APPENDIX 1

As described by Gehrels et al. (2008), analyses reported in this study involve ablation of zircon with a DUV193 Excimer laser system from New Wave Instruments (operating at a wavelength of 193 nm) using a spot diameter of 35 microns. The ablated material is carried in helium gas into the plasma source of a GVI Isoprobe, equipped with nine moveable Faraday collectors and four low-side Channeltrons (ion counters). Each analysis consists of an integration on peaks with the laser off (for backgrounds), 20 one-second integrations with the laser firing, and a 30 second delay to purge the previous sample and prepare for the next analysis. The ablation pit is ~15 microns in depth and ion yields are ~1.0 mv per ppm.

Common Pb is corrected by assuming an initial Pb composition from Stacey and Kramers (1975) and using measured ^{204}Pb. Conservative uncertainties of 1.0 for ^{206}Pb/ ^{204}Pb, 0.3 for ^{207}Pb/ ^{204}Pb, and 2.0 for ^{208}Pb/^{204}Pb are used for the composition of the common Pb.

Fractionation of Pb/U and Pb/Th occurs primarily in the laser pit, and is highly sensitive to the rate of carrier gas flow across the sample surface. A carrier gas flow rate of 0.45 ml/minute generates an optimal balance between signal intensity (Pb/U sensitivity of 0.9) and stability. Inter-element fractionation of Pb/U is generally ~20%, whereas apparent fractionation of Pb isotopes is generally ~2%. For every five analyses of unknowns, an analysis of fragments of a large Sri Lanka zircon crystal with known age of 563.5 ± 3.2 Ma (2-sigma error, ID-TIMS by Gehrels et al., 2008) is used to correct for this fractionation. The uncertainty resulting from the calibration correction is generally ~1% (2-sigma) for both ^{206}Pb/ ^{207}Pb and ^{206}Pb/ ^{238}U ages.

Pb/U and Pb/Th fractionation varies depending on depth of laser ablation. In most cases, Pb/U and Th/Pb increase by ~5% during an analysis that takes 20 seconds and excavates to a depth of 15 microns. This is accounted for by applying a depth-related fractionation factor to the unknowns. Due to variations in the flow rate and pattern of movement of the helium carrier gas across the sample surface, Pb/U fractionation varies depending on position on the mount surface. Mounting all standards and unknowns close together in the central part of the mount and analyzing only standards that are as close as possible to each unknown reduces the analytical error.

Intensities with our Sri Lanka standard, which have known U, Th, and Pb concentrations, are compared with unknowns in order to determine accurate concentrations of U and Th (to ~20%). Measurement errors for determination of $^{206}Pb/^{238}U$ and $^{206}Pb/^{204}Pb$ yield uncertainties of ~1-2% (at 2-sigma level) in the 206Pb/238U age. Measurement errors for determination of $^{206}Pb/^{207}Pb$ and $^{206}Pb/^{204}Pb$ also result in ~1-2% (at 2-sigma level) uncertainty in age for grains that are >1.0 Ga.

Grains were selected for analysis at random from the population of grains available. Complexities in the grains were identified by careful analysis of $^{206}Pb/^{238}U$ during data acquisition of both standards and unknowns. In nearly all cases, standards yield $^{206}Pb/^{238}U$ that increases in linear fashion during an analysis because the material analyzed is uniform in age and free from inclusions and fractures. Most unknowns exhibit a similar down-hole increase in $^{206}Pb/^{238}U$, and are accordingly interpreted to be free from age zonation, inclusions, and fractures. Some unknowns, however, yield $^{206}Pb/^{238}U$ patterns with different slopes, non-linear segments, or jumps in value. Such analyses are rejected during acquisition, and not considered further. We accordingly have confidence that most of the accepted analyses are not compromised by ablation across age boundaries, fractures, inclusions, or domains with variable Pb loss.

The analytical data are reported in Table DR1. All analyses are included from each sample, except those with unacceptably high (>500 cps) levels of 204Pb. Uncertainties shown in these tables are at the 1-sigma level, and include only measurement errors. These errors arise from the measurement of $^{206}Pb/^{238}U$, $^{206}Pb/^{207}Pb$, and $^{206}Pb/^{204}Pb$ and are referred to as random (or measurement) errors because they are different for each analysis within a session.

Interpreted ages are based on $^{206}Pb/^{238}U$ for grains <1.0 Ga and on $^{206}Pb/^{207}Pb$ for grains >1.0 Ga. This division at 1.0 Ga is a result of the increasing uncertainty of $^{206}Pb/^{238}U$ ages and the decreasing uncertainty of $^{206}Pb/^{207}Pb$ ages as a function of age.

Data are filtered as follows:

(1) Analyses with $^{206}Pb/^{238}U$ ages younger than 1.0 Ga are rejected if 1-sigma uncertainty is greater than 10%.

(2) Analyses with $^{206}Pb/^{207}Pb$ ages older than 1.0 Ga are rejected if 1-sigma uncertainty is greater than 10%.

(3) Analyses with $^{206}Pb/^{238}U$ ages older than 600 Ma are rejected if discordance (based on comparison of $^{206}Pb/^{238}U$ versus $^{206}Pb/^{207}Pb$ ages) is greater than 10%. This 600 Ma cutoff is used because $^{206}Pb/^{207}Pb$ ages are difficult to measure reliably for young grains.

(4) Analyses with $^{206}Pb/^{238}U$ ages older than 600 Ma are rejected if reverse discordance (based on comparison of $^{206}Pb/^{238}U$ versus $^{206}Pb/^{207}Pb$ ages) is greater than 5%. This 600 Ma cutoff is used because $^{206}Pb/^{207}Pb$ ages are difficult to measure reliably for young grains.

One of the complexities of the data set is the presence of several ages that are younger than the depositional age of the Lower Devonian samples. The data from each of these samples is described separately below.

For sample TSA138, the minimum depositional age is 407 ± 2.8 Ma based on the Lochovian-Pragian biostratigraphic age (Wang et al., 2005) and the time scale of Ogg et al. (2008). Two analyses yield $^{206}Pb/^{238}U$ ages younger than 407 ± 2.8 Ma but overlap within analytical uncertainty, and a third is considerably younger (384.5 ± 7.6 Ma at 1-sigma). These analyses are interpreted to have experienced slight amounts of Pb loss, or to have been compromised by intersection of a fracture or inclusion during laser ablation. The youngest probability peak from this sample has an age of 406 Ma (Table DR1), which is consistent with the biostratigraphic age within uncertainty.

For sample Ch4D1, the minimum depositional age is 391.8 ± 0.4 Ma based on the Emsian biostratigraphic age and the age of the Emsian-Eifellian boundary from Kaufmann et al. (2005). Only one analysis yields $^{206}Pb/^{238}U$ age younger than this, but overlaps within uncertainty (390.1 ± 12.8 Ma at 1-sigma). The youngest probability peak from this sample is 411 Ma, which considerably predates the minimum depositional age.

For sample Ch4D2, the minimum depositional age is 391.8 ± 0.4 Ma based on the Emsian biostratigraphic age and the age of the Emsian–Eifellian boundary from Kaufmann et al. (2005). This sample yields quite a few analyses with $^{206}Pb/^{238}U$ ages younger than this, but almost all are characterized by large analytical uncertainty. Accordingly, only one analysis is younger than the depositional age within 2-sigma uncertainty. The young age and large uncertainty of these analyses suggests that they may have experienced slight to moderate amounts of Pb loss, and/or that some analyses are compromised by intersection of a fracture or inclusion during laser ablation. The youngest probability peak from this sample is 409 Ma, which considerably predates the minimum depositional age.

The accuracy of our analyses is monitored by analysis of R33, which is mounted together with every set of unknowns. R33 yields an ID-TIMS age of 419.26 ± 0.39 Ma. Five analyses were conducted from each mount, with weighted mean ages of 416.7 ± 8.9 Ma, 416.7 ± 5.2 Ma, 422.9 ± 5.6 Ma, 419.4 ± 5.0, and 419.1 ± 4.9 Ma (DR Table 1). The uncertainty of an individual R33 analysis averaged 5.9 Ma. Together these analyses indicate that individual analyses conducted during this study are in most cases accurate to 2%, which is typical of LA-ICPMS geochronology (e.g., Gehrels et al., 2008).

