

WEB A7007. Eelde, Groote Veen. Report of radiocarbon dating analyses



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May 24, 2011

Dr. Johan Jelsma
De Steekproef b.v. Archaeological
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Hogeweg 3
Zuidhorn 9801 TG, Netherlands

RE: Radiocarbon Dating Results For Samples 000046119VN2, 29637 5699

Dear Dr. Jelsma:

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. As usual, the method of analysis is listed on the report with the results and calibration data is provided where applicable.

You will notice that Beta- () are 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.

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.

Thank you for prepaying the analyses. A receipt is enclosed with the mailed report copy. 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



REPORT OF RADIOCARBON DATING ANALYSES

Dr. Johan Jelsma

Report Date: 5/24/2011

De Steekproef b.v. Archaeological Research

Material Received: 5/4/2011

Sample Data	Measured Radiocarbon Age	$^{13}\text{C}/^{12}\text{C}$ Ratio	Conventional Radiocarbon Age(*)
Beta - 298307 SAMPLE : 000046119VN2 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (peat): 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).	100.2 +/- 0.3 pMC	-24.4 o/oo	100.1 +/- 0.3 pMC
Beta - 298308 SAMPLE : 29637 5699 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (cremated bone carbonate): bone carbonate extraction 2 SIGMA CALIBRATION : Cal BC 2440 to 2420 (Cal BP 4390 to 4370) AND Cal BC 2400 to 2380 (Cal BP 4350 to 4320) Cal BC 2350 to 2200 (Cal BP 4300 to 4150)	3770 +/- 30 BP	-21.6 o/oo	3830 +/- 30 BP

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the ^{14}C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby ^{14}C 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 $^{13}\text{C}/^{12}\text{C}$ ratios (delta ^{13}C) 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 ^{13}C . On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta ^{13}C , 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=-21.6:lab. mult=1)

Laboratory number: Beta-298308

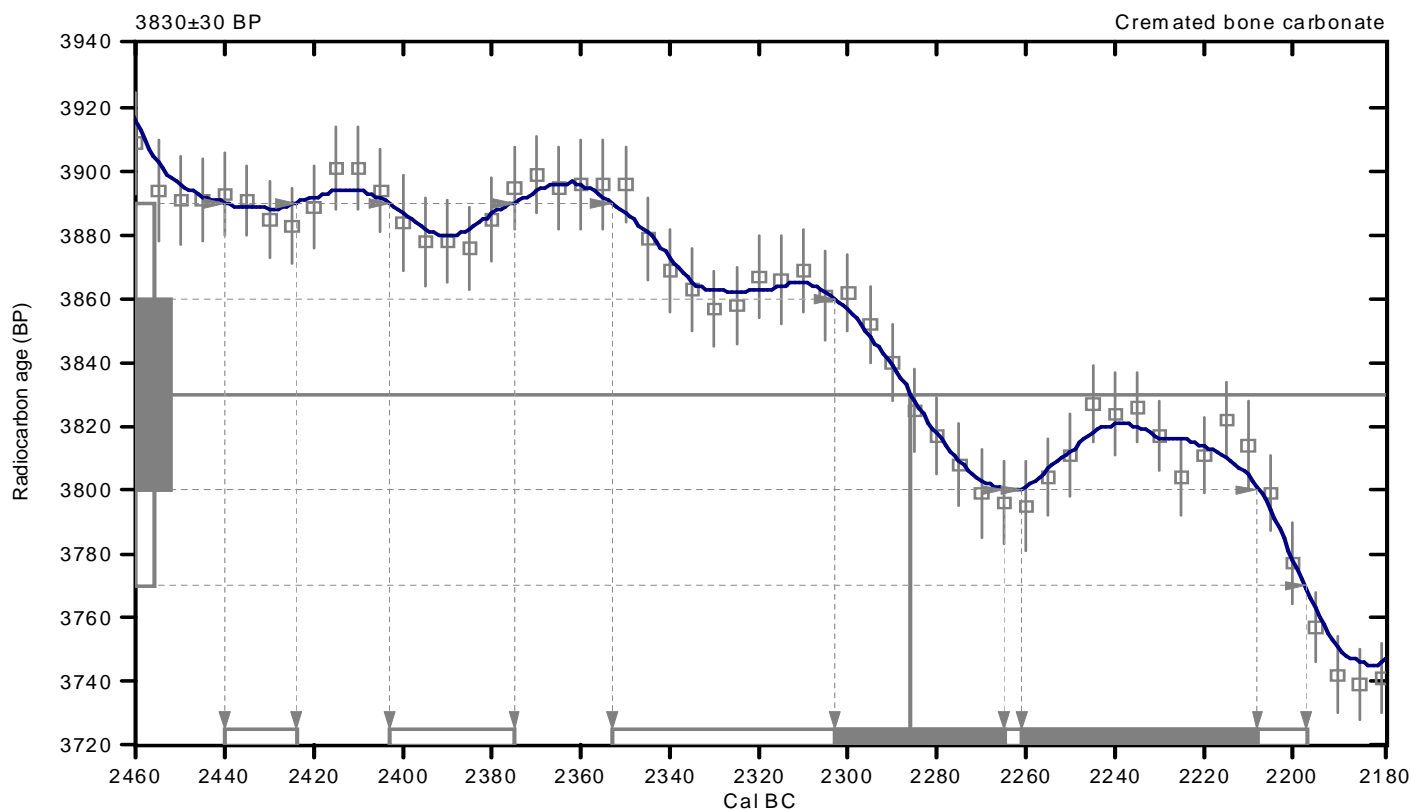
Conventional radiocarbon age: 3830±30 BP

2 Sigma calibrated results: Cal BC 2440 to 2420 (Cal BP 4390 to 4370) and
(95% probability) Cal BC 2400 to 2380 (Cal BP 4350 to 4320) and
Cal BC 2350 to 2200 (Cal BP 4300 to 4150)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 2290 (Cal BP 4240)

1 Sigma calibrated results: Cal BC 2300 to 2260 (Cal BP 4250 to 4220) and
(68% probability) Cal BC 2260 to 2210 (Cal BP 4210 to 4160)



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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