



REPORT OF RADIOCARBON DATING ANALYSES

Report Date: 2/22/2014*****

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Material Received:"4/18/2014

Sample Data	Apparent C14 Age (fraction modern)	C13/C12 Ratio
Beta -222223'''	''2540 +/- 30 BP (Fmdn 0.7529 +/- 0.0028)	-14.7 o/oo*****
SAMPLE :Z[\ 3 12/29/13 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (water DIC): carbonate precipitation		
Beta -222224	2; : 0 +/- 30 BR (Fmdn 0.7316 +/- 0.0027)	-22.4 o/oo
SAMPLE :Z[\ 4"31/12/113 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (water DIC): carbonate precipitation		
Beta -222225	5700 +/- 40 BP (Fmdn 0.4919 +/- 0.0024)	-18.0 o/oo
SAMPLE :Z\ [5"14/12/11 ANALYSIS : AMS-Standard delivery MATERIAL/PRETREATMENT : (water DIC): carbonate precipitation		

SAMPLE

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.