

FROM: Darden Hood, Director (mailto:<mailto:dhood@radiocarbon.com>)
(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

July 31, 2006

Dr. David Maynard
Landsker Archaeology
Llys Aeron
Hebron
Whitland, Carmarthenshire
SA34 0XX, UK

RE: Radiocarbon Dating Results For Samples 31, 32, 51, 53, 58, 59, 311, 312

Dear Dave:

Enclosed are the radiocarbon dating results for eight samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses went 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 MASTERCARD card provided. A receipt is enclosed. 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. David Maynard

Report Date: 7/31/2006

Landsker Archaeology

Material Received: 6/26/2006

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 218210 SAMPLE : 31 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (bone collagen): collagen extraction: with alkali 2 SIGMA CALIBRATION : Cal BC 1500 to 1360 (Cal BP 3450 to 3310) AND Cal BC 1360 to 1320 (Cal BP 3300 to 3260)	3030 +/- 40 BP	-18.5 o/oo	3140 +/- 40 BP
Beta - 218211 SAMPLE : 32 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (bone collagen): collagen extraction: with alkali 2 SIGMA CALIBRATION : Cal BC 1300 to 1030 (Cal BP 3250 to 2980)	2820 +/- 40 BP	-16.7 o/oo	2960 +/- 40 BP
Beta - 218212 SAMPLE : 51 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (bone collagen): collagen extraction: with alkali 2 SIGMA CALIBRATION : Cal BC 3780 to 3640 (Cal BP 5730 to 5590)	4820 +/- 40 BP	-19.1 o/oo	4920 +/- 40 BP
Beta - 218213 SAMPLE : 53 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (bone collagen): collagen extraction: with alkali 2 SIGMA CALIBRATION : Cal BC 3700 to 3630 (Cal BP 5640 to 5580) AND Cal BC 3570 to 3540 (Cal BP 5520 to 5480)	4750 +/- 40 BP	-18.6 o/oo	4850 +/- 40 BP
Beta - 218214 SAMPLE : 58 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (bone collagen): collagen extraction: with alkali 2 SIGMA CALIBRATION : Cal BC 3960 to 3720 (Cal BP 5910 to 5670)	4920 +/- 40 BP	-16.9 o/oo	5050 +/- 40 BP

Sample Data	Measured Radiocarbon Age	$^{13}\text{C}/^{12}\text{C}$ Ratio	Conventional Radiocarbon Age(*)
Beta - 218215 SAMPLE : 59 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (bone collagen); collagen extraction: with alkali 2 SIGMA CALIBRATION : Cal BC 1250 to 990 (Cal BP 3200 to 2940)	2780 +/- 40 BP	-17.2 o/oo	2910 +/- 40 BP
Beta - 218216 SAMPLE : 311 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 4240 to 3960 (Cal BP 6190 to 5910)	5260 +/- 60 BP	-25.4 o/oo	5250 +/- 60 BP
Beta - 218217 SAMPLE : 312 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal BC 3960 to 3670 (Cal BP 5920 to 5620)	5030 +/- 60 BP	-25.0 o/oo	5030 +/- 60 BP

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-18.5:lab. mult=1)

