

Table S2: Water Column Analytical Data, RV Melville Cruise MV1205 (2012)

Location	Cast#	Bottle #	Latitude	Longitude	Depth (m)	$\delta^3\text{He}$ (%)	CH_4 (nM)
TowYo	1T	1	46°16.49'S	75°47.96'W	2866	29.4	8.1
TowYo	1T	2			2785	30.1	8.3
TowYo	1T	3			2689	33.6	22.7
TowYo	1T	4			2595	28.1	1.7
TowYo	1T	5	46°16.15'S	75°48.20'W	2500	28.7	1.4
TowYo	1T	6	46°15.74'S	75°48.30'W	2901	29.0	7.8
TowYo	1T	7			2797	32.6	13.7
TowYo	1T	8			2698	32.3	13.8
TowYo	1T	9			2602	27.7	1.9
TowYo	1T	10	46°15.50'S	75°48.40'W	2499	28.4	1.6
TowYo	1T	11	46°14.80'S	75°48.74'W	2901		1.6
TowYo	1T	12			2800	30.2	7.2
TowYo	1T	13			2700	30.7	8.2
TowYo	1T	14			2598	28.6	2.3
TowYo	1T	15	46°14.64'S	75°48.85'W	2502	27.5	0.7
TowYo	1T	16	46°14.14'S	75°49.08'W	2507	28.8	1.1
TowYo	1T	17			2602	29.3	1.5
TowYo	1T	18			2701	29.5	4.1
TowYo	1T	19			2800	31.6	10.5
TowYo	1T	20	46°14.02'S	75°49.12'W	2901	30.1	6.3
TowYo	1T	21	46°12.94'S	75°49.67'W	2800	30.0	6.7
TowYo	1T	22			2700	30.8	4.3
TowYo	1T	23			2602	29.9	10.8
TowYo	1T	24	46°12.76'S	75°49.78'W	2500	30.4	2.1
G	2P	1	46°15.49'S	75°47.95'W	2896	28.4	5.2
G	2P	2			2800	30.0	5.8
G	2P	3			2697	28.5	3.4
G	2P	4	46°15.49'S	75°47.95'W	2600	29.8	3.3
G	2P	5	46°15.75'S	75°47.93'W	2900	28.9	5.4
G	2P	6			2790	29.5	8.0
G	2P	7			2700	29.7	5.0

G	2P	8			2600	29.0	2.7
G	2P	9	46°15.75'S	75°47.93'W	2500	29.4	3.2

G	2P	10	46°16.00'S	75°47.83'W	2898	29.2	5.3
G	2P	11			2800	29.7	5.8
G	2P	12			2697	29.4	4.5
G	2P	13			2598	30.2	2.2
G	2P	14	46°16.00'S	75°47.83'W	2500	30.2	4.0

G	2P	15	46°16.27'S	75°47.80'W	2888	29.1	4.4
G	2P	16			2796	29.9	6.2
G	2P	17			2699	28.9	3.2
G	2P	18			2602	29.1	3.1
G	2P	19	46°16.27'S	75°47.80'W	2500	29.7	3.6

H	3P	1	46°16.33'S	75°47.99'W	2803	30.2	16.5
H	3P	2			2748	32.4	21.7
H	3P	3			2699	34.4	32.6
H	3P	4	46°16.33'S	75°47.99'W	2649	33.7	26.1

H	3P	5	46°16.52'S	75°47.11'W	2800	30.8	16.5
H	3P	6			2750	31.6	20.5
H	3P	7			2702	35.3	39.9
H	3P	8	46°16.52'S	75°47.11'W	2649	31.9	16.2

H	3P	9	46°16.51'S	75°47.89'W	2918	29.0	8.4
H	3P	10			2850	31.2	12.0
H	3P	11B			2800	30.7	18.2
H	3P	12			2750	32.6	17.9
H	3P	13			2700	37.1	45.0
H	3P	14	46°16.51'S	75°47.89'W	2650	38.1	46.2

H	3P	15	46°16.53'S	75°47.62'W	2800	31.7	12.5
H	3P	16			2750	33.8	19.9
H	3P	17			2702	32.8	28.0
H	3P	18	46°16.53'S	75°47.62'W	2650	33.6	37.0

H	3P	19	46°16.74'S	75°47.75'W	2799	33.1	23.0
H	3P	20			2748	32.5	30.0
H	3P	21			2699	32.4	19.0
H	3P	22	46°16.74'S	75°47.75'W	2648	32.6	26.3

H	3P	23	46°16.83'S	75°47.70'W	2700	34.8	33.6
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H	3P	24	46°16.83'S	75°47.70'W	2649	35.0	31.8
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H	4V	1	46°16.99'S	75°48.15'W	2905	31.4	18.9
H	4V	3			2875	34.1	28.4
H	4V	4			2854	34.8	32.9
H	4V	6			2802	35.6	33.8
H	4V	8			2751	34.8	33.9
H	4V	10			2700	34.3	28.2
H	4V	12			2650	32.0	12.7
H	4V	14			2600	30.6	8.6
H	4V	16			2549	29.8	3.5
H	4V	17	46°16.99'S	75°48.15'W	2500	29.8	2.5

H	5P	1	46°16.52'S	75°47.88'W	2900	30.4	11.8
H	5P	2			2849	33.4	26.3
H	5P	3			2800	35.0	31.6
H	5P	4			2749	33.9	25.3
H	5P	5			2723	34.0	25.7
H	5P	6			2700	33.2	21.1
H	5P	7			2679	33.2	20.8
H	5P	8			2650	30.5	12.0
H	5P	9			2625	29.7	7.6
H	5P	10			2599	29.3	5.0
H	5P	11			2549	28.9	2.5
H	5P	12	46°16.52'S	75°47.88'W	2498	29.6	2.8

H	5P	13	46°16.47'S	75°47.81'W	2900	30.9	15.7
H	5P	14			2848	33.5	26.0
H	5P	15			2822	33.8	28.7
H	5P	16			2798	33.7	29.2
H	5P	17			2773	33.9	26.0
H	5P	18			2750	33.0	20.3
H	5P	19			2722	31.7	13.8
H	5P	20			2700	31.7	14.4
H	5P	21			2672	31.2	13.2
H	5P	22			2650	30.9	10.4
H	5P	23			2598	29.9	5.4
H	5P	24	46°16.47'S	75°47.81'W	2502	28.3	3.1