APPENDIX 1: ANALYTICAL DETAILS FOR LA-MC-ICP-MS

Zircon

The New Wave Research 193 nm ArF excimer laser was operated in 20-sec bursts at 32 mJ, a repetition rate of 8 Hz and spot sizes of 35 or 50 µm to ablate ~15 µm deep pits in zircon; monazites were analyzed at a repetition rate of 4 Hz and a spot size of 10 µm. The ablated material was transported to the ICP using a mixture of Ar and He carrier gases where it underwent 'dry' nebulization. The carrier gases have sufficiently low Hg abundance that any Hg in the 204 mass position was subtracted by measuring on-peak backgrounds prior to sample analysis. Mass 204 was measured using an ion-counting channel whereas masses 206, 207, 208, 232 and 238 were measured with Faraday detectors; all analyses were conducted in static mode. Each blank measurement was a 20-second count and each unknown measurement consisted of 20 separate 1-second counts. Because the measured isotopic ratios generally varied as a function of increasing laser pit depth, their values corresponding to a 'zero pit depth' were determined by regression of the ratio-vs.-time data. The regression was iterative, with ratios differing from their expected value by more than 3 sigma being rejected sequentially until the line was a good fit to all data. Fits that showed no statistically significant slope with respect to pit depth were recomputed with the slope forced to zero.

Mass fractionation on the Isoprobe was established by analyzing zircon and monazite standards of known ages after every few unknowns. We used a 564-Ma Sri Lankan zircon standard with 461 ppm U and 457 ppm Th, obtaining typical counting-measurement errors (2σ) of ±206/238 = 1.8%, ±206/207 = 8%, and ±208/232 = 6%. The expected/measured fractionation factors (2σ) for the zircon standard are 206/238: 1.276 ±

0.072, 206/207: 1.016 ± 0.034, and 208/232: 0.802 ± 0.128. These two sources of measurement error for the 206/238 ratio, 1.8% and 5.6%, respectively, dominate the internal error of the $^{238}U/^{206}Pb$ age (the common-Pb correction contributes only ~0.18% uncertainty, as measured 206/204 ratios are typically 3500). The choice of common-Pb correction, the 0.107% uncertainty in the ^{238}U decay constant, and the 0.7% uncertainty in the age of the standard lead to ~0.82% (2σ) additional error in the absolute $^{238}U/^{206}Pb$ age. The two sources of measurement error for the 206/207 ratio, 8% and 6.6%, respectively, dominate the internal error of the $^{207}Pb/^{206}Pb$ age (the common-Pb correction contributes ~1.2% uncertainty, as measured 207/204 ratios are typically 300). The choice of common-Pb correction, the 0.136% uncertainty in the ^{238}U decay constant, and the 0.7% uncertainty in the age of the standard lead to ~0.8% (2σ) additional error in the absolute $^{207}Pb/^{206}Pb$ age. Thus, a single analysis of our 564-Ma zircon standard typically has a precision of ±33.2 Ma (2σ) and an accuracy of ±33.5 Ma (2σ) in the $^{238}U/^{206}Pb$ age, and ±58.8 Ma (2σ) and ±59.1 Ma (2σ) in the $^{207}Pb/^{206}Pb$ age. Ten analyses of the same zircon grain leads to improvements in the accuracy of the $^{238}U/^{206}Pb$ age to ±11.5 Ma and of the $^{207}Pb/^{206}Pb$ age to ±19.1 Ma (2 standard errors of the mean).

Monazite

For a 425-Ma monazite standard (provided by John Aleinikoff and Sandra Kamo) typical counting-measurement errors are (2σ) ±206/238 = 2.6%, ±206/207 = 14%, and ±208/232 = 2.4%. The expected/measured fractionation factors (2σ) for the monazite standard are 206/238: 1.35 ± 0.066, 206/207: 0.75 ± 0.10, and 208/232: 0.96 ± 0.03. These two sources of measurement error, 2.4% and 3.2%, respectively for the 208/232 ratio,

dominate the internal error of the Th/Pb age (the common-Pb correction contributes only ~0.24% uncertainty as measured 208/204 ratios are typically 1500–2000). The choice of common-Pb correction, the 0.1% uncertainty in the ^{232}Th decay constant, and the 0.7% uncertainty in the age of the standard lead to ~0.74% (2σ) additional error in the absolute age. Thus, a single analysis of our monazite standard typically has a precision of ±17.0 Ma (2σ) and an accuracy of ± 17.3 Ma (2σ). Ten analyses of the same monazite grain leads to improvements in the precision to ± 5.4 Ma and in the accuracy to ± 6.2 Ma (2 standard errors of the mean).

Appendix 2. Complete $^{40}Ar/^{39}Ar$ data

T, temperature; 40(mol), moles ^{40}Ar corrected for blank and reactor-produced ^{40}Ar; $\sum^{39}Ar$, cumulative ^{39}Ar; $^{40}Ar^*$, fraction of radiogenic ^{40}Ar;
TFA, total fusion age; WMPA, weighted mean plateau age; WMA, weighted mean age
IA, inverse isochron age. Ratios are corrected for blanks, decay and interference.
First age uncertainty is intralaboratory uncertainty; uncertainty in parentheses includes error in decay constant and standard age.
* indicates steps used to calculate WMPA, WMA and IA.

