

# Uranium metallogeny in the North Flinders Ranges region of South Australia

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APPENDIX I

Trace elements in zircons from the WC2 sediments

(1/9)

	Level	Age [Ma]	1 $\sigma$	Ca	1 $\sigma$	Sc	1 $\sigma$	Ti	1 $\sigma$	V	1 $\sigma$	Mn	1 $\sigma$	Fe	1 $\sigma$	Cu	1 $\sigma$	Zn	1 $\sigma$	Ga	1 $\sigma$	Se	1 $\sigma$	Sr	1 $\sigma$
	[m]	Th/Pb		[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%
WC34- 1	-2	637	139	1162	5.9	1135	7.1	17	4.4	0.7	10.1	2.9	16.5	46	20.2	0.4	18.7	0.6	16.7	0.1	13.5	<2	-	1	4.8
WC34- 2	-2	1185	255	837	6.6	1195	8.2	17	4.9	0.1	33.9	0.4	28.9	55	23.1	<0.2	-	0.5	18.9	0.1	11.6	3	43.2	1	4.7
WC34- 3	-2	1199	259	1077	5.9	1083	7.2	16	4.4	0.5	11.3	1.2	18.3	286	19.3	0.3	19.6	0.7	13.8	0.6	6.1	129	4.9	1	4.5
WC34- 4	-2	778	172	9188	5.9	910	7.2	315	4.4	330.8	7.7	51.2	16.7	6249	19.5	22.0	5.4	10.1	4.2	9.9	5.4	<2	-	94	3.8
WC34- 5	-2	484	109	922	6.0	1198	7.3	19	4.5	1.2	8.9	2.1	17.5	137	19.9	0.2	40.2	0.6	15.2	0.2	9.5	4	24.9	1	4.5
WC34- 6	-2	297	68	1390	6.1	1238	7.4	20	4.5	1.6	8.3	1.2	19.1	348	20.2	0.4	18.3	0.8	11.1	0.4	6.5	<2	-	1	4.1
WC34- 7	-2	2247	502	1310	6.2	1140	7.5	134	4.6	20.2	8.0	57	17.8	7635	20.5	2.9	6.5	13.0	4.1	7.0	5.5	5	86.1	6	3.9
WC34- 8	-2	621	148	2793	6.2	1374	7.7	30	4.6	156.6	8.1	12.1	18.2	1623	21.0	5.9	6.0	7.0	4.3	2.7	5.7	94	53.3	29	3.9
WC34- 9	-2	1094	264	8573	6.4	3459	7.8	919	4.7	795.1	8.3	117	18.8	7018	21.6	40.6	6.8	13.3	9.5	12.2	6.3	<2	-	134	4.0
WC34-10	-2	1202	296	1051	6.5	1219	8.0	16	4.8	22.7	8.5	2.1	19.9	387	22.1	1.0	10.6	0.9	10.4	0.5	7.0	<2	-	5	4.1
WC35- 1	-9	4377	1083	11258	7.1	2181	8.9	85	5.2	716	9.3	291.9	22.2	11291	24.9	40.7	7.4	16.1	6.4	13.9	6.7	<2	-	209	4.2
WC35- 2	-9	3249	851	15991	7.2	2531	9.1	245	5.3	768.4	9.5	219.2	23.0	7801	25.7	42.4	7.5	9.5	6.5	14.4	6.7	<2	-	466	4.2
WC35- 3	-9	627	180	694	7.5	1290	9.4	17	5.5	4	9.8	4	24.0	449	26.5	1.0	13.0	1.8	6.7	0.2	9.3	<2	-	1	4.5
WC35- 4	-9	3865	1054	2522	7.6	1534	9.7	35	5.6	123.6	10.0	73	24.8	15457	27.4	13.2	8.1	12.5	4.6	2.9	6.8	<2	-	38	4.3
WC35- 5	-9	6909	1799	3620	7.8	1721	9.9	28	5.8	145.2	10.2	80.3	25.7	17624	28.3	19.3	8.3	12.8	4.6	5.7	7.0	<2	-	82	4.4
WC35- 6	-9	958	298	1969	8.0	1508	10.2	58	5.9	90	10.5	23.4	26.7	3926	29.2	6.1	8.9	8.2	4.9	3.6	7.3	<2	-	48	4.5
WC35- 7	-9	1002	321	625	8.3	1345	10.5	20	6.1	6.5	10.9	3.5	27.8	2761	30.2	2.2	10.7	2.6	6.2	0.7	7.9	<2	-	1	4.8
WC35- 8	-9	1010	332	1208	8.4	1294	10.9	20	6.2	40.5	11.1	8.3	28.8	538	31.3	1.6	12.9	1.7	8.3	0.6	8.2	<2	-	14	4.6
WC35- 9	-9	3326	1058	4700	8.6	1527	11.2	677	6.4	431.6	11.3	121.7	29.8	51425	32.3	48.3	9.4	50.2	4.7	20.7	7.7	<2	-	125	4.7
WC35-10	-9	751	263	754	8.9	1740	11.5	24	6.5	15.7	11.6	10.8	31.0	836	33.4	2.8	11.3	5.7	5.4	1.2	8.3	<2	-	9	4.9
WC37- 1	-13	550	204	491	9.5	1222	12.2	28	6.9	2.6	12.5	4.6	33.3	1224	35.7	1.5	16.8	0.8	16.5	0.5	9.8	<2	-	1	5.8
WC37- 2	-13	5199	1752	4786	9.5	1977	12.5	380	7.1	360.6	12.5	61.6	34.4	4580	36.9	19.2	10.8	14.8	5.2	7.9	8.6	<2	-	77	5.0
WC37- 3	-13	7388	2416	1382	9.8	1365	12.9	36	7.3	70.4	12.8	15.6	35.6	4184	38.1	5.3	11.6	6.0	5.8	2.1	9.2	<2	-	15	5.2
WC37- 4	-13	5262	1860	2474	10.0	2285	13.2	66	7.5	125	13.1	89.9	36.9	4095	39.4	8.4	11.8	10.5	5.6	3.7	9.1	<2	-	36	5.2
WC37- 5	-13	14410	4204	2246	10.3	1359	13.6	36	7.7	129.8	13.4	42.4	38.1	1502	40.7	8.4	12.2	6.7	6.2	5.4	9.2	<2	-	31	5.3
WC37- 6	-13	n.d.	n.d.	4528	10.5	1352	14.0	253	7.9	378.7	13.7	120.4	39.4	43691	42.0	36.0	12.1	67.0	5.4	15.3	9.5	<2	-	76	5.4
WC37- 7	-13	9966	3367	5153	10.8	2550	14.3	388	8.1	436.6	14.0	629.4	40.8	27910	43.4	42.9	12.5	22.9	5.6	13.6	9.7	<2	-	90	5.5
WC38- 1	-20	1067	78	1457	3.1	1534	4.3	91	5.2	101.5	3.0	75.7	11.0	11588	11.9	5.0	5.2	16.0	3.6	3.7	3.5	<2	-	>>	-
WC38- 2	-20	617	46	791	3.2	1206	4.3	16	5.2	3.7	3.5	3.4	11.5	936	12.2	0.6	25.0	0.8	12.4	54.9	3.2	<2	-	29	3.4
WC38- 3	-20	1260	92	584	3.3	1077	4.3	545	5.2	13.8	3.2	46.4	11.3	2566	12.4	2.6	6.5	10.2	3.8	2.3	3.7	<2	-	3	3.7
WC38- 4	-20	2916	206	2214	3.1	1913	4.3	82	5.3	367.6	3.0	68.2	11.4	3885	12.6	11.3	3.8	6.4	4.1	6.4	3.3	<2	-	26	3.4
WC38- 5	-20	1403	104	2732	3.1	2228	4.3	58	5.3	166.5	3.0	126.9	11.6	9130	12.9	16.4	3.7	31.5	3.5	4.3	3.5	<2	-	29	3.4
WC38- 7	-20	966	73	882	3.2	1353	4.4	16	5.5	5.5	3.7	38.5	12.0	1044	13.6	3.3	6.3	7.1	4.1	1.1	7.0	<2	-	5	3.6
WC38- 8	-20	1043	79	421	3.6	1246	4.4	30	5.5	3.1	4.2	6.1	12.4	740	14.0	<0.3	-	2.7	5.9	0.4	18.0	<2	-	1	6.0
WC38- 9	-20	85	7	363	3.8	1554	4.5	53	5.6	27.6	3.1	18.7	12.6	2532	14.4	10.7	4.0	2.7	6.0	1.5	5.7	<2	-	4	3.8
WC39- 1	-25	608	48	666	3.2	1308	4.7	20	5.8	24.3	3.1	14.6	13.6	675	15.9	<0.4	-	1.1	9.2	0.7	6.8	<2	-	3	3.8
WC39- 2	-25	2330	179	665	3.2	1129	4.7	15	5.9	18.4	3.1	27.4	14.0	507	16.4	<0.4	-	4.2	4.6	0.6	8.9	<2	-	3	3.7
WC39- 3	-25	4725	346	2815	3.1	1312	4.8	116	6.0	211	3.0	119.6	14.4	26388	17.0	15.5	3.9	20.7	3.7	6.9	3.5	<2	-	44	3.5
WC39- 4	-25	554	46	484	3.4	1175	4.9	26	6.2	2.1	4.0	5.8	14.9	506	17.7	0.6	29.0	1.2	8.6	0.3	16.2	<2	-	1	4.2
WC39- 5	-25	859	71	883	3.2	1216	4.9	16	6.3	38.4	3.1	18.2	15.3	3231	18.3	0.5	31.5	3.7	5.1	1.0	5.9	<2	-	6	3.7
WC39- 6	-25	1389	116	451	3.4	1113	5.0	15	6.4	0.2	22.6	0.7	19.4	64	19.4	<0.4	-	<0.3	-	<0.1	-	<2	-	1	5.7
WC39- 7	-25	1299	109	498	3.3	1082	5.1	14	6.6	1	5.5	3.8	16.5	147	19.9	<0.5	-	0.4	25.6	<0.1	-	<2	-	1	4.5
WC39- 8	-25	736	63	586	3.2	1078	5.2	18	6.7	14.7	3.1	14	16.8	1087	20.6	1.0	18.8	3.3	5.1	0.4	11.0	<2	-	2	4.0
WC39- 9	-25	702	61	511	3.3	1062	5.3	16	6.8	2.3	3.8	7.5	17.3	904	21.5	<0.5	-	2.0	6.4	0.2	21.1	<2	-	2	4.1
WC39-10	-25	1003	88	982	3.2	1093	5.4	17	7.0	24.3	3.1	38.6	17.8	3650	22.4	13.8	4.2	6.4	4.4	1.8	4.4	<2	-	12	3.7
WC40- 1	-42	814	74	318	3.8	1324	5.6	18	7.3	6.5	3.2	2.8	19.2	3225	24.3	<0.5	-	1.9	6.7	0.3	9.5	<2	-	2	4.1
WC40- 2	-42	4908	410	2962	3.1	1754	5.7	55	7.4	182.4	3.0	112.6	19.6	8611	25.4	9.8	4.8	9.0	4.3	4.3	3.7	<2	-	46	3.8
WC40- 3	-42	1179	109	4296	3.1	1389	5.8	17	7.6	0.4	11.8	7.7	20.3	122	26.6	<0.5	-	0.3	29.4	<0.1	-	<2	-	9	4.0

APPENDIX I

Trace elements in zircons from the WC2 sediments

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	Level [m]	Y [ppm]	1 $\sigma$ %	Nb [ppm]	1 $\sigma$ %	Mo [ppm]	1 $\sigma$ %	Sn [ppm]	1 $\sigma$ %	Sb [ppm]	1 $\sigma$ %	Ba [ppm]	1 $\sigma$ %	La [ppm]	1 $\sigma$ %	Ce [ppm]	1 $\sigma$ %	Pr [ppm]	1 $\sigma$ %	Nd [ppm]	1 $\sigma$ %	Sm [ppm]	1 $\sigma$ %	Eu [ppm]	1 $\sigma$ %	Gd [ppm]	1 $\sigma$ %	Tb [ppm]	1 $\sigma$ %
WC34- 1	-2	1331	5.8	7	5.6	1.7	6.9	0.2	11.6	<0.03	-	0.2	12.9	0.3	15.1	6	12.5	0.5	13.0	7	7.0	11	9.9	1.0	9.3	46	6.5	13	6.8
WC34- 2	-2	870	5.8	3	6.3	1.4	7.0	0.2	10.0	<0.03	-	0.3	12.9	<0.06	-	3	13.9	0.18	15.9	3	7.7	6	11.2	0.45	10.7	25	7.3	8	7.7
WC34- 3	-2	<i>n.d.</i>	-	5	5.5	1.7	6.4	0.2	8.7	0.11	12.8	3.8	10.5	1.1	12.8	8	12.5	0.6	12.7	4	7.0	5	10.0	0.4	9.9	23	6.5	7	6.8
WC34- 4	-2	821	5.9	261	5.5	17.6	5.1	3.0	4.3	7.0	4.3	36.1	10.6	61.6	13.0	522	12.5	111.3	12.3	845	6.7	743	9.8	124.5	8.8	1591	6.5	459	6.8
WC34- 5	-2	1510	5.9	10	5.6	1.6	6.7	0.2	11.6	<0.03	-	0.2	12.7	0.2	15.2	13	12.6	0.4	13.3	4	7.2	6	10.1	0.5	9.8	22	6.6	7	6.8
WC34- 6	-2	<i>n.d.</i>	-	4	5.7	1.7	6.5	0.2	7.4	0.15	9.3	0.9	11.1	3.3	13.2	20	12.7	2.0	12.6	15	6.9	16	10.0	1.7	9.4	61	6.6	17	6.9
WC34- 7	-2	<i>n.d.</i>	-	17	5.7	1.6	7.1	2.6	4.3	0.21	8.2	25.7	11.0	10.2	13.5	139	12.9	9.5	12.8	67	6.9	52	10.2	8.8	9.2	148	6.7	40	7.0
WC34- 8	-2	<i>n.d.</i>	-	44	5.8	2.4	6.0	1.2	4.6	0.4	5.6	10.6	11.2	46.7	13.7	656	13.1	57.3	13.0	336	7.0	221	10.3	32.5	9.4	367	6.8	101	7.1
WC34- 9	-2	<i>n.d.</i>	-	2230	5.9	7.3	11.1	12.9	5.0	2.1	9.8	58.1	11.5	182.8	14.0	3916	13.3	214.8	13.2	1463	7.2	1254	10.5	135.1	9.6	2874	6.9	888	7.3
WC34-10	-2	922	6.5	28	6.0	1.6	6.9	0.3	7.0	0.13	11.5	2.0	11.9	4.4	14.4	113	13.6	6.1	13.5	37	7.3	33	10.8	4.5	9.9	74	7.1	24	7.4
WC35- 1	-9	<i>n.d.</i>	-	131	6.5	8.2	8.8	4.5	5.8	3.2	6.2	56.0	13.0	2021.9	15.7	100	15.0	567.4	14.9	2659	8.0	1312	11.9	186.9	10.9	3003	7.7	881	8.1
WC35- 2	-9	<i>n.d.</i>	-	1929	6.6	50.3	6.2	15.1	4.9	3.2	5.7	62.8	13.3	343.8	16.1	1564	15.3	275.5	15.3	1734	8.1	1526	12.2	201.8	11.1	4125	7.9	1336	8.3
WC35- 3	-9	1257	7.3	27	6.8	1.6	7.5	0.3	7.8	0.07	19.1	0.5	14.1	1.2	16.8	22	15.8	1.4	15.6	9	8.5	10	12.6	1.3	11.6	35	8.2	12	8.6
WC35- 4	-9	<i>n.d.</i>	-	160	6.9	6.2	6.5	10.8	4.8	2.5	4.9	12.8	14.0	98.3	17.0	206	16.2	51.4	16.2	259	8.6	178	12.9	28.4	11.8	417	8.4	127	8.8
WC35- 5	-9	<i>n.d.</i>	-	63	7.1	6.0	6.6	0.6	6.4	1.2	5.5	28.9	14.4	67.7	17.4	249	16.6	72.6	16.6	455	8.8	499	13.2	82.7	12.1	1007	8.6	296	9.0
WC35- 6	-9	1534	7.9	63	7.3	2.2	7.7	0.9	5.8	0.21	8.5	22.2	14.8	52.2	17.9	440	17.0	42.5	17.1	242	9.0	192	13.6	29.0	12.5	424	8.8	117	9.3
WC35- 7	-9	1359	8.1	19	7.4	2.0	7.7	0.5	6.5	0.21	8.7	1.0	15.5	1.6	18.2	23	17.5	1.1	17.9	7	9.3	8	14.1	0.9	13.5	32	9.1	12	9.5
WC35- 8	-9	1422	8.3	42	7.6	1.8	8.0	0.4	7.7	0.04	34.1	2.7	15.7	16.8	18.8	84	17.9	15.0	18.1	77	9.4	60	14.3	10.2	13.2	163	9.3	52	9.8
WC35- 9	-9	<i>n.d.</i>	-	222	7.8	14.4	7.1	11.4	5.3	1.2	5.9	65.9	16.0	205.7	19.3	1318	18.4	183.2	18.5	995	9.7	791	14.7	114.0	13.6	1682	9.5	476	10.0
WC35-10	-9	<i>n.d.</i>	-	8	8.1	2.0	8.4	1.0	6.1	0.12	14.3	2.7	16.5	14.3	19.8	144	18.8	12.6	19.0	82	9.9	68	15.1	11.2	14.0	171	9.8	48	10.3
WC37- 1	-13	624	9.2	6	8.6	1.5	10.1	1.0	6.6	0.08	24.0	2.1	17.4	7.3	20.8	11	19.8	1.3	20.1	8	10.7	6	16.2	0.7	15.7	20	10.4	6	10.9
WC37- 2	-13	<i>n.d.</i>	-	1351	8.6	8.9	7.9	6.9	5.8	0.5	7.6	27.5	17.8	114.2	21.3	1372	20.2	121.1	20.5	678	10.7	547	16.3	89.9	15.1	1033	10.5	291	11.1
WC37- 3	-13	<i>n.d.</i>	-	108	8.8	3.3	8.7	1.4	6.3	0.4	7.9	6.0	18.3	21.8	21.8	281	20.7	24.8	21.0	135	10.9	114	16.7	18.7	15.5	223	10.8	65	11.4
WC37- 4	-13	<i>n.d.</i>	-	27	9.0	3.5	8.9	3.8	6.1	2.4	6.3	16.4	18.7	43.3	22.3	439	21.2	45.5	21.5	255	11.2	236	17.2	55.7	15.9	553	11.1	163	11.7
WC37- 5	-13	<i>n.d.</i>	-	433	9.2	3.5	9.1	3.4	6.3	0.9	7.3	16.1	19.2	36.8	22.8	374	21.6	43.4	22.0	232	11.4	191	17.6	33.4	16.3	332	11.3	94	11.9
WC37- 6	-13	<i>n.d.</i>	-	79	9.4	9.7	8.8	10.3	6.2	2.5	6.9	35.5	19.6	108.3	23.3	1253	22.1	133.8	22.5	709	11.7	539	18.0	90.4	16.7	1079	11.6	296	12.2
WC37- 7	-13	<i>n.d.</i>	-	223	9.6	17.6	8.7	4.3	6.5	4.5	6.6	62.5	20.1	205.5	23.8	548	22.6	208.6	23.0	1023	11.9	758	18.4	98.6	17.1	1558	11.9	436	12.5
WC38- 1	-20	<i>n.d.</i>	-	16	3.1	2.0	5.9	1.1	4.3	0.25	8.1	14.9	3.3	160.4	5.2	448	3.8	143.2	7.0	939	4.5	525	3.8	44.7	4.2	722	3.4	150	4.6
WC38- 2	-20	1785	3.1	55	3.1	1.5	6.0	0.3	7.2	0.18	8.3	280.3	3.2	3.6	5.4	15	3.9	2.8	7.1	23	4.6	23	3.9	2.5	4.5	74	3.5	23	4.7
WC38- 3	-20	<i>n.d.</i>	-	83	3.1	1.5	6.4	15.3	3.4	0.5	5.1	6.1	3.5	5.4	5.4	79	3.8	6.1	7.1	40	4.6	32	3.9	5.2	4.4	74	3.5	23	4.7
WC38- 4	-20	<i>n.d.</i>	-	136	3.1	5.4	4.4	2.8	3.5	1.3	3.7	32.4	3.3	206.7	5.3	332	3.8	105.6	7.2	663	4.6	578	3.8	93.5	4.3	1418	3.4	472	4.7
WC38- 5	-20	<i>n.d.</i>	-	213	3.1	5.0	4.6	2.2	3.8	1.8	3.6	18.9	3.3	75.8	5.3	732	3.9	115.4	7.2	1022	4.6	1597	3.8	376.4	4.3	3279	3.4	770	4.7
WC38- 7	-20	1144	3.1	69	3.1	1.5	6.5	0.7	5.0	1.3	3.7	<0.78	-	9.4	5.5	71	3.9	7.7	7.5	42	4.7	51	3.9	9.5	4.4	123	3.5	39	4.8
WC38- 8	-20	1966	3.1	7	3.2	1.3	7.2	0.3	8.9	0.10	16.2	<0.51	-	1.6	6.1	27	4.0	2.7	7.9	21	4.9	24	4.1	3.5	4.8	92	3.5	26	4.9
WC38- 9	-20	2912	3.1	32	3.1	1.7	6.3	0.4	7.1	0.08	22.1	6.2	5.5	29.8	5.6	217	4.0	20.1	7.7	103	4.8	74	4.0	15.3	4.5	164	3.5	43	4.9
WC39- 1	-25	<i>n.d.</i>	-	25	3.1	1.9	5.7	0.4	6.0	0.3	5.9	3.7	5.2	24.4	5.9	297	4.1	20.6	8.2	137	5.0	101	4.1	19.1	4.6	205	3.6	56	5.1
WC39- 2	-25	<i>n.d.</i>	-	64	3.1	1.4	6.6	0.3	6.5	0.04	31.0	2.9	5.9	17.3	6.0	339	4.1	15.2	8.4	92	5.1	81	4.1	11.6	4.7	160	3.6	44	5.2
WC39- 3	-25	<i>n.d.</i>	-	791	3.1	15.1	4.4	1.5	4.1	0.20	9.4	25.8	3.6	217.7	6.1	392	4.2	195.3	8.6	958	5.1	549	4.2	54.1	4.7	1034	3.6	302	5.3
WC39- 4	-25	1095	3.1	39	3.1	1.4	6.6	0.2	9.3	0.2	8.6	1.0	15.0	2.2	6.3	16	4.3	1.5	9.3	10	5.4	11	4.4	1.7	5.3	45	3.7	13	5.4
WC39- 5	-25	<i>n.d.</i>	-	15	3.2	2.6	5.7	0.3	7.8	0.3	7.0	4.1	4.9	75.1	6.3	465	4.3	49.0	9.0	232	5.3	139	4.3	14.6	4.9	254	3.7	77	5.5
WC39- 6	-25	1275	3.1	3	3.2	1.3	7.0	0.1	14.5	0.04	32.5	<0.30	-	0.2	10.9	5	4.4	0.4	10.3	5	5.8	9	4.6	0.7	6.5	41	3.7	13	5.6
WC39- 7	-25	1501	3.1	18	3.2	1.3	6.8	0.2	8.9	<0.036	-	<0.31	-	0.7	7.3	24	4.5	0.6	10.0	6	5.7	8	4.6	0.6	6.6	39	3.8	13	5.7
WC39- 8	-25	<i>n.d.</i>	-	41	3.1	1.8	6.3	0.2	9.6	0.07	17.8	0.8	13.8	11.2	6.8	98	4.5	12.3	9.7	73	5.6	67	4.5	11.4	5.2	127	3.8	35	5.8
WC39- 9	-25	1077	3.1	153	3.1	2.1	5.7	0.4	6.0	0.3	5.6	0.5	22.9	5.5	6.9	47	4.6	3.0	10.1	18	5.8	18	4.6	1.2	5.8	65	3.8	22	5.9
WC39-10	-25	<i>n.d.</i>	-	33	3.2	3.1	5.4	0.3	8.0	3.7	3.3	14.1	3.8	72.8	7.0	235	4.6	46.7	10.2	246	5.8	178	4.6	31.5	5.3	329	3.8	89	6.0
WC40- 1	-42	1182	3.1	13	3.2	1.7	6.4	0.3	8.1	0.10	14.6	1.0	9.8	1.0	7.7	23	4.8	1.2	11.1	10	6.2	15	4.8	1.3	5.9	56	3.9	18	6.3
WC40- 2	-42	<i>n.d.</i>	-	40	3.2	4.0	5.6	1.7	4.3	1.1	4.0	24.0	3.9	83.1	7.4	746	4.9	99.5	11.0	556	6.2	435	4.8	64.2	5.6	886	3.9	235	6.4
WC40- 3	-42	1020	3.1</																										

APPENDIX I

Trace elements in zircons from the WC2 sediments

(3/9)

