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January 17, 2012

Dr. Loukas Barton
U.S. National Park Service
240 West 5th Avenue
Ste. 236
Anchorage, AK 99501
USA

RE: Radiocarbon Dating Result For Sample CS-004

Dear Dr. Barton:

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.

Our invoice has been sent separately. Thank you for your prior efforts in arranging payment. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Digital signature on file

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
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REPORT OF RADIOCARBON DATING ANALYSES

Dr. Loukas Barton

Report Date: 1/17/2012

U.S. National Park Service

Material Received: 12/19/2011

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 312529	1490 +/- 40 BP	-25.2 o/oo	1490 +/- 40 BP

SAMPLE : CS-004
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 440 to 450 (Cal BP 1510 to 1500) AND Cal AD 460 to 480 (Cal BP 1490 to 1470)
Cal AD 530 to 650 (Cal BP 1420 to 1300)

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=-25.2:lab. mult=1)

Laboratory number: **Beta-312529**

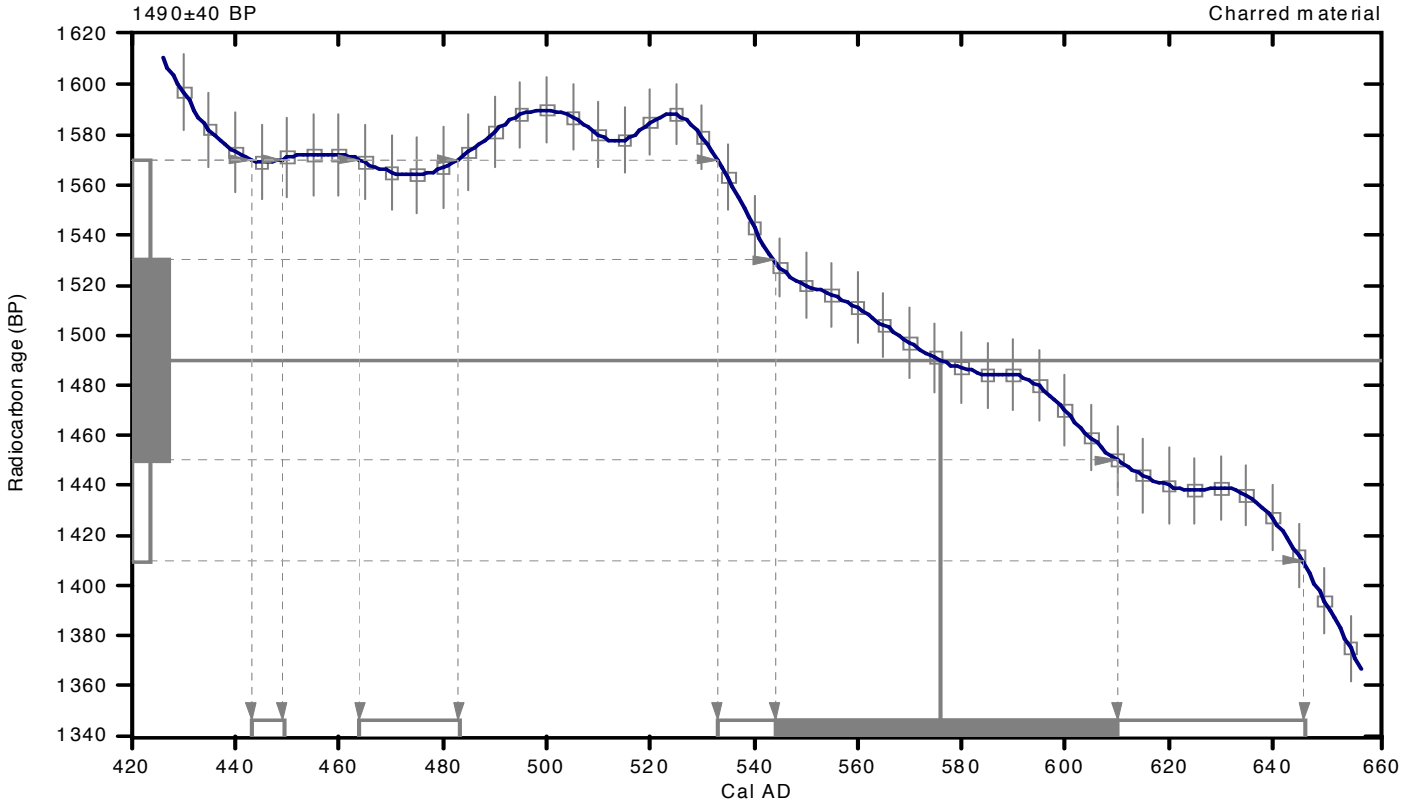
Conventional radiocarbon age: **1490±40 BP**

2 Sigma calibrated results: (95% probability) **Cal AD 440 to 450 (Cal BP 1510 to 1500) and Cal AD 460 to 480 (Cal BP 1490 to 1470) and Cal AD 530 to 650 (Cal BP 1420 to 1300)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 580 (Cal BP 1370)

1 Sigma calibrated result: (68% probability) Cal AD 540 to 610 (Cal BP 1410 to 1340)



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

Beta Analytic Radiocarbon Dating Laboratory

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