Date: Fri, 12 Dec 1997 16:57:20 +0000
From: beta@analytic.win.net (Beta Analytic Inc.)
To: nicholson@BrandonU.CA
Reply-to: beta@analytic.win.net (Beta Analytic Inc.)
MIME-version: 1.0

Sending E-mail beta@analytic.win.net
Receiving E-mail nicholson@brandonu.ca

THIS IS A COPY OF THE REPORT MAILED TO YOU TODAY. CALENDAR CALIBRATIONS ARE NOT INCLUDED.

Dear Dr. Nicholson:

Please find enclosed the radiocarbon dating results for one wood and three bone samples which were submitted on November 4. The wood sample was large enough for radiometric counting whereas the three bones were very small and required direct atomic counting using an AMS. The method used for each sample is designated on the report sheet along with the results. All analytical steps went normally. The quoted errors represent 1 sigma statistics. Since these errors cannot include uncertainties outside of those which can be quantified during measurement, it is best to consider them as minimum quotes.

The result for Beta-111144 is reported as a percentage of the reference standard (100% being 0 BP years old). This is because the analyzed material contained a C14 content which was greater than the modern standard. It indicates the carbon analyzed included atmospheric "bomb carbon" generated within the last 40 years.

Literature discussing the generalities of analysis and calendar calibration are enclosed. The "Analytical Procedures and Final Report" discussion should answer most questions about the report and results. If you have any specific questions, please do not hesitate to contact us.

Our invoice is enclosed. Please, immediately give it to the appropriate office for prompt payment or send VISA charge authorization. Thank you.

Darden Hood
Co-director

DATING RESULTS:

Dr. B. A. Nicholson November 4, 1997

Brandon University December 12, 1997

ƒƒ

Sample Data	Measured C14 Age	C13/C12 Ratio	Conventional C14 Age (*)

ƒƒ

Beta-111141 250 +/- 40 BP -25.2 o/oo 250 +/- 40 BP

SAMPLE #: FS-97/4
ANALYSIS: Standard-AMS
MATERIAL/PRETREATMENT:(bone collagen): collagen extraction with alkali

---

Beta-111142 6760 +/- 70 BP -28.6 o/oo 6700 +/- 70 BP

SAMPLE #: FSH 97/4
ANALYSIS: radiometric-standard
MATERIAL/PRETREATMENT:(wood): acid/alkali/acid

Beta-111143 2470 +/- 40 BP -23.0 o/oo 2500 +/- 40 BP

SAMPLE #: FSH 97/5
ANALYSIS: Standard-AMS
MATERIAL/PRETREATMENT:(bone collagen): collagen extraction with alkali

---

Beta-111144 104.9 +/- 0.6 % -25.5 o/oo 105.0 +/- 0.6 %

modern

modern
SAMPLE #: HB #1
ANALYSIS: Standard-AMS
MATERIAL/PRETREATMENT:(bone collagen): collagen extraction with alkali
COMMENT: reported result indicates an age of post 0 BP and has been reported as a % of the modern reference standard

NOTE: It is important to read the calendar calibration information
and to use the calendar calibrated results (reported separately) when
interpreting these results in AD/BC terms.

Dates are reported as RCYBP (radiocarbon years before present, "present"= 1950A.D.). By international convention, the modern reference standard was 95% of the C14 content of the National Bureau
of Standards' Oxalic Acid & calculated using the Libby C14 half life (5568 years). Quoted errors represent 1 standard deviation statistics (68% probability) & are based on combined measurements of
the sample, background, and modern reference standards. Measured C13/C12
ratios were calculated relative to the PDB-1 international standard and the
RCYBP ages were normalized to -25 per mil. If the ratio and age are

BETA ANALYTIC INC.

DR. M.A. TAMERS and MR. D.G. HOOD

UNIVERSITY BRANCH
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305/667-5167 FAX: 305/663-0964
E-MAIL: beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

FOR: Dr. B. A. Nicholson
Brandon University

DATE RECEIVED: November 4, 1997
DATE REPORTED: December 12, 1997

Sample Data	Measured C14 Age	C13/C12 Ratio	Conventional C14 Age (*)
Beta-111141	250 +/- 40 BP	-25.2 o/oo	250 +/- 40 BP

SAMPLE #: FS-97/4
ANALYSIS: Standard-AMS
MATERIAL/PRETREATMENT:(bone collagen): collagen extraction with alkali