Laboratory number: **Beta-218210**

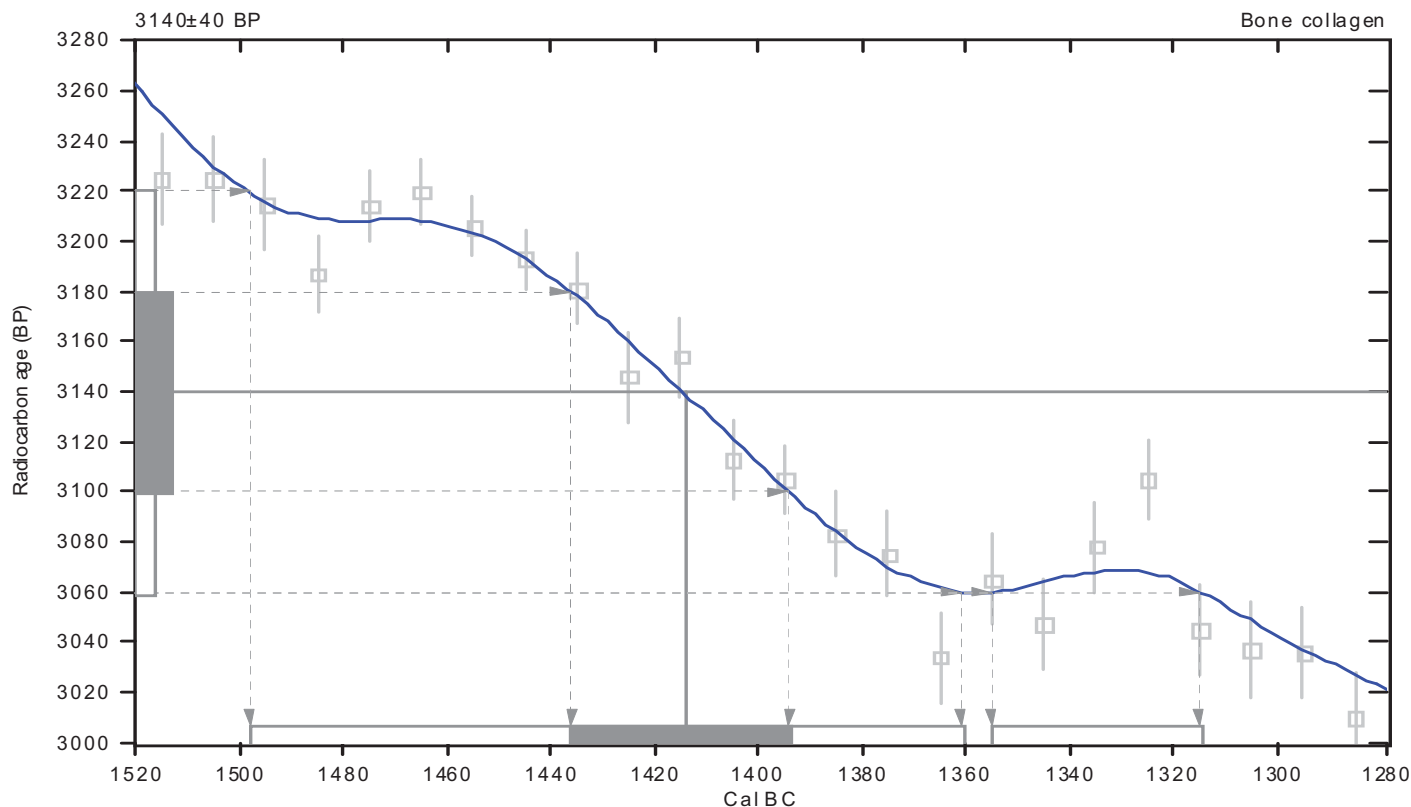
Conventional radiocarbon age: **3140±40 BP**

2 Sigma calibrated results: **Cal BC 1500 to 1360 (Cal BP 3450 to 3310) and
(95% probability) Cal BC 1360 to 1320 (Cal BP 3300 to 3260)**

Intercept data

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

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



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

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

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

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=-16.7:lab. mult=1)