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DR Table 1. U-Pb geochronologic analyses and plots.																		
							Isotope ratios						Apparent ages (Ma)					
Analysis	U (ppm)	206Pb/204Pb	U/Th	206Pb*/207Pb*	± (%)	207Pb*/235U*	± (%)	206Pb*/238U	± (%)	error corr.	206Pb*/238U*	± (Ma)	207Pb*/235U	± (Ma)	206Pb*/207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc %
SJS6-106-90	219	7606	1.0	16.6756	6.2	0.6101	7.6	0.0738	4.3	0.57	458.9	19.0	483.6	29.1	602.4	135.3	458.9	19.0	76
SJS6-106-48	439	18086	1.0	17.4890	2.6	0.5855	3.3	0.0743	2.0	0.61	461.8	9.0	468.0	12.4	498.4	57.9	461.8	9.0	93
SJS6-106-37	150	18151	1.9	18.2426	2.6	0.5642	2.9	0.0746	1.2	0.42	464.1	5.5	454.2	10.6	404.7	59.1	464.1	5.5	115
SJS6-106-15	41	3865	1.9	25.0234	28.8	0.4200	29.0	0.0762	3.5	0.12	473.6	16.2	356.1	87.3	-353.3	756.2	473.6	16.2	-134
SJS6-106-32	83	15368	1.3	16.9361	7.5	0.6227	7.8	0.0765	1.9	0.24	475.1	8.5	491.5	30.3	568.8	164.3	475.1	8.5	84
SJS6-106-31	306	24659	2.2	17.3602	2.2	0.6106	3.9	0.0769	3.2	0.82	477.5	14.9	483.9	15.1	514.7	49.0	477.5	14.9	93
SJS6-106-40	298	10240	1.2	16.2189	7.4	0.6556	7.6	0.0771	1.4	0.18	478.9	6.3	511.9	30.4	662.2	159.4	478.9	6.3	72
SJS6-106-33	728	18966	3.4	17.3685	2.1	0.6183	2.8	0.0779	1.9	0.66	483.5	8.7	488.8	10.9	513.6	46.2	483.5	8.7	94
SJS6-106-63	111	21455	2.0	17.4267	4.5	0.6165	4.8	0.0779	1.7	0.36	483.7	8.1	487.7	18.8	506.3	99.6	483.7	8.1	96
SJS6-106-81	264	33152	2.4	17.3232	2.4	0.6244	2.4	0.0785	0.5	0.22	486.9	2.5	492.6	9.5	519.4	52.2	486.9	2.5	94
SJS6-106-88	188	17207	1.2	17.3617	3.3	0.6234	5.7	0.0785	4.6	0.82	487.1	21.8	492.0	22.2	514.5	72.4	487.1	21.8	95
SJS6-106-4	131	15740	2.3	17.0317	5.2	0.6370	5.5	0.0787	1.9	0.35	488.3	9.1	500.4	21.8	556.5	113.0	488.3	9.1	88
SJS6-106-26	294	33129	2.0	17.4459	3.3	0.6227	4.4	0.0788	2.9	0.66	488.9	13.8	491.5	17.3	503.9	73.7	488.9	13.8	97
SJS6-106-38	289	39943	0.9	17.4648	2.4	0.6228	2.7	0.0789	1.1	0.42	489.5	5.3	491.6	10.5	501.5	53.7	489.5	5.3	98
SJS6-106-7	207	35503	2.5	17.4837	2.3	0.6229	4.0	0.0790	3.2	0.81	490.1	15.1	491.7	15.4	499.1	51.7	490.1	15.1	98
SJS6-106-20	235	5599	1.6	17.1655	3.4	0.6348	3.8	0.0790	1.6	0.43	490.3	7.7	499.1	14.9	539.4	74.8	490.3	7.7	91
SJS6-106-46	81	13906	1.2	19.2684	10.8	0.5689	10.9	0.0795	1.4	0.13	493.1	6.7	457.3	40.0	281.0	246.8	493.1	6.7	176
SJS6-106-12	57	6947	1.1	18.6126	12.2	0.5891	12.2	0.0795	0.7	0.06	493.3	3.6	470.3	45.9	359.6	275.5	493.3	3.6	137
SJS6-106-44	166	26833	1.3	17.1733	3.2	0.6392	4.0	0.0796	2.5	0.62	493.8	11.8	501.8	15.9	538.4	69.4	493.8	11.8	92
SJS6-106-83	274	29528	1.7	17.6020	3.3	0.6248	3.6	0.0798	1.5	0.43	494.7	7.3	492.9	14.1	484.3	71.9	494.7	7.3	102
SJS6-106-54	115	12543	1.9	17.9191	5.2	0.6143	5.4	0.0798	1.6	0.29	495.2	7.4	486.3	20.8	444.6	114.6	495.2	7.4	111
SJS6-106-92	424	35396	1.8	17.2532	1.4	0.6389	2.4	0.0800	1.9	0.80	495.8	9.0	501.6	9.4	528.3	31.1	495.8	9.0	94
SJS6-106-34	344	73145	1.8	17.5079	2.3	0.6300	2.8	0.0800	1.6	0.56	496.1	7.4	496.1	10.9	496.0	50.7	496.1	7.4	100
SJS6-106-22	157	20744	2.3	17.7939	4.6	0.6199	4.9	0.0800	1.7	0.36	496.1	8.3	489.8	19.0	460.2	101.4	496.1	8.3	108
SJS6-106-71	94	10115	1.6	17.1431	7.8	0.6441	8.1	0.0801	2.2	0.27	496.6	10.5	504.8	32.2	542.3	170.7	496.6	10.5	92
SJS6-106-14	241	31803	1.3	17.3605	1.4	0.6362	2.1	0.0801	1.5	0.73	496.7	7.2	500.0	8.1	514.6	30.6	496.7	7.2	97
SJS6-106-30	225	26255	2.6	16.9523	3.5	0.6538	4.1	0.0804	2.2	0.54	498.4	10.5	510.8	16.5	566.7	75.4	498.4	10.5	88
SJS6-106-9	482	71746	5.9	17.2555	2.4	0.6434	3.3	0.0805	2.4	0.70	499.3	11.3	504.4	13.3	528.0	52.1	499.3	11.3	95
SJS6-106-42	105	12645	1.0	18.7875	9.5	0.5921	9.5	0.0807	0.9	0.09	500.2	4.2	472.2	36.1	338.5	215.7	500.2	4.2	148
SJS6-106-77	294	6416	1.3	16.5124	8.7	0.6768	8.8	0.0810	1.5	0.17	502.4	7.1	524.8	36.2	623.6	188.0	502.4	7.1	81
SJS6-106-59	424	43710	1.2	17.3907	1.9	0.6452	2.3	0.0814	1.4	0.60	504.4	6.7	505.5	9.2	510.8	41.0	504.4	6.7	99
SJS6-106-100	249	28190	1.3	16.9854	2.5	0.6618	3.4	0.0815	2.3	0.68	505.2	11.1	515.7	13.6	562.4	54.0	505.2	11.1	90
SJS6-106-76	605	48609	2.4	17.4676	0.8	0.6439	1.2	0.0816	0.9	0.73	505.5	4.4	504.7	4.9	501.2	18.7	505.5	4.4	101
SJS6-106-54	247	26888	1.2	17.3451	2.7	0.6491	2.8	0.0817	0.7	0.26	506.0	3.5	507.9	11.0	516.6	58.6	506.0	3.5	98
SJS6-106-47	266	57103	1.9	17.6386	2.2	0.6392	3.8	0.0818	3.1	0.82	506.7	15.0	501.8	14.9	479.6	47.8	506.7	15.0	106
SJS6-106-53	328	40150	1.8	17.5006	2.0	0.6467	2.5	0.0821	1.4	0.58	508.5	7.1	506.4	9.9	497.0	44.3	508.5	7.1	102
SJS6-106-74	300	45114	4.7	16.9180	2.8	0.6696	3.2	0.0822	1.7	0.52	509.0	8.1	520.4	13.1	571.1	59.9	509.0	8.1	89
SJS6-106-13	1007	53346	4.0	17.2093	0.6	0.6585	3.5	0.0822	3.4	0.99	509.2	16.8	513.7	14.1	533.8	13.0	509.2	16.8	95
SJS6-106-28	159	23317	1.0	17.5403	5.4	0.6478	5.6	0.0824	1.4	0.26	510.5	7.0	507.1	22.2	492.0	118.5	510.5	7.0	104
SJS6-106-25	256	37220	1.5	17.4262	2.7	0.6527	2.9	0.0825	1.0	0.34	511.0	4.8	510.1	11.5	506.3	59.3	511.0	4.8	101
SJS6-106-8	586	72655	8.2	17.4000	1.5	0.6541	2.1	0.0825	1.5	0.71	511.3	7.4	511.0	8.6	509.6	33.1	511.3	7.4	100
SJS6-106-62	29	3455	2.5	17.8557	19.8	0.6388	19.9	0.0827	1.5	0.08	512.4	7.4	501.6	78.7	452.5	443.5	512.4	7.4	113
SJS6-106-51	218	40506	2.3	17.3406	3.8	0.6587	4.2	0.0828	1.7	0.42	513.1	8.6	513.8	16.8	517.2	83.0	513.1	8.6	99
SJS6-106-27	62	6965	1.2	16.9500	5.2	0.6747	5.3	0.0829	0.5	0.09	513.7	2.5	523.6	21.6	567.0	114.3	513.7	2.5	91
SJS6-106-98	302	31885	3.3	17.2729	1.8	0.6625	2.6	0.0830	1.9	0.73	514.0	9.4	516.1	10.6	525.7	39.1	514.0	9.4	98
SJS6-106-67	66	3904	2.1	16.3139	8.8	0.7019	8.9	0.0830	1.1	0.13	514.3	5.7	539.9	37.1	649.7	188.9	514.3	5.7	79
SJS6-106-82	184	21513	2.0	17.3859	3.6	0.6587	3.7	0.0831	1.0	0.27	514.3	5.0	513.8	15.1	511.5	79.1	514.3	5.0	101
SJS6-106-16	112	11195	1.5	18.3218	3.5	0.6271	3.8	0.0833	1.5	0.40	516.0	7.5	494.3	14.8	395.0	77.9	516.0	7.5	131
SJS6-106-1	250	18633	2.3	17.0707	2.6	0.6740	2.8	0.0834	0.8	0.30	516.6	4.0	523.1	11.3	551.5	57.6	516.6	4.0	94
SJS6-106-52	169	15198	0.7	17.9701	5.4	0.6407	5.7	0.0835	2.0	0.35	517.0	9.9	502.7	22.7	438.3	119.8	517.0	9.9	118
SJS6-106-97	202	19860	2.2	17.3796	4.6	0.6630	4.7	0.0836	1.2	0.25	517.4	5.8	516.4	19.2	512.2	100.8	517.4	5.8	101
SJS6-106-78	234	51443	1.7	17.1645	2.7	0.6722	2.9	0.0837	1.1	0.37	518.0	5.3	522.0	11.8	539.5	59.0	518.0	5.3	96
SJS6-106-3	58	10043	3.1	17.9624	9.1	0.6448	12.4	0.0840	8.4	0.68	520.0	41.8	505.3	49.3	439.3	203.5	520.0	41.8	118
SJS6-106-10	158	20568	2.0	17.6385	5.8	0.6585	6.1	0.0842	1.8	0.30	521.3	9.2	513.7	24.6	479.6	128.7	521.3	9.2	109
SJS6-106-6	457	61788	2.9	17.3736	0.9	0.6689	2.2	0.0843	2.0	0.92	521.7	10.0	520.1	8.8	513.0	19.0	521.7	10.0	102
SJS6-106-2	223	41286	3.2	17.6110	4.3	0.6606	4.9	0.0844	2.4	0.49	522.2	12.1	515.0	19.9	483.1	95.1	522.2	12.1	108
SJS6-106-57	389	19921	3.3	17.2441	3.4	0.6755	3.5	0.0845	0.9	0.27	522.9	4.8	524.1	14.4	529.4	74.5	522.9	4.8	99
SJS6-106-99	291	38619	1.8	17.0283	2.3	0.6908	2.6	0.0853	1.3	0.49	527.8	6.4	533.3	10.8	556.9	49.4	527.8	6.4	95
SJS6-106-11	347	103669	2.4	17.0445	1.4	0.6912	1.7	0.0854	1.0	0.56	528.5	4.9	533.5	7.2	554.9	31.5	528.5	4.9	95
SJS6-106-50	25	4098	3.4	20.2429	20.1	0.5824	20.2	0.0855	1.7	0.08	528.9	8.6	466.0	75.5	166.8	473.9	528.9	8.6	317
SJS6-106-65	258	3208	2.6	17.1182	3.4	0.6892	4.0	0.0856	2.0	0.51	529.3	10.4	532.3	16.5	545.5	74.9	529.3	10.4	97
SJS6-106-66	267	21372	2.4	17.8190	2.9	0.6630	3.0	0.0857	0.8	0.25	530.0	3.9	516.5	12.1	457.1	64.3	530.0	3.9	116
SJS6-106-95	323	37118	3.2	17.2053	3.1	0.6922	3.7	0.0864	1.9	0.52	534.1	9.8	534.1	15.3	534.3	68.8	534.1	9.8	100
SJS6-106-29	174	13239	1.3	16.7171	3.8	0.7132	4.0	0.0865	1.4	0.34	534.7	7.0	546.7	16.9	597.1	81.6	534.7	7.0	90
SJS6-106-18	128	26276	1.0	16.7343	3.9	0.7220	4.1	0.0876	1.0	0.23	541.5	4.9	551.8	17.3	594.8	85.5	541.5	4.9	91
SJS6-106-55	467	64709	2.2	17.0179	1.4	0.7126	3.8	0.0880	3.5	0.93	543.4	18.4	546.3	16.0	558.3	30.2	543.4	18.4	97
SJS6-106-58	375	69845	2.7	17.5279	1.7	0.6940	2.3	0.0882	1.6	0.68	545.0	8.3	535.2	9.6	493.5	37.4	545.0	8.3	110
SJS6-106-24	117	15635	1.3	17.5384	5.9	0.6942	6.4	0.0883	2.5	0.39	545.5	13.2	535.3	26.8	492.2	130.9	545.5	13.2	111
SJS6-106-43	50	14154	1.5	20.2418	8.0	0.6159	8.1	0.0904	1.0	0.12	558.0	5.1	487.3	31.4	167.0	188.3	558.0	5.1	334
SJS6-106-60	153	9209	2.0	18.0050	4.5	0.7017	4.7	0.0916	1.3	0.28	565.2	7.1	539.8	19.7	434.0	100.6	565.2	7.1	130
SJS6-106-68	135	12419	1.2	17.1753	4.9	0.7493	5.2	0.0933	2.0	0.38	575.2	10.9	567.8	22.8	538.2	106.3	575.2	10.9	107
SJS6-106-41	116	22180	1.9	15.5193	3.1	1.0577	3.2	0.1191	0.9	0.27	725.1	5.9	732.7	16.8	756.0	65.4	725.1	5.9	96
~~SJS6-106-86~~	~~12~~	~~6974~~	~~1.2~~	~~17.6268~~	~~42.9~~	~~0.9513~~	~~42.9~~	~~0.1216~~	~~1.3~~	~~0.03~~	~~739.9~~	~~9.3~~	~~678.8~~	~~215.6~~	~~481.1~~	~~991.1~~	~~739.9~~	~~9.3~~	~~154~~
SJS6-106-73	113	20788	0.8	15.5970	2.5	1.0927	4.6	0.1236	3.9	0.84	751.3	27.5	749.8	24.4	745.4	52.3	751.3	27.5	101
~~SJS6-106-49~~	~~81~~	~~17709~~	~~1.0~~	~~15.4299~~	~~5.3~~	~~1.1228~~	~~5.8~~	~~0.1257~~	~~2.2~~	~~0.38~~	~~763.0~~	~~16.0~~	~~764.3~~	~~31.0~~	~~768.1~~	~~112.4~~	~~763.0~~	~~16.0~~	~~99~~

DR Table 1. U-Pb geochronologic analyses and plots.

