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Appendix DR1 and Tables DR1 and DR2, SHRIMP data.

"*U–Pb zircon age constraints on the Hamersley spherule beds: Evidence for a single 2.63 Ga Jeerinah-Carawine impact ejecta layer*"

by Birger Rasmussen, Tim Blake and Ian R. Fletcher

Zircon U–Pb data acquisition

Zircon grains were cast into 2.5 cm mounts with fragments of the cz3 standard zircon. Grains from the Mount McRae Shale were placed in a single mount (population A on 04-55); grains from the Carawine Dolomite were placed on two separate mounts (03-107 and 03-109).

Data were collected in separate SHRIMP analytical sessions, using routine procedures.
The operating parameters for mount 03-107, 03-109, 04-55 were:

O_2^- primary ion beam current - 2.1 nA, 3.2 nA, and1.8 nA, respectively;

Primary beam diameter ("spot size") ~20 μm;

Mass resolution (1% definition) - 4540, 4700 and 4310, respectively.

Corrections for common Pb were made by the measured ^{204}Pb and the Pb isotopic composition of Broken Hill galena to remove the common Pb from the measured isotopic ratios. The precision of Pb/Pb data is determined from counting statistics and scatter in the data profiles. Precision estimates for Pb/U and Pb/Th include these components but are dominated by the figure for systematic reproducibility of Pb/U data, which is derived from data for CZ3 in each analytical session.

TABLE DR1. SHRIMP U–PB DATA FOR ZIRCONS FROM TUFF BED IN THE CARAWINE DOLOMITE

Grain	U (ppm)	Th (ppm)	4f206 (%)	$^{207}Pb^*/^{206}Pb^*$	±	$^{206}Pb^*/^{238}U$	±	$^{207}Pb^*/^{235}U$	±	$^{208}Pb^*/^{232}Th$	±	conc. (%)	$^{207}Pb^*/^{206}Pb^*$ Age (Ma)	±
7B2-1	72	59	0.038	0.1776	0.0013	0.4867	0.0114	11.92	0.29	0.1316	0.0034	97	2631	12
7B3-1	148	75	0.563	0.1753	0.0014	0.4749	0.0108	11.48	0.28	0.1253	0.0040	96	2609	13
7B4-1	23	8	0.327	0.1788	0.0027	0.4914	0.0137	12.11	0.38	0.1346	0.0067	98	2642	25
7B5-1	156	98	0.123	0.1779	0.0010	0.5029	0.0114	12.34	0.29	0.1351	0.0033	100	2633	9
7B6-1	31	15	0.461	0.1782	0.0034	0.5038	0.0134	12.38	0.41	0.1217	0.0080	100	2636	32
7B7-1	39	16	0.445	0.1745	0.0026	0.4984	0.0126	11.99	0.35	0.1232	0.0069	100	2601	25
7B8-1	55	43	0.313	0.1771	0.0018	0.5271	0.0128	12.87	0.34	0.1364	0.0040	104	2626	17
7B9-1	46	15	0.194	0.1758	0.0020	0.5049	0.0126	12.24	0.34	0.1364	0.0066	101	2614	19
7B10-1	124	70	0.050	0.1775	0.0011	0.5110	0.0117	12.51	0.30	0.1407	0.0036	101	2630	10
7B11-1	68	41	0.135	0.1772	0.0016	0.5119	0.0122	12.50	0.32	0.1385	0.0041	101	2627	15
7B12-1	50	23	0.415	0.1769	0.0020	0.5193	0.0128	12.66	0.34	0.1318	0.0050	103	2624	18
9B.1-1	105	73	0.249	0.1781	0.0010	0.4790	0.0071	11.76	0.19	0.1259	0.0026	96	2635	10
9B.5-1	119	64	0.082	0.1779	0.0009	0.5016	0.0074	12.30	0.19	0.1391	0.0024	100	2633	8
9B.6-1	67	27	-0.001	0.1770	0.0010	0.5032	0.0078	12.28	0.20	0.1369	0.0039	100	2625	10
9B.8-1	46	18	0.022	0.1777	0.0013	0.5149	0.0086	12.62	0.23	0.1480	0.0034	102	2631	12
9B.9-1	28	11	-0.308	0.1805	0.0022	0.4966	0.0099	12.36	0.29	0.1487	0.0061	98	2658	21
9B.10-1	31	10	0.199	0.1782	0.0020	0.5092	0.0093	12.51	0.27	0.1354	0.0062	101	2636	18
9B.11-1	29	11	0.188	0.1788	0.0019	0.5335	0.0099	13.16	0.28	0.1410	0.0054	104	2642	18
9B.13-1	49	33	0.072	0.1782	0.0014	0.4952	0.0083	12.17	0.23	0.1400	0.0029	98	2636	13
9B.14-1	147	82	0.224	0.1783	0.0011	0.4901	0.0071	12.05	0.19	0.1320	0.0025	97	2638	11
9B.17-1	55	37	0.274	0.1761	0.0014	0.5008	0.0080	12.16	0.22	0.1391	0.0035	100	2616	14
Old outlier														
9B.7-1	63	64	0.011	0.2586	0.0013	0.6498	0.0102	23.17	0.38	0.1756	0.0030	100	3238	8
Discordant														
9B.3-1	38	17	0.222	0.1720	0.0019	0.5342	0.0093	12.67	0.26	0.1389	0.0054	107	2577	19

