APPENDIX 6

Results of Radiocarbon Analysis of three charcoal samples from 49-SIT-963

by

Beta Analytic, Inc.
Miami, Florida

BETA

Consistent Accuracy . . .
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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

September 10, 2012

Mr. James J. Kinsman
Tongass National Forest
Sitka Ranger District
204 Siginaka Way
Sitka, AK 99835
USA

RE: Radiocarbon Dating Results For Samples SIT-62-12-1 TP-7, SIT-62-12-2 TP-7

Dear Mr. Kinsman:

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.

You will notice that Beta-329470 (SIT-62-12-1 TP-7) is reported with the units “pMC” rather than BP. “pMC” stands for "percent modern carbon". Results are reported in the pMC format when the analyzed material had more ^{14}C than did the modern (AD 1950) reference standard. The source of this "extra" ^{14}C in the atmosphere is thermo-nuclear bomb testing which on-set in the 1950s. Its presence generally indicates the material analyzed was part of a system that was respiring carbon after the on-set of the testing (AD 1950s). On occasion, the two sigma lower limit will extend into the time region before this "bomb-carbon" onset (i.e. less than 100 pMC). In those cases, there is some probability for 18th, 19th, or 20th century antiquity.

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

BETA ANALYTIC INC.
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REPORT OF RADIOCARBON DATING ANALYSES

Mr. James J. Kinsman

Report Date: 9/10/2012

Tongass National Forest

Material Received: 8/31/2012

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 329470	10 +/- 20 BP	-27.0 o/oo	100.2 +/- 0.3 pMC
SAMPLE : SIT-62-12-1 TP-7			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
COMMENT: The reported result indicates an age of post 0 BP and has been reported as a % of the modern reference standard, indicating the material was living about the last 60 years or so ("pMC" = percent modern carbon).			
Beta - 329471	50 +/- 30 BP	-26.7 o/oo	20 +/- 30 BP
SAMPLE : SIT-62-12-2 TP-7			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1890 to 1900 (Cal BP 60 to 50) and Cal AD Post 1950			

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=-26.7:lab. mult=1)