	Level	Dy	1 $\sigma$	Ho	1 $\sigma$	Er	1 $\sigma$	Tm	1 $\sigma$	Yb	1 $\sigma$	Lu	1 $\sigma$	Hf	1 $\sigma$	Ta	1 $\sigma$	W	1 $\sigma$	Re	1 $\sigma$	<sup>208</sup> Pb	1 $\sigma$	Th	1 $\sigma$	U	1 $\sigma$	Th/U	Eu*	Ce*
	[m]	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[wt-%]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	ratio		
WC34-1	-2	167	4.9	52	7.3	212	9.7	51	9.1	566	9.4	59	12.4	1.55	100	3	10.8	0.3	12.5	< 0.02	-	7.7	12.3	140	9.7	167	8.1	0.84	0.13	3.74
WC34-2	-2	102	5.3	33	8.3	140	11.1	34	10.3	380	10.6	42	14.0	1.30	97	2	12.2	0.1	27.8	< 0.02	-	9.7	11.3	74	11.0	160	9.7	0.46	0.11	2.30
WC34-3	-2	97	4.9	32	7.4	135	9.7	35	9.2	386	9.4	41	12.4	1.62	98	3	10.9	0.4	10.6	0.08	11.8	51.5	2.3	94	9.7	230	8.2	0.41	0.35	1.48
WC34-4	-2	4263	4.9	920	7.4	3208	9.8	697	9.2	5879	9.5	615	12.5	2.59	97	42	10.8	259	9.0	< 0.02	-	15.3	41.4	492	9.8	7150	8.3	0.07	0.15	10.31
WC34-5	-2	99	4.9	34	7.5	148	9.9	39	9.3	432	9.6	47	12.6	1.94	96	8	11.0	0.2	14.4	< 0.02	-	8.8	21.6	227	9.9	499	8.4	0.46	0.17	1.84
WC34-6	-2	201	4.9	61	7.5	241	10.0	58	9.4	609	9.7	67	12.7	1.56	95	2	11.0	0.3	10.9	< 0.02	-	16.1	6.9	213	10.0	168	8.5	1.27	0.31	3.32
WC34-7	-2	397	5.0	100	7.7	361	10.2	80	9.5	807	9.8	84	12.9	1.52	95	6	11.3	0.9	10.0	0.03	28.8	15.5	13.4	638	10.1	542	8.7	1.18	0.35	2.97
WC34-8	-2	955	5.0	227	7.8	856	10.4	211	9.7	2199	10.0	240	13.1	2.17	95	111	11.4	6	9.6	n.d.	-	39.0	5.2	77	10.3	1822	8.9	0.04	0.22	4.63
WC34-9	-2	9193	5.1	2458	7.9	9670	10.6	1972	9.9	16063	10.2	2734	13.4	2.72	96	882	11.7	17	10.1	< 0.03	-	21.7	24.3	731	10.5	8188	9.1	0.09	0.28	5.14
WC34-10	-2	270	5.2	79	8.1	325	10.8	85	10.1	968	10.4	103	13.7	1.87	96	18	11.9	3	10.2	< 0.02	-	7.8	38.4	228	10.7	1046	9.4	0.22	0.12	30.09
WC35-1	-9	8691	5.6	2111	8.9	7644	11.9	1684	11.1	7921	11.5	1776	15.0	2.63	100	51	13.2	14	11.2	0.12	39.1	49.9	15.5	121	11.8	4906	10.6	0.02	0.29	0.02
WC35-2	-9	13700	5.7	2738	9.1	13030	12.3	2979	11.4	satur.	11.8	3463	15.4	4.28	102	1168	13.5	113	11.2	0.25	20.1	31.5	16.0	105	12.1	9886	11.0	0.01	0.25	1.19
WC35-3	-9	148	5.8	48	9.3	208	12.6	53	11.7	593	12.1	63	15.8	1.51	103	10	13.9	0.3	13.8	< 0.03	-	20.4	16.4	379	12.4	590	11.3	0.64	0.21	4.12
WC35-4	-9	1295	5.9	322	9.6	1280	13.0	347	12.0	4068	12.4	468	16.2	2.26	104	202	14.3	53	11.7	< 0.04	-	19.2	16.9	53	12.7	1602	11.7	0.03	0.32	0.68
WC35-5	-9	2600	6.1	564	9.8	1896	13.3	426	12.3	4288	12.8	399	16.7	1.49	106	16	14.7	13	12.1	0.05	31.3	42.2	17.4	61	13.1	4975	12.1	0.01	0.36	0.83
WC35-6	-9	1088	6.2	269	10.1	957	13.7	221	12.6	2255	13.1	234	17.1	1.57	107	11	15.1	3	12.5	< 0.03	-	19.8	17.9	238	13.4	752	12.5	0.32	0.31	2.19
WC35-7	-9	152	6.4	54	10.4	241	14.1	63	13.0	704	13.5	79	17.5	1.58	109	12	15.5	1.2	13.1	< 0.03	-	34.3	18.4	394	13.8	1034	12.9	0.38	0.17	4.17
WC35-8	-9	549	6.5	149	10.6	574	14.5	137	13.3	1475	13.8	149	18.0	1.28	111	12	15.9	0.9	13.3	< 0.03	-	30.0	19.0	343	14.1	831	13.3	0.41	0.31	1.23
WC35-9	-9	4439	6.6	1064	10.9	3854	14.9	890	13.7	9067	14.2	1032	18.5	1.43	112	312	16.4	53	13.4	0.08	24.4	37.3	19.5	122	14.5	1641	13.7	0.07	0.30	1.59
WC35-10	-9	494	6.8	144	11.2	571	15.3	129	14.0	1209	14.6	154	18.9	1.64	114	5	16.8	0.7	14.9	0.05	29.8	22.0	20.0	340	14.9	629	14.2	0.54	0.31	2.52
WC37-1	-13	75	7.1	25	11.8	106	16.1	29	14.7	346	15.3	34	19.9	1.02	117	3	18.0	0.5	16.3	< 0.03	-	7.4	21.1	158	15.6	183	15.0	0.86	0.19	0.85
WC37-2	-13	2671	7.2	637	12.1	2364	16.5	564	15.1	6056	15.7	608	20.4	1.63	118	168	18.2	71	14.9	0.06	30.4	93.8	21.6	187	16.0	2297	15.5	0.08	0.37	2.74
WC37-3	-13	624	7.4	152	12.4	564	17.0	143	15.5	1618	16.1	142	20.8	1.72	120	42	18.7	4	15.4	< 0.02	-	35.5	22.2	47	16.4	1876	15.9	0.03	0.36	2.83
WC37-4	-13	1615	7.5	420	12.7	1612	17.4	412	15.8	4543	16.5	448	21.3	1.59	121	16	19.2	7	15.7	< 0.04	-	35.1	22.7	69	16.8	2203	16.4	0.03	0.47	2.32
WC37-5	-13	869	7.7	211	13.0	744	17.8	185	16.2	2140	16.9	173	21.8	0.89	123	26	19.6	10	16.0	< 0.04	-	54.0	23.2	30	17.2	1644	16.8	0.02	0.41	2.19
WC37-6	-13	2656	7.9	609	13.3	2185	18.3	491	16.6	4998	17.3	479	22.3	1.18	124	29	20.1	11	16.5	< 0.04	-	73.1	23.8	<1.5	-	2147	17.3	< 0.01	0.36	2.44
WC37-7	-13	4018	8.0	973	13.6	3518	18.7	777	17.0	7574	17.7	754	22.8	1.33	126	73	20.6	14	16.8	< 0.04	-	87.2	24.3	80	18.0	4708	17.8	0.02	0.28	0.62
WC38-1	-20	1231	3.6	256	4.0	837	6.7	179	5.7	1606	4.4	167	4.8	2.04	27	8	3.9	1.2	4.4	< 0.04	-	46.8	3.5	505	4.1	2249	3.0	0.22	0.22	0.69
WC38-2	-20	272	3.6	80	4.0	326	6.7	83	5.7	930	4.4	106	4.8	1.64	27	8	4.0	1.3	4.2	< 0.03	-	16.4	3.5	310	4.1	501	3.0	0.62	0.18	1.12
WC38-3	-20	267	3.6	80	4.0	349	6.8	97	5.7	1124	4.4	118	4.8	1.85	27	34	3.9	4	3.6	< 0.02	-	53.7	3.5	488	4.1	1845	3.0	0.26	0.33	3.25
WC38-4	-20	5026	3.6	1269	4.0	4938	6.8	1164	5.7	satur.	4.5	1230	4.8	2.31	27	56	3.9	13	3.1	0.04	38.5	22.5	3.5	85	4.1	2269	3.0	0.04	0.32	0.53
WC38-5	-20	5219	3.6	990	4.1	4350	6.9	935	5.8	satur.	4.5	1121	4.9	4.25	27	59	3.9	14	3.1	0.05	32.0	20.5	3.5	167	4.1	2904	3.0	0.06	0.50	1.83
WC38-7	-20	413	3.7	112	4.1	520	7.1	170	5.9	2295	4.6	277	5.0	2.71	28	139	3.9	5	3.3	0.05	26.9	41.6	3.5	497	4.2	1614	3.0	0.31	0.37	1.94
WC38-8	-20	313	3.7	98	4.2	394	7.2	97	6.0	1023	4.6	111	5.0	1.38	28	6	4.2	0.6	6.6	< 0.02	-	20.8	3.6	230	4.2	383	3.0	0.60	0.23	3.15
WC38-9	-20	425	3.7	105	4.2	395	7.3	97	6.1	1016	4.7	123	5.1	1.99	28	13	4.1	0.6	6.5	< 0.03	-	6.2	3.7	850	4.2	945	3.0	0.90	0.42	2.07
WC39-1	-25	560	3.8	135	4.3	503	7.7	119	6.4	1188	4.9	123	5.3	1.84	30	71	4.1	3	3.5	< 0.03	-	14.1	3.7	270	4.4	1189	3.0	0.23	0.41	3.10
WC39-2	-25	438	3.9	113	4.4	444	7.9	114	6.5	1280	4.9	129	5.4	2.46	30	41	4.2	1.6	4.0	< 0.02	-	27.3	3.7	131	4.5	1168	3.0	0.11	0.31	4.90
WC39-3	-25	3133	3.9	807	4.5	2957	8.1	637	6.7	4896	5.0	632	5.5	1.92	31	22	4.3	30	3.1	< 0.04	-	56.5	3.7	125	4.5	6743	3.1	0.02	0.22	0.45
WC39-4	-25	158	3.9	51	4.5	212	8.3	52	6.8	569	5.1	63	5.6	1.41	31	3	4.5	0.9	4.8	0.05	28.3	13.0	3.8	274	4.6	316	3.1	0.87	0.23	2.07
WC39-5	-25	810	4.0	201	4.6	749	8.5	178	7.0	1764	5.2	154	5.7	1.64	32	7	4.4	1.8	4.1	< 0.02	-	37.8	3.8	509	4.7	1620	3.1	0.31	0.24	1.80
WC39-6	-25	158	4.0	53	4.7	224	8.7	55	7.1	625	5.3	66	5.9	1.31	33	7	4.5	0.1	37.0	< 0.03	-	11.0	3.9	90	4.7	243	3.1	0.37	0.11	4.17
WC39-7	-25	176	4.1	62	4.7	275	8.9	70	7.3	779	5.4	80	6.0	1.55	33	11	4.5	0.1	15.3	< 0.03	-	53.9	3.8	475	4.8	1234	3.1	0.38	0.11	8.05
WC39-8	-25	342	4.1	89	4.8	347	9.1	86	7.5	943	5.5	90	6.1	1.66	34	15	4.6	1.0	4.7	< 0.02	-	39.3	3.9	620	4.9	1531	3.1	0.40	0.38	1.96
WC39-9	-25	252	4.2	67	4.9	262	9.3	64	7.6	687	5.6	65	6.2	1.62	35	31	4.6	10	3.1	< 0.03	-	26.1	3.9	431	5.0	1332	3.1	0.32	0.11	2.71
WC39-10	-25	824	4.2	195	5.0	710	9.6	176	7.8	1928	5.7	187</																		

APPENDIX I

Trace elements in zircons from the WC2 sediments

(4/9)

Level [m]	<sup>208</sup> Pb/ <sup>232</sup> Th Age [Ma]	1σ [Ma]	Ca [ppm]	1σ %	Sc [ppm]	1σ %	Ti [ppm]	1σ %	V [ppm]	1σ %	Mn [ppm]	1σ %	Fe [ppm]	1σ %	Cu [ppm]	1σ %	Zn [ppm]	1σ %	Ga [ppm]	1σ %	Se [ppm]	1σ %	Sr [ppm]	1σ %		
WC40-4	-42	2161	199	787	3.2	1381	5.9	75	7.7	6.2	3.4	6.5	20.8	1550	27.7	8.4	5.1	4.1	5.3	7.1	3.7	<2	-	21	3.9	
WC40-5	-42	797	77	394	3.6	1261	6.0	223	7.9	10	3.2	412.4	21.4	12119	28.9	<0.6	-	20.9	4.2	4.8	3.8	<2	-	3	4.3	
WC40-6	-42	2708	254	1225	3.1	1484	6.1	77	8.0	46.7	3.1	44.5	22.0	4161	30.2	7.4	5.3	6.1	4.9	2.4	4.2	<2	-	16	4.0	
WC40-7	-42	532	54	756	3.4	1440	6.2	21	8.2	17.9	3.2	13.7	22.7	1652	31.6	2.7	13.1	2.3	8.7	0.8	7.9	<2	-	7	4.2	
WC40-8	-42	769	78	354	3.8	1367	6.3	16	8.4	1.2	5.4	0.6	30.2	131	33.1	<0.6	-	0.6	19.0	<0.1	-	<2	-	1	5.6	
WC40-9	-42	7751	673	4529	3.1	1806	6.4	51	8.6	181	3.0	229.4	24.0	16288	34.5	17.3	4.7	36.1	4.3	3.9	3.9	<2	-	69	4.1	
WC40-10	-42	1015	106	309	3.8	1378	6.5	18	8.8	0.4	11.0	2.1	25.0	144	36.2	<0.5	-	0.8	13.3	<0.1	-	<2	-	1	5.8	
WC41-1	-48	2890	512	6990	3.9	306	4.9	2008	4.0	506.1	3.6	160.9	3.1	6689	8.8	34.2	7.2	57.5	5.4	39.6	3.9	<2	-	136	3.3	
WC41-2	-48	5354	898	1547	3.9	1346	4.9	29	4.0	117.4	3.6	22.9	3.1	1256	8.8	10.0	7.4	10.3	5.7	2.3	4.3	<2	-	24	3.3	
WC41-3	-48	3420	605	4503	3.9	2183	4.9	37	4.0	425.1	3.6	86.9	3.1	4742	8.9	24.3	7.3	20.0	5.6	10.9	4.0	<2	-	94	3.3	
WC41-4	-48	1293	244	1673	3.9	1257	5.0	15	4.0	1.1	4.8	5	3.6	45	9.9	<0.3	-	<0.3	-	0.2	9.7	<2	-	3	3.5	
WC41-5	-48	4959	867	3933	3.9	1475	5.0	61	4.0	324.9	3.6	176.1	3.1	2793	9.0	20.3	7.8	6.2	6.7	7.3	4.3	<2	-	71	3.3	
WC41-6	-48	4420	796	3036	4.0	1255	5.1	54	4.1	79.9	3.6	28.5	3.2	9701	9.1	27.6	7.9	17.8	5.8	18.0	4.1	<2	-	139	3.3	
WC41-7	-48	8985	1486	5419	4.0	1861	5.1	78	4.1	265.7	3.6	102.6	3.1	7413	9.3	17.2	8.3	11.3	6.0	6.6	4.2	<2	-	101	3.4	
WC41-8	-48	802	165	357	5.3	1377	5.2	27793	4.1	42.7	3.7	13	3.4	7557	9.4	6.0	9.7	7.2	6.8	1.5	5.4	<2	-	9	3.5	
WC41-9	-48	1016	213	1208	4.1	1057	5.3	121	4.2	105.9	3.7	93.1	3.1	35831	9.5	56.6	8.8	101.9	5.9	15.0	4.3	<2	-	24	3.4	
WC41-10	-48	5655	1086	3045	4.1	2006	5.4	69	4.2	377.7	3.7	43.2	3.1	10094	9.7	18.8	9.2	13.9	6.3	4.5	4.5	<2	-	66	3.4	
WC44-1	-75	679	155	1096	4.3	1573	5.6	39	4.4	47.8	3.8	23.9	3.2	4338	10.1	3.6	12.1	5.6	7.5	1.7	5.2	<2	-	14	3.5	
WC44-2	-75	591	139	258	5.4	1314	5.7	16	4.4	3.5	4.0	4.8	3.7	699	10.3	<0.5	-	1.3	14.3	4.1	4.7	<2	-	3	3.8	
WC44-3	-75	886	213	714	4.5	1192	5.8	14	4.5	1.3	4.9	1.6	6.3	194	10.6	<0.5	-	<0.3	-	0.1	24.1	<2	-	1	4.2	
WC44-4	-75	1065	263	102	9.7	1257	6.0	18	4.6	1.1	5.5	2.4	5.3	399	10.8	<0.6	-	0.9	18.1	0.4	9.0	<2	-	1	4.9	
WC44-5	-75	1126	285	230	5.7	1240	6.1	14	4.7	0.8	7.3	1.7	6.5	397	11.1	<0.4	-	0.7	21.5	0.2	15.6	<2	-	3	3.9	
WC44-6	-75	356	95	765	4.7	1311	6.3	29	4.7	36.2	4.0	25.3	3.2	3058	11.3	1.6	18.2	4.0	8.2	1.2	5.9	<2	-	9	3.7	
WC44-7	-75	1176	315	402	5.3	1366	6.4	17	4.8	1.3	5.7	4.8	4.2	363	11.6	7.3	13.3	4.3	8.9	0.2	15.8	<2	-	2	4.4	
WC44-8	-75	1092	301	139	7.7	1250	6.5	14	4.9	0.3	12.0	<0.2	-	56	12.4	<0.6	-	<0.3	-	<0.1	-	<2	-	1	5.6	
WC44-9	-75	840	239	359	5.3	1238	6.7	69	5.0	10.7	4.2	130.8	3.2	7846	12.1	9.5	13.9	17.3	7.7	7.8	5.4	<2	-	3	3.8	
WC44-10	-83	1177	360	9131	4.9	1857	6.9	36	5.1	408.2	4.2	83.6	3.2	6446	12.4	25.1	14.3	57.0	7.8	11.3	5.5	<2	-	185	3.7	
WC46-1	-83	1895	541	96	10.8	1265	7.2	19	5.3	5.9	4.4	6	3.7	662	13.0	<0.7	-	1.8	12.0	1.8	6.2	73	4.7	3	4.0	
WC46-2	-83	1022	322	2261	5.2	1784	7.3	14	5.4	14.8	4.4	387.4	3.2	7197	13.3	7.5	16.1	19.5	8.5	4.6	5.8	<2	-	16	3.9	
WC46-3	-83	1158	372	215	6.3	1284	7.5	16	5.5	0.3	14.3	2.2	5.1	118	13.8	<0.6	-	0.6	22.0	<0.3	-	<2	-	<0.2	-	
WC46-4	-83	949	314	340	5.8	1318	7.7	14	5.5	10.7	4.5	9.2	3.5	654	13.9	<0.6	-	2.9	10.5	<0.3	-	<2	-	2	4.3	
WC46-5	-83	14213	3557	3664	5.5	1320	7.8	84	5.6	171.9	4.6	71.4	3.3	20391	14.2	53.2	17.5	36.2	9.0	3.7	6.8	<2	-	86	4.0	
WC46-6	-83	1219	421	345	6.1	1418	8.0	12	5.7	5.6	4.8	1.4	7.9	256	14.6	<0.7	-	2.0	11.9	<0.3	-	<2	-	3	4.4	
WC46-7	-83	1028	364	260	6.7	1293	8.2	17	5.9	10	4.7	10.6	3.5	2789	14.9	1.4	26.6	4.1	10.2	0.6	17.7	<2	-	8	4.1	
WC46-8	-83	4039	1360	3792	5.8	1142	8.4	58	5.9	39.7	4.7	489.8	3.3	5883	15.2	7.8	19.6	7.2	10.1	7.2	6.7	<2	-	58	4.1	
WC46-9	-83	862	321	603	6.1	1209	8.5	14	6.1	5.8	4.8	8.3	3.6	1003	15.6	1.1	30.0	1.0	17.7	0.3	24.2	<2	-	2	4.7	
WC46-10	-83	956	362	1005	6.0	1399	8.7	17	6.1	39.2	4.9	9.6	3.5	1413	15.9	1.0	30.7	3.5	11.0	0.4	20.6	<2	-	16	4.2	
WC47-1	-84	768	87	342	4.8	1370	4.9	18	3.6	14.7	4.0	18.6	3.3	989	6.7	<1.2	-	7.4	5.7	2.9	4.2	<2	-	7	4.3	
WC47-2	-84	1433	160	113	13.3	1243	4.9	13	3.6	<0.2	-	<0.4	-	18	18.7	<1.8	-	<0.6	-	<0.3	-	<2	-	0	15.1	
WC47-3	-84	356	41	Carb.	<36	-	1483	4.9	18	3.6	1.3	6.2	0.5	29.4	634	6.8	<1.6	-	1.5	17.3	<0.2	-	<2	-	2	5.0
WC47-4	-84	274	32	Perm.	272	7.2	1717	5.0	18	3.6	4.9	4.5	9.8	3.8	219	7.2	<2.0	-	1.2	23.1	<0.2	-	<2	-	2	4.8
WC47-5	-84	509	60	Camb.	984	4.4	1864	5.0	18	3.7	15.1	4.2	30.7	3.4	925	7.0	<1.4	-	2.1	14.5	1.7	7.0	<2	-	22	4.3
WC47-6	-84	145	18	Juras.	437	4.9	1901	5.1	17	3.7	9.7	4.2	28.3	3.3	362	7.2	<1.1	-	2.3	10.6	0.3	26.8	<2	-	6	4.6
WC47-7	-84	264	35	Perm.	<84	-	1979	5.1	14	3.8	<0.3	-	<0.8	-	<18	-	<3.7	-	<1.3	-	<0.5	-	<2	-	1	14.3
WC47-8	-84	1009	122	<40	-	1349	5.2	37	3.7	0.8	9.0	11.8	3.6	328	7.5	<1.7	-	1.2	20.7	<0.2	-	<2	-	5	4.7	
WC47-9	-84	151	20	Juras.	225	9.7	1691	5.3	15	3.8	2.6	5.3	5.4	5.1	84	9.3	9.7	12.6	1.9	18.0	<0.3	-	<2	-	2	5.5
WC47-10	-84	440	57	Silur.	148	12.8	1535	5.4	14	3.8	2.5	5.7	0.9	22.0	135	8.6	<1.9	-	<0.8	-	<0.1	-	<2	-	1	7.5
WC50-1	-97	654	87	533	7.4	1858	5.6	60888	3.8	780	4.4	74.2	3.4	66771	8.2	23.9	11.1	33.1	6.2	16.1	3.9	<2	-	28	4.7	



APPENDIX I

Trace elements in zircons from the WC2 sediments

(5/9)

	Level	Y	1σ	Nb	1σ	Mo	1σ	Sn	1σ	Sb	1σ	Ba	1σ	La	1σ	Ce	1σ	Pr	1σ	Nd	1σ	Sm	1σ	Eu	1σ	Gd	1σ	Tb	1σ
	[m]	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%
WC40-4	-42	n.d.	-	10	3.3	1.6	7.6	0.7	5.5	0.11	15.2	54.7	4.0	231.4	7.8	378	5.0	267.4	11.6	946	6.4	1408	4.9	160.3	5.8	2313	4.0	536	6.6
WC40-5	-42	2406	3.1	29	3.2	1.5	7.5	5.2	4.0	0.05	33.3	18.9	4.0	2.9	8.0	35	5.1	3.8	11.9	22	6.6	22	5.1	2.3	6.1	79	4.0	25	6.8
WC40-6	-42	n.d.	-	38	3.2	2.3	7.1	1.2	4.7	0.4	5.9	11.6	4.1	33.9	8.1	373	5.2	33.1	12.1	178	6.7	146	5.1	23.2	6.1	352	4.1	111	6.9
WC40-7	-42	1494	3.1	6	3.6	1.6	9.3	0.7	6.8	0.5	6.9	4.7	5.1	9.9	8.4	94	5.3	7.7	12.5	43	6.9	40	5.3	7.3	6.3	91	4.2	27	7.0
WC40-8	-42	1159	3.1	11	3.2	1.5	7.9	0.4	7.5	0.05	35.6	<0.25	-	4.4	8.4	23	5.4	0.6	13.3	4	7.4	5	5.6	0.6	7.6	27	4.3	10	7.2
WC40-9	-42	n.d.	-	125	3.2	3.9	6.5	3.4	4.2	1.0	4.2	24.0	4.2	88.5	8.6	738	5.4	94.2	13.0	447	7.0	330	5.3	46.9	6.4	765	4.2	231	7.3
WC40-10	-42	1445	3.1	8	3.3	1.4	7.9	0.2	12.3	0.07	21.2	<0.17	-	0.3	11.6	9	5.6	0.4	14.1	4	7.6	7	5.7	0.5	8.4	40	4.3	13	7.4
WC41-1	-48	n.d.	-	229	3.6	22.7	5.6	112.6	5.9	9.0	10.7	55.5	4.2	199.7	3.4	173	4.8	184.7	3.5	1103	3.2	871	3.7	142.8	3.5	2157	3.4	634	4.1
WC41-2	-48	n.d.	-	53	3.6	3.5	5.9	1.0	6.7	0.9	11.1	10.7	4.2	51.5	3.4	256	4.8	38.9	3.5	219	3.2	152	3.8	26.0	3.5	379	3.4	119	4.1
WC41-3	-48	n.d.	-	53	3.6	7.0	5.7	1.2	6.5	0.8	11.2	25.5	4.2	135.5	3.4	409	4.8	117.0	3.5	636	3.2	419	3.8	69.1	3.5	992	3.4	304	4.1
WC41-4	-48	n.d.	-	4	3.7	1.4	7.1	0.3	10.6	<0.03	-	1.7	4.7	13.3	3.5	69	4.9	3.5	3.7	20	3.3	9	4.0	1.6	3.9	27	3.4	8	4.2
WC41-5	-48	n.d.	-	558	3.6	6.2	6.1	2.1	6.7	1.2	11.3	55.5	4.3	93.5	3.5	199	4.9	86.9	3.6	534	3.2	383	3.8	62.3	3.5	994	3.4	319	4.1
WC41-6	-48	n.d.	-	46	3.7	4.4	6.2	3.5	6.3	0.09	19.4	54.2	4.4	153.5	3.5	254	4.9	106.6	3.6	1078	3.2	696	3.8	49.1	3.5	736	3.4	140	4.2
WC41-7	-48	n.d.	-	54	3.7	11.2	5.9	1.0	7.1	0.20	14.6	33.0	4.5	405.9	3.5	63	5.0	336.4	3.6	2019	3.2	1193	3.8	132.6	3.5	2261	3.4	557	4.2
WC41-8	-48	n.d.	-	257	3.7	8.9	6.2	492.3	6.4	1209.7	11.7	6.5	4.6	17.3	3.5	77	5.1	9.0	3.7	57	3.3	44	4.0	6.7	3.8	137	3.5	42	4.3
WC41-9	-48	n.d.	-	146	3.7	6.9	6.3	29.8	6.5	0.21	20.6	28.2	4.6	16.7	3.5	89	5.2	13.2	3.6	77	3.3	61	4.0	9.7	3.6	188	3.5	59	4.3
WC41-10	-48	n.d.	-	40	3.8	6.2	6.3	1.6	7.0	0.4	14.0	29.7	4.7	155.3	3.5	461	5.2	136.7	3.7	819	3.3	604	4.0	132.1	3.6	1450	3.5	410	4.4
WC44-1	-75	n.d.	-	17	3.9	2.6	7.3	0.5	10.5	1.4	13.1	5.2	5.0	15.5	3.6	162	5.4	13.8	3.8	92	3.3	82	4.1	15.4	3.7	225	3.6	68	4.5
WC44-2	-75	1177	4.7	47	3.9	2.0	7.5	0.4	10.0	0.13	20.9	51.1	5.1	2.2	3.9	40	5.5	1.9	3.9	14	3.5	12	4.3	1.8	4.2	36	3.6	12	4.6
WC44-3	-75	1110	4.8	6	4.0	1.7	7.7	0.2	16.6	0.07	29.2	1.7	5.7	9.6	3.7	29	5.6	3.2	3.8	22	3.4	10	4.4	0.6	5.1	31	3.7	10	4.7
WC44-4	-75	742	4.9	3	4.4	1.7	8.1	0.2	19.7	0.11	22.8	5.0	5.4	0.8	4.3	6	5.9	0.3	4.9	3	4.5	4	5.0	0.6	5.4	18	3.7	6	4.7
WC44-5	-75	n.d.	-	36	4.1	2.5	7.9	0.2	14.4	0.09	25.0	1.8	6.1	3.0	4.0	30	5.9	2.3	4.1	15	3.6	19	4.5	2.3	4.3	72	3.7	24	4.8
WC44-6	-75	n.d.	-	44	4.1	2.5	7.9	3.9	8.0	1.0	15.0	10.0	5.6	12.2	3.9	171	6.0	10.9	3.9	72	3.4	56	4.4	9.7	3.9	144	3.7	43	4.9
WC44-7	-75	n.d.	-	6	4.3	1.7	9.6	0.5	10.7	0.14	23.0	2.3	6.2	0.8	4.8	8	6.2	0.3	5.5	4	4.7	6	5.2	0.5	6.7	34	3.8	11	5.0
WC44-8	-75	1035	5.3	11	4.2	1.9	8.5	0.3	11.9	<0.05	-	0.2	18.8	1.1	4.2	13	6.3	0.4	4.7	3	4.4	4	5.2	0.2	11.5	23	3.9	8	5.0
WC44-9	-75	n.d.	-	72	4.2	1.9	8.3	10.4	8.6	0.15	20.1	29.2	6.0	5.0	4.0	36	6.4	2.9	4.2	21	3.6	21	4.7	2.1	4.3	89	3.8	29	5.2
WC44-10	-83	n.d.	-	247	4.3	10.7	8.0	5.7	8.7	2.3	16.7	104.8	6.1	193.5	3.9	44	6.5	142.3	4.1	868	3.5	687	4.7	96.4	4.0	1476	3.9	448	5.2
WC46-1	-83	n.d.	-	17	4.5	1.6	9.6	0.7	10.5	0.17	21.4	20.2	6.4	0.9	4.4	28	6.8	0.8	4.5	9	3.9	16	5.0	1.0	4.9	84	4.0	27	5.5
WC46-2	-83	n.d.	-	18	4.5	2.8	8.9	1.0	9.6	8.9	17.9	35.2	6.6	31.4	4.1	110	6.9	6.8	4.3	39	3.7	45	4.9	6.7	4.3	144	4.0	47	5.5
WC46-3	-83	n.d.	-	10	4.6	1.8	9.2	0.3	13.0	0.08	27.5	<0.47	-	1.6	4.3	17	7.1	0.8	4.7	6	3.9	8	5.2	0.5	8.9	42	4.1	14	5.6
WC46-4	-83	n.d.	-	27	4.6	2.0	9.7	0.6	11.1	0.08	31.2	<0.37	-	2.5	4.4	27	7.2	1.7	4.5	13	3.8	14	5.2	2.1	4.7	56	4.1	18	5.8
WC46-5	-83	n.d.	-	790	4.7	8.1	9.1	4.9	10.2	2.8	19.4	12.9	7.1	229.7	4.2	376	7.4	117.9	4.5	605	3.7	386	5.1	27.8	4.4	843	4.1	263	5.8
WC46-6	-83	1973	6.6	10	4.8	1.7	10.0	0.5	11.7	<0.05	-	<0.32	-	1.4	4.5	45	7.5	1.2	4.7	9	3.9	12	5.4	3.9	4.7	51	4.2	16	6.0
WC46-7	-83	n.d.	-	8	4.9	2.5	9.9	0.3	14.0	0.12	26.2	6.4	7.5	103.1	4.3	108	7.7	39.7	4.6	359	3.7	87	5.3	n.d.	-	117	4.2	27	6.1
WC46-8	-83	n.d.	-	312	4.9	3.4	10.0	1.8	11.1	40.3	20.7	25.7	7.4	51.2	4.4	274	7.8	24.9	4.7	138	3.8	86	5.4	10.8	4.6	227	4.3	69	6.2
WC46-9	-83	1309	7.0	22	5.0	1.9	10.8	0.3	15.1	0.3	22.0	3.5	8.0	13.9	4.5	52	7.9	5.2	4.8	31	3.9	19	5.6	2.8	5.0	59	4.4	17	6.3
WC46-10	-83	n.d.	-	5	5.0	2.1	10.7	0.3	15.1	0.09	28.4	4.0	8.0	41.3	4.5	246	8.1	24.2	4.8	166	3.9	123	5.6	39.2	4.7	303	4.4	70	6.4
WC47-1	-84	n.d.	-	13	4.2	2.5	4.9	0.3	9.9	0.3	7.9	33.8	4.3	13.3	4.8	74	3.5	11.6	3.7	80	5.1	58	5.2	10.2	3.7	158	5.0	43	4.9
WC47-2	-84	696	6.0	4	4.4	1.2	9.8	0.2	20.2	<0.10	-	<0.28	-	<0.03	-	40	3.5	0.10	11.6	2	8.4	1	33.3	0.40	12.4	15	5.2	4	5.1
WC47-3	-84	1728	6.0	3	4.6	1.4	8.5	0.2	20.3	0.8	6.3	3.5	5.5	1.3	5.4	10	3.6	0.2	7.1	3	7.1	5	6.3	0.9	6.3	31	5.1	10	5.0
WC47-4	-84	2165	6.1	4	4.5	2.0	7.1	0.3	18.4	0.3	13.5	0.7	17.6	0.7	6.0	33	3.5	1.4	4.2	14	5.5	21	5.4	5.2	4.1	66	5.1	19	5.0
WC47-5	-84	n.d.	-	4	4.8	1.6	8.6	0.9	7.5	2.1	4.5	24.7	4.4	3.2	5.3	62	3.5	15.1	3.8	137	5.3	129	5.3	31.3	3.8	270	5.1	70	5.0
WC47-6	-84	2406	6.2	2	4.9	2.0	6.6	1.9	4.3	0.19	16.1	2.2	5.9	1.3	5.5	32	3.5	6.1	3.9	62	5.3	77	5.4	17.4	3.8	176	5.1	49	5.1
WC47-7	-84	2545	6.3	3	5.0	2.1	10.8	0.7	14.9	<0.19	-	<0.59	-	<0.08	-	11	3.6	0.11	20.2	2	10.5	6	7.4	1.71	6.4	37	5.3	12	5.2
WC47-8	-84	455	6.4	4	4.7	1.7	8.0	0.5	11.3	<0.09	-	2.3	6.7	1.7	5.5	20	3.6	0.5	5.0	3	7.1	3	7.3	0.8	6.5	9	5.6	3	5.5
WC47-9	-84	4238	6.5	4	4.8	1.6	9.7	0.5	12.7	<0.11	-	0.5	25.9	0.7	6.5	25	3.6	1.3	4.4	11	6.0	15	5.9	5.0	4.2	52	5.4	17	5.3
WC47-10	-84	3104	6.6	2	5.3	1.3	11.2	0.3	22.3	<0.10	-	0.7	17.6	0.3	8.5	25	3.6	0.6	5.3	8	6.3	13	6.1	3.2	4.6	67	5.5	22	5.4
WC50-1	-97	n.d.	-	893	4.6	17.6	4.5	78.7	3.2	50.0	3.6	139.5	4.7	18.8	5.5	69	3.7	6.0	4.1	35	6.0	26	6.1	6.6	4.4	73	5.7	20	5.6

