

FROM: Darden Hood, Director (mailto:<mailto:dhoo@radiocarbon.com>)

(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

November 8, 2004

Dr. Terry L. Hunt
University of Hawaii
Dept. of Anthropology
Porteus Hall 346
2424 Maile Way
Honolulu, HI 96822
USA

RE: Radiocarbon Dating Results For Samples 04ANAK8S243, 04ANAK5N291,
04ANAK8S314, 04ANAK9N319, 04ANAK11N327, 04ANAK12N331

Dear Dr. Hunt:

Enclosed are the radiocarbon dating results for six samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses went normally. The report sheet also contains the method used, material type, and applied pretreatments and, where applicable, the two-sigma calendar calibration range.

As always, this report has been both mailed and sent electronically. All results (excluding some inappropriate material types) which are less than about 20,000 years BP and more than about ~250 BP include this calendar calibration page (also digitally available in Windows metafile (wmf) format upon request). The calibrations are calculated using the newest (1998) calibration database with references quoted on the bottom of each page. Multiple probability ranges may appear in some cases, due to short-term variations in the atmospheric ^{14}C contents at certain time periods. Examining the calibration graphs will help you understand this phenomenon. Don't hesitate to contact us if you have questions about calibration.

We analyzed these samples on a sole priority basis. 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.

Information pages are also enclosed with the mailed copy of this report. If you have any specific questions about the analyses, please do not hesitate to contact us.

Our invoice is enclosed. Please, forward it to the appropriate officer or send VISA charge authorization. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "Darden Hood". The signature is written in a cursive, flowing style with a large initial 'D'.

Dr. Terry L. Hunt

Report Date: 11/8/2004

University of Hawaii

Material Received: 10/14/2004

Sample Data	Measured Radiocarbon Age	¹³ C/ ¹² C Ratio	Conventional Radiocarbon Age(*)
Beta - 196711 SAMPLE : 04ANAK8S243 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1280 to 1400 (Cal BP 670 to 550)	660 +/- 40 BP	-24.9 o/oo	660 +/- 40 BP
Beta - 196712 SAMPLE : 04ANAK5N291 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1250 to 1410 (Cal BP 700 to 540)	690 +/- 60 BP	-25.6 o/oo	680 +/- 60 BP
Beta - 196713 SAMPLE : 04ANAK8S314 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1270 to 1400 (Cal BP 680 to 550)	670 +/- 40 BP	-24.8 o/oo	670 +/- 40 BP
Beta - 196714 SAMPLE : 04ANAK9N319 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1290 to 1430 (Cal BP 660 to 520)	600 +/- 60 BP	-26.0 o/oo	590 +/- 60 BP
Beta - 196715 SAMPLE : 04ANAK11N327 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1260 to 1310 (Cal BP 690 to 640) AND Cal AD 1370 to 1380 (Cal BP 580 to 570)	670 +/- 40 BP	-22.5 o/oo	710 +/- 40 BP

Terry L. Hunt

Report Date: 11/8/2004

Sample Data	Measured Radiocarbon Age	$^{13}\text{C}/^{12}\text{C}$ Ratio	Conventional Radiocarbon Age(*)
Beta - 196716 SAMPLE : 04ANAK12N331 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1210 to 1320 (Cal BP 740 to 630) AND Cal AD 1340 to 1390 (Cal BP 600 to 560)	720 +/- 60 BP	-24.7 o/oo	720 +/- 60 BP

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.9:lab. mult=1)

