
APPENDIX A

BETA Analytic, Inc.



*Consistent Accuracy . . .
... Delivered On-time*

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Darden Hood
President

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January 15, 2010

Ms. Virginia Mahacek
Valley & Mountain Consulting
1034 Emerald Bay Road
#434
South Lake Tahoe, CA 96150

RE: Radiocarbon Dating Results For Samples UTR5 D4, UTR5 AJ728

Dear Ms. Mahacek:

Enclosed are the radiocarbon dating results for two samples recently sent to us. They each provided plenty of carbon for accurate measurements and all the analyses proceeded normally. The report sheet contains the dating result, method used, material type, applied pretreatment and two-sigma calendar calibration result (where applicable) for each sample.

This report has been both mailed and sent electronically, along with a separate publication quality calendar calibration page. This is useful for incorporating directly into your reports. It is also digitally available in Windows metafile (.wmf) format upon request. Calibrations are calculated using the newest (2004) calibration database. References are quoted on the bottom of each calibration page. Multiple probability ranges may appear in some cases, due to short-term variations in the atmospheric ¹⁴C contents at certain time periods. Examining the calibration graphs will help you understand this phenomenon. Calibrations may not be included with all analyses. The upper limit is about 20,000 years, the lower limit is about 250 years and some material types are not suitable for calibration (e.g. water).

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 enclosed with the mailed copy of this report. They should answer most of questions you may have. If they do not, or if you have specific questions about the analyses, please do not hesitate to contact us. Someone is always available to answer your questions.

The cost of the analysis was charged to the VISA card provided. 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



REPORT OF RADIOCARBON DATING ANALYSES

Ms. Virginia Mahacek

Report Date: 1/15/2010

Valley & Mountain Consulting

Material Received: 12/18/2009

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 270943 SAMPLE : UTR5 D4 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1160 to 1280 (Cal BP 790 to 670)	790 +/- 40 BP	-23.9 o/oo	810 +/- 40 BP
Beta - 270944 SAMPLE : UTR5 AJ728 ANALYSIS : Radiometric-Standard delivery (with extended counting) MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1170 to 1280 (Cal BP 780 to 670)	800 +/- 40 BP	-25.8 o/oo	790 +/- 40 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=-23.9:lab. mult=1)

Laboratory number: **Beta-270943**

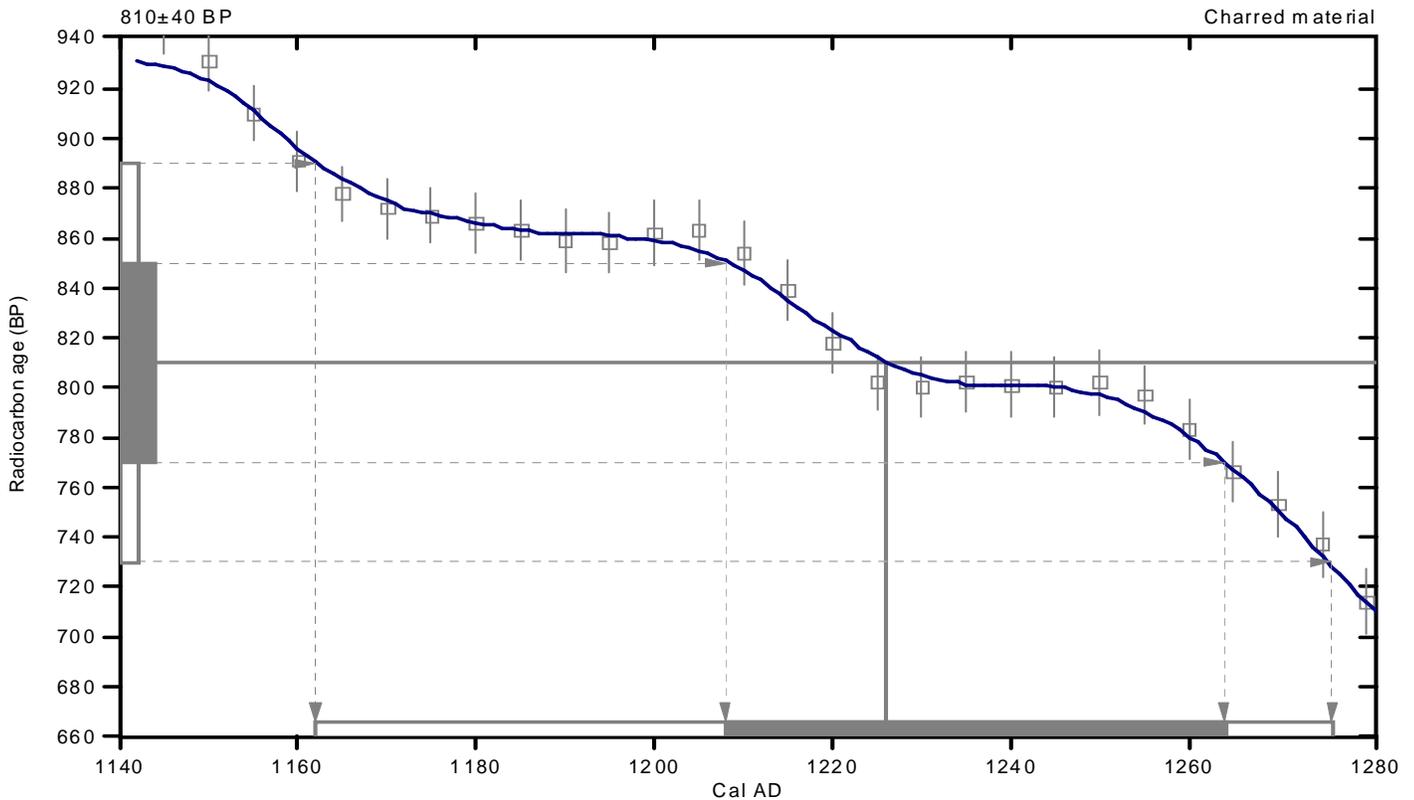
Conventional radiocarbon age: **810±40 BP**

