The University of Georgia

Center for Applied Isotope Studies

RADIOCARBON ANALYSIS REPORT

03 January 2013

Scott Shirar, University of Alaska
Dale Vinson, NPS Alaska Regional Office

Dear Drs. Shirar and Vinson,

On the following page please find the Radiocarbon analysis results and Stable Isotope Ratio $\delta^{13}C$ analyses for thirty-one charcoal samples received by our laboratory on 04 December 2012.

The samples were given a standard chemical treatment similar the pretreatment for cellulose described in Hedges *et al.* (1989) Archaeometry 31(2) 99-114. Briefly, the material was washed in ultrapure water, then gently boiled in a sequence of mineral acids and bases (1M HCl/ 1 M NaOH/ 1M HCl) to remove contaminating carbonate salts and humic acids.

The cleaned and treated material was then combined with CuO and combusted at 900°C in evacuated and sealed ampoules. Carbon dioxide produced during combustion was cryogenically purified from the other reaction products. CO_2 was catalytically converted to graphite using the method of Vogel *et al.* (1984) Nuclear Instruments and Methods in Physics Research B5, 289-293. Graphite $^{14}C/^{13}C$ ratios were measured using the CAIS 0.5 MeV accelerator mass spectrometer. The sample ratios were compared to the ratio measured from the Oxalic Acid I (NBS SRM 4990). The sample $^{13}C/^{12}C$ ratios were measured separately using a stable isotope ratio mass spectrometer and expressed as $\delta^{13}C$ with respect to PDB, with an error of less than 0.1‰.

The quoted uncalibrated dates have been given in radiocarbon years before 1950 (years BP), using the ^{14}C half-life of 5568 years. The errors are quoted at one standard deviation and reflect both statistical and experimental errors. The dates have been corrected for isotope fractionation. We have not rounded the ages or errors. Calendar calibrations derived from the program Calib v.6.1 and using the Intcal09 database are attached as a separate file.

If the dates are to be published, please quote the UGAMS numbers, as it identifies our laboratory as having produced the dates.

If you have any questions, or need additional information, please do not hesitate to contact me.

Sincerely,

Douglas K. Dvoracek

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Sample ID	UGAMS #	pmC	±	1 σ	δ^{13}C corrected Radiocarbon Age (YBP)			δ^{13}C
CS-002.1	12784	60.68	±	0.19	3996	±	24	-27.0
CS-003.2	12785	59.78	±	0.18	4145	±	24	-23.5
CS-006.1	12786	85.11	±	0.24	1292	±	22	-25.4
CS-007.3	12787	85.20	±	0.24	1284	±	22	-25.3
CS-008.1	12788	83.06	±	0.25	1481	±	23	-26.3
CS-009.1	12789	76.72	±	0.24	2123	±	24	-25.7
CS-011.1	12790	83.38	±	0.23	1461	±	22	-24.9
CS-012.1	12791	85.68	±	0.24	1217	±	22	-28.2
CS-013.1	12792	80.86	±	0.23	1706	±	22	-25.1
CS-014.1	12793	64.50	±	0.19	3523	±	24	-24.9
CS-015.2	12794	82.81	±	0.24	1508	±	23	-25.9
CS-017.1	12795	79.12	±	0.23	1868	±	23	-26.7
CS-018.1	12796	71.23	±	0.21	2724	±	23	-25.1
CS-020.2	12797	80.77	±	0.23	1715	±	22	-25.1
CS-022.1	12798	65.50	±	0.20	3416	±	24	-22.8
CS-023.1	12799	88.57	±	0.25	967	±	23	-26.0
CS-025.2	12800	91.05	±	0.26	759	±	23	-24.3
CS-026.2	12801	78.21	±	0.23	1953	±	23	-27.8
CS-028.1	12802	71.88	±	0.21	2644	±	23	-26.0
CS-029.2	12803	72.61	±	0.22	2572	±	24	-24.9
CS-031.2	12804	88.15	±	0.25	1011	±	23	-25.3
CS-033.2	12805	73.53	±	0.22	2461	±	23	-26.2
CS-034.1	12806	85.55	±	0.25	1248	±	23	-25.7
CS-035.1	12807	93.80	±	0.27	503	±	23	-26.5
CS-036.1	12808	92.60	±	0.28	603	±	24	-26.7
CS-037.1	12809	85.97	±	0.25	1215	±	23	-25.0
CS-039.2	12810	64.97	±	0.21	3458	±	25	-25.9
CS-040.2	12811	78.15	±	0.24	1981	±	25	-24.9
CS-043.1	12812	94.92	±	0.29	415	±	24	-25.5
CS-045.1	12813	73.04	±	0.21	2526	±	23	-24.8
CS-046.2	12814	94.95	±	0.27	417	±	23	-24.9

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