Laboratory number: **Beta-218211**

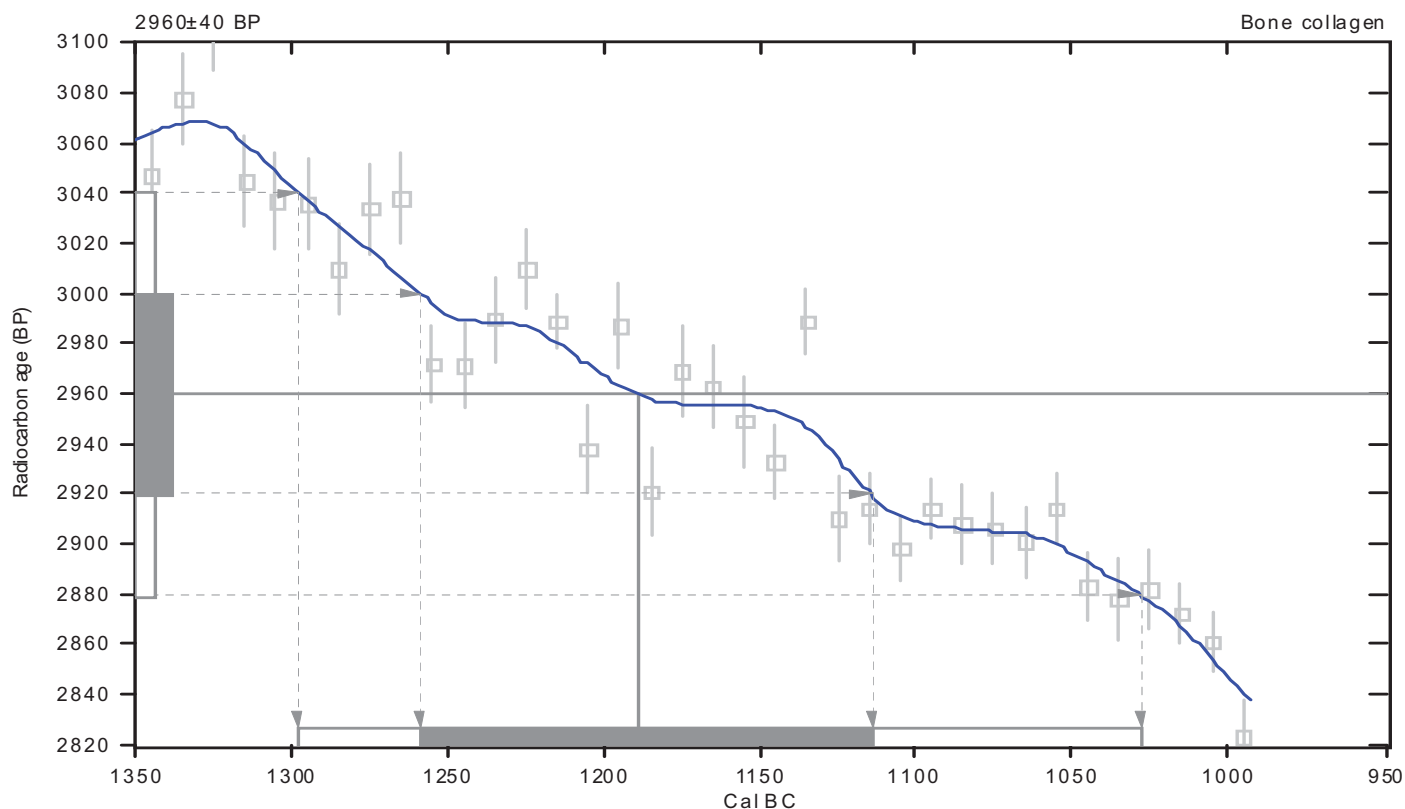
Conventional radiocarbon age: **2960±40 BP**

2 Sigma calibrated result: Cal BC 1300 to 1030 (Cal BP 3250 to 2980)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 1190 (Cal BP 3140)

1 Sigma calibrated result: Cal BC 1260 to 1110 (Cal BP 3210 to 3060)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

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

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

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=-19.1:lab. mult=1)

Laboratory number: **Beta-218212**

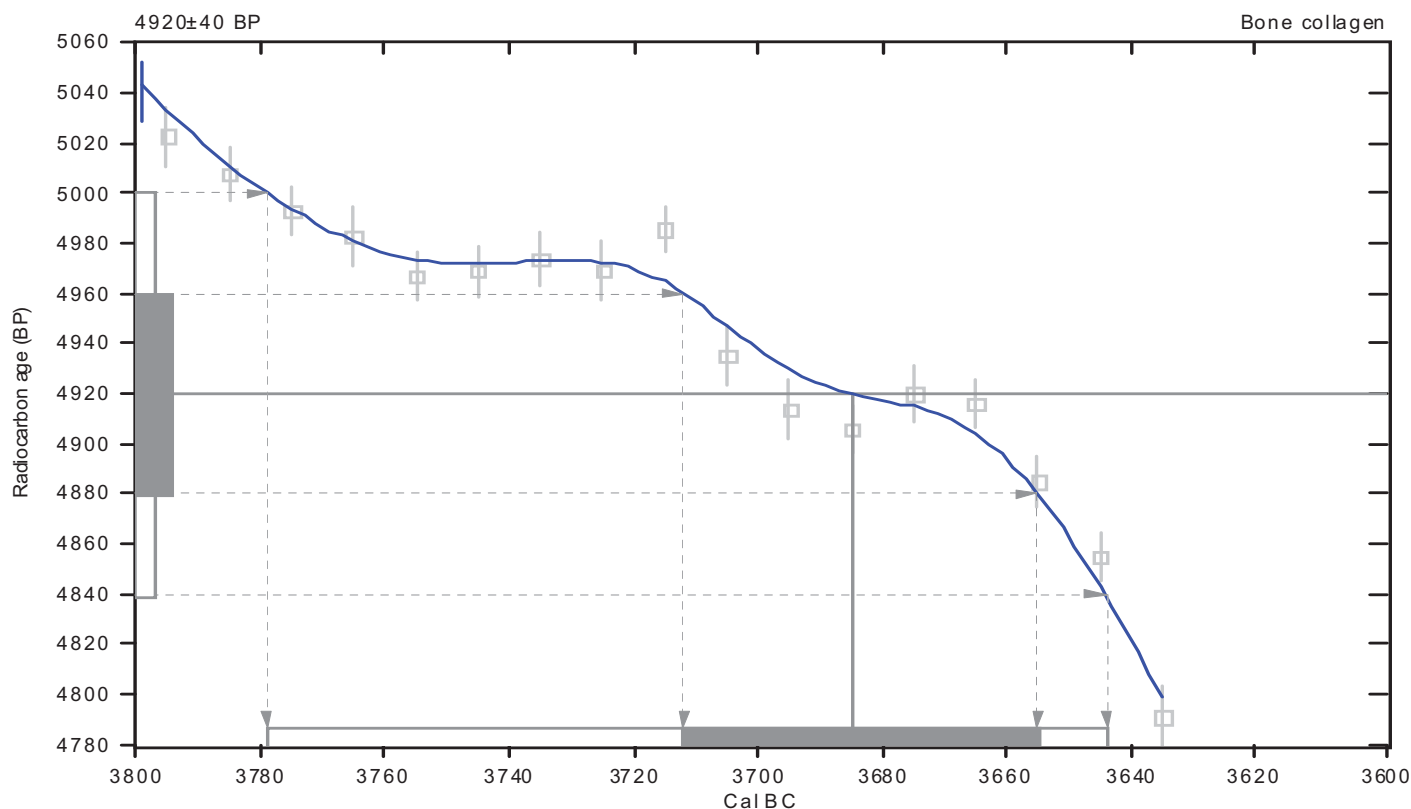
Conventional radiocarbon age: **4920±40 BP**