Release T (°C)	Dwell Time (min)	40(mol)	39(mol)	$^{40}Ar/^{39}Ar$	$^{38}Ar/^{39}Ar$	$^{37}Ar/^{39}Ar$	$^{36}Ar/^{39}Ar$	K/Ca	$\sum^{39}Ar$	40Ar*	Age (Ma) ± 1 sigma	Renne98 ± 1 sigma
sample e9810e, UTM 0366285 6855030: J = 0.133712; TFA = 396.9 ± 0.5 (3.1) Ma; WMA = 399.4 ± 1.5 (3.4) Ma												
500	13	4.20E-15	2.00E-16	20.9611	9.10E-03	-0.0841	0.0074	<0.001	0.00265	0.896	404.1 ± 5.9	409.6 ± 5.9
550	13	1.00E-14	5.14E-16	19.4539	1.50E-03	-0.0606	0.0035	<0.001	0.00947	0.948	397.4 ± 2.5	402.8 ± 2.5
600	13	2.10E-14	1.08E-15	19.5295	5.20E-04	-0.0129	0.0030	<0.001	0.02370	0.955	401.7 ± 1.3	407.2 ± 1.3
650	13	3.60E-14	1.88E-15	19.1694	0.00E+00	-0.0113	0.0018	<0.001	0.04813	0.973	401.6 ± 0.9	407.1 ± 0.9
700	13	6.20E-14	3.21E-15	19.3303	0.00E+00	-0.0034	0.0030	<0.001	0.09100	0.954	397.6 ± 0.7	403.0 ± 0.7
740	13	1.60E-13	8.47E-15	18.8866	0.00E+00	-0.0017	0.0023	<0.001	0.20367	0.964	393.0 ± 0.6*	398.3 ± 0.6*
780	13	3.20E-13	1.72E-14	18.6272	0.00E+00	-0.0005	0.0011	<0.001	0.43038	0.983	395.0 ± 0.5*	400.4 ± 0.5*
780	13	1.20E-13	6.49E-15	18.5036	0.00E+00	-0.0015	0.0006	<0.001	0.51761	0.990	395.4 ± 0.6*	400.8 ± 0.6*
820	13	1.50E-13	8.10E-15	18.5099	0.00E+00	-0.0019	0.0010	<0.001	0.62119	0.985	393.4 ± 0.6*	398.8 ± 0.6*
860	13	1.30E-13	6.99E-15	18.5923	0.00E+00	-0.0031	0.0013	<0.001	0.71143	0.979	392.9 ± 0.6*	398.2 ± 0.6*
900	13	1.60E-13	8.67E-15	18.4453	0.00E+00	-0.0025	0.0010	<0.001	0.82892	0.984	391.8 ± 0.6	397.1 ± 0.6
940	13	1.90E-13	1.06E-14	17.9054	0.00E+00	-0.0015	0.0005	<0.001	0.97200	0.992	384.5 ± 0.6	389.7 ± 0.6
980	13	3.00E-14	1.65E-15	18.2033	0.00E+00	-0.0075	0.0002	<0.001	0.99380	0.997	392.1 ± 0.9	397.4 ± 0.9
1020	13	1.60E-15	8.64E-17	18.5279	4.20E-03	-0.0717	0.0000	<0.001	0.99493	1.000	403.5 ± 12.8	409.0 ± 12.8
1070	13	4.60E-16	2.36E-17	19.4790	0.00E+00	-0.5680	0.0193	<0.001	0.99524	0.707	305.0 ± 50.2	309.1 ± 50.2
1130	13	1.40E-15	3.62E-16	3.8666	0.00E+00	0.0031	0.0007	156	1.00000	0.949	86.4 ± 3.6	87.6 ± 3.6
sample e9730g1, UTM 0531470 6908563: J = 0.0133759; TFA = 412.1 ± 0.8 (3.3); WMA = 410.5 ± 1.3 (3.4) Ma; IA = 409.0 ± 1.9 (3.7) Ma (MSWD = 4.6)												
560	13	6.40E-15	2.97E-16	21.5395	0.00E+00	0.3230	0.0089	1.50	0.05367	0.878	406.9 ± 3.5	412.4 ± 3.5
630	13	1.50E-14	7.80E-16	19.2205	0.00E+00	0.2654	0.0024	1.80	0.19568	0.963	399.0 ± 1.5	404.4 ± 1.5
690	13	2.50E-14	1.31E-15	19.1570	0.00E+00	0.3010	0.0009	1.60	0.43021	0.986	406.5 ± 1.0*	412.0 ± 1.0*
730	13	1.80E-14	9.36E-16	19.2271	0.00E+00	0.3437	0.0016	1.40	0.60300	0.975	403.8 ± 1.2*	409.3 ± 1.2*
760	13	9.00E-15	4.61E-16	19.5339	0.00E+00	0.4158	0.0023	1.20	0.68585	0.965	405.7 ± 2.1*	411.2 ± 2.1*

780	13	4.40E-15	2.21E-16	19.9507	0.00E+00	0.5609	0.0051	0.87	0.72525	0.925	397.9 ± 3.8*	403.3 ± 3.8*
800	13	3.40E-15	1.68E-16	20.1995	3.80E-03	0.6170	0.0059	0.79	0.75545	0.914	398.2 ± 4.7*	403.6 ± 4.7*
820	13	3.00E-15	1.47E-16	20.3962	3.10E-03	0.4611	0.0059	1.10	0.78223	0.914	401.5 ± 6.7*	407.0 ± 6.7*
850	13	3.60E-15	1.80E-16	20.0156	0.00E+00	0.3746	0.0028	1.30	0.81416	0.959	412.2 ± 4.7*	417.8 ± 4.7*
880	13	3.80E-15	1.89E-16	20.0990	7.00E-04	0.4514	0.0056	1.10	0.84796	0.918	398.1 ± 4.8*	403.5 ± 4.8*
950	13	6.40E-15	3.23E-16	19.8273	0.00E+00	0.3956	0.0036	1.20	0.90589	0.946	404.0 ± 2.9*	409.5 ± 2.9*
1000	13	6.90E-15	3.40E-16	20.2827	0.00E+00	0.5660	0.0033	0.87	0.96722	0.953	414.7 ± 2.8*	420.3 ± 2.8*
1050	13	3.80E-15	1.67E-16	22.7521	4.30E-03	0.5783	0.0112	0.85	0.99761	0.855	417.0 ± 5.3	422.7 ± 5.3
1200	13	1.30E-15	1.30E-17	100.2179	5.00E-02	14.2650	0.1398	0.03	1.00000	0.588	1048.0 ± 53.2	1062.3 ± 53.2

sample e9809c, UTM 0391713 6890272: J = 0.0133790; TFA = 388.7 ± 0.5 (3.0) Ma; WMPA = 389.78 ± 0.4 (3.0) Ma; IA = 389.6 ± 0.6 (3.0) (MSWD = 0.42)