APPENDIX I

Trace elements in zircons from the WC2 sediments

(6/9)

	Level	Dy	1 $\sigma$	Ho	1 $\sigma$	Er	1 $\sigma$	Tm	1 $\sigma$	Yb	1 $\sigma$	Lu	1 $\sigma$	Hf	1 $\sigma$	Ta	1 $\sigma$	W	1 $\sigma$	Re	1 $\sigma$	<sup>208</sup> Pb!	1 $\sigma$	Th	1 $\sigma$	U	1 $\sigma$	Th/U	Eu*	Ce*
	[m]	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[wt-%]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	ratio		
WC40-4	-42	2889	4.5	667	5.4	3005	10.8	548	8.7	3133	6.3	487	7.0	1.54	39	3	5.3	0.9	4.9	0.05	31.9	47.8	4.2	248	5.5	334	3.1	0.74	0.27	0.36
WC40-5	-42	306	4.6	102	5.5	443	11.0	107	8.9	1088	6.4	128	7.2	1.67	40	9	5.1	0.5	7.0	< 0.04	-	48.5	4.2	705	5.6	854	3.1	0.83	0.17	2.44
WC40-6	-42	1215	4.6	314	5.6	1249	11.3	302	9.1	3085	6.5	325	7.3	1.89	41	9	5.2	7	3.3	0.03	43.8	35.4	4.3	144	5.7	1139	3.1	0.13	0.31	2.61
WC40-7	-42	291	4.7	77	5.7	338	11.6	94	9.3	1162	6.6	137	7.5	1.64	41	3	5.6	0.9	6.4	< 0.03	-	23.9	4.4	523	5.8	608	3.1	0.86	0.37	2.53
WC40-8	-42	134	4.8	48	5.8	223	11.8	56	9.5	600	6.8	71	7.6	1.88	42	6	5.4	0.3	11.0	< 0.04	-	23.3	4.4	350	5.9	518	3.1	0.68	0.17	3.43
WC40-9	-42	2360	4.8	599	5.9	2331	12.1	563	9.7	5558	6.9	672	7.8	2.93	43	208	5.4	17	3.1	< 0.04	-	70.8	4.5	89	6.0	2919	3.1	0.03	0.29	1.90
WC40-10	-42	173	4.9	62	6.0	280	12.4	68	9.9	716	7.0	85	7.9	1.79	44	4	5.5	0.1	30.6	< 0.03	-	17.4	4.6	197	6.1	320	3.1	0.62	0.09	6.43
WC41-1	-48	1341	4.5	166	3.7	1056	4.3	234	4.1	797	3.6	319	4.1	2.82	12	32	3.6	189	5.7	0.05	30.0	104.8	15.6	398	3.5	3459	5.4	0.12	0.32	0.21
WC41-2	-48	1224	4.5	314	3.7	1198	4.3	274	4.1	2379	3.6	304	4.1	1.87	12	25	3.6	5	5.9	0.03	37.5	27.6	15.6	53	3.5	1548	5.4	0.03	0.33	1.34
WC41-3	-48	2741	4.6	486	3.7	2426	4.3	497	4.1	satur.	3.6	590	4.1	1.84	12	17	3.6	9	5.8	< 0.03	-	33.6	15.7	107	3.5	2324	5.4	0.05	0.33	0.76
WC41-4	-48	95	4.6	32	3.7	142	4.3	34	4.2	370	3.7	46	4.2	1.11	13	2	3.9	0.1	23.7	< 0.03	-	15.4	15.9	136	3.5	79	5.5	1.73	0.32	2.35
WC41-5	-48	3307	4.6	585	3.7	2413	4.4	538	4.2	satur.	3.7	649	4.2	1.76	13	63	3.6	13	5.9	0.04	35.0	32.2	16.2	68	3.5	2468	5.5	0.03	0.31	0.52
WC41-6	-48	1102	4.7	242	3.7	809	4.4	172	4.2	1577	3.7	189	4.2	1.55	13	20	3.6	2	6.2	0.04	25.6	194.1	16.5	464	3.5	1553	5.6	0.30	0.21	0.47
WC41-7	-48	3285	4.7	539	3.8	2862	4.5	598	4.3	satur.	3.7	651	4.3	1.90	13	11	3.7	7	6.1	0.06	25.5	36.9	16.9	39	3.6	3305	5.7	0.01	0.25	0.04
WC41-8	-48	468	4.8	141	3.8	587	4.5	136	4.3	1335	3.7	188	4.3	1.86	13	302	3.7	490	6.1	0.09	24.5	54.1	17.4	782	3.6	1586	5.8	0.49	0.26	1.45
WC41-9	-48	622	4.9	166	3.8	639	4.6	142	4.4	1336	3.8	170	4.4	1.51	14	31	3.7	4	6.3	< 0.03	-	33.5	17.9	380	3.6	926	5.9	0.41	0.28	1.41
WC41-10	-48	3367	4.9	730	3.9	2837	4.6	619	4.4	satur.	3.8	813	4.4	4.17	14	306	3.7	13	6.4	0.05	32.7	30.4	18.4	55	3.6	2421	6.0	0.02	0.43	0.74
WC44-1	-75	714	5.1	208	3.9	854	4.8	201	4.5	2036	3.9	310	4.5	2.50	15	10	3.9	4	6.7	< 0.04	-	36.7	19.6	628	3.7	1878	6.2	0.33	0.35	2.60
WC44-2	-75	134	5.2	43	4.0	194	4.9	48	4.6	499	3.9	70	4.6	1.83	15	12	3.9	2	7.3	< 0.03	-	13.9	20.2	274	3.7	715	6.4	0.38	0.27	4.60
WC44-3	-75	122	5.3	42	4.0	185	5.0	44	4.7	451	4.0	58	4.7	1.51	15	3	4.1	0.2	13.3	< 0.03	-	14.2	20.8	185	3.7	354	6.5	0.52	0.11	1.21
WC44-4	-75	74	5.4	26	4.1	119	5.1	30	4.8	310	4.0	45	4.8	1.37	16	2	4.3	0.1	24.6	< 0.04	-	4.4	21.6	48	3.8	179	6.7	0.27	0.24	2.58
WC44-5	-75	283	5.5	93	4.1	397	5.1	92	4.9	898	4.1	113	4.9	1.70	16	14	4.0	3	7.6	< 0.03	-	74.4	22.2	759	3.8	1863	6.8	0.41	0.19	2.65
WC44-6	-75	450	5.6	122	4.2	487	5.2	114	5.0	1091	4.1	144	4.9	1.90	17	12	4.1	3	7.6	< 0.03	-	17.5	22.9	576	3.9	945	7.0	0.61	0.33	3.47
WC44-7	-75	146	5.8	52	4.3	235	5.3	52	5.0	498	4.2	76	5.0	1.64	17	3	4.2	0.1	23.3	< 0.04	-	17.2	23.6	167	3.9	361	7.1	0.46	0.11	3.61
WC44-8	-75	109	5.9	40	4.3	179	5.4	42	5.1	408	4.2	56	5.1	1.70	17	7	4.2	0.1	25.5	< 0.04	-	20.6	24.3	217	4.0	577	7.3	0.38	0.05	4.34
WC44-9	-75	362	6.0	121	4.4	541	5.5	127	5.2	1217	4.3	176	5.2	1.88	18	27	4.2	1.4	8.5	< 0.03	-	49.2	25.1	677	4.0	1539	7.5	0.44	0.15	2.25
WC44-10	-83	3106	6.1	261	4.4	2136	5.7	631	5.3	satur.	4.4	623	5.3	2.53	18	79	4.2	39	8.1	< 0.04	-	50.9	23.7	278	4.1	6947	7.7	0.04	0.08	8.18
WC46-1	-83	361	6.4	128	4.6	573	5.9	132	5.5	1242	4.5	177	5.5	1.61	19	6	4.3	0.6	10.1	< 0.03	-	46.8	29.7	496	4.2	600	8.0	0.83	0.29	0.06
WC46-2	-83	501	6.5	138	4.6	648	6.0	218	5.6	2626	4.6	538	5.6	2.98	20	31	4.4	7	8.7	< 0.03	-	23.3	28.1	263	4.2	4641	8.2	0.06	0.25	1.76
WC46-3	-83	183	6.7	65	4.7	291	6.1	68	5.7	653	4.6	90	5.7	1.52	20	5	4.5	0.4	10.8	< 0.03	-	26.8	28.8	266	4.3	609	8.4	0.44	0.08	3.67
WC46-4	-83	226	6.8	73	4.8	327	6.2	82	5.8	871	4.7	139	5.8	1.95	21	32	4.5	0.4	11.7	< 0.03	-	18.5	29.5	225	4.3	1183	8.6	0.19	0.23	3.08
WC46-5	-83	1998	7.0	463	4.9	1757	6.3	365	5.9	2506	4.8	405	5.9	1.79	21	51	4.6	26	9.4	< 0.04	-	77.1	30.3	44	4.4	2184	8.8	0.02	0.15	0.54
WC46-6	-83	209	7.1	75	4.9	354	6.4	91	6.1	943	4.8	133	6.0	1.78	21	6	4.7	0.1	27.1	< 0.04	-	30.0	31.1	282	4.4	530	9.0	0.53	0.49	8.01
WC46-7	-83	283	7.2	86	5.0	345	6.6	77	6.2	682	4.9	96	6.1	1.60	22	5	4.7	0.4	12.1	< 0.04	-	31.0	31.8	347	4.5	572	9.1	0.61	0.30	0.40
WC46-8	-83	794	7.4	250	5.1	1131	6.7	296	6.3	2788	5.0	441	6.2	1.81	22	39	4.8	16	10.0	< 0.04	-	31.8	32.6	84	4.6	3751	9.3	0.02	0.24	1.80
WC46-9	-83	191	7.5	58	5.2	241	6.8	55	6.4	531	5.0	71	6.3	1.44	23	5	4.8	0.2	16.5	< 0.04	-	19.1	33.3	256	4.6	532	9.5	0.48	0.25	1.43
WC46-10	-83	635	7.7	150	5.2	538	6.9	118	6.5	1087	5.1	142	6.5	1.55	23	3	4.9	0.5	11.8	< 0.04	-	54.5	34.1	658	4.7	840	9.7	0.78	0.62	1.83
WC47-1	-84	440	5.7	124	4.8	493	4.2	108	5.2	1012	5.6	145	4.6	1.55	6	8	4.5	0.7	6.2	0.04	35.0	36.2	6.3	547	5.1	1273	5.0	0.43	0.33	1.39
WC47-2	-84	65	5.8	24	4.9	112	4.2	29	5.3	314	5.7	44	4.7	1.34	6	2	4.7	< 0.1	-	< 0.07	-	16.2	6.4	129	5.1	142	5.0	0.90	0.40	
WC47-3	-84	143	5.8	55	4.8	261	4.2	67	5.3	721	5.7	120	4.7	1.46	6	2	5.0	0.2	26.7	< 0.05	-	6.9	6.5	226	5.2	325	5.0	0.70	0.22	4.59
WC47-4	-84	212	5.8	71	4.9	318	4.3	79	5.3	825	5.7	134	4.7	1.78	6	2	5.1	0.1	36.2	< 0.07	-	11.9	6.6	510	5.2	452	5.1	1.13	0.42	7.80
WC47-5	-84	695	5.9	188	4.9	714	4.3	155	5.4	1374	5.8	195	4.7	1.96	7	4	4.8	0.7	9.6	< 0.05	-	26.0	6.6	596	5.3	1121	5.1	0.53	0.51	2.08
WC47-6	-84	490	5.9	131	5.0	489	4.3	109	5.4	1020	5.9	128	4.8	1.85	7	2	5.2	0.4	10.7	< 0.04	-	9.1	6.8	741	5.3	1170	5.2	0.63	0.46	2.69
WC47-7	-84	173	6.0	70	5.0	353	4.4	93	5.5	1014	5.9	208	4.8	2.70	7	2	5.7	< 0.2	-	< 0.15	-	5.5	8.0	243	5.4	433	5.3	0.56	0.36	
WC47-8	-84	36	6.2	14	5.1	71	4.4	21	5.6	252	6.0	47	4.9	1.79	7	2	5.1	0.2	31.0	< 0.07	-	15.8	7.0	180	5.4	485	5.4	0.37	0.46	5.05
WC47-9	-84	201	6.2	73	5.2	349	4.5	89	5.7	935</																				

APPENDIX I

Trace elements in zircons from the WC2 sediments

(7/9)

Level	<sup>208</sup> Pb/ <sup>232</sup> Th	1σ	Ca	1σ	Sc	1σ	Ti	1σ	V	1σ	Mn	1σ	Fe	1σ	Cu	1σ	Zn	1σ	Ga	1σ	Se	1σ	Sr	1σ		
[m]	Age [Ma]	[Ma]	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%		
WC50-2	-97	163	23	Juras.	524	6.4	1766	5.7	202	3.9	8.5	4.7	10.2	4.4	1310	8.5	<2.7	-	4.4	13.4	1.4	12.6	<2	-	4	5.3
WC50-3	-97	224	32	Trias	247	7.2	1333	5.8	14	4.0	0.8	8.3	<0.3	-	8	39.4	<1.4	-	<0.7	-	<0.2	-	<2	-	1	8.6
WC50-4	-97	246	40	Trias	313	6.7	1320	5.9	13	4.1	0.6	12.1	<0.2	-	7	51.3	<0.84	-	<0.4	-	<0.1	-	<2	-	0	19.0
WC50-5	-97	213	32	Trias	269	8.4	1538	6.0	81	4.1	2	6.0	3.3	7.7	372	9.4	<1.9	-	1.3	29.4	<0.3	-	<2	-	1	10.5
WC50-6	-97	93	15	Cret.	6459	4.7	1435	6.2	18	4.1	1.2	7.1	22.8	3.6	146	10.0	<1.6	-	<0.8	-	<0.2	-	<2	-	14	5.0
WC50-7	-97	325	52	Carb.	<64	-	1673	6.3	22	4.2	0.7	14.0	<0.7	-	52	13.8	<2.3	-	2.4	19.7	<0.3	-	<2	-	2	7.1
WC50-8	-97	1006	159		7747	4.9	2151	6.4	81	4.3	92.8	4.9	580.6	3.5	5867	10.1	4.7	16.5	20.0	7.2	11.1	4.0	<2	-	113	5.1
WC50-9	-97	201	33	Trias	77	18.9	1456	6.6	15	4.3	0.4	14.2	<0.3	-	71	11.6	<1.2	-	<0.5	-	<0.2	-	<2	-	1	7.5
WC50-10	-97	195	33	Jur.	41	37.2	1727	6.7	21	4.4	1.9	6.2	1.5	11.7	369	10.8	<1.5	-	2.4	13.6	<0.2	-	<2	-	1	6.6
WC55-1	-110	371	67	Devon.	503	5.8	1256	7.0	74	4.6	5.7	5.5	8.5	4.1	1533	11.3	<0.7	-	2.1	13.2	0.8	9.7	<2	-	1	7.0
WC55-2	-110	515	94	Camb.	180	9.2	1619	7.2	16	4.6	1.9	6.5	9	4.2	119	12.1	<1.0	-	1.1	24.8	0.4	21.6	<2	-	2	6.3
WC55-3	-110	1023	190		230	8.9	1756	7.4	14	4.8	0.2	29.0	0.6	32.2	16	24.9	<1.4	-	1.3	24.6	<0.2	-	<2	-	1	10.5
WC55-4	-110	467	100	Ordov.	197	9.4	1391	7.5	18	4.8	0.3	22.3	<0.4	-	13	26.5	<1.4	-	0.7	37.1	<0.2	-	<2	-	0	12.8
WC55-5	-110	103	20	Cret.	1021	6.2	2499	7.7	26	4.9	14.7	5.9	76.5	3.9	700	12.7	2.3	37.8	3.8	14.6	0.7	19.7	<2	-	13	6.1
WC55-6	-110	288	59	Perm.	153	11.2	1441	7.9	14	5.0	0.3	23.4	<0.4	-	<7	-	<1.3	-	<0.6	-	5.3	4.8	<2	-	0	19.1
WC55-7	-110	750	152		<39	-	1466	8.0	15	5.1	0.9	8.6	<0.4	-	247	13.3	<1.3	-	<0.6	-	<0.2	-	<2	-	1	9.3
WC55-8	-110	473	103	Ordov.	355	10.6	1977	8.2	15	5.3	0.6	20.3	<0.9	-	27	29.6	<2.7	-	<1.3	-	<0.4	-	<2	-	1	18.0
WC55-9	-110	106	24	Cret.	<38	-	1471	8.4	13	5.3	0.6	13.4	<0.4	-	8	45.0	<1.2	-	<0.6	-	<0.2	-	<2	-	1	11.4
WC55-10	-110	156	35	Juras.	347	11.2	1587	8.6	19	5.4	1	14.6	<0.9	-	71	17.2	<2.7	-	<1.3	-	<0.4	-	<2	-	2	9.2
WC61-1	-121	297	68	Perm.	324	7.6	1140	8.9	79	5.5	13.5	6.5	16.3	4.2	6174	14.8	4.5	16.6	5.1	10.8	6.6	4.6	<2	-	3	7.0
WC61-2	-121	4887	1020		6612	6.5	3552	9.1	79	5.6	332.8	6.6	190.8	4.2	23381	15.2	28.4	13.9	40.0	9.9	14.2	4.6	<2	-	153	6.9
WC61-3	-121	3509	773		1661	6.7	1600	9.3	50	5.7	107.6	6.7	20	4.3	1565	15.5	3.9	17.5	3.5	12.4	1.0	8.7	<2	-	29	7.0
WC61-4	-121	385	94	Devon.	216	8.6	1229	9.5	15	5.9	11.7	6.9	7.2	4.7	1433	15.8	<0.8	-	6.4	11.0	0.5	11.6	<2	-	4	7.3
WC61-5	-121	938	229		63	21.9	1277	9.6	13	5.9	0.2	25.1	<0.4	-	59	16.9	<1.0	-	<0.6	-	<0.1	-	<2	-	0	13.3
WC61-6	-121	1006	251		84	16.9	1360	9.8	16	6.1	0.2	21.9	<0.4	-	26	19.5	<1.1	-	<0.6	-	<0.1	-	<2	-	0	12.5
WC61-7	-121	510	131	Camb.	281	8.5	1339	10.0	16	6.2	2.8	7.6	2.2	8.2	275	16.9	<1.0	-	1.5	19.2	0.3	24.2	<2	-	1	8.2
WC61-8	-121	961	249		420	7.9	1259	10.2	15	6.3	<0.1	-	0.6	22.6	62	17.7	<0.9	-	<0.5	-	<0.1	-	<2	-	0	12.6
WC61-9	-121	3001	752		3667	7.4	3474	10.4	213	6.4	410.2	7.5	75.1	4.5	12560	17.4	24.4	15.2	14.2	11.8	13.7	4.9	<2	-	50	7.8
WC61-10	-121	384	105	Devon.	3665	7.5	2929	10.6	178	6.5	357.8	7.6	71.7	4.6	16327	17.8	39.1	15.3	27.4	11.8	13.9	5.0	<2	-	58	7.9
WC64-1	-126	1564	858		132	11.0	1115	14.3	28	4.8	0.5	12.7	12.5	4.5	1280	7.1	<1.4	-	0.9	26.4	1.5	5.8	<2	-	0	7.1
WC64-2	-126	800	427		436	7.2	1375	14.4	23	4.8	34.3	7.5	17.7	4.4	4412	7.1	3.9	14.4	4.6	10.4	1.4	6.1	<2	-	7	3.2
WC64-3	-126	3107	1503		1877	6.7	1708	14.5	52	4.8	115.7	7.6	144.6	4.3	3219	7.1	6.6	9.6	7.3	9.5	17.8	4.3	<2	-	23	3.1
WC64-4	-126	1255	617		141	10.7	1221	14.7	12	4.9	0.5	14.0	2.2	8.2	50	8.9	<1.2	-	<0.5	-	<0.1	-	<2	-	0	11.2
WC64-5	-126	1197	575		6143	6.8	2568	14.9	454	4.9	543.8	7.7	96.6	4.3	7624	7.2	20.8	4.5	13.9	9.1	6.9	4.6	<2	-	102	3.0
WC64-6	-126	898	427		74	18.5	1134	15.1	13	4.9	5.5	7.9	9.4	4.7	669	7.4	<1.3	-	1.9	15.1	0.4	15.6	<2	-	2	4.2
WC64-7	-126	734	346		188	9.3	1223	15.4	19	5.0	6.3	8.1	0.8	19.0	1210	7.4	7.3	7.5	2.6	13.7	0.9	8.3	<2	-	1	4.7
WC64-8	-126	738	345		860	7.3	1371	15.7	180	5.1	180	8.0	83.6	4.4	23212	7.5	33.7	3.4	28.5	9.2	7.1	4.7	<2	-	18	3.1
WC64-9	-126	919	426		184	9.7	1278	16.1	13	5.2	1.1	10.4	1.1	13.2	107	8.2	<1.2	-	<0.5	-	<0.1	-	<2	-	1	7.3
WC64-10	-126	1132	522		516	7.8	1267	16.4	30	5.2	59.4	8.4	8.6	4.9	560	7.8	<1.3	-	3.6	11.3	0.5	12.5	<2	-	12	3.1
WC70-1	-130	892	416		188	13.1	1053	17.3	10531	5.4	99.8	8.7	2.7	10.0	1376	8.1	<2.1	-	4.5	13.6	0.6	16.1	<2	-	2	5.0
WC70-2	-130	806	382		332	8.6	1215	17.8	17	5.5	0.2	27.5	2.3	7.4	167	8.4	<1.2	-	<0.6	-	<0.1	-	<2	-	0	8.6
WC70-3	-130	1297	609		3002	8.2	2712	18.3	96	5.7	274.2	9.1	59.2	4.8	5805	8.4	13.4	4.7	6.1	11.4	4.9	5.1	<2	-	51	3.1
WC70-4	-130	671	324		42	28.9	1591	18.8	25	5.8	0.4	17.2	<0.4	-	17	16.0	<1.2	-	0.6	35.0	<0.1	-	<2	-	0	7.0
WC70-5	-130	620	304		<33	-	1275	19.3	61	5.9	0.7	12.4	<0.4	-	98	9.1	<1.1	-	0.8	28.8	<0.1	-	<2	-	1	5.8
WC70-6	-130	3318	1528		4217	8.9	3011	19.9	82	6.0	496.5	9.8	69	5.0	4084	8.9	18.2	4.0	18.2	11.4	16.8	5.2	<2	-	103	3.0
WC70-7	-130	1202	595		5677	9.1	1713	20.5	125	6.2	631.2	10.1	116.6	5.1	9035	9.1	66.5	3.1	21.0	11.6	7.6	5.4	<2	-	151	3.0
WC70-8	-130	219	113	Trias	634	9.6	2876	21.0	37	6.3	79.3	10.3	64.3	5.2	3746	9.3	2.3	19.6	1.5	20.3	1.5	6.8	<2	-	9	3.3
WC70-9	-130	240	126	Trias	299	10.5	1441	21.7	92	6.5	30.8	10.6	6.2	5.8	395	9.6	<1.1	-	1.4	20.1	0.2	23.2	<2	-	6	3.2
WC70-10	-130	563	298	Camb.	590	10.0	1376	22.3	90	6.6	3.8	10.9	10.4	5.5	1194	9.7	2.6	14.9	3.9	13.7	0.5	10.9	<2	-	4	3.5

## APPENDIX I

## Trace elements in zircons from the WC2 sediments

(8/9)