2 Sigma calibrated result: Cal BC 3780 to 3640 (Cal BP 5730 to 5590)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 3680 (Cal BP 5640)

1 Sigma calibrated result: Cal BC 3710 to 3660 (Cal BP 5660 to 5600)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

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

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

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=-18.6:lab. mult=1)

Laboratory number: **Beta-218213**

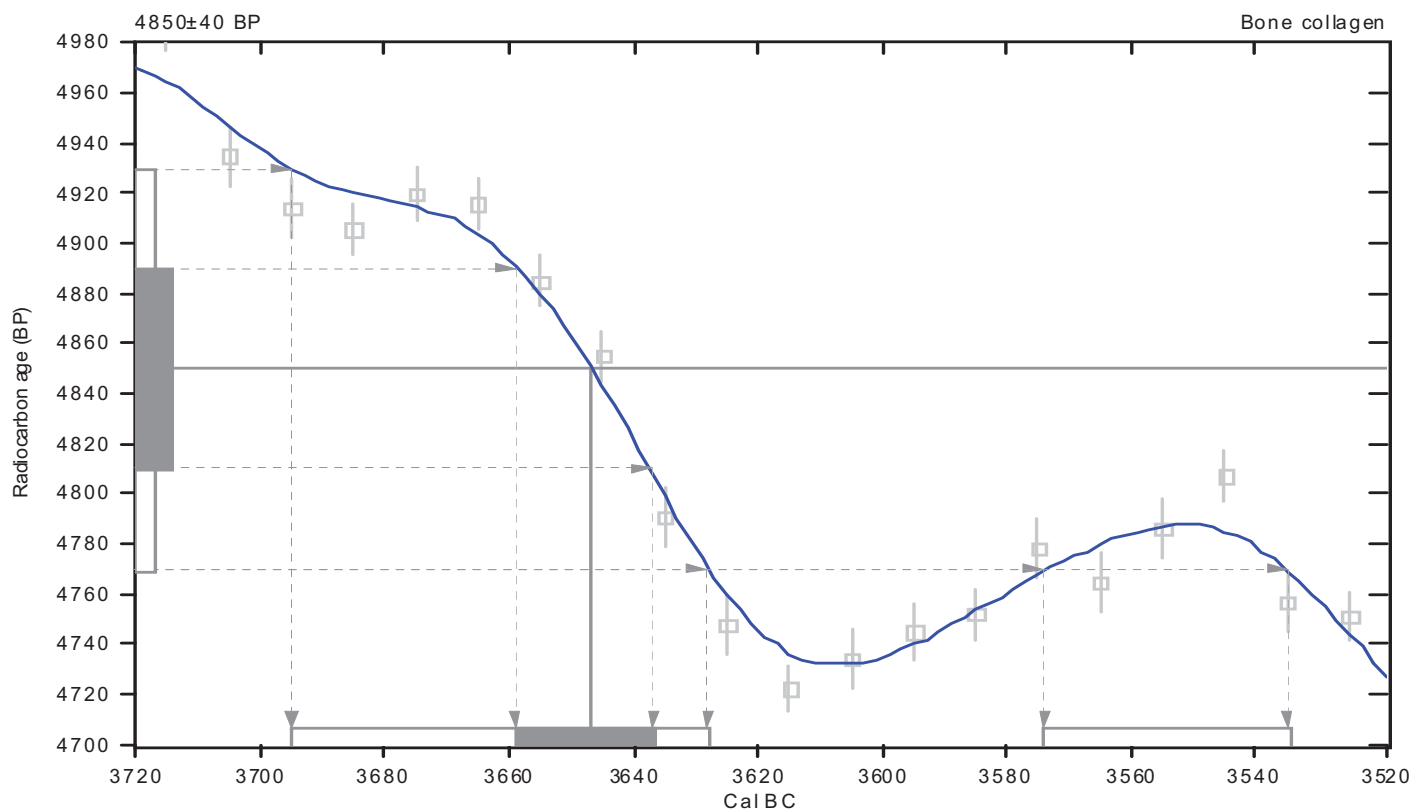
Conventional radiocarbon age: **4850±40 BP**