Laboratory number: Beta-196711

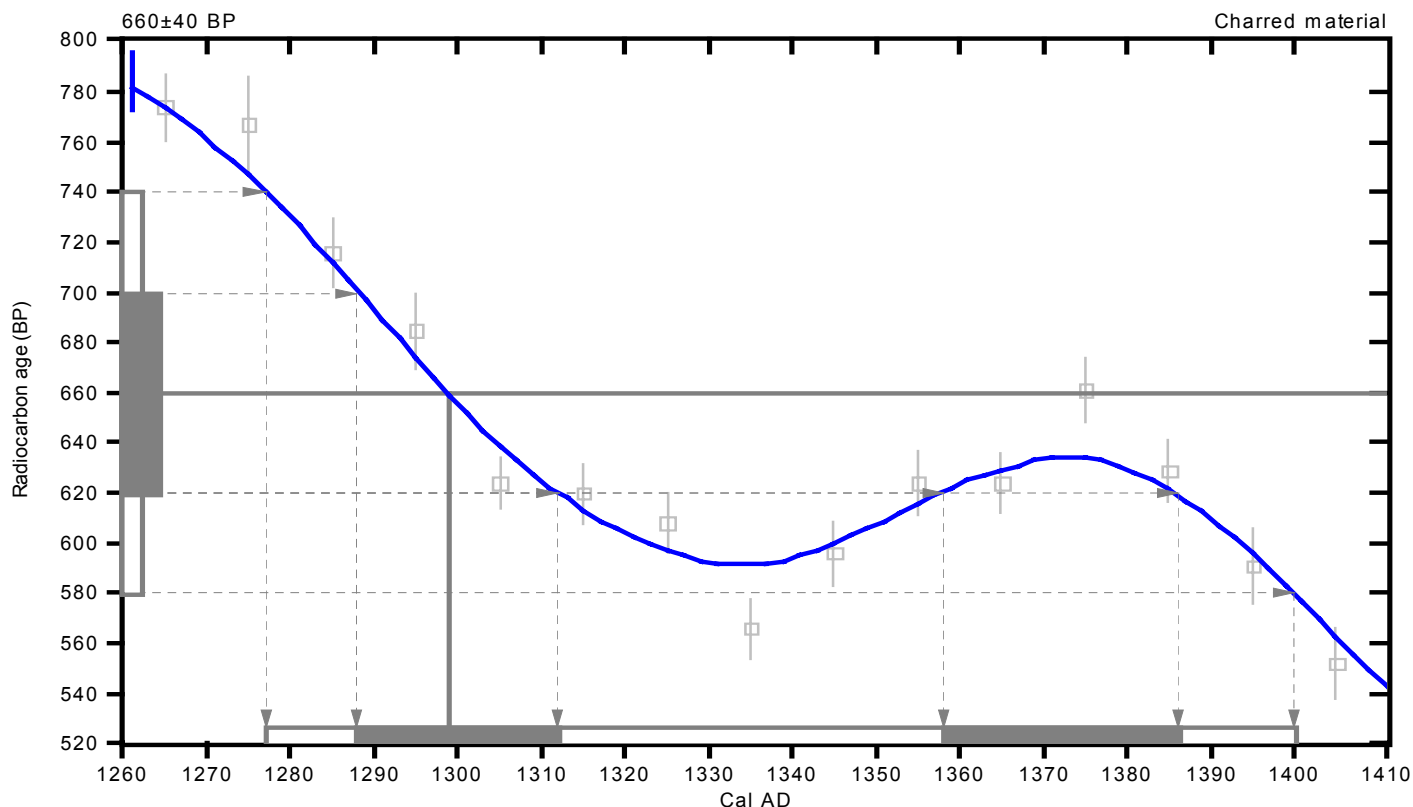
Conventional radiocarbon age: 660±40 BP

2 Sigma calibrated result: Cal AD 1280 to 1400 (Cal BP 670 to 550)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1300 (Cal BP 650)

1 Sigma calibrated results: Cal AD 1290 to 1310 (Cal BP 660 to 640) and
(68% probability) Cal AD 1360 to 1390 (Cal BP 590 to 560)



References:

Database used
Intcal98

Calibration Database
Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii
INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

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=-25.6:lab. mult=1)