560	13	1.00E-14	3.78E-16	26.4761	2.20E-04	0.0319	0.0272	15	0.00629	0.697	397.9 ± 3.3	403.3 ± 3.3
630	13	2.00E-14	9.72E-16	20.5756	1.70E-04	0.0046	0.0089	108	0.02177	0.872	388.1 ± 1.5	393.4 ± 1.5
690	13	4.80E-14	2.52E-15	19.0450	0.00E+00	0.0077	0.0032	64	0.06219	0.950	391.0 ± 0.8	396.3 ± 0.8
730	13	2.00E-13	1.14E-14	17.5100	0.00E+00	0.0008	0.0006	596	0.24179	0.990	376.4 ± 0.5*	381.5 ± 0.5*
760	13	1.80E-13	1.01E-14	17.8473	0.00E+00	0.0050	0.0003	97	0.40587	0.994	384.3 ± 0.5*	389.5 ± 0.5*
760	13	6.70E-14	3.76E-15	17.8424	0.00E+00	-0.0013	0.0003	<0.001	0.46613	0.996	384.7 ± 0.6*	389.9 ± 0.6*
770	13	5.00E-14	2.79E-15	17.9136	0.00E+00	0.0037	0.0004	131	0.51152	0.994	385.5 ± 0.7*	390.7 ± 0.7*
780	13	3.70E-14	2.07E-15	17.9121	0.00E+00	-0.0003	0.0005	<0.001	0.54495	0.992	384.7 ± 0.8*	389.9 ± 0.8*
800	13	3.40E-14	1.89E-15	17.9588	0.00E+00	0.0055	0.0006	89	0.57560	0.989	384.7 ± 0.9*	389.9 ± 0.9*
820	13	2.70E-14	1.50E-15	18.0121	0.00E+00	0.0050	0.0008	98	0.60016	0.986	384.7 ± 1.0*	389.9 ± 1.0*
850	13	2.80E-14	1.56E-15	17.9868	0.00E+00	0.0003	0.0007	1835	0.62523	0.988	384.8 ± 0.9*	390.0 ± 0.9*
880	13	3.10E-14	1.72E-15	18.0127	0.00E+00	0.0051	0.0010	97	0.65266	0.983	383.6 ± 0.9*	388.8 ± 0.9*
910	13	3.30E-14	1.83E-15	18.0149	0.00E+00	0.0073	0.0008	67	0.68244	0.987	385.0 ± 0.9*	390.2 ± 0.9*
930	13	3.20E-14	1.78E-15	18.0000	0.00E+00	-0.0057	0.0009	<0.001	0.71152	0.985	384.1 ± 0.9*	389.3 ± 0.9*
960	13	5.40E-14	3.01E-15	17.9280	0.00E+00	-0.0011	0.0006	<0.001	0.76052	0.990	384.5 ± 0.7*	389.7 ± 0.7*
990	13	1.10E-13	6.16E-15	17.8559	0.00E+00	-0.0005	0.0004	<0.001	0.86129	0.994	384.3 ± 0.6*	389.5 ± 0.6*
1040	13	1.30E-13	7.28E-15	17.8480	0.00E+00	0.0014	0.0003	346	0.97724	0.995	384.5 ± 0.6*	389.7 ± 0.6*
1200	13	2.60E-14	1.43E-15	18.2349	0.00E+00	0.0030	0.0012	163	1.00000	0.981	387.0 ± 1.0	392.3 ± 1.0

sample e9818b, UTM 0438451 6863002: J = 0.0133824; TFA = 393.5 ± 0.5 (3.1) Ma; WMPA = 392.9 ± 0.5 Ma (3.1); IA = 392.9 ± 0.9 (3.1) (MSWD = 0.85)

630	10	3.80E-14	2.04E-15	18.6707	0.00E+00	-0.0015	0.0012	<0.001	0.03861	0.980	395.3 ± 1.1	400.7 ± 1.1
700	10	6.90E-14	3.75E-15	18.3820	0.00E+00	-0.0014	0.0009	<0.001	0.11039	0.985	391.6 ± 0.8	396.9 ± 0.8
740	10	8.70E-14	4.79E-15	18.1529	0.00E+00	0.0011	0.0007	455	0.20173	0.989	388.4 ± 0.7*	393.7 ± 0.7*
770	10	1.30E-13	7.20E-15	18.0646	0.00E+00	0.0014	0.0005	339	0.33664	0.992	387.8 ± 0.6*	393.1 ± 0.6*

800	10	1.20E-13	6.66E-15	18.0095	0.00E+00	0.0037	0.0004	134	0.46682	0.994	387.3 ± 0.6*	392.6 ± 0.6*
840	10	1.20E-13	6.65E-15	18.0385	0.00E+00	0.0046	0.0005	106	0.59786	0.991	387.1 ± 0.6*	392.4 ± 0.6*
890	10	1.40E-13	7.75E-15	18.0677	0.00E+00	-0.0023	0.0005	<0.001	0.74873	0.991	387.6 ± 0.6*	392.9 ± 0.6*
940	10	1.70E-13	9.43E-15	18.0243	0.00E+00	0.0060	0.0004	82	0.92591	0.994	387.8 ± 0.6*	393.1 ± 0.6*
1000	10	6.40E-14	3.55E-15	18.0039	0.00E+00	0.0002	0.0003	2783	0.99345	0.994	387.5 ± 0.8*	392.8 ± 0.8*
1060	10	4.90E-15	2.58E-16	18.9631	4.40E-03	-0.0099	0.0034	<0.001	0.99833	0.948	388.8 ± 7.3*	394.1 ± 7.3*
1150	10	1.60E-15	8.65E-17	18.5044	2.80E-03	0.0586	0.0035	8	1.00000	0.944	378.8 ± 21.2*	384.0 ± 21.2*

sample e9804j1, UTM 0412007 6908063: J = 0.0133849; TFA = 391.8 ± 0.6 (3.1) Ma; WMPA = 391.2 ± 0.5 (3.0) Ma; IA = 390.8 ± 0.7 (3.1) Ma (MSWD = 0.70)

630	10	2.00E-14	9.06E-16	22.0645	5.70E-04	-0.0147	0.0127	<0.001	0.02485	0.830	395.6 ± 2.3	401.0 ± 2.3
700	10	5.70E-14	3.00E-15	19.0187	0.00E+00	0.0047	0.0035	104	0.10678	0.946	389.2 ± 0.9	394.5 ± 0.9
740	10	1.30E-13	7.22E-15	18.0124	0.00E+00	-0.0032	0.0007	<0.001	0.31100	0.988	385.6 ± 0.6*	390.8 ± 0.6*
770	10	9.90E-14	5.54E-15	17.8763	0.00E+00	-0.0019	0.0002	<0.001	0.46239	0.996	385.7 ± 0.7*	390.9 ± 0.7*
800	10	6.40E-14	3.58E-15	17.8598	0.00E+00	-0.0024	0.0002	<0.001	0.56092	0.997	385.8 ± 0.8*	391.0 ± 0.8*
840	10	4.50E-14	2.51E-15	17.9514	0.00E+00	0.0008	0.0004	637	0.62926	0.993	386.2 ± 0.9*	391.5 ± 0.9*
890	10	3.70E-14	2.05E-15	18.0426	0.00E+00	-0.0038	0.0008	<0.001	0.68490	0.986	385.4 ± 1.1*	390.6 ± 1.1*
940	10	3.70E-14	2.04E-15	18.1148	0.00E+00	0.0062	0.0007	79	0.74087	0.989	387.7 ± 1.1*	393.0 ± 1.1*
1000	10	8.80E-14	4.88E-15	18.0400	0.00E+00	-0.0024	0.0007	<0.001	0.87511	0.988	386.1 ± 0.7*	391.4 ± 0.7*
1060	10	8.00E-14	4.46E-15	17.9411	0.00E+00	0.0022	0.0003	226	0.99783	0.994	386.3 ± 0.7*	391.6 ± 0.7*
1150	10	1.50E-15	8.05E-17	18.6398	3.70E-03	-0.0426	0.0000	<0.001	1.00000	1.000	406.5 ± 21.8*	412.0 ± 21.8*

sample e9731d2, UTM 0492058 6896386: J = 0.0133872; TFA = 399.9 ± 0.6 (3.1) Ma; WMPA = 399.1 ± 0.5 (3.1) Ma; IA = 398.6 ± 0.9 (3.2) Ma (MSWD = 0.18)

