cal BP 2860)

1 Sigma calibrated result: (68% probability) Cal BC 930 to 900 (Cal BP 2880 to 2850)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.9:lab. mult=1)

Laboratory number: **Beta-306693**

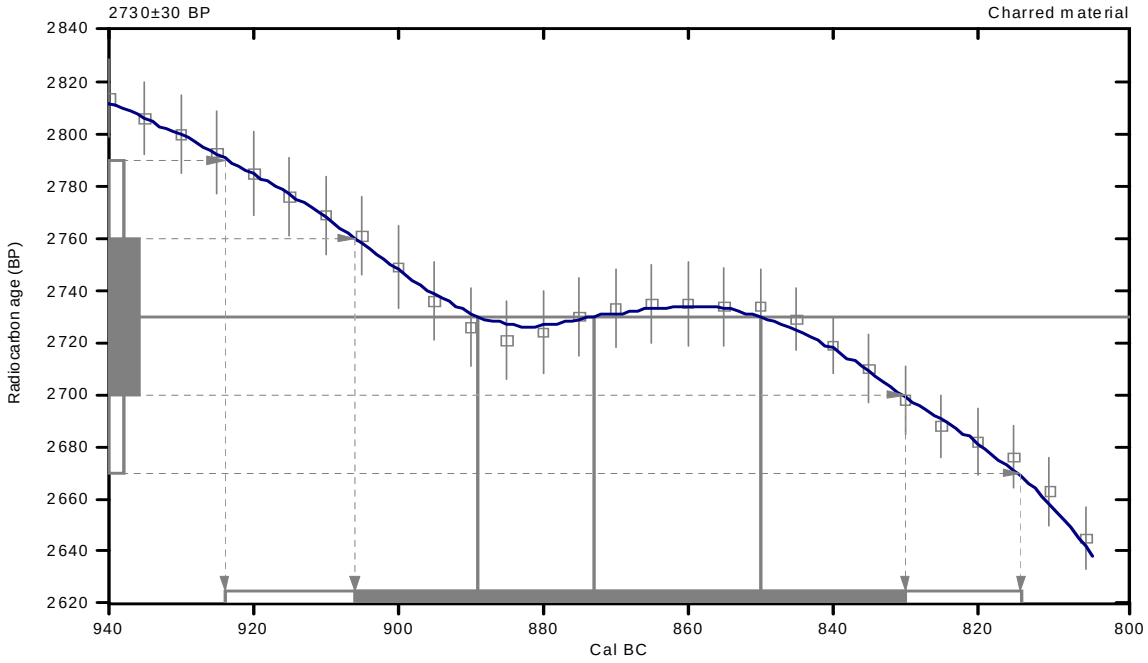
Conventional radiocarbon age: **2730±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 920 to 810 (Cal BP 2870 to 2760)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 890 (Cal BP 2840) and
Cal BC 870 (Cal BP 2820) and
Cal BC 850 (Cal BP 2800)

1 Sigma calibrated result: (68% probability) Cal BC 910 to 830 (Cal BP 2860 to 2780)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.5:lab. mult=1)

Laboratory number: **Beta-306694**

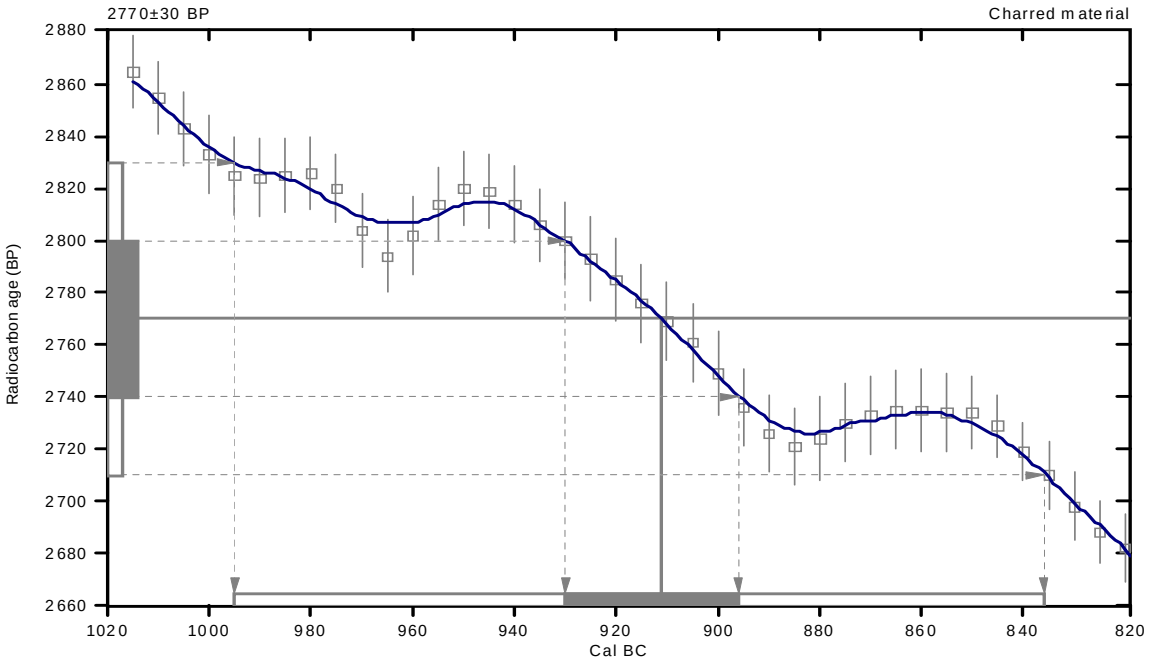
Conventional radiocarbon age: **2770±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1000 to 840 (Cal BP 2940 to 2790)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 910 (Cal BP 2860)

1 Sigma calibrated result: (68% probability) Cal BC 930 to 900 (Cal BP 2880 to 2850)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11:lab. mult=1)

Laboratory number: **Beta-306695**

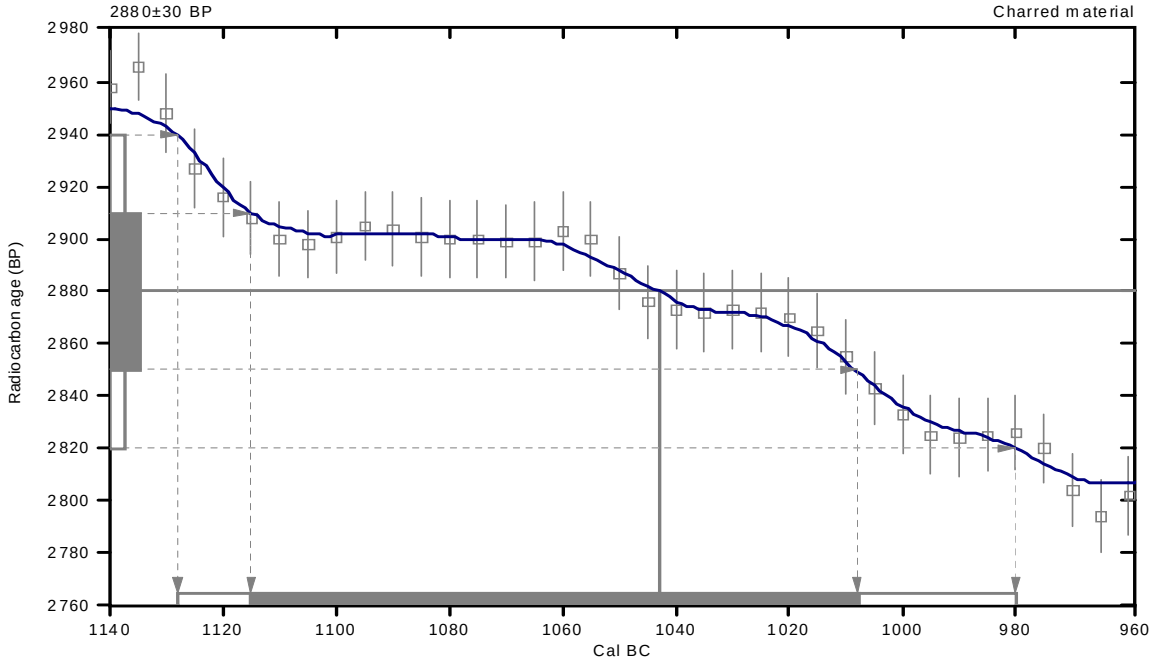
Conventional radiocarbon age: **2880±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1130 to 980 (Cal BP 3080 to 2930)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1040 (Cal BP 2990)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1010 (Cal BP 3060 to 2960)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.6:lab. mult=1)

Laboratory number: **Beta-306696**

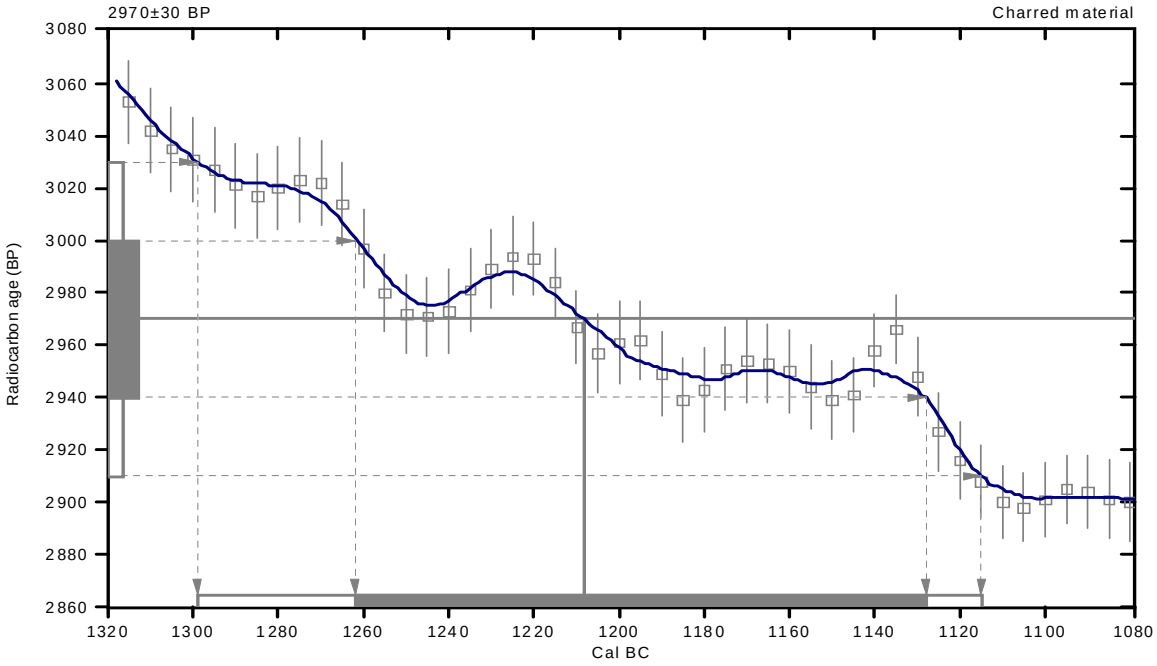
Conventional radiocarbon age: **2970±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1300 to 1120 (Cal BP 3250 to 3060)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1210 (Cal BP 3160)

1 Sigma calibrated result: (68% probability) Cal BC 1260 to 1130 (Cal BP 3210 to 3080)



References:

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Calibration Database

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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.6:lab. mult=1)

Laboratory number: **Beta-306697**

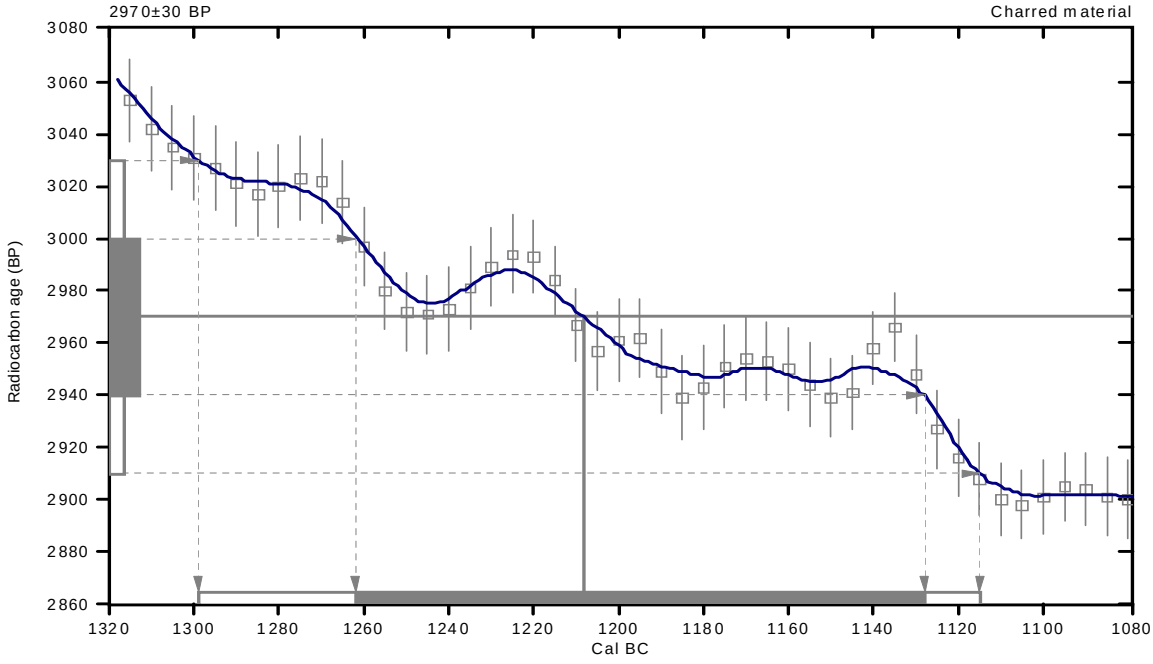
Conventional radiocarbon age: **2970±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1300 to 1120 (Cal BP 3250 to 3060)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1210 (Cal BP 3160)

1 Sigma calibrated result: (68% probability) Cal BC 1260 to 1130 (Cal BP 3210 to 3080)



References:

Database used

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Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

October 7, 2011

Dr. William H. Doelle/James Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN4823, LCAFN4901, LCAFN4902, LCAFN10506, LCAFN10523, LCAFN10719, LCAFN10836, LCAFN11196, LCAFN11710, LCAFN12083, LCAFN12092, LCAFN12317, LCAFN12718, LCAFN12278, LCAFN12784, LCAFN12904, LCAFN14365

Dear Dr. Doelle and Mr. Vint:

Enclosed are the radiocarbon dating results for 17 samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/James Vint — Report Date: 10/7/2011

Desert Archaeology, Incorporated — Material Received: 8/23/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 304531	2660 +/- 40 BP	-10.5 o/oo	2900 +/- 40 BP
SAMPLE : LCAFN4823			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1250 to 1240 (Cal BP 3200 to 3190) AND Cal BC 1220 to 980 (Cal BP 3170 to 2930)			
Beta - 304532	2630 +/- 40 BP	-11.1 o/oo	2860 +/- 40 BP
SAMPLE : LCAFN4901			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1130 to 920 (Cal BP 3080 to 2870)			
Beta - 304533	2630 +/- 40 BP	-10.7 o/oo	2860 +/- 40 BP
SAMPLE : LCAFN4902			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1130 to 920 (Cal BP 3080 to 2870)			
Beta - 304534	2670 +/- 40 BP	-11.1 o/oo	2900 +/- 40 BP
SAMPLE : LCAFN10506			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1250 to 1240 (Cal BP 3200 to 3190) AND Cal BC 1220 to 980 (Cal BP 3170 to 2930)			

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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/James Vint

Report Date: 10/7/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 304535	2640 +/- 40 BP	-10.6 o/oo	2880 +/- 40 BP
SAMPLE : LCAFN10523			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1200 to 930 (Cal BP 3150 to 2880)			
Beta - 304536	2640 +/- 40 BP	-11.1 o/oo	2870 +/- 40 BP
SAMPLE : LCAFN10719			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1190 to 1140 (Cal BP 3140 to 3090) AND Cal BC 1140 to 920 (Cal BP 3090 to 2870)			
Beta - 304537	2280 +/- 30 BP	-21.3 o/oo	2340 +/- 30 BP
SAMPLE : LCAFN10836			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 410 to 380 (Cal BP 2360 to 2330)			
Beta - 304538	2690 +/- 30 BP	-9.9 o/oo	2940 +/- 30 BP
SAMPLE : LCAFN11196			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1260 to 1040 (Cal BP 3210 to 2990)			

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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/James Vint

Report Date: 10/7/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 304539	2640 +/- 40 BP	-10.1 o/oo	2880 +/- 40 BP
SAMPLE : LCAFN11710			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1200 to 930 (Cal BP 3150 to 2880)			
Beta - 304540	2550 +/- 40 BP	-8.6 o/oo	2820 +/- 40 BP
SAMPLE : LCAFN12083			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1080 to 900 (Cal BP 3030 to 2850)			
Beta - 304541	2690 +/- 30 BP	-11.2 o/oo	2920 +/- 30 BP
SAMPLE : LCAFN12092			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1250 to 1240 (Cal BP 3200 to 3190) AND Cal BC 1220 to 1010 (Cal BP 3170 to 2960)			
Beta - 304542	2700 +/- 30 BP	-10.9 o/oo	2930 +/- 30 BP
SAMPLE : LCAFN12317			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1260 to 1020 (Cal BP 3210 to 2980)			

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.

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Dr. William H. Doelle/James Vint

Report Date: 10/7/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 304543 SAMPLE : LCAFN12718 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1000 to 840 (Cal BP 2940 to 2790)	2740 +/- 30 BP	-23.3 o/oo	2770 +/- 30 BP
Beta - 304544 SAMPLE : LCAFN12278 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1080 to 920 (Cal BP 3030 to 2870)	2600 +/- 30 BP	-10.5 o/oo	2840 +/- 30 BP
Beta - 304545 SAMPLE : LCAFN12784 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1270 to 1050 (Cal BP 3220 to 3000)	2710 +/- 30 BP	-10.3 o/oo	2950 +/- 30 BP
Beta - 304546 SAMPLE : LCAFN12904 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1120 to 970 (Cal BP 3070 to 2920) AND Cal BC 960 to 940 (Cal BP 2900 to 2890)	2830 +/- 30 BP	-22.3 o/oo	2870 +/- 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.

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Dr. William H. Doelle/James Vint

Report Date: 10/7/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 304547	2650 +/- 30 BP	-11.0 o/oo	2880 +/- 30 BP
SAMPLE : LCAFN14365			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1130 to 980 (Cal BP 3080 to 2930)			

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=-10.5:lab. mult=1)

Laboratory number: **Beta-304531**

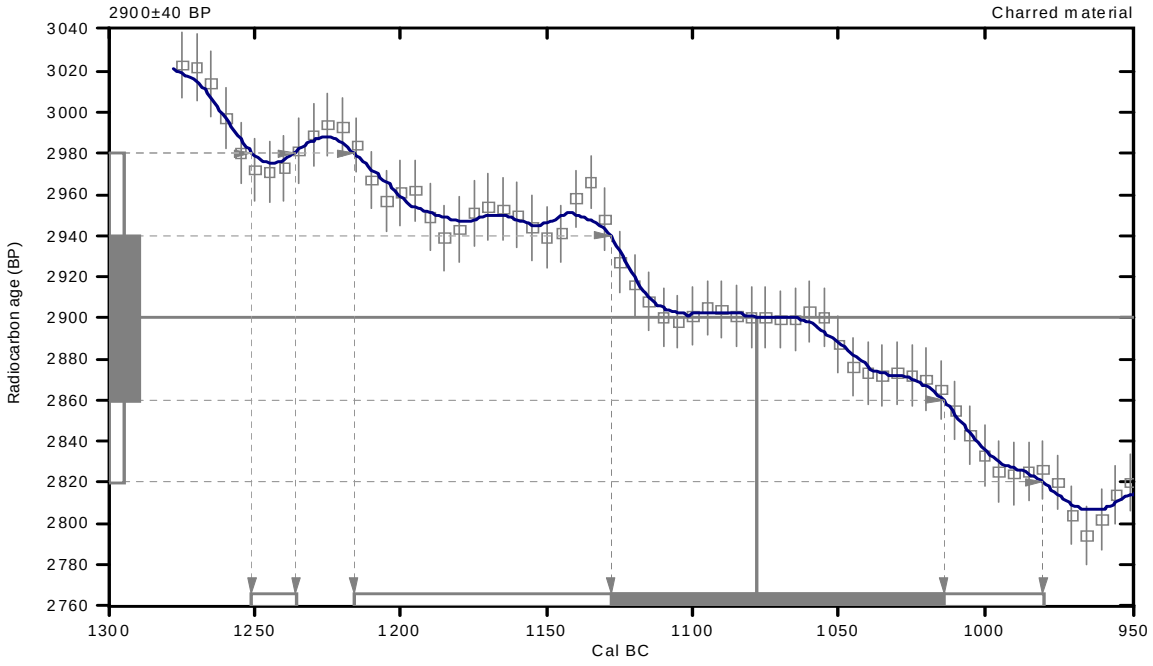
Conventional radiocarbon age: **2900±40 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1250 to 1240 (Cal BP 3200 to 3190) and Cal BC 1220 to 980 (Cal BP 3170 to 2930)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1080 (Cal BP 3030)

1 Sigma calibrated result: (68% probability) Cal BC 1130 to 1010 (Cal BP 3080 to 2960)



References:

Database used

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Calibration Database

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.1:lab. mult=1)

Laboratory number: **Beta-304532**

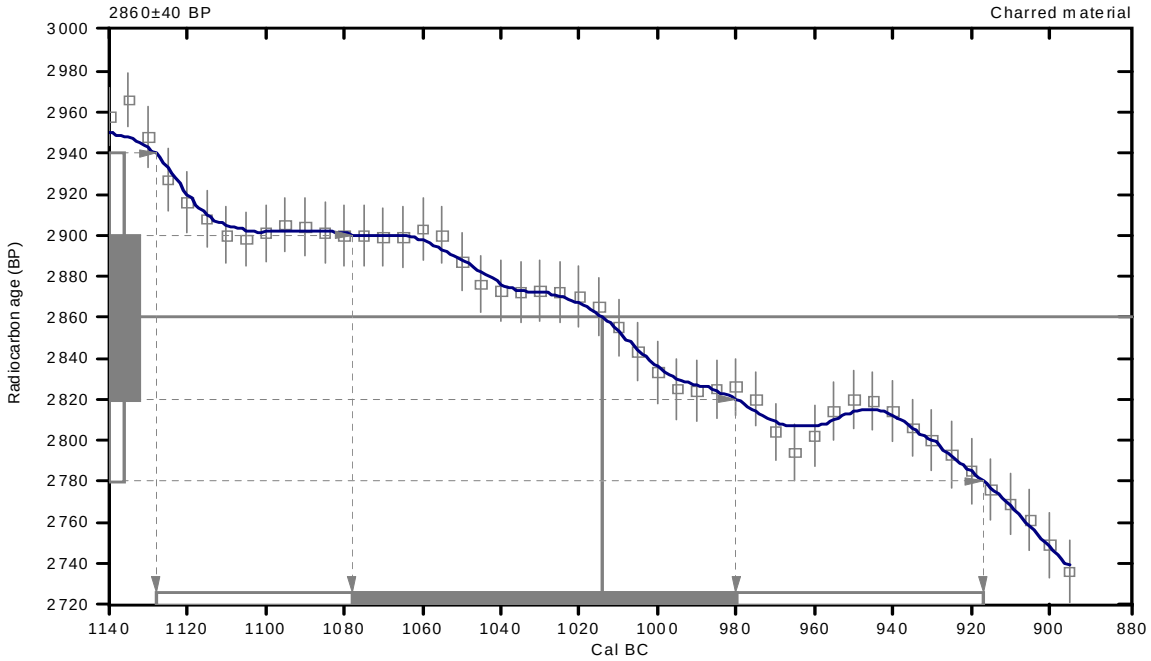
Conventional radiocarbon age: **2860±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1130 to 920 (Cal BP 3080 to 2870)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1010 (Cal BP 2960)

1 Sigma calibrated result: (68% probability) Cal BC 1080 to 980 (Cal BP 3030 to 2930)



References:

Database used

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Calibration Database

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.7:lab. mult=1)

Laboratory number: **Beta-304533**

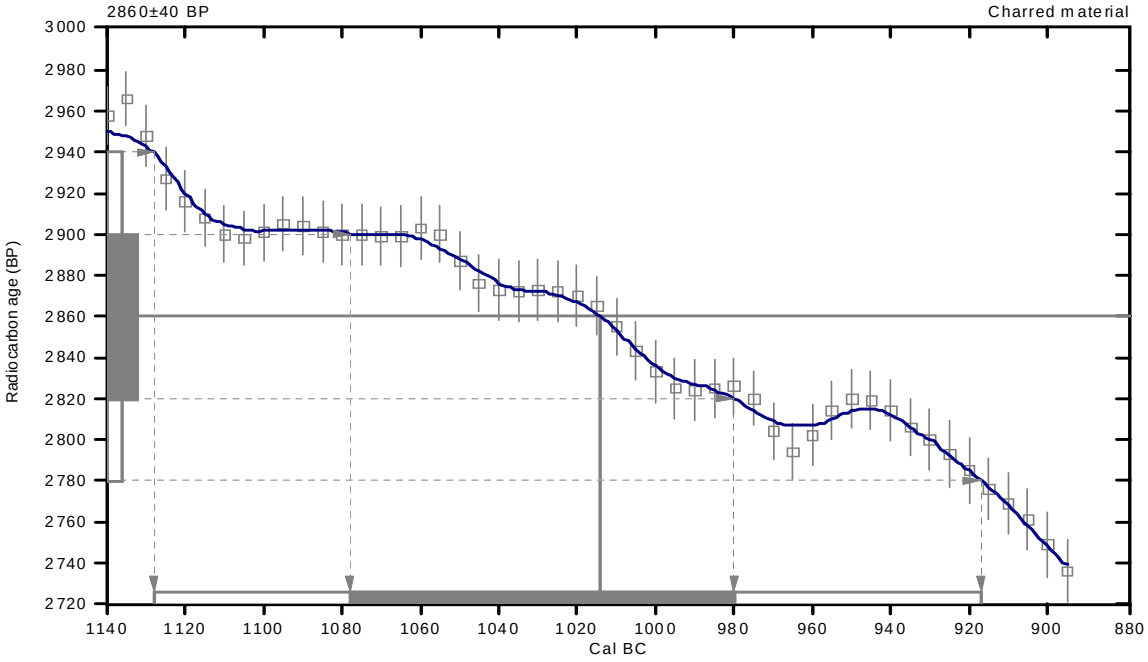
Conventional radiocarbon age: **2860±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1130 to 920 (Cal BP 3080 to 2870)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1010 (Cal BP 2960)

1 Sigma calibrated result: (68% probability) Cal BC 1080 to 980 (Cal BP 3030 to 2930)



References:

Database used

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Calibration Database

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.1:lab. mult=1)