Laboratory number: Beta-196712

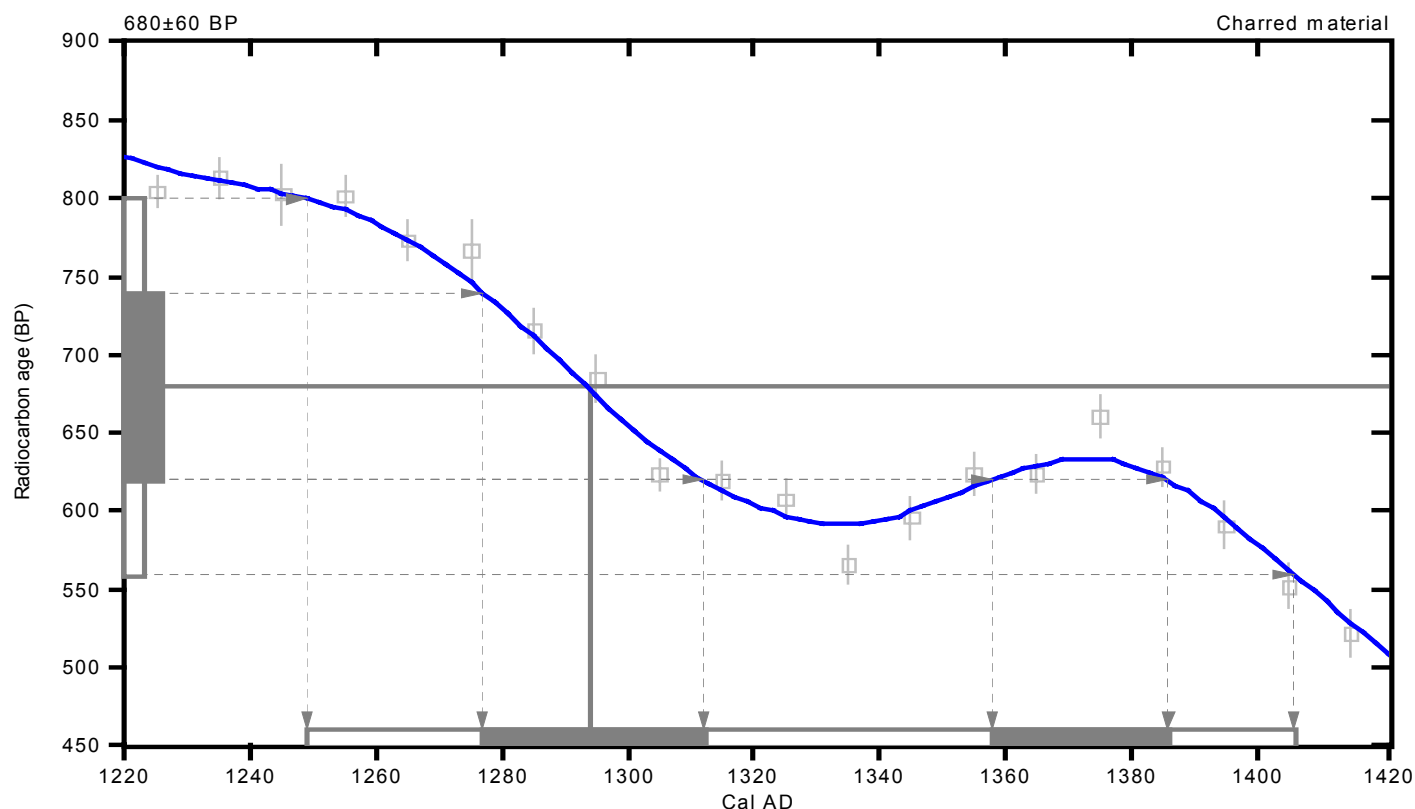
Conventional radiocarbon age: 680±60 BP

2 Sigma calibrated result: Cal AD 1250 to 1410 (Cal BP 700 to 540)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1290 (Cal BP 660)

1 Sigma calibrated results: Cal AD 1280 to 1310 (Cal BP 670 to 640) and
(68% probability) Cal AD 1360 to 1390 (Cal BP 590 to 560)



References:

Database used
Intcal98

Calibration Database
Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.8:lab. mult=1)