550	13	5.70E-15	2.74E-16	20.8332	0.00E+00	0.0086	0.0079	57	0.00681	0.888	399.2 ± 6.3	404.6 ± 6.3
600	13	1.10E-14	5.53E-16	19.8973	0.00E+00	0.0172	0.0034	28	0.02056	0.950	406.8 ± 2.9	412.3 ± 2.9
650	13	2.10E-14	1.08E-15	19.4231	0.00E+00	-0.0154	0.0025	<0.001	0.04675	0.962	402.6 ± 1.7	408.1± 1.7
690	13	4.10E-14	2.05E-15	20.0231	0.00E+00	-0.0018	0.0053	<0.001	0.09775	0.922	398.4 ± 1.1	403.8 ± 1.1
720	13	1.20E-13	6.44E-15	18.6212	0.00E+00	0.0007	0.0013	709	0.26404	0.979	393.9 ± 0.6*	399.3 ± 0.6*
740	13	1.10E-13	6.01E-15	18.3138	0.00E+00	-0.0018	0.0005	<0.001	0.40884	0.992	392.8 ± 0.6*	398.1 ± 0.6*
760	13	7.90E-14	4.31E-15	18.3249	0.00E+00	0.0020	0.0004	246	0.51617	0.994	393.6 ± 0.7*	399.0 ± 0.7*
780	13	5.90E-14	3.22E-15	18.3418	0.00E+00	-0.0018	0.0004	<0.001	0.59532	0.993	393.6 ± 0.8*	399.0 ± 0.8*
810	13	4.90E-14	2.66E-15	18.4299	0.00E+00	-0.0027	0.0006	<0.001	0.66063	0.990	394.2 ± 0.9*	399.6 ± 0.9*
850	13	4.10E-14	2.21E-15	18.5314	0.00E+00	0.0020	0.0010	248	0.71506	0.984	394.2 ± 1.0*	399.6 ± 1.0*
890	13	3.30E-14	1.78E-15	18.5885	0.00E+00	0.0050	0.0012	97	0.75892	0.981	393.9 ± 1.1*	399.3 ± 1.1*
910	13	2.40E-14	1.29E-15	18.5410	0.00E+00	0.0068	0.0010	72	0.79156	0.984	394.2 ± 1.4*	399.6 ± 1.4*
930	13	2.40E-14	1.30E-15	18.5070	0.00E+00	-0.0015	0.0010	<0.001	0.82338	0.984	393.5 ± 1.4*	398.9 ± 1.4*

960	13	3.10E-14	1.67E-15	18.5281	0.00E+00	-0.0023	0.0008	<0.001	0.86545	0.987	394.9 ± 1.2*	400.3 ± 1.2*
1000	13	6.30E-14	3.41E-15	18.4547	0.00E+00	0.0093	0.0007	53	0.95024	0.989	394.2 ± 0.8*	399.6 ± 0.8*
1050	13	3.70E-14	2.00E-15	18.4924	0.00E+00	-0.0011	0.0009	<0.001	1.00000	0.986	394.0 ± 1.0*	399.4 ± 1.0*

sample e9809g3, UTM 0372629 6876228: J = 0.0133892; TFA = 391.2 ± 0.5 (3.0) Ma; WMPA = 390.3 ± 0.4 (3.0) Ma; IA = 389.6 ± 0.7 (3.1) Ma (MSWD = 0.32)

600	13	2.30E-14	1.12E-15	20.4489	0.00E+00	0.0005	0.0073	1061	0.02226	0.894	395.1 ± 1.3	400.5 ± 1.3
650	13	3.00E-14	1.56E-15	19.1836	0.00E+00	0.0020	0.0032	245	0.05361	0.951	394.3 ± 1.0	399.7 ± 1.0
700	13	4.90E-14	2.55E-15	19.2272	0.00E+00	-0.0001	0.0039	<0.001	0.10518	0.940	391.0 ± 0.8	396.3 ± 0.8
720	13	4.60E-14	2.45E-15	18.7968	0.00E+00	0.0004	0.0030	1226	0.15464	0.953	387.7 ± 0.8*	393.0 ± 0.8*
740	13	5.50E-14	2.95E-15	18.6708	0.00E+00	0.0011	0.0029	436	0.21449	0.955	386.1 ± 0.7*	391.4 ± 0.7*
760	13	8.00E-14	4.40E-15	18.1827	0.00E+00	-0.0005	0.0015	<0.001	0.30386	0.976	384.7 ± 0.6*	389.9 ± 0.6*
780	13	9.30E-14	5.17E-15	17.9963	0.00E+00	-0.0022	0.0009	<0.001	0.40795	0.986	384.5 ± 0.6*	389.7 ± 0.6*
810	13	1.10E-13	6.13E-15	17.9590	0.00E+00	-0.0047	0.0007	<0.001	0.52895	0.989	384.7 ± 0.6*	389.9 ± 0.6*
850	13	1.20E-13	6.64E-15	18.0697	0.00E+00	-0.0023	0.0011	<0.001	0.66666	0.982	384.5 ± 0.6*	389.7 ± 0.6*
870	13	6.50E-14	3.54E-15	18.3536	0.00E+00	-0.0040	0.0020	<0.001	0.73835	0.967	384.7 ± 0.8*	389.9 ± 0.8*
870	13	3.20E-14	1.73E-15	18.5197	0.00E+00	-0.0160	0.0024	<0.001	0.77379	0.961	385.7 ± 1.1*	390.9 ± 1.1*
890	13	3.60E-14	1.95E-15	18.4907	0.00E+00	-0.0070	0.0022	<0.001	0.81359	0.964	386.3 ± 0.9*	391.6 ± 0.9*
910	13	4.00E-14	2.18E-15	18.3077	0.00E+00	-0.0093	0.0017	<0.001	0.85786	0.972	385.5 ± 0.9*	390.7 ± 0.9*
930	13	3.90E-14	2.15E-15	18.1316	0.00E+00	-0.0054	0.0010	<0.001	0.90103	0.984	386.3 ± 0.9*	391.6 ± 0.9*
960	13	3.90E-14	2.17E-15	17.9548	0.00E+00	-0.0094	0.0007	<0.001	0.94459	0.988	384.6 ± 0.9*	389.8 ± 0.9*
990	13	2.80E-14	1.56E-15	17.9843	0.00E+00	-0.0209	0.0008	<0.001	0.97640	0.988	384.9 ± 1.0*	390.1 ± 1.0*
1040	13	1.70E-14	9.39E-16	18.1078	1.20E-03	-0.0185	0.0009	<0.001	0.99561	0.986	386.7 ± 1.5*	392.0 ± 1.5*
1200	13	4.00E-15	2.17E-16	18.4037	2.00E-03	-0.1614	0.0013	<0.001	1.00000	0.978	389.6 ± 5.8*	394.9 ± 5.8*

sample e9804c7, UTM 0431115 6925587: J = 0.133932; TFA = 392.6 ± 0.5 (3.0) Ma; WMA = 391.5 ± 0.9 (3.1) Ma; IA = 393.9 ± 0.9 (3.1) (MSWD = 6.46)