	Level	Y	1 $\sigma$	Nb	1 $\sigma$	Mo	1 $\sigma$	Sn	1 $\sigma$	Sb	1 $\sigma$	Ba	1 $\sigma$	La	1 $\sigma$	Ce	1 $\sigma$	Pr	1 $\sigma$	Nd	1 $\sigma$	Sm	1 $\sigma$	Eu	1 $\sigma$	Gd	1 $\sigma$	Tb	1 $\sigma$
	[m]	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%
WC50-2	-97	2424	7.1	5	5.0	1.8	11.2	0.8	11.4	0.24	25.3	3.8	6.6	0.8	7.1	20	3.7	0.7	5.4	7	6.8	10	6.7	2.6	5.1	42	5.8	14	5.6
WC50-3	-97	2338	7.2	1	5.5	1.4	8.6	0.3	15.7	<0.08	-	<0.23	-	0.4	7.4	14	3.7	0.3	5.8	6	6.6	9	6.5	1.3	5.3	51	5.9	16	5.7
WC50-4	-97	769	7.4	1	6.6	1.6	9.9	0.3	16.8	<0.04	-	<0.13	-	0.1	16.5	17	3.8	0.12	12.1	2	10.3	4	8.1	0.92	7.7	22	6.2	6	6.1
WC50-5	-97	744	7.6	2	5.7	1.5	10.5	0.4	19.1	<0.11	-	<0.32	-	0.4	7.8	14	3.8	0.3	7.1	2	8.9	3	8.1	1.0	6.9	14	6.3	5	6.1
WC50-6	-97	2016	7.8	3	5.2	1.8	7.8	0.5	12.0	<0.09	-	1.2	9.8	33.7	6.0	96	3.8	9.1	4.3	44	6.5	15	6.7	2.5	4.8	48	6.2	14	6.1
WC50-7	-97	2452	8.0	3	5.5	1.9	8.9	0.5	15.6	<0.14	-	0.7	21.7	0.3	9.8	4	4.1	0.3	7.6	5	7.7	9	7.2	0.5	11.4	60	6.4	21	6.2
WC50-8	-97	n.d.	-	18	5.3	6.3	5.4	3.3	4.2	15.1	3.8	134.2	5.1	22.0	6.3	303	3.9	64.8	4.4	588	6.7	801	6.8	266.5	4.3	1855	6.5	520	6.3
WC50-9	-97	1812	8.4	3	5.8	1.6	9.2	0.3	15.5	<0.07	-	0.6	15.2	0.4	8.5	42	4.0	0.9	5.2	14	7.1	22	7.1	7.0	4.6	86	6.6	24	6.5
WC50-10	-97	2281	8.6	4	5.5	1.7	8.1	0.5	11.2	<0.09	-	0.7	14.5	0.4	8.4	25	4.0	0.6	5.4	7	7.4	12	7.4	2.6	5.0	56	6.8	18	6.6
WC55-1	-110	1147	9.0	4	5.9	1.4	8.6	0.3	13.9	<0.04	-	1.1	8.2	1.3	7.2	12	4.1	0.4	6.0	4	8.3	5	8.3	0.9	6.6	26	7.1	8	6.9
WC55-2	-110	1365	9.3	2	6.1	1.6	8.8	0.4	14.2	0.09	38.4	1.6	7.5	1.0	7.5	26	4.1	2.8	5.0	26	7.6	24	7.7	12.2	4.7	56	7.2	14	7.0
WC55-3	-110	n.d.	-	1	6.6	1.8	9.1	0.3	17.8	<0.09	-	0.3	30.7	0.2	11.9	8	4.3	0.2	8.9	3	9.1	5	8.6	1.5	5.9	25	7.5	8	7.2
WC55-4	-110	181	9.7	2	6.0	1.5	8.5	0.5	11.2	<0.09	-	<0.23	-	0.1	15.7	16	4.3	0.2	7.2	4	8.4	7	8.3	2.4	5.1	17	7.6	3	7.3
WC55-5	-110	n.d.	-	4	6.6	2.4	9.3	1.2	8.7	2.1	5.7	7.8	6.3	3.0	7.6	77	4.3	11.3	5.0	115	8.0	141	8.1	34.7	4.9	378	7.7	98	7.5
WC55-6	-110	n.d.	-	2	6.8	1.7	8.9	0.2	23.1	0.10	37.1	<0.21	-	0.0	30.6	11	4.4	0.2	9.8	3	9.9	5	9.3	1.5	6.2	21	8.0	6	7.7
WC55-7	-110	n.d.	-	3	6.6	1.7	8.4	0.3	18.2	0.14	24.4	<0.22	-	0.1	14.8	9	4.4	0.10	11.9	2	10.5	4	9.3	0.56	8.5	31	8.1	12	7.8
WC55-8	-110	1667	10.7	2	7.6	2.3	11.4	0.3	34.4	<0.18	-	<0.45	-	0.1	24.1	6	4.7	0.3	10.5	4	10.6	11	9.3	1.1	9.1	70	8.2	21	8.0
WC55-9	-110	1270	10.9	2	7.2	1.7	10.2	0.3	24.4	<0.09	-	0.7	13.5	0.1	32.1	24	4.5	0.14	12.5	3	10.5	6	9.9	1.31	7.0	30	8.5	9	8.3
WC55-10	-110	1723	11.2	2	7.4	1.6	15.4	0.5	21.2	<0.19	-	<0.45	-	0.4	12.8	18	4.6	0.6	7.4	4	10.9	6	10.6	1.8	7.3	44	8.6	9	8.4
WC61-1	-121	1229	11.7	24	6.9	2.9	6.6	3.4	3.9	0.19	16.5	44.0	6.5	2.9	8.6	23	4.7	2.5	5.6	15	9.3	13	9.5	2.8	5.7	45	8.9	14	8.7
WC61-2	-121	n.d.	-	63	7.0	15.7	5.8	5.7	3.8	30.7	4.6	94.6	6.7	104.3	8.7	540	4.7	113.0	5.6	711	9.3	657	9.6	126.6	5.5	1687	9.0	605	8.8
WC61-3	-121	n.d.	-	179	7.1	4.8	6.1	1.0	6.1	0.3	14.0	8.6	6.9	34.5	8.8	488	4.8	34.3	5.7	199	9.5	160	9.8	29.0	5.6	398	9.2	126	9.0
WC61-4	-121	n.d.	-	11	7.3	1.9	7.3	0.4	11.0	0.2	15.8	1.4	8.0	5.1	9.1	69	4.9	4.7	5.7	32	9.7	31	10.0	4.4	5.7	93	9.4	29	9.1
WC61-5	-121	765	12.7	14	7.4	1.4	9.0	<0.1	-	<0.08	-	<0.17	-	0.1	21.2	10	4.9	0.09	12.1	1	14.1	2	11.7	0.24	13.2	13	9.6	5	9.4
WC61-6	-121	1229	12.9	4	7.5	1.5	8.5	0.2	29.9	<0.08	-	0.2	29.5	0.1	15.8	18	5.0	0.14	9.1	3	11.0	5	10.8	0.80	7.3	29	9.8	10	9.5
WC61-7	-121	1095	13.2	19	7.7	1.7	8.2	0.4	11.9	0.2	21.6	0.5	16.1	4.8	9.6	26	5.1	2.0	6.1	11	10.3	8	10.8	0.8	7.5	27	10.0	9	9.7
WC61-8	-121	1092	13.5	10	7.9	1.5	8.6	0.2	24.4	<0.07	-	<0.15	-	13.4	9.7	32	5.2	3.7	6.1	22	10.5	8	11.0	0.2	13.2	28	10.1	9	9.9
WC61-9	-121	n.d.	-	116	7.9	30.3	6.1	3.5	4.3	41.2	5.0	11.7	7.4	89.8	9.9	238	5.2	134.9	6.2	789	10.6	607	11.0	99.6	6.1	1020	10.3	298	10.0
WC61-10	-121	n.d.	-	17	8.1	5.1	7.3	22.6	3.6	2.7	6.0	36.6	7.5	58.6	10.1	716	5.3	55.7	6.3	330	10.7	259	11.2	61.5	6.2	579	10.5	164	10.2
WC64-1	-126	639	8.0	4	3.5	1.6	16.8	0.9	12.6	<0.07	-	5.5	4.3	1.0	4.3	4	8.3	0.4	4.6	3	7.5	3	6.6	0.2	18.0	14	6.0	5	7.9
WC64-2	-126	1832	8.1	24	3.2	3.2	15.9	0.9	12.5	0.3	14.2	3.4	4.5	7.4	3.8	140	8.3	8.9	3.1	53	6.4	42	4.9	7.1	3.2	81	6.0	27	7.8
WC64-3	-126	n.d.	-	117	3.2	5.9	15.9	3.0	11.3	0.7	11.1	20.1	4.2	27.8	3.8	509	8.4	44.2	3.1	267	6.5	230	4.9	39.8	3.1	435	6.0	127	7.9
WC64-4	-126	945	8.3	5	3.4	1.8	16.8	0.3	18.1	<0.07	-	<0.12	-	1.2	4.4	7	8.5	0.5	4.4	4	7.2	4	6.1	0.3	9.4	22	6.2	7	8.0
WC64-5	-126	n.d.	-	141	3.2	16.8	16.1	4.4	11.7	0.6	12.2	52.0	4.2	298.3	3.8	443	8.6	212.9	3.1	1139	6.7	699	5.0	100.4	3.1	1512	6.2	450	8.2
WC64-6	-126	n.d.	-	16	3.3	1.9	17.3	0.8	13.4	0.2	21.9	1.1	6.8	1.6	4.3	28	8.8	2.0	3.5	16	6.9	20	5.2	2.1	4.0	89	6.3	28	8.3
WC64-7	-126	1241	8.8	16	3.3	1.4	18.4	0.4	16.6	0.11	27.7	1.3	6.3	0.7	5.2	28	9.0	0.5	4.6	5	7.8	6	6.0	0.7	6.5	30	6.5	10	8.6
WC64-8	-126	n.d.	-	94	3.2	14.0	17.0	3.8	12.3	1.1	10.5	18.5	4.4	28.1	4.0	373	9.2	25.4	3.2	154	7.1	119	5.3	20.7	3.1	300	6.6	91	8.7
WC64-9	-126	1699	9.3	19	3.3	1.6	18.6	0.5	15.9	<0.07	-	0.4	13.0	0.9	4.8	20	9.4	0.9	3.8	8	7.6	11	5.7	1.1	4.7	49	6.8	17	9.0
WC64-10	-126	n.d.	-	23	3.3	2.2	18.4	0.4	17.5	0.15	23.1	2.9	4.8	17.9	4.1	233	9.6	14.1	3.2	82	7.5	61	5.5	9.5	3.2	150	6.9	48	9.2
WC70-1	-130	659	10.1	62	3.3	1.5	21.6	294.5	13.5	1.7	12.1	3.5	5.5	4.2	4.3	28	10.2	0.5	5.2	4	9.0	5	7.2	1.3	5.3	18	7.4	5	9.9
WC70-2	-130	631	10.4	3	3.6	1.5	19.9	0.2	27.5	<0.07	-	0.5	11.1	0.1	17.2	3	10.4	0.07	11.7	1	10.8	2	8.0	0.15	16.3	14	7.6	5	10.2
WC70-3	-130	n.d.	-	138	3.3	18.5	19.8	4.0	14.5	0.6	13.8	15.8	4.8	49.6	4.3	193	10.7	71.9	3.2	444	8.4	388	6.0	66.8	3.1	872	7.7	294	10.4
WC70-4	-130	1910	10.4	3	3.7	1.8	21.2	0.3	19.7	<0.07	-	1.9	5.7	0.1	19.4	84	11.1	0.4	4.5	8	8.9	13	6.4	5.0	3.4	59	8.0	16	10.7
WC70-5	-130	1346	11.4	26	3.3	1.7	21.8	0.6	17.6	0.08	37.8	0.2	31.5	5.9	4.6	26	11.4	2.1	3.5	11	9.1	6	7.0	0.2	15.9	29	8.2	10	11.1
WC70-6	-130	n.d.	-	67	3.4	8.0	21.6	3.3	15.8	3.7	13.4	30.0	5.1	196.4	4.5	643	11.7	152.2	3.3	858	9.3	580	6.6	99.6	3.1	1470	8.4	439	11.5
WC70-7	-130	n.d.	-	90	3.4	12.1	22.2	2.4	16.4	0.8	14.7	66.3	5.2	249.3	4.6	223	12.1	263.9	3.3	1553	9.6	1009	6.8	156.4	3.1	2614	8.7	746	11.9
WC70-8	-130	n.d.	-	8	3.5	2.3	23.2	2.1	17.0	4.9	14.2	6.2	5.5	8.9	4.8	192	12.5	9.4	3.4	69	9.6	70	7.0	18.0	3.2	171	9.0	46	12.3
WC70-9	-130	3276	13.0	18	3.5	2.0	24.0	0.9	18.1	<0.08	-	2.5	6.0	9.0	4.9	251	12.8	14.2	3.4	90	10.3	67	7.2	11.0	3				

## APPENDIX I

## Trace elements in zircons from the WC2 sediments

(9/9)

	Level	Dy	1 σ	Ho	1 σ	Er	1 σ	Tm	1 σ	Yb	1 σ	Lu	1 σ	Hf	1 σ	Ta	1 σ	W	1 σ	Re	1 σ	<sup>208</sup> Pb	1 σ	Th	1 σ	U	1 σ	Th/U	Eu*	Ce*
	[m]	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[wt-%]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	[ppm]	%	ratio		
WC50-2	-97	183	6.7	67	5.5	334	4.7	83	6.1	859	6.6	162	5.3	1.84	9	2	6.0	0.5	15.0	< 0.12	-	6.3	8.4	458	5.9	391	6.0	1.17	0.39	6.64
WC50-3	-97	216	6.9	78	5.6	353	4.8	84	6.2	838	6.7	124	5.4	1.58	9	0.6	6.7	< 0.1	-	< 0.05	-	4.0	8.4	212	6.0	187	6.2	1.13	0.19	9.05
WC50-4	-97	79	7.1	28	5.8	124	4.9	33	6.4	336	6.9	46	5.5	1.46	10	0.7	8.0	< 0.1	-	< 0.03	-	2.0	10.3	93	6.2	92	6.3	1.01	0.29	32.97
WC50-5	-97	63	7.2	25	5.8	136	5.0	39	6.5	479	7.0	92	5.6	1.73	10	1.1	6.5	< 0.2	-	< 0.08	-	9.9	8.7	545	6.3	682	6.5	0.80	0.45	9.73
WC50-6	-97	170	7.3	60	5.9	284	5.0	72	6.6	790	7.2	128	5.7	1.60	11	1.3	6.1	< 0.1	-	< 0.08	-	4.7	9.1	595	6.4	474	6.6	1.26	0.29	1.29
WC50-7	-97	277	7.5	100	6.1	441	5.1	103	6.8	978	7.4	146	5.8	1.95	11	2	6.0	< 0.1	-	< 0.11	-	8.7	9.3	313	6.6	470	6.8	0.67	0.07	3.47
WC50-8	-97	4846	7.7	895	6.2	3746	5.2	796	6.9	2537	7.5	887	5.9	2.17	12	11	5.8	2	6.5	< 0.06	-	27.1	9.4	311	6.7	6485	7.0	0.05	0.67	1.88
WC50-9	-97	268	7.9	86	6.3	381	5.3	95	7.1	1039	7.7	143	6.0	1.54	12	1.2	6.7	< 0.10	-	< 0.06	-	9.5	9.8	559	6.9	268	7.2	2.09	0.49	16.58
WC50-10	-97	228	8.1	80	6.5	369	5.4	89	7.2	868	7.9	147	6.2	2.08	12	2	6.3	0.1	31.7	< 0.07	-	7.2	10.0	435	7.0	362	7.4	1.20	0.30	12.09
WC55-1	-110	116	8.4	42	6.7	190	5.7	48	7.6	518	8.3	65	6.4	1.34	13	1.3	6.8	0.1	42.3	< 0.03	-	4.4	10.7	138	7.3	178	7.8	0.77	0.23	3.62
WC55-2	-110	149	8.6	48	6.9	213	5.8	55	7.7	628	8.5	103	6.6	1.78	14	1.0	7.1	0.1	44.0	< 0.05	-	8.9	10.8	201	7.5	223	8.0	0.90	1.02	3.56
WC55-3	-110	94	8.9	31	7.0	140	5.9	33	7.9	332	8.7	54	6.7	1.77	14	0.5	8.6	< 0.13	-	< 0.07	-	7.3	11.2	82	7.7	61	8.2	1.34	0.41	9.69
WC55-4	-110	24	9.1	6	7.2	20	6.1	4	8.1	36	8.9	5	7.0	1.95	15	0.4	8.9	0.1	34.4	< 0.07	-	1.3	13.6	33	7.9	50	8.4	0.67	0.69	24.15
WC55-5	-110	937	9.3	243	7.3	918	6.1	178	8.3	1491	9.1	241	7.0	2.25	15	1.1	8.0	2	7.1	< 0.10	-	11.5	11.7	1317	8.0	985	8.6	1.34	0.46	3.08
WC55-6	-110	73	9.5	26	7.5	115	6.2	29	8.5	319	9.3	50	7.1	1.85	16	1.1	7.7	0.1	43.7	< 0.06	-	3.3	12.4	135	8.2	166	8.9	0.82	0.45	29.21
WC55-7	-110	168	9.7	62	7.6	283	6.3	68	8.6	652	9.5	98	7.3	2.06	17	2	7.4	< 0.1	-	< 0.07	-	10.7	12.2	165	8.4	224	9.1	0.74	0.15	19.58
WC55-8	-110	213	9.9	55	7.8	205	6.5	41	8.8	349	9.7	52	7.4	2.37	17	1.4	8.7	< 0.2	-	< 0.15	-	5.0	13.3	123	8.6	470	9.3	0.26	0.12	6.92
WC55-9	-110	120	10.1	41	8.0	185	6.6	48	9.0	510	9.9	72	7.6	1.75	18	1.0	8.5	< 0.1	-	0.06	46.9	2.4	13.4	264	8.8	221	9.6	1.19	0.31	64.29
WC55-10	-110	118	10.4	45	8.1	219	6.7	58	9.2	623	10.1	117	7.7	2.34	18	2	8.3	< 0.2	-	< 0.14	-	5.3	13.7	397	8.9	605	9.8	0.66	0.34	8.96
WC61-1	-121	149	10.8	43	8.4	181	7.0	41	9.6	403	10.6	58	8.0	1.57	19	7	7.7	3	6.0	< 0.06	-	9.7	13.6	381	9.3	526	10.3	0.72	0.35	2.03
WC61-2	-121	6456	11.0	690	8.6	4386	7.1	757	9.8	satur.	10.8	1041	8.2	2.26	20	26	7.8	61	5.7	0.04	57.5	51.2	13.9	109	9.5	3745	10.5	0.03	0.37	1.17
WC61-3	-121	1345	11.3	346	8.8	1362	7.2	322	10.0	3079	11.0	370	8.3	2.44	21	19	7.9	6	6.1	< 0.05	-	24.7	14.1	76	9.7	2802	10.8	0.03	0.35	3.33
WC61-4	-121	337	11.5	97	9.0	406	7.4	97	10.2	939	11.2	117	8.5	1.78	21	7	8.1	0.9	7.9	< 0.05	-	25.2	14.4	768	9.9	863	11.0	0.89	0.25	3.31
WC61-5	-121	71	11.7	27	9.1	130	7.5	33	10.4	334	11.4	45	8.6	2.18	22	9	8.2	< 0.1	-	< 0.07	-	15.3	14.7	188	10.1	704	11.3	0.27	n.d.	31.25
WC61-6	-121	130	12.0	46	9.3	206	7.7	50	10.6	501	11.7	70	8.8	1.67	22	2	8.7	0.1	33.3	< 0.06	-	10.9	15.0	125	10.3	144	11.5	0.87	0.19	36.50
WC61-7	-121	120	12.2	41	9.5	186	7.8	45	10.8	446	11.9	62	9.0	2.10	23	8	8.6	0.6	9.5	< 0.06	-	16.0	15.3	366	10.5	569	11.8	0.64	0.17	2.01
WC61-8	-121	116	12.4	42	9.7	188	7.9	45	11.0	454	12.1	60	9.1	1.89	24	6	8.6	0.1	35.4	< 0.05	-	16.1	15.5	193	10.7	531	12.0	0.36	0.04	1.07
WC61-9	-121	2741	12.7	606	9.8	2121	8.1	472	11.2	4007	12.3	470	9.3	1.90	24	16	8.8	41	6.4	< 0.06	-	51.1	15.8	187	10.9	6325	12.3	0.03	0.39	0.51
WC61-10	-121	1547	12.9	370	10.0	1386	8.2	307	11.4	2945	12.6	459	9.4	1.94	25	8	9.0	14	6.6	< 0.11	-	18.5	16.1	564	11.1	2235	12.5	0.25	0.48	2.94
WC64-1	-126	61	9.5	22	10.9	96	12.2	22	10.1	228	9.7	30	10.8	1.26	23	1.4	10.9	< 0.1	-	< 0.05	-	6.8	45.8	50	10.8	141	4.1	0.35	0.08	1.65
WC64-2	-126	275	9.6	73	11.0	291	12.3	71	10.3	711	9.8	89	11.0	2.15	24	15	10.5	3	5.8	< 0.05	-	25.0	43.0	362	10.9	1263	4.1	0.29	0.37	4.04
WC64-3	-126	1268	9.7	321	11.2	1213	12.5	282	10.4	2586	9.9	316	11.1	2.31	25	20	10.7	11	5.2	< 0.06	-	42.5	40.8	150	11.1	2340	4.1	0.06	0.38	3.40
WC64-4	-126	91	9.9	32	11.4	142	12.7	33	10.6	331	10.1	45	11.3	1.62	27	2	10.9	< 0.1	-	< 0.04	-	10.4	39.0	95	11.3	252	4.2	0.38	0.10	2.29
WC64-5	-126	4208	10.1	900	11.6	3633	12.9	785	10.8	1818	10.3	948	11.5	3.29	28	108	11.1	25	5.2	0.11	25.0	51.9	37.5	498	11.5	4193	4.2	0.12	0.30	0.41
WC64-6	-126	329	10.3	108	11.8	451	13.2	105	11.0	1018	10.6	138	11.8	1.87	30	22	11.3	0.7	8.8	< 0.05	-	43.9	36.3	564	11.7	1336	4.2	0.42	0.15	3.66
WC64-7	-126	131	10.6	45	12.1	201	13.6	47	11.3	461	10.8	60	12.1	2.09	32	7	11.6	0.5	11.3	0.12	20.2	19.1	35.4	302	12.0	696	4.3	0.43	0.15	11.00
WC64-8	-126	944	10.9	253	12.4	995	13.9	233	11.6	2218	11.1	340	12.4	1.95	34	26	11.9	7	5.6	< 0.05	-	30.1	34.7	473	12.4	884	4.3	0.54	0.33	3.27
WC64-9	-126	210	11.2	72	12.7	312	14.3	74	11.9	711	11.4	92	12.8	2.53	36	10	12.2	< 0.1	-	< 0.05	-	31.3	34.1	393	12.7	1184	4.4	0.33	0.15	5.03
WC64-10	-126	513	11.5	142	13.1	553	14.8	125	12.2	1186	11.8	137	13.2	2.27	39	10	12.6	3	6.3	< 0.05	-	46.0	33.6	467	13.1	1352	4.5	0.35	0.30	3.44
WC70-1	-130	61	12.3	22	13.9	102	15.8	28	13.0	316	12.6	49	14.0	1.97	46	6	13.5	574	5.8	< 0.09	-	9.4	32.9	121	14.0	137	4.6	0.89	0.45	4.39
WC70-2	-130	63	12.7	22	14.4	102	16.3	25	13.4	259	13.0	36	14.5	2.55	50	2	14.0	0.2	20.5	< 0.05	-	3.2	33.0	46	14.4	130	4.7	0.35	0.09	9.55
WC70-3	-130	3098	13.1	746	14.9	2914	16.8	627	13.9	2485	13.4	687	15.0	3.84	55	24	14.3	21	6.2	< 0.06	-	37.5	32.6	331	14.9	2986	4.8	0.11	0.35	0.76
WC70-4	-130	204	13.6	71	15.4	311	17.4	71	14.4	714	13.9	104	15.5	2.62	61	1.0	15.2	< 0.1	-	< 0.06	-	14.6	32.6	253	15.5	123	4.8	2.05	0.55	115.14
WC70-5	-130	136	14.0	50	15.9	233	18.1	55	14.9	547	14.4	77	16.1	4.38	67	11	15.3	1.2	7.6	< 0.05	-	23.2	32.5	434	16.0	1217	4.9	0.36	0.04	1.72
WC70-6	-130	4344	14.5	1002	16.4	3672	18.7	772	15.4	3665	14.9	767	16.6	4.77	75	17	15.9	58	6.6	< 0.06	-	48.1	32.5	158	16.6	3153	5.0	0.05	0.33	

## APPENDIX II

## Uranium, thorium and REE mineralisations in the MPD

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Locality Name	Nr	Elements	Genesis	Primary	Secondary	Size	Easting	Northing	References
Arkaroola Ck 1 (Wywyna top contact, upstream Arkaroola pegmatite)		REE, Th, U	allanite in an actinolite garnet skarn with zircon, fluorite	Allanite-(Ce)		1	338220	6648680	Coats & Blissett 1971 p.267
Echo Camp (3 miles South of Mt Painter)		REE, Th, U	Actinolite-garnet rock (skarn)	Allanite-(Ce)		1	342100	6649600	Coats & Blissett 1971 p.163 ; Johnson J. E.
Magnetite-allanite-diopside-thorite skarn		REE, Th, U	Metasomatic: skarn in metacarbonates (Proterozoic)	Allanite, thorite, uraninite, U-rich rutile		2	369945	6683063	This work, Campana et al. 1961 (map)
Paragneiss with allanite		REE	metasomatic	Allanite		1	369896	6683078	This work
Silicified rhyolite		REE, Th, U	metasomatic	Allanite, thorite	Bastnaesite	1	360955	6692400	This work
Yerila Granite	363385	REE, Th, U	Metasomatic: Allanite gneiss( 327 ppm U)	Allanite		1	359422	6693428	CRA Exploration
Yerila Granite	363292	REE, Th, U	Skarn : calcsilicate with allanite (1600 ppm Th, 452 ppm U)	Allanite		1	358812	6693393	CRA Exploration
Yerila Granite	363295	REE, Th, U	Skarn : calcsilicate with allanite (490 ppm U)	Allanite		1	358822	6693298	CRA Exploration
Biotite gneiss with allanite and fluorite		REE, Th, U	metasomatic	Allanite, thorite, uraninite, titanite-Y	Basnaesite, synchysite	3	360642	6693159	This work
Calcsilicate HSG	143015	REE, Th, U	Migmatite zone - metasomatic sediments (U = 370 ppm)	Allanite		1	350522	6662387	Blight, P. G. 1977
Calcsilicate HSG	143016	REE, Th, U	Migmatite zone - metasomatic sediments (U = 511 ppm)	Allanite		1	352350	6664652	Blight, P. G. 1977
Biotite gneiss with allanite and fluorite		REE, Th, U	metasomatic	Allanite		1	360763	6693515	This work
Hot Spring Creek (2 miles upstream HS)		REE, Th, U	Disseminated in gneiss (migmatite) & calcsilicate	Allanite-(Ce)		2	349698	6661612	Coats & Blissett 1971 p.163; Mawson 1926a, This work
Sunshine Peak area		REE, Th, U	Shear zone in gneiss (biotite-rich	Monazite-(Ce)		1	339381	6651990	Elburg et al. 2003
Monazite Hill	4308	REE, Th, Y	Lenses of monazite in biotite schist & pegmatitic gneiss (6-12 x 30-120m)	monazite-(Ce), xenotime-(Y), (2-7 % monazite)		1	349359	6661298	I. Youles 1969
Migmatitic biotite gneiss		REE,Th, U	Migmatite	Monazite		1	339590	6654570	This work
Migmatitic biotite gneiss		REE,Th, U	Migmatite	Monazite		2	353929	6666405	This work
Shear zone monazite lense		REE, Th	Hydrothermal	Monazite, thorite		2	353645	6666697	This work
SED-Badd		REE, U	Detrital concentrations in a creek	Monazite, xenotime, fergusonite, uraninite, allanite, columbite, uranmicrolite	cerite-(Ce), torneboemite, hollandite	1	361271	6691800	This work
Nr.10 Workings (Mount Painter region)	SAM G23810	REE, Th, U	Biotite schist & pegmatitic gneiss	Davidite-(La)		1	339675	6654725	This work; Mawson 1944; Broughton 1926; Broughton 1925
Pegmatite with muscovite (BE granite related)		REE, Y	Pegmatite	Monazite, xenotime		1	357500	6671275	This work