Laboratory number: Beta-196713

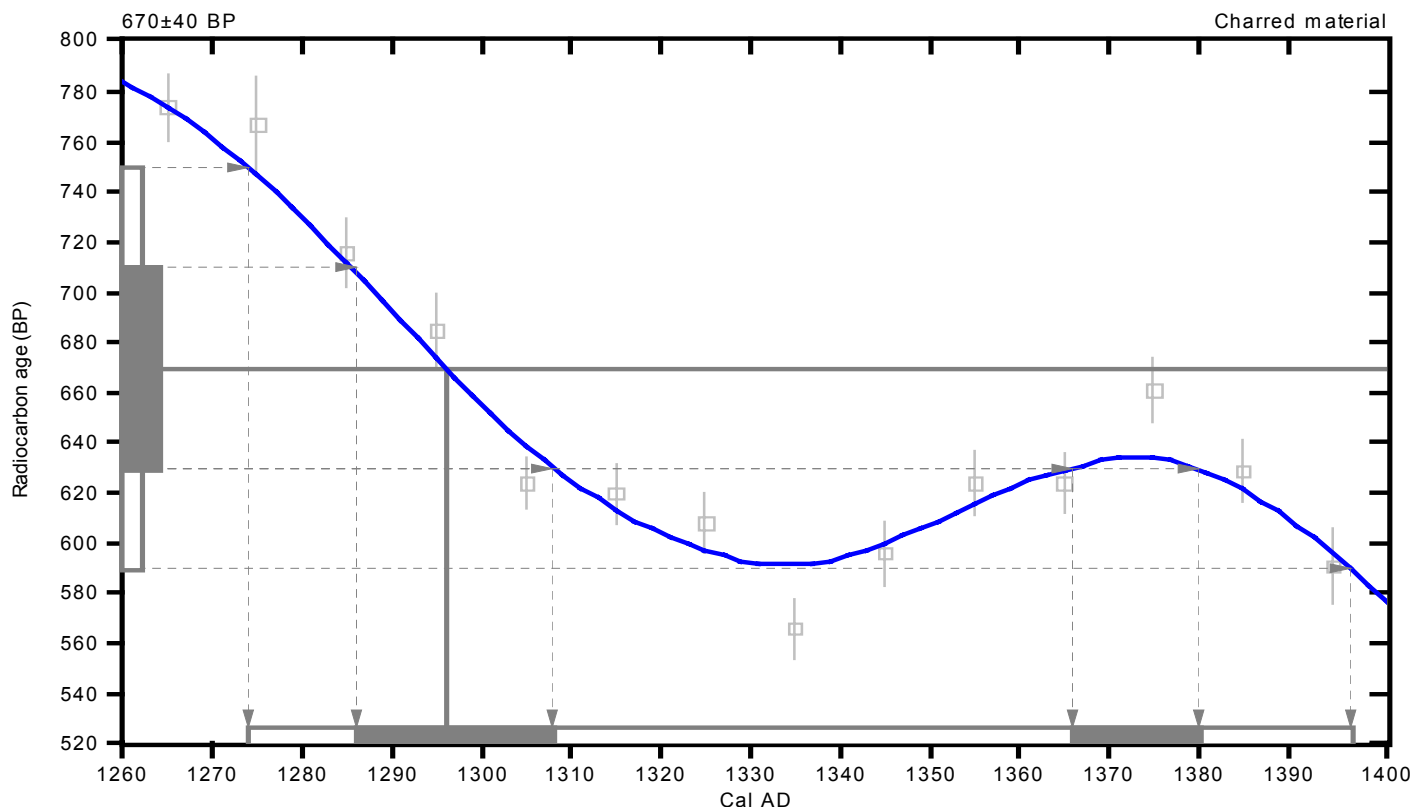
Conventional radiocarbon age: 670±40 BP

2 Sigma calibrated result: Cal AD 1270 to 1400 (Cal BP 680 to 550)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1300 (Cal BP 650)

1 Sigma calibrated results: Cal AD 1290 to 1310 (Cal BP 660 to 640) and
(68% probability) Cal AD 1370 to 1380 (Cal BP 580 to 570)



References:

Database used
Intcal98

Calibration Database
Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii
INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26:lab. mult=1)