Laboratory number: **Beta-304534**

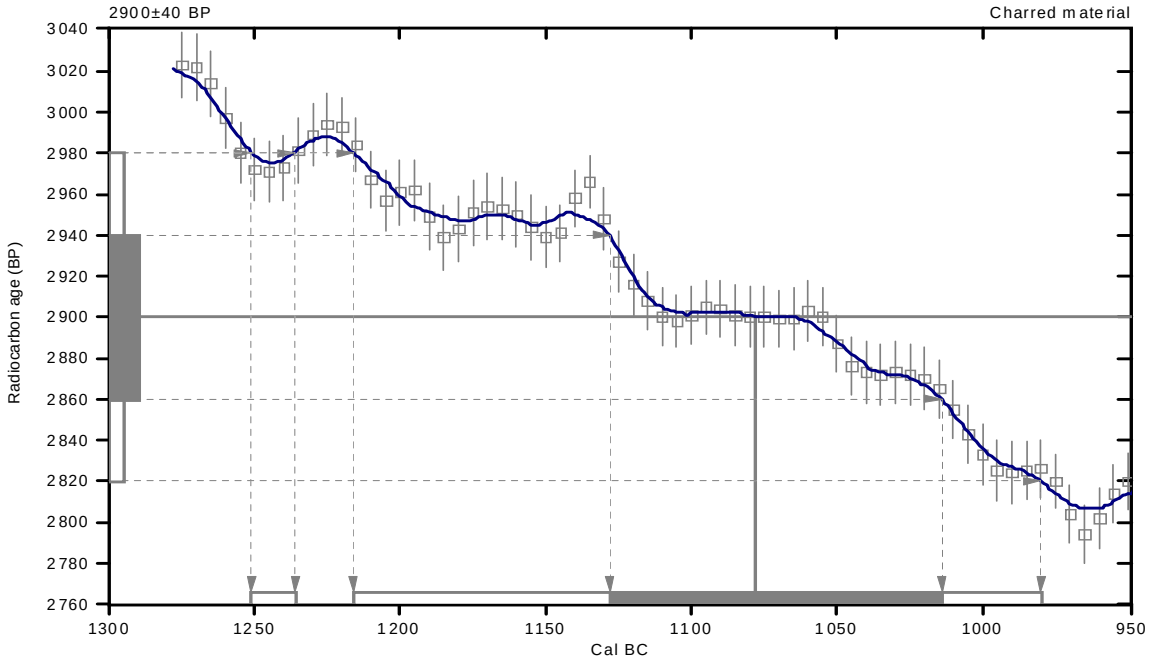
Conventional radiocarbon age: **2900±40 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1250 to 1240 (Cal BP 3200 to 3190) and Cal BC 1220 to 980 (Cal BP 3170 to 2930)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1080 (Cal BP 3030)

1 Sigma calibrated result: (68% probability) Cal BC 1130 to 1010 (Cal BP 3080 to 2960)



References:

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.6:lab. mult=1)

Laboratory number: **Beta-304535**

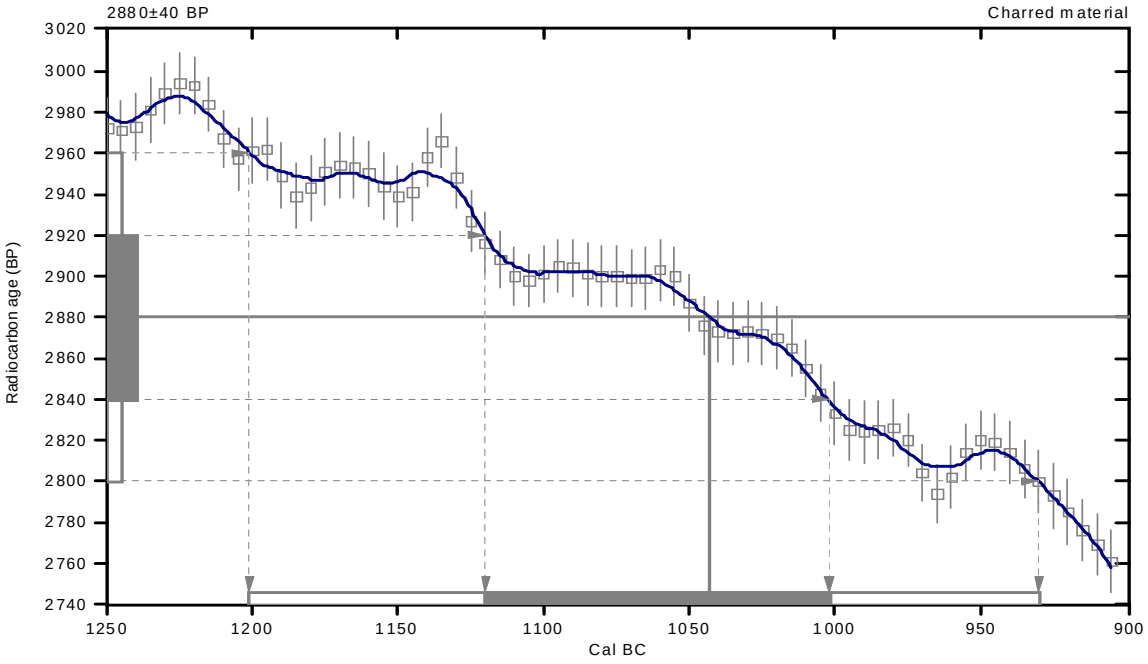
Conventional radiocarbon age: **2880±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1200 to 930 (Cal BP 3150 to 2880)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1040 (Cal BP 2990)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1000 (Cal BP 3070 to 2950)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.1:lab. mult=1)

Laboratory number: **Beta-304536**

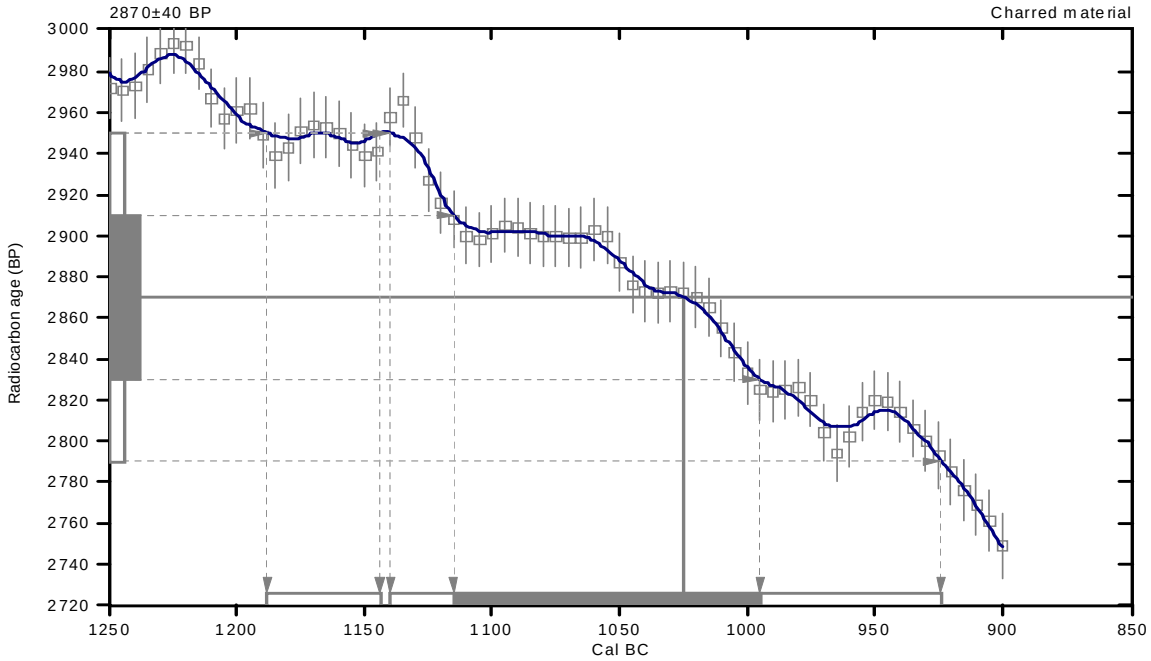
Conventional radiocarbon age: **2870±40 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and Cal BC 1140 to 920 (Cal BP 3090 to 2870)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1020 (Cal BP 2980)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1000 (Cal BP 3060 to 2940)



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INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-21.3:lab. mult=1)

Laboratory number: **Beta-304537**

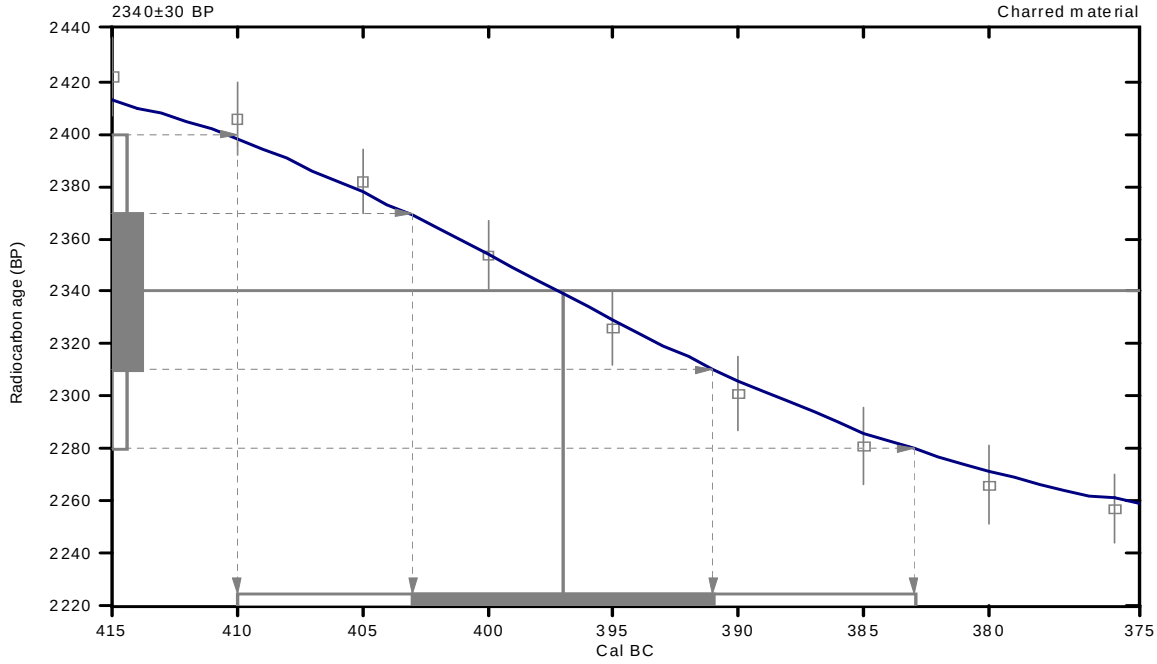
Conventional radiocarbon age: **2340±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 410 to 380 (Cal BP 2360 to 2330)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 400 (Cal BP 2350)

1 Sigma calibrated result: (68% probability) Cal BC 400 to 390 (Cal BP 2350 to 2340)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-9.9:lab. mult=1)

Laboratory number: **Beta-304538**

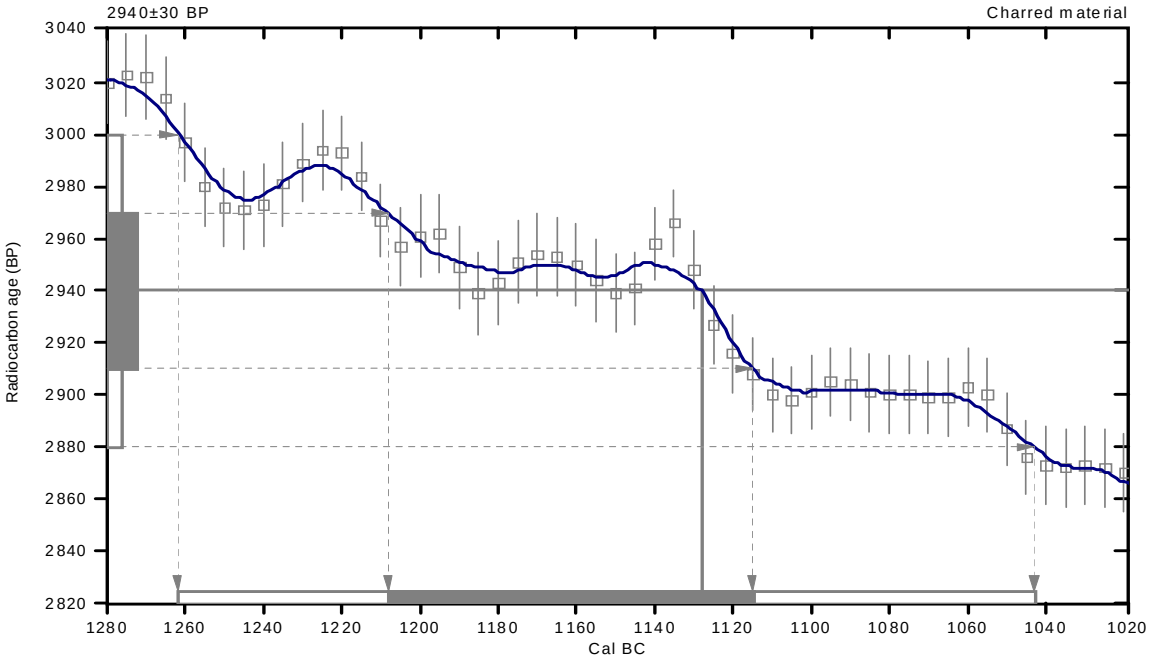
Conventional radiocarbon age: **2940±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1260 to 1040 (Cal BP 3210 to 2990)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1130 (Cal BP 3080)

1 Sigma calibrated result: (68% probability) Cal BC 1210 to 1120 (Cal BP 3160 to 3060)



References:

Database used

INTCAL04

Calibration Database

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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.1:lab. mult=1)

Laboratory number: **Beta-304539**

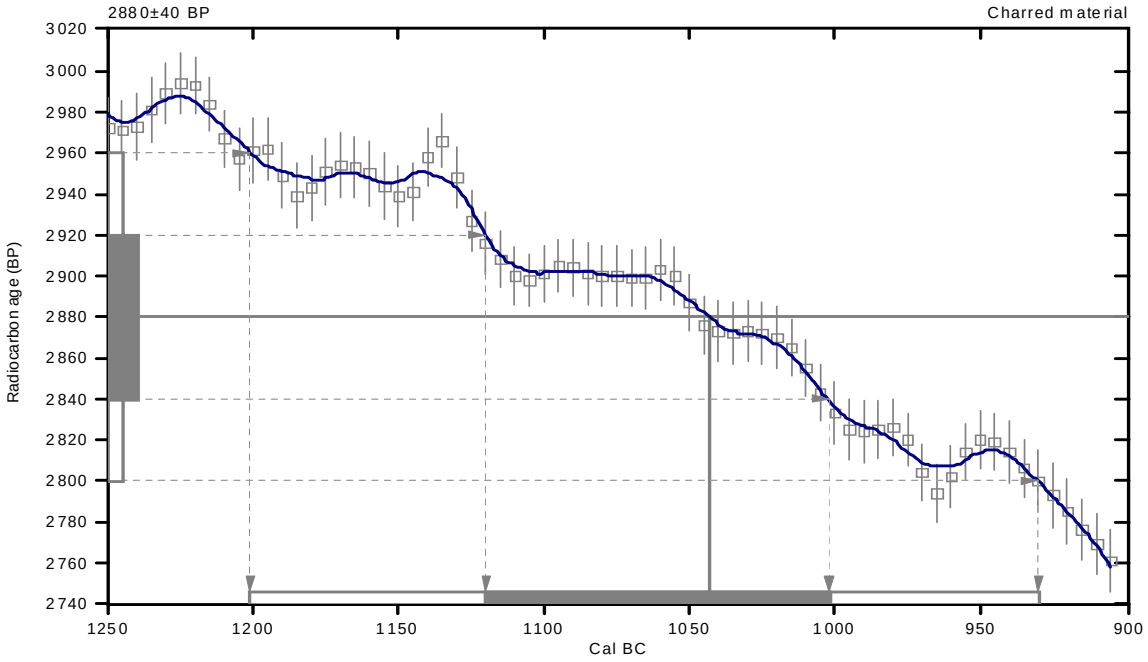
Conventional radiocarbon age: **2880±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1200 to 930 (Cal BP 3150 to 2880)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1040 (Cal BP 2990)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1000 (Cal BP 3070 to 2950)



References:

Database used

INTCAL04

Calibration Database

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-8.6:lab. mult=1)

Laboratory number: **Beta-304540**

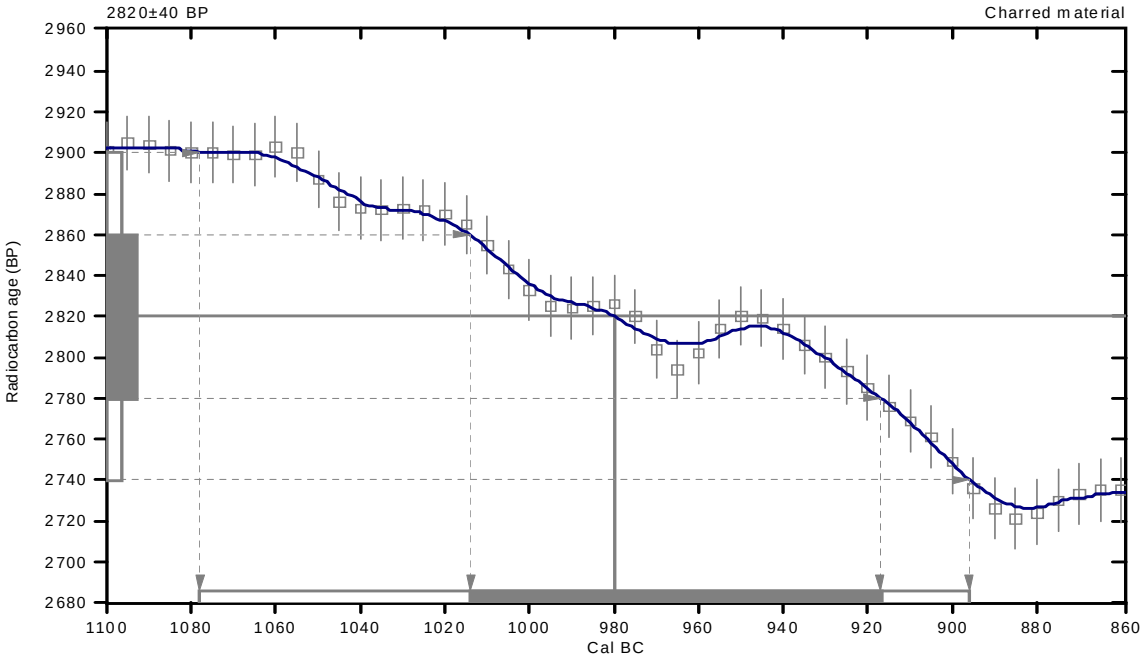
Conventional radiocarbon age: **2820±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1080 to 900 (Cal BP 3030 to 2850)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 980 (Cal BP 2930)

1 Sigma calibrated result: (68% probability) Cal BC 1010 to 920 (Cal BP 2960 to 2870)



References:

Database used

INTCAL04

Calibration Database

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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.2:lab. mult=1)

Laboratory number: **Beta-304541**

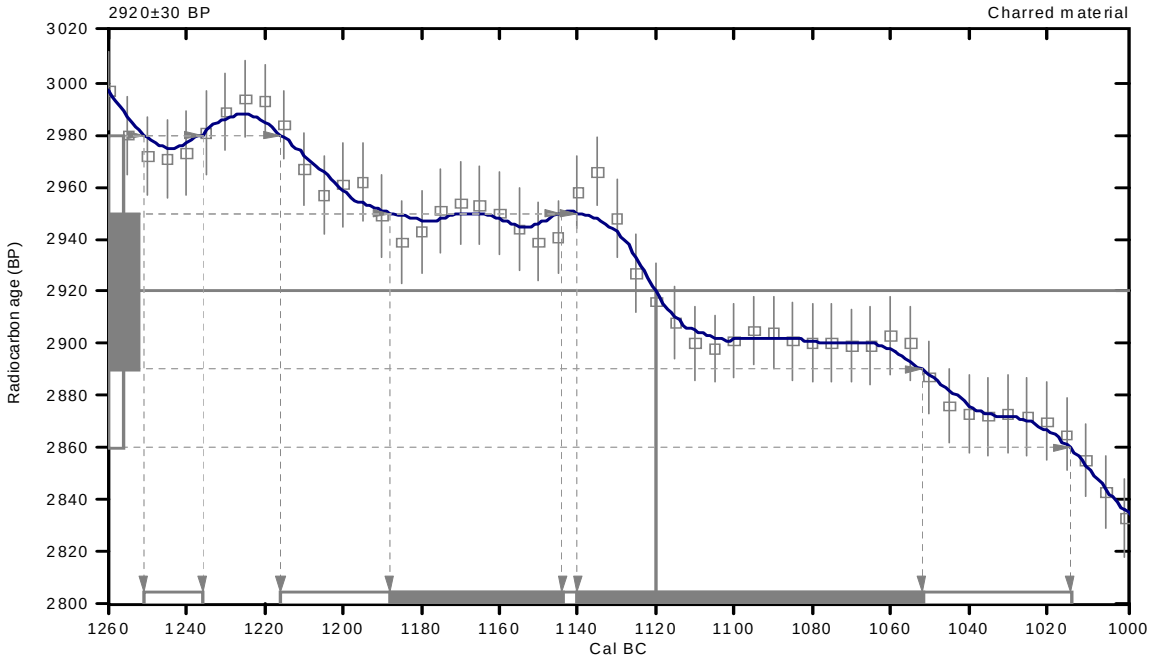
Conventional radiocarbon age: **2920±30 BP**

2 Sigma calibrated results: **Cal BC 1250 to 1240 (Cal BP 3200 to 3190) and**
(95% probability) **Cal BC 1220 to 1010 (Cal BP 3170 to 2960)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3070)

1 Sigma calibrated results: Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and
(68% probability) Cal BC 1140 to 1050 (Cal BP 3090 to 3000)



References:

Database used

INTCAL04

Calibration Database

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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.9:lab. mult=1)

Laboratory number: **Beta-304542**

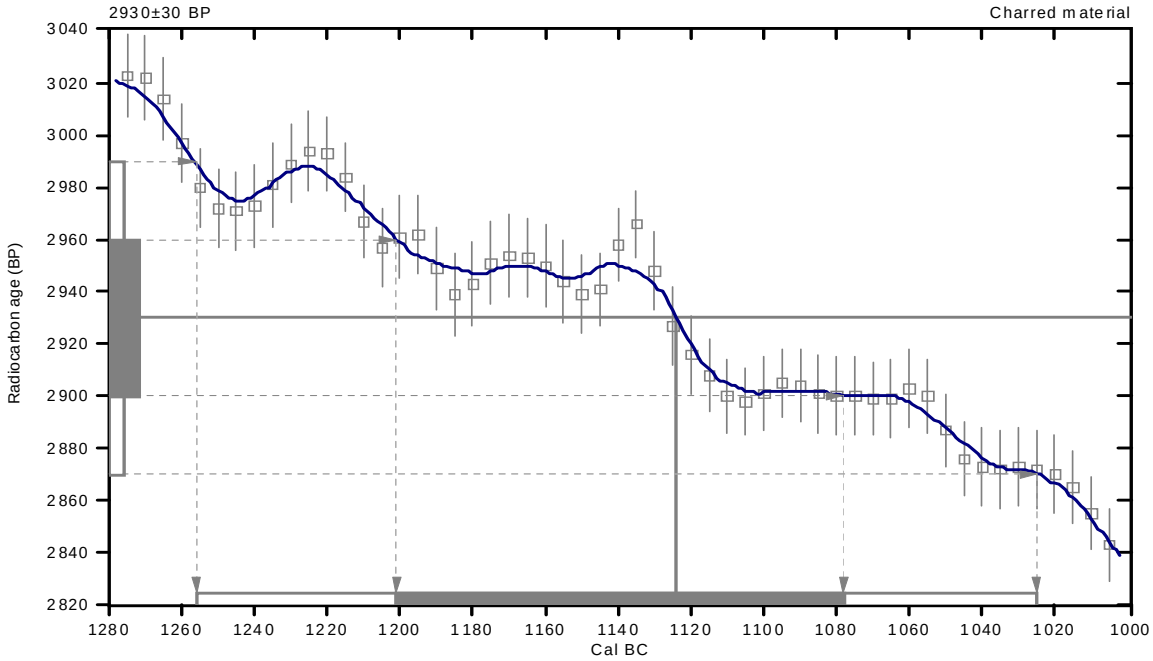
Conventional radiocarbon age: **2930±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1260 to 1020 (Cal BP 3210 to 2980)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3070)

1 Sigma calibrated result: (68% probability) Cal BC 1200 to 1080 (Cal BP 3150 to 3030)



References:

Database used

INTCAL04

Calibration Database

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IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.2:lab. mult=1)

Laboratory number: **Beta-304541**

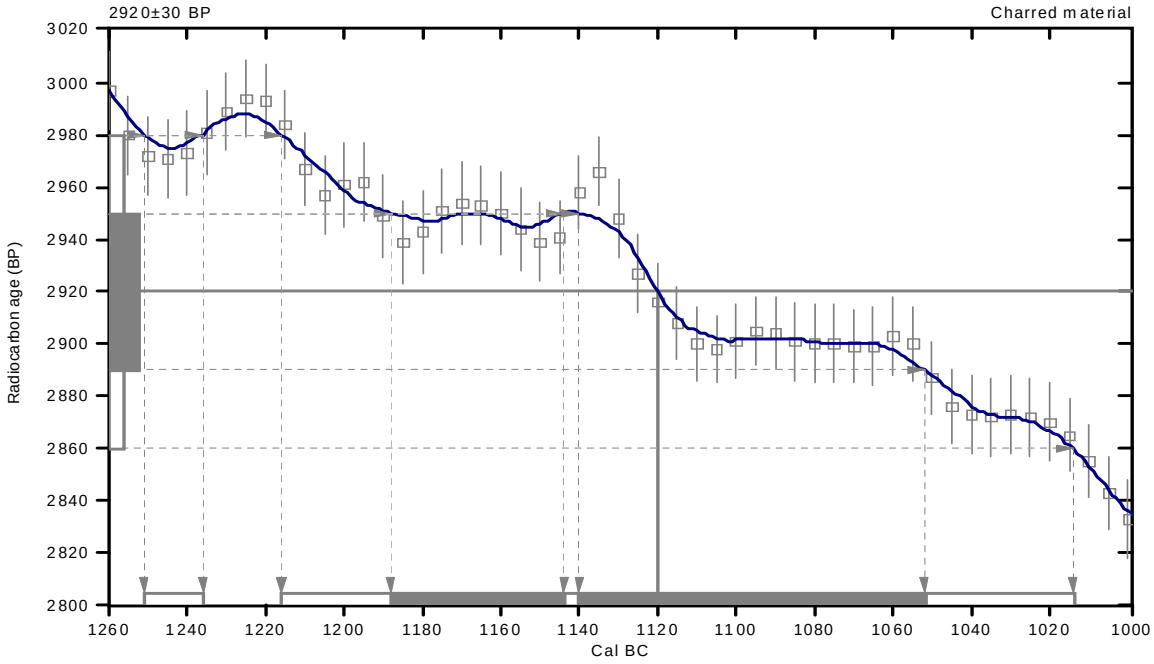
Conventional radiocarbon age: **2920±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1250 to 1240 (Cal BP 3200 to 3190) and Cal BC 1220 to 1010 (Cal BP 3170 to 2960)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3070)

