148974: lithic sandstone, Coodardo Well

Location and sampling

EDMUND (SF 50-14), ELLIOTT CREEK (2250)
MGA Zone 50, 458182E 7394718N

Sampled on 27 September 2004

The sample was taken from an outcrop of fine-grained lithic sandstone, lacking internal stratification, within interbedded sandstone and siltstone about 1.2 km northeast of Coodardo Well.

Tectonic unit/relations

This lithic sandstone is part of the Curran Member, within the uppermost Ullawarra Formation of the upper Edmund Group, Edmund Basin (Martin et al., 2005). The Curran Member comprises interbedded lithic sandstone and siltstone with gradational contacts with the remainder of the Ullawarra Formation below, and the Coodardoo Formation above (Martin and Thorne, 2002; Martin et al., 2005). The Curran Member is older than the c. 1465 Ma dolerite sills that intrude the Edmund Group (Wingate, 2002), and younger than 1680–1620 Ma granites of the Durlacher Supersuite in the underlying Gascoyne Complex (Martin et al., 2005; Sheppard et al., 2005).

Petrographic description

This dark greenish-grey rock is rich in poorly sorted, angular to rounded detrital grains (45–50%), within an abundant clay-rich matrix (50–55%). The grains are mostly (35%) single-crystal quartz crystals 0.05–0.5 mm in diameter, with lesser (10%) lithic fragments, rare plagioclase and microcline (<1% each), and accessory muscovite, biotite, chlorite, leucoxene, rutile, anatase, and tourmaline. The matrix is sericite-rich, with lesser clay minerals and limonite, and is weakly foliated. Lithic fragments range up to 10 mm in length and comprise (in approximately equal proportions) foliated quartz–sericite claystone, and possible intraclasts of feldspar-rich lithic sandstone that lacks biotite and chlorite, but features pale-green, massive and unfoliated interstitial clay minerals that contrast with the foliated, sericite-rich clay matrix of the host sandstone. The sample also contains a vein of granular to prismatic quartz, 0.3–0.5 mm wide, and minor, irregular fractures filled by limonite and clay minerals.

Zircon morphology

Zircons isolated from this sample are anhedral to euhedral, variably rounded, and range from clear and colourless to dark brown or opaque. They are up to 250 μm long, with aspect ratios up to 4:1. Concentric growth zoning is common, and typically is truncated at (abraded) grain boundaries. A cathodoluminescence image of representative zircons is shown in Figure 1.

Analytical details

This sample was analysed on 6–10 October 2005, using SHRIMP-A. Forty-nine analyses of the CZ3 standard were obtained, and following the deletion of five analyses as outliers, the remaining 44 analyses indicated an external spot-to-spot (reproducibility) uncertainty of 1.68% (1σ) and a $^{238}U/^{206}Pb^*$ calibration uncertainty of 0.27% (1σ). Common-Pb corrections were applied to all analyses using common-Pb isotopic compositions determined by the method of Stacey and Kramers (1975).

Results

Ninety-one analyses were obtained from 90 zircons, with one grain (22) analysed twice. Results are listed in Table 1, and shown in a concordia diagram (Fig. 2) and a probability density diagram (Fig. 3).

Interpretation

The analyses are mainly concordant (Fig. 2), with only six analyses characterised by moderate to strong discordance (>5%) or high common-Pb contents (f204 >1%). The dates obtained from these six analyses (Group D; Table 1) are imprecise or unreliable, and are not considered geologically significant. The remaining 85 analyses can be divided into two groups, based on their $^{207}Pb^*/^{206}Pb^*$ ratios.

Group 1 comprises eight analyses of seven zircons (Table 1), which yielded a weighted mean $^{207}Pb^*/^{206}Pb^*$ date of 1680 ± 10 Ma (MSWD = 1.20).

Group 2 comprises 77 analyses of 77 zircons (Table 1), which yielded $^{207}Pb^*/^{206}Pb^*$ dates of 3064–1760 Ma.