Laboratory number: **Beta-196714**

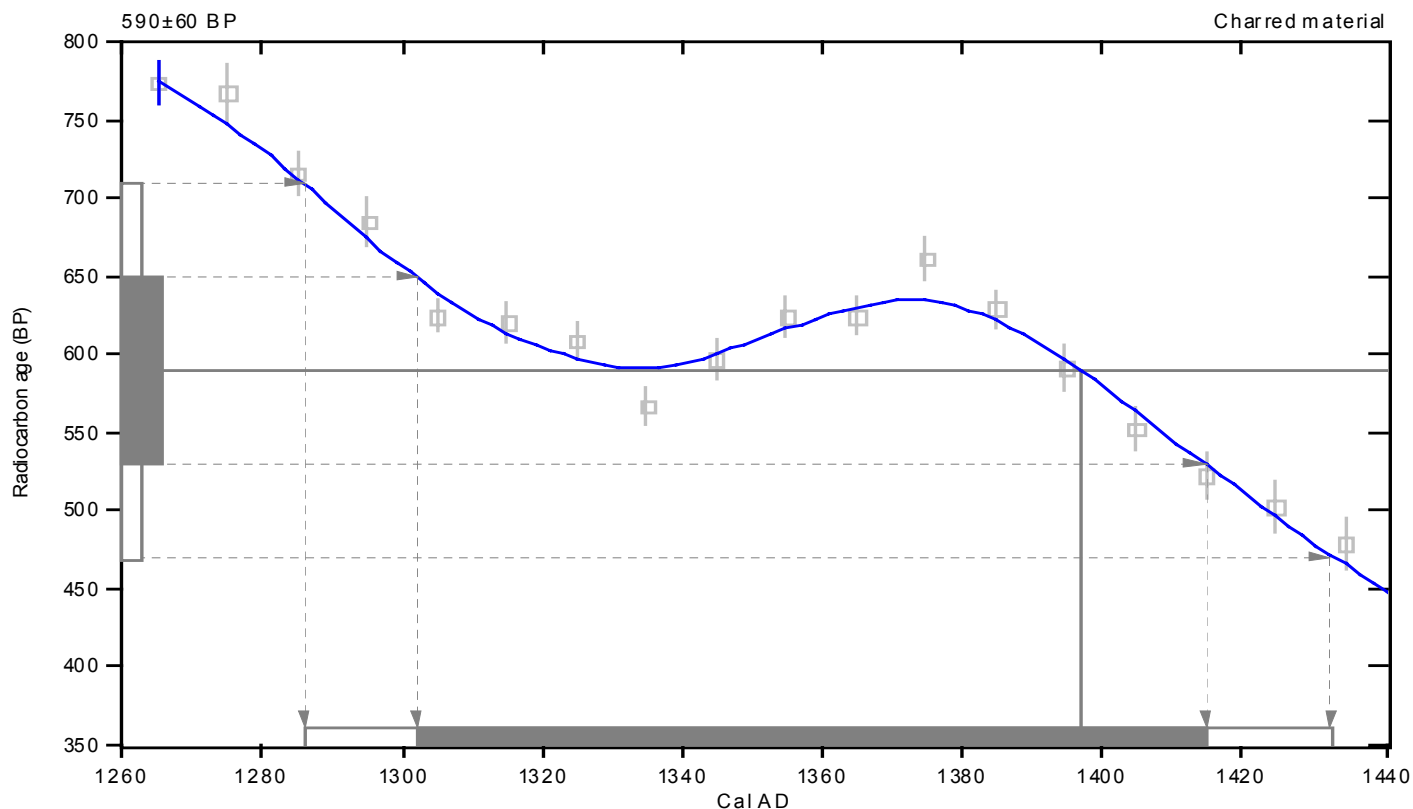
Conventional radiocarbon age: **590±60 BP**

2 Sigma calibrated result: **Cal AD 1290 to 1430 (Cal BP 660 to 520)**
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal AD 1400 (Cal BP 550)**

1 Sigma calibrated result: **Cal AD 1300 to 1420 (Cal BP 650 to 540)**
(68% probability)



References:

Database used

INTCAL 98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxi-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.5:lab. mult=1)