Laboratory number: **Beta-329471**

Conventional radiocarbon age: **20±30 BP**

2 Sigma calibrated results[2]: (95% probability) **Cal AD 1890 to 1900 (Cal BP 60 to 50) and Cal AD Post 1950**

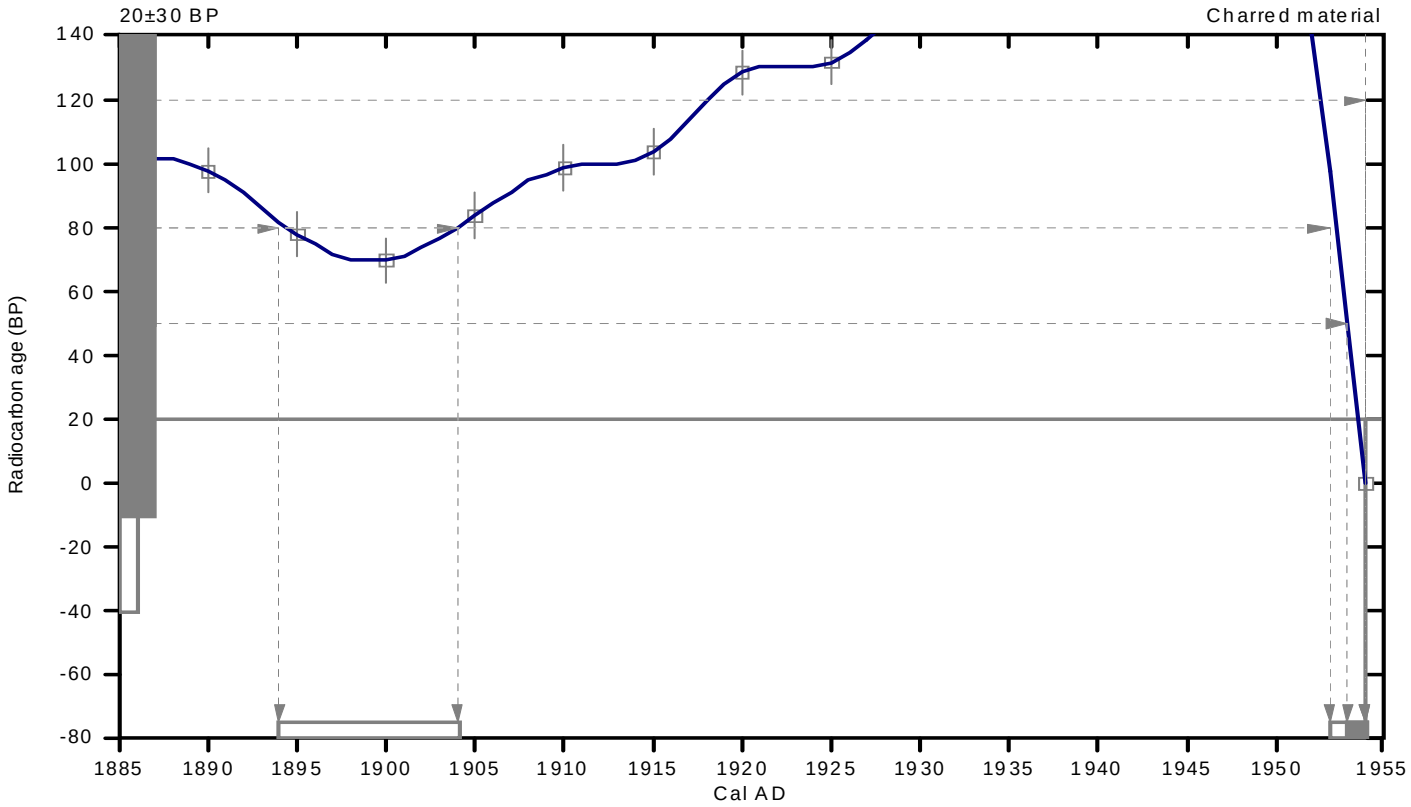
[2] 2 Sigma range being quoted is the maximum antiquity based on the minus 2 Sigma range

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD Post 1950

1 Sigma calibrated result[3]: (68% probability) Cal AD Post 1950

[3] 1 Sigma range being quoted is the maximum antiquity based on the minus 1 Sigma range



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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Darden Hood
President

Ronald Hatfield
Christopher Patrick
Deputy Directors

December 1, 2015

Mr. Dave McMahan
McMahan Consulting
446 E. 23rd Ave.
Anchorage, AK 99503
United States

RE: Radiocarbon Dating Result For Sample NEVA 2015-1

Dear Mr. McMahan:

Enclosed is the radiocarbon dating result for one sample recently sent to us. As usual, specifics of the analysis are listed on the report with the result and calibration data is provided where applicable. The Conventional Radiocarbon Age has been corrected for total fractionation effects and where applicable, calibration was performed using 2013 calibration databases (cited on the graph pages).

The web directory containing the table of results and PDF download also contains pictures, a cvs spreadsheet download option and a quality assurance report containing expected vs. measured values for 3-5 working standards analyzed simultaneously with your samples.

The reported result is accredited to ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 standards and all pretreatments and chemistry were performed here in our laboratories and counted in our own accelerators here in Miami. Since Beta is not a teaching laboratory, only graduates trained to strict protocols of the ISO/IEC 17025:2005 Testing Accreditation PJLA #59423 program participated in the analysis.

As always Conventional Radiocarbon Ages and sigmas are rounded to the nearest 10 years per the conventions of the 1977 International Radiocarbon Conference. When counting statistics produce sigmas lower than +/- 30 years, a conservative +/- 30 BP is cited for the result. The reported d13C was measured separately in an IRMS (isotope ratio mass spectrometer). It is NOT the AMS d13C which would include fractionation effects from natural, chemistry and AMS induced sources.

When interpreting the result, please consider any communications you may have had with us regarding the sample. As always, your inquiries are most welcome. If you have any questions or would like further details of the analysis, please do not hesitate to contact us.