1 Sigma calibrated results: (68% probability) Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and Cal BC 1140 to 1050 (Cal BP 3090 to 3000)



References:

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.5:lab. mult=1)

Laboratory number: **Beta-304544**

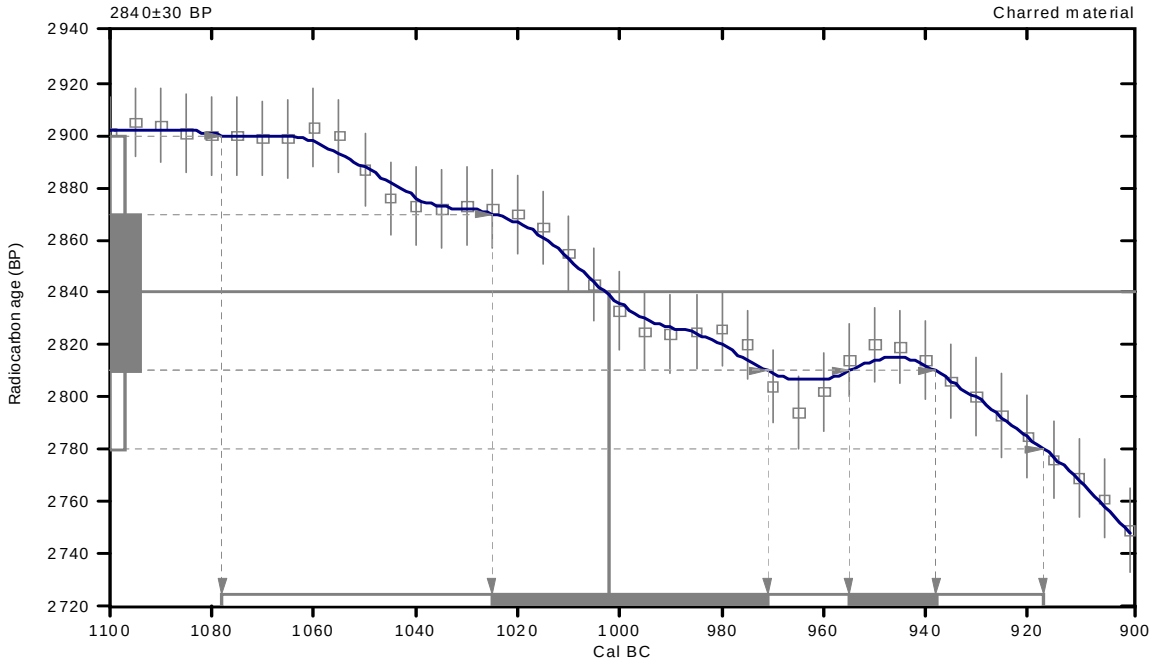
Conventional radiocarbon age: **2840±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1080 to 920 (Cal BP 3030 to 2870)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1000 (Cal BP 2950)

1 Sigma calibrated results: (68% probability) Cal BC 1020 to 970 (Cal BP 2980 to 2920) and Cal BC 960 to 940 (Cal BP 2900 to 2890)



References:

Database used

INTCAL04

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.3:lab. mult=1)

Laboratory number: **Beta-304545**

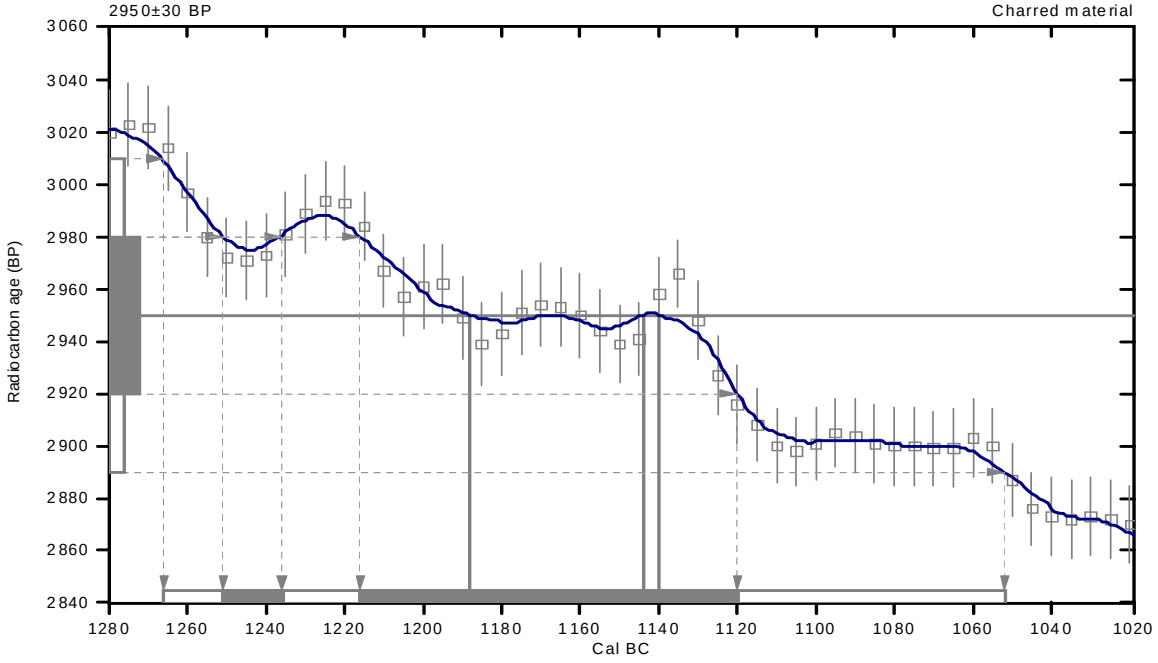
Conventional radiocarbon age: **2950±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1270 to 1050 (Cal BP 3220 to 3000)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 1190 (Cal BP 3140) and
Cal BC 1140 (Cal BP 3090) and
Cal BC 1140 (Cal BP 3090)

1 Sigma calibrated results: (68% probability) Cal BC 1250 to 1240 (Cal BP 3200 to 3190) and
Cal BC 1220 to 1120 (Cal BP 3170 to 3070)



References:

Database used
INTCAL04
Calibration Database
INTCAL04 Radiocarbon Age Calibration
IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).
Mathematics
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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.3:lab. mult=1)

Laboratory number: **Beta-304546**

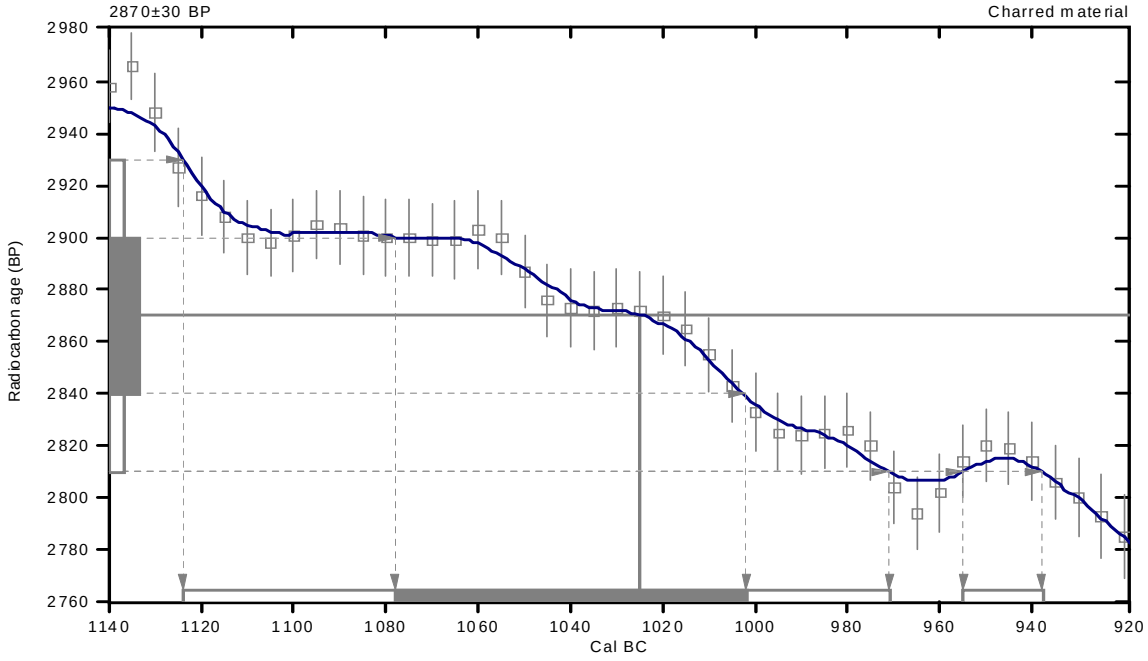
Conventional radiocarbon age: **2870±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1120 to 970 (Cal BP 3070 to 2920) and Cal BC 960 to 940 (Cal BP 2900 to 2890)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1020 (Cal BP 2980)

1 Sigma calibrated result: (68% probability) Cal BC 1080 to 1000 (Cal BP 3030 to 2950)



References:

Database used

INTCAL04

Calibration Database

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Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11:lab. mult=1)

Laboratory number: **Beta-304547**

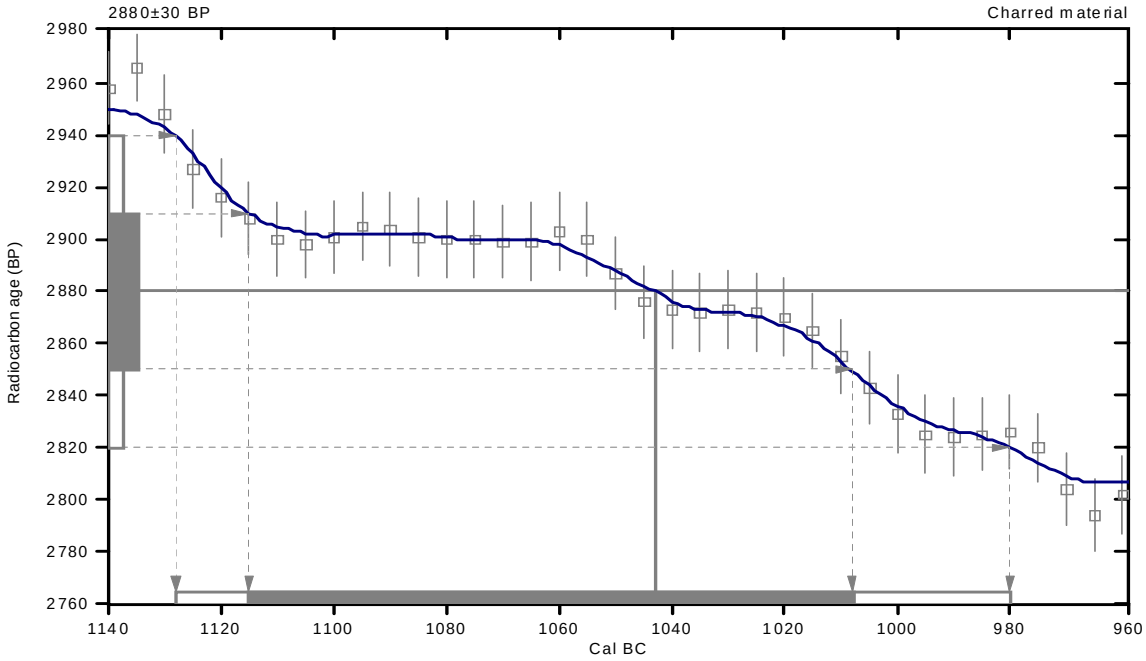
Conventional radiocarbon age: **2880±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1130 to 980 (Cal BP 3080 to 2930)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1040 (Cal BP 2990)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1010 (Cal BP 3060 to 2960)



References:

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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

July 20, 2012

Dr. William H. Doelle/J. Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN349, LCAFN3973, LCAFN4397, LCAFN510, LCAFN9099, LCAFN10639, LCAFN11092, LCAFN12344, LCAFN12347, LCAFN12953, LCAFN13594, LCAFN14001, LCAFN14002

Dear Dr. Doelle:

Enclosed are the radiocarbon dating results for 13 samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Thank you for prepaying the analyses. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/J. Vint — Report Date: 7/20/2012

Desert Archaeology, Incorporated — Material Received: 7/12/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 325653	2640 +/- 30 BP	-23.5 o/oo	2660 +/- 30 BP
SAMPLE : LCAFN349			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 840 to 800 (Cal BP 2790 to 2740)			
Beta - 325654	2550 +/- 30 BP	-10.4 o/oo	2790 +/- 30 BP
SAMPLE : LCAFN3973			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1010 to 890 (Cal BP 2960 to 2840) AND Cal BC 880 to 850 (Cal BP 2820 to 2800)			
Beta - 325655	2690 +/- 30 BP	-11.2 o/oo	2920 +/- 30 BP
SAMPLE : LCAFN4397			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1260 to 1240 (Cal BP 3200 to 3190) AND Cal BC 1210 to 1010 (Cal BP 3160 to 2960)			
Beta - 325656	2470 +/- 30 BP	-9.8 o/oo	2720 +/- 30 BP
SAMPLE : LCAFN510			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 920 to 810 (Cal BP 2870 to 2760)			

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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/J. Vint

Report Date: 7/20/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 325657	2670 +/- 30 BP	-11.4 o/oo	2890 +/- 30 BP
SAMPLE : LCAFN9099 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1190 to 1180 (Cal BP 3140 to 3130) AND Cal BC 1160 to 1140 (Cal BP 3110 to 3090) Cal BC 1130 to 1000 (Cal BP 3080 to 2950)			
Beta - 325658	2550 +/- 30 BP	-10.7 o/oo	2780 +/- 30 BP
SAMPLE : LCAFN10639 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1000 to 840 (Cal BP 2950 to 2790)			
Beta - 325659	2660 +/- 30 BP	-10.2 o/oo	2900 +/- 30 BP
SAMPLE : LCAFN11092 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1210 to 1200 (Cal BP 3160 to 3150) AND Cal BC 1190 to 1140 (Cal BP 3140 to 3090) Cal BC 1130 to 1000 (Cal BP 3080 to 2950)			
Beta - 325660	2850 +/- 30 BP	-24.5 o/oo	2860 +/- 30 BP
SAMPLE : LCAFN12344 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 1120 to 970 (Cal BP 3070 to 2920) AND Cal BC 960 to 930 (Cal BP 2910 to 2880)			

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.

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beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/J. Vint

Report Date: 7/20/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 325661	2640 +/- 30 BP	-10.2 o/oo	2880 +/- 30 BP
SAMPLE : LCAFN12347			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1190 to 1180 (Cal BP 3140 to 3130) AND Cal BC 1150 to 1150 (Cal BP 3100 to 3100) Cal BC 1130 to 980 (Cal BP 3080 to 2920)			
Beta - 325662	2770 +/- 30 BP	-10.5 o/oo	3010 +/- 30 BP
SAMPLE : LCAFN12953			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1380 to 1340 (Cal BP 3330 to 3280) AND Cal BC 1320 to 1190 (Cal BP 3270 to 3140) Cal BC 1180 to 1160 (Cal BP 3130 to 3110) AND Cal BC 1140 to 1130 (Cal BP 3090 to 3080)			
Beta - 325663	2700 +/- 30 BP	-11.0 o/oo	2930 +/- 30 BP
SAMPLE : LCAFN13594			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1260 to 1230 (Cal BP 3210 to 3180) AND Cal BC 1220 to 1020 (Cal BP 3170 to 2970)			
Beta - 325664	2700 +/- 30 BP	-10.8 o/oo	2930 +/- 30 BP
SAMPLE : LCAFN14001			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1260 to 1230 (Cal BP 3210 to 3180) AND Cal BC 1220 to 1020 (Cal BP 3170 to 2970)			

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.

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
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beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/J. Vint

Report Date: 7/20/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 325665	2800 +/- 30 BP	-22.2 o/oo	2850 +/- 30 BP
SAMPLE : LCAFN14002			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1120 to 920 (Cal BP 3070 to 2870)			

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=-23.5:lab. mult=1)

Laboratory number: **Beta-325653**

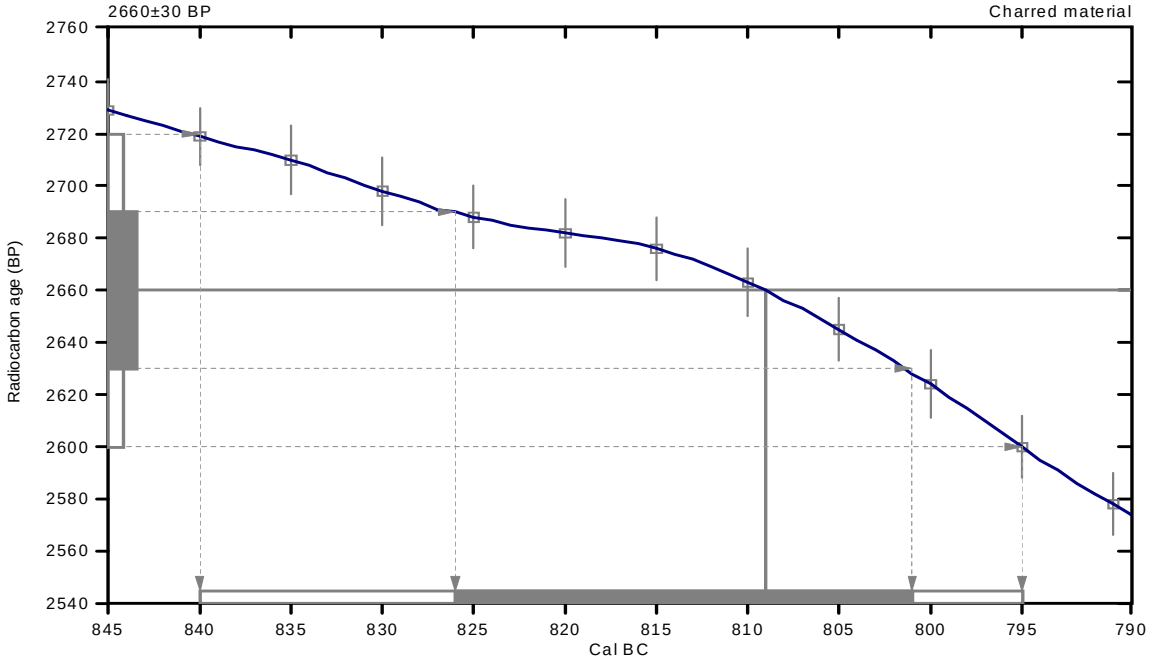
Conventional radiocarbon age: **2660±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 840 to 800 (Cal BP 2790 to 2740)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 810 (Cal BP 2760)

1 Sigma calibrated result: (68% probability) Cal BC 830 to 800 (Cal BP 2780 to 2750)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.4:lab. mult=1)

Laboratory number: **Beta-325654**

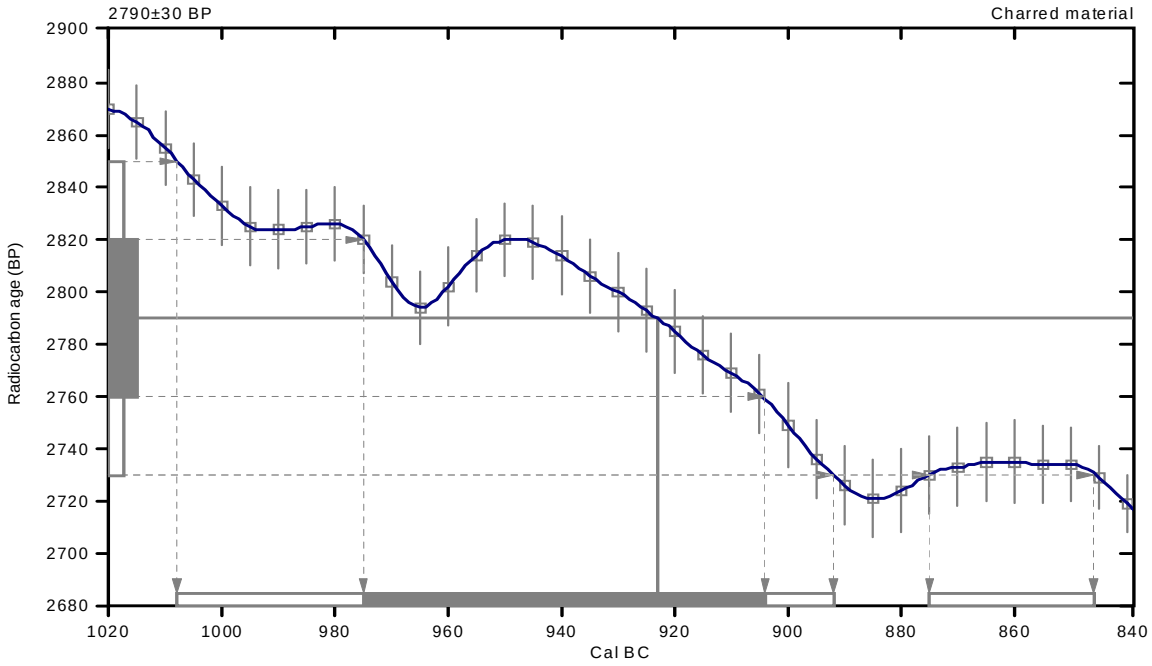
Conventional radiocarbon age: **2790±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1010 to 890 (Cal BP 2960 to 2840) and Cal BC 880 to 850 (Cal BP 2820 to 2800)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 920 (Cal BP 2870)

1 Sigma calibrated result: (68% probability) Cal BC 980 to 900 (Cal BP 2920 to 2850)



References:

Database used

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References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.2:lab. mult=1)

Laboratory number: **Beta-325655**

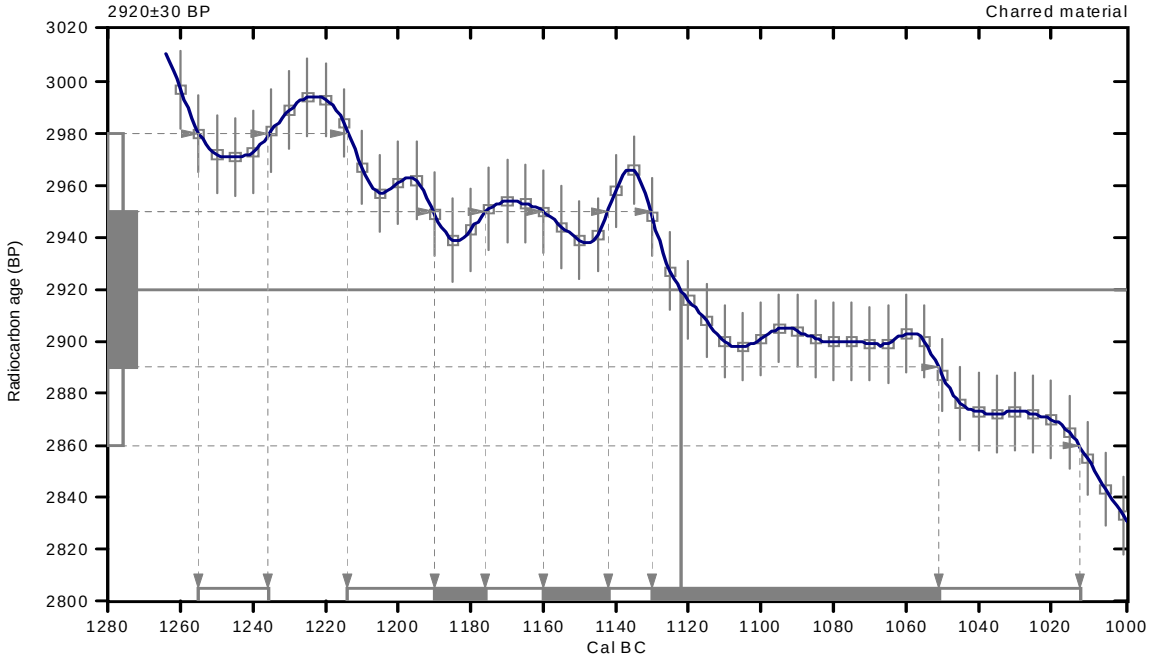
Conventional radiocarbon age: **2920±30 BP**

2 Sigma calibrated results: **Cal BC 1260 to 1240 (Cal BP 3200 to 3190) and**
(95% probability) **Cal BC 1210 to 1010 (Cal BP 3160 to 2960)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3070)

1 Sigma calibrated results: Cal BC 1190 to 1180 (Cal BP 3140 to 3130) and
(68% probability) Cal BC 1160 to 1140 (Cal BP 3110 to 3090) and
Cal BC 1130 to 1050 (Cal BP 3080 to 3000)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-9.8:lab. mult=1)

Laboratory number: **Beta-325656**

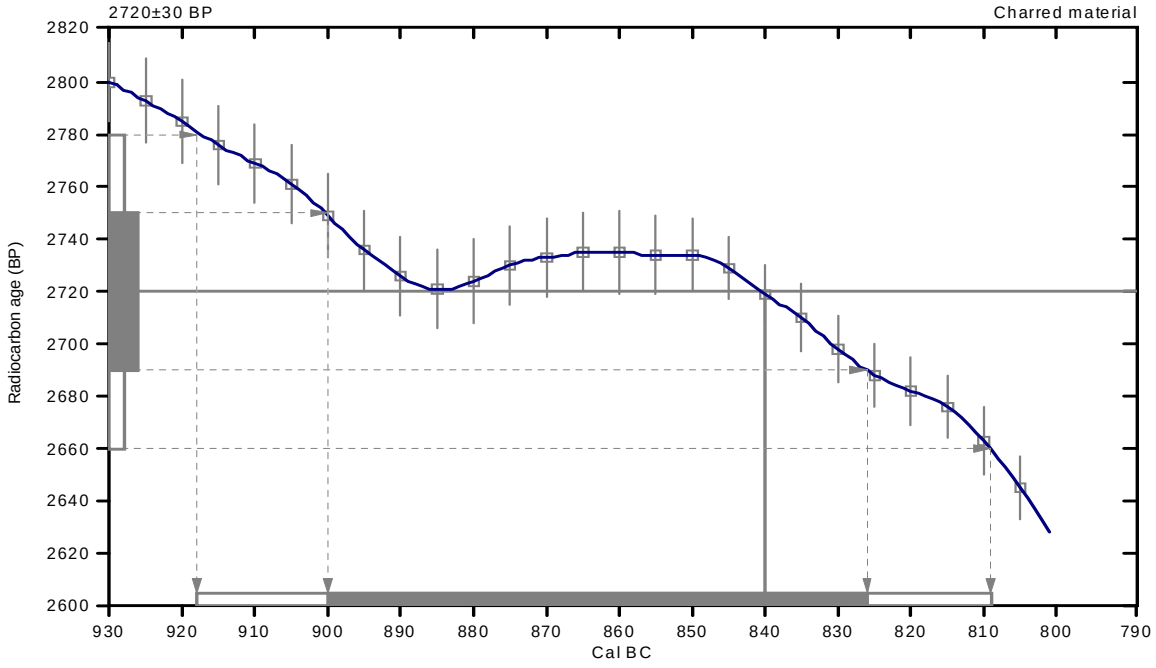
Conventional radiocarbon age: **2720±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 920 to 810 (Cal BP 2870 to 2760)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 840 (Cal BP 2790)

1 Sigma calibrated result: (68% probability) Cal BC 900 to 830 (Cal BP 2850 to 2780)



References:

Database used

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References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.4:lab. mult=1)