Analysis labels are nB.p-q: n = abbreviated mount number (03-109 or 03-107); B = population on mount; p = grain; q = analysis on grain (in this case, one per grain).

4f206 = apparent common Pb in ^{206}Pb, based on observed ^{204}Pb.

Conc. = Concordance, as 100•t[206*/238]/t[207*/206*].

All listed precisions are 1σ.

All Pb data are common-Pb corrected, based on measured ^{204}Pb and the isotopic composition from Stacey & Kramers [1975] growth curve at the apparent age of the grain.

TABLE DR2. SHRIMP U–PB DATA FOR ZIRCONS IN TUFF BED FROM THE MOUNT MCRAE SHALE

Grain	U (ppm)	Th (ppm)	4f206 (%)	$^{207}Pb^*/^{206}Pb^*$	±	$^{206}Pb^*/^{238}U$	±	$^{207}Pb^*/^{235}U$	±	$^{208}Pb^*/^{232}Th$	±	conc. (%)	$^{207}Pb^*/^{206}Pb^*$ Age (Ma)	±
A.10-1	134	50	0.037	0.1662	0.0007	0.4636	0.0066	10.62	0.16	0.1282	0.0021	97	2519	7
A.22-1	172	64	0.014	0.1656	0.0005	0.4660	0.0065	10.64	0.15	0.1269	0.0019	98	2514	5
A.8-1	178	77	0.033	0.1651	0.0006	0.4561	0.0064	10.38	0.15	0.1245	0.0021	97	2509	6
A.16-1	139	55	0.031	0.1650	0.0006	0.4636	0.0066	10.55	0.15	0.1252	0.0020	98	2508	6
A.6-1	211	90	0.053	0.1649	0.0006	0.4691	0.0055	10.67	0.13	0.1292	0.0019	99	2506	6
A.6-1	210	90	0.053	0.1649	0.0006	0.4514	0.0063	10.26	0.15	0.1244	0.0021	96	2506	6
A.18-2	190	73	0.031	0.1648	0.0005	0.4612	0.0064	10.48	0.15	0.1265	0.0019	98	2506	5
A.3-1	156	62	0.020	0.1647	0.0007	0.4673	0.0057	10.61	0.14	0.1270	0.0021	99	2504	7
A.3-1	155	62	0.020	0.1647	0.0007	0.4497	0.0065	10.21	0.15	0.1222	0.0022	96	2504	7
A.12-1	163	73	0.057	0.1647	0.0006	0.4648	0.0065	10.56	0.15	0.1266	0.0020	98	2504	6
A.20-1	171	87	0.045	0.1644	0.0006	0.4488	0.0062	10.17	0.15	0.1175	0.0019	96	2502	6
A.7-1	191	87	0.051	0.1642	0.0006	0.4753	0.0056	10.76	0.13	0.1290	0.0018	100	2499	6
A.7-1	190	86	0.051	0.1642	0.0006	0.4574	0.0064	10.36	0.15	0.1241	0.0020	97	2499	6
A.23-1	197	85	0.072	0.1640	0.0005	0.4600	0.0064	10.40	0.15	0.1185	0.0018	98	2497	5
A.18-1	240	100	0.025	0.1637	0.0005	0.4628	0.0064	10.45	0.15	0.1263	0.0019	98	2495	5
