Hamilton Antarctic and Environmental Isotope Lab (HAMIL) Standards Used

Elemental Analysis

	Elemental Analyzer	
International (Primary) Standards	**$\delta^{13}C$** ‰ $_{VPDB}$	**$\delta^{15}N$** ‰ N_2 air
Graphite USGS24 – NIST 8541	-16.05	N/A
L-Glutamic Acid USGS40 - NIST 8573	-26.389	-4.5
L-Glutamic Acid USGS41 – NIST 8574	+37.626	+47.6
Potassium Nitrate IAEA-NO3 – NIST 8549	N/A	+4.7
Ammonium Sulfate – IAEA-N-2	N/A	+20.3
Lab (Internal) Standards		
Urea: Lot #1280597; Fluka 51456; Assay >/= 99.5%	-48.623	-0.26
Caffeine Anhydrous: Lot # 1337874; Fluka >99.0% (HPLC)	-31.289	-2.7
Acetanilide – Costech Analytical Technologies	-30.062	N/A
JGC20 – Jumbo Gravity Core 20 from USAP cruise NBP-00-03	-23.491	N/A
Fish Meal – (Korean)	-13.893	N/A
CBT – Trout tissue received from Cornell University, July 2009	N/A	+17.8
Mink – Mink tissue received from Cornell University, July 2009	N/A	+11.7

N/A – Not Applicable

Gas Bench Analysis

	GasBench		
International (Primary) Standards	**$\delta^{13}C$‰**	**$\delta^{18}O$‰**	**$\delta^{2}H$‰**
	VPDB	VPDB or VSMOW/SLAP*	VSMOW/SLAP
Barium Carbonate – IAEA – CO - 9	-47.32	-15.6	-
Calcite – NBS - 18	-5.014	-23.2	-
NBS19 – SRM - 8544	+1.95	-2.2	-
GISP	-	-24.8	-189.5
VSMOW2	-	0	0
SLAP2	-	-55.5	-427.5
Lab (Internal) Standards			
Calcium Carbonate – Merck	-43.00**	-17.5**	-
Calcium Carbonate - LECO	-15.56**	-21.3**	-
Sodium Carbonate - Fisher	-1.929**	-17.9**	-
Strontium Carbonate – J.T. Baker	-4.701**	-14.0**	-
Vostok(from ice core)***	-	-53.4	-430.6
Tewks Well Water	-	-11.4	-76.71
Sylvan Beach Municipal Water	-	-6.60	-
Millipore RO	-	-10.2	-
Science Center Tap	-	-9.65	-
Distilled	-	-7.26	-44.70
Prepared Lab Standard (50 ppm v/v D_2O)	-	-	+245.6

* VSMOW/SLAP scale for water analysis

** Valued determined from LECO containing Standard Curve

*** Vostok: Originally obtained as an ice core from Vostok Ice Core Team (member G. Domack) which subsequently melted due to freezer malfunction. Vostok water obtained from combining the melted ice from the following ice core depths (in meters): 3548.77 – 3548.82, 3553.085 – 3553.185, 3553.325 – 3553.425, 3556.38 – 3556.48, and 3560.635 – 3560.685.

Lab Standard Qualification Procedures

- A three point (n=3 for each) standard curve (on three separate days) using international standards was used to assign δ values (‰) for the internal lab standards under study. (Precision and accuracy assessments of the three standard curves were accomplished through readback values of additional international standards analyzed but not used in the generation of the three standard curves.)
- A three point (n=3 for each) standard curve using experimentally determined internal lab standards was used to back calculate δ values (‰) for the international lab standards also analyzed. (Precision and accuracy assessments for both the international readbacks and additional lab standards analyzed but not used in the standard curve generation validated our δ value (‰) assignments for the Lab Standards.)

(updated 12/10/2010)