Laboratory number: **Beta-325657**

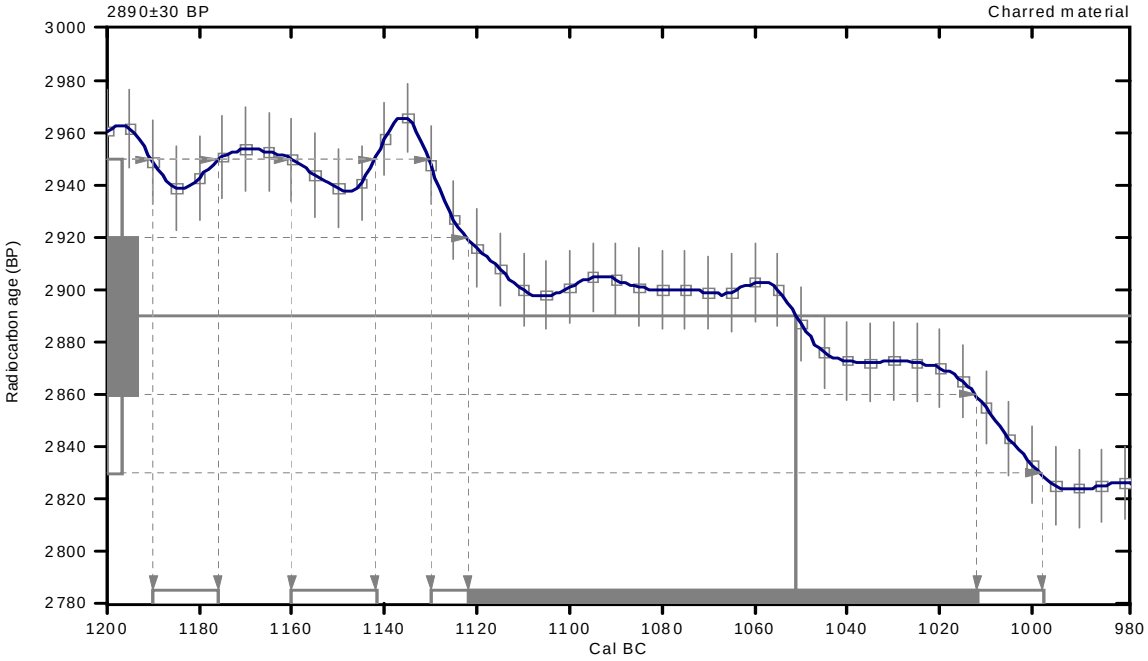
Conventional radiocarbon age: **2890±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1190 to 1180 (Cal BP 3140 to 3130) and Cal BC 1160 to 1140 (Cal BP 3110 to 3090) and Cal BC 1130 to 1000 (Cal BP 3080 to 2950)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1050 (Cal BP 3000)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1010 (Cal BP 3070 to 2960)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.7:lab. mult=1)

Laboratory number: **Beta-325658**

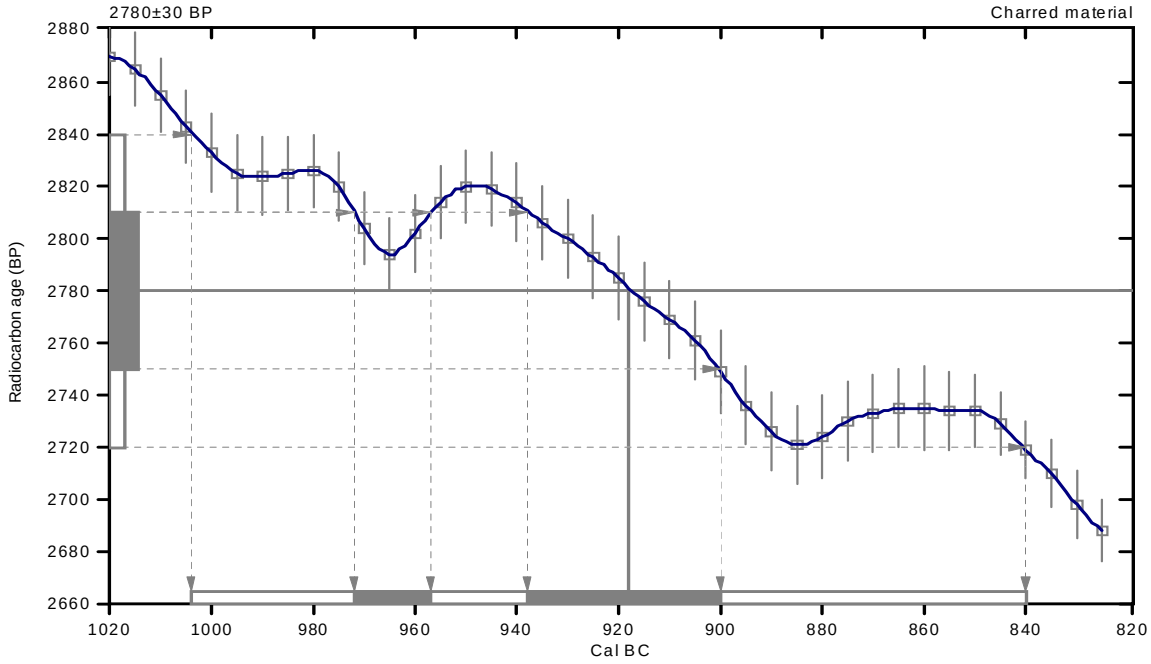
Conventional radiocarbon age: **2780±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1000 to 840 (Cal BP 2950 to 2790)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 920 (Cal BP 2870)

1 Sigma calibrated results: (68% probability) Cal BC 970 to 960 (Cal BP 2920 to 2910) and Cal BC 940 to 900 (Cal BP 2890 to 2850)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.2:lab. mult=1)

Laboratory number: **Beta-325659**

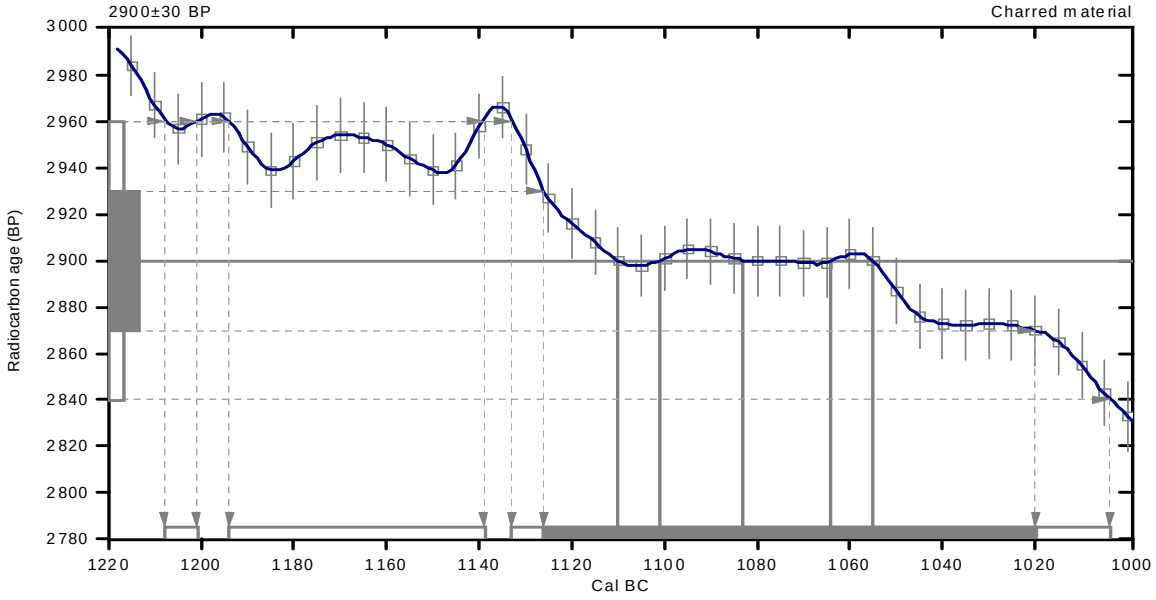
Conventional radiocarbon age: **2900±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1210 to 1200 (Cal BP 3160 to 3150) and Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and Cal BC 1130 to 1000 (Cal BP 3080 to 2950)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 1110 (Cal BP 3060) and Cal BC 1100 (Cal BP 3050) and Cal BC 1080 (Cal BP 3030) and Cal BC 1060 (Cal BP 3010) and Cal BC 1060 (Cal BP 3000)

1 Sigma calibrated result: (68% probability) Cal BC 1130 to 1020 (Cal BP 3080 to 2970)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.5:lab. mult=1)

Laboratory number: **Beta-325660**

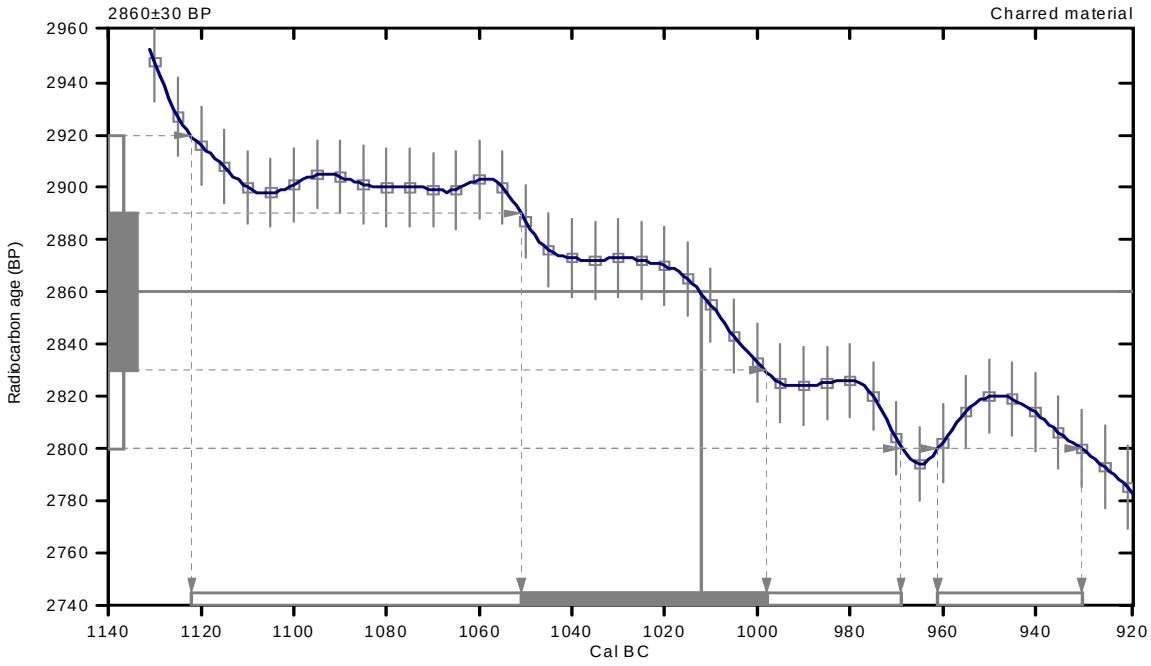
Conventional radiocarbon age: **2860±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1120 to 970 (Cal BP 3070 to 2920) and Cal BC 960 to 930 (Cal BP 2910 to 2880)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1010 (Cal BP 2960)

1 Sigma calibrated result: (68% probability) Cal BC 1050 to 1000 (Cal BP 3000 to 2950)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.2:lab. mult=1)

Laboratory number: **Beta-325661**

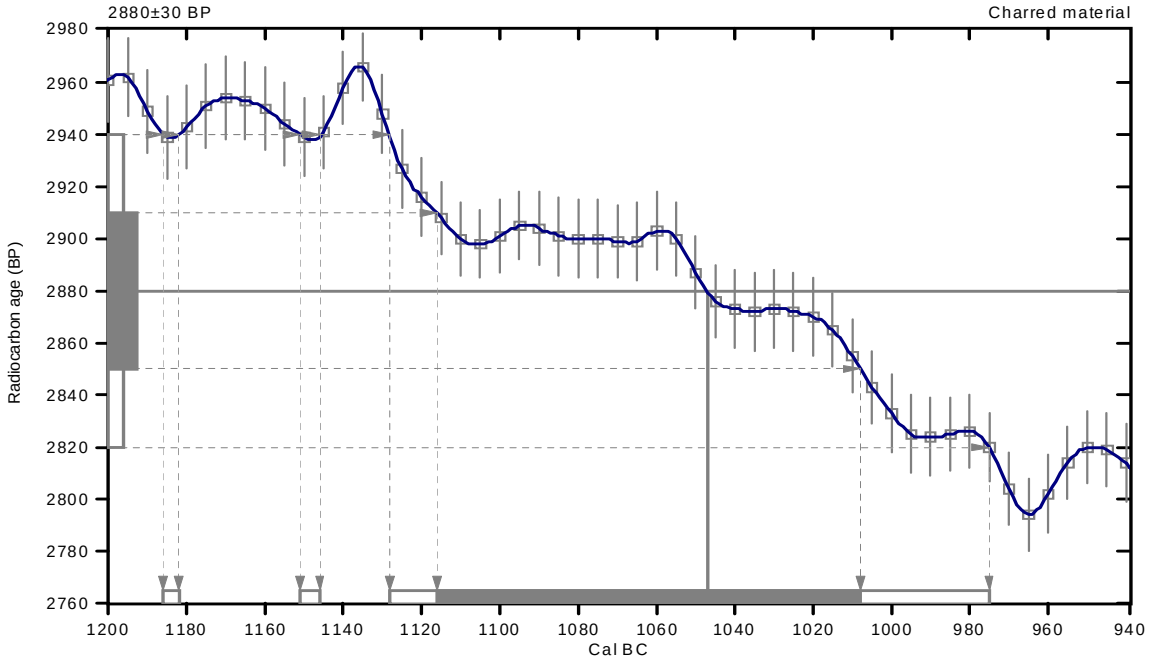
Conventional radiocarbon age: **2880±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1190 to 1180 (Cal BP 3140 to 3130) and Cal BC 1150 to 1150 (Cal BP 3100 to 3100) and Cal BC 1130 to 980 (Cal BP 3080 to 2920)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1050 (Cal BP 3000)

1 Sigma calibrated result: (68% probability) Cal BC 1120 to 1010 (Cal BP 3070 to 2960)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.5:lab. mult=1)

Laboratory number: **Beta-325662**

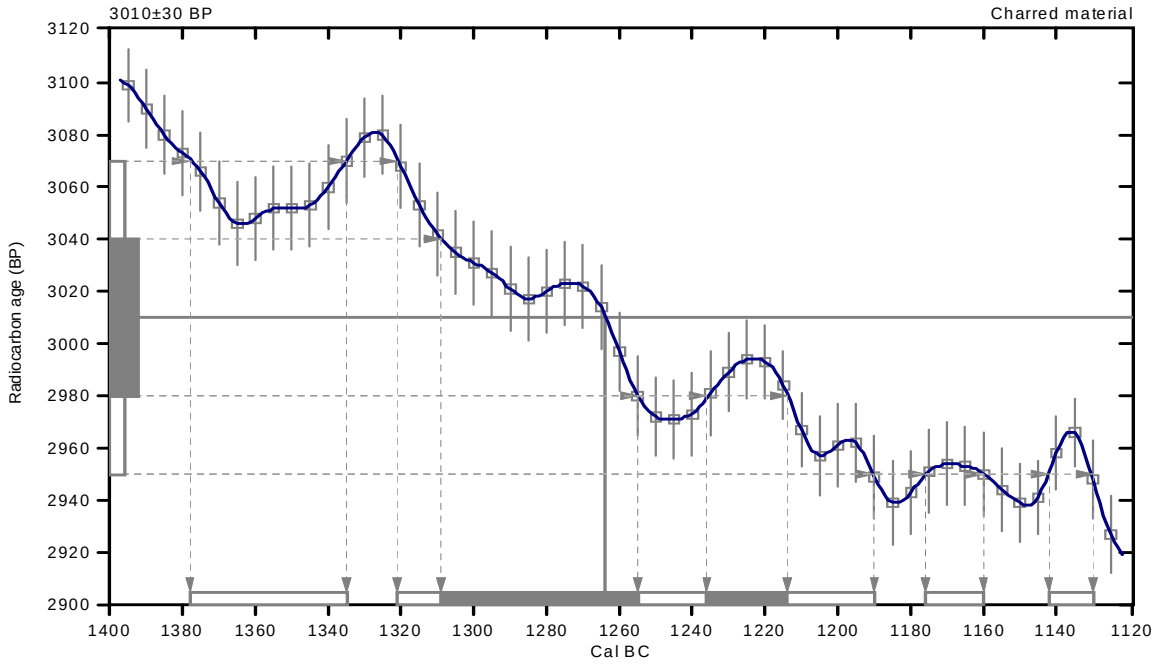
Conventional radiocarbon age: **3010±30 BP**

2 Sigma calibrated results: **Cal BC 1380 to 1340 (Cal BP 3330 to 3280) and**
(95% probability) **Cal BC 1320 to 1190 (Cal BP 3270 to 3140) and**
Cal BC 1180 to 1160 (Cal BP 3130 to 3110) and
Cal BC 1140 to 1130 (Cal BP 3090 to 3080)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1260 (Cal BP 3210)

1 Sigma calibrated results: Cal BC 1310 to 1260 (Cal BP 3260 to 3200) and
(68% probability) Cal BC 1240 to 1210 (Cal BP 3190 to 3160)



References:

Database used

INTCAL09

References to INTCAL09 database

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Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates
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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11:lab. mult=1)

Laboratory number: **Beta-325663**

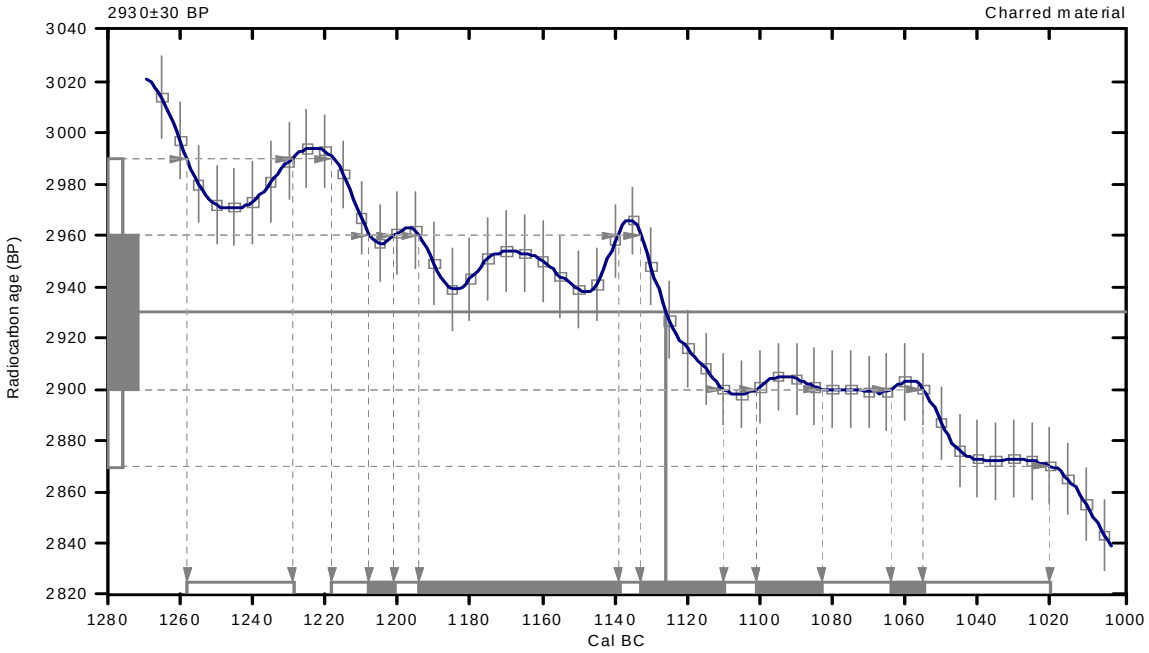
Conventional radiocarbon age: **2930±30 BP**

2 Sigma calibrated results: **Cal BC 1260 to 1230 (Cal BP 3210 to 3180) and**
(95% probability) **Cal BC 1220 to 1020 (Cal BP 3170 to 2970)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1130 (Cal BP 3080)

1 Sigma calibrated results: (68% probability)
Cal BC 1210 to 1200 (Cal BP 3160 to 3150) and
Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and
Cal BC 1130 to 1110 (Cal BP 3080 to 3060) and
Cal BC 1100 to 1080 (Cal BP 3050 to 3030) and
Cal BC 1060 to 1060 (Cal BP 3010 to 3000)



References:

Database used

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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.8:lab. mult=1)

Laboratory number: **Beta-325664**

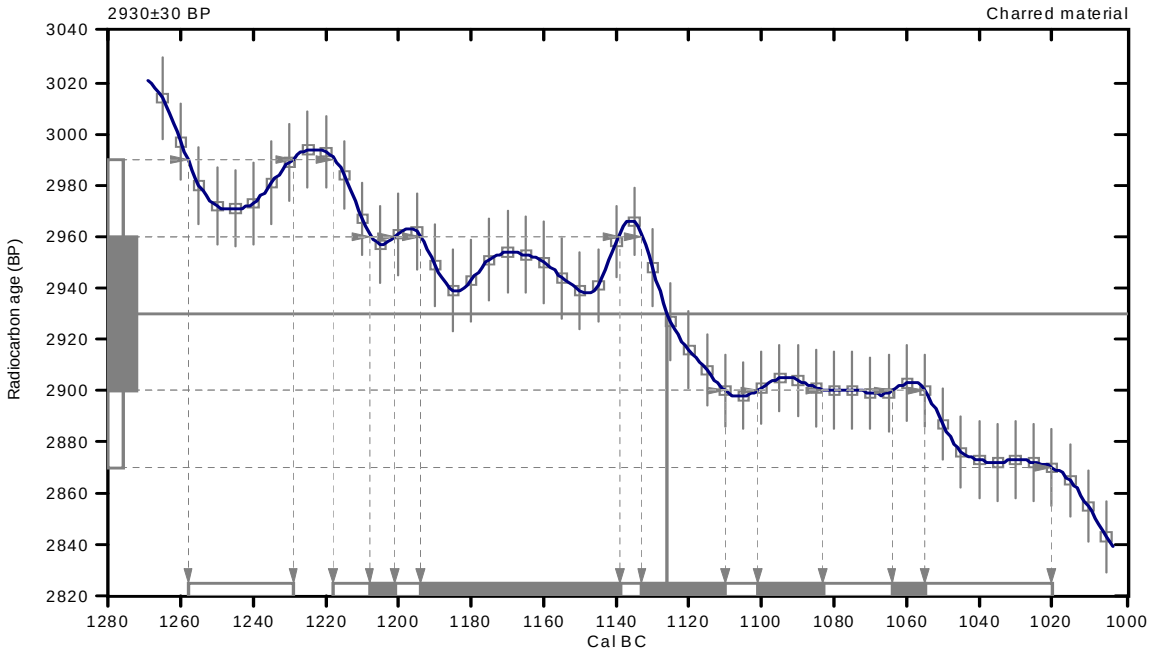
Conventional radiocarbon age: **2930±30 BP**

2 Sigma calibrated results: **Cal BC 1260 to 1230 (Cal BP 3210 to 3180) and**
(95% probability) **Cal BC 1220 to 1020 (Cal BP 3170 to 2970)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1130 (Cal BP 3080)

1 Sigma calibrated results: (68% probability)
Cal BC 1210 to 1200 (Cal BP 3160 to 3150) and
Cal BC 1190 to 1140 (Cal BP 3140 to 3090) and
Cal BC 1130 to 1110 (Cal BP 3080 to 3060) and
Cal BC 1100 to 1080 (Cal BP 3050 to 3030) and
Cal BC 1060 to 1060 (Cal BP 3010 to 3000)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.2:lab. mult=1)

Laboratory number: **Beta-325665**

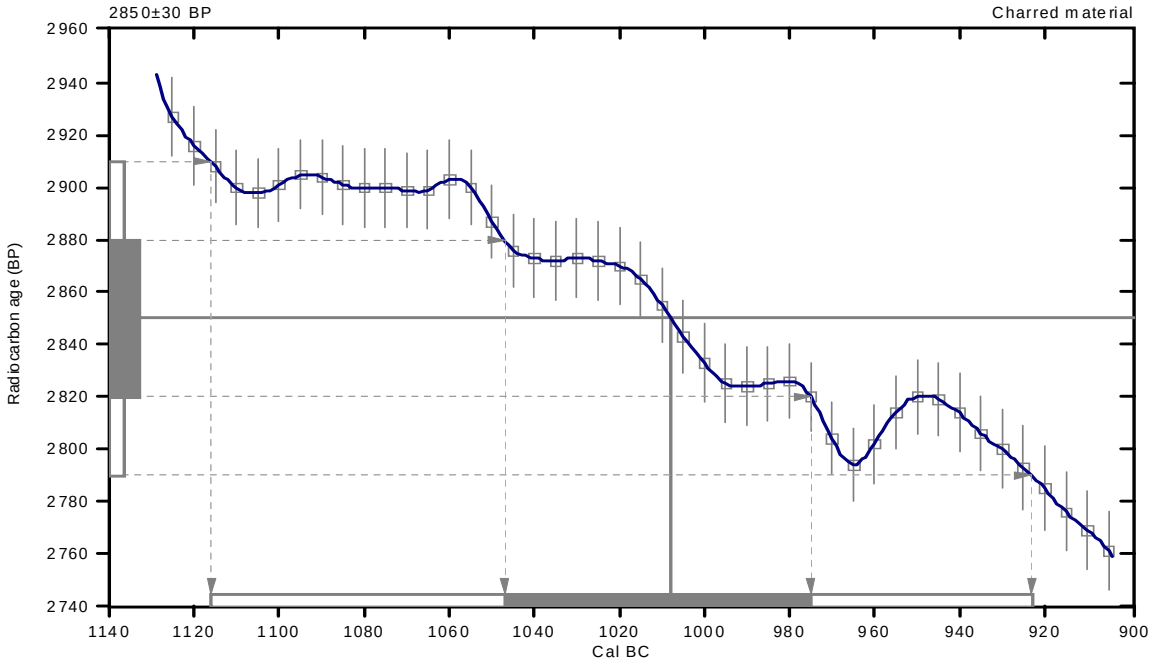
Conventional radiocarbon age: **2850±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1120 to 920 (Cal BP 3070 to 2870)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1010 (Cal BP 2960)

1 Sigma calibrated result: (68% probability) Cal BC 1050 to 980 (Cal BP 3000 to 2920)



References:

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Mathematics used for calibration scenario

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October 4, 2012

Dr. William H. Doelle/Jim Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Result For Sample LCAFN13472

Dear Dr. Doelle and Mr. Vint:

Enclosed is the radiocarbon dating result for one sample recently sent to us. It provided plenty of carbon for an accurate measurement and the analysis proceeded normally. As usual, the method of analysis is listed on the report sheet and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analysis. It was analyzed with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Thank you for prepaying the analysis. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood
Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint — Report Date: 10/4/2012

Desert Archaeology, Incorporated — Material Received: 9/27/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 331700	3130 +/- 30 BP	-10.7 o/oo	3360 +/- 30 BP

SAMPLE : LCAFN13472
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal BC 1740 to 1710 (Cal BP 3690 to 3660) AND Cal BC 1700 to 1600 (Cal BP 3640 to 3560)
Cal BC 1570 to 1560 (Cal BP 3520 to 3510) AND Cal BC 1550 to 1540 (Cal BP 3500 to 3490)