It is possible that all of the analyses are of unmodified detrital zircons, in which case the weighted mean $^{207}Pb^*/^{206}Pb^*$ date of 1618 ± 53 Ma (MSWD = 0.45) for two analyses (22.1 and 22.2) of a single low-uranium

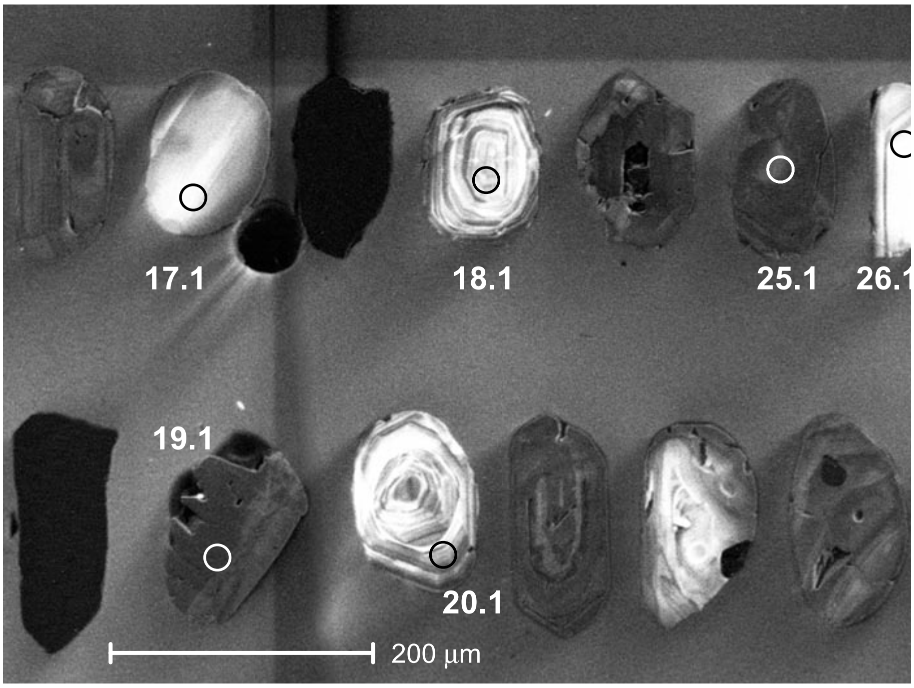

Figure 1. Cathodoluminescence image of representative zircons from sample 148974: lithic sandstone, Coodardo Well. Numbered circles indicate approximate positions of analysis sites

zircon represents a maximum age for depositional of the sandstone. However, these analyses produced relatively imprecise results, and the date of 1680 ± 10 Ma for the eight analyses in Group 1 represents a more robust estimate of the maximum depositional age. Martin et al. (2007) determined a maximum depositional age of 1680 ± 8 Ma from the same data.

The combined analyses in Groups 1 and 2 indicate dates that define significant age components (based on three or more data points) at c. 1681, c. 1796, c. 2404, c. 2459, c. 2498, c. 2525, c. 2549, c. 2588, c. 2694, c. 2710, and c. 2810 Ma, and several minor components spanning the range 3064–1625 Ma (Fig. 3). These are interpreted as the ages of zircon-bearing rocks in the source region(s) of the sandstone.

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Recommended reference for this publication

WINGATE, M. T. D., BODORKOS, S., and SIRCOMBE, K. N., 2007, 148974: lithic sandstone, Coodardo Well; Geochronology dataset 691, *in* Compilation of geochronology data: Western Australia Geological Survey.

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Date released: 30 June 2007

Table 1. Ion microprobe analytical results for zircons from sample 148974: lithic sandstone, Coodardo Well