Analysis	U (ppm)	206Pb/204Pb	U/Th	206Pb*/207Pb*	± (%)	Isotope ratios: 207Pb*/235U*	± (%)	206Pb*/238U	± (%)	error corr.	Apparent ages (Ma): 206Pb*/238U*	± (Ma)	207Pb*/235U	± (Ma)	206Pb*/207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc %
~~SJS6-106-75~~	~~392~~	~~2765~~	~~0.8~~	~~12.6980~~	~~14.1~~	~~1.3701~~	~~14.1~~	~~0.1262~~	~~0.5~~	~~0.03~~	~~766.1~~	~~3.4~~	~~876.2~~	~~82.8~~	~~1165.9~~	~~279.9~~	~~766.1~~	~~3.4~~	~~66~~
~~SJS6-106-69~~	~~36~~	~~2172~~	~~0.7~~	~~15.2617~~	~~9.7~~	~~1.1417~~	~~9.7~~	~~0.1264~~	~~0.5~~	~~0.05~~	~~767.2~~	~~3.4~~	~~773.3~~	~~52.4~~	~~791.2~~	~~203.2~~	~~767.2~~	~~3.4~~	~~97~~
~~SJS6-106-5~~	~~34~~	~~9435~~	~~0.9~~	~~15.4247~~	~~12.9~~	~~1.1449~~	~~13.3~~	~~0.1281~~	~~3.1~~	~~0.23~~	~~776.9~~	~~22.7~~	~~774.8~~	~~72.2~~	~~768.8~~	~~273.4~~	~~776.9~~	~~22.7~~	~~101~~
SJS6-106-23	251	54237	7.2	15.0700	1.8	1.2149	2.6	0.1328	2.0	0.74	803.8	14.8	807.5	14.7	817.7	37.1	803.8	14.8	98
SJS6-106-96	99	22712	1.5	14.6359	3.1	1.2867	3.5	0.1366	1.6	0.47	825.3	12.6	839.8	19.9	878.4	63.8	825.3	12.6	94
SJS6-106-94	393	49771	1.1	14.9504	1.1	1.2786	1.9	0.1386	1.5	0.82	837.0	12.0	836.2	10.6	834.3	22.5	837.0	12.0	100
~~SJS6-106-93~~	~~689~~	~~5906~~	~~1.3~~	~~13.9162~~	~~4.7~~	~~1.4194~~	~~7.3~~	~~0.1433~~	~~5.5~~	~~0.76~~	~~863.1~~	~~44.8~~	~~897.1~~	~~43.2~~	~~982.0~~	~~95.4~~	~~863.1~~	~~44.8~~	~~88~~
SJS6-106-70	122	35450	2.4	14.5779	2.2	1.3850	2.8	0.1464	1.6	0.58	881.0	13.0	882.6	16.2	886.7	46.5	881.0	13.0	99
SJS6-106-89	345	60141	2.5	14.4837	0.9	1.4387	1.7	0.1511	1.4	0.85	907.3	12.2	905.2	10.2	900.0	18.8	907.3	12.2	101
SJS6-106-91	304	28721	1.8	13.9691	3.3	1.5157	3.7	0.1536	1.6	0.43	920.9	13.4	936.8	22.4	974.2	67.5	920.9	13.4	95
SJS6-106-80	612	103294	3.8	14.3116	0.7	1.4881	1.3	0.1545	1.1	0.86	925.9	9.9	925.6	8.1	924.7	14.0	925.9	9.9	100
~~SJS6-106-72~~	~~280~~	~~27573~~	~~18.8~~	~~12.5150~~	~~2.3~~	~~1.8187~~	~~7.4~~	~~0.1651~~	~~7.0~~	~~0.95~~	~~984.9~~	~~63.8~~	~~1052.2~~	~~48.3~~	~~1194.6~~	~~45.9~~	~~1194.6~~	~~45.9~~	~~82~~
SJS6-106-56	224	47939	5.1	13.7573	1.8	1.6875	3.3	0.1684	2.8	0.84	1003.2	25.7	1003.8	20.9	1005.3	35.7	1005.3	35.7	100
SJS6-106-21	139	12220	1.2	13.0227	1.9	1.8602	2.1	0.1757	0.8	0.37	1043.4	7.5	1067.1	13.7	1115.7	38.3	1115.7	38.3	94
~~SJS6-106-29~~	~~34~~	~~3502~~	~~1.1~~	~~12.5261~~	~~7.3~~	~~2.2164~~	~~7.9~~	~~0.2014~~	~~3.2~~	~~0.40~~	~~1182.6~~	~~34.2~~	~~1186.2~~	~~55.6~~	~~1192.9~~	~~143.8~~	~~1192.9~~	~~143.8~~	~~99~~
SJS6-106-36	376	110415	2.1	10.9215	0.6	3.1972	1.8	0.2532	1.7	0.94	1455.2	22.0	1456.5	13.9	1458.3	11.3	1458.3	11.3	100
~~SJS6-106-19~~	~~53~~	~~30328~~	~~1.1~~	~~8.5238~~	~~1.9~~	~~4.7068~~	~~2.1~~	~~0.2910~~	~~0.9~~	~~0.43~~	~~1646.4~~	~~12.8~~	~~1768.5~~	~~17.2~~	~~1915.7~~	~~33.2~~	~~1915.7~~	~~33.2~~	~~86~~
SJS6-106-45	204	138454	2.2	9.2023	0.6	4.8431	1.9	0.3232	1.8	0.95	1805.5	28.2	1792.4	15.9	1777.2	11.0	1777.2	11.0	102
SJS6-106-84	119	58934	1.5	7.9900	0.8	6.2711	0.9	0.3634	0.5	0.58	1998.3	9.2	2014.4	8.1	2031.0	13.4	2031.0	13.4	98
SJS6-106-35	178	90799	4.9	5.5040	1.0	11.2755	2.0	0.4501	1.8	0.87	2395.7	35.7	2546.2	19.0	2668.3	16.4	2668.3	16.4	90
SJS6-106-17	126	89297	0.7	5.6364	0.8	11.4926	1.4	0.4698	1.1	0.80	2482.7	22.8	2564.0	13.0	2628.9	13.9	2628.9	13.9	94
SJS6-106-39	83	67796	1.4	5.5056	0.6	12.0978	1.6	0.4831	1.4	0.93	2540.6	30.4	2612.0	14.6	2667.8	9.3	2667.8	9.3	95
~~SJS6-106-87~~	~~85~~	~~29262~~	~~1.6~~	~~4.4941~~	~~5.4~~	~~15.6077~~	~~20.8~~	~~0.5087~~	~~20.1~~	~~0.97~~	~~2651.2~~	~~436.6~~	~~2853.1~~	~~200.7~~	~~2999.0~~	~~86.3~~	~~2999.0~~	~~86.3~~	~~88~~
SJS6-106-35	90	9678	1.8	4.5079	1.5	16.5050	3.2	0.5396	2.8	0.88	2781.9	63.0	2906.5	30.2	2994.0	23.7	2994.0	23.7	93
SJS6-106-64	217	210683	2.7	3.9788	0.3	21.0585	3.1	0.6077	3.1	1.00	3060.7	74.4	3141.3	29.8	3193.2	4.7	3193.2	4.7	96
SJS6-106-85	42	41554	2.3	3.9378	0.7	22.4838	1.2	0.6421	0.9	0.78	3197.4	22.8	3204.9	11.3	3209.6	11.5	3209.6	11.5	100
SJS6-106-79	103	86888	1.2	3.8295	0.4	23.4332	1.5	0.6508	1.4	0.97	3231.5	36.3	3245.1	14.3	3253.5	5.6	3253.5	5.6	99
SJS6114-80	136	9868	2.0	17.6563	9.6	0.5803	9.6	0.0743	0.6	0.07	462.1	2.8	464.7	35.9	477.4	212.8	462.1	2.8	97
SJS6114-19	341	143918	2.5	17.4409	1.3	0.5994	2.1	0.0758	1.7	0.79	471.1	7.6	476.8	8.0	504.5	28.2	471.1	7.6	93
SJS6114-31	209	33825	1.6	17.5308	5.2	0.5976	5.9	0.0760	2.6	0.45	472.1	11.9	475.7	22.2	493.2	115.5	472.1	11.9	96
SJS6114-41	200	22757	1.3	17.3712	3.7	0.6154	4.1	0.0775	1.9	0.46	481.4	8.8	487.0	15.9	513.3	80.2	481.4	8.8	94
SJS6114-21	111	31250	2.0	17.3182	8.5	0.6175	8.6	0.0776	1.2	0.14	481.6	5.6	488.3	33.3	520.0	186.8	481.6	5.6	93
SJS6114-46	483	49619	1.9	17.4551	2.2	0.6146	2.4	0.0778	0.9	0.38	483.0	4.3	486.4	9.3	502.7	48.7	483.0	4.3	96
SJS6114-89	39	8229	2.0	19.3621	17.3	0.5542	17.4	0.0778	2.0	0.12	483.1	9.3	447.7	63.0	269.8	398.1	483.1	9.3	179
SJS6114-72	75	15787	1.6	16.7715	10.2	0.6406	10.4	0.0779	2.1	0.20	483.7	9.6	502.7	41.4	590.0	222.5	483.7	9.6	82
SJS6114-100	134	14108	2.3	17.8860	3.6	0.6030	4.0	0.0782	1.7	0.44	485.5	8.1	479.1	15.2	448.8	79.8	485.5	8.1	108
SJS6114-69	59	4743	1.4	18.6238	12.4	0.5827	12.6	0.0787	2.5	0.20	488.4	11.9	466.2	47.2	358.3	279.8	488.4	11.9	136
SJS6114-43	320	23126	1.0	17.5040	3.5	0.6205	3.9	0.0788	1.8	0.47	488.8	8.6	490.2	15.3	496.5	76.7	488.8	8.6	98
SJS6114-14	221	9429	1.5	17.3365	4.4	0.6287	4.8	0.0790	1.8	0.37	490.4	8.4	495.3	18.7	517.7	97.4	490.4	8.4	95
SJS6114-15	295	32006	1.8	17.7212	1.9	0.6157	2.5	0.0791	1.6	0.65	490.9	7.8	487.1	9.8	469.3	42.6	490.9	7.8	105
SJS6114-67	78	47849	1.4	17.7954	13.8	0.6132	13.9	0.0791	1.3	0.10	491.0	6.3	485.6	53.6	460.0	307.3	491.0	6.3	107
SJS6114-83	240	48805	1.3	17.7806	5.4	0.6161	5.5	0.0795	1.0	0.18	492.9	4.6	487.4	21.2	461.9	119.5	492.9	4.6	107
SJS6114-79	153	20654	1.3	17.4222	3.0	0.6295	3.5	0.0795	1.9	0.53	493.4	8.8	495.8	13.7	506.9	65.1	493.4	8.8	97
SJS6114-49	70	6676	1.9	16.9149	7.9	0.6484	8.0	0.0795	1.0	0.12	493.4	4.7	507.5	31.8	571.5	171.9	493.4	4.7	86
SJS6114-38	301	18750	1.8	17.4917	1.4	0.6285	1.8	0.0797	1.0	0.58	494.5	4.8	495.2	6.9	498.1	31.8	494.5	4.8	99
SJS6114-65	659	177579	3.5	17.4469	0.7	0.6307	3.5	0.0798	3.5	0.98	495.0	16.6	496.6	13.9	503.7	15.0	495.0	16.6	98
SJS6114-73	82	13955	1.3	17.6244	10.9	0.6257	11.0	0.0800	1.0	0.09	496.0	4.7	493.4	42.9	481.4	242.1	496.0	4.7	103
SJS6114-2	129	34640	2.3	17.3012	4.8	0.6392	4.9	0.0802	1.1	0.22	497.4	5.3	501.8	19.5	522.1	105.1	497.4	5.3	95
SJS6114-36	590	8806	3.1	17.3035	1.9	0.6417	2.3	0.0805	1.4	0.59	499.3	6.6	503.4	9.3	521.9	41.6	499.3	6.6	96
SJS6114-53	59	9609	4.7	17.4136	10.2	0.6384	10.3	0.0806	1.5	0.14	499.9	7.0	501.3	40.9	508.0	225.2	499.9	7.0	98
SJS6114-17	176	9744	2.0	18.2329	3.9	0.6139	4.3	0.0812	1.6	0.38	503.2	7.8	486.0	16.4	405.9	88.1	503.2	7.8	124
SJS6114-13	151	9362	3.5	18.6384	6.2	0.6006	6.3	0.0812	1.2	0.19	503.2	5.9	477.6	23.9	356.5	139.2	503.2	5.9	141
SJS6114-5	51	4613	2.3	19.6895	12.1	0.5701	12.2	0.0814	1.1	0.09	504.5	5.4	458.1	44.9	231.2	280.7	504.5	5.4	218
SJS6114-57	153	15137	2.9	16.8438	4.0	0.6670	4.3	0.0815	1.6	0.38	504.9	7.8	518.9	17.4	580.6	86.4	504.9	7.8	87
SJS6114-77	321	14090	1.7	17.4175	2.0	0.6457	2.1	0.0816	0.5	0.22	505.4	2.2	505.8	8.2	507.4	44.3	505.4	2.2	100
SJS6114-11	178	18859	3.0	17.3613	4.6	0.6482	4.7	0.0816	1.0	0.22	505.8	5.1	507.4	18.8	514.5	101.1	505.8	5.1	98
SJS6114-7	32	3717	3.9	16.8075	10.1	0.6708	10.2	0.0818	1.2	0.12	506.7	5.9	521.2	41.4	585.4	219.4	506.7	5.9	87
SJS6114-20	135	23436	1.6	17.2227	5.2	0.6547	5.4	0.0818	1.2	0.23	506.8	6.1	511.4	21.7	532.2	114.9	506.8	6.1	95
SJS6114-92	815	81305	1.7	17.5149	0.9	0.6441	1.4	0.0818	1.0	0.77	507.0	5.1	504.8	5.4	495.2	18.8	507.0	5.1	102
SJS6114-42	843	55005	3.8	17.2441	0.8	0.6545	1.1	0.0819	0.8	0.74	507.2	4.1	511.3	4.6	529.4	16.6	507.2	4.1	96
SJS6114-90	580	63672	1.1	17.3505	1.7	0.6543	1.9	0.0823	0.8	0.43	510.1	3.9	511.1	7.5	515.9	37.3	510.1	3.9	99
SJS6114-29	59	7522	4.4	18.7724	13.0	0.6057	13.1	0.0825	1.6	0.12	510.8	7.7	480.8	50.3	340.3	295.9	510.8	7.7	150
SJS6114-98	811	56104	2.5	17.4000	1.0	0.6539	1.8	0.0825	1.6	0.85	511.1	7.7	510.9	7.4	509.6	21.2	511.1	7.7	100
SJS6114-66	110	9719	1.1	18.6222	6.3	0.6110	6.7	0.0825	2.5	0.37	511.2	12.3	484.2	26.0	358.4	141.4	511.2	12.3	143
SJS6114-50	291	58287	1.0	17.6070	2.5	0.6476	3.0	0.0827	1.5	0.50	512.2	7.3	507.0	11.8	483.6	56.3	512.2	7.3	106
SJS6114-64	266	40591	0.7	17.7177	2.4	0.6445	2.7	0.0828	1.3	0.47	512.9	6.2	505.1	10.6	469.7	52.1	512.9	6.2	109
SJS6114-23	263	48501	1.6	16.7320	2.2	0.6855	2.4	0.0832	1.0	0.40	515.1	4.8	530.1	10.1	595.1	48.4	515.1	4.8	87
SJS6114-97	678	61805	2.2	17.4273	1.1	0.6591	2.2	0.0833	1.9	0.88	515.8	9.5	514.1	8.8	506.2	23.2	515.8	9.5	102
SJS6114-40	253	42111	2.1	17.1969	2.7	0.6685	3.0	0.0834	1.5	0.48	516.3	7.3	519.8	12.4	535.4	58.6	516.3	7.3	96
SJS6114-71	170	26222	1.0	17.0421	5.6	0.6759	5.8	0.0835	1.7	0.28	517.2	8.2	524.3	23.9	555.2	122.2	517.2	8.2	93
SJS6114-32	373	56689	2.6	17.0744	1.9	0.6747	2.1	0.0835	1.1	0.50	517.3	5.3	523.5	8.8	551.0	40.5	517.3	5.3	94
SJS6114-96	385	44461	1.0	17.2049	1.2	0.6697	2.4	0.0836	2.1	0.87	517.4	10.6	520.5	9.9	534.4	25.9	517.4	10.6	97
SJS6114-51	286	27560	2.3	17.0962	2.8	0.6753	3.4	0.0837	1.8	0.54	518.4	9.2	523.9	13.9	548.3	62.1	518.4	9.2	95
SJS6114-91	152	41280	1.1	17.5849	5.7	0.6568	5.7	0.0838	0.9	0.15	518.6	4.3	512.6	23.1	486.4	125.4	518.6	4.3	107

DR Table 1. U-Pb geochronologic analyses and plots.