560	13	8.80E-15	4.17E-16	21.1245	3.40E-04	-0.0656	0.0095	<0.001	0.00790	0.868	395.1 ± 3.3	400.5 ± 3.3
630	13	1.60E-14	8.22E-16	19.4682	0.00E+00	-0.0169	0.0035	<0.001	0.02316	0.945	395.9 ± 1.7	401.3 ± 1.7
690	13	3.20E-14	1.70E-15	18.7956	0.00E+00	-0.0097	0.0023	<0.001	0.05502	0.963	391.8 ± 1.0	397.1 ± 1.0
730	13	8.10E-14	4.32E-15	18.7583	0.00E+00	0.0005	0.0028	893	0.13670	0.956	388.2 ± 0.7	393.5 ± 0.7
760	13	1.40E-13	7.70E-15	18.1747	0.00E+00	0.0020	0.0013	244	0.28102	0.979	385.6 ± 0.6*	390.8 ± 0.6*
770	13	7.80E-14	4.31E-15	18.0902	0.00E+00	-0.0005	0.0009	<0.001	0.36249	0.986	386.5 ± 0.6*	391.8 ± 0.6*
780	13	5.10E-14	2.82E-15	18.1008	0.00E+00	0.0012	0.0008	398	0.41582	0.987	387.1 ± 0.7*	392.4 ± 0.7*
795	13	4.10E-14	2.26E-15	18.1121	0.00E+00	0.0009	0.0011	521	0.45910	0.981	385.2 ± 0.8*	390.4 ± 0.8*
810	13	3.10E-14	1.71E-15	18.1568	0.00E+00	-0.0012	0.0011	<0.001	0.49186	0.982	386.1 ± 0.9*	391.4 ± 0.9*
840	13	3.40E-14	1.86E-15	18.2403	0.00E+00	-0.0061	0.0013	<0.001	0.52764	0.979	386.9 ± 0.9*	392.2 ± 0.9*
870	13	3.40E-14	1.86E-15	18.3170	0.00E+00	-0.0019	0.0015	<0.001	0.56267	0.976	387.1 ± 0.9*	392.4 ± 0.9*
920	13	5.50E-14	3.01E-15	18.2705	0.00E+00	0.0003	0.0015	1453	0.61947	0.975	386.1 ± 0.7*	391.4 ± 0.7*
950	13	5.40E-14	2.94E-15	18.3526	0.00E+00	-0.0017	0.0018	<0.001	0.67521	0.971	386.2 ± 0.7*	391.5 ± 0.7*
1020	13	2.40E-13	1.32E-14	18.1352	0.00E+00	0.0058	0.0008	85	0.92168	0.988	387.9 ± 0.5	393.2 ± 0.5
1020	13	5.30E-14	2.93E-15	18.0598	0.00E+00	0.0031	0.0005	159	0.97688	0.991	387.8 ± 0.7	393.1 ± 0.7
1200	13	2.20E-14	1.19E-15	18.4321	0.00E+00	0.0038	0.0015	130	1.00000	0.976	389.4 ± 1.1	394.7 ± 1.1

sample e1627i, UTM 0499314 6865550: J = 0.0133954; TFA = 425.1 ± 0.6 (3.3) Ma; WMPA = 423.6 ± 0.7 (3.3) Ma; IA = 419.0 ± 3.9 (5.1) Ma (MSWD = 0.40)

630	10	1.80E-14	8.54E-16	21.0679	0.00E+00	0.0028	0.0012	177	0.03246	0.983	441.5 ± 2.3	447.5 ± 2.3
700	10	3.30E-14	1.62E-15	20.3091	0.00E+00	0.0043	0.0010	113	0.09398	0.986	428.7 ± 1.4	434.5 ± 1.4
740	10	7.90E-14	4.02E-15	19.6653	0.00E+00	0.0077	0.0005	64	0.24514	0.993	419.2 ± 0.8*	424.9 ± 0.8*
770	10	7.00E-14	3.59E-15	19.4728	0.00E+00	-0.0002	0.0002	<0.001	0.38034	0.997	417.0 ± 0.8*	422.7 ± 0.8*
800	10	4.50E-14	2.31E-15	19.5021	0.00E+00	-0.0115	0.0003	<0.001	0.46815	0.995	416.8 ± 1.1*	422.5 ± 1.1*
840	10	4.10E-14	2.10E-15	19.4931	0.00E+00	-0.0028	0.0003	<0.001	0.54789	0.996	417.1 ± 1.1*	422.8 ± 1.1*
890	10	4.80E-14	2.46E-15	19.5415	0.00E+00	0.006	0.0004	81	0.64001	0.994	417.2 ± 1.0*	422.9 ± 1.0*
940	10	6.70E-14	3.42E-15	19.5779	0.00E+00	0.0096	0.0003	51	0.76891	0.995	418.4 ± 0.8*	424.1 ± 0.8*
1000	10	1.10E-13	5.63E-15	19.5395	0.00E+00	0.0052	0.0003	94	0.97408	0.996	418.0 ± 0.7*	423.7 ± 0.7*
1060	10	1.30E-14	6.48E-16	20.0507	0.00E+00	0.0319	0.0010	15	0.99824	0.985	423.6 ± 2.9*	429.4 ± 2.9*
1150	10	1.00E-15	4.54E-17	22.0260	5.20E-03	-0.3583	0.0080	<0.001	1.00000	0.892	421.5 ± 37.9*	427.2 ± 37.9*

sample e1704c, UTM 0426257 6894761: J = 0.133959; TFA = 395.1 ± 0.6 (3.1) Ma; WMPA = 394.3 ± 0.5 (3.1) Ma; IA = 393.7 ± 0.7 (3.1) (MSWD = 0.53)

560	10	8.10E-15	4.11E-16	19.7098	0.00E+00	0.0213	0.0036	23	0.01133	0.946	402.2 ± 3.8	407.7 ± 3.8
640	10	2.50E-14	1.28E-15	19.5839	0.00E+00	0.0083	0.0036	59	0.04575	0.945	399.5 ± 1.4	404.9 ± 1.4