Grp no.	Spot no.	Grain .spot	^{238}U (ppm)	^{232}Th (ppm)	$^{232}Th/^{238}U$	f204 (%)	$^{238}U/^{206}Pb$ ±1σ	$^{207}Pb/^{206}Pb$ ±1σ	$^{238}U/^{206}Pb^*$ ±1σ	$^{207}Pb^*/^{206}Pb^*$ ±1σ	$^{238}U/^{206}Pb^*$ date (Ma) ±1σ	$^{207}Pb^*/^{206}Pb^*$ date (Ma) ±1σ	Disc (%)
1	22	22.1	22	5	0.25	0.432	3.455 ± 0.081	0.10163 ± 0.00156	3.470 ± 0.082	0.09790 ± 0.00298	1632 ± 34	1585 ± 57	–3.0
1	70	22.2	37	12	0.34	0.112	3.473 ± 0.072	0.10116 ± 0.00119	3.477 ± 0.072	0.10020 ± 0.00164	1630 ± 30	1628 ± 30	–0.1
1	2	2.1	304	125	0.43	0.029	3.240 ± 0.057	0.10293 ± 0.00042	3.241 ± 0.057	0.10268 ± 0.00046	1733 ± 27	1673 ± 8	–3.6
1	79	78.1	96	173	1.87	0.042	3.311 ± 0.062	0.10315 ± 0.00071	3.312 ± 0.062	0.10278 ± 0.00087	1701 ± 28	1675 ± 16	–1.5
1	88	87.1	262	146	0.57	0.068	3.445 ± 0.060	0.10348 ± 0.00045	3.447 ± 0.060	0.10289 ± 0.00051	1642 ± 25	1677 ± 9	2.1
1	28	28.1	326	67	0.21	0.025	3.361 ± 0.058	0.10356 ± 0.00040	3.362 ± 0.058	0.10334 ± 0.00042	1678 ± 26	1685 ± 7	0.4
1	31	31.1	191	88	0.48	0.051	3.226 ± 0.057	0.10383 ± 0.00058	3.228 ± 0.058	0.10339 ± 0.00060	1740 ± 27	1686 ± 11	–3.2
1	80	79.1	132	102	0.79	0.068	3.431 ± 0.062	0.10438 ± 0.00063	3.433 ± 0.062	0.10379 ± 0.00073	1648 ± 26	1693 ± 13	2.7
2	34	34.1	321	479	1.54	0.014	3.185 ± 0.060	0.10779 ± 0.00041	3.186 ± 0.060	0.10767 ± 0.00041	1760 ± 29	1760 ± 7	0.0
2	12	12.1	253	199	0.81	0.019	3.177 ± 0.056	0.10957 ± 0.00052	3.178 ± 0.056	0.10940 ± 0.00054	1764 ± 27	1789 ± 9	1.4
2	47	48.1	118	83	0.73	0.019	3.182 ± 0.058	0.10962 ± 0.00077	3.183 ± 0.058	0.10945 ± 0.00079	1761 ± 28	1790 ± 13	1.6
2	50	50.1	268	206	0.80	–0.005	3.139 ± 0.055	0.10943 ± 0.00043	3.138 ± 0.055	0.10947 ± 0.00044	1783 ± 27	1791 ± 7	0.4
2	55	55.1	119	97	0.84	0.015	3.197 ± 0.058	0.10968 ± 0.00069	3.198 ± 0.058	0.10954 ± 0.00071	1754 ± 28	1792 ± 12	2.1
2	1	1.1	311	172	0.57	0.021	3.256 ± 0.057	0.10997 ± 0.00051	3.256 ± 0.057	0.10979 ± 0.00052	1726 ± 27	1796 ± 9	3.9
2	25	25.1	301	90	0.31	0.106	3.198 ± 0.056	0.11073 ± 0.00045	3.201 ± 0.056	0.10981 ± 0.00052	1752 ± 27	1796 ± 9	2.4
2	9	9.1	399	123	0.32	0.025	3.159 ± 0.058	0.11011 ± 0.00037	3.159 ± 0.058	0.10989 ± 0.00038	1773 ± 28	1798 ± 6	1.4
2	72	71.1	164	182	1.14	–0.016	3.220 ± 0.057	0.10987 ± 0.00056	3.220 ± 0.057	0.11001 ± 0.00057	1744 ± 27	1800 ± 9	3.1
2	36	36.1	213	187	0.91	0.145	3.071 ± 0.054	0.11128 ± 0.00048	3.075 ± 0.054	0.11001 ± 0.00056	1815 ± 28	1800 ± 9	–0.9
2	57	57.1	93	33	0.37	0.018	3.161 ± 0.059	0.11022 ± 0.00076	3.161 ± 0.059	0.11007 ± 0.00089	1772 ± 29	1801 ± 15	1.6
2	48	47.1	96	99	1.06	0.022	3.195 ± 0.059	0.11066 ± 0.00070	3.196 ± 0.059	0.11047 ± 0.00082	1755 ± 28	1807 ± 13	2.9