							Isotope ratios						Apparent ages (Ma)						
Analysis	U (ppm)	206Pb/204Pb	U/Th	206Pb*/207Pb*	± (%)	207Pb*/235U*	± (%)	206Pb*/238U	± (%)	error corr.	206Pb*/238U*	± (Ma)	207Pb*/235U	± (Ma)	206Pb*/207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc %
SJS6114-78	558	194120	2.3	17.4173	2.0	0.6632	2.7	0.0838	1.8	0.66	518.6	8.9	516.6	11.0	507.5	45.0	518.6	8.9	102
SJS6114-16	396	29042	1.0	17.3663	1.7	0.6654	2.2	0.0838	1.3	0.62	518.8	6.6	517.9	8.8	513.9	37.5	518.8	6.6	101
SJS6114-99	121	5541	1.6	17.0535	5.4	0.6787	5.7	0.0839	1.8	0.32	519.6	9.2	526.0	23.4	553.7	118.0	519.6	9.2	94
SJS6114-45	168	17192	1.0	17.4217	4.7	0.6659	4.8	0.0841	0.8	0.17	520.8	4.1	518.2	19.5	506.9	104.2	520.8	4.1	103
SJS6114-54	270	126981	1.5	16.8867	1.4	0.6874	1.6	0.0842	0.8	0.49	521.1	4.0	531.2	6.8	575.1	31.0	521.1	4.0	91
SJS6114-82	77	20951	2.4	16.4959	6.4	0.7044	6.5	0.0843	1.6	0.24	521.6	7.8	541.4	27.5	625.8	137.1	521.6	7.8	83
SJS6114-61	143	13452	1.3	17.5220	8.2	0.6639	8.2	0.0844	1.0	0.12	522.2	4.8	517.0	33.4	494.3	180.8	522.2	4.8	106
SJS6114-58	122	29794	3.8	17.1280	5.7	0.6821	5.8	0.0847	1.0	0.18	524.3	5.1	528.0	23.7	544.2	123.9	524.3	5.1	96
SJS6114-76	80	22484	2.6	17.2714	8.4	0.6790	8.5	0.0851	1.4	0.16	526.2	7.0	526.2	35.1	525.9	185.3	526.2	7.0	100
SJS6114-62	54	8920	3.0	17.5583	14.0	0.6680	14.0	0.0851	0.9	0.07	526.3	4.8	519.5	56.9	489.7	309.2	526.3	4.8	107
SJS6114-44	139	27708	1.2	17.9435	6.4	0.6566	6.7	0.0854	2.0	0.29	528.6	9.9	512.5	26.9	441.6	142.5	528.6	9.9	120
SJS6114-84	354	62664	1.3	17.1479	1.5	0.6882	1.7	0.0856	0.8	0.47	529.4	4.1	531.7	7.0	541.7	32.9	529.4	4.1	98
SJS6114-1	580	63517	3.4	17.1674	0.8	0.6890	1.1	0.0858	0.8	0.68	530.6	3.9	532.2	4.7	539.2	18.4	530.6	3.9	98
SJS6114-88	285	30495	1.6	17.3277	2.0	0.6828	2.7	0.0858	1.9	0.70	530.7	9.8	528.5	11.3	518.8	42.8	530.7	9.8	102
SJS6114-56	129	15855	2.5	17.4579	5.2	0.6848	5.6	0.0867	1.8	0.33	536.0	9.4	529.7	22.9	502.4	115.6	536.0	9.4	107
SJS6114-18	103	23821	3.6	17.8433	7.0	0.6707	7.0	0.0868	0.9	0.12	536.5	4.5	521.1	28.7	454.1	155.2	536.5	4.5	118
SJS6114-10	133	16621	2.8	17.7389	2.7	0.6880	3.0	0.0885	1.3	0.44	546.8	6.9	531.6	12.4	467.1	59.7	546.8	6.9	117
SJS6114-39	34	7561	2.6	17.0434	11.9	0.7164	11.9	0.0886	1.2	0.10	547.0	6.1	548.6	50.6	555.0	260.0	547.0	6.1	99
SJS6114-70	358	9515	1.7	16.9744	1.6	0.7294	2.2	0.0898	1.4	0.67	554.3	7.7	556.2	9.3	563.8	35.3	554.3	7.7	98
~~SJS6114-28~~	~~204~~	~~18588~~	~~2.7~~	~~12.1878~~	~~33.6~~	~~1.0653~~	~~33.8~~	~~0.0942~~	~~2.8~~	~~0.08~~	~~580.1~~	~~15.4~~	~~736.4~~	~~178.6~~	~~1246.7~~	~~678.1~~	~~580.1~~	~~15.4~~	~~47~~
~~SJS6114-68~~	~~302~~	~~37458~~	~~2.2~~	~~15.1227~~	~~1.2~~	~~1.0485~~	~~2.4~~	~~0.1150~~	~~2.0~~	~~0.87~~	~~701.7~~	~~13.6~~	~~728.1~~	~~12.2~~	~~810.3~~	~~24.5~~	~~701.7~~	~~13.6~~	~~87~~
SJS6114-8	220	30837	1.8	15.4068	2.6	1.0515	3.8	0.1175	2.7	0.73	716.1	18.5	729.6	19.6	771.3	54.6	716.1	18.5	93
~~SJS6114-75~~	~~32~~	~~10212~~	~~1.3~~	~~15.3944~~	~~4.4~~	~~1.0824~~	~~4.5~~	~~0.1209~~	~~1.1~~	~~0.24~~	~~735.5~~	~~7.5~~	~~744.8~~	~~24.0~~	~~773.0~~	~~93.0~~	~~735.5~~	~~7.5~~	~~95~~
SJS6114-86	1050	7129	2.4	12.1371	1.7	1.3845	4.1	0.1219	3.7	0.91	741.4	26.2	882.4	24.4	1254.8	34.2	741.4	26.2	59
~~SJS6114-34~~	~~153~~	~~51986~~	~~2.5~~	~~13.1560~~	~~25.0~~	~~1.2854~~	~~54.9~~	~~0.1227~~	~~48.9~~	~~0.89~~	~~745.8~~	~~344.9~~	~~839.3~~	~~324.3~~	~~1095.4~~	~~507.9~~	~~745.8~~	~~344.9~~	~~68~~
SJS6114-52	33	14624	0.9	15.0647	3.1	1.1347	4.2	0.1240	2.8	0.67	753.4	20.2	770.0	22.8	818.4	65.2	753.4	20.2	92
~~SJS6114-87~~	~~47~~	~~8077~~	~~1.0~~	~~15.6474~~	~~8.9~~	~~1.1115~~	~~9.1~~	~~0.1261~~	~~1.8~~	~~0.20~~	~~765.8~~	~~13.3~~	~~758.9~~	~~48.5~~	~~738.6~~	~~188.4~~	~~765.8~~	~~13.3~~	~~104~~
SJS6114-37	20	15599	0.6	14.8564	2.4	1.1791	2.8	0.1270	1.4	0.49	771.0	9.9	790.9	15.2	847.4	50.3	771.0	9.9	91
SJS6114-94	44	8026	1.0	15.4417	2.9	1.1446	3.2	0.1282	1.3	0.39	777.5	9.2	774.7	17.3	766.5	61.6	777.5	9.2	101
SJS6114-33	178	36634	1.2	15.1184	1.0	1.2272	2.3	0.1346	2.1	0.89	813.8	15.9	813.1	13.0	811.0	21.7	813.8	15.9	100
~~SJS6114-35~~	~~47~~	~~18453~~	~~1.9~~	~~14.4260~~	~~5.4~~	~~1.2926~~	~~6.1~~	~~0.1352~~	~~2.7~~	~~0.44~~	~~817.7~~	~~20.6~~	~~842.4~~	~~34.8~~	~~908.2~~	~~112.3~~	~~817.7~~	~~20.6~~	~~90~~
SJS6114-26	65	9005	1.7	14.8254	3.8	1.2790	4.3	0.1375	2.0	0.47	830.7	15.8	836.4	24.7	851.8	79.7	830.7	15.8	98
SJS6114-9	81	24523	1.5	14.9502	3.0	1.3206	3.5	0.1432	1.9	0.55	862.7	15.7	854.8	20.4	834.3	61.5	862.7	15.7	103
SJS6114-95	427	106016	6.0	14.1846	0.6	1.4926	1.1	0.1536	1.0	0.86	920.8	8.5	927.4	6.9	942.9	11.9	920.8	8.5	98
SJS6114-48	352	84870	3.2	9.6375	0.5	4.0718	2.3	0.2846	2.3	0.98	1614.6	32.7	1648.7	19.1	1692.4	8.8	1692.4	8.8	95
SJS6114-24	135	175355	1.6	9.3279	1.2	4.4384	2.1	0.3003	1.8	0.83	1692.6	26.1	1719.5	17.5	1752.4	21.7	1752.4	21.7	97
~~SJS6114-3~~	~~266~~	~~93359~~	~~6.1~~	~~7.8237~~	~~2.2~~	~~5.6351~~	~~2.8~~	~~0.3198~~	~~1.7~~	~~0.61~~	~~1788.5~~	~~27.0~~	~~1921.5~~	~~24.2~~	~~2068.1~~	~~39.1~~	~~2068.1~~	~~39.1~~	~~86~~
SJS6114-74	64	23248	0.8	8.5571	0.7	5.3486	1.1	0.3319	0.9	0.78	1847.8	14.5	1876.7	9.8	1908.8	12.8	1908.8	12.8	97
SJS6114-22	78	34022	3.0	8.6358	1.1	5.3080	1.6	0.3325	1.1	0.71	1850.3	18.3	1870.2	13.7	1892.3	20.4	1892.3	20.4	98
SJS6114-30	36	30396	0.1	7.9818	2.4	6.0977	2.9	0.3530	1.5	0.53	1948.9	25.7	1989.9	25.0	2032.8	42.9	2032.8	42.9	96
SJS6114-85	18	12332	0.1	8.4570	3.8	5.7866	3.9	0.3549	0.8	0.22	1958.1	14.3	1944.4	33.9	1929.9	68.6	1929.9	68.6	101
SJS6114-4	157	94616	2.9	8.0293	0.5	6.1687	1.7	0.3592	1.7	0.95	1978.5	28.1	2000.0	15.1	2022.3	9.2	2022.3	9.2	98
SJS6114-12	48	18724	0.8	8.1223	1.5	6.1012	2.8	0.3594	2.4	0.85	1979.4	41.2	1990.4	24.8	2001.9	26.5	2001.9	26.5	99
SJS6114-27	127	41030	0.5	8.0978	0.4	6.1363	1.7	0.3604	1.6	0.97	1984.0	27.8	1995.4	14.7	2007.2	7.4	2007.2	7.4	99
SJS6114-59	448	153272	1.7	8.0590	0.3	6.3413	1.2	0.3706	1.2	0.98	2032.4	20.1	2024.2	10.4	2015.8	4.6	2015.8	4.6	101
SJS6114-47	338	92700	2.0	6.4174	1.1	8.7955	1.1	0.4094	0.4	0.34	2212.0	7.2	2317.0	10.4	2410.9	18.2	2410.9	18.2	92
SJS6114-55	59	125468	0.8	6.7925	0.7	8.8404	1.7	0.4355	1.5	0.92	2330.5	30.3	2321.7	15.4	2313.9	11.7	2313.9	11.7	101
~~SJS6114-25~~	~~226~~	~~229182~~	~~2.1~~	~~4.0929~~	~~1.0~~	~~17.4973~~	~~1.9~~	~~0.5194~~	~~1.7~~	~~0.87~~	~~2696.6~~	~~37.2~~	~~2962.5~~	~~18.7~~	~~3148.4~~	~~15.4~~	~~3148.4~~	~~15.4~~	~~86~~
SJS6114-81	16	13172	2.6	4.5263	1.8	16.2172	2.1	0.5324	1.0	0.48	2751.4	22.7	2889.7	20.1	2987.5	29.7	2987.5	29.7	92
SJS6114-6	68	47158	1.7	4.9933	0.6	14.9033	1.1	0.5397	0.9	0.86	2782.3	21.2	2809.1	10.4	2828.4	9.0	2828.4	9.0	98
SJS6114-60	282	135053	1.3	3.8495	0.8	20.8232	1.5	0.5814	1.3	0.84	2954.3	30.3	3130.4	14.8	3245.3	13.2	3245.3	13.2	91
~~TSA-138-35~~	~~63~~	~~9016~~	~~2.1~~	~~18.5963~~	~~12.6~~	~~0.4557~~	~~12.8~~	~~0.0615~~	~~2.0~~	~~0.16~~	~~384.5~~	~~7.6~~	~~381.3~~	~~40.7~~	~~361.6~~	~~285.8~~	~~384.5~~	~~7.6~~	~~106~~
TSA-138-82	96	17019	2.4	17.8920	12.4	0.4956	12.5	0.0643	1.3	0.10	401.8	4.9	408.7	42.0	448.0	277.0	401.8	4.9	90
TSA-138-10	85	9506	1.1	18.5923	16.8	0.4776	16.9	0.0644	1.5	0.09	402.3	6.0	396.4	55.5	362.1	381.8	402.3	6.0	111
TSA-138-81	1024	30182	2.1	17.7620	1.7	0.5067	4.4	0.0653	4.1	0.92	407.6	16.0	416.2	15.0	464.2	37.6	407.6	16.0	88
TSA-138-12	303	8927	1.7	17.8385	2.5	0.5096	3.6	0.0659	2.6	0.73	411.6	10.6	418.2	12.4	454.7	54.6	411.6	10.6	91
TSA-138-7	184	20817	2.0	17.8911	2.7	0.5107	3.5	0.0663	2.2	0.63	413.7	9.0	418.9	12.2	448.1	61.0	413.7	9.0	92
TSA-138-65	323	34544	1.1	17.9026	3.0	0.5190	4.1	0.0674	2.8	0.69	420.4	11.5	424.5	14.2	446.7	65.8	420.4	11.5	94
TSA-138-42	78	6936	1.5	16.5561	11.7	0.5676	11.9	0.0682	2.5	0.21	425.0	10.1	456.5	43.9	617.9	252.8	425.0	10.1	69
TSA-138-78	40	8196	1.5	16.8972	12.9	0.5570	13.0	0.0683	1.9	0.14	425.7	7.6	449.6	47.3	573.8	281.2	425.7	7.6	74
TSA-138-1	164	3117	2.7	16.6434	3.7	0.6023	4.3	0.0727	2.2	0.52	452.4	9.8	478.7	16.5	606.6	80.4	452.4	9.8	75
TSA-138-51	545	8424	1.6	16.5375	5.9	0.6120	6.3	0.0734	2.1	0.33	456.6	9.2	484.8	24.1	620.4	127.5	456.6	9.2	74
TSA-138-90	142	27743	1.3	17.6252	5.1	0.5746	5.4	0.0735	1.8	0.33	456.9	7.8	461.0	20.0	481.3	112.8	456.9	7.8	95
TSA-138-97	261	48145	0.8	17.9293	3.0	0.5658	3.5	0.0736	1.9	0.55	457.7	8.6	455.3	13.0	443.4	65.9	457.7	8.6	103
TSA-138-54	346	36090	1.7	17.1415	1.3	0.5978	1.7	0.0743	1.1	0.66	462.1	5.0	475.8	6.4	542.5	27.7	462.1	5.0	85
TSA-138-67	57	10330	2.3	18.6024	16.8	0.5580	16.9	0.0753	1.8	0.10	467.9	7.9	450.2	61.4	360.8	380.5	467.9	7.9	130
TSA-138-2	911	49749	2.4	17.6162	1.1	0.5941	2.5	0.0759	2.3	0.90	471.6	10.3	473.5	9.6	482.5	24.4	471.6	10.3	98
TSA-138-28	72	11375	4.0	16.4243	5.6	0.6414	8.8	0.0764	6.8	0.77	474.7	31.1	503.2	34.9	635.2	119.7	474.7	31.1	75
TSA-138-46	180	39767	1.0	17.7918	4.6	0.5952	5.3	0.0768	2.5	0.48	477.0	11.6	474.2	20.0	460.5	102.6	477.0	11.6	104
TSA-138-33	275	25943	1.4	17.0797	5.8	0.6229	6.6	0.0772	3.1	0.47	479.2	14.2	491.7	25.6	550.4	127.1	479.2	14.2	87
TSA-138-4	67	6110	1.6	15.3636	11.3	0.6931	14.3	0.0772	8.8	0.62	479.6	40.6	534.7	59.4	777.2	237.3	479.6	40.6	62
TSA-138-13	1178	38455	0.8	17.4209	0.9	0.6127	2.7	0.0774	2.5	0.94	480.7	11.8	485.3	10.4	507.0	19.7	480.7	11.8	95
TSA-138-15	192	29118	1.1	17.6838	4.8	0.6041	6.0	0.0775	3.6	0.60	481.0	16.9	479.8	23.1	474.0	106.9	481.0	16.9	101
TSA-138-58	297	61397	1.9	17.5549	1.1	0.6093	1.4	0.0776	0.8	0.56	481.6	3.5	483.1	5.2	490.2	24.9	481.6	3.5	98