710	10	5.40E-14	2.79E-15	19.3265	0.00E+00	0.0065	0.0038	76	0.12188	0.942	393.7 ± 0.9	399.1 ± 0.9
750	10	1.20E-13	6.48E-15	18.5072	0.00E+00	0.0031	0.0018	156	0.29409	0.971	389.2 ± 0.6*	394.5 ± 0.6*
800	10	1.50E-13	8.27E-15	18.1339	0.00E+00	0.0000	0.0007	<0.001	0.52874	0.989	388.5 ± 0.6*	393.8 ± 0.6*
850	10	7.90E-14	4.33E-15	18.2582	0.00E+00	0.0004	0.0010	1248	0.64722	0.984	388.9 ± 0.7*	394.2 ± 0.7*
900	10	5.90E-14	3.19E-15	18.4907	0.00E+00	0.0007	0.0018	666	0.73503	0.972	389.1 ± 0.8*	394.4 ± 0.8*
950	10	1.00E-13	5.46E-15	18.3029	0.00E+00	0.0014	0.0011	358	0.88518	0.982	389.2 ± 0.6*	394.5 ± 0.6*
1000	10	7.20E-14	3.97E-15	18.1350	0.00E+00	0.0030	0.0006	163	0.99453	0.991	389.1 ± 0.7*	394.4 ± 0.7*
1060	10	3.60E-15	1.90E-16	18.9695	0.00E+00	0.0259	0.0015	19	0.99974	0.976	399.6 ± 8.0	405.0 ± 8.0
1140	10	1.40E-16	9.73E-18	14.3957	0.00E+00	1.2022	0.0210	0.41	1.00000	0.569	187.8 ± 178.5	190.4 ± 178.5
sample e9816e, UTM 0431450 6875648: J = 0.0133952; TFA = 396.2 ± 0.4 (3.1) Ma; WMPA = 395.2 ± 0.5 (3.1) Ma; IA = 395.3 ± 0.6 (3.1) Ma (MSWD = 0.47)												
550	13	8.00E-15	4.04E-16	19.8074	0.00E+00	-0.0278	0.0035	<0.001	0.00794	0.948	404.7 ± 3.9	410.2 ± 3.9
600	13	1.60E-14	8.18E-16	19.5659	0.00E+00	0.0109	0.0030	45	0.02354	0.954	402.8 ± 2.0	408.3 ± 2.0
650	13	2.70E-14	1.42E-15	18.9865	1.30E-04	0.0204	0.0019	24	0.05108	0.970	397.7 ± 1.3	403.1 ± 1.3
690	13	5.50E-14	2.24E-15	24.5297	0.00E+00	-0.0026	0.0209	<0.001	0.09486	0.749	396.8 ± 1.2	402.2 ± 1.2
720	13	6.40E-14	3.39E-15	18.8701	0.00E+00	0.0067	0.0024	73	0.16089	0.962	392.8 ± 0.8	398.1 ± 0.8
740	13	1.00E-13	5.47E-15	18.2680	0.00E+00	0.0056	0.0009	88	0.27279	0.986	389.9 ± 0.6*	395.2 ± 0.6*
760	13	1.10E-13	6.05E-15	18.1701	0.00E+00	0.0018	0.0006	268	0.38803	0.991	389.7 ± 0.6*	395.0 ± 0.6*
780	13	8.20E-14	4.52E-15	18.1262	0.00E+00	0.0015	0.0004	328	0.47711	0.993	389.7 ± 0.7*	395.0 ± 0.7*
810	13	7.10E-14	3.91E-15	18.1471	0.00E+00	0.0011	0.0005	441	0.55384	0.992	389.6 ± 0.7*	394.9 ± 0.7*
850	13	7.00E-14	3.83E-15	18.2660	0.00E+00	0.0002	0.0009	2547	0.62842	0.985	389.7 ± 0.7*	395.0 ± 0.7*
890	13	7.40E-14	4.03E-15	18.3804	0.00E+00	-0.0002	0.0013	<0.001	0.70771	0.979	389.7 ± 0.7*	395.0 ± 0.7*
910	13	6.60E-14	3.60E-15	18.3089	0.00E+00	-0.0065	0.0009	<0.001	0.77862	0.985	390.4 ± 0.7*	395.7 ± 0.7*
930	13	7.90E-14	4.34E-15	18.1863	0.00E+00	0.0038	0.0006	129	0.86357	0.990	389.9 ± 0.7*	395.2 ± 0.7*
960	13	9.20E-14	5.07E-15	18.1359	0.00E+00	0.0002	0.0003	2727	0.96327	0.994	390.3 ± 0.7*	395.6 ± 0.7*
1000	13	3.20E-14	1.77E-15	18.1289	0.00E+00	-0.0059	0.0003	<0.001	0.99801	0.996	390.6 ± 1.1*	395.9 ± 1.1*
1050	13	2.00E-15	1.03E-16	19.3377	0.00E+00	-0.1415	0.0062	<0.001	1.00000	0.905	379.9 ± 14.9*	385.1 ± 14.9*

Table 1. Zircon and titanite data

Analysis #	UTM coordinates	U (ppm)	Th (ppm)	Th/U	$^{238}U/^{206}Pb^*$ corrected	± 1 std. dev.	$^{207}Pb^*/^{206}Pb^*$ corrected	± 1 std. dev.	$^{206}Pb^*/^{238}U$ age Ma ± 1 std. dev.
e1612a-6	0344699 6896495	15	0	0.03	13.54	8.82	0.07	11.44	459 ± 39
e1612a-10		55	2	0.04	13.02	4.86	0.05	22.70	477 ± 22
e1612a-5		74	49	0.67	12.92	4.15	0.05	8.90	481 ± 19
e1612a-7		70	25	0.36	12.71	5.04	0.06	16.43	488 ± 24
e1612a-8		15	1	0.05	11.05	13.77	0.07	10.68	559 ± 75
e1612a-11		21	4	0.19	10.46	3.90	0.07	10.32	589 ± 22
e1612o-m4-2	03823xx 68940xx	68	35	0.51	11.52	4.51	0.09	23.82	537 ± 23
e1612o-m1-4		273	1	0.00	7.10	3.17	0.08	5.28	849 ± 25
e1612o-m3-3		187	156	0.84	6.10	2.45	0.08	6.11	978 ± 22
e1612o-m3-4		43	23	0.54	5.04	4.00	0.09	4.38	1166 ± 43
e1612o-m1-3		134	33	0.25	4.31	3.13	0.10	6.78	1346 ± 38
e1612o-m4-3		315	255	0.81	3.95	4.71	0.11	11.18	1456 ± 61
e1612o-m1-2		53	25	0.48	3.85	3.82	0.09	7.18	1489 ± 51
e1612o-m1-5		55	22	0.40	3.63	2.78	0.09	5.58	1570 ± 39
e1612q.1.1^	0386325 6884503	392	159	0.41	15.96	1.74	0.05	3.08	392 ± 7
e1612q.8.1^		4	1	0.15	15.70	3.55	0.05	27.51	398 ± 14
e1612q.3.1^		142	4	0.03	15.48	2.23	0.06	8.03	404 ± 9
e1612q-m3-1.2		56	5	0.08	15.08	4.95	0.06	23.06	414 ± 20
e1612q.2.1^		879	25	0.03	14.58	3.33	0.06	11.81	428 ± 14
e1612q-m3-1.1		42	3	0.07	14.46	5.79	0.06	42.74	431 ± 24
e1612Q.6.1^		546	14	0.03	14.45	3.06	0.07	13.36	432 ± 13
e1612q-m3-1.4		58	5	0.09	14.38	3.07	0.06	34.87	433 ± 13
e1612q-m3-3.12		56	5	0.09	14.31	3.33	0.08	13.76	435 ± 14
e1612q-m3-2.9		81	10	0.13	14.23	6.35	0.06	37.87	438 ± 27
e1612q-m3-2.8		47	4	0.08	14.11	3.39	0.06	29.43	441 ± 14
e1612q-m4-6		36	2	0.06	14.02	4.71	0.04	39.76	444 ± 20
e1612q-m3-1.6		63	4	0.06	13.78	5.99	0.07	25.75	452 ± 26
e1612q-m3-3.10		59	4	0.07	13.73	6.01	0.06	33.85	453 ± 26