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=-10.7:lab. mult=1)

Laboratory number: **Beta-331700**

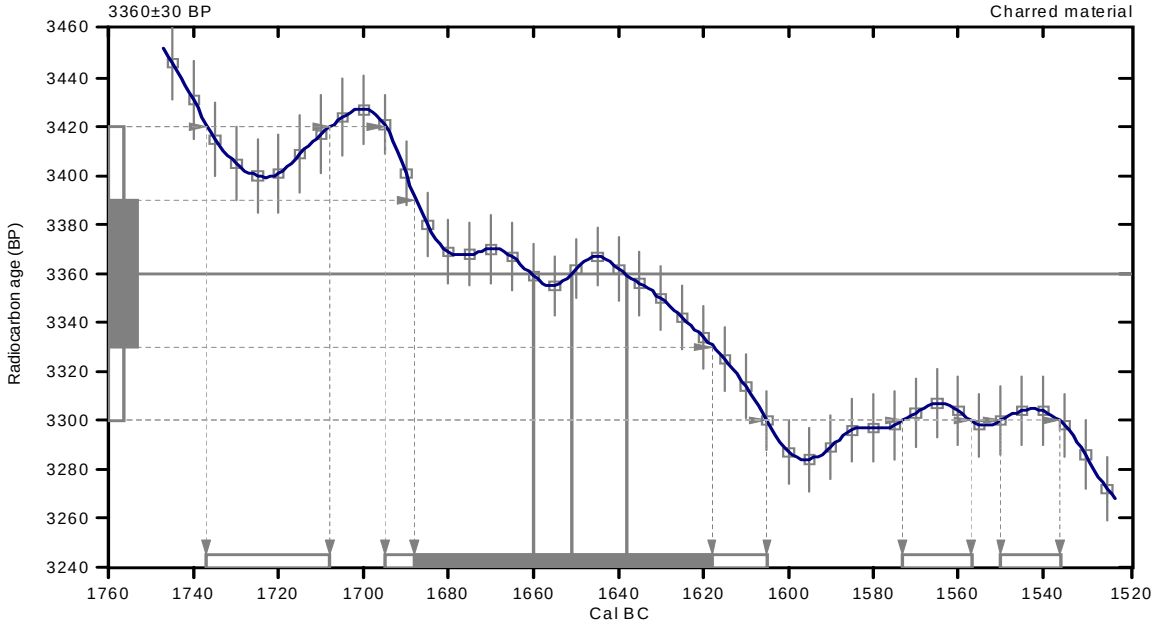
Conventional radiocarbon age: **3360±30 BP**

2 Sigma calibrated results: **Cal BC 1740 to 1710 (Cal BP 3690 to 3660) and**
(95% probability) **Cal BC 1700 to 1600 (Cal BP 3640 to 3560) and**
Cal BC 1570 to 1560 (Cal BP 3520 to 3510) and
Cal BC 1550 to 1540 (Cal BP 3500 to 3490)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 1660 (Cal BP 3610) and
Cal BC 1650 (Cal BP 3600) and
Cal BC 1640 (Cal BP 3590)

1 Sigma calibrated result: (68% probability) Cal BC 1690 to 1620 (Cal BP 3640 to 3570)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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www.radiocarbon.com

Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

November 5, 2012

Dr. William H. Doelle/Mr. Jim Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN1232, LCAFN2287, LCAFN2665, LCAFN6676, LCAFN6711, LCAFN7173, LCAFN7208, LCAFN7278, LCAFN7885, LCAFN8001, LCAFN10527, LCAFN12782

Dear Mr. Vint:

Enclosed are the radiocarbon dating results for 12 samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint — Report Date: 11/5/2012

Desert Archaeology, Incorporated — Material Received: 10/30/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 333929	2740 +/- 30 BP	-27.0 o/oo	2710 +/- 30 BP
SAMPLE : LCAFN1232			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 910 to 810 (Cal BP 2860 to 2760)			
Beta - 333930	2280 +/- 30 BP	-10.0 o/oo	2530 +/- 30 BP
SAMPLE : LCAFN2287			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 790 to 730 (Cal BP 2740 to 2680) AND Cal BC 690 to 660 (Cal BP 2640 to 2610) Cal BC 650 to 540 (Cal BP 2600 to 2490)			
Beta - 333931	4400 +/- 30 BP	-10.3 o/oo	4640 +/- 30 BP
SAMPLE : LCAFN2665			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 3510 to 3420 (Cal BP 5460 to 5370) AND Cal BC 3420 to 3410 (Cal BP 5360 to 5360) Cal BC 3400 to 3400 (Cal BP 5350 to 5350) AND Cal BC 3380 to 3360 (Cal BP 5330 to 5310)			
Beta - 333932	2380 +/- 30 BP	-9.9 o/oo	2630 +/- 30 BP
SAMPLE : LCAFN6676			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 830 to 790 (Cal BP 2780 to 2740)			

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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint

Report Date: 11/5/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 333933 SAMPLE : LCAFN6711 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 830 to 790 (Cal BP 2780 to 2740)	2430 +/- 30 BP	-11.9 o/oo	2640 +/- 30 BP
Beta - 333934 SAMPLE : LCAFN7173 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 920 to 810 (Cal BP 2870 to 2760)	2460 +/- 30 BP	-8.7 o/oo	2730 +/- 30 BP
Beta - 333935 SAMPLE : LCAFN7208 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 520 to 390 (Cal BP 2470 to 2340)	2350 +/- 30 BP	-23.0 o/oo	2380 +/- 30 BP
Beta - 333936 SAMPLE : LCAFN7278 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 840 to 800 (Cal BP 2790 to 2740)	2430 +/- 30 BP	-11.2 o/oo	2660 +/- 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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint

Report Date: 11/5/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 333937	2480 +/- 30 BP	-10.2 o/oo	2720 +/- 30 BP
SAMPLE : LCAFN7885			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 920 to 810 (Cal BP 2870 to 2760)			
Beta - 333938	2420 +/- 30 BP	-7.9 o/oo	2700 +/- 30 BP
SAMPLE : LCAFN8001			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 900 to 800 (Cal BP 2850 to 2750)			
Beta - 333939	2750 +/- 30 BP	-10.8 o/oo	2980 +/- 30 BP
SAMPLE : LCAFN10527			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1310 to 1120 (Cal BP 3260 to 3070)			
Beta - 333940	2680 +/- 30 BP	-10.1 o/oo	2920 +/- 30 BP
SAMPLE : LCAFN12782			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 1260 to 1240 (Cal BP 3200 to 3190) AND Cal BC 1210 to 1010 (Cal BP 3160 to 2960)			

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:lab. mult=1)

Laboratory number: **Beta-333929**

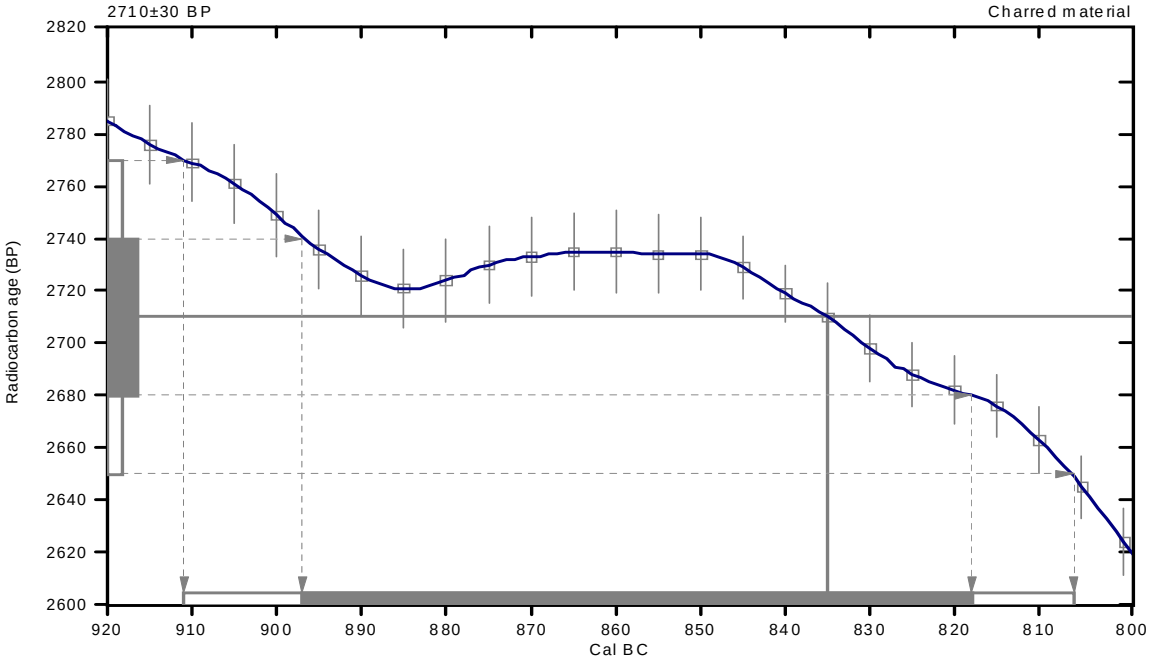
Conventional radiocarbon age: **2710±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 910 to 810 (Cal BP 2860 to 2760)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 840 (Cal BP 2780)

1 Sigma calibrated result: (68% probability) Cal BC 900 to 820 (Cal BP 2850 to 2770)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10:lab. mult=1)

Laboratory number: **Beta-333930**

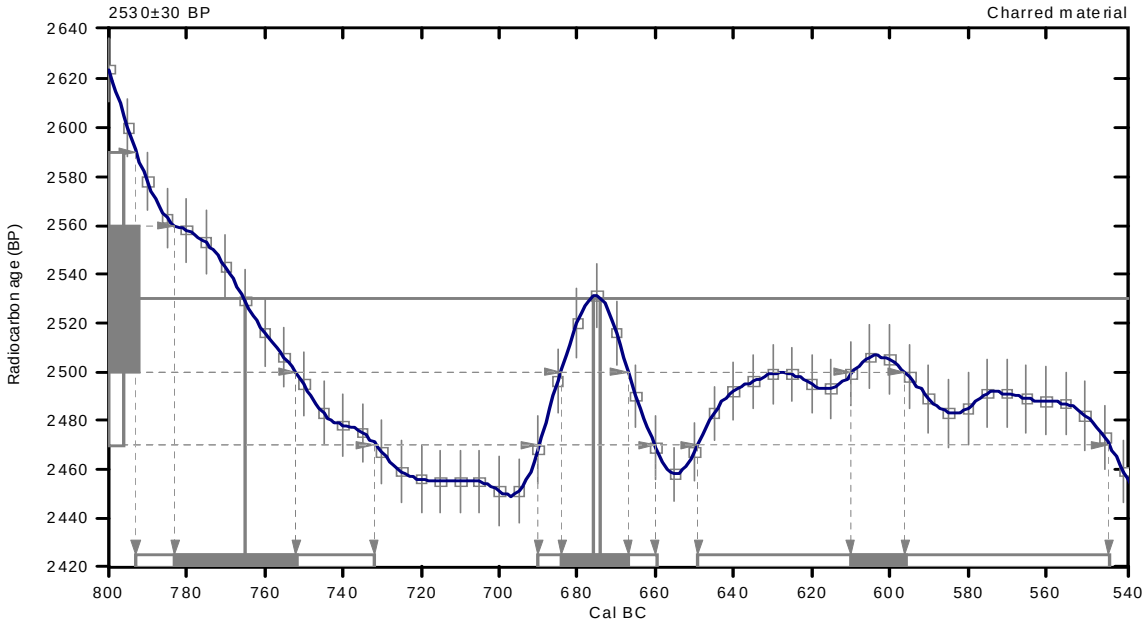
Conventional radiocarbon age: **2530±30 BP**

2 Sigma calibrated results: **Cal BC 790 to 730 (Cal BP 2740 to 2680) and**
(95% probability) **Cal BC 690 to 660 (Cal BP 2640 to 2610) and**
Cal BC 650 to 540 (Cal BP 2600 to 2490)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 760 (Cal BP 2720) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620)

1 Sigma calibrated results: Cal BC 780 to 750 (Cal BP 2730 to 2700) and
(68% probability) Cal BC 680 to 670 (Cal BP 2630 to 2620) and
Cal BC 610 to 600 (Cal BP 2560 to 2550)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.3:lab. mult=1)

Laboratory number: **Beta-333931**

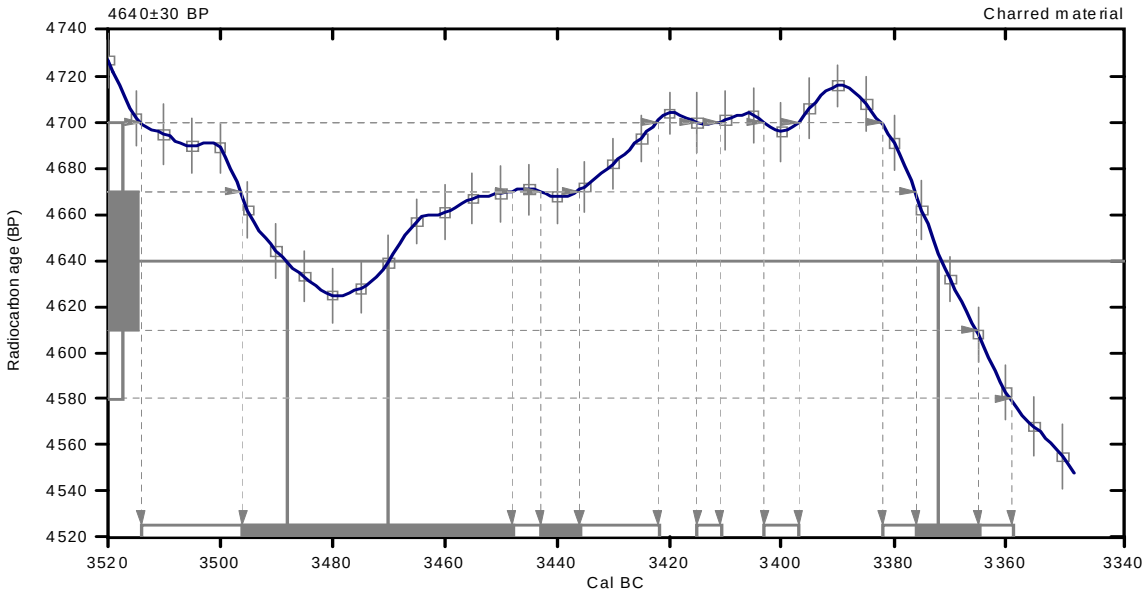
Conventional radiocarbon age: **4640±30 BP**

2 Sigma calibrated results: (95% probability)
Cal BC 3510 to 3420 (Cal BP 5460 to 5370) and
Cal BC 3420 to 3410 (Cal BP 5360 to 5360) and
Cal BC 3400 to 3400 (Cal BP 5350 to 5350) and
Cal BC 3380 to 3360 (Cal BP 5330 to 5310)

Intercept data

Intercepts of radiocarbon age with calibration curve:
Cal BC 3490 (Cal BP 5440) and
Cal BC 3470 (Cal BP 5420) and
Cal BC 3370 (Cal BP 5320)

1 Sigma calibrated results: (68% probability)
Cal BC 3500 to 3450 (Cal BP 5450 to 5400) and
Cal BC 3440 to 3440 (Cal BP 5390 to 5390) and
Cal BC 3380 to 3360 (Cal BP 5330 to 5320)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-9.9:lab. mult=1)

Laboratory number: **Beta-333932**

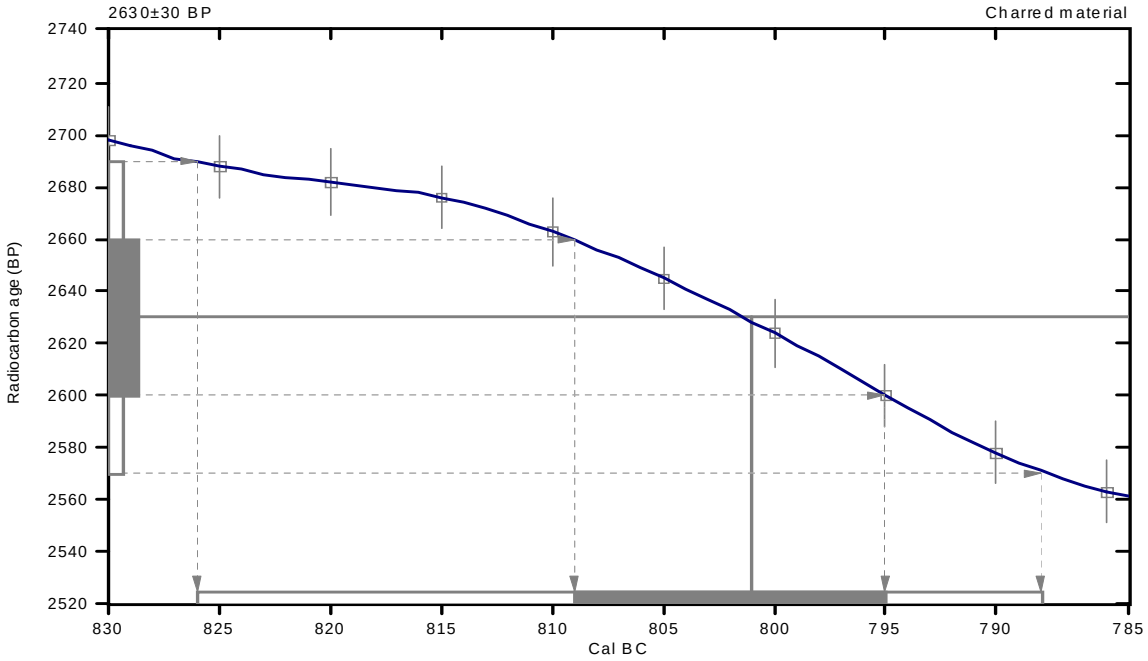
Conventional radiocarbon age: **2630±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 830 to 790 (Cal BP 2780 to 2740)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 800 (Cal BP 2750)

1 Sigma calibrated result: (68% probability) Cal BC 810 to 800 (Cal BP 2760 to 2740)



References:

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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.9:lab. mult=1)

Laboratory number: **Beta-333933**

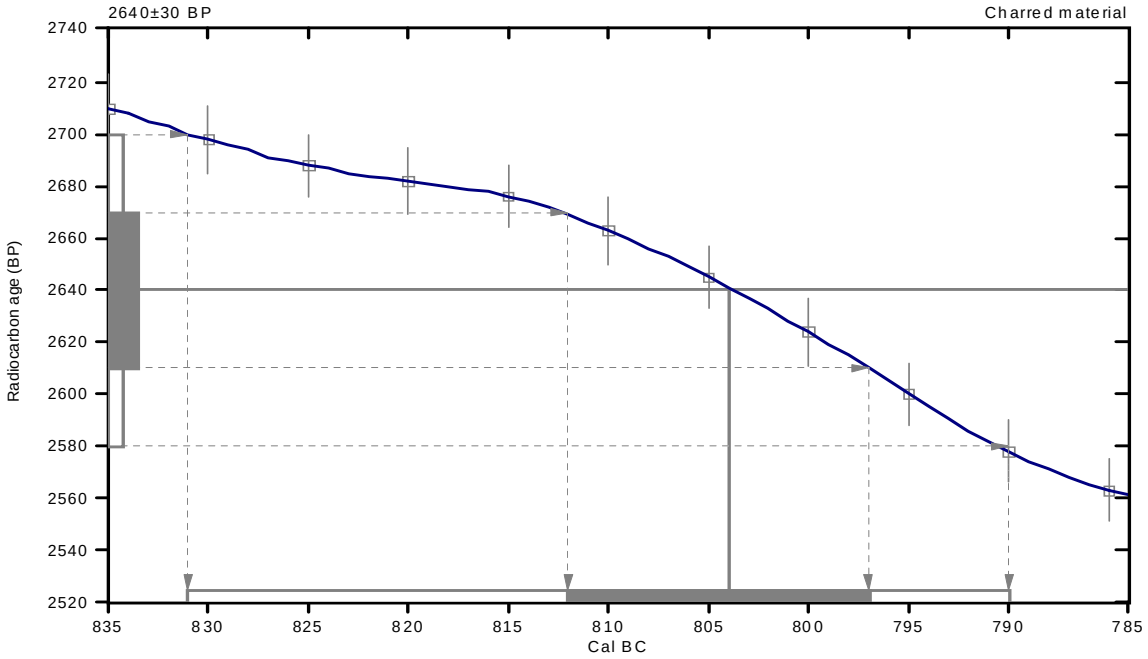
Conventional radiocarbon age: **2640±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 830 to 790 (Cal BP 2780 to 2740)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 800 (Cal BP 2750)

1 Sigma calibrated result: (68% probability) Cal BC 810 to 800 (Cal BP 2760 to 2750)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-8.7:lab. mult=1)

Laboratory number: **Beta-333934**

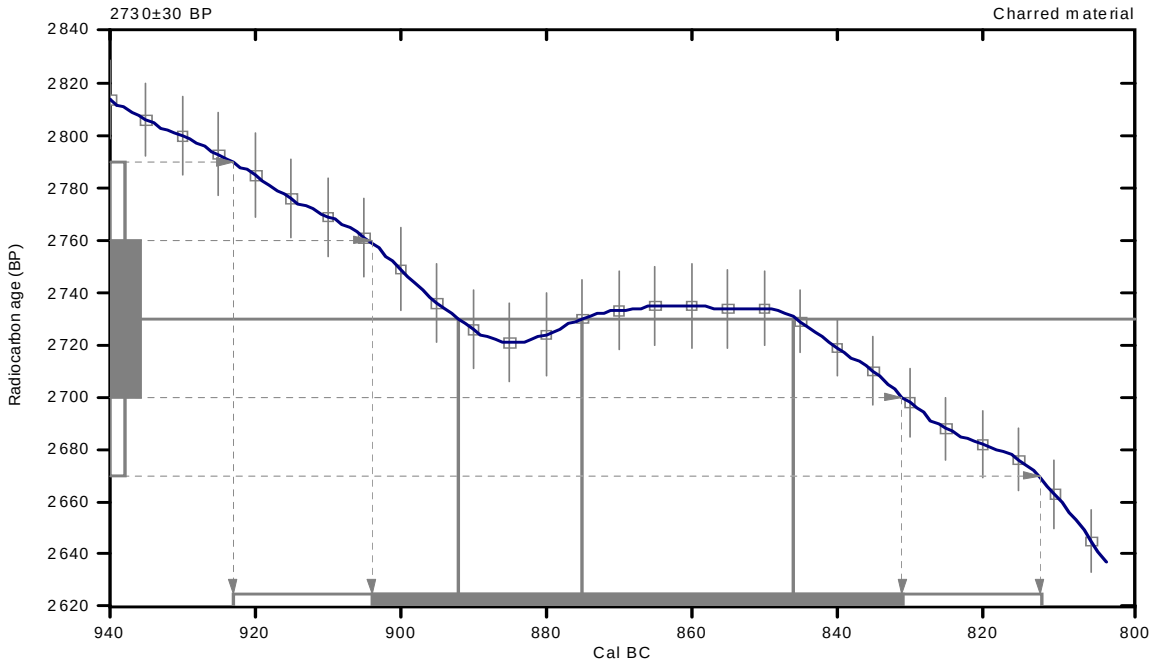
Conventional radiocarbon age: **2730±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 920 to 810 (Cal BP 2870 to 2760)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 890 (Cal BP 2840) and
Cal BC 880 (Cal BP 2820) and
Cal BC 850 (Cal BP 2800)

1 Sigma calibrated result: (68% probability) Cal BC 900 to 830 (Cal BP 2850 to 2780)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23:lab. mult=1)

Laboratory number: **Beta-333935**

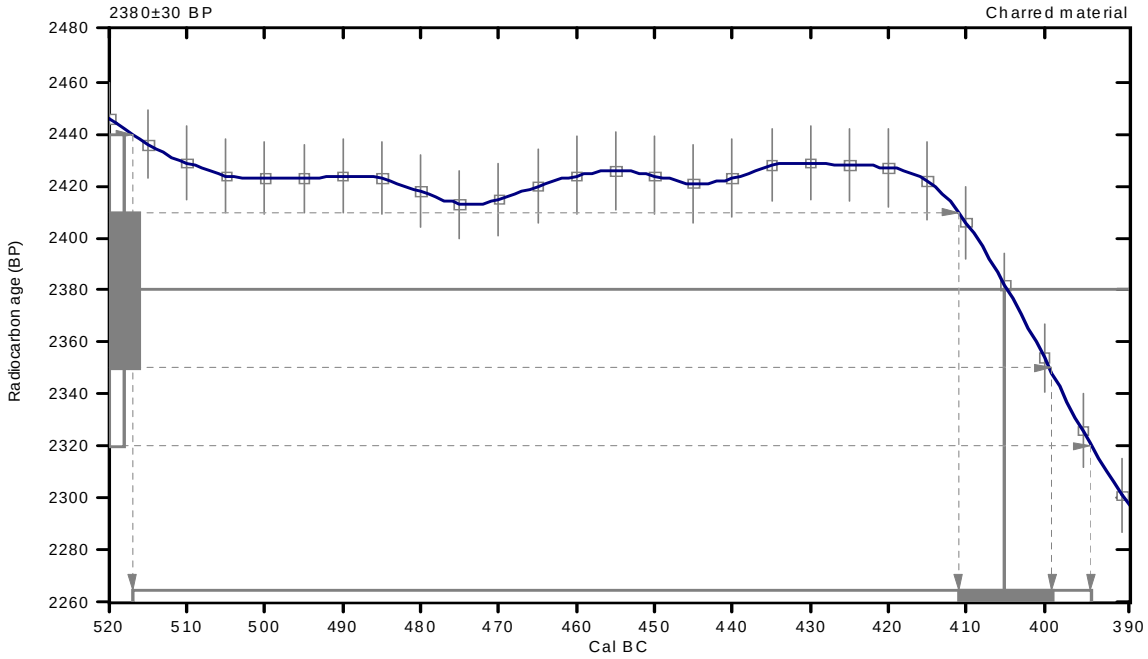
Conventional radiocarbon age: **2380±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 520 to 390 (Cal BP 2470 to 2340)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 400 (Cal BP 2360)

1 Sigma calibrated result: (68% probability) Cal BC 410 to 400 (Cal BP 2360 to 2350)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.2:lab. mult=1)