DR Table 1. U-Pb geochronologic analyses and plots.																			
							Isotope ratios							Apparent ages (Ma)					
Analysis	U (ppm)	206Pb / 204Pb	U/Th	206Pb* / 207Pb*	± (%)	207Pb* / 235U*	± (%)	206Pb* / 238U	± (%)	error corr.	206Pb* / 238U*	± (Ma)	207Pb* / 235U	± (Ma)	206Pb* / 207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc %
TSA-138-70	332	56025	2.6	17.8414	2.0	0.5998	3.7	0.0776	3.1	0.85	481.9	14.6	477.1	14.2	454.4	44.0	481.9	14.6	106
TSA-138-86	61	9957	2.2	18.0294	13.2	0.5968	13.2	0.0780	0.9	0.07	484.4	4.4	475.2	50.3	431.0	295.3	484.4	4.4	112
TSA-138-100	125	35165	0.9	18.0510	6.5	0.6001	7.0	0.0786	2.5	0.36	487.6	11.7	477.3	26.6	428.3	145.8	487.6	11.7	114
TSA-138-38	88	15716	2.4	17.2452	10.5	0.6299	10.7	0.0788	1.8	0.17	488.8	8.3	496.0	41.8	529.3	230.9	488.8	8.3	92
TSA-138-17	146	20664	2.0	17.2858	7.0	0.6290	7.2	0.0789	1.7	0.23	489.3	7.8	495.5	28.2	524.1	153.7	489.3	7.8	93
TSA-138-53	238	17540	1.0	16.9932	5.8	0.6399	7.2	0.0789	4.3	0.60	489.3	20.2	502.2	28.5	561.4	125.8	489.3	20.2	87
TSA-138-16	220	22550	1.7	17.9214	2.3	0.6070	3.0	0.0789	1.9	0.63	489.5	8.9	481.6	11.5	444.4	52.2	489.5	8.9	110
TSA-138-96	68	12203	1.0	17.1402	8.6	0.6367	8.8	0.0792	1.8	0.21	491.1	8.6	500.3	34.8	542.6	188.6	491.1	8.6	91
TSA-138-61	198	36448	1.9	17.4962	3.3	0.6297	3.7	0.0799	1.8	0.48	495.5	8.6	495.9	14.6	497.5	72.0	495.5	8.6	100
TSA-138-56	419	61138	2.7	17.0868	1.6	0.6472	2.2	0.0802	1.5	0.68	497.3	7.3	506.8	8.8	549.4	35.3	497.3	7.3	91
TSA-138-88	696	108425	1.8	17.6220	0.7	0.6313	2.9	0.0807	2.8	0.97	500.2	13.5	496.9	11.4	481.7	16.1	500.2	13.5	104
TSA-138-24	516	52938	0.8	17.4092	1.9	0.6391	2.2	0.0807	1.0	0.48	500.3	5.0	501.8	8.5	508.5	41.5	500.3	5.0	98
TSA-138-44	232	40106	3.0	16.9996	4.0	0.6567	4.1	0.0810	0.6	0.14	501.9	2.7	512.6	16.4	560.6	87.9	501.9	2.7	90
TSA-138-85	309	49977	1.4	17.1947	1.9	0.6534	2.5	0.0815	1.7	0.66	505.0	8.0	510.6	10.1	535.7	41.7	505.0	8.0	94
TSA-138-87	90	17781	2.0	16.8503	7.1	0.6695	7.4	0.0818	2.0	0.27	507.0	9.6	520.4	30.0	579.8	154.6	507.0	9.6	87
TSA-138-60	184	36494	3.1	17.4216	4.8	0.6478	5.0	0.0818	1.4	0.29	507.1	7.0	507.1	19.9	506.9	104.8	507.1	7.0	100
TSA-138-3	427	7416	2.9	16.5051	4.5	0.6871	5.0	0.0822	2.1	0.42	509.5	10.3	531.1	20.5	624.6	96.8	509.5	10.3	82
TSA-138-41	372	65001	1.2	17.3022	1.7	0.6575	3.1	0.0825	2.5	0.83	511.1	12.5	513.1	12.3	522.0	37.7	511.1	12.5	98
TSA-138-19	398	62511	1.6	17.2225	1.9	0.6612	3.5	0.0826	2.9	0.84	511.6	14.5	515.3	14.2	532.2	41.5	511.6	14.5	96
TSA-138-37	184	27776	1.7	17.5002	4.8	0.6564	5.8	0.0833	3.3	0.56	515.8	16.1	512.4	23.3	497.0	105.8	515.8	16.1	104
TSA-138-57	311	53794	3.1	17.1878	2.3	0.6698	2.6	0.0835	1.1	0.44	517.0	5.6	520.6	10.5	536.6	50.7	517.0	5.6	96
TSA-138-73	118	23646	1.8	17.5799	9.7	0.6572	9.9	0.0838	1.7	0.17	518.7	8.6	512.9	39.8	487.0	215.4	518.7	8.6	107
TSA-138-63	379	72365	0.8	17.1934	1.8	0.6758	2.9	0.0843	2.3	0.78	521.6	11.4	524.2	11.8	535.8	39.3	521.6	11.4	97
TSA-138-43	626	123281	2.7	17.4963	1.2	0.6695	1.7	0.0850	1.2	0.72	525.7	6.0	520.4	6.8	497.5	25.6	525.7	6.0	106
TSA-138-30	151	2916	1.2	13.3503	20.3	0.8826	20.3	0.0855	1.4	0.07	528.6	7.1	642.4	97.1	1066.0	412.2	528.6	7.1	50
TSA-138-64	312	40469	0.9	17.0633	2.6	0.6963	3.2	0.0862	1.8	0.57	532.8	9.2	536.6	13.2	552.5	57.0	532.8	9.2	96
TSA-138-79	169	31425	0.6	17.5049	3.3	0.6826	4.6	0.0867	3.2	0.70	535.8	16.7	528.3	19.1	496.4	73.3	535.8	16.7	108
TSA-138-66	197	42420	2.7	17.1875	3.5	0.6953	4.5	0.0867	2.7	0.62	535.8	14.1	536.0	18.6	536.6	76.9	535.8	14.1	100
TSA-138-92	248	52706	1.2	17.3617	2.5	0.6930	3.6	0.0873	2.6	0.73	539.3	13.6	534.6	15.0	514.5	54.5	539.3	13.6	105
TSA-138-69	64	12233	1.9	18.4387	9.3	0.6611	9.6	0.0884	2.5	0.26	546.1	13.2	515.3	38.9	380.8	209.2	546.1	13.2	143
TSA-138-11	152	35574	2.3	17.3374	5.6	0.7044	6.2	0.0886	2.6	0.43	547.1	13.9	541.4	25.8	517.6	122.1	547.1	13.9	106
TSA-138-6	132	24003	1.3	17.1978	2.8	0.7103	3.3	0.0886	1.8	0.54	547.2	9.5	544.9	14.1	535.3	61.4	547.2	9.5	102
TSA-138-72	67	12440	4.2	17.4571	8.4	0.7075	8.6	0.0896	1.8	0.21	553.1	9.6	543.3	36.2	502.5	185.3	553.1	9.6	110
TSA-138-14	263	71220	2.2	16.8073	2.8	0.7772	3.0	0.0947	1.1	0.36	583.5	6.1	583.9	13.5	585.4	61.7	583.5	6.1	100
TSA-138-98	193	32011	0.6	16.6331	3.4	0.7888	3.7	0.0952	1.5	0.40	586.0	8.3	590.5	16.5	607.9	72.9	586.0	8.3	96
TSA-138-99	533	143203	1.4	16.6555	1.3	0.8322	2.4	0.1005	2.0	0.83	617.5	11.7	614.8	11.1	605.0	29.0	617.5	11.7	102
TSA-138-59	257	45397	3.6	16.0932	1.9	0.8744	3.2	0.1021	2.5	0.80	626.4	15.2	637.9	15.1	678.8	41.2	626.4	15.2	92
TSA-138-62	219	45261	0.5	16.2861	2.0	0.8784	2.3	0.1038	1.1	0.47	636.4	6.6	640.1	11.0	653.3	43.8	636.4	6.6	97
TSA-138-84	215	31869	1.2	15.3300	2.8	1.0358	5.8	0.1152	5.0	0.88	702.6	33.6	721.8	29.8	781.8	58.6	702.6	33.6	90
TSA-138-21	74	30269	1.1	15.1514	3.7	1.0936	9.5	0.1202	8.8	0.92	731.6	60.9	750.2	50.6	806.4	77.0	731.6	60.9	91
TSA-138-48	101	47133	0.5	15.3677	3.4	1.0948	3.7	0.1220	1.5	0.41	742.2	10.7	750.8	19.9	776.6	72.0	742.2	10.7	96
~~TSA-138-45~~	~~37~~	~~11882~~	~~1.5~~	~~15.5161~~	~~10.0~~	~~1.0855~~	~~10.1~~	~~0.1222~~	~~1.1~~	~~0.11~~	~~742.9~~	~~7.9~~	~~746.3~~	~~53.3~~	~~756.4~~	~~211.7~~	~~742.9~~	~~7.9~~	~~98~~
TSA-138-55	284	95443	1.4	15.1389	2.0	1.1483	3.1	0.1261	2.3	0.75	765.5	16.8	776.4	16.8	808.1	42.5	765.5	16.8	95
~~TSA-138-31~~	~~721~~	~~23372~~	~~1.1~~	~~14.7476~~	~~1.9~~	~~1.1822~~	~~4.4~~	~~0.1264~~	~~4.0~~	~~0.90~~	~~767.6~~	~~28.8~~	~~792.3~~	~~24.2~~	~~862.7~~	~~39.0~~	~~767.6~~	~~28.8~~	~~89~~
TSA-138-76	117	32580	0.7	15.0668	2.9	1.1700	3.1	0.1278	1.2	0.38	775.6	8.8	786.6	17.2	818.1	60.7	775.6	8.8	95
~~TSA-138-68~~	~~80~~	~~8419~~	~~1.1~~	~~14.4917~~	~~3.4~~	~~1.2252~~	~~3.9~~	~~0.1288~~	~~1.9~~	~~0.50~~	~~780.9~~	~~14.3~~	~~812.1~~	~~21.8~~	~~898.9~~	~~69.8~~	~~780.9~~	~~14.3~~	~~87~~
TSA-138-50	669	60849	1.2	14.9959	0.7	1.1840	1.4	0.1288	1.2	0.84	780.9	8.6	793.2	7.7	828.0	15.6	780.9	8.6	94
~~TSA-138-80~~	~~131~~	~~14933~~	~~1.0~~	~~14.5158~~	~~5.1~~	~~1.2303~~	~~5.7~~	~~0.1295~~	~~2.4~~	~~0.43~~	~~785.1~~	~~18.0~~	~~814.5~~	~~31.8~~	~~895.5~~	~~106.1~~	~~785.1~~	~~18.0~~	~~88~~
TSA-138-83	177	43750	1.3	14.9605	2.3	1.1937	3.0	0.1295	1.8	0.62	785.1	13.6	797.7	16.4	832.9	48.4	785.1	13.6	94
~~TSA-138-52~~	~~97~~	~~2899~~	~~1.0~~	~~8.5392~~	~~51.7~~	~~2.1004~~	~~51.8~~	~~0.1301~~	~~3.3~~	~~0.06~~	~~788.3~~	~~24.8~~	~~1148.9~~	~~372.1~~	~~1912.5~~	~~1004.7~~	~~1912.5~~	~~1004.7~~	~~41~~
TSA-138-77	398	75200	0.8	15.1054	1.0	1.1883	2.0	0.1302	1.7	0.85	788.9	12.4	795.2	10.8	812.8	21.3	788.9	12.4	97
~~TSA-138-18~~	~~135~~	~~47683~~	~~1.7~~	~~15.5059~~	~~3.0~~	~~1.1783~~	~~3.3~~	~~0.1325~~	~~1.2~~	~~0.38~~	~~802.2~~	~~9.3~~	~~790.5~~	~~17.9~~	~~757.8~~	~~63.5~~	~~802.2~~	~~9.3~~	~~106~~
TSA-138-22	605	58153	1.0	15.0194	0.5	1.2216	1.7	0.1331	1.6	0.94	805.4	11.9	810.5	9.3	824.7	11.4	805.4	11.9	98
TSA-138-8	338	97399	2.3	15.1349	0.9	1.2718	2.1	0.1396	1.9	0.91	842.4	15.1	833.2	11.9	808.7	18.4	842.4	15.1	104
TSA-138-29	192	54184	1.4	14.7335	2.0	1.3071	2.4	0.1397	1.4	0.55	842.8	10.7	848.9	14.1	864.7	42.2	842.8	10.7	97
TSA-138-5	281	68879	2.2	15.0604	1.6	1.2829	2.7	0.1401	2.2	0.81	845.4	17.1	838.1	15.3	819.0	33.2	845.4	17.1	103
~~TSA-138-32~~	~~64~~	~~6623~~	~~2.5~~	~~14.2768~~	~~10.5~~	~~1.3636~~	~~11.3~~	~~0.1412~~	~~4.0~~	~~0.36~~	~~851.4~~	~~32.2~~	~~873.4~~	~~66.1~~	~~929.6~~	~~216.5~~	~~851.4~~	~~32.2~~	~~92~~
~~TSA-138-27~~	~~83~~	~~21970~~	~~1.4~~	~~14.9780~~	~~7.2~~	~~1.3051~~	~~7.3~~	~~0.1418~~	~~1.4~~	~~0.19~~	~~854.7~~	~~11.3~~	~~848.0~~	~~42.2~~	~~830.5~~	~~150.4~~	~~854.7~~	~~11.3~~	~~103~~
TSA-138-39	385	123186	1.1	14.8860	1.0	1.3214	2.2	0.1427	1.9	0.88	859.7	15.6	855.1	12.6	843.3	21.3	859.7	15.6	102
TSA-138-93	867	85199	9.4	14.7622	0.6	1.3620	2.0	0.1458	1.9	0.95	877.5	15.5	872.7	11.7	860.6	13.4	877.5	15.5	102
TSA-138-25	295	73166	0.7	14.6342	1.0	1.3920	3.8	0.1477	3.7	0.97	888.3	30.6	885.6	22.5	878.7	20.1	888.3	30.6	101
TSA-138-49	358	114268	5.1	14.2095	1.1	1.4580	2.4	0.1503	2.2	0.88	902.4	18.2	913.2	14.7	939.3	23.5	939.3	23.5	96
TSA-138-75	97	28376	2.5	14.9208	2.6	1.4081	2.8	0.1524	0.9	0.34	914.3	7.9	892.4	16.4	838.4	54.1	914.3	7.9	109
TSA-138-95	120	37234	0.7	14.6509	2.8	1.4423	3.4	0.1533	2.0	0.57	919.2	16.8	906.7	20.7	876.3	58.7	919.2	16.8	105
TSA-138-9	180	52250	1.6	14.8855	1.9	1.4255	2.9	0.1539	2.3	0.77	922.7	19.4	899.6	17.6	843.4	39.2	922.7	19.4	109
TSA-138-74	187	60489	2.4	14.5519	1.6	1.5225	2.0	0.1607	1.2	0.61	960.6	10.7	939.5	12.1	890.3	32.5	890.3	32.5	108
~~TSA-138-20~~	~~443~~	~~154899~~	~~2.6~~	~~6.9045~~	~~1.4~~	~~4.7613~~	~~6.3~~	~~0.2384~~	~~6.1~~	~~0.97~~	~~1378.5~~	~~76.1~~	~~1778.1~~	~~52.9~~	~~2285.8~~	~~24.6~~	~~2285.8~~	~~24.6~~	~~60~~
TSA-138-26	405	154546	0.8	8.6175	0.2	5.6289	1.4	0.3518	1.3	0.98	1943.2	22.6	1920.5	11.8	1896.1	4.4	1896.1	4.4	102
~~TSA-138-71~~	~~276~~	~~175799~~	~~2.0~~	~~7.1865~~	~~1.4~~	~~6.8038~~	~~1.8~~	~~0.3546~~	~~1.2~~	~~0.68~~	~~1956.7~~	~~20.9~~	~~2086.2~~	~~16.2~~	~~2216.6~~	~~23.4~~	~~2216.6~~	~~23.4~~	~~88~~
TSA-138-40	333	151337	3.4	7.8789	0.7	6.5923	3.0	0.3767	3.0	0.97	2060.9	52.1	2058.3	26.8	2055.7	12.2	2055.7	12.2	100
TSA-138-89	144	109980	1.7	5.6813	0.3	12.5780	1.8	0.5183	1.8	0.99	2691.9	39.1	2648.6	17.0	2615.7	5.1	2615.7	5.1	103
TSA-138-91	268	308784	2.1	4.7402	0.3	16.9157	1.1	0.5815	1.0	0.95	2955.1	24.0	2930.1	10.2	2912.9	5.4	2912.9	5.4	101
TSA-138-36	61	74621	3.2	4.3379	1.1	19.2754	1.4	0.6064	0.9	0.63	3055.7	21.9	3055.7	13.7	3055.7	17.5	3055.7	17.5	100
CH-4D1-30	155	16889	1.8	17.8432	4.2	0.4820	5.4	0.0624	3.4	0.63	390.1	12.8	399.4	17.8	454.1	92.8	390.1	12.8	86

DR Table 1. U-Pb geochronologic analyses and plots.