2	42	42.1	265	187	0.73	0.329	3.244 ± 0.057	0.11379 ± 0.00062	3.255 ± 0.057	0.11092 ± 0.00077	1727 ± 27	1815 ± 13	4.8
2	26	26.1	58	65	1.16	0.074	3.031 ± 0.059	0.11197 ± 0.00096	3.034 ± 0.059	0.11133 ± 0.00115	1837 ± 31	1821 ± 19	–0.8
2	82	81.1	37	19	0.53	–0.157	3.202 ± 0.069	0.11120 ± 0.00116	3.197 ± 0.069	0.11257 ± 0.00134	1755 ± 33	1841 ± 22	4.7
2	3	3.1	152	90	0.61	0.020	2.734 ± 0.050	0.12306 ± 0.00060	2.735 ± 0.050	0.12288 ± 0.00061	2009 ± 31	1998 ± 9	–0.5
2	68	68.1	70	39	0.57	0.055	2.741 ± 0.052	0.12471 ± 0.00089	2.743 ± 0.052	0.12422 ± 0.00096	2004 ± 33	2018 ± 14	0.7
2	63	63.1	137	97	0.73	0.073	2.487 ± 0.045	0.12955 ± 0.00072	2.489 ± 0.045	0.12891 ± 0.00076	2177 ± 34	2083 ± 10	–4.5
2	4	4.1	277	157	0.59	0.028	2.316 ± 0.041	0.14807 ± 0.00050	2.316 ± 0.041	0.14782 ± 0.00052	2314 ± 34	2321 ± 6	0.3
2	62	62.1	151	72	0.49	0.008	2.228 ± 0.040	0.15437 ± 0.00064	2.228 ± 0.040	0.15430 ± 0.00065	2390 ± 36	2394 ± 7	0.2
2	14	14.1	403	41	0.10	0.018	2.226 ± 0.038	0.15541 ± 0.00041	2.226 ± 0.038	0.15525 ± 0.00042	2392 ± 34	2405 ± 5	0.5
2	13	13.1	57	54	0.99	0.146	2.227 ± 0.044	0.15670 ± 0.00112	2.230 ± 0.044	0.15541 ± 0.00117	2388 ± 39	2406 ± 13	0.8
2	29	29.1	158	51	0.33	0.009	2.167 ± 0.039	0.15847 ± 0.00060	2.167 ± 0.039	0.15839 ± 0.00061	2446 ± 36	2439 ± 7	–0.3
2	11	11.1	135	47	0.36	0.040	2.149 ± 0.039	0.15952 ± 0.00070	2.150 ± 0.039	0.15916 ± 0.00073	2462 ± 37	2447 ± 8	–0.6
2	76	75.1	246	110	0.46	0.006	2.270 ± 0.040	0.15996 ± 0.00049	2.270 ± 0.040	0.15990 ± 0.00049	2353 ± 35	2455 ± 5	4.1
2	85	84.1	186	89	0.49	0.010	2.218 ± 0.039	0.16014 ± 0.00061	2.218 ± 0.039	0.16004 ± 0.00062	2399 ± 35	2456 ± 7	2.3
2	10	10.1	197	66	0.35	0.009	2.206 ± 0.039	0.16022 ± 0.00057	2.206 ± 0.039	0.16013 ± 0.00057	2410 ± 36	2457 ± 6	1.9
2	77	76.1	210	69	0.34	–0.018	2.197 ± 0.039	0.16002 ± 0.00055	2.197 ± 0.039	0.16018 ± 0.00056	2418 ± 36	2458 ± 6	1.6
2	19	19.1	719	53	0.08	0.033	2.268 ± 0.039	0.16070 ± 0.00031	2.268 ± 0.039	0.16041 ± 0.00032	2354 ± 34	2460 ± 3	4.3
2	83	82.1	160	82	0.53	0.030	2.158 ± 0.038	0.16133 ± 0.00070	2.159 ± 0.038	0.16106 ± 0.00071	2453 ± 36	2467 ± 7	0.5
2	30	30.1	372	177	0.49	0.113	2.248 ± 0.039	0.16236 ± 0.00043	2.250 ± 0.039	0.16135 ± 0.00045	2370 ± 34	2470 ± 5	4.0
2	44	44.1	203	77	0.39	0.034	2.102 ± 0.037	0.16340 ± 0.00057	2.103 ± 0.037	0.16310 ± 0.00059	2508 ± 37	2488 ± 6	–0.8
2	67	67.1	143	27	0.20	0.028	2.196 ± 0.039	0.16359 ± 0.00066	2.196 ± 0.039	0.16334 ± 0.00067	2419 ± 36	2491 ± 7	2.9
2	8	8.1	142	204	1.49	–0.031	2.174 ± 0.043	0.16364 ± 0.00067	2.173 ± 0.043	0.16391 ± 0.00070	2440 ± 40	2496 ± 7	2.2