Laboratory number: **Beta-333936**

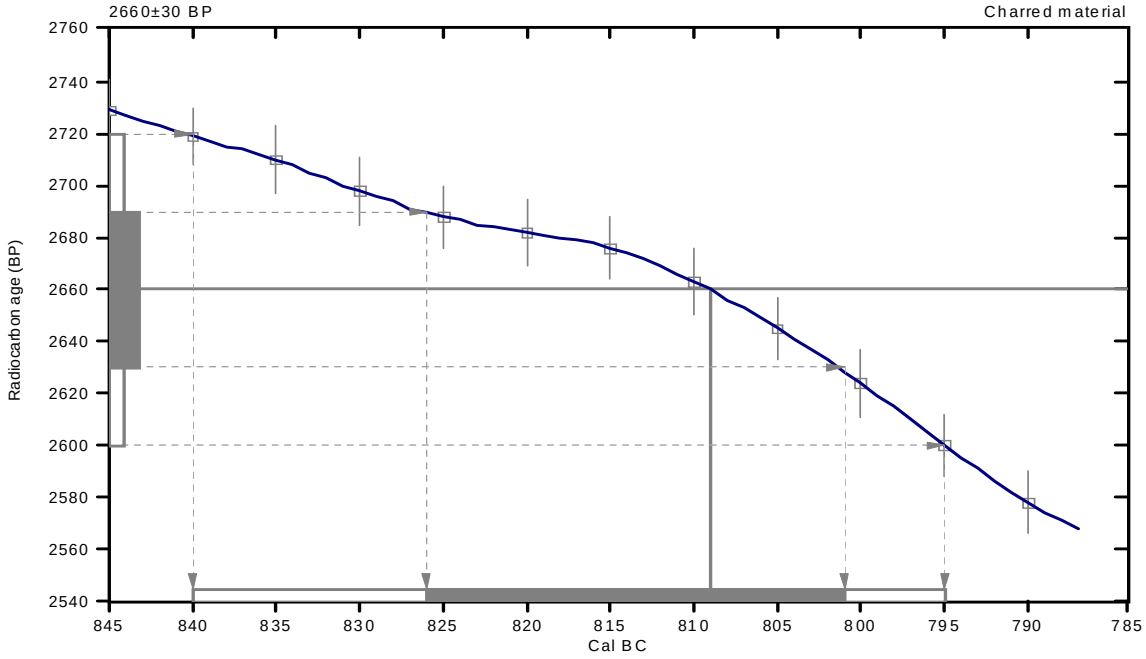
Conventional radiocarbon age: **2660±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 840 to 800 (Cal BP 2790 to 2740)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 810 (Cal BP 2760)

1 Sigma calibrated result: (68% probability) Cal BC 830 to 800 (Cal BP 2780 to 2750)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.2:lab. mult=1)

Laboratory number: **Beta-333937**

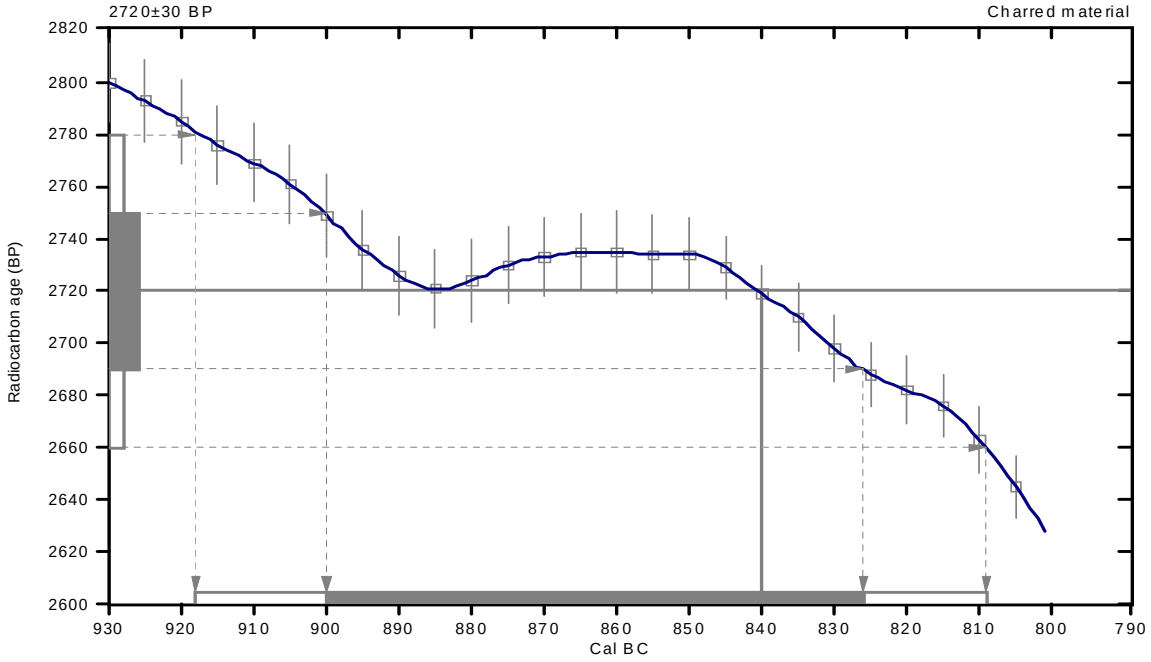
Conventional radiocarbon age: **2720±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 920 to 810 (Cal BP 2870 to 2760)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 840 (Cal BP 2790)

1 Sigma calibrated result: (68% probability) Cal BC 900 to 830 (Cal BP 2850 to 2780)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-7.9:lab. mult=1)

Laboratory number: **Beta-333938**

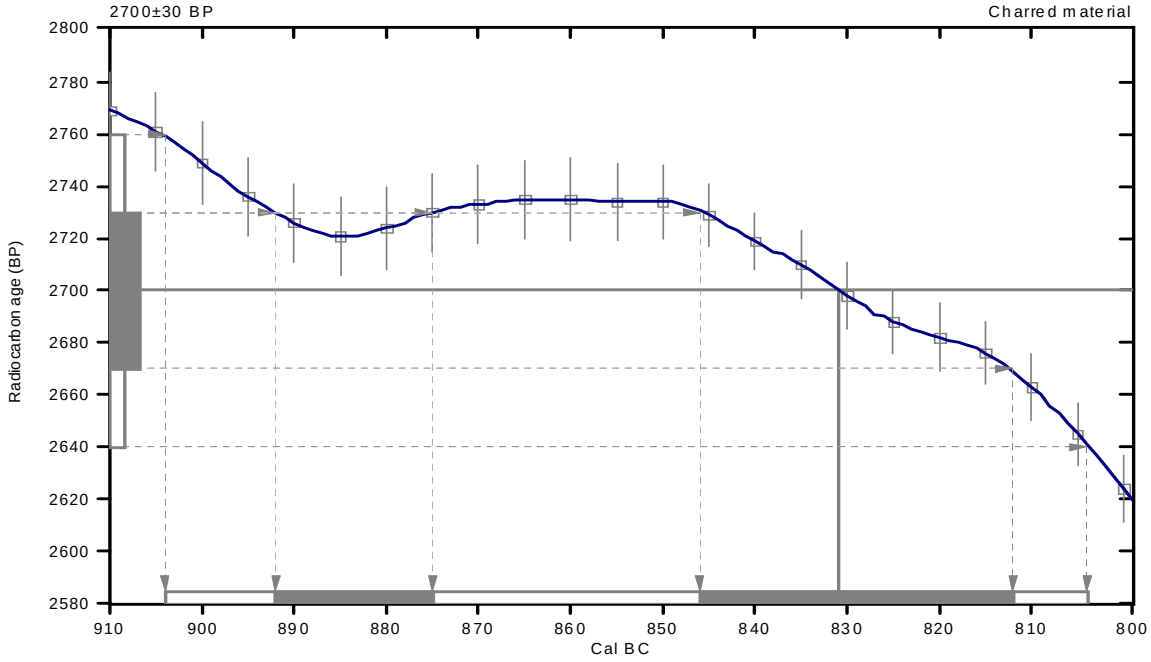
Conventional radiocarbon age: **2700±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 900 to 800 (Cal BP 2850 to 2750)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 830 (Cal BP 2780)

1 Sigma calibrated results: (68% probability) Cal BC 890 to 880 (Cal BP 2840 to 2820) and Cal BC 850 to 810 (Cal BP 2800 to 2760)



References:

Database used

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References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.8:lab. mult=1)

Laboratory number: **Beta-333939**

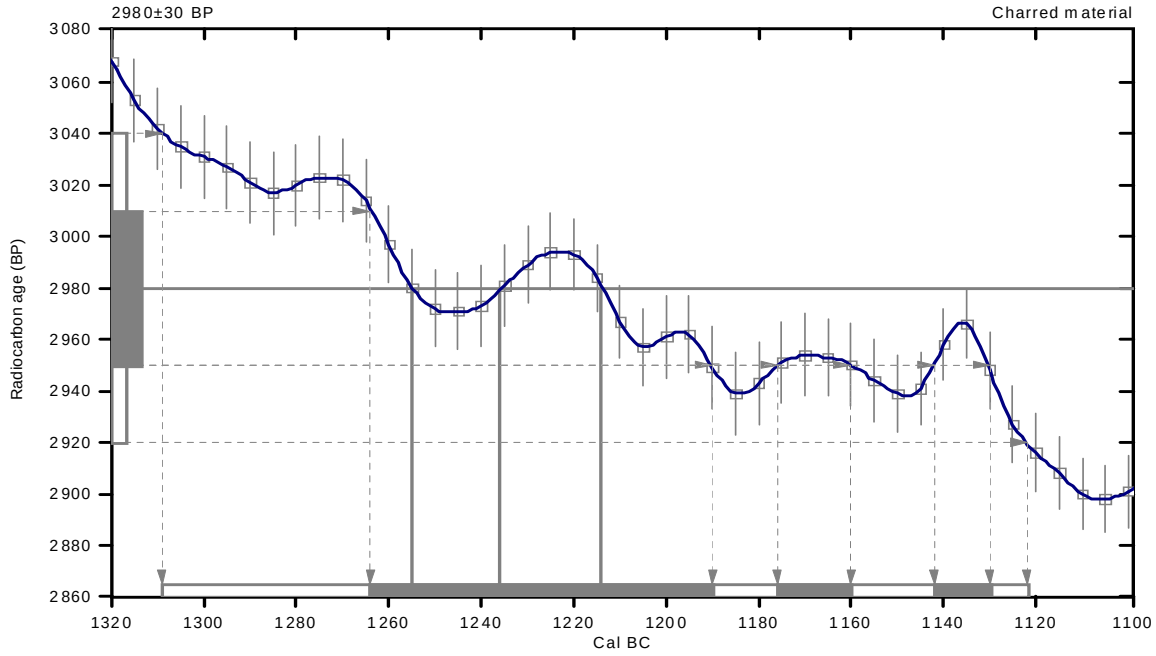
Conventional radiocarbon age: **2980±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 1310 to 1120 (Cal BP 3260 to 3070)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 1260 (Cal BP 3200) and
Cal BC 1240 (Cal BP 3190) and
Cal BC 1210 (Cal BP 3160)

1 Sigma calibrated results: (68% probability) Cal BC 1260 to 1190 (Cal BP 3210 to 3140) and
Cal BC 1180 to 1160 (Cal BP 3130 to 3110) and
Cal BC 1140 to 1130 (Cal BP 3090 to 3080)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.1:lab. mult=1)

Laboratory number: **Beta-333940**

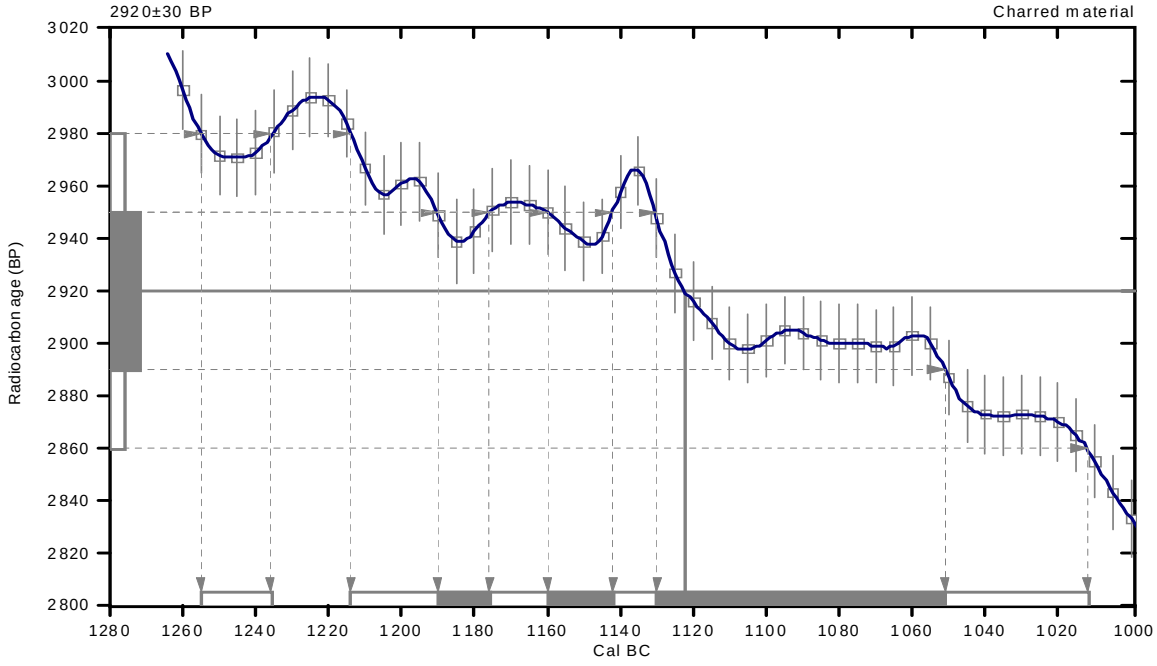
Conventional radiocarbon age: **2920±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 1260 to 1240 (Cal BP 3200 to 3190) and Cal BC 1210 to 1010 (Cal BP 3160 to 2960)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 1120 (Cal BP 3070)

1 Sigma calibrated results: (68% probability) Cal BC 1190 to 1180 (Cal BP 3140 to 3130) and Cal BC 1160 to 1140 (Cal BP 3110 to 3090) and Cal BC 1130 to 1050 (Cal BP 3080 to 3000)



References:

Database used

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References to INTCAL09 database

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Mathematics used for calibration scenario

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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

January 21, 2013

Dr. William H. Doelle/Jim Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN555, LCAFN1173, LCAFN1666, LCAFN1692, LCAFN1815, LCAFN1999, LCAFN2377, LCAFN5012, LCAFN5202, LCAFN5332, LCAFN5815, LCAFN6211

Dear Dr. Doelle & Mr. Vint:

Enclosed are the radiocarbon dating results for 12 samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analyses. We analyzed them with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

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,

Darden Hood

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint — Report Date: 1/21/2013

Desert Archaeology, Incorporated — Material Received: 1/10/2013

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 339685	2450 +/- 30 BP	-8.5 o/oo	2720 +/- 30 BP
SAMPLE : LCAFN555			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 920 to 810 (Cal BP 2870 to 2760)			
Beta - 339686	2260 +/- 30 BP	-10.3 o/oo	2500 +/- 30 BP
SAMPLE : LCAFN1173			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 780 to 520 (Cal BP 2730 to 2470)			
Beta - 339687	2330 +/- 30 BP	-10.8 o/oo	2560 +/- 30 BP
SAMPLE : LCAFN1666			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 800 to 750 (Cal BP 2750 to 2700) AND Cal BC 680 to 670 (Cal BP 2630 to 2620) Cal BC 610 to 600 (Cal BP 2560 to 2550)			
Beta - 339688	2330 +/- 30 BP	-10.9 o/oo	2560 +/- 30 BP
SAMPLE : LCAFN1692			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 800 to 750 (Cal BP 2750 to 2700) AND Cal BC 680 to 670 (Cal BP 2630 to 2620) Cal BC 610 to 600 (Cal BP 2560 to 2550)			

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.

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beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint

Report Date: 1/21/2013

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 339689 SAMPLE : LCAFN1815 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 770 to 510 (Cal BP 2720 to 2460)	2470 +/- 30 BP	-23.5 o/oo	2490 +/- 30 BP
Beta - 339690 SAMPLE : LCAFN1999 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 810 to 770 (Cal BP 2760 to 2720)	2360 +/- 30 BP	-10.2 o/oo	2600 +/- 30 BP
Beta - 339691 SAMPLE : LCAFN2377 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 810 to 770 (Cal BP 2760 to 2720)	2350 +/- 30 BP	-9.8 o/oo	2600 +/- 30 BP
Beta - 339693 SAMPLE : LCAFN5012 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 780 to 520 (Cal BP 2730 to 2470)	2270 +/- 30 BP	-10.8 o/oo	2500 +/- 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.

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REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint

Report Date: 1/21/2013

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 339694	2250 +/- 30 BP	-10.0 o/oo	2500 +/- 30 BP
SAMPLE : LCAFN5202			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 780 to 520 (Cal BP 2730 to 2470)			
Beta - 339695	2280 +/- 30 BP	-9.8 o/oo	2530 +/- 30 BP
SAMPLE : LCAFN5332			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 790 to 730 (Cal BP 2740 to 2680) AND Cal BC 690 to 660 (Cal BP 2640 to 2610) Cal BC 650 to 540 (Cal BP 2600 to 2490)			
Beta - 339696	2220 +/- 30 BP	-11.1 o/oo	2450 +/- 30 BP
SAMPLE : LCAFN5815			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 760 to 680 (Cal BP 2710 to 2630) AND Cal BC 670 to 410 (Cal BP 2620 to 2360)			
Beta - 339697	2470 +/- 30 BP	-10.4 o/oo	2710 +/- 30 BP
SAMPLE : LCAFN6211			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 910 to 810 (Cal BP 2860 to 2760)			

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=-8.5:lab. mult=1)

Laboratory number: **Beta-339685**

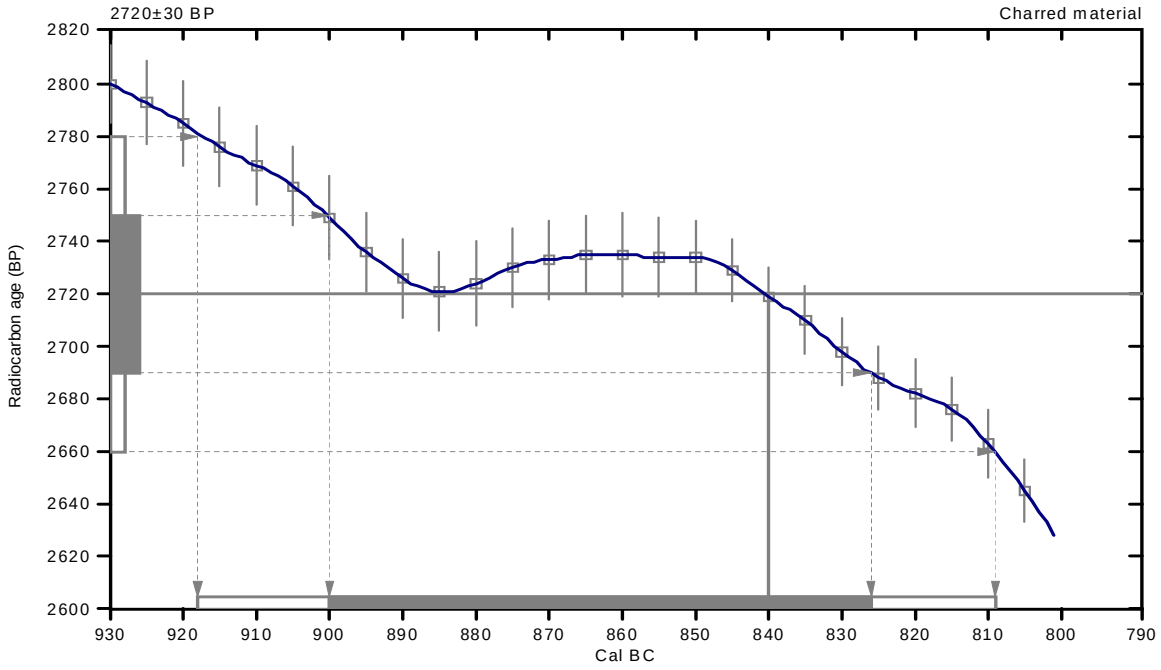
Conventional radiocarbon age: **2720±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 920 to 810 (Cal BP 2870 to 2760)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 840 (Cal BP 2790)

1 Sigma calibrated result: (68% probability) Cal BC 900 to 830 (Cal BP 2850 to 2780)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.3:lab. mult=1)

Laboratory number: **Beta-339686**

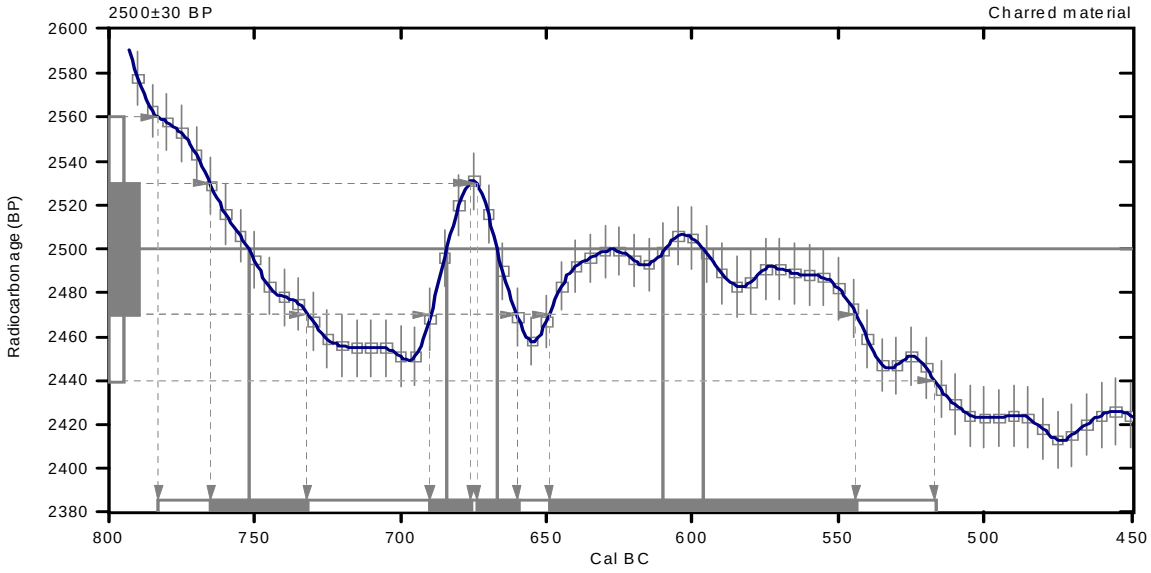
Conventional radiocarbon age: **2500±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 780 to 520 (Cal BP 2730 to 2470)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 750 (Cal BP 2700) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620) and
Cal BC 610 (Cal BP 2560) and
Cal BC 600 (Cal BP 2550)

1 Sigma calibrated results: (68% probability) Cal BC 760 to 730 (Cal BP 2720 to 2680) and
Cal BC 690 to 680 (Cal BP 2640 to 2630) and
Cal BC 670 to 660 (Cal BP 2620 to 2610) and
Cal BC 650 to 540 (Cal BP 2600 to 2490)



References:

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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.8:lab. mult=1)

Laboratory number: **Beta-339687**

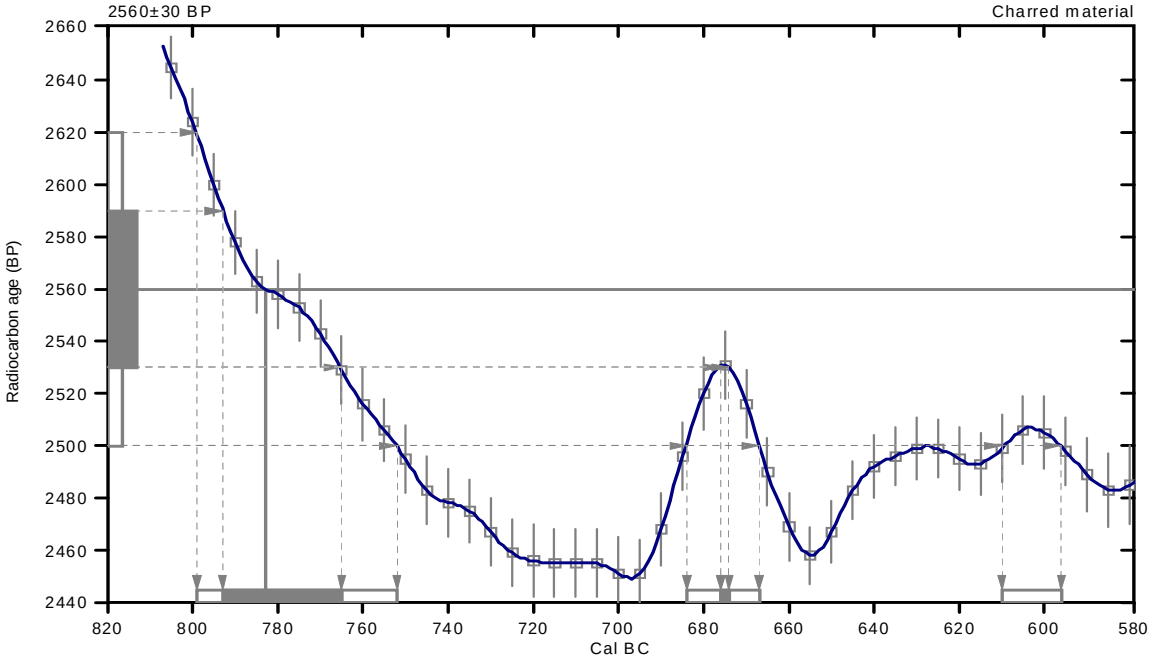
Conventional radiocarbon age: **2560±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 800 to 750 (Cal BP 2750 to 2700) and Cal BC 680 to 670 (Cal BP 2630 to 2620) and Cal BC 610 to 600 (Cal BP 2560 to 2550)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 780 (Cal BP 2730)

1 Sigma calibrated results: (68% probability) Cal BC 790 to 760 (Cal BP 2740 to 2720) and Cal BC 680 to 670 (Cal BP 2630 to 2620)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.9:lab. mult=1)

Laboratory number: **Beta-339688**

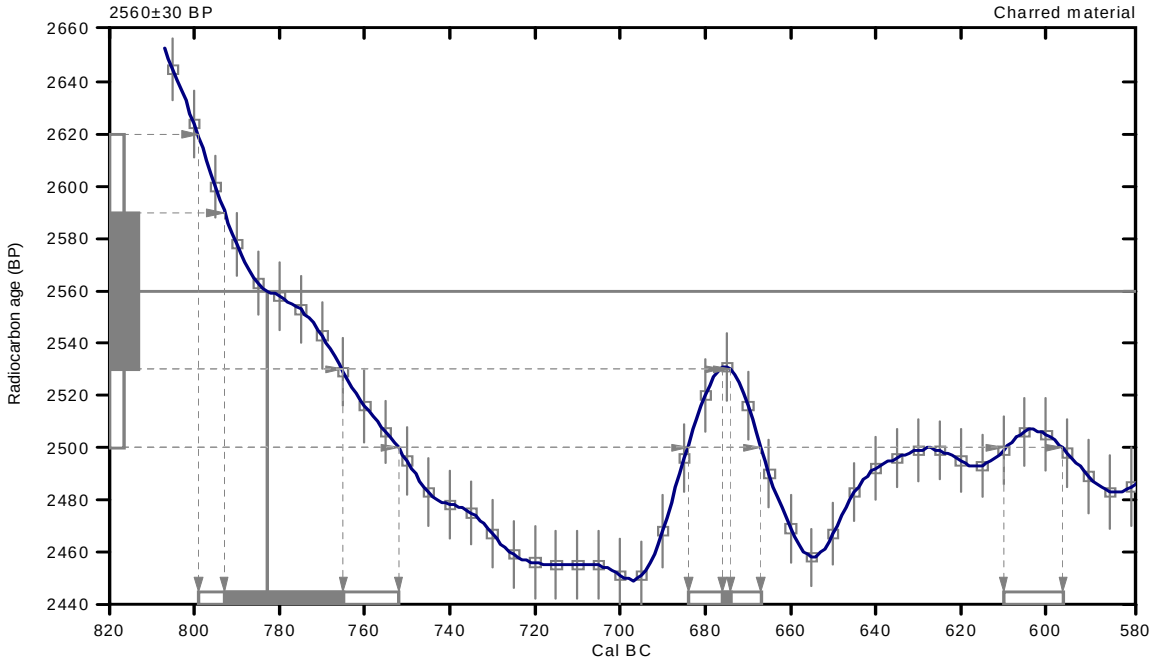
Conventional radiocarbon age: **2560±30 BP**