						Isotope ratios					Apparent ages (Ma)								
Analysis	U (ppm)	206Pb 204Pb	U/Th	206Pb* 207Pb*	± (%)	207Pb* 235U*	± (%)	206Pb* 238U	± (%)	error corr.	206Pb* 238U*	± (Ma)	207Pb* 235U	± (Ma)	206Pb* 207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc %
CH-4D1-12	146	13676	1.7	18.9271	8.6	0.4571	8.6	0.0627	0.7	0.09	392.3	2.8	382.2	27.3	321.7	194.6	392.3	2.8	122
CH-4D1-83	218	32112	1.6	18.2384	5.0	0.4761	5.3	0.0630	2.0	0.37	393.7	7.5	395.4	17.5	405.2	111.2	393.7	7.5	97
CH-4D1-84	410	69079	2.6	18.4655	3.7	0.4738	5.4	0.0635	4.0	0.73	396.6	15.2	393.8	17.8	377.5	83.8	396.6	15.2	105
CH-4D1-22	85	8741	1.5	18.6933	16.7	0.4757	16.9	0.0645	2.9	0.17	402.9	11.5	395.1	55.5	349.9	379.5	402.9	11.5	115
CH-4D1-69	70	19830	1.4	18.5411	12.3	0.4804	12.4	0.0646	1.7	0.14	403.5	6.8	398.3	40.8	368.3	277.3	403.5	6.8	110
CH-4D1-64	162	19398	1.0	18.2991	5.6	0.4937	5.7	0.0655	0.8	0.14	409.1	3.2	407.4	19.0	397.8	125.6	409.1	3.2	103
CH-4D1-10	65	5840	1.8	15.2350	18.1	0.5939	18.3	0.0656	2.0	0.11	409.7	8.0	473.4	69.2	794.8	383.5	409.7	8.0	52
CH-4D1-89	253	16327	1.7	17.6345	5.3	0.5135	5.4	0.0657	0.6	0.12	410.0	2.5	420.8	18.5	480.1	117.7	410.0	2.5	85
CH-4D1-45	377	47607	1.4	17.6932	4.2	0.5121	4.6	0.0657	1.9	0.41	410.3	7.5	419.9	15.7	472.8	91.9	410.3	7.5	87
CH-4D1-24	330	11275	1.9	17.2613	4.7	0.5252	4.8	0.0657	0.9	0.20	410.5	3.7	428.6	16.7	527.3	102.8	410.5	3.7	78
CH-4D1-44	274	25457	1.5	18.0528	3.1	0.5031	3.2	0.0659	0.5	0.15	411.2	1.9	413.8	10.8	428.1	69.7	411.2	1.9	96
CH-4D1-11	350	40428	1.9	18.5778	1.9	0.4921	2.8	0.0663	2.1	0.75	413.9	8.5	406.3	9.5	363.8	42.3	413.9	8.5	114
CH-4D1-46	407	59679	1.4	18.3767	1.6	0.4978	2.7	0.0663	2.2	0.81	414.1	8.9	410.2	9.3	388.3	35.9	414.1	8.9	107
CH-4D1-93	166	40662	2.0	18.2054	6.2	0.5026	6.6	0.0664	2.2	0.33	414.2	8.8	413.5	22.3	409.3	138.4	414.2	8.8	101
CH-4D1-9	92	17221	3.0	16.8399	10.6	0.5451	10.6	0.0666	1.0	0.09	415.5	3.9	441.8	38.0	581.2	230.1	415.5	3.9	71
CH-4D1-35	173	15380	1.2	17.3558	4.7	0.5318	5.1	0.0669	2.1	0.41	417.7	8.5	433.0	18.0	515.2	102.5	417.7	8.5	81
CH-4D1-91	487	59738	2.1	17.9653	1.2	0.5145	2.6	0.0670	2.3	0.89	418.3	9.4	421.5	9.0	438.9	26.8	418.3	9.4	95
CH-4D1-5	281	42742	1.9	18.3220	2.5	0.5046	2.8	0.0671	1.2	0.42	418.4	4.7	414.8	9.4	395.0	55.9	418.4	4.7	106
CH-4D1-41	132	21488	2.1	18.7510	6.7	0.4953	7.8	0.0674	4.1	0.52	420.2	16.5	408.5	26.3	342.9	151.3	420.2	16.5	123
CH-4D1-54	337	56553	1.3	18.1805	4.4	0.5110	4.5	0.0674	1.1	0.25	420.3	4.6	419.1	15.4	412.4	97.3	420.3	4.6	102
CH-4D1-52	194	45828	2.2	18.7036	5.1	0.4980	5.3	0.0676	1.3	0.24	421.4	5.2	410.4	17.8	348.6	115.6	421.4	5.2	121
~~CH-4D1-52~~	~~338~~	~~38791~~	~~1.3~~	~~16.6203~~	~~8.0~~	~~0.5605~~	~~17.9~~	~~0.0676~~	~~16.0~~	~~0.89~~	~~421.5~~	~~65.1~~	~~451.9~~	~~65.2~~	~~609.6~~	~~173.3~~	~~421.5~~	~~65.1~~	~~69~~
CH-4D1-68	65	13606	0.8	18.1137	10.3	0.5194	10.4	0.0682	1.6	0.15	425.5	6.5	424.7	36.2	420.6	230.6	425.5	6.5	101
CH-4D1-63	64	18701	1.9	15.9798	8.7	0.5944	8.8	0.0689	0.9	0.10	429.5	3.7	473.7	33.3	694.0	186.8	429.5	3.7	62
CH-4D1-57	439	38748	2.0	17.9549	1.9	0.5291	3.6	0.0689	3.1	0.85	429.5	12.7	431.2	12.7	440.2	42.6	429.5	12.7	98
CH-4D1-65	224	8288	1.9	17.3970	4.3	0.5464	4.5	0.0689	1.3	0.30	429.8	5.6	442.6	16.2	510.1	94.7	429.8	5.6	84
CH-4D1-34	132	17891	2.2	19.1427	6.1	0.4987	6.2	0.0692	1.1	0.17	431.6	4.5	410.8	21.0	295.9	140.1	431.6	4.5	146
CH-4D1-17	266	56181	2.1	18.5287	2.4	0.5174	2.7	0.0695	1.0	0.39	433.3	4.3	423.4	9.2	369.8	55.1	433.3	4.3	117
CH-4D1-88	455	31753	2.3	18.2305	1.2	0.5291	1.4	0.0700	0.8	0.55	435.9	3.3	431.2	4.9	406.2	26.2	435.9	3.3	107
CH-4D1-75	224	31298	1.1	18.3914	2.8	0.5293	3.0	0.0706	1.0	0.33	439.8	4.2	431.4	10.4	386.5	62.9	439.8	4.2	114
CH-4D1-8	45	7585	1.5	17.9798	22.2	0.5582	22.3	0.0728	2.1	0.09	452.9	9.1	450.4	81.4	437.1	500.2	452.9	9.1	104
CH-4D1-77	283	56058	4.7	18.4428	2.0	0.5568	2.9	0.0745	2.1	0.73	463.1	9.4	449.5	10.5	380.3	44.6	463.1	9.4	122
CH-4D1-67	239	28947	1.5	17.0714	3.7	0.6167	5.6	0.0764	4.3	0.76	474.3	19.5	487.8	21.8	551.4	80.5	474.3	19.5	86
CH-4D1-79	213	18367	1.5	17.0936	5.4	0.6276	5.5	0.0778	1.1	0.21	483.0	5.3	494.6	21.5	548.6	117.1	483.0	5.3	88
CH-4D1-66	214	33814	2.8	17.8718	4.0	0.6018	4.3	0.0780	1.6	0.37	484.2	7.5	478.4	16.4	450.5	88.5	484.2	7.5	107
CH-4D1-31	457	10810	1.8	17.0641	2.6	0.6372	3.2	0.0789	1.9	0.59	489.3	8.9	500.6	12.8	552.4	57.1	489.3	8.9	89
CH-4D1-25	125	28390	1.4	17.9824	4.9	0.6105	5.0	0.0796	0.9	0.18	493.8	4.3	483.8	19.3	436.8	109.8	493.8	4.3	113
CH-4D1-74	129	28974	2.3	17.0094	6.6	0.6479	6.7	0.0799	1.4	0.20	495.7	6.5	507.2	26.8	559.4	143.6	495.7	6.5	89
CH-4D1-86	195	27895	1.9	17.7405	6.9	0.6216	7.0	0.0800	1.3	0.19	496.0	6.4	490.8	27.4	466.9	153.1	496.0	6.4	106
CH-4D1-37	463	40816	2.0	17.5174	2.1	0.6313	3.3	0.0802	2.6	0.78	497.3	12.4	496.9	13.0	494.8	45.4	497.3	12.4	101
CH-4D1-14	149	15332	1.2	16.5749	4.8	0.6678	6.2	0.0803	3.9	0.62	497.8	18.5	519.4	25.1	615.5	104.1	497.8	18.5	81
CH-4D1-43	215	40566	1.4	17.7130	5.2	0.6263	5.3	0.0805	1.0	0.18	498.9	4.6	493.8	20.6	470.3	114.9	498.9	4.6	106
CH-4D1-49	235	11254	1.3	16.8646	3.0	0.6584	3.4	0.0805	1.6	0.48	499.3	7.9	513.6	13.9	578.0	65.5	499.3	7.9	86
CH-4D1-61	248	40268	2.0	17.9033	2.7	0.6208	2.9	0.0806	1.1	0.40	499.7	5.5	490.3	11.2	446.6	58.9	499.7	5.5	112
CH-4D1-3	157	30803	1.5	17.6426	5.2	0.6300	6.0	0.0806	3.1	0.51	499.8	14.7	496.1	23.6	479.1	114.3	499.8	14.7	104
CH-4D1-28	191	38697	2.1	17.5471	3.5	0.6402	4.3	0.0815	2.4	0.56	504.9	11.6	502.4	16.9	491.1	77.7	504.9	11.6	103
CH-4D1-92	176	39231	1.3	17.4160	4.0	0.6462	4.0	0.0816	0.4	0.11	505.8	2.2	506.1	16.0	507.7	87.7	505.8	2.2	100
CH-4D1-40	230	25427	1.3	17.2579	4.7	0.6640	4.8	0.0831	0.7	0.14	514.6	3.3	517.0	19.3	527.7	103.6	514.6	3.3	98
CH-4D1-76	454	103626	2.5	17.5914	1.8	0.6535	2.3	0.0834	1.4	0.60	516.2	6.9	510.6	9.2	485.6	40.6	516.2	6.9	106
CH-4D1-62	511	107432	1.5	17.4392	1.8	0.6599	2.2	0.0835	1.3	0.60	516.8	6.6	514.6	8.9	504.7	38.7	516.8	6.6	102
CH-4D1-77	249	45736	1.7	17.0557	4.2	0.6757	4.5	0.0836	1.5	0.33	517.5	7.4	524.2	18.3	553.4	92.3	517.5	7.4	94
CH-4D1-36	779	108953	1.8	17.4597	1.0	0.6632	1.5	0.0840	1.2	0.77	519.8	5.9	516.6	6.2	502.1	21.5	519.8	5.9	104
CH-4D1-80	1100	109077	2.3	17.4567	0.5	0.6636	1.8	0.0840	1.7	0.95	520.1	8.5	516.8	7.2	502.5	11.7	520.1	8.5	103
CH-4D1-2	225	29021	1.2	16.7959	4.6	0.6920	4.8	0.0843	1.5	0.32	521.7	7.7	534.0	20.0	586.9	99.4	521.7	7.7	89
CH-4D1-96	526	7111	1.0	14.6836	19.0	0.7928	19.1	0.0844	1.5	0.08	522.5	7.6	592.8	85.9	871.7	397.7	522.5	7.6	60
CH-4D1-71	760	137516	3.7	17.4924	0.8	0.6656	1.0	0.0844	0.6	0.58	522.6	3.0	518.0	4.2	498.0	18.5	522.6	3.0	105
CH-4D1-15	172	28377	3.6	16.9373	2.2	0.7003	4.7	0.0860	4.1	0.88	532.0	21.1	539.0	19.6	568.6	48.9	532.0	21.1	94
CH-4D1-39	313	29709	1.1	17.0737	1.1	0.6951	1.4	0.0861	0.8	0.58	532.2	4.1	535.8	5.8	551.2	24.6	532.2	4.1	97
CH-4D1-97	396	61528	1.9	17.4988	2.1	0.6829	2.5	0.0867	1.5	0.58	535.8	7.5	528.5	10.4	497.2	45.3	535.8	7.5	108
CH-4D1-87	322	44225	2.5	17.3683	1.6	0.6910	2.1	0.0870	1.3	0.62	538.0	6.6	533.4	8.6	513.7	35.4	538.0	6.6	105
CH-4D1-4	904	188803	1.2	17.4860	1.0	0.6893	2.0	0.0874	1.7	0.85	540.3	8.6	532.4	8.1	498.8	22.8	540.3	8.6	108
CH-4D1-26	185	16741	1.1	16.8267	3.8	0.7167	4.6	0.0875	2.7	0.58	540.6	13.8	548.7	19.5	582.9	81.6	540.6	13.8	93
CH-4D1-23	238	44636	1.4	17.3429	2.1	0.7003	3.9	0.0881	3.3	0.85	544.2	17.2	539.0	16.3	516.9	45.4	544.2	17.2	105
CH-4D1-16	945	71107	22.6	17.1106	1.6	0.7107	2.7	0.0882	2.2	0.82	544.9	11.5	545.2	11.4	546.4	34.2	544.9	11.5	100
CH-4D1-70	386	115608	2.5	17.4575	1.7	0.7068	1.9	0.0895	0.9	0.46	552.5	4.7	542.9	8.1	502.4	37.7	552.5	4.7	110
CH-4D1-42	203	25248	1.4	16.2897	6.1	0.7689	6.1	0.0908	0.7	0.12	560.5	4.0	579.1	27.1	652.9	131.0	560.5	4.0	86
CH-4D1-1	862	65803	2.8	16.9149	1.2	0.7614	2.7	0.0934	2.4	0.90	575.7	13.2	574.8	11.7	571.5	25.2	575.7	13.2	101
~~CH-4D1-95~~	~~722~~	~~40132~~	~~2.8~~	~~8.3339~~	~~11.1~~	~~2.0639~~	~~12.6~~	~~0.1247~~	~~6.1~~	~~0.48~~	~~757.8~~	~~43.7~~	~~1136.9~~	~~86.7~~	~~1956.1~~	~~198.4~~	~~1956.1~~	~~198.4~~	~~39~~
CH-4D1-7	98	29490	1.6	15.4150	3.5	1.1282	4.5	0.1261	2.8	0.62	765.8	20.1	766.9	24.2	770.2	74.5	765.8	20.1	99
CH-4D1-94	206	58405	0.7	15.1707	1.4	1.1847	1.4	0.1303	0.3	0.23	789.8	2.4	793.5	7.7	803.7	28.6	789.8	2.4	98
~~CH-4D1-90~~	~~223~~	~~6363~~	~~2.0~~	~~14.4290~~	~~4.4~~	~~1.2490~~	~~7.7~~	~~0.1307~~	~~6.3~~	~~0.82~~	~~791.9~~	~~47.1~~	~~823.0~~	~~43.5~~	~~907.8~~	~~91.2~~	~~791.9~~	~~47.1~~	~~87~~
CH-4D1-59	348	73072	1.5	15.3439	1.3	1.1748	1.5	0.1307	0.8	0.51	792.1	5.8	788.9	8.4	779.9	27.8	792.1	5.8	102
CH-4D1-38	194	52094	1.6	15.3023	1.8	1.2088	3.0	0.1342	2.3	0.79	811.5	17.7	804.7	16.5	785.6	38.5	811.5	17.7	103
~~CH-4D1-85~~	~~116~~	~~28637~~	~~1.3~~	~~14.7886~~	~~4.4~~	~~1.2605~~	~~5.0~~	~~0.1352~~	~~2.3~~	~~0.46~~	~~817.5~~	~~17.4~~	~~828.1~~	~~28.1~~	~~856.9~~	~~91.9~~	~~817.5~~	~~17.4~~	~~95~~
~~CH-4D1-56~~	~~57~~	~~26218~~	~~0.9~~	~~14.9142~~	~~4.6~~	~~1.2570~~	~~5.8~~	~~0.1360~~	~~3.6~~	~~0.62~~	~~821.8~~	~~27.5~~	~~826.6~~	~~32.7~~	~~839.3~~	~~94.8~~	~~821.8~~	~~27.5~~	~~98~~

DR Table 1. U-Pb geochronologic analyses and plots.