## APPENDIX II

## Uranium, thorium and REE mineralisations in the MPD

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Locality Name	Nr	Elements	Genesis	Primary	Secondary	Size	Easting	Northing	References
Mount Pitt North slope		Y, REE	Biotite schist	Xenotime-(Y)		1	334450	6654475	Coats & Blissett 1971 p.165; Youles I. 1969
Betafite Mt Shanahan Prospekt North		U	Veinlet	Betafite		1	345525	6672425	Coats & Blissett 1971 p.151 & 163, 266 ; Reyner M.L. & Pitman R.K. 1954
Coats pegmatite	Nr 34595	U	Pegmatite vein in Yudnamutana Ck	Brannerite		1	346150	6658710	Coats & Blissett 1971 p.163 ; Coats 1959/25/09
Hot Spring Creek (lower section)		U, Th	Pegmatite vein - peralkaline aplite	Brannerite (microlite?)		2	350038	6661231	This work ; Johnson J.E. ? ; Coats & Blissett 1971, p.164
Metasomatite - U-rich	142909	U, Th	Migmatite zone : granitic alkaline melt, U>Th (U = 427 ppm)			1	350861	6662305	Blight, P. G. 1977
Jacob (Brannerite Hill)		U, Th	Pegmatitic vein, fault	Brannerite	gummite	3	354876	6668685	This work
Charlotte		U, Th	Quartz vein with brannerite and hematite	Brannerite	Gummite	1	354718	6668286	This work
Jacob 2		U, Th	Pegmatitic vein, fault	Brannerite	gummite	2	354895	6668736	This work
Nichols Nob Mine	3166	Cu, Au, Ni, U	Fault related veins	Uraninite, brannerite	Gummite, liebigite	2	279150	6645850	PIRSA, Noble et al. 1983, Mawson 1944
Mount Ogilvie Diggings	4330	Au, Ni, U	Fault related veins	Uraninite, brannerite	Gummite, liebigite, torbernite	2	275353	6644624	PIRSA, Noble et al. 1983, Mawson 1944
Gunsight Prospekt	1934	U, Cu, Co, REE, V	Shear zone /skarn / granitic breccia	Allanite-(Ce), uraninite, monazite-(Ce)		3	371513	6681125	Teale 1993
Hematite - shear zone		U, Th	Hematite, biotite breccia with U minerals	Monazite, uraninite		1	354846	6668532	This work
Smiler Greenwood prospekt	2059	U	Hematite breccia	Monazite-(Ce), fergusonite	Torbernite, gummite	2	342946	6656983	Coats & Blissett 1971 p.210
Mount Painter No.1 Workings	4332	U, REE	Hematite breccia	Monazite-(Ce), samarskite	torbernite	2	339328	6655641	Coats & Blissett 1971 p.210
Nr.2 Workings (Mount Painter region)	4333	U, REE	Hematite breccia with monazite - pegmatitic Hydrothermal	Samarskite, Euxenite-(Y), Monazite-(Ce)	Autunite?, Gummite, Dewindtite, Uranophane, Uranosphaerite	2	339350	6655591	Coats & Blissett 1971 p.95, 163; Kleeman 1946; Mawson 1944; Brugger et al. 2004; Elburg et al. 2003
Mount Shanahan Uranium prospekt	4348	U	Fault related quartz vein (~10 cm x 10 m) in the Freeling Heights Quartzite	Uraninite	Uranophane, metatorbernite	2	344158	6671768	Coats & Blissett 1971 p.150; Hughes 1957
Old Shamrock Copper Mine / Valley Prospekt	2046 / 4418	Cu, U	Shear zone in the Wooltana volcanics (0.5 x 10 m)	Uraninite	Metatorbernite, torbernite, uranophane	1	342912	6663658	Coats & Blissett 1971 p.151; Campana H. & Johnson J.E. 1955
Schist in Wooltana volc.	368671	U	(unknown: U>>Th, 0.2% U)	Uraninite ?			342542	6663628	Marathon Petroleum
East Painter Nr.4 Workings	4225	U, REE	Hematite breccia	uraninite	Uranophane, torbernite	3	344492	6654650	Coats & Blissett 1971 p.165

## APPENDIX II

## Uranium, thorium and REE mineralisations in the MPD

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Locality Name	Nr	Elements	Genesis	Primary	Secondary	Size	Easting	Northing	References
Gows Diggings (Brindana Gorge area)	2036	Cu, U, Au, Pb, Ag	ESE-trending shear zone, number of siliceous ironstone lodes	Uraninite ?			368652	6685125	
Paralana Hot Springs area	2050	U, Cu	Thin goethite veinlets near small breccia zones (1-3 m x ~0.5 m)	Uraninite	Torbernite	1	349947	6660778	Coats & Blissett 1971 p.164 ; Johnson J. E.; Broadhurst (1945a)
East Painter No.1 Workings	4222	U	Granitic/hematite breccia with sulfides	Uraninite	Torbernite	2	344376	6654964	
East Painter No.2 Workings	4223	U	Granitic/hematite breccia with sulfides	Uraninite	Torbernite	2	344484	6654982	
Mount Gee prospect	4322	U, REE	Hematite breccia	Uraninite, coffinite, monazite-(Ce)	Torbernite, metatorbernite, autunite	3	340159	6655405	Coats & Blissett 1971 p.212-213
Mount Gee East Uranium occurrence	4321	U, REE	Hematite breccia	Uraninite, coffinite, monazite-(Ce)	Torbernite, metatorbernite, autunite	3	340641	6655172	Coats & Blissett 1971 p.212-213
Hodgkinson Uranium prospect	4266	U	Breccia hematite mineralisation	Uraninite, thorite	Metatorbernite, torbernite	3	347894	6659628	Smith, A., 1992
"Radioactive schist" Mt Shanahan U prospect SW		U	Ferruginous biotite schist with hematite shear zone	Uraninite?		1	343120	6670370	Coats & Blissett 1971 p.266
Nr.6 Workings (Mount Painter region)	4337	U	Hematite ore / breccia, shear zone		Autunite Torbernite Gummite Uranophane	3	340111	6653931	Coats & Blissett 1971 p.
East Painter No.5 Workings	4226	U	Hematite breccia		Torbernite	2	344804	6655088	Coats & Blissett 1971 p.215
Mount Painter No.3 Workings	4334	U	Hematite breccia		Torbernite	2	339078	6655619	Coats & Blissett 1971 p.232
Mount Painter No.4 Workings	4335	U	Hematite breccia		Torbernite	1	339960	6655170	Coats & Blissett 1971 p.233
Mount Painter No.5 Workings	4336	U	Hematite breccia		Torbernite	1	340380	6654796	Coats & Blissett 1971 p.233
Mount Painter No.7 Workings	4338	U	Breccia zone / Quartz-hematite		Torbernite, gummite, metatorbernite	1	339359	6654007	Coats & Blissett 1971 p.247
Mount Painter No.8 Workings	4339	U	Granitic breccia /shear / no hematite ore		Torbernite	2	339644	6654850	Coats & Blissett 1971 p.248
East Painter No.3 Workings	4224	U	Breccia body (granitic/hematite)		Torbernite	2	344195	6655018	
West of East Painter prospect		U, REE	Hematite breccia		Uranophane Autunite	1	344050	6655570	Coats & Blissett 1971 p.165
Hematite Valley occurrence	4263	U			x		347774	6660354	
O'Sullivans	4369	U			x		347781	6659911	
Rolling stones	4385	U			x		346937	6659780	
Grogans Bluff Uranium occurrence	4259	U			x		347340	6658965	
Horn Uranium occurrence	4271	U					346893	6658632	
Hawthorn prospect	4261	U					346270	6658998	



## APPENDIX II

## Uranium, thorium and REE mineralisations in the MPD

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Locality Name	Nr	Elements	Genesis	Primary	Secondary	Size	Easting	Northing	References
Breccia Nob uranium occurrence	4183	U					345494	6658177	
Turquoise Uranium occurrence	4403	U					344296	6657722	
Armchair Prospect	4150	U					342706	6657687	
Streitberg Uranium occurrence	4396	U					343326	6657607	
Mount Ward Uranium occurrence	4350	U					343297	6657237	
Bills Folly Prospect	4169	U					342119	6655715	
Minerva Heights Uranium occurrence	4305	U					339338	6653893	
Gum Tree Uranium occurrence	4260	U					339093	6653449	
Great Copper Bell Mine	2037	Cu, Mo, Au, U, Pb, Ag	shear hosted epigenetic quartz veins				373509	6682349	
Echidna Prospect	3202	U	U mineralisation occurring within a NW -SW trending lens of ferruginous granite breccia				342727	6658531	
East Painter 5A Uranium Mine	4227	U	Granitic sheared gneiss		Torbernite	2	344851	6655148	
Bentley Greenwood Prospect	2076	U	Torbernite in hematite in shear zone (43m on 4~10m wide) from migmatite		Torbernite	1	343959	6655905	
Commonwealth Mine	2119	Cu, U, Ag	Shear-zone /fault mineralised zone		Uranophane	1	341872	6659628	
British Empire Mine	2009	Cu, U	Shear-zone /fault mineralised zone		Kasolite	1	346297	6661008	Coats & Blissett 1971 p.165
Beverley	1932	U	Sandstone-hosted		Carnotite, Coffinite, uraninite	3	365000	6659150	
Parabarana Mine	3203	Cu, Zn, U, Au, Pb	Only minor secondary uranium.		Gummite	1	375385	6682371	Coats & Blissett 1971 p.165
Arkaroola Ck 2		Cu, U	disseminated in biotite schist in actinolite marble		Uranophane	1	337250	6648750	Coats & Blissett 1971 p.267
Four Mile West	8431	U	Sandstone-hosted		Coffinite, uraninite	3	355300	6664000	
Four Mile East	8431	U	Sandstone-hosted		Coffinite, uraninite	3	358000	6665500	
Mount Distance Prospect (Yerelina Ck)	8487	U	Sedimentay hosted U prospect		Carnotite		311300	6686900	
Leslie Talc deposit		Talc	on talc		Carnotite	1	350651	6691861	Coats & Blissett 1971 p.165
Billy Springs Mine area		Talc	on talc		Carnotite	1	353133	6688136	Coats & Blissett 1971 p.165
Wild Dog Mine	4436	U, Cu					330053	6654223	
Fault-breccia		U	Hydrothermal - epigenetic		Torbernite	1	353820	6664950	This work
Clay in Namba Fm	130905	U	Sedimentary hosted : 420 ppm U		Coffinite?		368592	6634548	Central Pacific Minerals

## APPENDIX III

## Whole-rock chemical analyses

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	Allanite skarn (JB05-37)	Allanite skarn (JB05-36)	Yerila gneiss S.S.	Yerila gneiss Yer5 silicified	Yerila Gneiss (JB05-39)	Yerila - Terrapinna (CONTAC- YER)	Terapinna Granite (Terap2)	Metasediment in Terap (JB05- 38)	Hematite - Mt. Shanahan (JB05-30)	Hematite Nr 2 Radium Ridge	Pegmatite brannerite - Hidden Valley	East Painter Prospect - breccia
	PW8	PW36	PW28	PW16	PW23	PW27	PW17	PW18	PW3	**PW2	**PW6	PW1
SiO <sub>2</sub>	73.87	58.41	66.62	75.43	64.44	67.51	66.95	69.66	65.36	18.65	46.10	65.41
TiO <sub>2</sub>	0.39	0.57	0.60	0.38	0.78	0.79	0.60	0.58	0.16	<0.01	9.92	0.38
Al <sub>2</sub> O <sub>3</sub>	9.77	17.77	13.45	13.59	13.50	13.93	14.67	13.72	2.00	<0.01	9.87	11.52
Fe <sub>2</sub> O <sub>3</sub>	3.59	5.62	1.94	0.19	2.71	4.11	1.53	1.88	29.31	65.22	2.46	8.11
FeO	1.50	1.20	3.90	0.40	4.50	2.50	3.40	3.20	0.80	n.d.	n.d.	3.40
MnO	0.12	0.10	0.07	0.04	0.07	0.09	0.07	0.08	0.01	<0.01	0.17	0.18
MgO	0.26	0.65	0.72	0.12	1.81	0.83	0.61	0.46	0.66	<0.01	1.94	0.61
CaO	4.70	2.68	2.47	0.86	1.70	2.27	1.85	1.96	0.09	0.05	0.86	0.10
Na <sub>2</sub> O	0.87	3.73	2.09	7.18	1.77	2.52	2.32	2.09	0.11	<0.05	<0.10	0.10
K <sub>2</sub> O	2.59	7.73	5.85	0.39	6.12	3.88	6.13	4.84	0.87	<0.05	8.21	7.84
P <sub>2</sub> O <sub>5</sub>	0.05	0.06	0.12	0.08	0.15	0.19	0.20	0.15	0.11	4.85	0.12	0.23
Cr <sub>2</sub> O <sub>3</sub>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UO <sub>2</sub>	0.02	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.50	11.39	0.01
BaO	0.03	0.05	0.04	0.01	0.08	0.05	0.16	0.21	0.02	0.02	0.23	0.06
ThO <sub>2</sub>	0.06	0.04	0.06	0.05	0.04	0.00	0.01	0.01	0.00	0.02	3.22	0.01
ZrO <sub>2</sub>	0.07	0.11	0.10	0.06	0.13	0.13	0.08	0.07	0.00	0.00	0.00	0.04
Rb <sub>2</sub> O	0.01	0.04	0.05	0.00	0.05	0.03	0.04	0.02	0.00	0.00	0.00	0.02
Y <sub>2</sub> O <sub>3</sub>	0.07	0.04	0.04	0.03	0.03	0.01	0.01	0.01	0.02	0.05	0.51	0.03
La <sub>2</sub> O <sub>3</sub>	0.03	0.09	0.08	0.01	0.08	0.01	0.01	0.02	0.00	3.14	0.07	0.10
Ce <sub>2</sub> O <sub>3</sub>	0.06	0.15	0.14	0.04	0.14	0.03	0.03	0.04	0.01	5.41	0.09	0.14
Nd <sub>2</sub> O <sub>3</sub>	0.03	0.06	0.05	0.01	0.06	0.01	0.01	0.02	0.00	1.29	0.13	0.05
LOI	1.43	0.59	1.25	0.51	1.56	1.03	0.98	0.96	0.40	0.32	2.65	1.59
S	0.01	0.07	0.00	0.01	0.01	0.00	0.01	0.09	0.01	0.04	0.23	0.14
Total	99.53	99.77	99.66	99.41	99.73	99.92	99.67	100.07	99.94	99.56	98.17	100.07
Nb	111	103	90	111	86	50	36	29	23	<15	<15	40
*Ta	6.8	6.3	5.0	6.9	4.7	3.9	2.4	2.2	4.9	n.d.	n.d.	3.3
Zr	545	800	722	468	998	935	591	515	181	<10<	<10<	325
Y	519	323	277	245	250	107	74	63	19	360	4030	261
Sr	238	98	75	35	84	66	96	117	9	<9<	<9<	59
U	216	86	167	159	40	11	9	6	15	4410	100400	129
Rb	103	336	414	25	437	271	355	191	31	<10	<10	169
Th	515	385	501	476	375	34	45	47	17	210	28300	52
Pb	132	85	88	44	52	27	29	43	10	190	7850	14
Ga	23	28	25	22	26	25	23	21	11	<10<	<10	22
Zn	30	70	64	14	72	103	74	79	9	<10<	15	19
Cu	12	3	7	7	4	7	9	16	16	<10<	<11<	111
Ni	14	14	13	6	13	8	6	6	7	<10<	<11<	18
Co	90	37	64	110	57	91	81	94	223	<20<	90	73
Cr	<2<	<2<	<2<	<2<	<2<	4	7	3	6	<10<	<10<	<2<
V	24	24	23	8	33	26	25	14	63	10<<	407	70
Ce	552	1252	1186	342	1190	237	235	322	<3<	46200	780	1180
Nd	262	499	453	89	496	125	100	139	<4<	11100	1100	455
Ba	310	439	366	45	682	442	1390	1919	158	200	2020	575
La	280	731	681	71	674	104	109	152	<4<	26800	630	883
Hf	4	14	10	6	15	11	9	8	8	n.d.	n.d.	6
Sc	8	<2<	4	8	7	17	3	5	<2<	n.d.	n.d.	<2<
As	5	7	9	8	7	9	8	9	6	<10<	340	5
*Mo	1.2	0.8	8.8	4.8	1.5	2.1	7.2	1.5	4.0	**<10<	**480	160.0
**Cd	<10<	<10<	17	<10<	17	<10<	<10<	<10<	<10<	238	<10<	<10<
*La	744.0	571.7	638.2	411.8	474.2	108.8	87.0	155.3	260.5	n.d.	n.d.	627.5
*Ce	1240.9	910.1	1134.1	650.7	857.0	170.2	145.2	258.4	362.5	n.d.	n.d.	1009.9
*Pr	126.7	97.4	110.6	62.2	91.2	25.9	16.0	28.3	33.1	n.d.	n.d.	97.0
*Nd	464.8	343.1	371.6	215.4	334.9	112.5	63.7	117.3	121.9	n.d.	n.d.	348.2
*Sm	80.1	61.1	56.3	22.1	57.7	26.2	14.0	22.4	16.6	n.d.	n.d.	52.6
*Eu	2.1	3.1	2.8	1.6	2.9	2.3	1.9	2.2	1.9	n.d.	n.d.	5.8
*Gd	85.3	52.9	50.3	30.1	47.3	23.7	13.0	16.2	10.1	n.d.	n.d.	46.0
*Tb	13.4	7.5	7.9	4.5	8.0	4.1	2.1	2.7	1.0	n.d.	n.d.	6.7
*Dy	88.1	45.2	45.1	31.5	44.1	21.1	14.2	11.3	5.5	n.d.	n.d.	41.1
*Ho	18.8	10.4	9.7	7.1	8.2	4.5	2.3	2.2	0.7	n.d.	n.d.	9.2
*Er	51.4	26.2	25.0	23.4	23.7	9.7	5.6	4.6	2.1	n.d.	n.d.	26.2
Tm	6.9	3.8	3.4	3.0	3.0	1.4	0.8	0.6	0.3	n.d.	n.d.	3.6
Yb	46.6	25.0	27.2	25.2	21.1	8.5	6.0	3.6	2.4	n.d.	n.d.	23.6
Lu	7.3	3.6	3.4	2.7	3.2	1.4	0.9	0.6	0.2	n.d.	n.d.	3.7
Fe <sup>2+</sup> /Fe <sup>3+</sup>	0.46	0.24	2.23	2.34	1.85	0.68	2.47	1.89	0.03	n.d.	n.d.	0.47
Th/U	0.42	0.22	0.33	0.33	0.11	0.32	0.20	0.13	0.88	21.00	3.55	2.48

Major elements chemistry determined by XRF on melted discs (LiB<sub>2</sub>O<sub>4</sub>), ICP-MS for REE and some traces on the same discs and trace elements by XRF on pressed pellets. Fe<sup>2+</sup> by spectrophotometry. \*ICPMS data, \*\*XRF UNIQUANT

## APPENDIX III

## Whole-rock chemical analyses

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	Amphibolite AMP-HI in Box Bore	Amphibolite 11 (Yerila)	Microgabbro Hidden Valley (JB05-10)	Amphibolite in Yerila (Amph9)	Leucogranite Hidden Valley	British Empire Granite	Hot Spring Gneiss a polycrase	Box Bore Gneiss (BB1)	Mt Neil granite fSED-RIVER	Mt Neil chlorite alteration – sulf.	Mt Neil granite Nooldoonool.
	PW26	PW25	PW19	PW20	PW21	PW31	PW29	PW37	PW22	PW38	PW30
SiO <sub>2</sub>	48.51	50.08	49.96	50.58	76.50	75.51	77.83	74.71	72.99	71.93	68.96
TiO <sub>2</sub>	2.41	1.73	1.54	1.63	0.02	0.06	0.24	0.33	0.33	0.39	0.42
Al <sub>2</sub> O <sub>3</sub>	13.82	14.04	14.72	14.50	13.69	13.75	10.98	11.77	13.00	13.66	14.37
Fe <sub>2</sub> O <sub>3</sub>	7.06	5.82	5.49	3.41	0.18	0.27	1.57	0.95	2.65	1.45	3.15
FeO	8.80	6.30	7.10	8.20	n.d.	0.30	1.20	1.60	0.80	1.60	1.20
MnO	0.12	0.22	0.20	0.17	0.02	0.02	0.03	0.03	0.01	0.02	0.03
MgO	5.16	6.71	6.02	7.24	0.11	0.14	0.28	0.34	0.13	0.48	0.19
CaO	4.31	10.61	9.80	11.10	0.32	0.54	1.26	1.07	0.83	0.43	1.73
Na <sub>2</sub> O	1.73	2.43	2.68	0.97	5.57	3.33	2.91	2.36	3.21	2.68	3.70
K <sub>2</sub> O	4.73	0.37	1.21	0.12	3.51	4.64	2.84	5.50	5.49	5.52	5.66
P <sub>2</sub> O <sub>5</sub>	0.48	0.15	0.21	0.14	0.04	0.09	0.02	0.05	0.04	0.08	0.07
Cr <sub>2</sub> O <sub>3</sub>	0.01	0.06	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UO <sub>2</sub>	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
BaO	0.15	0.01	0.02	0.03	0.01	0.02	0.03	0.03	0.04	0.06	0.09
ThO <sub>2</sub>	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.01	0.01
ZrO <sub>2</sub>	0.04	0.01	0.02	0.01	0.00	0.01	0.05	0.04	0.06	0.05	0.10
Rb <sub>2</sub> O	0.07	0.00	0.00	0.00	0.03	0.04	0.02	0.06	0.04	0.03	0.03
Y <sub>2</sub> O <sub>3</sub>	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.02
La <sub>2</sub> O <sub>3</sub>	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.01	0.02
Ce <sub>2</sub> O <sub>3</sub>	0.01	0.00	0.01	0.00	0.00	0.00	0.03	0.04	0.04	0.03	0.04
Nd <sub>2</sub> O <sub>3</sub>	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.01	0.02
LOI	2.22	1.22	0.71	1.36	0.08	0.78	0.56	0.83	0.59	1.20	0.38
S	0.04	0.00	0.14	0.02	0.00	0.03	0.00	0.01	0.01	0.01	0.01
Total	99.69	99.76	99.88	99.55	100.08	99.53	99.93	99.81	100.33	99.66	100.20
Nb	36	10	14	9	8	21	63	36	49	36	58
*Ta	1.6	1.0	1.6	1.1	2.8	4.7	6.5	3.3	3.5	3.7	5.0
Zr	266	107	169	94	14	43	368	313	477	383	736
Y	96	30	48	26	<1<	14	76	125	156	71	166
Sr	87	160	109	158	6	54	58	31	38	42	79
U	10	2	4	4	11	17	130	50	19	36	19
Rb	667	18	42	9	253	330	188	515	330	320	259
Th	15	3	5	4	6	9	241	177	62	61	70
Pb	7	4	8	6	5	22	41	54	15	18	18
Ga	30	20	22	20	13	19	20	19	24	24	27
Zn	48	83	108	66	8	13	29	34	35	24	26
Cu	13	149	46	199	<2<	5	6	7	9	117	4
Ni	28	100	46	118	<2<	2	4	8	7	7	7
Co	59	79	66	79	68	128	116	97	55	82	68
Cr	78	260	210	298	3	3	<2<	3	<2<	12	<2<
V	330	355	289	361	6	4	<2<	14	5	24	2
Ce	70	21	59	23	5	13	256	384	361	250	366
Nd	32	11	29	14	<4<	5	105	142	163	100	158
Ba	1379	54	212	247	88	180	227	271	399	566	838
La	47	11	25	8	<4<	8	180	194	159	122	168
Hf	8	<1<	4	4	7	8	6	7	7	7	10
Sc	44	49	32	51	<2<	2	3	3	3	4	3
As	7	4	3	4	5	5	8	9	9	9	<3<
*Mo	0.5	0.4	1.0	<0.645	<1.955	2.5	0.8	0.8	2.5	1.8	2.0
**Cd	<10<	<10<	<10<	<10<	<10<	<10<	10	<10<	<10<	14	<10<
*La	39.5	10.7	30.4	6.8	3.1	6.0	235.7	191.8	113.3	115.1	170.2
*Ce	70.2	20.3	56.4	15.9	5.1	14.6	355.2	367.0	207.0	211.0	312.6
*Pr	8.5	2.8	6.7	2.4	0.3	1.5	38.7	35.7	25.3	21.0	34.6
*Nd	38.6	13.1	29.9	11.1	1.5	5.9	119.8	123.4	107.9	76.6	126.1
*Sm	10.4	3.7	8.6	4.0	1.8	1.8	22.5	20.7	21.6	16.3	27.4
*Eu	1.2	1.1	1.7	1.4	<0.19	0.4	0.9	0.8	2.2	1.0	3.5
*Gd	10.1	3.8	8.4	3.6	<1.22	2.7	14.9	18.2	19.6	12.0	18.7
*Tb	2.3	1.0	1.4	0.8	<0.16	0.6	2.1	2.2	2.9	1.9	4.3
*Dy	14.7	5.4	8.8	4.3	0.9	1.8	14.6	14.7	21.7	13.2	25.7
*Ho	3.4	0.9	1.7	0.8	0.1	0.4	3.2	2.9	4.3	2.3	5.1
*Er	9.8	2.6	6.2	2.7	0.0	1.9	8.9	7.2	11.6	7.0	14.2
Tm	1.6	0.3	0.8	0.4	0.2	0.1	1.5	1.5	1.4	1.0	1.8
Yb	10.8	3.3	6.1	2.6	1.4	4.5	8.6	11.3	13.6	5.9	15.3
Lu	1.7	0.4	0.8	0.3	0.2	0.5	1.2	1.5	1.5	0.9	2.1
Fe <sup>2+</sup> /Fe <sup>3+</sup>	1.39	1.20	1.44	2.67	n.d.	1.23	0.85	1.87	0.34	1.23	0.42
Th/U	0.67	0.67	0.80	1.00	1.83	1.89	0.54	0.28	0.31	0.59	0.27

## APPENDIX III

## Rock chemical analyses - Yerila

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Fraction	Whole-rock			K-feldspar concentrate			Quartz-Oligoclase ± (Kfd)						Qz-Pl-Kfd
Magnetic [Ampere]				1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+
Density				<2.62	<2.62	<2.62	2.62-2.96	2.62-2.96	2.62-2.96	2.62-2.96	2.62-2.75	2.62-2.75	<2.75
Size [mm]	bulk	2-5	1-2	2-5	½ - 1	¼ - ½	2-5	2.5	1-2	½ - 1	½ - 1	½ - 1	½ - 1
		H <sub>2</sub> O wash	H <sub>2</sub> O wash	H <sub>2</sub> O wash	HCl 10% 10 min	HCl 10% 10 min	raw	HCl 10% 10 min	Water-abraded	HCl 10% 10 min	raw	HCl 10% 10 min	HCl 10% 10 min
SiO <sub>2</sub>	66.62	65.66	64.71	65.45	67.96	69.29	84.66	87.54	89.74	91.44	90.44	90.98	87.06
TiO <sub>2</sub>	0.60	0.55	0.52	0.07	0.03	0.02	0.08	0.09	0.05	0.06	0.05	0.04	0.02
Al <sub>2</sub> O <sub>3</sub>	13.45	13.58	14.95	17.30	17.16	15.98	7.47	6.34	5.02	4.57	3.96	3.73	6.02
Fe <sub>2</sub> O <sub>3</sub>	1.94	6.06	5.51	0.83	0.11	0.09	0.97	0.68	0.70	0.37	0.60	0.28	0.14
FeO	3.90	-	-	-	-	-	-	-	-	-	-	-	-
MnO	0.07	0.08	0.07	0.02	0.00	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.01
MgO	0.72	0.79	0.75	0.23	0.01	0.11	0.15	0.08	0.09	0.06	0.07	0.01	0.01
CaO	2.47	2.49	2.58	0.98	0.46	0.40	1.52	1.29	1.06	0.69	0.77	0.57	0.47
Na <sub>2</sub> O	2.09	2.18	2.56	2.03	1.78	1.59	1.96	1.69	1.34	1.03	0.89	0.86	0.87
K <sub>2</sub> O	5.85	5.90	6.25	11.30	12.09	11.48	1.54	1.23	0.93	1.37	1.25	1.23	3.43
P <sub>2</sub> O <sub>5</sub>	0.12	0.11	0.10	0.03	0.01	0.01	0.03	0.01	0.02	0.01	0.03	0.00	0.01
BaO	0.04				0.09					0.01			
ThO <sub>2</sub>	0.06				0.00					0.00			
ZrO <sub>2</sub>	0.10				0.02					0.02			
Rb <sub>2</sub> O	0.05				0.06					0.01			
Y <sub>2</sub> O <sub>3</sub>	0.04				0.00					0.00			
La <sub>2</sub> O <sub>3</sub>	0.08				0.00					0.00			
Ce <sub>2</sub> O <sub>3</sub>	0.14				0.00					0.00			
Nd <sub>2</sub> O <sub>3</sub>	0.05				0.00					0.00			
LOI	1.25	0.84	0.75	0.53	0.22	0.29	0.37	0.29	0.29	0.07	0.31	0.22	0.25
S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	99.77	98.26	98.75	98.77	100.09	99.27	98.76	99.25	99.25	99.98	98.38	97.93	98.28
Nb	90	89	85	10	3	5	17	19	13	15	12	11	8
*Ta	5.0	-	-	-	2.2	-	-	-	-	6.6	-	-	-
Zr	722	674	579	132	128	122	216	214	184	154	193	178	140
Y	277	270	253	33	8	11	58	51	42	29	47	22	14
Sr	75	71	78	70	66	58	52	42	36	29	28	22	27
U	167	160	137	32	10	6	32	18	24	7	36	8	7
Rb	414	409	413	507	582	486	93	73	59	61	68	61	151
Th	501	503	433	103	20	15	132	78	105	33	118	33	20
Pb	88	71	74	92	57	52	26	17	16	19	23	11	16
Ga	25	24	25	20	20	17	14	11	9	8	8	5	9
Zn	64	55	49	16	13	4	8	3	5	9	10	0	0
Cu	7	4	4	3	<2<	0	3	0	0	9	4	1	5
Ni	13	8	9	3	4	1	1	3	1	<2<	8	0	3
Co	64				71	-				269			
Cr	<2<	15	15	9	3	0	4	8	4	5	10	3	14
V	23	25	23	6	2	4	7	5	4	3	5	3	3
Ce	1186	951	787	116	29	11	180	47	129	<3<	185	8	8
Nd	453	366	304	45	6	1	68	22	49	<4<	71	4	3
Ba	366	426	459	818	843	818	124	100	73	125	95	94	255
La	681	491	412	69	17	5	97	24	68	<4<	101	1	2
Hf	10				6	-				11			
Sc	4	12	11	2	4	0	2	1	1	<2<	1	0	0
As	9	6	6	4	<3<	4	8	13	12	<3<	15	15	11
*Mo	8.8	12	26	9	2.5	3	6	4	5	2.6	8	4	3
*La	638.2				9.8					6.2			
*Ce	1134				13.1					9.8			
*Pr	110.6				1.9					1.7			
*Nd	371.6				3.3					5.1			
*Sm	56.3				1.9					1.4			
*Eu	2.8				0.4					0.3			
*Gd	50.3				0.8					2.8			
*Tb	7.9				0.2					0.5			
*Dy	45.1				2.2					3.1			
*Ho	9.7				0.4					1.0			
*Er	25.0				0.9					3.7			
Tm	3.4				<0.15					0.4			
Yb	27.2				1.2					2.5			
Lu	3.4				0.2					0.4			
Fe <sup>2+</sup> /Fe <sup>3+</sup>	2.23				n.d.					n.d.			