Laboratory number: Beta-196715

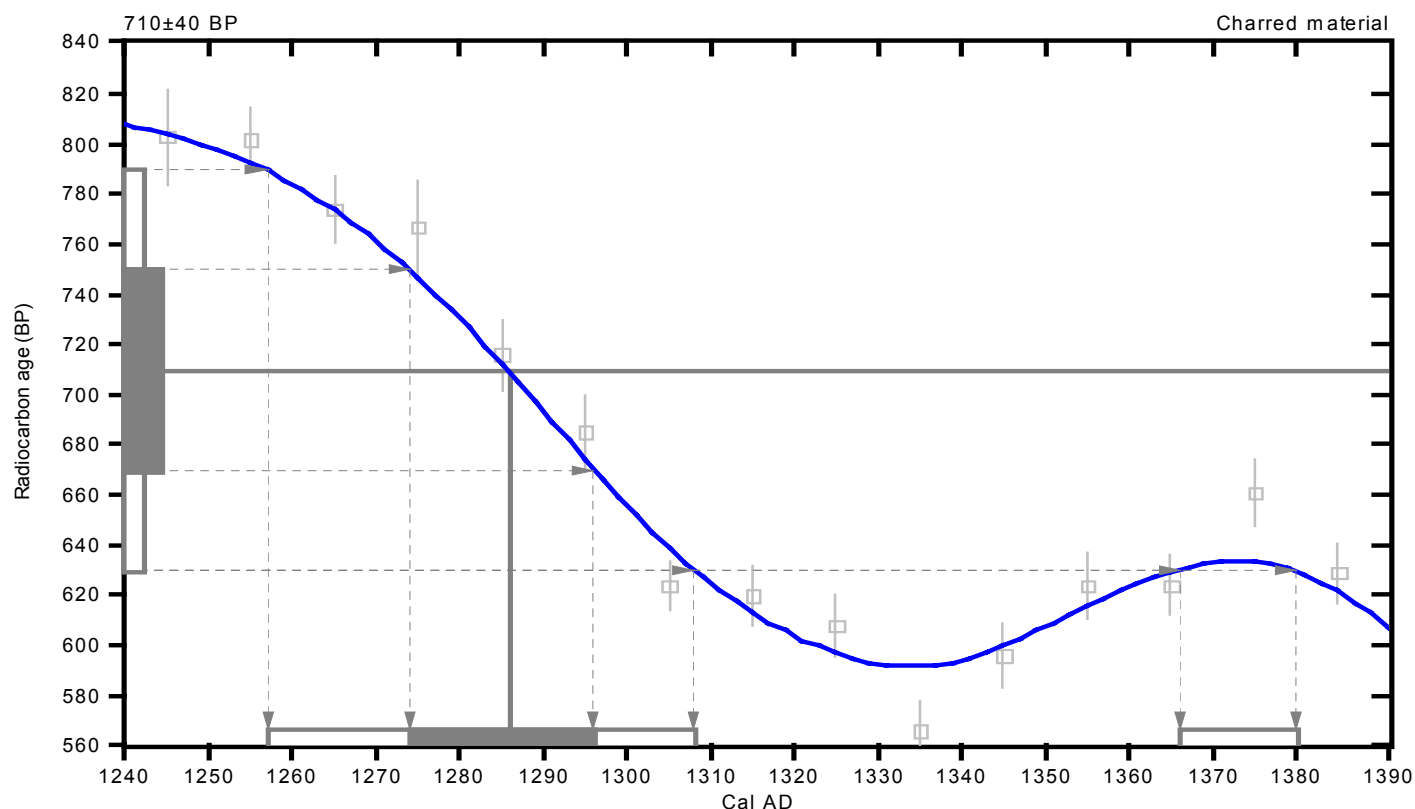
Conventional radiocarbon age: 710±40 BP

**2 Sigma calibrated results: Cal AD 1260 to 1310 (Cal BP 690 to 640) and
(95% probability) Cal AD 1370 to 1380 (Cal BP 580 to 570)**

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1290 (Cal BP 660)

1 Sigma calibrated result: Cal AD 1270 to 1300 (Cal BP 680 to 650)
(68% probability)



References:

Database used
Intcal98

Calibration Database
Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1 041-1 083

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-24.7:lab. mult=1)