e1612q-m3-3.13		55	2	0.03	13.42	6.95	0.06	23.28	463 ± 31
e9801e.9.1^	0474897 6902600	66	4	0.06	16.74	2.93	0.05	5.21	374 ± 11
e9801e.5.1^		43	3	0.07	15.98	3.29	0.06	3.58	391 ± 13
e9801e.7.1^		25	6	0.24	15.19	1.91	0.05	3.03	411 ± 8
e9801e-m1-2		2489	3975	1.60	14.86	2.97	0.06	4.87	420 ± 12
e9801e-m1-15		738	141	0.19	13.94	3.45	0.05	6.42	447 ± 15
e9801e-m1-16		812	198	0.24	13.86	3.17	0.05	6.46	449 ± 14
e9801e.8.1^		24	17	0.72	13.83	1.65	0.06	1.92	450 ± 7
e9801e.1.1^		175	15	0.09	13.45	1.46	0.06	2.00	462 ± 7
e9801e-m1-19		324	159	0.49	13.15	4.08	0.05	13.08	473 ± 19
e9801e.4.1^		27	2	0.07	13.01	3.55	0.06	3.69	478 ± 16
e9801e.2.1^		22	1	0.04	12.48	2.04	0.07	2.13	497 ± 10
e9801e.3.1^		72	4	0.05	9.02	3.02	0.07	3.97	678 ± 19
e9801e-m1-5		62	36	0.58	6.94	4.16	0.08	10.63	868 ± 34
e9801e-m1-7		402	84	0.21	6.64	2.91	0.08	6.07	904 ± 25
e9801e-m1-12		53	24	0.46	6.54	2.92	0.06	9.83	917 ± 25
e9801e-m1-8		143	36	0.25	4.51	3.03	0.11	5.27	1292 ± 36
e9801e-m4-5		198	22	0.11	4.14	4.67	0.12	7.35	1396 ± 59
e9801e-m4-3		203	81	0.40	3.95	4.53	0.12	7.02	1454 ± 59
e9801e-m1-14		129	103	0.80	3.49	2.63	0.13	5.64	1625 ± 38
e8904b.3.1^	0431596 6926619	51	1	0.02	5.07	1.89	0.10	2.84	1160 ± 20
e9804b-m4-1		208	30	0.15	4.26	3.40	0.10	3.15	1361 ± 42
e8904b.6.1^		3	0	0.02	4.17	1.59	0.09	0.81	1385 ± 20
e9804b-m4-2		247	35	0.14	4.08	3.29	0.10	1.90	1412 ± 42
e9804b-m4-3		270	24	0.09	3.86	4.47	0.10	0.86	1485 ± 59
e9804b-m1-4		201	19	0.10	3.80	4.21	0.10	5.08	1506 ± 57
e8904b.2.1^		689	66	0.10	3.80	1.28	0.10	0.87	1507 ± 17
e9804b-m1-7		307	89	0.29	3.78	3.09	0.10	4.79	1513 ± 42
e9804b-m1-3		137	16	0.12	3.71	3.00	0.10	5.95	1538 ± 41
e9804b-m1-6		280	48	0.17	3.70	2.87	0.10	4.66	1540 ±39
e8904b.4.1^		3	1	0.17	3.65	2.09	0.10	1.37	1562 ± 29
e9804b-m1-1		89	13	0.14	3.60	2.90	0.09	5.68	1579 ± 41

e9804b-m1-2			112	15	0.13	3.57	3.19	0.09	6.88	1591 ± 45
e9804c7-20	0431115	6925587	438	66	0.15	15.52	5.40	0.07	10.43	403 ± 21
e9804c7-19			40	2	0.05	2.78	5.22	0.13	10.59	1981 ± 89
e9804c7-17			32	10	0.31	2.69	3.30	0.16	11.49	2038 ±58
e9804c7-18			29	6	0.22	2.51	3.83	0.15	10.25	2159 ± 70
e9812d2.9.1^	0371143	6912896	162	2	0.01	16.43	10.27	0.06	35.67	381 ± 38
e9812d2.1.1^			3926	722	0.18	15.18	4.61	0.07	15.35	411 ± 18
e9812d2-m3-4.13			14	0	0.01	14.99	10.92	0.05	54.47	416 ± 45
e9812d2.5.1^			205	6	0.03	14.98	5.92	0.06	30.92	416 ± 24
e9812d2-m3-2.5			13	0	0.02	14.82	10.52	0.06	56.38	421 ± 43
e9812d2-m4-6			11	0	0.03	12.58	5.15	0.08	35.24	493 ± 25
e9812d2-m4-3			69	140	2.02	9.11	3.80	0.07	15.02	672 ± 24
e9812d2-m4-7			12	2	0.17	8.42	3.68	0.04	56.06	723 ± 25
e9812d2-m4-10			37	36	0.96	7.79	2.79	0.07	5.87	778 ± 20
e9812d2-m4-8			16	4	0.22	7.35	3.83	0.08	29.23	822 ± 30
e9812d2-m4-9			19	12	0.66	6.49	3.51	0.06	31.70	924 ± 30
e9815b.5.1^	0407196	6885594	947	93	0.10	9.72	2.42	0.08	2.44	631 ± 15
e9815b.4.1^			902	73	0.08	8.79	4.26	0.07	3.70	695 ± 28
e9815b.3.1^			1260	78	0.06	8.61	2.48	0.07	10.69	709 ± 17
e9815b.2.1^			342	15	0.04	8.50	1.91	0.08	2.24	717 ± 13
e9815b.7.1^			654	59	0.09	6.88	1.68	0.07	1.26	874 ± 14
e9815b-m4-3			224	141	0.63	4.70	3.55	0.10	8.87	1245 ± 40
e9815b-m1-5			160	30	0.18	4.67	2.92	0.09	5.73	1251 ± 33
e9815b.1.1^			323	46	0.14	4.58	2.03	0.09	1.35	1272 ± 23
e9815b.1b.1^			110	48	0.43	4.52	3.55	0.10	0.97	1289 ± 42
e9815b-m1-8			109	70	0.65	4.21	3.08	0.08	7.51	1373 ± 38
e9815b-m4-2			276	435	1.57	4.02	3.54	0.10	7.90	1431 ± 46
e9815b.8.1^			391	29	0.07	3.95	1.66	0.09	1.81	1455 ± 22
e9815b-m1-1			243	212	0.87	3.90	3.02	0.11	4.84	1472 ± 40
e9815b-m4-4			277	226	0.82	3.88	3.47	0.11	8.00	1480 ± 46
e9815b-m1-1			380	313	0.82	3.77	2.94	0.11	5.20	1516 ± 40

e9815b-m1-6	127	24	0.19	3.74	2.82	0.10	5.45	1527 ± 38
e9815b-m1-7	200	64	0.32	3.58	2.86	0.10	5.38	1587 ± 40
e9815b-m1-2	178	104	0.58	3.50	3.26	0.10	6.45	1621 ± 47
e9815b-m1-4	61	68	1.12	3.48	3.05	0.08	10.89	1626 ± 44

