

Table 1  
Hydrogen isotope geothermometer data

Location	Measured vent $T$ (°C)	E.M. $H_2$ (mmol/kg)	E.M. $CH_4$ (mmol/kg)	$\delta D-H_2$ (‰)	$\delta D-CH_4$ (‰)	$^aH_2O-H_2$ 1000ln $\alpha$	$H_2O-H_2^b$ Bottinga $T$ (°C)	$H_2O-H_2^c$ Horibe $T$ (°C)	$CH_4-H_2$ 1000ln $\alpha$	$CH_4-H_2^b$ Bottinga $T$ (°C)	$CH_4-H_2^c$ Horibe $T$ (°C)
LC-BH	90	8.97	1.03	-609.2	-126.6	944	102	115	804	131	98
LC-BH	90	9.22	1.07	-609.2	-125.8	943	102	115	805	130	97
LC-IF	55	3.69	1.21	-648.8	-128.6	1050	70	87	909	101	68
LC-IF	55	3.35	1.14	-645.5	-138.5	1041	73	90	888	107	73
LC-IF	55	3.77	1.28	-648.4	-135.7	1049	70	88	899	104	70
LC-6	67	14.14	1.61	-604.8	-107.7	932	106	118	814	128	95
LC-6	62	14.19	1.55	-615.9	-128.8	961	97	110	819	126	93
LC-7	28	5.54	1.29	-662.8	-129.3	1091	58	77	949	90	57
LC-7	28	5.43	1.31	-666.0	-124.5	1101	56	74	964	86	53
LC-8	43	4.20	1.84	-657.5	-141.4	1075	63	81	919	98	65
LC-8	43	4.10	1.79	-650.5	-136.0	1055	69	86	905	102	69
LC-C	62	7.90	1.07	-620.0	-126.1	971	93	108	833	122	89
LC-C	70	14.38	1.98	-613.9	-130.1	956	98	112	812	128	95
LC-H	60	2.21	1.44	-656.8	-99.1	1073	63	81	965	85	53
LC-H	60	0.90	1.34	-689.4	-103.6	1173	37	56	1060	60	31
LC-3	61	11.58	1.26	-610.4	-111.6	947	101	114	824	125	92
LC-3	71	13.26	1.55	-604.8	-103.1	932	106	118	819	126	93
LC-3	73	11.94	1.30	-608.6	-125.0	942	103	115	804	131	98
Broken Spur	353	1.59	0.11	-392.6	n.m.	499	313	315	n.d.	n.d.	n.d.
Logatchev	350	19.03	3.99	-372.4	-109.3	466	341	344	350	385	321
9N	380	12.98	0.09	-328.2	n.m.	398	412	417	n.d.	n.d.	n.d.
SWIR	350	8.17	0.19	-400.0	n.m.	511	303	304	n.d.	n.d.	n.d.
Middle Valley	274	6.20	8.00	-415.9	-110.2	538	283	284	421	316	269
Middle Valley	285	5.44	5.26	-423.7	-106.6	551	273	274	438	301	258
Guaymas	317	3.16	52.01	-379.3	-95.9	477	331	334	376	358	301
Endeavour	375	0.48	2.58	-345.0	-125.1	423	384	388	289	460	376
Endeavour	375	1.38	2.02	-331.9	-107.1	403	405	411	290	460	375
Endeavour	341	0.14	1.25	-386.7	n.m.	489	321	323	n.d.	n.d.	n.d.
Endeavour	340	0.12	1.17	-356.6	n.m.	441	365	369	n.d.	n.d.	n.d.
Endeavour	338	0.24	2.08	-379.5	n.m.	477	331	333	n.d.	n.d.	n.d.
21N EPR <sup>d</sup>	350	0.95	0.02	-388.0	-114.0	491	319	321	370	364	306
Oman <sup>d</sup>	35	n.m.	n.m.	-715.0	-240.0	1255	18	37	981	81	49
Zambales <sup>d</sup>	n.m.	n.m.	n.m.	-585.0	-128.0	n.d.	n.d.	n.d.	743	150	118

E.M. = endmember. n.m. = not measured. n.d. = not determined.

<sup>a</sup>  $\delta D-H_2O$  values for Lost City measured at 2–7‰, assumed to be 0‰ for high-temperature sites.

<sup>b</sup> (Bottinga, 1969).

<sup>c</sup> (Horibe and Craig, 1995).

<sup>d</sup> 21°N (Welhan and Craig, 1983), Oman (Fritz et al., 1992), Zambales (Abrajano et al., 1988).