Table 1. (continued)

Grp no.	*Spot no.*	*Grain .spot*	^{238}U *(ppm)*	^{232}Th *(ppm)*	$^{232}Th/^{238}U$	*f204 (%)*	$^{238}U/^{206}Pb$ $\pm 1\sigma$	$^{207}Pb/^{206}Pb$ $\pm 1\sigma$	$^{238}U/^{206}Pb^*$ $\pm 1\sigma$	$^{207}Pb^*/^{206}Pb^*$ $\pm 1\sigma$	$^{238}U/^{206}Pb^*$ *date (Ma)* $\pm 1\sigma$	$^{207}Pb^*/^{206}Pb^*$ *date (Ma)* $\pm 1\sigma$	*Disc (%)*
2	5	5.1	87	64	0.76	0.079	2.122 ± 0.040	0.16466 ± 0.00080	2.123 ± 0.040	0.16396 ± 0.00087	2488 ± 39	2497 ± 9	0.4
2	71	70.1	274	104	0.39	0.009	2.204 ± 0.038	0.16449 ± 0.00047	2.204 ± 0.038	0.16441 ± 0.00047	2412 ± 35	2502 ± 5	3.6
2	21	21.1	39	29	0.77	–0.091	2.123 ± 0.043	0.16444 ± 0.00152	2.121 ± 0.043	0.16526 ± 0.00158	2490 ± 42	2510 ± 16	0.8
2	69	69.1	93	71	0.79	0.020	2.058 ± 0.038	0.16633 ± 0.00080	2.059 ± 0.038	0.16615 ± 0.00083	2552 ± 39	2519 ± 8	–1.3
2	86	85.1	163	143	0.90	0.005	2.150 ± 0.038	0.16622 ± 0.00062	2.150 ± 0.038	0.16617 ± 0.00063	2462 ± 36	2519 ± 6	2.3
2	78	77.1	152	82	0.56	0.014	2.154 ± 0.038	0.16640 ± 0.00064	2.154 ± 0.038	0.16628 ± 0.00065	2458 ± 36	2521 ± 7	2.5
2	75	74.1	272	128	0.49	0.141	2.152 ± 0.037	0.16760 ± 0.00069	2.155 ± 0.037	0.16634 ± 0.00071	2457 ± 36	2521 ± 7	2.5
2	60	60.1	134	107	0.83	0.022	2.106 ± 0.038	0.16685 ± 0.00068	2.107 ± 0.038	0.16666 ± 0.00068	2504 ± 37	2524 ± 7	0.8
2	27	27.1	158	99	0.65	0.000	2.144 ± 0.038	0.16706 ± 0.00062	2.144 ± 0.038	0.16706 ± 0.00062	2468 ± 36	2528 ± 6	2.4
2	51	51.1	220	152	0.71	0.004	2.183 ± 0.038	0.16728 ± 0.00052	2.183 ± 0.038	0.16725 ± 0.00053	2431 ± 35	2530 ± 5	3.9
2	46	46.1	202	96	0.49	0.005	2.008 ± 0.036	0.16753 ± 0.00064	2.008 ± 0.036	0.16749 ± 0.00065	2606 ± 38	2533 ± 6	–2.9
2	33	33.1	269	125	0.48	0.026	2.050 ± 0.038	0.16918 ± 0.00049	2.050 ± 0.038	0.16895 ± 0.00050	2561 ± 39	2547 ± 5	–0.5
2	89	88.1	233	81	0.36	0.008	2.050 ± 0.036	0.16912 ± 0.00052	2.050 ± 0.036	0.16904 ± 0.00052	2561 ± 37	2548 ± 5	–0.5
2	40	40.1	140	166	1.23	–0.001	2.088 ± 0.038	0.16922 ± 0.00067	2.088 ± 0.038	0.16923 ± 0.00067	2522 ± 38	2550 ± 7	1.1
2	37	37.1	239	393	1.70	0.017	2.072 ± 0.036	0.16965 ± 0.00051	2.072 ± 0.036	0.16950 ± 0.00053	2539 ± 37	2553 ± 5	0.5
2	58	58.1	155	102	0.68	–0.029	2.098 ± 0.037	0.17045 ± 0.00064	2.097 ± 0.037	0.17071 ± 0.00065	2513 ± 37	2565 ± 6	2.0
2	56	56.1	115	191	1.72	0.068	2.104 ± 0.038	0.17160 ± 0.00091	2.106 ± 0.038	0.17099 ± 0.00095	2505 ± 38	2567 ± 9	2.4
2	81	80.1	416	227	0.56	0.123	2.131 ± 0.039	0.17425 ± 0.00040	2.134 ± 0.039	0.17315 ± 0.00042	2477 ± 38	2588 ± 4	4.3
2	49	49.1	119	63	0.55	0.055	2.015 ± 0.037	0.18034 ± 0.00072	2.017 ± 0.037	0.17984 ± 0.00076	2596 ± 39	2651 ± 7	2.1
2	15	15.1	211	63	0.31	0.007	1.935 ± 0.034	0.18305 ± 0.00061	1.935 ± 0.034	0.18300 ± 0.00061	2685 ± 39	2680 ± 6	–0.2