Laboratory number: **Beta-196716**

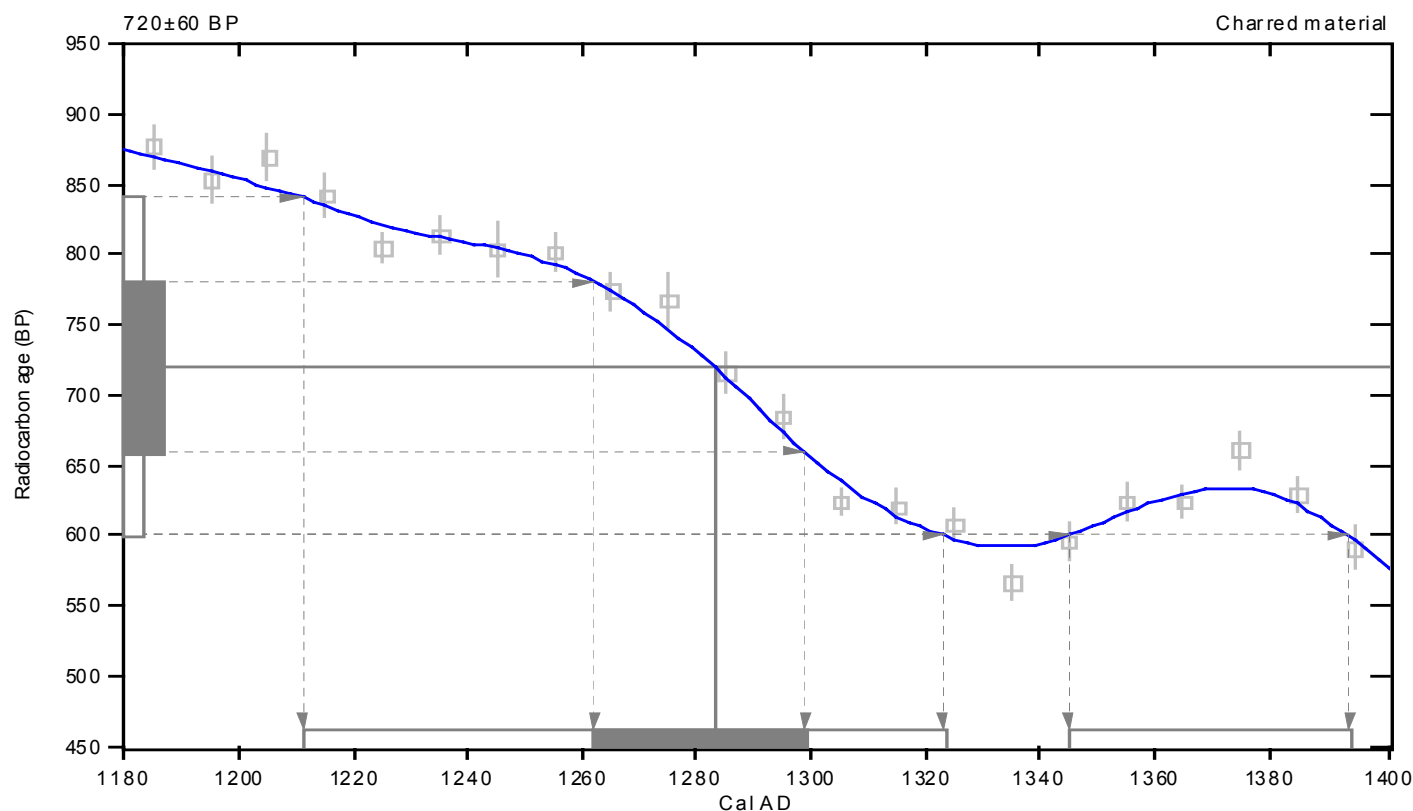
Conventional radiocarbon age: **720±60 BP**

2 Sigma calibrated results: **Cal AD 1210 to 1320 (Cal BP 740 to 630) and
(95% probability) Cal AD 1340 to 1390 (Cal BP 600 to 560)**

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal AD 1280 (Cal BP 670)**

1 Sigma calibrated result: **Cal AD 1260 to 1300 (Cal BP 690 to 650)**
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxi-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

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