2 Sigma calibrated results: **Cal BC 3700 to 3630 (Cal BP 5640 to 5580) and
(95% probability) Cal BC 3570 to 3540 (Cal BP 5520 to 5480)**

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal BC 3650 (Cal BP 5600)**

1 Sigma calibrated result: **Cal BC 3660 to 3640 (Cal BP 5610 to 5590)
(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

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=-16.9:lab. mult=1)

Laboratory number: **Beta-218214**

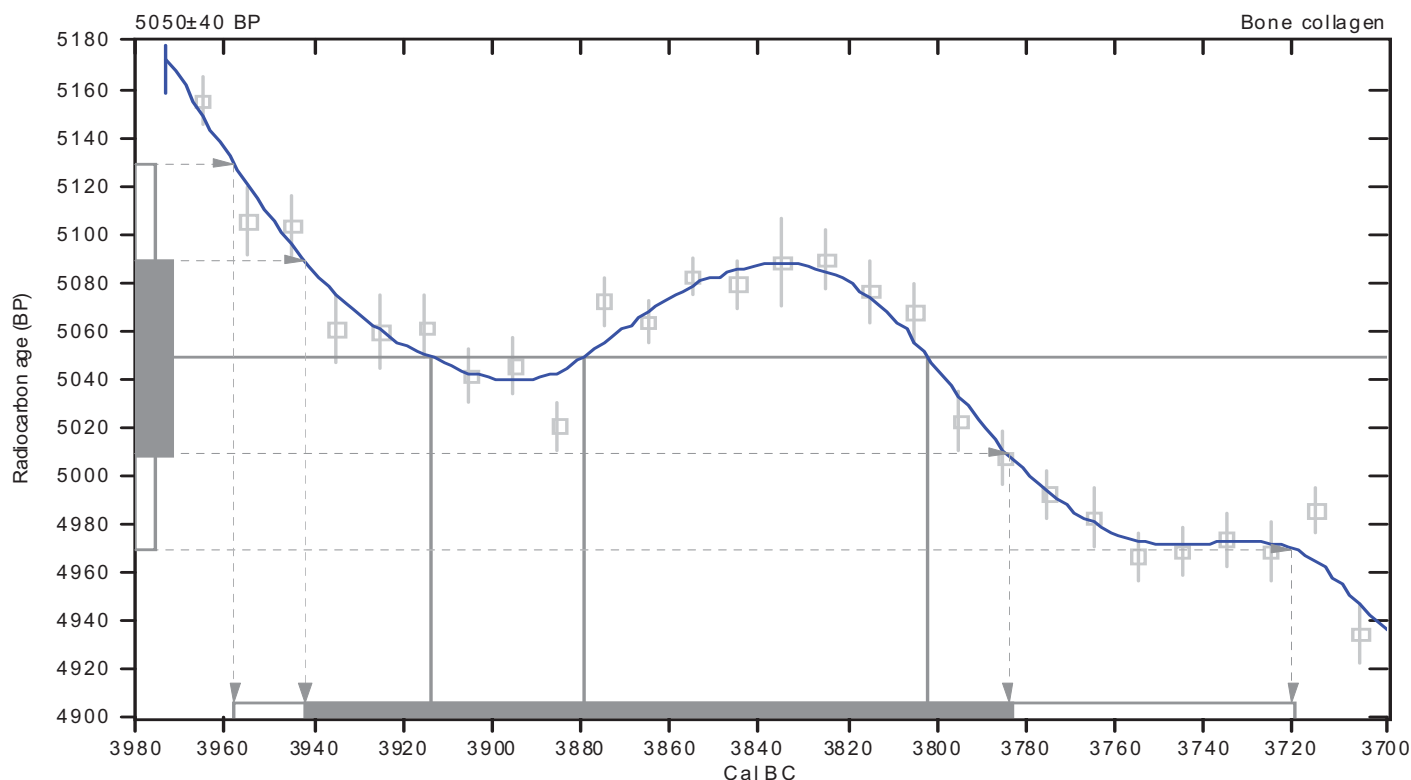
Conventional radiocarbon age: **5050±40 BP**