Beta-111142	6760 +/- 70 BP	-28.6 o/oo	6700 +/- 70 BP

SAMPLE #: FSH 97/4
ANALYSIS: radiometric-standard
MATERIAL/PRETREATMENT:(wood): acid/alkali/acid

Beta-111143	2470 +/- 40 BP	-23.0 o/oo	2500 +/- 40 BP

SAMPLE #: FSH 97/5
ANALYSIS: Standard-AMS
MATERIAL/PRETREATMENT:(bone collagen): collagen extraction with alkali

Beta-111144	104.9 +/- 0.6 % modern	-25.5 o/oo	105.0 +/- 0.6 % modern

SAMPLE #: HB #1
ANALYSIS: Standard-AMS
MATERIAL/PRETREATMENT:(bone collagen): collagen extraction with alkali
COMMENT: reported result indicates an age of post 0 BP and has been reported as a % of the modern reference standard

NOTE: It is important to read the calendar calibration information and to use the calendar calibrated results (reported separately) when interpreting these results in AD/BC terms.

Dates are reported as RCYBP (radiocarbon years before present, "present" = 1950A.D.). By International convention, the modern reference standard was 95% of the C14 content of the National Bureau of Standards' Oxalic Acid & calculated using the Libby C14 half life (5568 years). Quoted errors represent 1 standard deviation statistics (68% probability) & are based on combined measurements of the sample, background, and modern reference standards.

Measured C13/C12 ratios were calculated relative to the PDB-1 international standard and the RCYBP ages were normalized to -25 per mil. If the ratio and age are accompanied by an (*), then the C13/C12 value was estimated, based on values typical of the material type. The quoted results are NOT calibrated to calendar years. Calibration to calendar years should be calculated using the Conventional C14 age.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

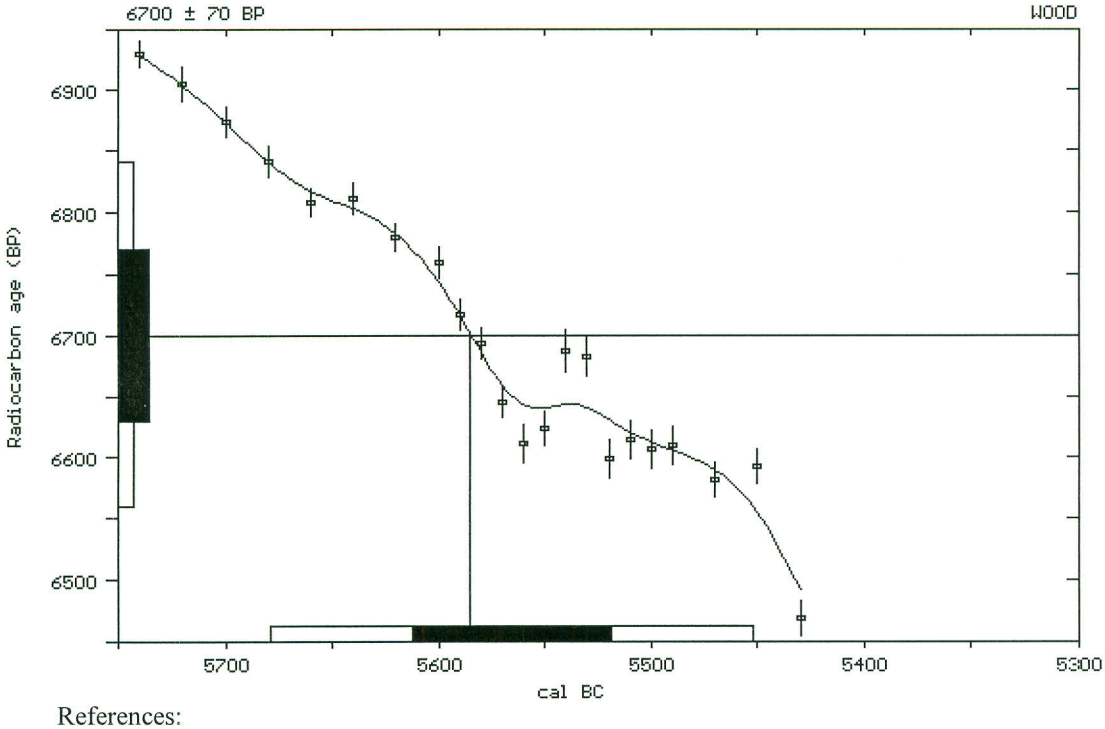
Flintstone

(Variables:C13/C12=-28.6:lab mult.=1)