## APPENDIX III

## Rock chemical analyses - Yerila

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Fraction	Qz-Pl-Kfd				Qz-Pl-Kf + HM's	Qz-Pl-Kf + HM's	Biot-hast- HM's	Biotite	Biotite +titanite	K- hastingsite
Magnetic [Ampere]	1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+	1.0 A+	0.2-0.3	0.2-0.3	0.3-0.6	0.27-0.34
Density	<2.96	<2.96	<2.96	<2.96	all	all	all	<3.32	<3.32	>3.32
Size [mm]	¼ - ½	¼ - ½	⅛ - ¼	⅛ - ¼	< ⅛	< ⅛	⅛ - ¼	¼ - ½	¼ - ½	¼ - ½
	raw	HCl 10% 10 min	raw	HCl 10% 10 min	raw	HCl 10% 10 min	raw			
SiO <sub>2</sub>	85.31	83.59	80.93	81.80	77.88	80.35	36.59	36.79	42.45	38.34
TiO <sub>2</sub>	0.05	0.04	0.08	0.04	0.26	0.15	1.50	1.71	1.53	1.25
Al <sub>2</sub> O <sub>3</sub>	7.01	7.44	9.27	9.16	10.49	10.31	14.22	14.48	14.76	12.64
Fe <sub>2</sub> O <sub>3</sub>	0.43	0.09	0.54	0.07	0.73	0.06	30.56	30.31	22.47	10.07
FeO										18.00
MnO	0.01	0.01	0.01	0.01	0.02	0.01	0.34	0.31	0.25	0.43
MgO	0.10	0.02	0.11	0.03	0.17	0.03	3.46	3.70	2.82	2.36
CaO	0.82	0.72	1.35	1.03	2.47	1.46	2.91	1.12	2.78	10.55
Na <sub>2</sub> O	1.02	1.22	1.75	1.70	2.18	2.16	0.61	0.47	1.42	1.12
K <sub>2</sub> O	3.89	3.84	4.01	4.05	3.88	3.88	6.35	7.52	5.85	2.28
P <sub>2</sub> O <sub>5</sub>	0.03	0.00	0.07	0.00	0.27	0.00	0.04	0.07	0.12	0.07
BaO										
ThO <sub>2</sub>										
ZrO <sub>2</sub>										
Rb <sub>2</sub> O										
Y <sub>2</sub> O <sub>3</sub>										
La <sub>2</sub> O <sub>3</sub>										
Ce <sub>2</sub> O <sub>3</sub>										
Nd <sub>2</sub> O <sub>3</sub>										
LOI	0.39	0.27	0.46	0.26	0.71	0.30	1.07	1.10	1.31	1.97
S	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.04	0.03	0.00
Total	99.06	97.25	98.58	98.16	99.04	98.71	97.69	97.61	95.79	99.07
Nb	12	10	18	12	50	31	183	200	203	
*Ta										
Zr	155	137	285	134	747	657	425	776	1000	
Y	45	19	75	25	214	70	283	185	463	
Sr	36	35	53	45	62	51	17	17	64	
U	30	6	51	6	97	10	208	203	327	
Rb	169	165	171	168	165	159	1232	1537	1045	
Th	90	16	117	14	228	15	464	486	1097	
Pb	36	21	42	21	49	23	72	61	98	
Ga	9	9	12	12	13	13	67	67	54	
Zn	19	0	14	0	17	0	322	338	233	
Cu	20	3	16	6	20	0	47	37	30	
Ni	26	1	78	1	123	3	375	232	141	
Co										
Cr	12	3	12	4	11	11	645	412	129	
V	4	4	4	3	5	3	121	101	87	
Ce	168	10	235	10	420	11	827	642	2739	
Nd	60	4	88	1	168	5	325	258	1039	
Ba	283	298	308	319	307	311	264	311	294	
La	89	2	121	3	214	2	465	356	1468	
Hf										
Sc	0	0	1	1	1	1	55	29	34	
As	9	7	11	9	11	7	1	2	7	
*Mo	8	3	8	3	11	2	18	16	14	

Chemical composition of the Yerila Gneiss S.S. and mineral separates by crushing/heavy liquids

Major elements chemistry determined by XRF on melted discs (LiB<sub>2</sub>O<sub>4</sub>), ICP-MS for REE and some traces on the same discs and trace elements by XRF on pressed pellets. Fe<sup>2+</sup> by spectrophotometry

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Allanite-(Ce) 1/5

	Allanite 1			Allanite 2			Allanite 3			Allanite 4			Allanite 5			Allanite 6		
	ala1_1	ala1_2	ala1_3	al2_alt	al2_rim	al2_cor	al3_1	al3_2	al3_4	al4_1	al4_3	al4_9	al5_1	al5_2	al5_3	al6_1	al6_2	al6_3
F	<0.50	<0.50	<0.50	0.63	<0.50	<0.50	0.63	<0.50	0.66	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MgO	0.19	0.24	<0.15	0.33	0.31	0.39	0.54	0.67	0.47	0.42	0.60	0.54	<0.15	0.24	<0.15	0.23	0.18	0.26
Al <sub>2</sub> O <sub>3</sub>	16.86	15.03	15.77	15.16	15.25	13.68	13.94	12.58	12.62	14.61	13.96	14.21	15.63	15.98	16.45	15.59	16.16	15.75
SiO <sub>2</sub>	34.78	33.25	33.58	41.85	42.78	32.98	33.44	32.66	32.60	32.98	33.46	33.32	33.95	34.03	34.63	34.09	34.33	34.36
K <sub>2</sub> O	<0.10	<0.10	<0.10	0.25	0.21	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
CaO	12.62	11.06	11.42	6.60	6.42	10.19	10.33	9.32	7.51	9.69	9.73	10.19	11.42	11.27	11.34	11.53	11.85	11.63
TiO <sub>2</sub>	0.87	1.38	0.64	2.41	2.27	1.40	1.48	1.64	1.60	1.40	1.28	1.58	1.49	1.17	0.94	1.05	1.08	0.99
MnO	0.37	0.36	0.41	<0.28	<0.28	0.42	<0.28	0.37	<0.28	0.35	0.35	0.33	0.37	0.39	<0.28	0.34	0.29	<0.28
FeO	13.78	15.38	15.00	3.74	3.81	16.19	15.77	16.70	12.28	15.66	16.34	15.73	15.36	15.18	14.96	15.42	14.94	14.99
Y <sub>2</sub> O <sub>3</sub>	0.47	0.34	0.36	0.36	0.21	<0.18	0.25	<0.18	0.27	<0.18	0.32	0.49	0.45	0.38	0.31	0.40	0.28	0.29
La <sub>2</sub> O <sub>3</sub>	5.69	6.42	5.74	3.83	4.20	7.49	6.86	7.33	6.18	5.95	7.40	6.35	5.86	5.80	5.74	6.67	6.69	6.20
Ce <sub>2</sub> O <sub>3</sub>	12.09	13.54	14.11	10.29	11.12	14.78	14.34	15.32	14.45	12.81	15.51	14.75	13.83	13.44	12.98	13.18	13.06	13.39
*(Nd-Gd) <sub>2</sub> O <sub>3</sub>	3.20	3.56	4.18	3.23	3.46	3.65	3.74	3.99	4.13	3.43	4.05	4.20	3.98	3.82	3.62	3.26	3.19	3.60
ThO <sub>2</sub>	0.94	1.15	1.07	1.75	1.75	1.00	1.09	1.28	1.06	1.01	1.02	0.97	1.06	1.07	0.95	1.03	1.01	1.15
UO <sub>2</sub>	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Total	101.86	101.71	102.28	90.44	91.79	102.16	102.40	101.87	93.84	98.32	104.02	102.66	103.40	102.78	101.93	102.79	103.07	102.61
<i>*calculated</i>																		
Normalised on the basis of eight cations																		
F	0.000	0.000	0.000	0.203	0.000	0.000	0.188	0.000	0.217	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mg	0.025	0.033	0.000	0.050	0.045	0.055	0.076	0.096	0.073	0.060	0.083	0.075	0.000	0.032	0.000	0.032	0.024	0.036
Al	1.789	1.645	1.714	1.802	1.787	1.518	1.541	1.416	1.548	1.644	1.528	1.560	1.679	1.715	1.768	1.674	1.723	1.693
Si	3.131	3.086	3.097	4.222	4.255	3.104	3.136	3.119	3.392	3.149	3.108	3.104	3.094	3.099	3.158	3.106	3.105	3.134
K	0.000	0.000	0.000	0.033	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ca	1.217	1.100	1.129	0.714	0.684	1.028	1.038	0.954	0.838	0.992	0.968	1.017	1.115	1.100	1.109	1.125	1.149	1.136
Ti	0.059	0.096	0.044	0.183	0.170	0.099	0.104	0.118	0.126	0.101	0.089	0.111	0.102	0.080	0.065	0.072	0.073	0.068
Mn	0.028	0.028	0.032	0.000	0.000	0.033	0.000	0.030	0.000	0.029	0.027	0.026	0.029	0.030	0.000	0.026	0.023	0.000
Fe	1.037	1.194	1.157	0.315	0.317	1.274	1.237	1.334	1.068	1.250	1.269	1.225	1.171	1.156	1.141	1.175	1.130	1.143
Y	0.023	0.017	0.018	0.019	0.011	0.000	0.012	0.000	0.015	0.000	0.016	0.024	0.022	0.018	0.015	0.019	0.014	0.014
La	0.189	0.220	0.195	0.143	0.154	0.260	0.237	0.258	0.237	0.209	0.253	0.218	0.197	0.195	0.193	0.224	0.223	0.209
Ce	0.380	0.439	0.454	0.363	0.386	0.486	0.469	0.511	0.525	0.427	0.503	0.480	0.440	0.427	0.413	0.419	0.413	0.426
Nd-Gd	0.103	0.118	0.138	0.116	0.123	0.123	0.125	0.136	0.154	0.117	0.134	0.140	0.130	0.124	0.118	0.106	0.103	0.117
Th	0.019	0.024	0.022	0.040	0.040	0.021	0.023	0.028	0.025	0.022	0.022	0.021	0.022	0.022	0.020	0.021	0.021	0.024
U	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
[REE,Th,U,Y]	0.714	0.818	0.827	0.681	0.714	0.889	0.868	0.933	0.956	0.775	0.928	0.883	0.810	0.787	0.759	0.790	0.773	0.790
[Ca + REE]	1.931	1.917	1.956	1.395	1.398	1.917	1.906	1.887	1.793	1.767	1.896	1.900	1.925	1.887	1.868	1.915	1.922	1.926
Fe <sup>3+</sup> (calc)	0.211	0.355	0.286	0.198	0.213	0.482	0.459	0.584	0.452	0.356	0.472	0.440	0.321	0.285	0.232	0.326	0.277	0.307
Fe <sup>2+</sup> (calc)	0.826	0.839	0.871	0.118	0.000	0.792	0.778	0.750	0.616	0.894	0.797	0.786	0.850	0.871	0.910	0.849	0.853	0.836
[Ti+Mg+Mn]	0.112	0.158	0.077	0.233	0.215	0.187	0.180	0.244	0.199	0.189	0.199	0.211	0.131	0.142	0.065	0.130	0.120	0.104
Si/Al	1.750	1.877	1.806	2.343	2.381	2.045	2.035	2.203	2.191	1.916	2.034	1.989	1.843	1.807	1.786	1.856	1.802	1.851
Fe <sup>3+</sup> /Fe (tot.)	0.203	0.298	0.247	0.627	1.000	0.379	0.371	0.438	0.423	0.285	0.372	0.359	0.274	0.247	0.203	0.278	0.245	0.268

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Allanite-(Ce)

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	Allanite 7					Allanite 8					Allanite 9				Allanite 10			
	al7_1	al7_2	al7_7	al7_8	al7_9	al8_1	al8_2	al8_3	al8_5	al8_8	al8_9	al9_3	al9_4	al9_6	al10_1	al10_2	al10_3	al10_7
F	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MgO	0.32	0.23	0.28	0.29	0.24	0.24	0.32	0.29	0.30	0.40	0.24	0.26	0.25	0.22	0.56	0.47	0.55	0.58
Al <sub>2</sub> O <sub>3</sub>	14.37	17.13	15.48	15.09	15.25	15.24	14.19	15.25	15.17	14.52	15.24	15.80	16.11	15.39	14.21	14.11	13.85	14.06
SiO <sub>2</sub>	33.72	34.92	34.14	33.86	32.91	33.18	33.30	33.53	33.94	33.15	32.53	33.71	33.71	33.97	33.78	33.52	33.60	34.57
K <sub>2</sub> O	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
CaO	9.72	12.38	10.77	10.55	10.74	10.62	10.58	11.40	11.75	10.69	10.96	10.95	11.44	10.75	10.71	10.68	10.88	10.64
TiO <sub>2</sub>	1.36	0.85	1.14	1.43	1.34	1.31	1.33	1.06	1.26	1.54	1.06	0.82	0.81	0.93	1.71	1.41	1.48	1.91
MnO	<0.28	<0.28	<0.28	0.34	<0.28	<0.28	0.44	<0.28	<0.28	0.35	0.35	0.33	<0.28	0.34	<0.28	0.43	0.33	0.34
FeO	14.90	14.35	15.42	15.37	15.46	15.42	15.81	15.49	15.37	15.79	15.64	15.57	15.57	14.37	16.75	16.13	17.06	16.82
Y <sub>2</sub> O <sub>3</sub>	<0.18	0.29	0.29	0.26	0.30	0.41	0.40	0.39	0.34	0.43	0.30	0.20	<0.18	0.31	0.38	0.39	0.24	0.39
La <sub>2</sub> O <sub>3</sub>	7.62	6.30	7.00	7.25	7.05	7.16	6.16	6.60	5.68	6.78	6.01	6.49	6.16	6.37	6.33	5.85	6.64	6.71
Ce <sub>2</sub> O <sub>3</sub>	14.75	12.63	14.66	14.34	14.05	14.23	13.94	13.81	13.78	14.10	14.06	14.51	14.02	14.35	14.66	14.93	15.50	15.04
*(Nd-Gd) <sub>2</sub> O <sub>3</sub>	3.57	3.16	3.83	3.55	3.50	3.53	3.89	3.61	4.05	3.66	4.02	4.01	3.93	3.99	4.17	4.54	4.43	4.16
ThO <sub>2</sub>	1.22	0.74	0.84	1.02	0.94	0.89	1.12	1.06	1.09	1.06	1.10	1.04	1.05	1.24	1.05	0.97	1.03	1.20
UO <sub>2</sub>	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Total	101.54	102.98	103.85	103.33	101.78	102.24	101.47	102.47	102.72	102.45	101.50	103.71	103.03	102.22	104.29	103.44	105.59	106.43
<i>*calculated</i>																		
Normalised on the basis of eight cations																		
F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mg	0.045	0.031	0.038	0.040	0.034	0.033	0.044	0.039	0.041	0.056	0.034	0.036	0.034	0.030	0.076	0.064	0.074	0.078
Al	1.603	1.804	1.668	1.637	1.676	1.670	1.567	1.655	1.636	1.589	1.676	1.700	1.731	1.684	1.531	1.536	1.486	1.491
Si	3.191	3.120	3.122	3.117	3.068	3.085	3.119	3.088	3.106	3.078	3.036	3.078	3.073	3.153	3.088	3.096	3.059	3.112
K	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ca	0.986	1.185	1.055	1.041	1.073	1.058	1.062	1.125	1.152	1.064	1.096	1.071	1.117	1.069	1.049	1.057	1.062	1.026
Ti	0.097	0.057	0.078	0.099	0.094	0.092	0.093	0.073	0.087	0.107	0.074	0.057	0.055	0.065	0.117	0.098	0.101	0.129
Mn	0.000	0.000	0.000	0.027	0.000	0.000	0.035	0.000	0.000	0.027	0.027	0.026	0.000	0.026	0.000	0.033	0.026	0.026
Fe	1.179	1.072	1.179	1.183	1.205	1.199	1.238	1.193	1.176	1.226	1.220	1.189	1.187	1.115	1.281	1.246	1.299	1.266
Y	0.000	0.014	0.014	0.013	0.015	0.020	0.020	0.019	0.017	0.021	0.015	0.010	0.000	0.015	0.019	0.019	0.011	0.019
La	0.266	0.208	0.236	0.246	0.242	0.246	0.213	0.224	0.192	0.232	0.207	0.219	0.207	0.218	0.213	0.199	0.223	0.223
Ce	0.487	0.394	0.468	0.461	0.457	0.462	0.456	0.444	0.440	0.457	0.458	0.463	0.446	0.465	0.468	0.481	0.493	0.472
Nd-Gd	0.121	0.101	0.125	0.117	0.117	0.117	0.130	0.119	0.132	0.121	0.134	0.131	0.128	0.132	0.136	0.150	0.144	0.134
Th	0.026	0.015	0.018	0.021	0.020	0.019	0.024	0.022	0.023	0.022	0.023	0.022	0.022	0.026	0.022	0.020	0.021	0.025
U	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
[REE,Th,U,Y]	0.900	0.731	0.861	0.857	0.851	0.864	0.842	0.828	0.804	0.854	0.837	0.844	0.803	0.857	0.858	0.870	0.892	0.872
[Ca + REE]	1.886	1.916	1.916	1.898	1.923	1.922	1.904	1.953	1.955	1.917	1.933	1.914	1.920	1.926	1.907	1.927	1.954	1.898
Fe <sup>3+</sup> (calc)	0.397	0.196	0.332	0.363	0.324	0.330	0.433	0.345	0.364	0.411	0.324	0.300	0.269	0.316	0.469	0.464	0.514	0.509
Fe <sup>2+</sup> (calc)	0.782	0.876	0.847	0.820	0.881	0.869	0.805	0.847	0.812	0.815	0.896	0.889	0.918	0.799	0.812	0.782	0.785	0.757
[Ti+Mg+Mn]	0.142	0.088	0.116	0.165	0.128	0.125	0.173	0.112	0.127	0.190	0.135	0.118	0.089	0.122	0.193	0.196	0.201	0.233
Si/Al	1.991	1.730	1.871	1.904	1.831	1.847	1.991	1.866	1.898	1.937	1.811	1.811	1.776	1.873	2.016	2.015	2.059	2.087
Fe <sup>3+</sup> /Fe (tot.)	0.337	0.183	0.282	0.307	0.269	0.275	0.350	0.289	0.310	0.335	0.265	0.252	0.227	0.283	0.366	0.372	0.396	0.402

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Allanite-(Ce)

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	All. 10		All. 11		Allanite 12		Allanite 13			Allanite 14				Allanite 15			
	al10_12	al11_2	al12_1	al12_2	al13_1	al13_2	al13_3	al14_1	al14_2	al14_3	al14_4	al14_5	al14_6	al14_8	al15_1	al15_2	
F	<0.50	<0.50	<0.50	<0.50	0.57	0.61	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.60	<0.50	<0.50
MgO	0.67	0.35	0.88	0.79	0.69	0.70	0.71	0.37	0.34	0.41	0.33	0.37	0.42	0.48	0.31	0.26	
Al <sub>2</sub> O <sub>3</sub>	13.29	14.17	13.47	13.39	13.41	13.74	14.07	14.23	14.36	14.61	15.04	15.09	14.32	14.55	14.63	15.29	
SiO <sub>2</sub>	33.44	33.95	33.36	33.59	33.61	33.69	33.55	34.17	33.68	34.30	34.44	34.06	33.68	33.47	33.67	33.70	
K <sub>2</sub> O	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
CaO	9.90	10.71	9.50	9.53	10.00	10.15	9.96	10.71	10.73	10.94	11.10	11.24	10.87	10.65	10.92	10.84	
TiO <sub>2</sub>	1.78	1.84	1.87	1.91	1.83	1.67	1.88	1.29	1.46	1.63	1.54	1.20	1.39	1.57	1.13	1.18	
MnO	0.46	0.52	<0.28	<0.28	0.42	0.43	<0.28	<0.28	0.45	<0.28	0.43	0.34	<0.28	<0.28	<0.28	0.36	
FeO	17.11	16.35	16.79	16.60	16.55	17.37	16.75	16.18	16.02	16.34	16.22	16.22	16.63	16.58	15.87	15.33	
Y <sub>2</sub> O <sub>3</sub>	<0.18	0.30	0.28	0.27	0.37	0.33	0.29	0.38	0.32	0.41	0.44	0.38	0.30	0.29	0.32	0.37	
La <sub>2</sub> O <sub>3</sub>	7.55	6.06	8.34	8.50	7.00	6.88	7.55	6.64	6.93	6.22	5.95	6.76	7.41	7.37	6.00	6.49	
Ce <sub>2</sub> O <sub>3</sub>	15.72	14.70	15.36	16.32	15.57	15.63	15.03	14.60	14.33	14.41	14.17	14.35	14.69	14.94	14.27	14.16	
*(Nd-Gd) <sub>2</sub> O <sub>3</sub>	4.09	4.32	3.51	3.91	4.29	4.38	3.74	3.98	3.70	4.10	4.11	3.79	3.64	3.79	4.13	3.83	
ThO <sub>2</sub>	1.35	1.15	1.20	1.29	0.99	1.10	1.02	1.19	1.15	1.15	1.28	1.24	1.15	1.01	1.00	1.16	
UO <sub>2</sub>	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	
Total	105.34	104.41	104.57	106.10	105.30	106.68	104.56	103.73	103.45	104.52	105.04	105.04	104.50	105.30	102.25	102.98	
<i>*calculated</i>																	
Normalised on the basis of eight cations																	
F	0.000	0.000	0.000	0.000	0.168	0.177	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.174	0.000	0.000
Mg	0.092	0.048	0.121	0.108	0.095	0.095	0.097	0.051	0.046	0.056	0.044	0.049	0.057	0.065	0.043	0.035	
Al	1.444	1.527	1.472	1.456	1.458	1.474	1.525	1.544	1.560	1.565	1.597	1.607	1.545	1.569	1.599	1.659	
Si	3.083	3.105	3.093	3.098	3.101	3.065	3.084	3.146	3.105	3.118	3.104	3.078	3.085	3.062	3.122	3.102	
K	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Ca	0.978	1.050	0.944	0.941	0.988	0.989	0.980	1.056	1.060	1.066	1.071	1.088	1.066	1.043	1.085	1.069	
Ti	0.124	0.126	0.131	0.133	0.127	0.115	0.130	0.089	0.101	0.111	0.104	0.082	0.096	0.108	0.079	0.082	
Mn	0.036	0.040	0.000	0.000	0.033	0.033	0.000	0.000	0.035	0.000	0.033	0.026	0.000	0.000	0.000	0.028	
Fe	1.319	1.250	1.302	1.280	1.277	1.322	1.287	1.246	1.235	1.242	1.222	1.226	1.273	1.268	1.231	1.180	
Y	0.000	0.015	0.014	0.013	0.018	0.016	0.014	0.018	0.016	0.020	0.021	0.018	0.015	0.014	0.016	0.018	
La	0.257	0.205	0.285	0.289	0.238	0.231	0.256	0.225	0.236	0.208	0.198	0.225	0.250	0.249	0.205	0.220	
Ce	0.506	0.469	0.497	0.525	0.502	0.496	0.482	0.469	0.461	0.457	0.446	0.453	0.470	0.477	0.462	0.455	
Nd-Gd	0.135	0.141	0.116	0.129	0.141	0.142	0.123	0.131	0.122	0.133	0.132	0.122	0.119	0.124	0.137	0.126	
Th	0.028	0.024	0.025	0.027	0.021	0.023	0.021	0.025	0.024	0.024	0.026	0.026	0.024	0.021	0.021	0.024	
U	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
[REE,Th,U,Y]	0.926	0.853	0.938	0.984	0.920	0.908	0.897	0.869	0.858	0.842	0.823	0.844	0.878	0.884	0.841	0.844	
[Ca + REE]	1.903	1.903	1.882	1.925	1.908	1.897	1.877	1.925	1.918	1.908	1.895	1.932	1.944	1.928	1.926	1.913	
Fe <sup>3+</sup> (calc)	0.556	0.473	0.528	0.544	0.542	0.526	0.475	0.456	0.440	0.435	0.403	0.393	0.455	0.431	0.401	0.341	
Fe <sup>2+</sup> (calc)	0.763	0.777	0.773	0.736	0.735	0.795	0.812	0.789	0.795	0.807	0.820	0.833	0.819	0.837	0.831	0.840	
[Ti+Mg+Mn]	0.251	0.215	0.252	0.241	0.256	0.243	0.227	0.140	0.182	0.167	0.182	0.157	0.153	0.173	0.121	0.145	
Si/Al	2.135	2.033	2.102	2.129	2.127	2.080	2.023	2.038	1.991	1.992	1.943	1.915	1.996	1.952	1.952	1.870	
Fe <sup>3+</sup> /Fe (tot.)	0.421	0.378	0.406	0.425	0.424	0.398	0.369	0.366	0.356	0.350	0.330	0.321	0.357	0.340	0.325	0.289	