2 Sigma calibrated result: Cal BC 3960 to 3720 (Cal BP 5910 to 5670)
(95% probability)

Intercept data

Intercepts of radiocarbon age
with calibration curve: Cal BC 3910 (Cal BP 5860) and
Cal BC 3880 (Cal BP 5830) and
Cal BC 3800 (Cal BP 5750)

1 Sigma calibrated result: Cal BC 3940 to 3780 (Cal BP 5890 to 5730)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

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

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

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=-17.2:lab. mult=1)

Laboratory number: **Beta-218215**

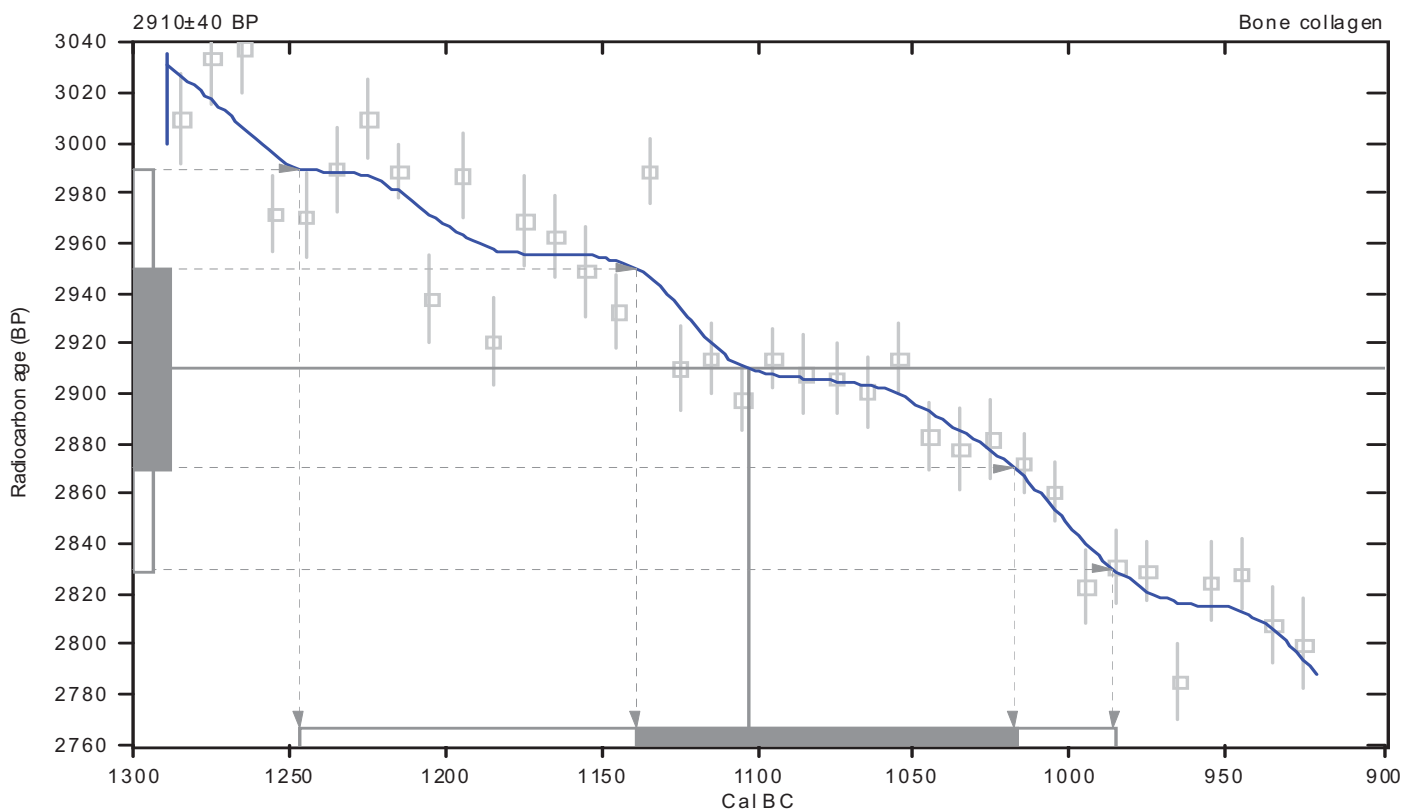
Conventional radiocarbon age: **2910±40 BP**