2	17	17.1	83	49	0.61	0.025	1.959 ± 0.036	0.18344 ± 0.00104	1.960 ± 0.036	0.18322 ± 0.00106	2658 ± 40	2682 ± 10	0.9
2	64	64.1	157	37	0.24	–0.012	1.995 ± 0.039	0.18346 ± 0.00066	1.995 ± 0.039	0.18357 ± 0.00066	2619 ± 42	2685 ± 6	2.5
2	54	54.1	47	30	0.67	0.007	1.928 ± 0.038	0.18397 ± 0.00115	1.928 ± 0.038	0.18391 ± 0.00127	2694 ± 44	2688 ± 11	–0.2
2	90	89.1	172	176	1.05	–0.009	1.959 ± 0.035	0.18387 ± 0.00060	1.958 ± 0.035	0.18395 ± 0.00060	2659 ± 38	2689 ± 5	1.1
2	7	7.1	320	185	0.60	–0.001	1.916 ± 0.033	0.18417 ± 0.00047	1.916 ± 0.033	0.18418 ± 0.00047	2707 ± 38	2691 ± 4	–0.6
2	65	65.1	621	4	0.01	0.010	2.002 ± 0.034	0.18481 ± 0.00038	2.003 ± 0.034	0.18472 ± 0.00039	2611 ± 37	2696 ± 3	3.1
2	53	53.1	332	69	0.21	0.002	1.976 ± 0.034	0.18476 ± 0.00044	1.977 ± 0.034	0.18475 ± 0.00044	2639 ± 37	2696 ± 4	2.1
2	66	66.1	160	97	0.63	0.009	1.966 ± 0.035	0.18532 ± 0.00064	1.966 ± 0.035	0.18524 ± 0.00065	2651 ± 39	2700 ± 6	1.8
2	45	45.1	148	125	0.87	–0.005	1.956 ± 0.035	0.18595 ± 0.00066	1.956 ± 0.035	0.18599 ± 0.00066	2662 ± 39	2707 ± 6	1.7
2	43	43.1	291	3	0.01	–0.008	1.950 ± 0.035	0.18615 ± 0.00048	1.949 ± 0.035	0.18623 ± 0.00048	2669 ± 39	2709 ± 4	1.5
2	39	39.1	276	107	0.40	0.007	1.929 ± 0.034	0.18662 ± 0.00051	1.929 ± 0.034	0.18656 ± 0.00051	2692 ± 38	2712 ± 4	0.7
2	20	20.1	127	73	0.59	–0.014	1.900 ± 0.035	0.18649 ± 0.00072	1.899 ± 0.035	0.18661 ± 0.00074	2727 ± 41	2713 ± 7	–0.5
2	84	83.1	153	144	0.97	0.011	1.979 ± 0.036	0.18733 ± 0.00136	1.979 ± 0.036	0.18723 ± 0.00137	2637 ± 39	2718 ± 12	3.0
2	24	24.1	82	72	0.90	–0.012	1.902 ± 0.035	0.18753 ± 0.00089	1.902 ± 0.035	0.18764 ± 0.00090	2724 ± 41	2722 ± 8	–0.1
2	73	72.1	126	81	0.67	0.003	1.958 ± 0.035	0.18785 ± 0.00071	1.958 ± 0.035	0.18783 ± 0.00072	2660 ± 39	2723 ± 6	2.3
2	52	52.1	199	103	0.54	0.017	1.911 ± 0.034	0.18908 ± 0.00058	1.912 ± 0.034	0.18893 ± 0.00061	2712 ± 39	2733 ± 5	0.8
2	61	61.1	149	98	0.68	0.043	1.921 ± 0.034	0.19060 ± 0.00068	1.922 ± 0.034	0.19021 ± 0.00069	2701 ± 39	2744 ± 6	1.6
2	59	59.1	71	33	0.47	–0.012	1.910 ± 0.037	0.19355 ± 0.00099	1.910 ± 0.037	0.19366 ± 0.00100	2715 ± 43	2773 ± 8	2.1
2	23	23.1	142	88	0.64	0.000	1.870 ± 0.033	0.19786 ± 0.00069	1.870 ± 0.033	0.19785 ± 0.00070	2761 ± 40	2809 ± 6	1.7
2	32	32.1	81	48	0.62	0.034	1.829 ± 0.035	0.19843 ± 0.00099	1.829 ± 0.035	0.19813 ± 0.00103	2811 ± 44	2811 ± 9	0.0
2	38	38.1	125	105	0.86	0.002	1.850 ± 0.034	0.19822 ± 0.00075	1.850 ± 0.034	0.19820 ± 0.00076	2786 ± 42	2811 ± 6	0.9
2	6	6.1	196	106	0.56	0.011	1.696 ± 0.031	0.22166 ± 0.00063	1.697 ± 0.031	0.22156 ± 0.00063	2987 ± 44	2992 ± 5	0.2
2	91	90.1	64	26	0.42	–0.039	1.690 ± 0.032	0.23144 ± 0.00110	1.690 ± 0.032	0.23178 ± 0.00114	2997 ± 46	3064 ± 8	2.2