## APPENDIX IV

## EMPA analyses from the Yerila gneiss (YER-03)

## Allanite-(Ce)

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	Allanite 15				Allanite 16				Allanite 17				Composite grains			
	al15_4	al15_6	al15_10	al15_al	al15_al2	al16_1	al16_2	al17	al17_1	al17_3	al17_6	al17_8	xx8_1	xx9_1	X rim	
F	<0.50	<0.50	<0.50	1.22	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MgO	0.26	0.25	0.23	0.35	0.41	0.52	0.72	0.25	0.50	0.45	0.31	0.47	0.38	0.42	0.45	
Al <sub>2</sub> O <sub>3</sub>	15.24	15.59	15.81	16.57	16.73	13.48	13.46	13.47	14.59	14.46	14.84	14.80	14.48	14.62	15.32	
SiO <sub>2</sub>	33.85	33.76	33.96	45.54	44.90	33.32	33.50	30.49	33.21	33.40	33.56	33.65	34.71	34.37	36.42	
K <sub>2</sub> O	<0.10	<0.10	<0.10	0.54	0.51	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	0.32	
CaO	10.98	11.25	11.08	5.66	5.54	9.82	9.12	9.72	10.26	10.52	10.81	10.06	11.09	11.06	8.12	
TiO <sub>2</sub>	1.31	0.94	1.02	1.81	1.64	1.71	1.57	0.74	1.16	1.61	1.27	0.94	1.61	1.40	3.07	
MnO	<0.28	0.42	0.43	<0.28	<0.28	0.37	0.37	<0.28	<0.28	<0.28	0.34	0.33	<0.28	<0.28	0.35	
FeO	16.05	15.54	15.64	3.38	3.05	16.66	15.71	14.59	16.50	15.95	15.93	16.22	16.57	16.38	6.06	
Y <sub>2</sub> O <sub>3</sub>	0.42	0.31	0.40	0.56	0.58	0.28	0.25	<0.18	<0.18	0.51	0.39	0.30	0.29	0.33	0.56	
La <sub>2</sub> O <sub>3</sub>	6.04	5.63	6.30	3.54	3.88	7.20	6.67	7.09	7.32	7.80	7.69	7.86	7.56	7.09	3.83	
Ce <sub>2</sub> O <sub>3</sub>	13.97	14.02	14.23	11.19	10.90	15.54	14.94	12.84	14.36	14.53	14.37	15.66	14.67	14.47	10.19	
*(Nd-Gd) <sub>2</sub> O <sub>3</sub>	3.97	4.20	3.96	3.82	3.51	4.17	4.13	2.87	3.52	3.37	3.34	3.90	3.55	3.69	3.18	
ThO <sub>2</sub>	1.09	1.18	1.19	2.37	2.12	0.98	0.94	0.82	0.97	1.11	1.07	0.83	1.10	1.14	3.11	
UO <sub>2</sub>	<0.18	<0.18	<0.18	<0.18	0.21	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	
Total	103.18	103.07	104.26	96.55	93.98	104.05	101.39	92.87	102.54	103.70	103.91	105.02	106.02	104.96	90.98	
<i>*calculated</i>																
Normalised on the basis of eight cations																
F	0.000	0.000	0.000	0.370	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Mg	0.035	0.034	0.031	0.049	0.059	0.072	0.102	0.038	0.070	0.062	0.043	0.064	0.051	0.056	0.068	
Al	1.645	1.680	1.690	1.861	1.902	1.478	1.504	1.624	1.596	1.574	1.605	1.600	1.536	1.562	1.827	
Si	3.099	3.086	3.080	4.340	4.332	3.100	3.178	3.119	3.082	3.086	3.081	3.087	3.124	3.116	3.687	
K	0.000	0.000	0.000	0.066	0.063	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.041	
Ca	1.077	1.102	1.077	0.578	0.573	0.979	0.927	1.065	1.020	1.041	1.063	0.989	1.070	1.074	0.880	
Ti	0.090	0.065	0.070	0.130	0.119	0.120	0.112	0.057	0.081	0.112	0.087	0.065	0.109	0.095	0.233	
Mn	0.000	0.032	0.033	0.000	0.000	0.029	0.029	0.000	0.000	0.000	0.026	0.025	0.000	0.000	0.030	
Fe	1.229	1.188	1.187	0.269	0.246	1.297	1.246	1.248	1.280	1.232	1.223	1.244	1.247	1.242	0.513	
Y	0.021	0.015	0.019	0.028	0.030	0.014	0.012	0.000	0.000	0.025	0.019	0.014	0.014	0.016	0.030	
La	0.204	0.190	0.211	0.124	0.138	0.247	0.233	0.268	0.251	0.266	0.260	0.266	0.251	0.237	0.143	
Ce	0.447	0.448	0.451	0.372	0.367	0.505	0.495	0.458	0.465	0.469	0.460	0.501	0.461	0.458	0.360	
Nd-Gd	0.130	0.137	0.128	0.130	0.121	0.139	0.140	0.105	0.117	0.111	0.110	0.128	0.114	0.120	0.115	
Th	0.023	0.025	0.025	0.051	0.047	0.021	0.020	0.019	0.021	0.023	0.022	0.017	0.022	0.024	0.072	
U	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
[REE,Th,U,Y]	0.824	0.814	0.834	0.707	0.707	0.925	0.901	0.850	0.853	0.894	0.872	0.927	0.862	0.854	0.720	
[Ca + REE]	1.901	1.916	1.911	1.285	1.280	1.904	1.828	1.915	1.873	1.934	1.935	1.916	1.932	1.929	1.600	
Fe <sup>3+</sup> (calc)	0.355	0.320	0.310	0.139	0.098	0.522	0.496	0.376	0.404	0.426	0.395	0.400	0.464	0.438	0.173	
Fe <sup>2+</sup> (calc)	0.874	0.868	0.876	0.131	0.148	0.775	0.751	0.871	0.877	0.806	0.828	0.844	0.784	0.804	0.340	
[Ti+Mg+Mn]	0.126	0.130	0.133	0.179	0.178	0.221	0.244	0.095	0.150	0.174	0.157	0.154	0.160	0.152	0.332	
Si/Al	1.884	1.837	1.823	2.332	2.277	2.097	2.112	1.921	1.931	1.960	1.919	1.930	2.033	1.995	2.018	
Fe <sup>3+</sup> /Fe (tot.)	0.289	0.270	0.262	0.515	0.399	0.402	0.398	0.302	0.315	0.346	0.323	0.322	0.372	0.353	0.337	

## APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Allanite-(Ce)

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Label	Average composition of allanite crystals																		
	All. 1	All. 2	All. 3	All. 4	All. 5	All. 6	All. 7	All. 8	All. 9	All. 10	All. 11	All. 12	All. 13	All. 14	All. 15	All. 16	All. 17	All. XX8	All. XX9
F	n.d.	n.d.	0.64	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.59	0.60	n.d.	n.d.	n.d.	n.d.	n.d.
MgO	0.21	0.39	0.56	0.52	0.24	0.22	0.27	0.30	0.25	0.56	0.35	0.83	0.70	0.39	0.26	0.62	0.40	0.38	0.42
Al <sub>2</sub> O <sub>3</sub>	15.89	13.68	13.05	14.26	16.02	15.83	15.46	14.94	15.77	13.90	14.17	13.43	13.74	14.60	15.31	13.47	14.43	14.48	14.62
SiO <sub>2</sub>	33.87	32.98	32.90	33.26	34.20	34.26	33.91	33.27	33.80	33.78	33.95	33.48	33.62	33.97	33.78	33.41	32.86	34.71	34.37
CaO	11.70	10.19	9.06	9.87	11.35	11.67	10.83	11.00	11.04	10.56	10.71	9.52	10.03	10.89	11.01	9.47	10.27	11.09	11.06
TiO <sub>2</sub>	0.96	1.40	1.58	1.42	1.20	1.04	1.22	1.26	0.85	1.66	1.84	1.89	1.79	1.44	1.11	1.64	1.14	1.61	1.40
MnO	0.38	0.42	0.37	0.34	0.38	0.32	0.34	0.38	0.33	0.39	0.52	n.d.	0.43	0.41	0.40	0.37	0.33	n.d.	n.d.
FeO	14.72	16.19	14.91	15.91	15.17	15.12	15.10	15.58	15.17	16.77	16.35	16.69	16.89	16.31	15.69	16.19	15.84	16.57	16.38
Y <sub>2</sub> O <sub>3</sub>	0.39	n.d.	0.26	0.40	0.38	0.32	0.28	0.38	0.26	0.35	0.30	0.28	0.33	0.36	0.36	0.26	0.40	0.29	0.33
La <sub>2</sub> O <sub>3</sub>	5.95	7.49	6.79	6.57	5.80	6.52	7.04	6.40	6.34	6.62	6.06	8.42	7.14	6.75	6.09	6.94	7.55	7.56	7.09
Ce <sub>2</sub> O <sub>3</sub>	13.25	14.78	14.70	14.36	13.42	13.21	14.08	13.99	14.29	15.17	14.70	15.84	15.41	14.50	14.13	15.24	14.35	14.67	14.47
*(Nd-Gd) <sub>2</sub> O <sub>3</sub>	3.65	3.65	3.96	3.90	3.81	3.35	3.52	3.79	3.98	4.28	4.32	3.71	4.13	3.87	4.02	4.15	3.40	3.55	3.69
ThO <sub>2</sub>	1.05	1.00	1.14	1.00	1.03	1.06	0.95	1.05	1.11	1.12	1.15	1.25	1.04	1.17	1.13	0.96	0.96	1.10	1.14
Total	102.02	102.17	99.92	101.81	103.00	102.92	103.00	102.34	103.19	105.16	104.42	105.34	105.84	105.26	103.29	102.72	101.93	106.01	104.97
<i>*calculated</i>																			
Normalised on the basis of eight cations																			
F	0.000	0.000	0.202	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.172	0.174	0.000	0.000	0.000	0.000	0.000
Mg	0.029	0.055	0.081	0.072	0.032	0.030	0.037	0.041	0.034	0.077	0.048	0.115	0.096	0.053	0.036	0.087	0.055	0.051	0.056
Al	1.716	1.518	1.502	1.577	1.721	1.697	1.677	1.632	1.705	1.498	1.527	1.464	1.485	1.570	1.655	1.491	1.600	1.536	1.562
Si	3.105	3.104	3.216	3.120	3.117	3.115	3.123	3.085	3.101	3.088	3.105	3.096	3.083	3.100	3.098	3.139	3.091	3.124	3.116
Ca	1.149	1.028	0.943	0.992	1.108	1.137	1.068	1.093	1.086	1.034	1.050	0.943	0.986	1.064	1.082	0.953	1.036	1.070	1.074
Ti	0.066	0.099	0.116	0.100	0.082	0.071	0.085	0.088	0.059	0.114	0.126	0.132	0.124	0.099	0.077	0.116	0.080	0.109	0.095
Mn	0.030	0.033	0.030	0.027	0.029	0.024	0.027	0.030	0.026	0.030	0.040	0.000	0.033	0.031	0.031	0.029	0.026	0.000	0.000
Fe	1.129	1.274	1.213	1.248	1.156	1.149	1.164	1.209	1.164	1.282	1.250	1.291	1.295	1.245	1.203	1.271	1.245	1.247	1.242
Y	0.019	0.000	0.014	0.020	0.018	0.016	0.014	0.019	0.013	0.017	0.015	0.014	0.016	0.017	0.018	0.013	0.019	0.014	0.016
La	0.201	0.260	0.244	0.227	0.195	0.219	0.240	0.219	0.215	0.223	0.205	0.287	0.242	0.227	0.206	0.240	0.262	0.251	0.237
Ce	0.424	0.486	0.502	0.470	0.427	0.419	0.453	0.453	0.458	0.484	0.469	0.511	0.493	0.462	0.452	0.500	0.471	0.461	0.458
Nd-Gd	0.120	0.123	0.138	0.130	0.124	0.109	0.116	0.126	0.130	0.140	0.141	0.122	0.135	0.126	0.132	0.139	0.114	0.114	0.120
Th	0.022	0.021	0.025	0.021	0.021	0.022	0.020	0.022	0.023	0.023	0.024	0.026	0.022	0.024	0.023	0.021	0.021	0.022	0.024
[REE,Th,U,Y]	0.786	0.889	0.923	0.869	0.786	0.784	0.843	0.838	0.838	0.887	0.853	0.961	0.908	0.857	0.831	0.913	0.887	0.862	0.854
[Ca + REE]	1.935	1.917	1.867	1.861	1.893	1.921	1.910	1.931	1.924	1.921	1.903	1.904	1.894	1.921	1.913	1.866	1.922	1.932	1.929
Fe <sup>3+</sup> (calc)	0.284	0.482	0.498	0.423	0.279	0.303	0.323	0.368	0.295	0.502	0.473	0.536	0.515	0.430	0.345	0.509	0.400	0.464	0.438
Fe <sup>2+</sup> (calc)	0.845	0.792	0.715	0.826	0.877	0.846	0.841	0.841	0.869	0.780	0.777	0.754	0.781	0.814	0.858	0.763	0.845	0.784	0.804
[Ti+Mg+Mn]	0.125	0.187	0.228	0.200	0.144	0.126	0.149	0.159	0.119	0.221	0.215	0.246	0.253	0.183	0.143	0.232	0.161	0.160	0.152
Si/Al	1.809	2.045	2.141	1.978	1.812	1.836	1.862	1.890	1.819	2.061	2.033	2.115	2.076	1.975	1.872	2.105	1.932	2.033	1.995
Fe <sup>3+</sup> /Fe (tot.)	0.252	0.379	0.411	0.339	0.242	0.264	0.277	0.304	0.254	0.392	0.378	0.416	0.397	0.346	0.287	0.400	0.321	0.372	0.353

APPENDIX IV

EMPA analyses from the Yerila gneiss (YER-03)

Apatite

1/1

Label	apa01	apa01_2	apa02	apa2_2	apa03	apa3_2	apa3_3	apa3_4	apa04	apa4_2	apa04_3	apa05	apa5_2	apa5_3	apa5_4	apa5_5	apa5_6	apa6	apa07	apa08	apa09	apa10	
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	0.55	0.30	0.37	0.45	n.d.	0.79	0.60	0.37	0.82	2.05	1.75	0.86	0.25	0.45	0.22	0.24	0.28	0.72	1.04	0.41	n.d.	n.d.	n.d.
P <sub>2</sub> O <sub>5</sub>	40.19	42.20	40.27	42.15	41.03	41.11	41.76	42.07	39.38	39.19	39.21	38.72	42.92	42.24	42.50	42.06	42.33	40.1	39.26	40.61	40.39	41.03	41.03
CaO	50.49	52.41	50.76	52.28	51.75	51.67	52.67	53.07	49.96	49.86	50.29	50.1	52.90	52.12	52.63	52.17	52.16	50.58	49.49	51.25	51.14	50.59	50.59
FeO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.05	0.05	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.63	0.49	0.55	0.60	0.2	1.28	0.90	0.75	1.18	2.49	2.56	1.22	0.37	0.71	0.34	0.39	0.42	1.02	1.21	0.5	0.36	0.23	0.23
ZrO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Yb <sub>2</sub> O <sub>3</sub>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
HfO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.03	n.d.	n.d.	0.07	0.07	n.d.	n.d.	n.d.	0.00	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
UO <sub>2</sub>	n.d.	n.d.	n.d.	0.04	n.d.	n.d.	0.04	0.04	n.d.	0.07	0.05	n.d.	n.d.	n.d.	0.04	n.d.	0.03	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Total	91.86	95.40	91.95	95.51	92.98	94.85	96.01	96.29	91.34	93.73	93.92	90.9	96.43	95.53	95.78	94.91	95.22	92.42	91	92.77	91.89	91.85	91.85
Normalised to [P+Si] equals three apfu																							
Si	0.048	0.025	0.032	0.037	0.000	0.067	0.050	0.031	0.072	0.174	0.150	0.077	0.020	0.038	0.018	0.020	0.023	0.062	0.091	0.035	0.000	0.000	0.000
P	2.952	2.975	2.968	2.963	3.000	2.933	2.950	2.969	2.928	2.826	2.850	2.923	2.980	2.962	2.982	2.980	2.977	2.938	2.909	2.965	3.000	3.000	3.000
Ca	4.694	4.675	4.734	4.650	4.789	4.666	4.708	4.740	4.701	4.549	4.625	4.787	4.648	4.627	4.673	4.679	4.642	4.690	4.641	4.735	4.807	4.681	4.681
Fe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Y	0.029	0.022	0.025	0.026	0.009	0.057	0.040	0.033	0.055	0.113	0.117	0.058	0.016	0.031	0.015	0.018	0.018	0.047	0.056	0.023	0.017	0.011	0.011
Th	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
U	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Label	apa11	apa12	apa13	apa15	apa16	apa17	apa18	apa19	apa20	apa21	apa22	apa23	apa24	apa25	apa26	apax2	zr45_1	zr60_3	zr60_4	ur13_1	zr45_4	zr46_1	
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	0.59	0.67	1.31	n.d.	n.d.	1.13	0.39	n.d.	n.d.	1.43	0.77	0.84	0.75	0.83	n.d.	0.51	1.49	3.01	3.21	3.60	3.13	3.86	3.86
P <sub>2</sub> O <sub>5</sub>	40.76	40.3	38.84	40.79	40.96	38.71	40.47	40.95	41.43	36.88	39.4	38.84	38.96	39.7	40.98	42.69	40.70	36.36	40.77	32.27	35.53	33.82	33.82
CaO	51.01	50.57	48.9	51.22	51.03	49.4	51.51	51.43	51.85	49.16	50.19	50.66	50.57	50.67	51.17	52.15	50.72	44.98	42.54	50.60	44.8	43.67	43.67
FeO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.05	0.05	0.07	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.57	1.1	1.68	0.31	0.37	1.69	0.29	0.48	0.27	2.12	1.03	1.2	1.04	1.09	0.2	n.d.	n.d.	3.00	1.27	3.39	1.65	2.17	2.17
ZrO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Yb <sub>2</sub> O <sub>3</sub>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.12	0.13	0.40	0.34	0.42	n.a.	n.a.	n.a.
HfO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.21	0.15	0.26	n.d.	0.09
UO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.10	0.10	0.08	n.d.	n.d.	n.d.
Total	92.93	92.64	90.73	92.32	92.36	90.93	92.66	92.86	93.55	89.59	91.39	91.54	91.32	92.29	92.35	95.48	93.04	88.11	88.43	90.69	85.11	83.61	83.61
Normalised to [P+Si] equals three apfu																							
Si	0.050	0.058	0.115	0.000	0.000	0.100	0.034	0.000	0.000	0.131	0.068	0.075	0.067	0.072	0.000	0.042	0.124	0.267	0.255	0.349	0.283	0.356	0.356
P	2.950	2.942	2.885	3.000	3.000	2.900	2.966	3.000	3.000	2.869	2.932	2.925	2.933	2.928	3.000	2.958	2.876	2.733	2.745	2.651	2.717	2.644	2.644
Ca	4.672	4.672	4.597	4.768	4.730	4.684	4.778	4.768	4.752	4.839	4.727	4.829	4.819	4.729	4.741	4.573	4.536	4.279	3.625	5.261	4.336	4.320	4.320
Fe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.003	0.006	0.000	0.000	0.000
Y	0.026	0.050	0.078	0.014	0.017	0.080	0.013	0.022	0.012	0.104	0.048	0.057	0.049	0.051	0.009	0.000	0.000	0.142	0.054	0.175	0.079	0.107	0.107
Th	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.003	0.006	0.000	0.002	0.002
U	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.002	0.000	0.000	0.000

n.d. = not detected / n.a. = not analysed

Label	X_test	tit_test	tit80_2	tit80_3	tit79_1	tit79_2	tit78_1	tit78_2	tit78_3	tit77_1	tit77_2	tit76	tit75_1	tit75_2	tit74_1	tit74_3	tit73_1	tit73_2
F	1.94	1.44	2.25	2.25	2.33	2.10	1.99	2.16	2.31	1.93	2.32	1.93	2.01	2.08	2.66	2.35	2.46	2.66
Al <sub>2</sub> O <sub>3</sub>	4.71	5.43	6.09	6.07	5.89	5.97	5.71	5.66	5.74	5.60	5.99	5.94	6.07	5.41	5.69	5.66	5.68	5.71
SiO <sub>2</sub>	31.34	30.45	31.60	31.53	30.81	30.98	31.55	31.61	31.73	31.27	31.04	30.65	31.13	30.70	31.21	30.87	30.63	31.16
CaO	26.90	25.18	27.60	27.40	25.23	26.20	27.15	27.22	28.00	27.41	26.03	25.29	25.76	25.65	26.16	26.14	25.97	26.05
TiO <sub>2</sub>	30.27	28.11	29.20	29.87	27.50	29.09	30.01	30.30	29.88	29.37	28.34	27.81	28.54	27.87	28.25	28.00	27.93	29.21
Fe <sub>2</sub> O <sub>3</sub>	1.53	2.24	1.36	1.17	2.10	1.53	1.38	1.41	1.24	1.26	2.03	2.00	2.05	2.12	1.97	2.12	1.77	1.96
Y <sub>2</sub> O <sub>3</sub>	0.92	2.38	0.48	1.51	2.54	2.02	0.92	0.89	0.79	1.08	1.96	2.47	2.06	1.98	1.97	1.92	2.14	1.99
Ce <sub>2</sub> O <sub>3</sub>	n.d.	0.78	n.d.	n.d.	0.58	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.59	n.d.	0.51	n.d.	0.53
Yb <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Total	97.61	96.01	98.57	99.79	96.97	97.89	98.72	99.26	99.70	97.93	97.70	96.09	97.62	96.40	97.91	97.57	96.59	99.27
Normalised to three cations																		
F	0.204	0.155	0.233	0.232	0.249	0.220	0.207	0.223	0.237	0.202	0.244	0.206	0.211	0.223	0.281	0.249	0.263	0.278
Al	0.184	0.217	0.235	0.233	0.234	0.234	0.220	0.218	0.220	0.218	0.235	0.237	0.238	0.216	0.224	0.223	0.226	0.222
Si	1.042	1.034	1.034	1.025	1.041	1.029	1.033	1.032	1.030	1.032	1.034	1.037	1.036	1.040	1.042	1.034	1.035	1.031
Ca	0.958	0.916	0.968	0.954	0.913	0.932	0.953	0.952	0.974	0.968	0.929	0.917	0.918	0.931	0.936	0.938	0.940	0.924
Ti	0.757	0.717	0.718	0.730	0.699	0.726	0.739	0.744	0.729	0.729	0.710	0.708	0.714	0.710	0.709	0.705	0.710	0.727
Fe	0.043	0.064	0.037	0.032	0.059	0.043	0.038	0.038	0.034	0.035	0.057	0.057	0.057	0.060	0.055	0.059	0.050	0.054
Y	0.016	0.043	0.008	0.026	0.046	0.036	0.016	0.015	0.014	0.019	0.035	0.045	0.036	0.036	0.035	0.034	0.039	0.035
Ce	0.000	0.010	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.006	0.000	0.006
Yb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
[Ca+Y+REE]	0.974	0.968	0.976	0.980	0.966	0.968	0.969	0.968	0.987	0.987	0.964	0.961	0.955	0.974	0.970	0.978	0.979	0.965
Fe <sup>3+</sup>	0.043	0.064	0.037	0.032	0.059	0.043	0.038	0.038	0.034	0.035	0.057	0.057	0.057	0.060	0.055	0.059	0.050	0.054
[Ti+Al+Fe <sup>3+</sup> ]	0.941	0.934	0.953	0.963	0.933	0.960	0.960	0.962	0.949	0.946	0.945	0.945	0.952	0.926	0.933	0.929	0.936	0.949

Label	tit72_1	tit72_2	tit72_vei	tit72_in	tit72_3	tit71_1	tit71_2	tit70_1	tit70_2	tit69_1	tit69_2	tit68_1	tit68_2	tit51	tit51_2	tit51_3	tit53	tit54
F	2.51	3.04	2.42	2.83	2.33	2.30	2.35	1.96	2.10	2.33	2.23	1.96	1.90	2.40	2.62	2.41	2.57	2.52
Al <sub>2</sub> O <sub>3</sub>	5.61	5.65	5.69	5.79	5.64	5.44	5.65	5.90	5.94	5.76	5.74	5.93	5.97	5.78	5.74	5.97	5.57	5.87
SiO <sub>2</sub>	31.02	31.13	31.05	31.17	30.73	31.39	30.70	31.10	31.17	31.64	31.12	31.47	31.39	31.17	31.17	31.48	30.70	31.28
CaO	25.69	26.18	26.39	26.17	25.73	25.91	25.73	25.94	26.27	25.98	26.47	25.92	26.60	26.56	26.42	26.42	26.37	26.30
TiO <sub>2</sub>	28.34	28.88	28.17	29.03	28.52	27.62	28.27	27.82	29.23	28.56	28.78	28.29	28.36	28.77	28.87	29.43	29.50	28.98
Fe <sub>2</sub> O <sub>3</sub>	2.08	2.01	1.94	1.85	2.24	2.07	2.10	1.87	1.69	1.97	1.94	2.05	1.92	1.78	1.93	1.70	1.91	1.83
Y <sub>2</sub> O <sub>3</sub>	2.28	2.11	2.26	2.30	2.12	1.88	2.01	2.27	2.23	2.09	2.00	1.99	1.99	2.12	2.15	2.03	2.20	2.17
Ce <sub>2</sub> O <sub>3</sub>	0.66	0.46	0.66	0.60	0.52	0.54	0.60	n.d.	n.d.	n.d.	0.47	n.d.	0.60	n.d.	n.d.	n.d.	0.45	n.d.
Yb <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	0.55	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Total	98.18	99.47	99.13	99.74	97.82	97.14	97.41	96.86	98.65	98.32	98.74	97.63	98.72	98.58	98.89	99.44	99.27	98.94
Normalised to three cations																		
F	0.265	0.319	0.254	0.296	0.246	0.244	0.250	0.208	0.220	0.244	0.233	0.206	0.198	0.251	0.274	0.250	0.269	0.263
Al	0.221	0.221	0.223	0.225	0.223	0.215	0.224	0.233	0.231	0.225	0.224	0.232	0.232	0.225	0.224	0.231	0.217	0.228
Si	1.038	1.031	1.030	1.029	1.029	1.055	1.032	1.042	1.029	1.049	1.029	1.046	1.033	1.031	1.031	1.033	1.016	1.033
Ca	0.921	0.930	0.938	0.926	0.923	0.933	0.927	0.931	0.929	0.923	0.938	0.923	0.938	0.941	0.936	0.929	0.935	0.931
Ti	0.713	0.720	0.703	0.721	0.718	0.698	0.715	0.701	0.725	0.712	0.715	0.707	0.702	0.716	0.718	0.726	0.734	0.720
Fe	0.058	0.056	0.054	0.051	0.063	0.058	0.059	0.052	0.047	0.054	0.054	0.057	0.053	0.049	0.053	0.047	0.053	0.050
Y	0.041	0.037	0.040	0.040	0.038	0.034	0.036	0.040	0.039	0.037	0.035	0.035	0.035	0.037	0.038	0.035	0.039	0.038
Ce	0.008	0.006	0.008	0.007	0.006	0.007	0.007	0.000	0.000	0.000	0.006	0.000	0.007	0.000	0.000	0.000	0.005	0.000
Yb	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
[Ca+Y+REE]	0.970	0.973	0.991	0.973	0.967	0.973	0.970	0.972	0.968	0.960	0.978	0.958	0.980	0.979	0.974	0.964	0.979	0.969
Fe <sup>3+</sup>	0.058	0.056	0.054	0.051	0.063	0.058	0.059	0.052	0.047	0.054	0.054	0.057	0.053	0.049	0.053	0.047	0.053	0.050
[Ti+Al+Fe <sup>3+</sup> ]	0.934	0.940	0.925	0.946	0.941	0.913	0.939	0.934	0.956	0.937	0.939	0.939	0.933	0.941	0.942	0.957	0.951	0.948