Laboratory Number:	Beta-111142
Conventional radiocarbon age:	**6700 ± 70 BP**
Calibrated results: (2 sigma, 95% probability)	**cal BC 5680 to 5450**

Intercept data:

Intercept of radiocarbon age with calibration curve:	cal BC 5585
1 sigma calibrated results: (68% probability)	cal BC 5610 to 5520



References:

Pretoria Calibration Curve for Short Lived Samples
Vogel, J. C., Fuls, A., Visser, E. and Becker, B., 1993, Radiocarbon 35(1), p73-86

A Simplified Approach to Calibrating C14 Dates
Talma, A. S. and Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Calibration - 1993
Stuiver, M., Long, A., Kra, R. S. and Devine, J. M., 1993, Radiocarbon 35(1)

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=-23:lab mult.=1)

Date of FSH Bison Skull

Laboratory Number: Beta-111143

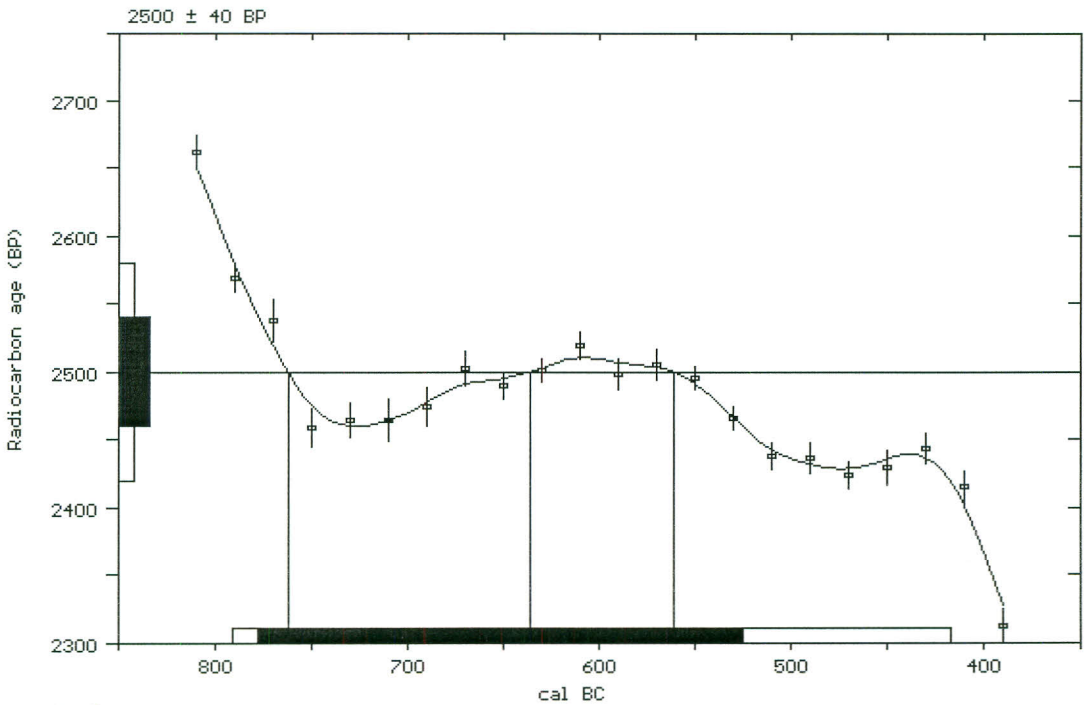
Conventional radiocarbon age: **2500 ± 40 BP**

Calibrated results: (2 sigma, 95% probability) **cal BC 790 to 415**

Intercept data:

Intercepts of radiocarbon age with calibration curve: cal BC 760 and cal BC 635 and cal BC 560

1 sigma calibrated results: (68% probability) cal BC 780 to 525



References:

Pretoria Calibration Curve for Short Lived Samples

Vogel, J. C., Fuls, A., Visser, E. and Becker, B., 1993, Radiocarbon 35(1), p73-86

A Simplified Approach to Calibrating C14 Dates

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

Calibration - 1993

Stuiver, M., Long, A., Kra, R. S. and Devine, J. M., 1993, Radiocarbon 35(1)

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