Table 1. (continued)

Grp no.	Spot no.	Grain .spot	^{238}U (ppm)	^{232}Th (ppm)	$^{232}Th/^{238}U$	f204 (%)	$^{238}U/^{206}Pb$ ±1σ	$^{207}Pb/^{206}Pb$ ±1σ	$^{238}U/^{206}Pb^*$ ±1σ	$^{207}Pb^*/^{206}Pb^*$ ±1σ	$^{238}U/^{206}Pb^*$ date (Ma) ±1σ	$^{207}Pb^*/^{206}Pb^*$ date (Ma) ±1σ	Disc (%)
D	18	18.1	58	31	0.55	0.051	1.950 ± 0.039	0.16645 ± 0.00123	1.951 ± 0.039	0.16599 ± 0.00125	2668 ± 44	2518 ± 13	–6.0
D	35	35.1	327	75	0.24	0.842	2.518 ± 0.044	0.15064 ± 0.00043	2.539 ± 0.044	0.14318 ± 0.00061	2140 ± 32	2266 ± 7	5.5
D	41	41.1	97	81	0.87	0.836	2.487 ± 0.046	0.15315 ± 0.00103	2.508 ± 0.046	0.14573 ± 0.00130	2163 ± 34	2296 ± 15	5.8
D	87	86.1	465	335	0.74	0.255	3.288 ± 0.057	0.11320 ± 0.00118	3.297 ± 0.058	0.11098 ± 0.00122	1708 ± 26	1816 ± 20	5.9
D	74	73.1	374	279	0.77	0.176	2.191 ± 0.038	0.18208 ± 0.00042	2.194 ± 0.038	0.18052 ± 0.00045	2421 ± 35	2658 ± 4	8.9
D	16	16.1	814	421	0.53	7.418	3.964 ± 0.068	0.17487 ± 0.00165	4.282 ± 0.074	0.11019 ± 0.00298	1353 ± 21	1803 ± 49	24.9