A.21-1	179	77	-0.012	0.1636	0.0005	0.4574	0.0064	10.32	0.15	0.1229	0.0019	97	2493	5
Old outlier														
A.14-1	85	53	0.022	0.1843	0.0008	0.5037	0.0074	12.80	0.20	0.1344	0.0022	98	2692	7
Young outliers														
A.1-1	105	37	-0.007	0.1569	0.0008	0.4473	0.0057	9.67	0.13	0.1235	0.0020	98	2422	8
A.1-1	104	37	-0.007	0.1569	0.0008	0.4304	0.0064	9.31	0.15	0.1189	0.0021	95	2422	8
A.1-2	100	34	0.004	0.1567	0.0008	0.4561	0.0059	9.86	0.14	0.1251	0.0021	100	2421	9
A.1-2	99	34	0.004	0.1567	0.0008	0.4389	0.0066	9.49	0.15	0.1204	0.0023	97	2421	9
A.17-1	130	138	0.001	0.1477	0.0006	0.4127	0.0059	8.40	0.12	0.1146	0.0018	96	2319	7
A.19-1	182	65	0.018	0.1476	0.0005	0.4221	0.0059	8.59	0.12	0.1177	0.0018	98	2318	6
Discordant														
A.7-2	177	64	0.075	0.1646	0.0007	0.4314	0.0062	9.79	0.15	0.1151	0.0021	92	2504	7
A.8-2	173	155	0.389	0.1653	0.0009	0.4093	0.0058	9.33	0.14	0.0535	0.0011	88	2510	9
A.4-1	237	170	0.711	0.1647	0.0030	0.3809	0.0093	8.65	0.26	0.0542	0.0036	83	2505	31
A.4-1	235	169	0.711	0.1647	0.0030	0.3665	0.0094	8.32	0.26	0.0521	0.0035	80	2505	31
A.13-1	444	181	0.285	0.1865	0.0006	0.3797	0.0053	9.76	0.14	0.1568	0.0026	77	2712	5
A.15-1	463	401	0.355	0.1576	0.0007	0.3123	0.0043	6.78	0.10	0.0823	0.0024	72	2430	7
A.12-2	203	261	0.957	0.1645	0.0035	0.2889	0.0042	6.55	0.17	0.0316	0.0021	65	2502	36
A.19-2	599	256	0.655	0.1466	0.0013	0.2347	0.0051	4.74	0.11	0.1452	0.0102	59	2307	15
A.11-1	527	301	0.474	0.1560	0.0008	0.2077	0.0028	4.47	0.06	0.0725	0.0016	50	2413	9
High common Pb														
A.2-1	479	422	4.327	0.1656	0.0110	0.2221	0.0036	5.07	0.35	0.0439	0.0059	51	2514	112
A.2-1	476	419	4.327	0.1656	0.0110	0.2137	0.0038	4.88	0.34	0.0422	0.0057	50	2514	112
Unexplained young outlier														
A.9-1	59	24	0.172	0.0572	0.0015	0.0837	0.0014	0.66	0.02	0.0247	0.0008	104	499	57

Analysis labels are A.p-q: A = abbreviation for 04-55A; p = grain; q = analysis on grain. Other footnotes as in Table DR1.