2 Sigma calibrated results: **Cal BC 800 to 750 (Cal BP 2750 to 2700) and**
(95% probability) **Cal BC 680 to 670 (Cal BP 2630 to 2620) and**
Cal BC 610 to 600 (Cal BP 2560 to 2550)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 780 (Cal BP 2730)

1 Sigma calibrated results: Cal BC 790 to 760 (Cal BP 2740 to 2720) and
(68% probability) Cal BC 680 to 670 (Cal BP 2630 to 2620)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.5:lab. mult=1)

Laboratory number: **Beta-339689**

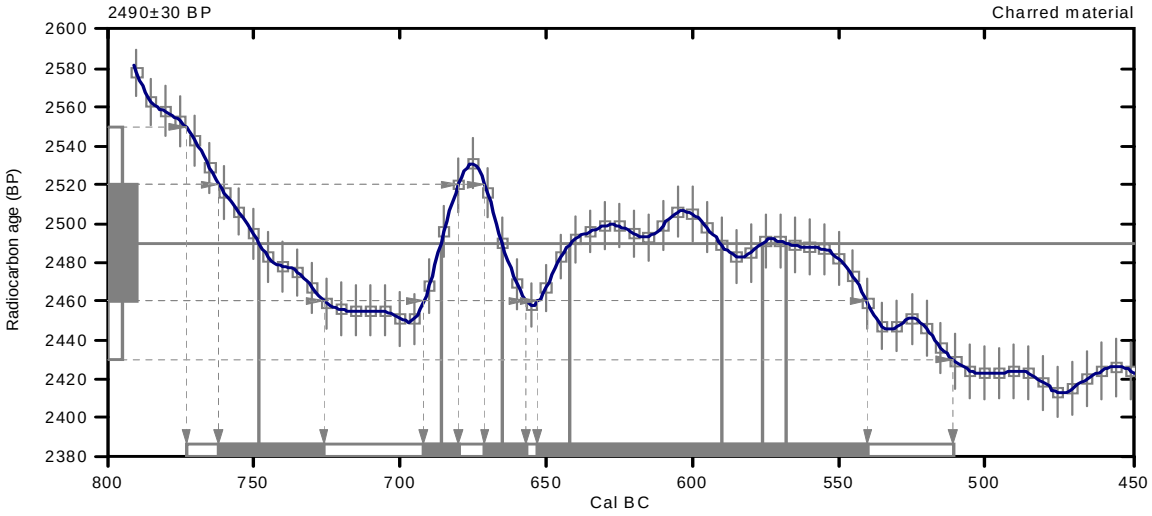
Conventional radiocarbon age: **2490±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 770 to 510 (Cal BP 2720 to 2460)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 750 (Cal BP 2700) and
Cal BC 690 (Cal BP 2640) and
Cal BC 660 (Cal BP 2620) and
Cal BC 640 (Cal BP 2590) and
Cal BC 590 (Cal BP 2540) and
Cal BC 580 (Cal BP 2530) and
Cal BC 570 (Cal BP 2520)

1 Sigma calibrated results: (68% probability) Cal BC 760 to 730 (Cal BP 2710 to 2680) and
Cal BC 690 to 680 (Cal BP 2640 to 2630) and
Cal BC 670 to 660 (Cal BP 2620 to 2610) and
Cal BC 650 to 540 (Cal BP 2600 to 2490)



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INTCAL09

References to INTCAL09 database

Heaton,et.al.,2009, Radiocarbon 51(4):1151-1164, Reimer,et.al, 2009, Radiocarbon 51(4):1111-1150, Stuiver,et.al,1993, Radiocarbon 35(1):137-189, Oeschger,et.al.,1975,Tellus 27:168-192

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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.2:lab. mult=1)

Laboratory number: **Beta-339690**

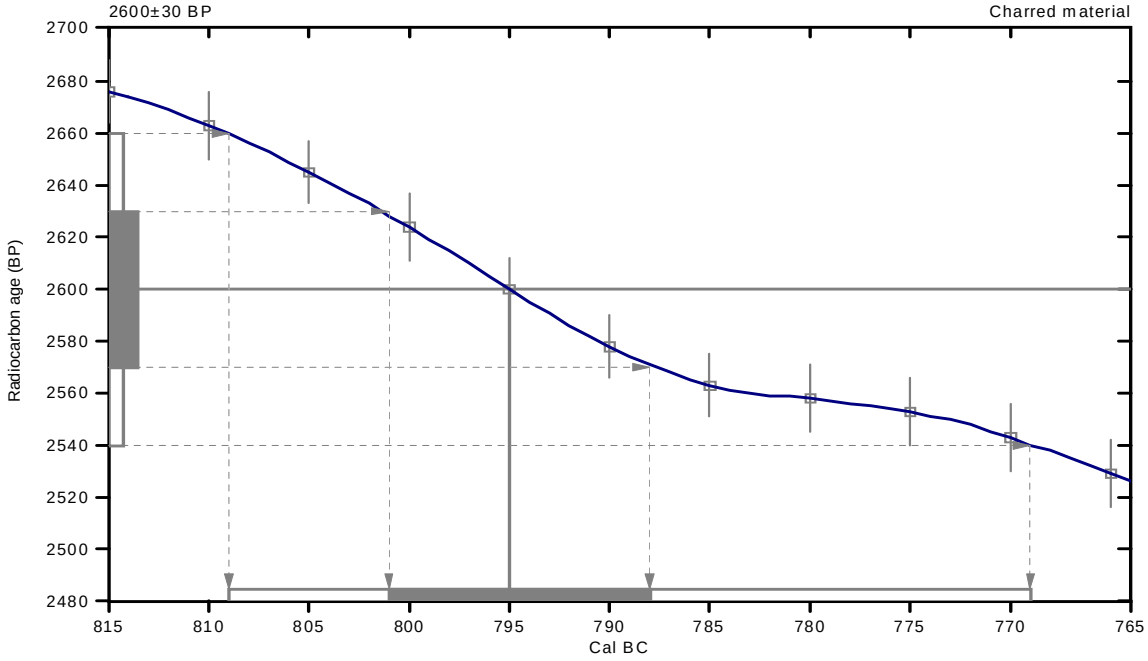
Conventional radiocarbon age: **2600±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 810 to 770 (Cal BP 2760 to 2720)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 800 (Cal BP 2740)

1 Sigma calibrated result: (68% probability) Cal BC 800 to 790 (Cal BP 2750 to 2740)



References:

Database used

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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-9.8:lab. mult=1)

Laboratory number: **Beta-339691**

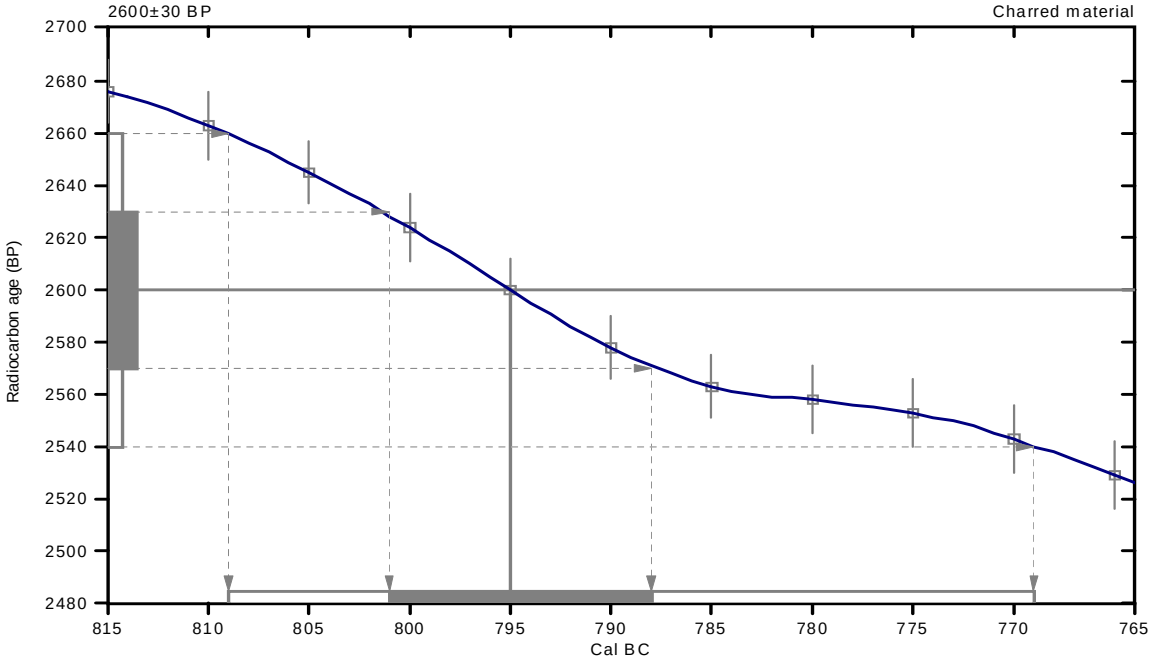
Conventional radiocarbon age: **2600±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 810 to 770 (Cal BP 2760 to 2720)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 800 (Cal BP 2740)

1 Sigma calibrated result: (68% probability) Cal BC 800 to 790 (Cal BP 2750 to 2740)



References:

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.8:lab. mult=1)

Laboratory number: **Beta-339693**

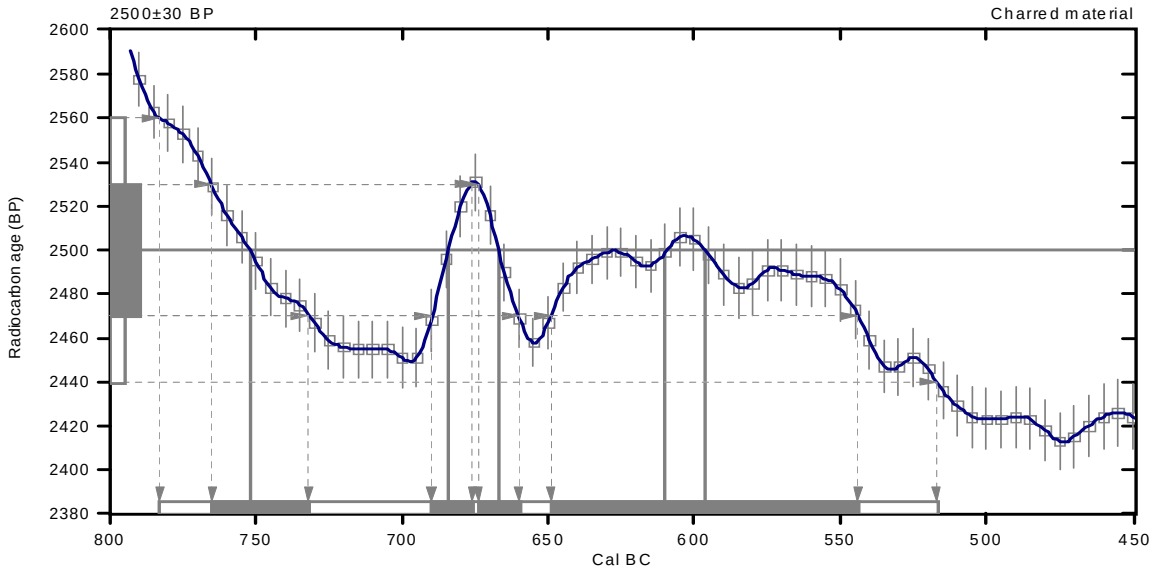
Conventional radiocarbon age: **2500±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 780 to 520 (Cal BP 2730 to 2470)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 750 (Cal BP 2700) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620) and
Cal BC 610 (Cal BP 2560) and
Cal BC 600 (Cal BP 2550)

1 Sigma calibrated results: (68% probability) Cal BC 760 to 730 (Cal BP 2720 to 2680) and
Cal BC 690 to 680 (Cal BP 2640 to 2630) and
Cal BC 670 to 660 (Cal BP 2620 to 2610) and
Cal BC 650 to 540 (Cal BP 2600 to 2490)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10:lab. mult=1)

Laboratory number: **Beta-339694**

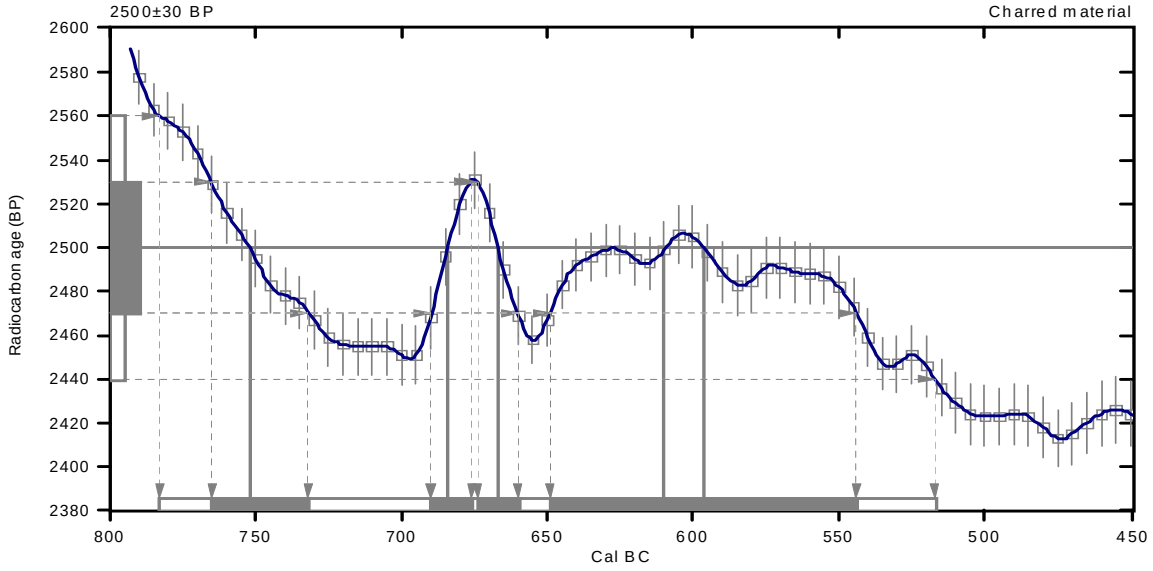
Conventional radiocarbon age: **2500±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 780 to 520 (Cal BP 2730 to 2470)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 750 (Cal BP 2700) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620) and
Cal BC 610 (Cal BP 2560) and
Cal BC 600 (Cal BP 2550)

1 Sigma calibrated results: (68% probability) Cal BC 760 to 730 (Cal BP 2720 to 2680) and
Cal BC 690 to 680 (Cal BP 2640 to 2630) and
Cal BC 670 to 660 (Cal BP 2620 to 2610) and
Cal BC 650 to 540 (Cal BP 2600 to 2490)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-9.8:lab. mult=1)

Laboratory number: **Beta-339695**

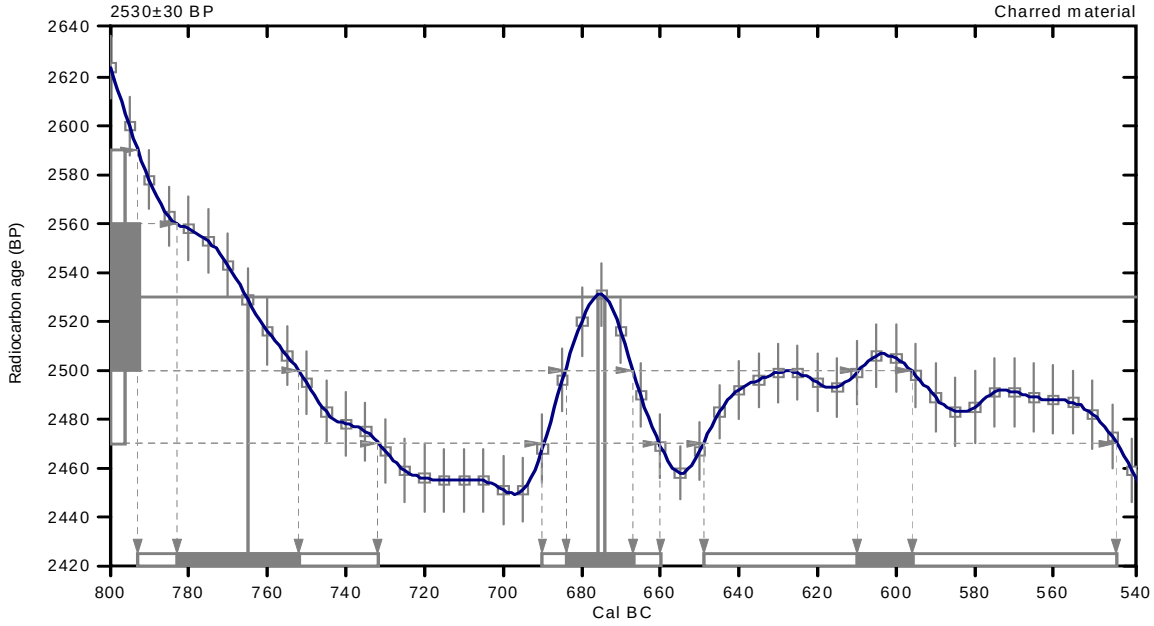
Conventional radiocarbon age: **2530±30 BP**

2 Sigma calibrated results: **Cal BC 790 to 730 (Cal BP 2740 to 2680) and**
(95% probability) **Cal BC 690 to 660 (Cal BP 2640 to 2610) and**
Cal BC 650 to 540 (Cal BP 2600 to 2490)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 760 (Cal BP 2720) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620)

1 Sigma calibrated results: Cal BC 780 to 750 (Cal BP 2730 to 2700) and
(68% probability) Cal BC 680 to 670 (Cal BP 2630 to 2620) and
Cal BC 610 to 600 (Cal BP 2560 to 2550)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.1:lab. mult=1)

Laboratory number: **Beta-339696**

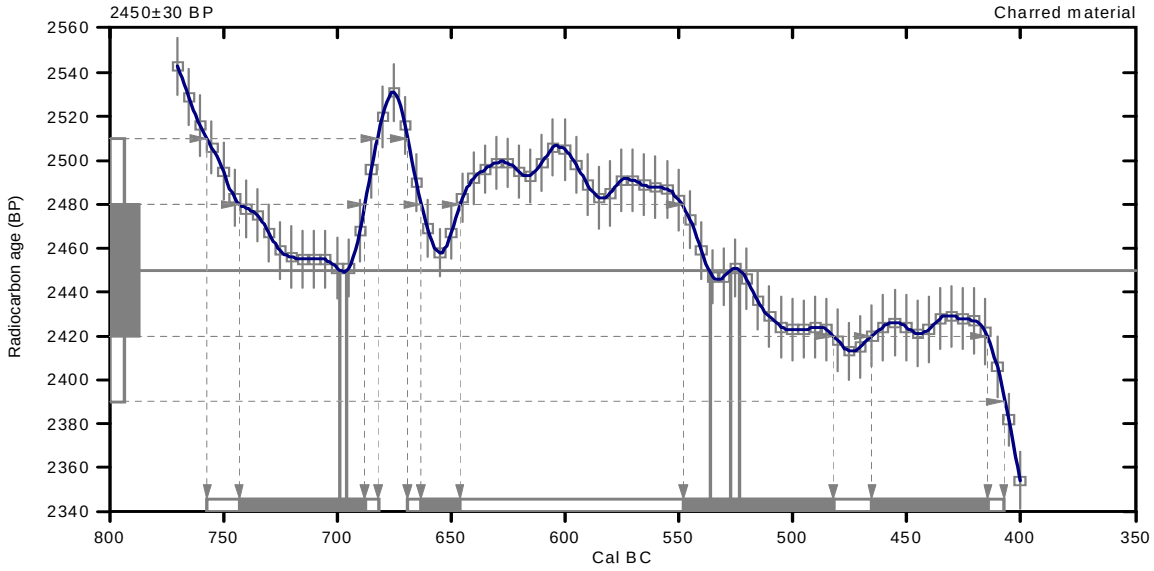
Conventional radiocarbon age: **2450±30 BP**

2 Sigma calibrated results: **Cal BC 760 to 680 (Cal BP 2710 to 2630) and**
(95% probability) **Cal BC 670 to 410 (Cal BP 2620 to 2360)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 700 (Cal BP 2650) and
Cal BC 700 (Cal BP 2650) and
Cal BC 540 (Cal BP 2490) and
Cal BC 530 (Cal BP 2480) and
Cal BC 520 (Cal BP 2470)

1 Sigma calibrated results: Cal BC 740 to 690 (Cal BP 2690 to 2640) and
(68% probability) Cal BC 660 to 650 (Cal BP 2610 to 2600) and
Cal BC 550 to 480 (Cal BP 2500 to 2430) and
Cal BC 460 to 410 (Cal BP 2420 to 2360)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.4:lab. mult=1)

Laboratory number: **Beta-339697**

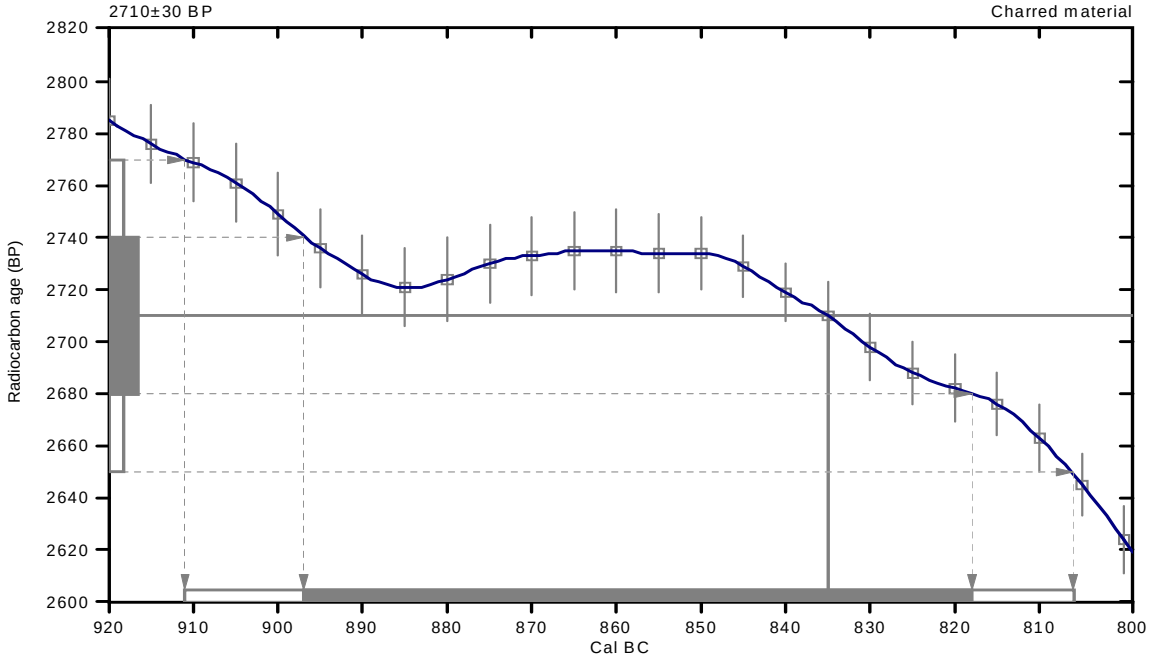
Conventional radiocarbon age: **2710±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 910 to 810 (Cal BP 2860 to 2760)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 840 (Cal BP 2780)

1 Sigma calibrated result: (68% probability) Cal BC 900 to 820 (Cal BP 2850 to 2770)



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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

March 15, 2013

Dr. William H. Doelle/Jim Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN2737, LCAFN2509, LCAFN7691, LCAFN10881, LCAFN12317

Dear Dr. Doelle & Mr. Vint:

Enclosed are the radiocarbon dating results for five samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

The web directory containing the table of results and PDF download also contains pictures including, most importantly the portion actually analyzed. These can be saved by opening them and right clicking. Also a cvs spreadsheet download option is available and a quality assurance report is posted for each set of results. This report contains expected vs measured values for 3-5 working standards analyzed simultaneously with your samples.

All results reported are accredited to ISO-17025 standards and all analyses were performed entirely here in our laboratories. Since Beta is not a teaching laboratory, only graduates trained in accordance with the strict protocols of the ISO-17025 program participated in the analyses. When interpreting the results, please consider any communications you may have had with us regarding the samples.

If you have specific questions about the analyses, please contact us. Your inquiries are always welcome.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint — Report Date: 3/15/2013

Desert Archaeology, Incorporated — Material Received: 3/7/2013

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 344167	2270 +/- 30 BP	-9.7 o/oo	2520 +/- 30 BP
SAMPLE : LCAFN2737			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 790 to 730 (Cal BP 2740 to 2680) AND Cal BC 690 to 660 (Cal BP 2640 to 2610) Cal BC 650 to 540 (Cal BP 2600 to 2490)			
Beta - 344168	2290 +/- 30 BP	-10.0 o/oo	2540 +/- 30 BP
SAMPLE : LCAFN2509			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 800 to 740 (Cal BP 2740 to 2690) AND Cal BC 690 to 660 (Cal BP 2640 to 2610) Cal BC 650 to 550 (Cal BP 2600 to 2500)			
Beta - 344169	2240 +/- 30 BP	-10.9 o/oo	2470 +/- 30 BP
SAMPLE : LCAFN7691			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 760 to 680 (Cal BP 2720 to 2630) AND Cal BC 670 to 410 (Cal BP 2620 to 2360)			
Beta - 344170	3750 +/- 30 BP	-10.6 o/oo	3990 +/- 30 BP
SAMPLE : LCAFN10881			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 2570 to 2460 (Cal BP 4520 to 4420)			

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.