^ analyses performed by SIMS; others are LA-ICPMS data

* radiogenic Pb

Table 2. ICP monazite data

Analysis #	UTM coordinates	$^{238}U/^{206}Pb^*$ corrected	±1 s. e. (%)	$^{207}Pb^*/^{206}Pb^*$ corrected	±1 s.e. (%)	$^{208}Pb/^{232}Th$ age	± 1 s.e.
e1605a-1	0497273 6928121	15.06	2.05	0.07	6.23	426	7
e1612a-A1.2	0344699 6896495	15.60	3.31	0.06	4.78	399	10
e1612a-B2.1		14.72	2.62	0.07	4.28	428	15
e1622f1-C1.2	0408438 6926222	15.41	4.90	0.06	7.32	395	13
e1622f1-C1.3		15.22	4.47	0.06	10.06	395	18
e1622f1-A1.2		14.96	3.46	0.06	7.76	415	10
e1622f1-A1.4		15.28	3.01	0.06	10.68	417	11
e1622f1-A2.1		14.51	3.20	0.06	6.63	420	16
e1622f1-A1.3		15.18	3.28	0.06	10.54	421	14
e1622f1-A1.5		15.45	2.74	0.06	7.09	421	11
e1622f1-A1.1		14.62	3.54	0.06	10.69	435	15
e9731d2-B1	0492058 6896386	16.67	5.90	0.06	7.62	357	15
e9731d2-A1.1		15.72	3.34	0.06	6.13	381	14
e9731d2-A2.2		15.08	5.21	0.05	8.38	399	19
e9731d2-A2.1		14.67	6.21	0.06	7.37	420	25
e9731d2-A1.2		14.18	2.95	0.07	6.14	423	17
e9804c1-B1.2	0431115 6925587	14.53	1.79	0.06	10.58	399	13
e9804c1-B2		14.95	1.71	0.06	8.83	406	12
e9804c1-A2.1		4.06	1.89	0.12	6.14	1262	29
e9804c1-A2.3		3.92	1.97	0.12	5.90	1365	32
e9804c1-A1		3.93	2.03	0.13	6.17	1377	33
e9804c1-A2.2		3.65	1.34	0.13	5.90	1475	30
e9804c1-B1.1		3.34	2.12	0.13	6.84	1692	95

e9804c7-3.2	0431115 6925587	15.36	2.21	0.07	11.30	385	8
e9804c7-3.4		15.88	2.50	0.06	13.52	395	8
e9804c7-2.4		15.71	5.28	0.05	18.83	397	14
e9804c7-2.3		16.06	4.19	0.05	16.49	402	17
e9804c7-3.3		15.14	2.90	0.06	12.11	416	12
e9804c7-1.2		15.38	4.02	0.05	14.77	419	8
e9804c7-2.2		15.40	5.46	0.05	16.36	421	12
e9804c7-1.3		15.06	4.50	0.05	14.76	430	14
e9804c7-2.1		15.01	6.17	0.05	14.86	433	22
e9804c7-1.1		14.67	3.91	0.05	15.03	435	7
e9804c7-4.3		14.76	3.24	0.05	12.43	470	13
e9804c7-4.1		14.06	4.99	0.06	20.23	474	13
e9804c7-5.2		15.07	3.33	0.07	11.32	483	17
e9804c7-4.2		15.10	3.44	0.06	13.60	483	19
e9804c7-5.1		13.87	3.32	0.06	22.59	503	15
e9804c7-3.1		7.64	2.97	0.11	11.34	673	14
e9809o2-C1.2	0379741 6863444	7.75	2.30	0.08	9.61	801	17
e9809o2-C1.1		7.02	4.26	0.09	11.55	843	36
e9809o2-A1		6.79	3.67	0.09	10.38	888	18
e9809o2-B1.2		6.82	3.23	0.09	12.06	912	28
e9809o2-B1.1		6.28	1.99	0.08	11.39	979	23

e9819d1-B1.2	0427149 6879216	16.12	2.82	0.06	13.28	375	7
e9819d1-B1.3		15.86	2.85	0.06	10.87	377	9
e9819d1-B1.1		15.28	5.32	0.07	11.62	397	14
e9819d1-3.30		15.24	3.62	0.07	9.42	400	21
e9819d1-B2.2		14.91	4.92	0.07	10.51	404	16
e9819d1-1.16		14.68	7.07	0.07	6.86	404	24
e9819d1-3.26		14.28	6.29	0.08	9.29	405	25
e9819d1-1.15		14.58	6.17	0.07	6.48	406	23
e9819d1-C1.1		14.86	3.50	0.06	12.31	412	17
e9819d1-3.27		14.06	6.66	0.08	11.17	413	28
e9819d1-3.29		14.19	6.16	0.07	9.72	414	28
e9819d1-9		13.61	3.58	0.08	7.02	414	21
e9819d1-1.18		14.25	5.09	0.07	6.76	415	17
e9819d1-5.41		13.73	3.79	0.07	9.42	415	15
e9819d1-3.28		13.73	9.14	0.08	9.46	416	34
e9819d1-3.31		13.55	3.31	0.08	10.81	417	16
e9819d1-5.40		14.11	3.34	0.07	9.57	419	18
e9819d1-4.36		13.39	4.90	0.08	10.66	432	15
e9819d1-4		13.02	8.28	0.08	14.49	435	27
e9819d1-5.39		13.21	5.19	0.08	11.05	440	20
e9819d1-1		13.61	6.76	0.07	12.59	440	26
e9819d1-2.23		13.12	3.13	0.07	10.06	442	25
e9819d1-4.37		12.79	6.48	0.08	14.84	447	15
e9819d1-1.14		12.68	4.26	0.09	6.23	449	18
e9819d1-33		12.86	3.79	0.08	10.08	450	10
e9819d1-1.13		12.51	3.56	0.08	6.97	451	17
e9819d1-2		13.21	3.98	0.08	11.07	451	12
e9819d1-3.32		12.98	2.87	0.09	9.00	456	10
e9819d1-2.20		11.97	3.73	0.09	10.11	458	18
e9819d1-12		12.15	3.48	0.08	6.91	462	16
e9819d1-5		12.39	3.86	0.08	14.06	467	10
e9819d1-4		12.10	3.60	0.08	9.59	472	28

* radiogenic Pb