						Isotope ratios					Apparent ages (Ma)								
Analysis	U (ppm)	206Pb 204Pb	U/Th	206Pb* 207Pb*	± (%)	207Pb* 235U*	± (%)	206Pb* 238U	± (%)	error corr.	206Pb* 238U*	± (Ma)	207Pb* 235U	± (Ma)	206Pb* 207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc %
CH-4D1-47	352	32225	2.6	15.1494	0.7	1.2815	1.3	0.1408	1.1	0.85	849.2	8.8	837.5	7.4	806.7	14.5	849.2	8.8	105
CH-4D1-78	191	61954	2.8	15.0333	1.2	1.3303	1.9	0.1450	1.5	0.79	873.1	12.0	859.0	10.8	822.8	24.0	873.1	12.0	106
CH-4D1-99	182	73435	1.6	14.7726	2.0	1.3652	2.4	0.1463	1.4	0.57	880.0	11.4	874.1	14.3	859.2	41.6	880.0	11.4	102
CH-4D1-58	80	30814	3.0	14.3580	3.9	1.4438	4.2	0.1503	1.5	0.36	902.9	12.7	907.3	25.3	918.0	81.2	918.0	81.2	98
~~CH-4D1-73~~	~~74~~	~~25715~~	~~1.3~~	~~14.8477~~	~~4.5~~	~~1.4039~~	~~4.7~~	~~0.1512~~	~~1.3~~	~~0.28~~	~~907.6~~	~~11.3~~	~~890.6~~	~~27.8~~	~~848.6~~	~~93.5~~	~~907.6~~	~~11.3~~	~~107~~
~~CH-4D1-72~~	~~82~~	~~25699~~	~~1.8~~	~~14.9620~~	~~5.7~~	~~1.3949~~	~~5.7~~	~~0.1514~~	~~0.5~~	~~0.08~~	~~908.7~~	~~4.0~~	~~886.8~~	~~33.8~~	~~832.6~~	~~118.9~~	~~908.7~~	~~4.0~~	~~109~~
~~CH-4D1-21~~	~~416~~	~~19318~~	~~19.8~~	~~13.5308~~	~~2.2~~	~~1.5588~~	~~2.4~~	~~0.1530~~	~~0.8~~	~~0.32~~	~~917.6~~	~~6.5~~	~~954.0~~	~~14.7~~	~~1038.9~~	~~45.4~~	~~1038.9~~	~~45.4~~	~~88~~
CH-4D1-100	50	19636	2.5	14.3730	4.0	1.4747	4.0	0.1537	0.8	0.19	921.8	6.5	920.1	24.5	915.8	81.8	915.8	81.8	101
CH-4D1-60	156	31140	1.5	14.0056	1.5	1.6265	6.4	0.1652	6.2	0.97	985.7	56.9	980.5	40.2	968.9	29.8	968.9	29.8	102
CH-4D1-55	643	21033	2.5	13.9531	2.4	1.6359	3.0	0.1655	1.9	0.62	987.5	17.0	984.1	19.0	976.6	48.1	976.6	48.1	101
~~CH-4D1-13~~	~~676~~	~~3436~~	~~6.4~~	~~9.5083~~	~~6.9~~	~~2.7504~~	~~7.9~~	~~0.1897~~	~~3.8~~	~~0.48~~	~~1119.6~~	~~39.4~~	~~1342.2~~	~~59.1~~	~~1717.3~~	~~127.6~~	~~1717.3~~	~~127.6~~	~~65~~
CH-4D1-29	366	42944	0.9	11.5919	0.8	2.5978	2.0	0.2184	1.8	0.91	1273.4	21.0	1300.0	14.7	1344.2	16.4	1344.2	16.4	95
CH-4D1-51	95	78078	1.0	12.7118	1.8	2.3795	2.5	0.2194	1.7	0.69	1278.6	20.2	1236.5	18.0	1163.7	36.0	1163.7	36.0	110
CH-4D1-50	307	188159	0.4	10.5677	1.0	3.2943	3.5	0.2525	3.3	0.96	1451.3	43.1	1479.7	27.0	1520.7	18.9	1520.7	18.9	95
CH-4D1-82	642	138825	0.5	9.3847	0.4	4.3631	2.9	0.2970	2.9	0.99	1676.3	42.8	1705.4	24.1	1741.3	6.8	1741.3	6.8	96
CH-4D1-53	41	17700	1.3	8.1608	1.5	5.8946	2.5	0.3489	2.0	0.80	1929.3	33.3	1960.4	21.8	1993.5	26.9	1993.5	26.9	97
~~CH-4D1-81~~	~~345~~	~~101494~~	~~2.5~~	~~4.7124~~	~~4.2~~	~~12.6256~~	~~5.7~~	~~0.4315~~	~~3.8~~	~~0.66~~	~~2312.5~~	~~72.9~~	~~2652.1~~	~~53.4~~	~~2922.5~~	~~68.8~~	~~2922.5~~	~~68.8~~	~~79~~
~~Ch-4D2-51~~	~~250~~	~~1957~~	~~2.0~~	~~9.6361~~	~~35.4~~	~~0.5148~~	~~203.8~~	~~0.0360~~	~~200.7~~	~~0.98~~	~~227.8~~	~~450.0~~	~~421.7~~	~~866.0~~	~~1692.7~~	~~675.8~~	~~1692.7~~	~~675.8~~	~~13~~
Ch-4D2-20	157	10234	2.5	15.0661	18.6	0.5469	19.3	0.0598	5.0	0.26	374.2	18.0	443.0	69.2	818.2	391.8	374.2	18.0	46
Ch-4D2-98	136	80809	1.8	17.7435	5.1	0.4650	6.1	0.0598	3.3	0.55	374.6	12.2	387.7	19.6	466.5	112.7	374.6	12.2	80
Ch-4D2-92	75	29940	2.7	20.0571	19.1	0.4142	19.4	0.0603	3.1	0.16	377.2	11.3	351.9	57.7	188.3	448.8	377.2	11.3	200
~~Ch-4D2-82~~	~~455~~	~~150784~~	~~2.8~~	~~18.0620~~	~~2.1~~	~~0.4656~~	~~2.5~~	~~0.0610~~	~~1.4~~	~~0.55~~	~~381.7~~	~~5.1~~	~~388.1~~	~~8.1~~	~~427.0~~	~~47.1~~	~~381.7~~	~~5.1~~	~~89~~
Ch-4D2-79	128	51855	1.3	19.0014	6.1	0.4454	7.1	0.0614	3.7	0.52	384.1	13.8	374.1	22.2	312.8	137.9	384.1	13.8	123
Ch-4D2-44	236	81471	2.1	17.5626	3.1	0.4831	3.3	0.0615	1.2	0.37	385.0	4.6	400.2	10.9	489.2	67.5	385.0	4.6	79
Ch-4D2-72	127	81843	2.2	18.6585	4.9	0.4576	6.3	0.0619	3.9	0.62	387.3	14.6	382.6	20.0	354.1	111.4	387.3	14.6	109
Ch-4D2-91	36	14817	1.9	19.2720	15.0	0.4442	15.6	0.0621	4.2	0.27	388.3	15.9	373.2	48.8	280.5	345.7	388.3	15.9	138
Ch-4D2-81	321	152317	3.8	18.1843	4.1	0.4713	5.2	0.0622	3.1	0.61	388.7	11.8	392.1	16.8	411.9	91.7	388.7	11.8	94
Ch-4D2-61	259	109475	0.9	18.0520	6.0	0.4748	6.1	0.0622	1.3	0.21	388.8	4.9	394.5	20.0	428.2	133.1	388.8	4.9	91
Ch-4D2-16	237	86997	1.3	17.6493	2.9	0.4857	4.7	0.0622	3.8	0.80	388.8	14.3	402.0	15.7	478.3	63.2	388.8	14.3	81
Ch-4D2-63	72	31981	1.1	19.6260	11.0	0.4390	11.1	0.0625	1.1	0.10	390.8	4.3	369.6	34.3	238.7	254.8	390.8	4.3	164
Ch-4D2-2	243	70305	2.0	17.6087	3.3	0.4900	3.7	0.0626	1.6	0.44	391.3	6.2	404.9	12.4	483.4	73.8	391.3	6.2	81
Ch-4D2-90	132	23435	1.4	16.9073	11.4	0.5127	11.6	0.0629	2.2	0.19	393.1	8.3	420.3	39.8	572.5	247.8	393.1	8.3	69
Ch-4D2-1	44	19603	2.3	19.4768	24.8	0.4468	24.8	0.0631	1.7	0.07	394.5	6.5	375.0	77.9	256.2	576.7	394.5	6.5	154
Ch-4D2-93	179	99151	1.9	17.7152	3.3	0.4914	3.7	0.0631	1.7	0.45	394.7	6.5	405.9	12.5	470.0	74.0	394.7	6.5	84
Ch-4D2-14	247	29466	1.8	16.8507	5.4	0.5174	5.8	0.0632	2.1	0.36	395.2	8.1	423.4	20.0	579.8	117.0	395.2	8.1	68
Ch-4D2-80	94	37786	2.7	18.8863	13.0	0.4619	13.1	0.0633	1.2	0.09	395.5	4.7	385.6	42.0	326.6	296.6	395.5	4.7	121
Ch-4D2-55	208	45334	2.4	17.3690	5.5	0.5023	5.6	0.0633	0.8	0.14	395.5	3.0	413.3	19.0	513.6	122.0	395.5	3.0	77
Ch-4D2-41	150	75002	1.7	17.1313	6.5	0.5095	7.1	0.0633	2.9	0.41	395.7	11.1	418.1	24.5	543.8	142.8	395.7	11.1	73
Ch-4D2-84	131	49912	1.8	18.3313	6.9	0.4762	7.2	0.0633	2.1	0.29	395.8	8.1	395.5	23.6	393.9	155.0	395.8	8.1	100
Ch-4D2-68	67	26901	1.5	17.8362	11.3	0.4899	11.4	0.0634	1.5	0.13	396.1	5.7	404.9	38.1	455.0	251.8	396.1	5.7	87
Ch-4D2-27	56	8297	2.0	13.6445	13.1	0.6413	13.5	0.0635	3.2	0.24	396.7	12.3	503.1	53.6	1022.0	266.7	396.7	12.3	39
Ch-4D2-66	73	31793	2.8	18.5980	9.6	0.4730	9.7	0.0638	1.1	0.12	398.7	4.4	393.3	31.5	361.4	216.7	398.7	4.4	110
Ch-4D2-73	110	56815	1.7	18.9430	10.6	0.4649	10.9	0.0639	2.3	0.21	399.2	9.0	387.7	35.1	319.8	242.5	399.2	9.0	125
Ch-4D2-3	253	140981	2.4	18.2096	2.0	0.4842	2.8	0.0639	1.9	0.70	399.6	7.5	400.9	9.2	408.8	44.3	399.6	7.5	98
Ch-4D2-76	265	40706	2.3	17.8169	3.1	0.4954	3.9	0.0640	2.4	0.61	400.0	9.3	408.6	13.2	457.4	69.4	400.0	9.3	87
Ch-4D2-12	491	39975	2.5	17.8542	3.2	0.4945	4.4	0.0640	3.0	0.69	400.1	11.7	408.0	14.7	452.7	70.3	400.1	11.7	88
Ch-4D2-15	111	40047	1.0	19.3373	9.0	0.4566	9.2	0.0640	2.0	0.22	400.1	7.8	381.9	29.3	272.7	206.5	400.1	7.8	147
Ch-4D2-69	103	44017	1.6	18.5005	6.3	0.4783	6.5	0.0642	1.4	0.22	401.0	5.5	396.9	21.4	373.2	143.1	401.0	5.5	107
Ch-4D2-50	119	53846	2.2	18.7024	10.1	0.4736	10.5	0.0642	2.7	0.26	401.4	10.4	393.7	34.2	348.8	229.6	401.4	10.4	115
Ch-4D2-83	277	106042	2.3	17.8929	2.5	0.4954	2.9	0.0643	1.4	0.49	401.7	5.5	408.6	9.7	447.9	56.2	401.7	5.5	90
Ch-4D2-75	52	25173	1.1	19.3958	16.3	0.4572	16.4	0.0643	1.4	0.09	401.8	5.5	382.3	52.2	265.9	376.6	401.8	5.5	151
Ch-4D2-58	206	104225	1.4	18.4212	3.5	0.4829	3.9	0.0645	1.8	0.45	403.0	6.9	400.1	13.0	382.9	79.1	403.0	6.9	105
Ch-4D2-85	614	28331	2.6	17.1996	3.6	0.5172	3.8	0.0645	1.1	0.30	403.1	4.4	423.3	13.2	535.1	79.6	403.1	4.4	75
Ch-4D2-60	178	88034	2.6	18.8995	7.1	0.4717	7.4	0.0647	2.1	0.29	403.9	8.2	392.3	24.0	325.0	160.4	403.9	8.2	124
Ch-4D2-88	127	46268	1.3	18.8660	5.5	0.4733	6.1	0.0648	2.7	0.44	404.5	10.5	393.5	19.9	329.0	124.5	404.5	10.5	123
Ch-4D2-24	592	41186	2.5	17.7389	1.8	0.5042	2.5	0.0649	1.7	0.70	405.1	6.9	414.5	8.5	467.1	39.6	405.1	6.9	87
Ch-4D2-74	113	49678	1.0	19.5602	10.7	0.4573	10.8	0.0649	1.3	0.12	405.2	5.1	382.4	34.5	246.4	247.8	405.2	5.1	164
Ch-4D2-65	347	136255	1.3	18.2028	2.6	0.4918	3.0	0.0649	1.4	0.47	405.5	5.5	406.1	10.0	409.6	58.7	405.5	5.5	99
Ch-4D2-9	551	115987	2.4	18.2015	1.1	0.4921	1.8	0.0650	1.4	0.79	405.7	5.7	406.3	6.1	409.8	25.1	405.7	5.7	99
Ch-4D2-6	102	42726	1.5	19.4276	7.2	0.4611	7.2	0.0650	1.0	0.13	405.8	3.8	385.0	23.2	262.1	165.1	405.8	3.8	155
Ch-4D2-96	391	12840	1.9	16.3682	3.5	0.5481	3.6	0.0651	1.1	0.31	406.4	4.5	443.8	13.1	642.6	74.5	406.4	4.5	63
Ch-4D2-71	114	47975	1.8	17.7793	8.5	0.5052	8.8	0.0651	2.2	0.26	406.8	8.8	415.2	29.8	462.0	187.8	406.8	8.8	88
Ch-4D2-37	132	61418	1.3	18.4401	5.8	0.4885	5.9	0.0653	0.7	0.12	408.0	2.8	403.9	19.6	380.6	131.4	408.0	2.8	107
Ch-4D2-23	307	51193	1.4	17.6268	3.9	0.5128	4.1	0.0656	1.2	0.28	409.3	4.6	420.3	14.1	481.1	86.8	409.3	4.6	85
Ch-4D2-17	373	158667	2.2	18.0426	2.3	0.5011	3.3	0.0656	2.4	0.71	409.5	9.3	412.5	11.3	429.4	52.4	409.5	9.3	95
Ch-4D2-36	149	13492	1.4	16.5968	9.3	0.5449	9.3	0.0656	0.3	0.04	409.5	1.4	441.7	33.4	612.6	201.8	409.5	1.4	67
Ch-4D2-62	527	84868	2.5	18.1977	1.6	0.4977	1.9	0.0657	1.0	0.54	410.1	4.2	410.2	6.6	410.3	36.6	410.1	4.2	100
Ch-4D2-42	174	67823	1.3	18.4919	2.8	0.4911	3.3	0.0659	1.9	0.56	411.2	7.5	405.7	11.2	374.3	62.2	411.2	7.5	110
Ch-4D2-11	148	79024	1.9	17.9059	7.1	0.5074	7.2	0.0659	1.3	0.18	411.4	5.1	416.7	24.7	446.3	158.4	411.4	5.1	92
Ch-4D2-18	352	54276	1.8	17.5409	3.4	0.5180	7.8	0.0659	6.9	0.90	411.4	27.7	423.8	26.9	491.9	75.7	411.4	27.7	84
Ch-4D2-89	143	33117	1.7	17.7404	6.1	0.5127	6.6	0.0660	2.5	0.38	411.8	9.9	420.2	22.7	466.9	135.2	411.8	9.9	88
Ch-4D2-31	311	125830	2.2	18.2197	3.5	0.5012	3.6	0.0662	0.8	0.24	413.4	3.4	412.5	12.1	407.6	77.5	413.4	3.4	101
Ch-4D2-45	261	52327	2.9	17.5429	2.4	0.5210	2.7	0.0663	1.0	0.39	413.8	4.2	425.8	9.2	491.7	53.8	413.8	4.2	84
Ch-4D2-52	462	128227	2.1	17.8249	2.4	0.5141	3.1	0.0665	2.1	0.66	414.8	8.3	421.2	10.8	456.4	52.4	414.8	8.3	91

DR Table 1. U-Pb geochronologic analyses and plots.