2 Sigma calibrated result: Cal BC 1250 to 990 (Cal BP 3200 to 2940)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 1100 (Cal BP 3050)

1 Sigma calibrated result: Cal BC 1140 to 1020 (Cal BP 3090 to 2970)
(68% probability)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

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

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=-25.4:lab. mult=1)

Laboratory number: **Beta-218216**

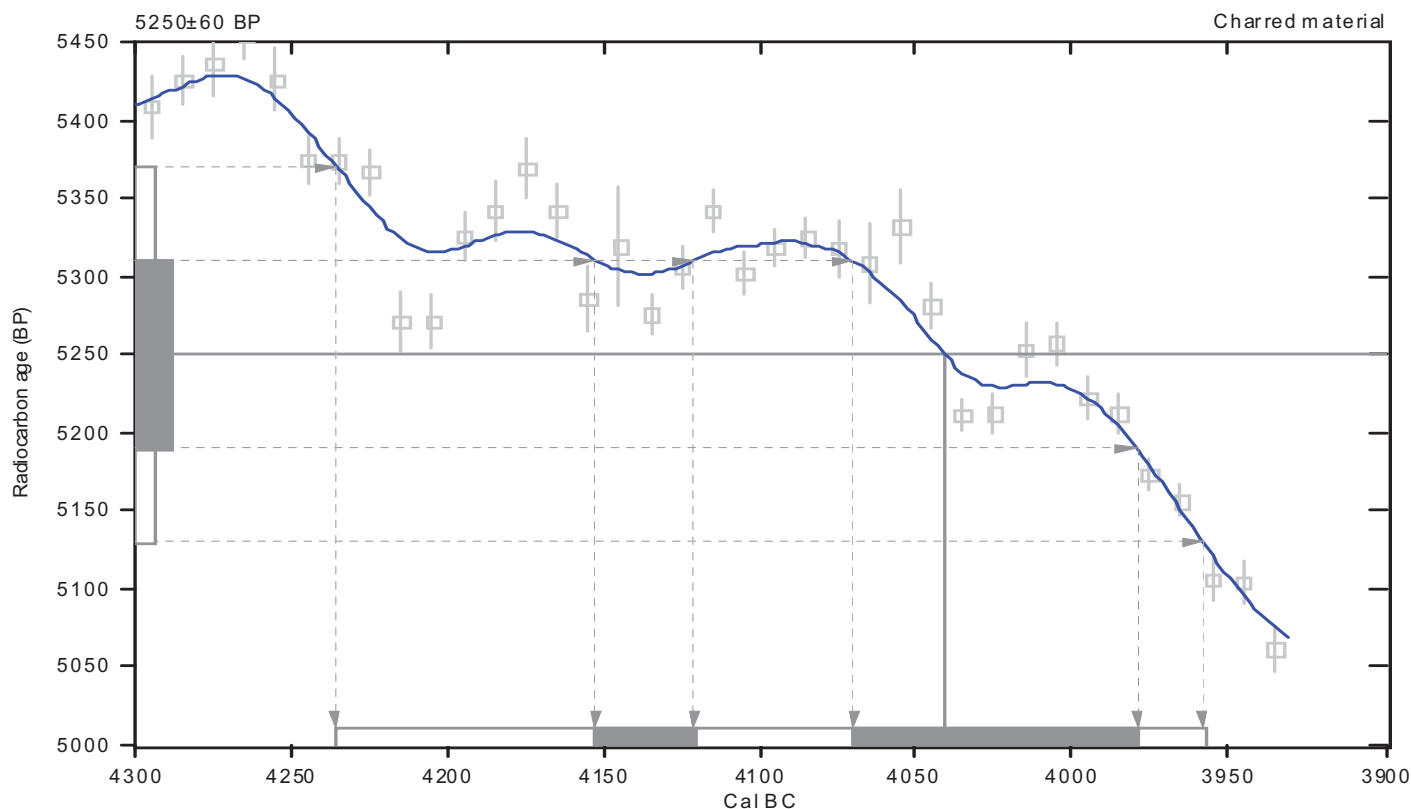
Conventional radiocarbon age: **5250±60 BP**