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
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MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint

Report Date: 3/15/2013

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 344171	4690 +/- 30 BP	-10.5 o/oo	4930 +/- 30 BP

SAMPLE : LCAFN12317
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal BC 3770 to 3650 (Cal BP 5720 to 5600)

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=-9.7:lab. mult=1)

Laboratory number: **Beta-344167**

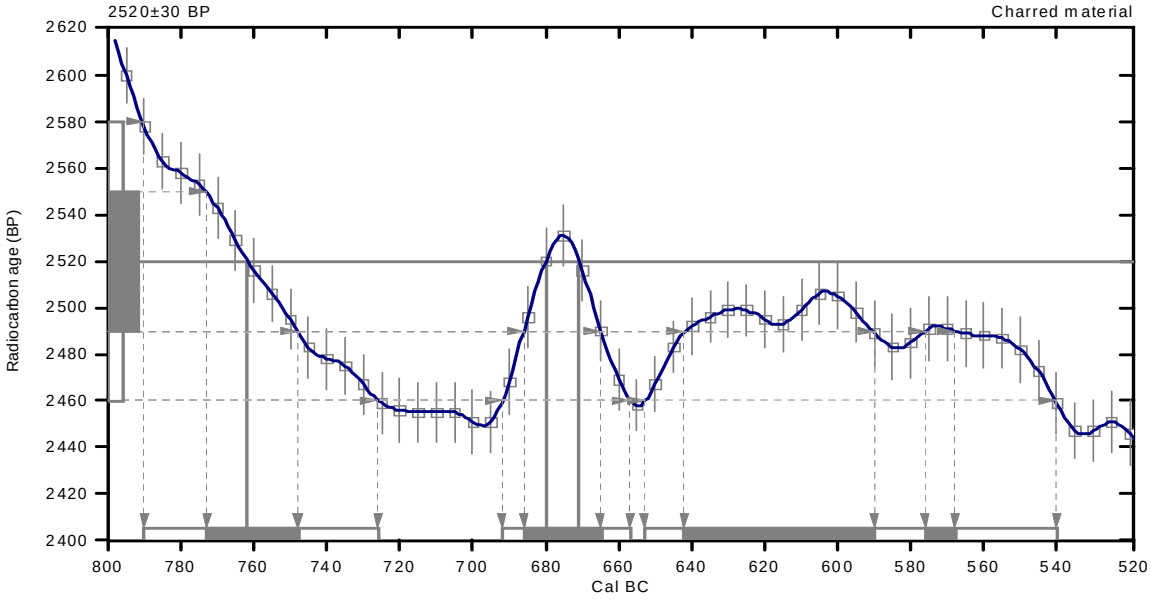
Conventional radiocarbon age: **2520±30 BP**

2 Sigma calibrated results: **Cal BC 790 to 730 (Cal BP 2740 to 2680) and**
(95% probability) **Cal BC 690 to 660 (Cal BP 2640 to 2610) and**
Cal BC 650 to 540 (Cal BP 2600 to 2490)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 760 (Cal BP 2710) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620)

1 Sigma calibrated results: (68% probability) Cal BC 770 to 750 (Cal BP 2720 to 2700) and
Cal BC 690 to 660 (Cal BP 2640 to 2620) and
Cal BC 640 to 590 (Cal BP 2590 to 2540) and
Cal BC 580 to 570 (Cal BP 2530 to 2520)



References:

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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10:lab. mult=1)

Laboratory number: **Beta-344168**

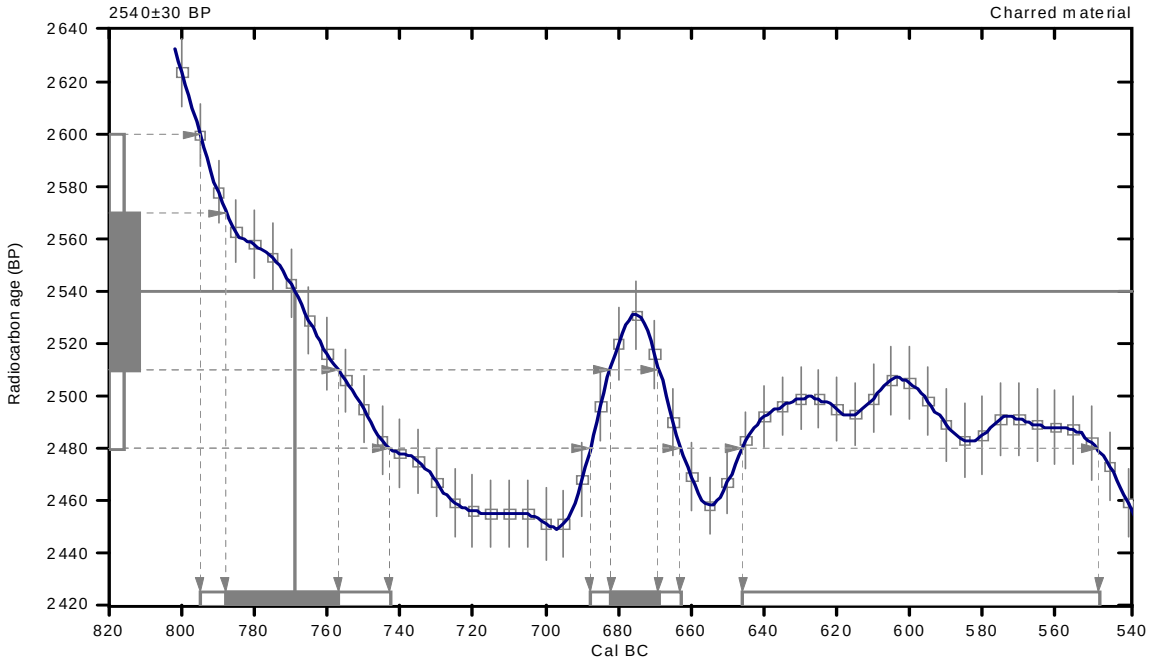
Conventional radiocarbon age: **2540±30 BP**

2 Sigma calibrated results: **Cal BC 800 to 740 (Cal BP 2740 to 2690) and**
(95% probability) **Cal BC 690 to 660 (Cal BP 2640 to 2610) and**
Cal BC 650 to 550 (Cal BP 2600 to 2500)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 770 (Cal BP 2720)

1 Sigma calibrated results: Cal BC 790 to 760 (Cal BP 2740 to 2710) and
(68% probability) Cal BC 680 to 670 (Cal BP 2630 to 2620)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.9:lab. mult=1)

Laboratory number: **Beta-344169**

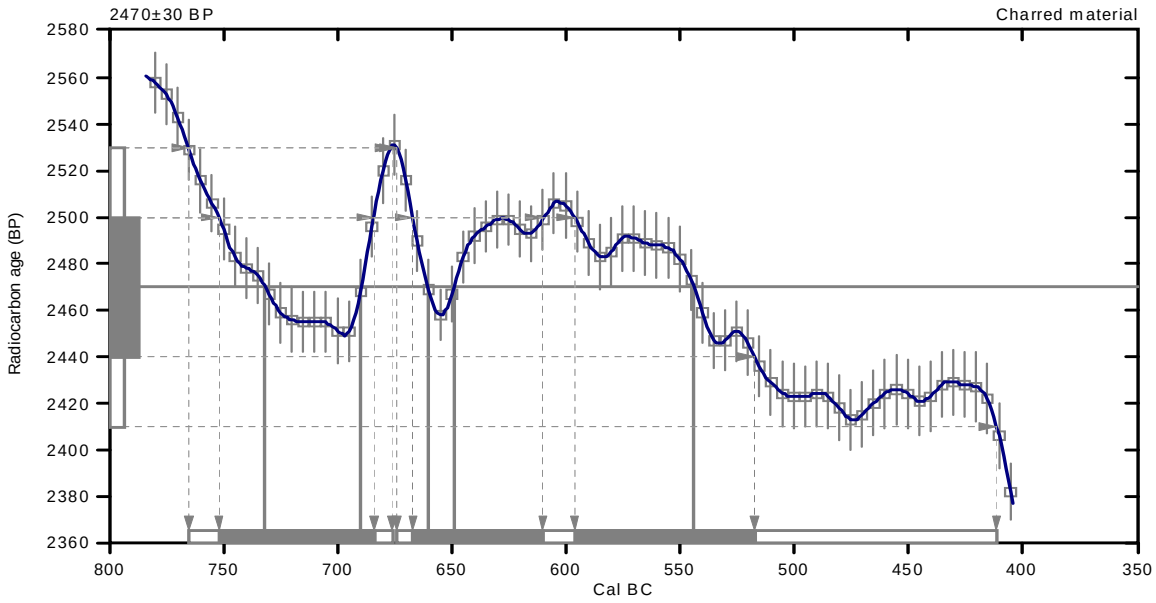
Conventional radiocarbon age: **2470±30 BP**

2 Sigma calibrated results: (95% probability) **Cal BC 760 to 680 (Cal BP 2720 to 2630) and Cal BC 670 to 410 (Cal BP 2620 to 2360)**

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 730 (Cal BP 2680) and
Cal BC 690 (Cal BP 2640) and
Cal BC 660 (Cal BP 2610) and
Cal BC 650 (Cal BP 2600) and
Cal BC 540 (Cal BP 2490)

1 Sigma calibrated results: (68% probability) Cal BC 750 to 680 (Cal BP 2700 to 2630) and
Cal BC 670 to 610 (Cal BP 2620 to 2560) and
Cal BC 600 to 520 (Cal BP 2550 to 2470)



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Mathematics used for calibration scenario

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.6:lab. mult=1)

Laboratory number: **Beta-344170**

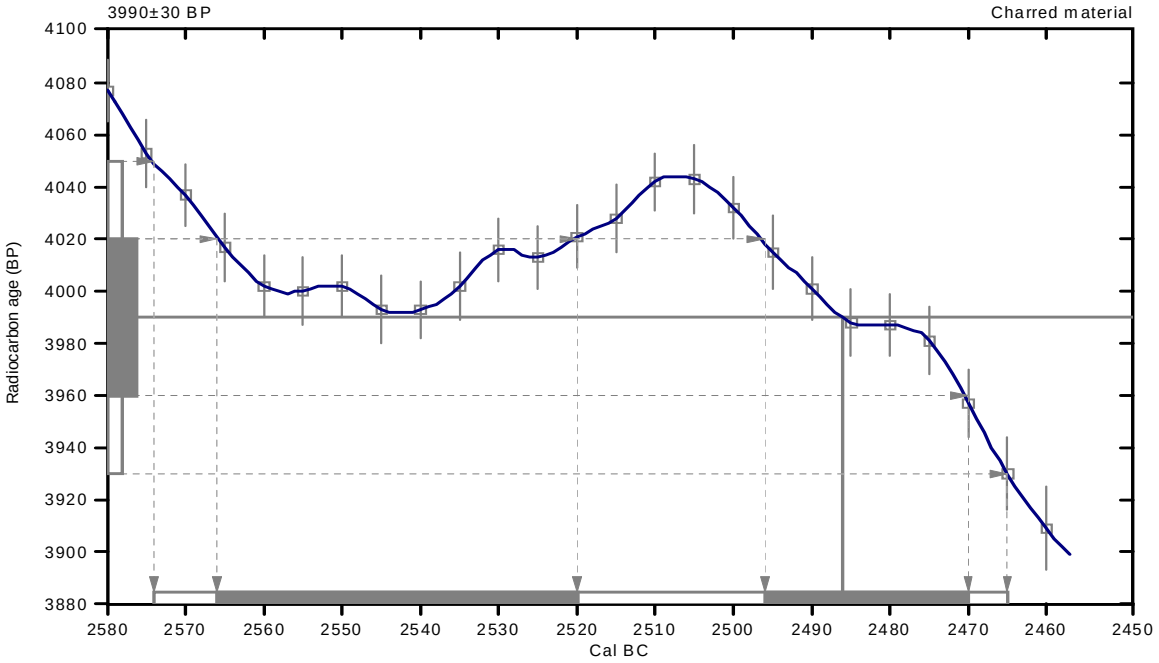
Conventional radiocarbon age: **3990±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 2570 to 2460 (Cal BP 4520 to 4420)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 2490 (Cal BP 4440)

1 Sigma calibrated results: (68% probability) Cal BC 2570 to 2520 (Cal BP 4520 to 4470) and Cal BC 2500 to 2470 (Cal BP 4450 to 4420)



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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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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.5:lab. mult=1)

Laboratory number: **Beta-344171**

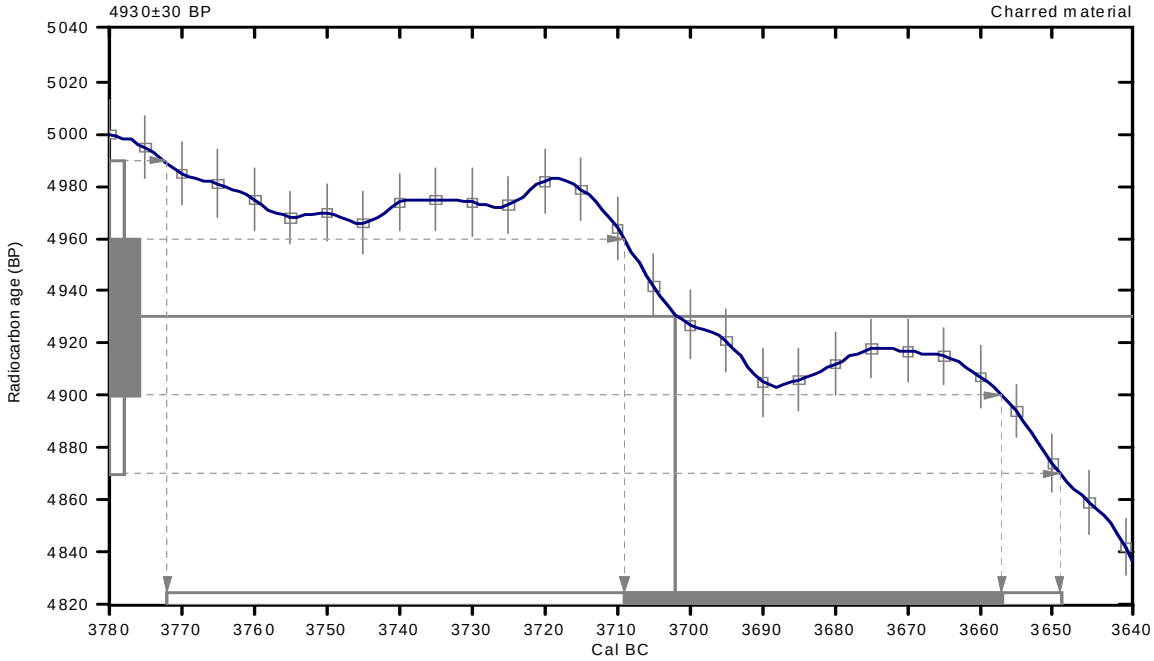
Conventional radiocarbon age: **4930±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 3770 to 3650 (Cal BP 5720 to 5600)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 3700 (Cal BP 5650)

1 Sigma calibrated result: (68% probability) Cal BC 3710 to 3660 (Cal BP 5660 to 5610)



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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

September 6, 2013

Dr. William H. Doelle/ Mr. Jim Vint
Desert Archaeology, Incorporated
3975 North Tucson Boulevard
Tucson, AZ 85716
USA

RE: Radiocarbon Dating Results For Samples LCAFN16032, LCAFN16060, LCAFN16240, LCAFN16252

Dear Dr. Doelle & Mr. Vint:

Enclosed are the radiocarbon dating results for four samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

The web directory containing the table of results and PDF download also contains pictures including, most importantly the portion actually analyzed. These can be saved by opening them and right clicking. Also a cvs spreadsheet download option is available and a quality assurance report is posted for each set of results. This report contains expected versus measured values for 3-5 working standards analyzed simultaneously with your samples.

All results reported are accredited to ISO-17025 standards and all analyses were performed entirely here in our laboratories. Since Beta is not a teaching laboratory, only graduates trained in accordance with the strict protocols of the ISO-17025 program participated in the analyses. When interpreting the results, please consider any communications you may have had with us regarding the samples.

If you have specific questions about the analyses, please contact us. Your inquiries are always welcome.

Thank you for prepaying the analyses. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Darden Hood

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. William H. Doelle/Jim Vint — Report Date: 9/6/2013

Desert Archaeology, Incorporated — Material Received: 8/28/2013

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 358013	2130 +/- 30 BP	-9.5 o/oo	2380 +/- 30 BP
SAMPLE : LCAFN16032			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 520 to 390 (Cal BP 2470 to 2340)			
Beta - 358014	2300 +/- 30 BP	-11.1 o/oo	2530 +/- 30 BP
SAMPLE : LCAFN16060			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 790 to 730 (Cal BP 2740 to 2680) AND Cal BC 690 to 660 (Cal BP 2640 to 2610) Cal BC 650 to 540 (Cal BP 2600 to 2490)			
Beta - 358015	2410 +/- 30 BP	-10.3 o/oo	2650 +/- 30 BP
SAMPLE : LCAFN16240			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 840 to 790 (Cal BP 2780 to 2740)			
Beta - 358016	2550 +/- 30 BP	-22.1 o/oo	2600 +/- 30 BP
SAMPLE : LCAFN16252			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 810 to 770 (Cal BP 2760 to 2720)			

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=-9.5:lab. mult=1)

Laboratory number: **Beta-358013**

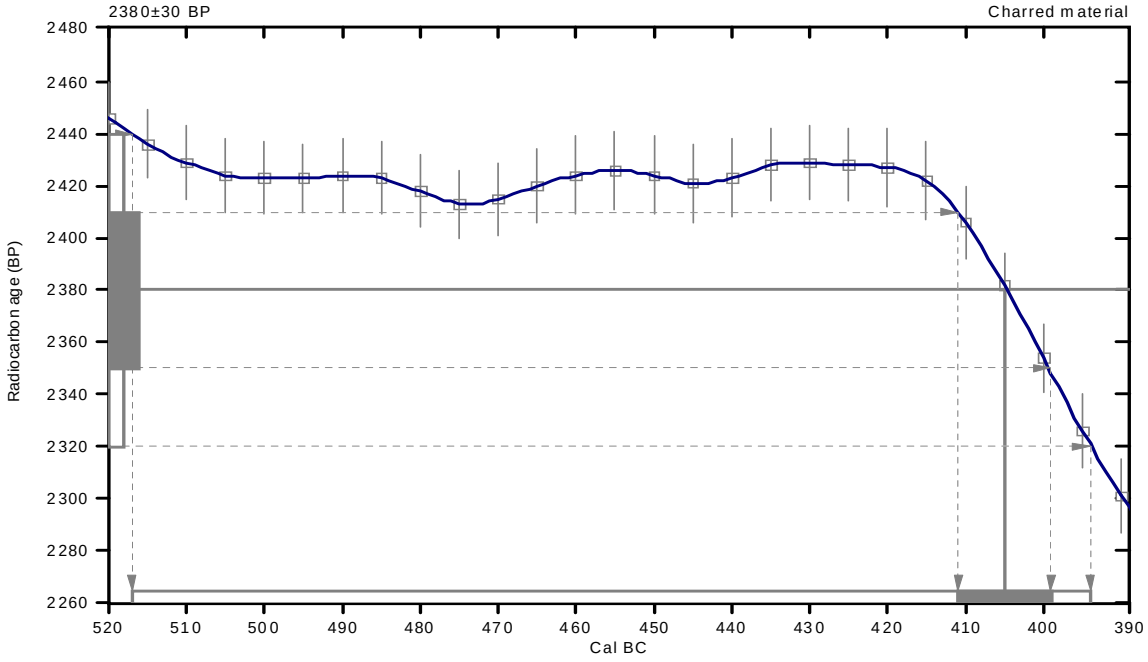
Conventional radiocarbon age: **2380±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 520 to 390 (Cal BP 2470 to 2340)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 400 (Cal BP 2360)

1 Sigma calibrated result: (68% probability) Cal BC 410 to 400 (Cal BP 2360 to 2350)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-11.1:lab. mult=1)

Laboratory number: **Beta-358014**

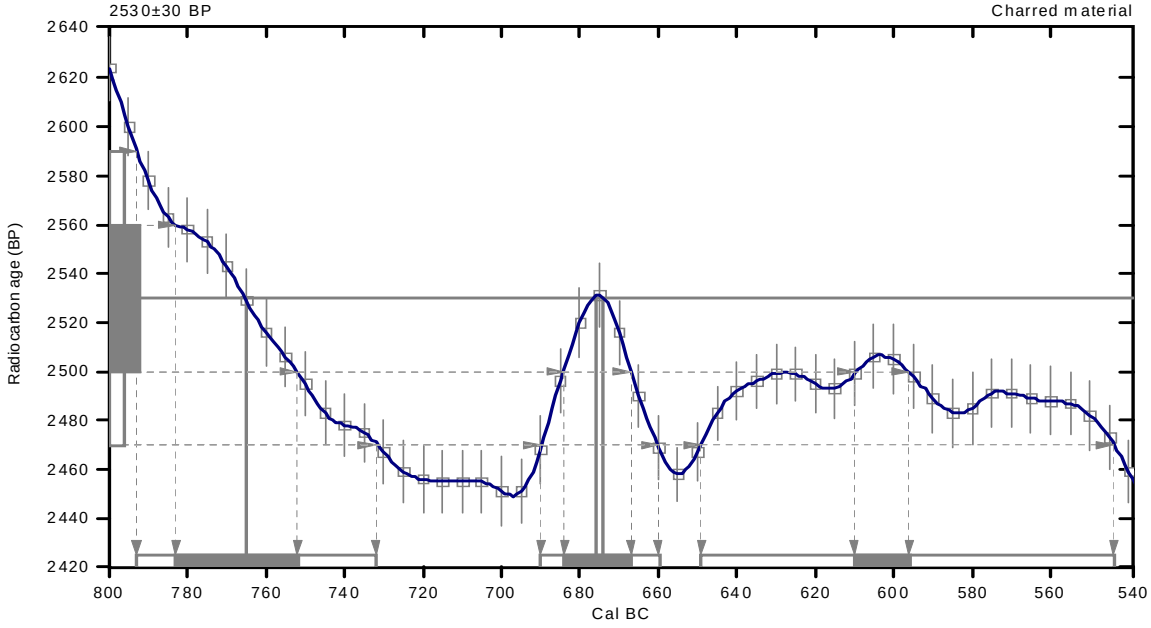
Conventional radiocarbon age: **2530±30 BP**

2 Sigma calibrated results: **Cal BC 790 to 730 (Cal BP 2740 to 2680) and**
(95% probability) **Cal BC 690 to 660 (Cal BP 2640 to 2610) and**
Cal BC 650 to 540 (Cal BP 2600 to 2490)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal BC 760 (Cal BP 2720) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620)

1 Sigma calibrated results: Cal BC 780 to 750 (Cal BP 2730 to 2700) and
(68% probability) Cal BC 680 to 670 (Cal BP 2630 to 2620) and
Cal BC 610 to 600 (Cal BP 2560 to 2550)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-10.3:lab. mult=1)

Laboratory number: **Beta-358015**

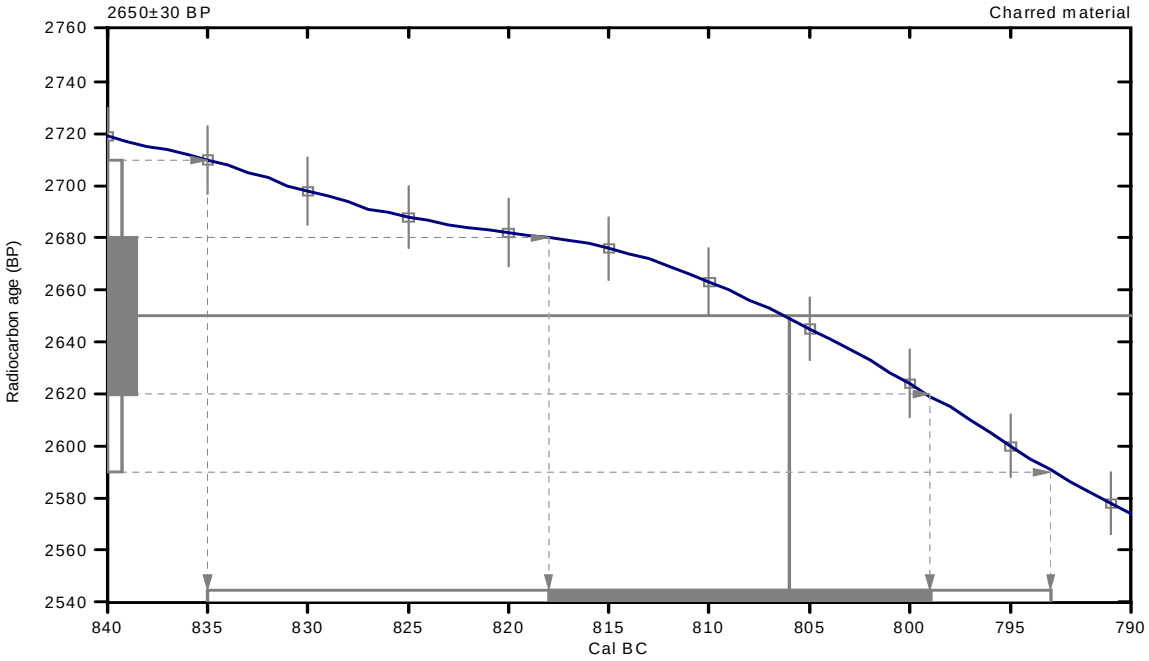
Conventional radiocarbon age: **2650±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 840 to 790 (Cal BP 2780 to 2740)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 810 (Cal BP 2760)

1 Sigma calibrated result: (68% probability) Cal BC 820 to 800 (Cal BP 2770 to 2750)



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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.1:lab. mult=1)

Laboratory number: **Beta-358016**

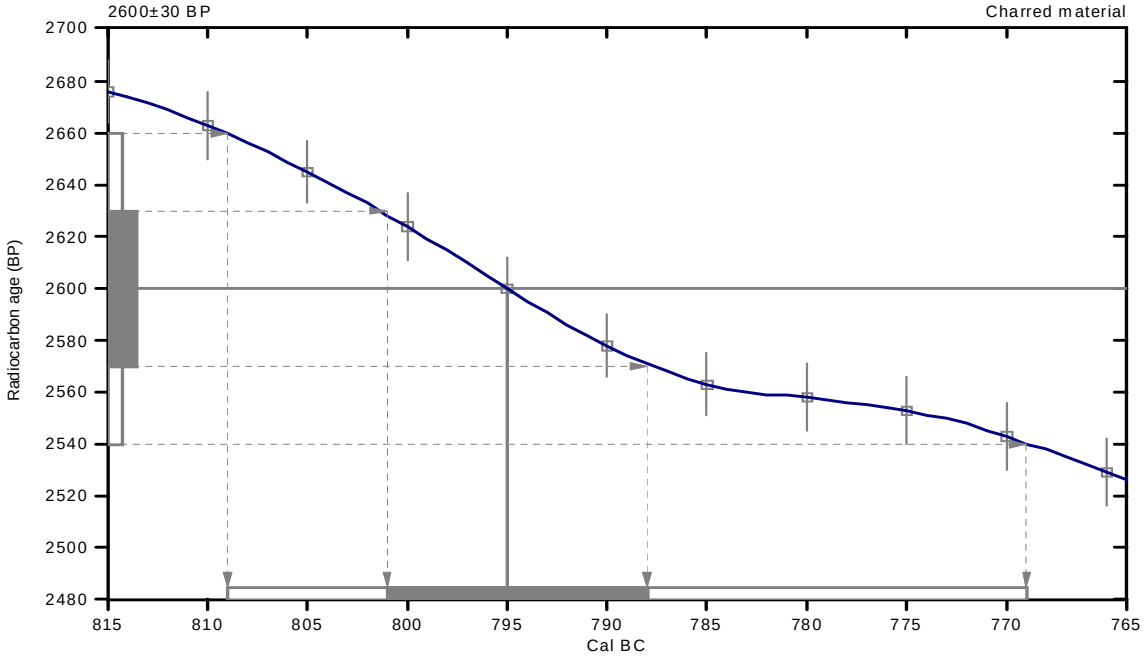
Conventional radiocarbon age: **2600±30 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 810 to 770 (Cal BP 2760 to 2720)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 800 (Cal BP 2740)

1 Sigma calibrated result: (68% probability) Cal BC 800 to 790 (Cal BP 2750 to 2740)



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