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

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REPORT OF RADIOCARBON DATING ANALYSES

Mr. Dave McMahan

Report Date: 12/1/2015

McMahan Consulting

Material Received: 11/20/2015

Sample Data	Measured Radiocarbon Age	d13C	Conventional Radiocarbon Age(*)
Beta - 424507	110 +/- 30 BP	-26.3 o/oo	90 +/- 30 BP

SAMPLE : NEVA 2015-1
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1685 to 1735 (Cal BP 265 to 215) and Cal AD 1805 to 1930 (Cal BP 145 to 20) and Post AD 1950 (Post BP 0)

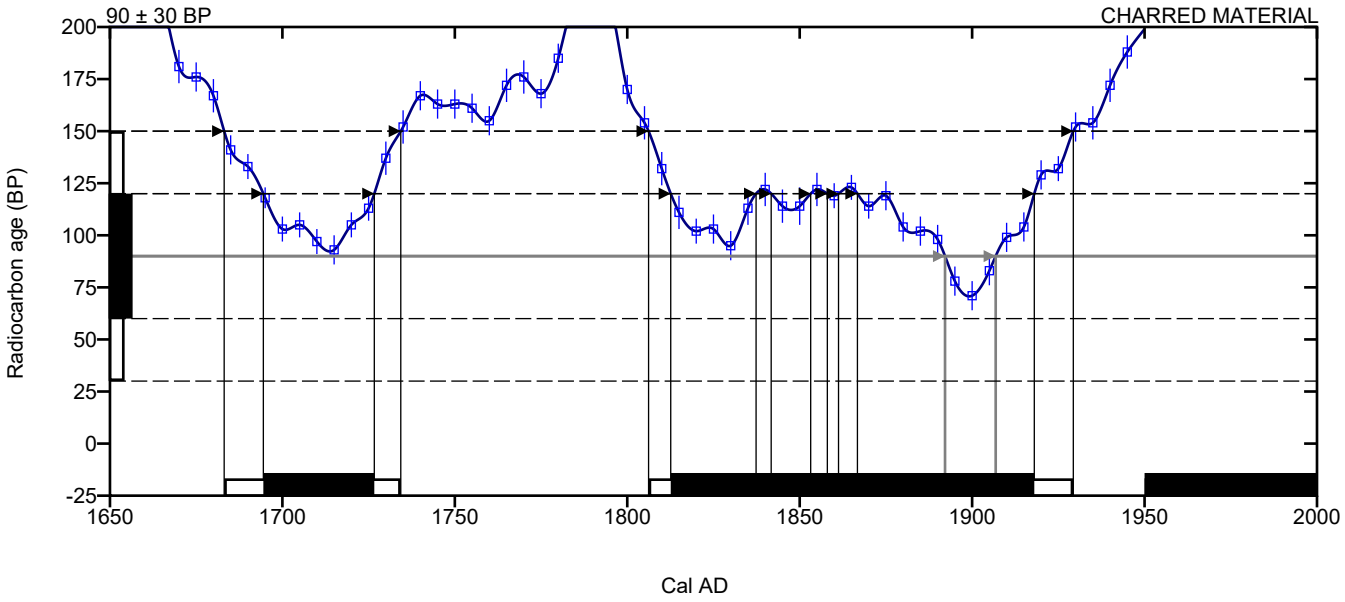
Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 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 = -26.3 o/oo : lab. mult = 1)

Laboratory number	**Beta-424507 : NEVA 2015-1**
Conventional radiocarbon age	**90 ± 30 BP**
Calibrated Result (95% Probability)	**Cal AD 1685 to 1735 (Cal BP 265 to 215)** **Cal AD 1805 to 1930 (Cal BP 145 to 20)** **Post AD 1950 (Post BP 0)**
Intercept of radiocarbon age with calibration curve	Cal AD 1890 (Cal BP 60) Cal AD 1905 (Cal BP 45) Post AD 1950 (Post BP 0)
Calibrated Result (68% Probability)	Cal AD 1695 to 1725 (Cal BP 255 to 225) Cal AD 1815 to 1920 (Cal BP 135 to 30) Post AD 1950 (Post BP 0)



Database used

INTCAL13

References

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates, Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

References to INTCAL13 database

Reimer PJ et al. IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP. Radiocarbon 55(4):1869–1887., 2013.