Analysis	U (ppm)	206Pb/204Pb	U/Th	206Pb*/207Pb*	± (%)	207Pb*/235U*	± (%)	206Pb*/238U	± (%)	error corr.	206Pb*/238U*	± (Ma)	207Pb*/235U	± (Ma)	206Pb*/207Pb*	± (Ma)	Best age (Ma)	± (Ma)	Conc %
						Isotope ratios							Apparent ages (Ma)						
Ch-4D2-43	197	57162	1.6	18.4949	6.3	0.4959	6.8	0.0665	2.5	0.37	415.2	10.0	408.9	22.9	373.9	142.2	415.2	10.0	111
Ch-4D2-87	106	59709	1.5	18.3173	7.7	0.5011	8.2	0.0666	2.8	0.34	415.5	11.1	412.4	27.8	395.6	173.1	415.5	11.1	105
Ch-4D2-13	254	56911	1.5	17.7301	3.7	0.5189	4.0	0.0667	1.7	0.42	416.4	6.9	424.4	14.0	468.2	81.3	416.4	6.9	89
Ch-4D2-46	70	30034	1.2	18.9119	11.2	0.4870	11.3	0.0668	1.7	0.15	416.9	6.8	402.9	37.6	323.5	254.3	416.9	6.8	129
Ch-4D2-97	133	16345	1.5	17.5843	5.8	0.5250	5.8	0.0669	0.4	0.06	417.7	1.5	428.5	20.2	486.5	127.1	417.7	1.5	86
Ch-4D2-22	1101	79626	2.4	17.3581	5.8	0.5341	6.2	0.0672	2.3	0.37	419.5	9.4	434.5	22.0	514.9	126.6	419.5	9.4	81
Ch-4D2-19	848	89522	1.7	17.7317	2.4	0.5251	2.8	0.0675	1.4	0.51	421.3	5.8	428.6	9.7	468.0	53.2	421.3	5.8	90
Ch-4D2-49	270	103929	2.3	18.0961	3.5	0.5152	3.6	0.0676	0.7	0.18	421.8	2.7	421.9	12.3	422.8	78.5	421.8	2.7	100
Ch-4D2-26	144	47026	3.1	17.5619	4.7	0.5312	5.5	0.0677	2.9	0.53	422.1	11.8	432.6	19.4	489.2	103.2	422.1	11.8	86
Ch-4D2-7	252	81848	3.7	18.5394	4.5	0.5099	4.7	0.0686	1.5	0.31	427.5	6.1	418.4	16.1	368.5	100.7	427.5	6.1	116
Ch-4D2-64	250	94003	1.4	17.9519	2.9	0.5290	3.5	0.0689	1.9	0.54	429.4	7.7	431.2	12.2	440.6	65.3	429.4	7.7	97
Ch-4D2-34	110	51941	1.8	17.5891	6.5	0.5416	7.5	0.0691	3.7	0.49	430.6	15.3	439.5	26.6	485.8	143.2	430.6	15.3	89
Ch-4D2-30	290	28580	3.7	17.6440	2.6	0.5407	6.3	0.0692	5.8	0.92	431.3	24.2	438.9	22.6	478.9	56.5	431.3	24.2	90
Ch-4D2-40	688	84487	2.3	17.6780	4.3	0.5480	5.0	0.0703	2.5	0.50	437.7	10.5	443.7	17.9	474.7	95.9	437.7	10.5	92
Ch-4D2-67	213	79437	1.6	17.6822	4.9	0.5582	5.2	0.0716	1.6	0.31	445.7	6.9	450.4	18.9	474.2	109.5	445.7	6.9	94
Ch-4D2-95	260	100986	3.8	17.1093	2.9	0.6459	3.7	0.0801	2.2	0.59	497.0	10.3	505.9	14.6	546.6	64.4	497.0	10.3	91
Ch-4D2-59	55	36408	2.0	18.2377	14.1	0.6193	14.3	0.0819	2.2	0.15	507.6	10.6	489.4	55.6	405.3	317.7	507.6	10.6	125
Ch-4D2-57	599	3555	2.0	12.9773	5.9	0.8811	6.3	0.0829	2.0	0.33	513.6	10.1	641.6	29.9	1122.7	118.5	513.6	10.1	46
Ch-4D2-38	336	30132	2.1	15.7969	7.6	0.7266	7.7	0.0832	1.5	0.20	515.5	7.5	554.6	33.1	718.4	161.5	515.5	7.5	72
Ch-4D2-35	161	94670	1.7	17.3249	5.5	0.6645	5.7	0.0835	1.5	0.26	516.9	7.5	517.3	23.2	519.1	121.6	516.9	7.5	100
Ch-4D2-25	655	223544	1.4	17.4022	1.1	0.6858	1.2	0.0866	0.5	0.44	535.2	2.8	530.3	5.1	509.4	24.5	535.2	2.8	105
Ch-4D2-78	184	109346	2.0	17.1916	3.9	0.7217	7.0	0.0900	5.9	0.84	555.5	31.3	551.7	30.0	536.1	84.7	555.5	31.3	104
~~*Ch-4D2-32*~~	~~*85*~~	~~*12375*~~	~~*0.5*~~	~~*14.1186*~~	~~*12.3*~~	~~*0.9525*~~	~~*12.3*~~	~~*0.0975*~~	~~*1.3*~~	~~*0.11*~~	~~*600.0*~~	~~*7.6*~~	~~*679.4*~~	~~*61.2*~~	~~*952.5*~~	~~*251.9*~~	~~*600.0*~~	~~*7.6*~~	~~*63*~~
Ch-4D2-4	118	103711	1.6	15.1871	2.0	1.1160	3.0	0.1229	2.2	0.74	747.4	15.7	761.1	16.1	801.4	42.2	747.4	15.7	93
~~*Ch-4D2-48*~~	~~*103*~~	~~*78529*~~	~~*1.7*~~	~~*15.7001*~~	~~*4.5*~~	~~*1.1286*~~	~~*4.6*~~	~~*0.1285*~~	~~*0.8*~~	~~*0.18*~~	~~*779.4*~~	~~*6.0*~~	~~*767.1*~~	~~*24.6*~~	~~*731.5*~~	~~*95.3*~~	~~*779.4*~~	~~*6.0*~~	~~*107*~~
~~*Ch-4D2-56*~~	~~*200*~~	~~*150853*~~	~~*4.3*~~	~~*7.8996*~~	~~*2.5*~~	~~*2.9562*~~	~~*3.0*~~	~~*0.1694*~~	~~*1.6*~~	~~*0.53*~~	~~*1008.7*~~	~~*14.5*~~	~~*1396.4*~~	~~*22.5*~~	~~*2051.1*~~	~~*44.5*~~	~~*2051.1*~~	~~*44.5*~~	~~*49*~~
Ch-4D2-33	71	170959	3.3	8.1453	1.5	6.2460	3.5	0.3690	3.2	0.91	2024.6	55.6	2010.9	30.8	1996.9	25.9	1996.9	25.9	101
~~*Ch-4D2-28*~~	~~*160*~~	~~*422271*~~	~~*23.6*~~	~~*5.5458*~~	~~*3.1*~~	~~*9.1785*~~	~~*7.8*~~	~~*0.3692*~~	~~*7.2*~~	~~*0.92*~~	~~*2025.5*~~	~~*124.3*~~	~~*2356.0*~~	~~*71.6*~~	~~*2655.8*~~	~~*52.1*~~	~~*2655.8*~~	~~*52.1*~~	~~*76*~~
Ch-4D2-70	339	998668	1.6	5.3800	0.3	13.1817	0.7	0.5143	0.7	0.93	2675.1	14.7	2692.8	6.8	2706.0	4.4	2706.0	4.4	99
SJS6-106-R33	111	13996	1.4	18.5329	6.4	0.4858	7.0	0.0653	2.8	0.40	407.8	11.1	402.1	23.3	369.3	145.3	407.8	11.1	110
SJS6-106-R33	254	28023	1.3	18.2804	2.0	0.4948	2.2	0.0656	0.9	0.40	409.6	3.4	408.2	7.3	400.1	44.5	409.6	3.4	102
SJS6-106-R33	117	8837	1.5	18.5167	6.0	0.4965	6.1	0.0667	0.7	0.11	416.1	2.7	409.3	20.5	371.3	136.3	416.1	2.7	112
SJS6-106-R33	428	39592	0.7	17.9571	1.9	0.5204	2.9	0.0678	2.2	0.75	422.7	8.9	425.4	10.1	439.9	43.3	422.7	8.9	96
SJS6-106-R33	235	42792	1.6	18.5334	3.6	0.5073	3.8	0.0682	1.2	0.32	425.2	4.9	416.6	12.9	369.2	80.6	425.2	4.9	115
SJS6-106-R33	169	18914	1.3	17.6150	6.8	0.5582	7.1	0.0713	2.1	0.30	444.0	9.1	450.3	25.8	482.6	149.7	444.0	9.1	92
SJS6114-R33	128	47960	2.0	18.2134	8.2	0.5155	8.4	0.0681	1.7	0.21	424.7	7.1	422.1	28.9	408.3	183.5	424.7	7.1	104
SJS6114-R33	135	13167	1.4	19.1786	6.5	0.4749	6.6	0.0661	1.1	0.16	412.4	4.4	394.6	21.7	291.6	149.7	412.4	4.4	141
SJS6114-R33	59	7134	1.8	19.0688	13.5	0.4894	13.6	0.0677	1.5	0.11	422.2	6.1	404.5	45.5	304.7	309.8	422.2	6.1	139
SJS6114-R33	243	21140	1.5	17.8271	2.5	0.5182	3.1	0.0670	1.8	0.60	418.0	7.5	423.9	10.7	456.1	54.8	418.0	7.5	92
SJS6114-R33	249	57250	1.1	18.2572	6.1	0.4994	6.3	0.0661	1.6	0.25	412.8	6.3	411.3	21.3	402.9	136.4	412.8	6.3	102
TSA-138-R331	101	16161	1.1	18.2286	8.0	0.5068	8.1	0.0670	1.2	0.15	418.0	4.9	416.3	27.5	406.4	178.5	418.0	4.9	103
TSA-138-R332	203	24757	0.9	18.4849	2.2	0.5115	2.6	0.0686	1.3	0.51	427.6	5.4	419.5	8.9	375.1	49.8	427.6	5.4	114
TSA-138-R333	199	33655	0.9	17.9017	4.3	0.5261	4.7	0.0683	1.9	0.41	426.0	8.0	429.2	16.4	446.8	95.0	426.0	8.0	95
TSA-138-R334	156	25213	0.9	18.8175	4.8	0.5022	5.3	0.0685	2.1	0.40	427.3	8.6	413.2	17.9	334.9	109.7	427.3	8.6	128
TSA-138-R335	139	15989	0.9	18.9325	6.3	0.4889	6.6	0.0671	1.9	0.29	418.8	7.8	404.1	22.1	321.1	144.1	418.8	7.8	130
CH-4D1-R331	134	30042	2.5	17.5048	3.9	0.5397	4.4	0.0685	2.1	0.47	427.2	8.6	438.2	15.7	496.4	85.6	427.2	8.6	86
CH-4D1-R332	58	9839	2.8	19.5341	19.8	0.4703	19.8	0.0666	1.0	0.05	415.8	4.1	391.4	64.4	249.5	459.3	415.8	4.1	167
CH-4D1-R333	125	25648	1.9	18.5979	8.2	0.4931	8.3	0.0665	1.4	0.17	415.1	5.6	407.0	27.9	361.4	185.3	415.1	5.6	115
CH-4D1-R334	152	29372	1.5	17.9005	4.5	0.5297	4.7	0.0688	1.5	0.31	428.7	6.1	431.6	16.5	447.0	99.3	428.7	6.1	96
CH-4D1-R335	55	12812	3.0	16.9451	14.7	0.5470	14.8	0.0672	1.7	0.11	419.4	6.8	443.0	53.1	567.6	321.0	419.4	6.8	74
Ch-4D2-R331	163	94515	3.0	17.7268	5.1	0.5345	5.1	0.0687	0.6	0.12	428.4	2.5	434.8	18.0	468.6	112.2	428.4	2.5	91
Ch-4D2-R332	73	29039	1.8	17.1056	6.7	0.5440	6.8	0.0675	0.9	0.13	421.0	3.6	441.0	24.2	547.0	146.9	421.0	3.6	77
Ch-4D2-R333	94	47721	3.0	18.2344	13.3	0.5006	13.3	0.0662	0.8	0.06	413.3	3.0	412.1	45.1	405.7	298.6	413.3	3.0	102
Ch-4D2-R334	197	56048	1.6	17.4564	6.4	0.5293	6.4	0.0670	0.2	0.04	418.1	0.9	431.4	22.7	502.5	141.9	418.1	0.9	83
Ch-4D2-R335	91	57158	2.6	17.6590	9.7	0.5281	9.9	0.0676	1.7	0.17	421.9	6.8	430.6	34.6	477.1	215.5	421.9	6.8	88

DATA for Standards:

SJS6-106-R331-R334: Mean = 416.7±8.9 [2.1%] 95% conf.; Wtd by data-pt errs only, 0 of 6 rej.; MSWD = 3.5, probability = 0.004

SJS6-114-R331-R335: Mean = 416.7±5.2 [1.2%] 95% conf.; Wtd by data-pt errs only, 0 of 5 rej.; MSWD = 0.86, probability = 0.49

TSA-138-R331-R335: Mean = 422.9±5.6 [1.3%] 95% conf.; Wtd by data-pt errs only, 0 of 5 rej.; MSWD = 0.60, probability = 0.66

CH-4D1-R331-R335: Mean = 419.4±5.0 [1.2%] 95% conf.; Wtd by data-pt errs only, 0 of 5 rej.; MSWD = 1.13, probability = 0.34

CH-4D2-R331-R335: Mean = 419.1±4.9 [1.2%] 95% conf.; Wtd by data-pt errs only, 0 of 5 rej.; MSWD = 4.8, probability = 0.001

All R33 analyses; Mean = 418.8±2.0 [0.47%] 95% conf.; Wtd by data-pt errs only, 0 of 26 rej.; Wtd by data-pt errs only, 0 of 26 rej.; MSWD = 2.0, probability =

Analyses with >10% uncertainty (1-sigma) in 206Pb/207Pb age are not included, unless 206Pb/238U age is <600 Ma (in red italics).

Best age is determined from 206Pb/238U age for analyses with 206Pb/238U age < ~1000 Ma and from 206Pb/207Pb age for analyses with 206Pb/238Uage > ~1000 Ma.

Actual cutoff used is different for each sample, selected to avoid dividing clusters of ages.

Concordance is based on 206Pb/238U age / 206Pb/207Pb age, with 100% = concordant. Value is not reported for 206Pb/238U ages <600 Ma because of large uncertainty in

Analyses with 206Pb/238U age > 500 Ma and with >10% discordance (<90% concordance) are not included (in red italics).

Analyses with 206Pb/238U age > 500 Ma and with >5% reverse discordance (>105% concordance) are not included (in red italics).

DR Table 1. U-Pb geochronologic analyses and plots.																			
							Isotope ratios						Apparent ages (Ma)						
Analysis	U	206Pb	U/Th	206Pb*	±	207Pb*	±	206Pb*	±	error	206Pb*	±	207Pb*	±	206Pb*	±	Best age	±	Conc
	(ppm)	204Pb		207Pb*	(%)	235U*	(%)	238U	(%)	corr.	238U*	(Ma)	235U	(Ma)	207Pb*	(Ma)	(Ma)	(Ma)	%

All uncertainties are reported at the 1-sigma level, and include only internal (measurement) errors.

External (systematic) errors are as follows:

SJS6-106:	206Pb/238U = 1.5%, 206Pb/207Pb = 0.9% (at 2-sigma level)
SJS6-114:	206Pb/238U = 1.2%, 206Pb/207Pb = 0.9% (at 2-sigma level)
TSA-138:	206Pb/238U = 2.1%, 206Pb/207Pb = 0.9% (at 2-sigma level)
Ch4d1:	206Pb/238U = 1.6%, 206Pb/207Pb = 0.9% (at 2-sigma level)
Ch4d2:	206Pb/238U = 2.6%, 206Pb/207Pb = 1.0% (at 2-sigma level)

Crystals of R33 were analyzed from each mount along with unknowns, and analyzed as secondary standards.

Individual analyses shown above.

Weighted mean age is calculated for each mount, and for all analyses above.

Known age (from ID-TIMS is 419.3 ± 0.4 Ma (Black et al. (2004).

U concentration and U/Th are calibrated relative to Sri Lanka zircon and are accurate to ~20%.

Common Pb correction is from 204Pb, with composition interpreted from Stacey and Kramers (1975).

Uncertainties of 1.5 for 206Pb/204Pb, 0.3 for 207Pb/ 204Pb, and 2.0 for 208Pb/ 204Pb are applied to common Pb composition.

U/Pb and 206Pb/207Pb fractionation is calibrated relative to fragments of a large Sri Lanka zircon of 563.5 ± 3.2 Ma (2-sigma, from Gehrels et al., 2008).

U decay constants and composition as follows: 238U = 9.8485 x 10-10, 235U = 1.55125 x 10-10, 238U/235U = 137.88

Analytical methods as described by Gehrels et al. (2008).

Concordia and age-probability plots made with Isoplot (Ludwig, 2008).

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