2 Sigma calibrated result: Cal AD 1160 to 1280 (Cal BP 790 to 670)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1230 (Cal BP 720)

1 Sigma calibrated result: Cal AD 1210 to 1260 (Cal BP 740 to 690)
(68% probability)



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=-25.8:lab. mult=1)

Laboratory number: **Beta-270944**

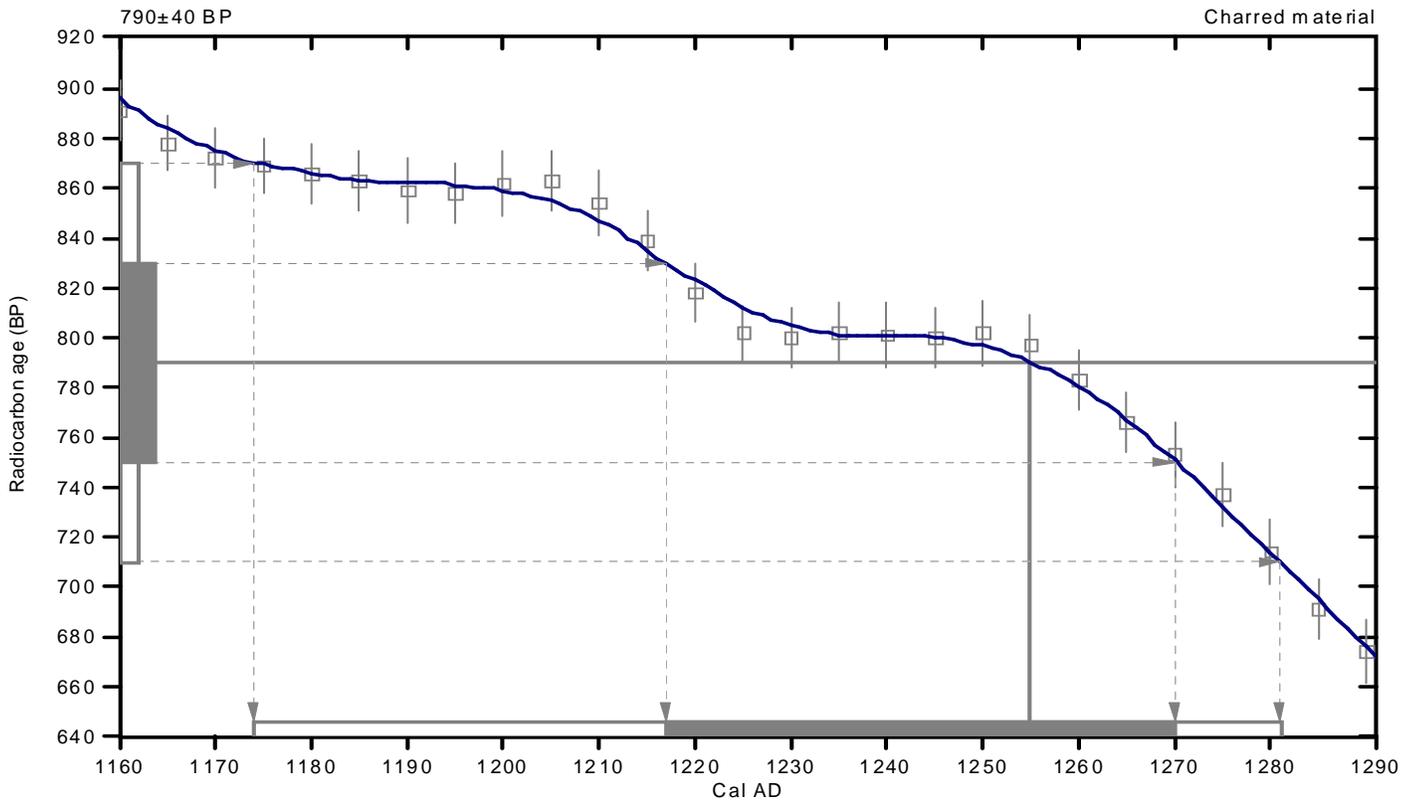
Conventional radiocarbon age: **790±40 BP**

2 Sigma calibrated result: Cal AD 1170 to 1280 (Cal BP 780 to 670)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1260 (Cal BP 700)

1 Sigma calibrated result: Cal AD 1220 to 1270 (Cal BP 730 to 680)
(68% probability)



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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