2 Sigma calibrated result: Cal BC 4240 to 3960 (Cal BP 6190 to 5910)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal BC 4040 (Cal BP 5990)**

1 Sigma calibrated results: Cal BC 4150 to 4120 (Cal BP 6100 to 6070) and
(68% probability) Cal BC 4070 to 3980 (Cal BP 6020 to 5930)



References:

Database used

INTCAL98

Calibration Database

Editorial Comment

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

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

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=-25:lab. mult=1)

Laboratory number: **Beta-218217**

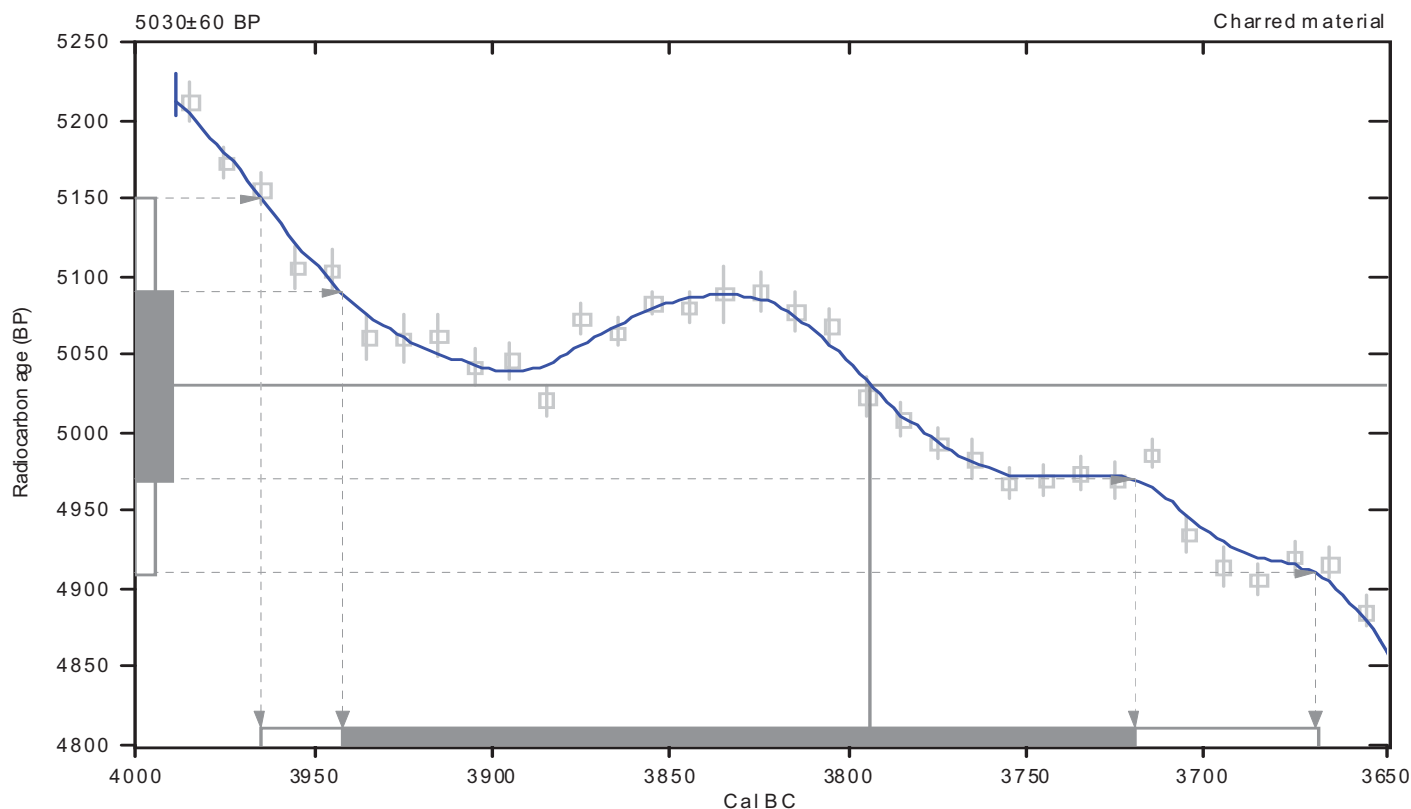
Conventional radiocarbon age: **5030±60 BP**

2 Sigma calibrated result: Cal BC 3960 to 3670 (Cal BP 5920 to 5620)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 3790 (Cal BP 5740)

1 Sigma calibrated result: Cal BC 3940 to 3720 (Cal BP 5890 to 5670)
(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

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