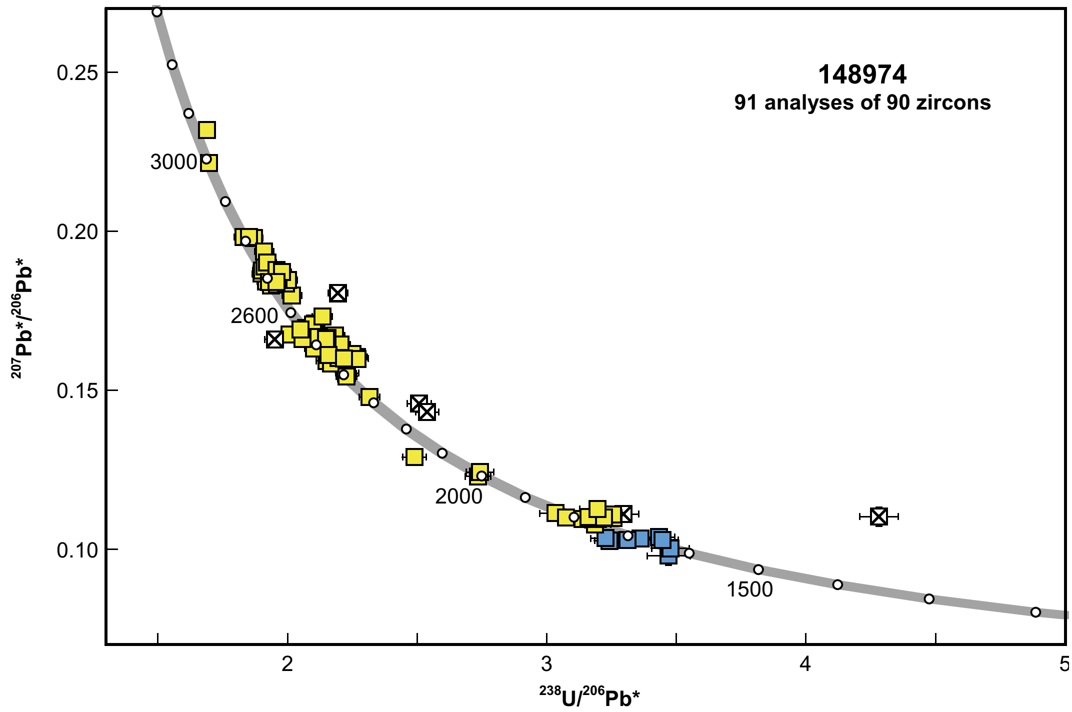

Figure 2. U–Pb analytical data for sample 148974: sandstone, Coodardo Well. Blue squares indicate Group 1 (youngest detrital zircons); yellow squares indicate Group 2 (older detrital zircons); crossed squares indicate ungrouped analyses (discordance >5% or *f*204 >1%)

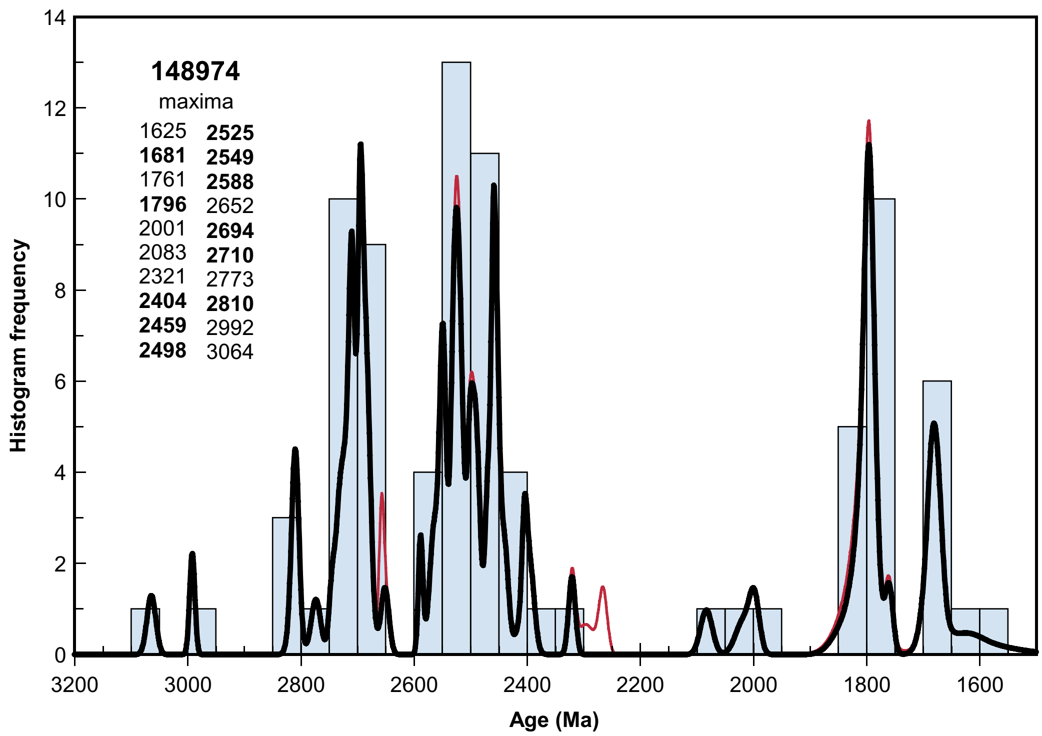

Figure 3. Probability density diagram for sample 148974: lithic sandstone, Coodardo Well. Heavy curve, maxima values, and frequency histogram (bin width 50 Ma) include only data with discordance <5% and *f*204 <1% (85 analyses of 84 zircons). Lighter curve includes all data (91 analyses of 90 zircons)