Label	tit55	tit56	tit57	tit57_2	tit58	tit61	tit62	tit64	tit65	tit67	tit37	tit38	tit40	tit43	tit45	tit48	tit49	tit50
F	2.45	1.80	2.61	2.31	2.92	2.63	2.33	2.47	1.85	1.95	2.78	3.00	3.09	2.47	2.30	2.43	2.73	3.20
Al <sub>2</sub> O <sub>3</sub>	6.35	5.79	5.85	5.48	5.93	5.61	6.21	5.76	5.95	5.93	6.01	6.21	5.94	6.15	5.79	5.99	5.78	6.16
SiO <sub>2</sub>	31.50	31.43	31.21	31.38	31.46	31.07	31.46	31.32	31.75	31.74	31.71	31.95	31.45	31.47	31.50	31.78	31.72	31.43
CaO	26.66	26.28	26.52	26.64	26.90	25.85	26.29	26.69	27.26	27.67	27.77	27.86	26.49	26.62	26.22	27.06	26.30	26.05
TiO <sub>2</sub>	28.50	30.50	29.81	28.47	29.35	29.27	28.20	28.62	29.46	30.10	30.13	29.88	28.28	29.49	28.13	28.31	28.84	29.18
Fe <sub>2</sub> O <sub>3</sub>	1.68	1.83	1.92	1.85	1.64	2.16	2.02	1.89	1.51	1.46	1.40	1.27	2.21	1.63	2.07	2.02	2.03	1.92
Y <sub>2</sub> O <sub>3</sub>	2.07	1.87	2.17	1.89	1.97	2.56	2.14	2.03	1.80	1.59	1.47	1.49	2.11	2.15	2.11	2.11	2.34	2.47
Ce <sub>2</sub> O <sub>3</sub>	n.d.	0.48	0.47	n.d.	n.d.	0.53	n.d.	0.51	n.d.	n.d.	n.d.	n.d.	0.63	n.d.	n.d.	n.d.	0.57	n.d.
Yb <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.47	n.d.
Total	99.20	99.96	100.55	98.02	100.17	99.68	98.66	99.28	99.58	100.45	101.28	101.66	100.21	99.98	98.11	99.70	100.78	100.41
Normalised to three cations																		
F	0.254	0.186	0.270	0.243	0.302	0.275	0.243	0.258	0.190	0.199	0.284	0.305	0.321	0.255	0.242	0.251	0.283	0.332
Al	0.245	0.222	0.225	0.214	0.229	0.219	0.241	0.224	0.228	0.225	0.228	0.235	0.230	0.236	0.226	0.230	0.223	0.238
Si	1.033	1.024	1.019	1.042	1.029	1.027	1.037	1.032	1.031	1.023	1.021	1.026	1.033	1.027	1.045	1.037	1.038	1.031
Ca	0.937	0.918	0.928	0.948	0.942	0.915	0.929	0.942	0.949	0.955	0.958	0.958	0.933	0.931	0.932	0.946	0.922	0.915
Ti	0.703	0.748	0.732	0.711	0.722	0.728	0.699	0.709	0.720	0.730	0.730	0.721	0.699	0.724	0.702	0.695	0.710	0.720
Fe	0.046	0.050	0.052	0.051	0.045	0.060	0.056	0.052	0.041	0.039	0.038	0.034	0.061	0.044	0.057	0.055	0.055	0.053
Y	0.036	0.032	0.038	0.033	0.034	0.045	0.037	0.036	0.031	0.027	0.025	0.025	0.037	0.037	0.037	0.037	0.041	0.043
Ce	0.000	0.006	0.006	0.000	0.000	0.006	0.000	0.006	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.007	0.000
Yb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
[Ca+Y+REE]	0.973	0.956	0.971	0.981	0.976	0.967	0.966	0.984	0.980	0.983	0.983	0.984	0.977	0.968	0.969	0.983	0.974	0.959
Fe <sup>3+</sup>	0.046	0.050	0.052	0.051	0.045	0.060	0.056	0.052	0.041	0.039	0.038	0.034	0.061	0.044	0.057	0.055	0.055	0.053
[Ti+Al+Fe <sup>3+</sup> ]	0.948	0.970	0.957	0.925	0.950	0.946	0.941	0.933	0.948	0.955	0.958	0.956	0.929	0.960	0.928	0.925	0.932	0.958

**APPENDIX IV** EMPA (XRF) analyses from the Yerila gneiss (YER-03)

*Alkaline amphibole*

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Label	XRF	Hs25	Hs17_2	Hs1_4	Hs18	Hs1_5	ap_test	Hs16_3	Hs23	Hs20	Hs24	Hs1_1	Hs1_3	Hs21	Hs17	Hs22	Hs27	Hs19	Hs16_4	Hs16_5	Hs26	Hs1_6	
F	n.d.	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	0.722	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	0.831	<0.60
Na <sub>2</sub> O	1.12	1.20	1.24	1.17	1.19	1.30	1.25	1.12	1.19	1.30	1.27	1.28	0.93	1.24	1.28	1.16	1.25	1.20	1.24	1.19	1.25	1.14	1.14
MgO	2.36	2.31	2.15	2.26	2.25	2.21	2.57	2.21	2.24	1.97	2.27	2.29	2.40	2.15	2.09	1.99	2.17	2.34	2.29	2.28	2.52	2.44	2.44
Al <sub>2</sub> O <sub>3</sub>	12.64	12.13	12.50	12.55	12.60	12.57	12.82	12.24	12.30	13.28	12.59	12.19	12.50	12.30	12.95	12.58	12.57	12.61	12.23	12.42	12.72	12.36	12.36
SiO <sub>2</sub>	38.34	39.31	38.76	38.86	39.45	39.20	39.47	39.00	39.51	37.95	39.12	38.82	39.33	39.04	38.70	38.84	39.24	39.47	39.05	39.13	39.30	38.96	38.96
K <sub>2</sub> O	2.28	2.09	2.19	2.25	2.15	2.31	2.20	2.22	2.10	2.39	2.18	2.27	2.06	2.15	2.37	2.25	2.20	2.14	2.19	2.07	2.24	2.11	2.11
CaO	10.55	11.27	11.10	11.14	10.98	11.16	10.98	10.85	11.20	11.16	10.98	10.90	10.98	10.83	11.02	10.78	11.02	10.97	10.91	10.81	10.97	10.79	10.79
TiO <sub>2</sub>	1.25	0.81	0.81	0.75	0.73	0.69	0.73	0.66	0.65	0.65	0.64	0.64	0.58	0.57	0.57	0.57	0.56	0.56	0.55	0.55	0.53	0.51	0.51
MnO	0.43	0.50	0.39	0.42	0.48	0.37	0.52	0.67	0.43	0.57	0.48	0.49	0.50	0.50	0.36	0.67	0.54	0.48	0.45	0.52	0.49	0.52	0.52
FeO	*18.00	27.54	28.27	27.69	27.98	27.94	28.09	27.66	27.73	28.34	28.69	28.12	27.63	27.65	27.96	28.29	27.82	28.13	27.56	27.86	27.26	27.86	27.86
Fe <sub>2</sub> O <sub>3</sub>	*10.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOI (H <sub>2</sub> O)	1.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	99.08	97.16	97.41	97.09	97.81	97.75	98.63	96.63	97.35	97.61	98.22	97.00	96.91	96.43	97.96	97.13	97.37	97.90	96.47	96.83	98.04	96.69	96.69
Normalised to 23 oxygens		Normalized Fe <sup>2+</sup> /Fe <sup>3+</sup> ratio at 2.00										* Measured FeO by spectrophotometry											
H	2.084	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.359	0.000	0.000	0.000	0.000	0.000	0.000	0.411	0.000
Na	0.344	0.365	0.378	0.357	0.359	0.394	0.375	0.343	0.361	0.397	0.384	0.392	0.283	0.380	0.390	0.354	0.380	0.362	0.380	0.363	0.379	0.349	0.349
Mg	0.558	0.540	0.503	0.530	0.523	0.515	0.592	0.520	0.522	0.462	0.527	0.539	0.561	0.507	0.489	0.467	0.507	0.543	0.539	0.535	0.588	0.574	0.574
Al	2.362	2.243	2.314	2.326	2.314	2.315	2.336	2.279	2.268	2.463	2.312	2.267	2.312	2.292	2.398	2.335	2.321	2.314	2.278	2.304	2.345	2.298	2.298
Si	6.080	6.168	6.087	6.110	6.146	6.124	6.103	6.160	6.182	5.972	6.095	6.125	6.172	6.173	6.079	6.118	6.148	6.146	6.172	6.159	6.147	6.146	6.146
K	0.461	0.418	0.439	0.451	0.427	0.460	0.434	0.447	0.419	0.480	0.433	0.457	0.412	0.434	0.475	0.452	0.440	0.425	0.442	0.416	0.447	0.425	0.425
Ca	1.793	1.895	1.868	1.877	1.833	1.868	1.819	1.836	1.878	1.882	1.833	1.842	1.846	1.835	1.855	1.819	1.850	1.830	1.848	1.823	1.838	1.824	1.824
Ti	0.149	0.096	0.096	0.089	0.086	0.081	0.085	0.078	0.076	0.077	0.075	0.076	0.068	0.068	0.067	0.068	0.066	0.066	0.065	0.065	0.062	0.060	0.060
Mn	0.058	0.066	0.052	0.056	0.063	0.049	0.068	0.090	0.057	0.076	0.063	0.065	0.066	0.067	0.048	0.089	0.072	0.063	0.060	0.069	0.065	0.069	0.069
Fe	3.589	3.614	3.713	3.641	3.646	3.650	3.632	3.654	3.629	3.729	3.738	3.710	3.626	3.656	3.673	3.727	3.645	3.663	3.643	3.667	3.566	3.675	3.675
Σ cations	15.394	15.405	15.449	15.436	15.397	15.456	15.443	15.408	15.393	15.537	15.460	15.472	15.347	15.411	15.475	15.429	15.428	15.414	15.427	15.402	15.437	15.419	15.419
<sup>T</sup> Si	6.080	6.168	6.087	6.110	6.146	6.124	6.103	6.160	6.182	5.972	6.095	6.125	6.172	6.173	6.079	6.118	6.148	6.146	6.172	6.159	6.147	6.146	6.146
<sup>T</sup> Al	1.920	1.832	1.913	1.890	1.854	1.876	1.897	1.840	1.818	2.028	1.905	1.875	1.828	1.827	1.921	1.882	1.852	1.854	1.828	1.841	1.853	1.854	1.854
<sup>C</sup> Al	0.443	0.411	0.401	0.436	0.460	0.439	0.439	0.439	0.450	0.434	0.407	0.391	0.484	0.465	0.477	0.453	0.469	0.461	0.450	0.463	0.492	0.443	0.443
<sup>C</sup> Ti	0.149	0.096	0.096	0.089	0.086	0.081	0.085	0.078	0.076	0.077	0.075	0.076	0.068	0.068	0.067	0.068	0.066	0.066	0.065	0.065	0.062	0.060	0.060
<sup>C</sup> Fe <sup>3+</sup>	1.196	1.204	1.238	1.214	1.215	1.217	1.211	1.218	1.209	1.243	1.246	1.237	1.209	1.219	1.224	1.242	1.215	1.221	1.214	1.222	1.188	1.225	1.225
<sup>C</sup> Mg	0.558	0.540	0.503	0.530	0.523	0.515	0.592	0.520	0.522	0.462	0.527	0.539	0.561	0.507	0.489	0.467	0.507	0.543	0.539	0.535	0.588	0.574	0.574
<sup>C</sup> Fe <sup>2+</sup>	2.393	2.409	2.475	2.427	2.430	2.434	2.421	2.436	2.419	2.486	2.492	2.473	2.417	2.437	2.449	2.484	2.430	2.442	2.429	2.445	2.377	2.450	2.450
Total C	4.738	4.660	4.713	4.695	4.714	4.685	4.748	4.692	4.678	4.703	4.747	4.716	4.739	4.695	4.707	4.714	4.687	4.733	4.698	4.731	4.707	4.753	4.753
<sup>B</sup> Ca	1.793	1.895	1.868	1.877	1.833	1.868	1.819	1.836	1.878	1.882	1.833	1.842	1.846	1.835	1.855	1.819	1.850	1.830	1.848	1.823	1.838	1.824	1.824
<sup>B</sup> Na	0.207	0.105	0.132	0.123	0.167	0.132	0.181	0.164	0.122	0.118	0.167	0.158	0.154	0.165	0.145	0.181	0.150	0.170	0.152	0.177	0.162	0.176	0.176
<sup>A</sup> Na	0.137	0.260	0.245	0.233	0.192	0.262	0.194	0.179	0.239	0.278	0.216	0.234	0.129	0.215	0.245	0.173	0.230	0.193	0.228	0.186	0.217	0.172	0.172
<sup>A</sup> K	0.461	0.418	0.439	0.451	0.427	0.460	0.434	0.447	0.419	0.480	0.433	0.457	0.412	0.434	0.475	0.452	0.440	0.425	0.442	0.416	0.447	0.425	0.425
Total A	0.598	0.678	0.684	0.685	0.620	0.722	0.628	0.627	0.658	0.758	0.650	0.691	0.541	0.648	0.720	0.626	0.669	0.618	0.669	0.602	0.664	0.597	0.597

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

*Biotite & ilmenite* 1/1

Biotite

Label	bio_t2	tit75_4	bio_1	bio_2	bio_3	bio_4	xx18_4	xx18_5	bio11	bio12
F	0.69	0.74	0.79	0.60	0.62	0.66	<0.55	<0.55	0.98	0.90
Al <sub>2</sub> O <sub>3</sub>	14.49	14.86	14.11	14.25	14.54	14.37	14.72	15.47	13.92	13.81
SiO <sub>2</sub>	35.24	35.62	35.56	36.03	35.25	35.21	34.80	32.15	35.21	35.52
K <sub>2</sub> O	9.15	9.10	9.16	9.48	9.24	9.23	9.17	5.05	9.34	9.27
CaO	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20
TiO <sub>2</sub>	1.68	1.77	1.99	2.01	2.23	2.10	2.09	1.72	2.08	2.07
MgO	3.91	4.57	4.14	4.08	3.97	4.14	3.80	5.95	4.10	4.01
MnO	<0.25	<0.25	0.38	0.36	0.37	0.29	0.29	0.63	<0.25	0.33
FeO	30.05	28.17	29.71	29.91	29.62	30.20	30.68	29.80	29.78	29.38
Total	95.22	94.82	95.84	96.72	95.84	96.20	95.55	91.01	95.40	95.28

Normalized at eight cations

F	0.182	0.194	0.207	0.156	0.162	0.171	0.000	0.000	0.258	0.236
Mg	0.485	0.564	0.510	0.497	0.489	0.508	0.467	0.765	0.508	0.498
Al	1.419	1.453	1.375	1.373	1.415	1.393	1.431	1.573	1.365	1.356
Si	2.931	2.956	2.943	2.948	2.913	2.900	2.871	2.776	2.932	2.962
K	0.971	0.963	0.966	0.989	0.973	0.970	0.965	0.555	0.992	0.985
Ca	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.000	0.000
Ti	0.105	0.110	0.124	0.124	0.138	0.130	0.130	0.112	0.130	0.129
Mn	0.000	0.000	0.027	0.025	0.026	0.020	0.020	0.046	0.000	0.023
Fe	2.089	1.954	2.055	2.044	2.046	2.079	2.116	2.151	2.073	2.047

[Mg+Fe+Mn]	2.57	2.52	2.59	2.57	2.56	2.61	2.60	2.96	2.58	2.57
[Al+Si]	4.35	4.41	4.32	4.32	4.33	4.29	4.30	4.35	4.30	4.32
Al/Si	0.48	0.49	0.47	0.47	0.49	0.48	0.50	0.57	0.47	0.46

Ilmenite

Label	al4_2	al4_2	al4_8	al9_5	ala1_co	tit80_1	xx11_3	xx11_4	xx12_2	xx14_2	xx19_3
FeO <sub>TOT</sub>	49.70	53.02	49.07	49.90	50.21	51.99	50.60	51.13	50.11	49.97	50.33
MnO	1.52	1.58	5.19	2.71	6.39	4.81	3.93	4.01	4.48	3.50	3.97
TiO <sub>2</sub>	45.87	45.64	42.81	45.08	41.55	42.69	43.70	44.27	44.44	44.79	44.40
Total	97.09	100.24	97.07	97.69	98.15	99.49	98.23	99.41	99.03	98.26	98.70

Normalized at two cations

Mn	0.033	0.034	0.115	0.060	0.141	0.100	0.088	0.089	0.099	0.079	0.089
Fe <sup>2+</sup>	0.937	0.965	0.837	0.894	0.812	0.900	0.856	0.850	0.831	0.846	0.842
Ti	0.970	0.998	0.952	0.954	0.953	1.000	0.944	0.939	0.930	0.925	0.931
Fe <sup>3+</sup>	0.060	0.003	0.097	0.092	0.094	0.000	0.112	0.122	0.141	0.150	0.138

Relative % of end-members

MnTiO <sub>3</sub>	3.22	3.37	10.82	5.68	13.34	9.91	8.25	8.30	9.14	7.24	8.20
FeTiO <sub>3</sub>	90.66	96.30	79.48	85.08	77.19	90.09	80.58	79.65	77.07	78.14	78.26
Fe <sub>2</sub> O <sub>3</sub>	6.13	0.34	9.70	9.24	9.47	0.00	11.17	12.05	13.79	14.62	13.54



## APPENDIX IV

## EMPA analyses from the Yerila gneiss (YER-03)

## REE-fluorocarbonates

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	tit52	tit59	tit60	tit63	tit66	tit36	tit39	tit41	tit42	tit44	tit46	tit47	bas1	xx4_2	xx6_2	xx7_5	xx15_2	xx18_1	xx18_2	xx18_3
F	6.85	7.19	8.31	6.87	7.34	7.64	6.36	7.74	7.16	8.22	7.60	6.95	6.75	7.20	8.76	7.24	7.37	7.27	7.20	7.27
Al <sub>2</sub> O <sub>3</sub>	0.60	<0.18	0.60	0.72	<0.18	<0.18	0.54	<0.18	0.33	0.96	<0.18	0.20	0.90	0.68	0.65	0.87	1.30	1.34	1.46	2.63
SiO <sub>2</sub>	1.91	0.91	1.89	2.44	1.34	1.27	1.86	0.91	1.48	4.92	0.99	1.06	2.75	2.41	2.30	3.19	3.19	3.34	3.43	5.80
P <sub>2</sub> O <sub>5</sub>	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
CaO	5.17	4.10	4.47	5.93	3.64	4.61	4.97	5.74	4.89	2.74	5.69	2.52	5.61	5.74	4.52	6.08	5.90	5.14	5.21	4.97
TiO <sub>2</sub>	0.40	<0.31	<0.31	0.44	<0.31	<0.31	0.52	0.46	<0.31	0.71	0.49	<0.31	0.60	<0.31	0.98	1.08	0.54	0.56	0.55	1.23
FeO	<0.30	1.79	<0.30	<0.30	<0.30	<0.30	0.47	<0.30	<0.30	1.37	<0.30	<0.30	<0.30	<0.30	0.71	0.88	1.37	0.52	0.57	1.57
Y <sub>2</sub> O <sub>3</sub>	0.70	0.55	0.77	1.03	1.11	1.04	0.68	0.95	0.64	0.65	0.81	0.47	0.64	0.61	0.90	0.85	0.82	0.70	0.70	0.63
ZrO <sub>2</sub>																				
La <sub>2</sub> O <sub>3</sub>	14.94	18.28	19.16	13.62	12.21	14.18	18.39	15.82	21.18	13.87	19.28	20.55	20.08	20.20	18.64	16.01	17.66	20.13	20.26	19.54
Ce <sub>2</sub> O <sub>3</sub>	37.80	37.51	35.91	36.92	38.83	39.90	35.75	36.65	37.01	36.77	36.18	37.79	39.13	39.46	40.29	36.65	36.87	39.55	39.64	35.97
ThO <sub>2</sub>	2.29	1.47	1.36	2.45	1.73	1.26	1.66	1.44	1.43	4.72	2.26	1.44	1.92	1.71	0.50	5.48	3.45	1.57	1.52	1.26
UO <sub>2</sub>	0.24	<0.19	0.30	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	0.27	<0.19	0.26	0.25	<0.19
Total	70.91	71.79	72.78	70.42	66.20	69.90	71.21	69.72	74.12	74.92	73.30	70.99	78.38	77.99	78.24	78.60	78.46	80.37	80.78	80.87

Normalized to five cations pfu.

F	3.767	4.076	4.631	3.670	4.657	4.494	3.443	4.454	3.887	4.237	4.177	4.229	3.257	3.562	4.407	3.434	3.445	3.382	3.310	3.068
Al	0.124	0.000	0.125	0.143	0.000	0.000	0.109	0.000	0.067	0.184	0.000	0.046	0.161	0.126	0.122	0.153	0.226	0.233	0.251	0.414
Si	0.332	0.163	0.333	0.412	0.268	0.237	0.319	0.166	0.253	0.803	0.172	0.203	0.420	0.376	0.365	0.478	0.472	0.491	0.498	0.774
Ca	0.964	0.788	0.844	1.073	0.781	0.918	0.912	1.119	0.899	0.479	1.060	0.520	0.917	0.961	0.770	0.977	0.934	0.811	0.812	0.711
Ti	0.053	0.000	0.000	0.056	0.000	0.000	0.067	0.063	0.000	0.087	0.064	0.000	0.069	0.000	0.117	0.122	0.060	0.062	0.060	0.123
Fe	0.000	0.268	0.000	0.000	0.000	0.000	0.067	0.000	0.000	0.187	0.000	0.000	0.000	0.000	0.094	0.111	0.170	0.064	0.070	0.175
Y	0.065	0.052	0.072	0.093	0.119	0.103	0.062	0.092	0.059	0.056	0.075	0.048	0.052	0.050	0.076	0.067	0.064	0.055	0.054	0.045
La	0.958	1.208	1.244	0.848	0.903	0.973	1.161	1.061	1.341	0.834	1.237	1.458	1.130	1.165	1.093	0.885	0.963	1.093	1.087	0.962
Ce	2.405	2.462	2.315	2.282	2.850	2.716	2.239	2.440	2.326	2.195	2.303	2.662	2.185	2.260	2.345	2.011	1.995	2.131	2.110	1.758
Th	0.091	0.060	0.054	0.094	0.079	0.053	0.065	0.060	0.056	0.175	0.089	0.063	0.067	0.061	0.018	0.187	0.116	0.053	0.050	0.038
U	0.009	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.008	0.008	0.000
Cations	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
La/Ce	0.398	0.491	0.537	0.372	0.317	0.358	0.518	0.435	0.576	0.380	0.537	0.548	0.517	0.516	0.466	0.440	0.482	0.513	0.515	0.547
(Al+Si)	0.456	0.163	0.459	0.555	0.268	0.237	0.428	0.166	0.320	0.987	0.172	0.249	0.581	0.502	0.488	0.631	0.698	0.724	0.749	1.188
(Ca+Fe)	0.964	1.056	0.844	1.073	0.781	0.918	0.979	1.119	0.899	0.665	1.060	0.520	0.917	0.961	0.864	1.088	1.104	0.874	0.882	0.886
(REE+Y+Th)	3.519	3.781	3.686	3.316	3.950	3.845	3.526	3.652	3.781	3.261	3.704	4.231	3.433	3.537	3.532	3.151	3.138	3.332	3.301	2.803
REE / F	0.934	0.928	0.796	0.904	0.848	0.856	1.024	0.820	0.973	0.770	0.887	1.000	1.054	0.993	0.801	0.918	0.911	0.985	0.997	0.914

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Thorite

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Serie A: included in zircon

Label	zr008_5	zr011_4	zr026_3	zr025_3	zr065_2	zr072_1	zr079_4	zr085_3	zr088_2	zr097_5	zr100_3	zr114_2	zr115_4	zr116_1	zr137_3	zr143_4	zr159_4	zr161_2	zr162_4	zr169_2	zr175_4
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Al <sub>2</sub> O <sub>3</sub>	2.19	n.d.	1.53	1.08	1.48	0.87	1.15	1.43	1.36	1.14	1.28	1.18	0.97	0.98	1.02	1.02	1.08	1.09	1.32	0.98	1.26
SiO <sub>2</sub>	23.65	20.67	23.07	20.71	21.68	22.18	19.5	21.1	22.67	22.69	21.82	20.38	20.23	18.86	22.73	17.01	22.4	21.79	22.66	18.18	23.13
P <sub>2</sub> O <sub>5</sub>	n.d.	n.d.	0.23	n.d.	0.46	0.42	n.d.	0.27	0.24	0.24	0.25	n.d.	0.26	0.52	0.17	0.2	0.2	0.35	0.57	0.29	0.27
CaO	0.71	n.d.	0.43	0.77	1.25	0.58	0.87	0.67	0.73	0.57	0.91	0.79	0.59	0.42	1.08	1.36	0.63	0.72	1.15	1.19	0.72
TiO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	1.13	n.d.	0.62	4.15	0.86	1.27	1.43	0.58	0.55	0.6	0.37	1.28	1.4	1.58	0.76	1.09	0.68	1.01	0.88	0.37	0.48
Y <sub>2</sub> O <sub>3</sub>	4.97	0.34	3.78	4.32	3.03	6.94	3.54	5.87	5.44	5.1	6.47	5.01	6.33	5.6	0.99	6.9	5.12	5.64	5.64	5.7	5.45
ZrO <sub>2</sub>	5.51	4.82	5.3	4.96	15.31	0.82	2.12	2.8	3.58	2.99	5.54	3.3	n.d.	0.54	4.5	4.2	3.86	2.76	5.34	2.63	3.82
La <sub>2</sub> O <sub>3</sub>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce <sub>2</sub> O <sub>3</sub>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
PbO	n.d.	2.52	n.d.	1.02	0.32	0.2	0.17	0.28	0.39	n.d.	0.41	0.25	n.d.	n.d.	n.d.	0.18	0.17	0.19	0.23	0.14	n.d.
ThO <sub>2</sub>	44.99	46.82	46.69	31.93	33.82	33.14	44.69	46.49	46.39	45.06	47.75	38.85	50.32	49.73	32.93	41.91	44.23	32.32	48.43	46.29	47.26
UO <sub>2</sub>	4.74	13.6	2.7	9.33	3.36	15.38	17.3	4.7	4.66	2.67	3.92	7.34	3.41	2.96	12.18	7.91	8.02	21.62	2.97	8.91	7.34
Total	87.89	88.77	84.35	78.27	81.57	81.80	90.77	84.19	86.01	81.06	88.72	78.38	83.51	81.19	76.36	81.78	86.39	87.49	89.19	84.68	89.73

Serie B : thorite associated with allanite, titanite or free

Label	al3_3	al4_6	al4_7	al17_4	al16_4	al14_7	al13_4	al13_6	al13_7	al11_3	al10_8	xx_1_3	xx_2_1	xx5_1	xx6_1	xx6_3	xx7_3	xx9_2	xx17_3	x_1_5
F	n.d.	n.d.	0.55	n.d.	n.d.	n.d.	n.d.	n.d.	1.49	n.d.	n.d.	n.d.	n.d.	0.93	0.92	0.93	0.7	n.d.	2.86	n.d.
Al <sub>2</sub> O <sub>3</sub>	1.43	0.34	n.d.	2.32	2.11	1.37	1.27	2.02	n.d.	1.85	1.38	1.14	1.20	1.11	n.d.	n.d.	1.12	2.15	0.63	1.13
SiO <sub>2</sub>	25.65	23.43	22.17	22.62	23.92	22.09	23.07	23.13	23.22	23.32	22.56	24.15	24.69	21.40	20.84	22.02	21.66	23.74	6.38	24.86
P <sub>2</sub> O <sub>5</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CaO	1.34	4.21	3.86	2.70	1.82	4.19	4.24	3.87	3.35	5.16	3.56	3.87	4.12	1.06	1.20	1.20	1.14	1.52	5.62	4.16
TiO <sub>2</sub>	n.d.	n.d.	0.70	n.d.	n.d.	n.d.	n.d.	n.d.	1.52	n.d.	n.d.	n.d.	n.d.	n.d.	2.97	2.62	n.d.	n.d.	n.d.	n.d.
FeO	2.61	3.17	1.47	2.95	8.07	1.72	1.65	2.50	1.51	1.42	1.36	0.32	0.27	n.d.	n.d.	0.50	0.43	0.70	0.53	0.95
Y <sub>2</sub> O <sub>3</sub>	0.41	0.28	0.32	0.51	0.40	0.78	0.57	0.40	0.42	0.78	0.35	0.28	0.28	5.56	6.81	6.11	5.04	2.31	0.36	0.51
ZrO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	0.83	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
La <sub>2</sub> O <sub>3</sub>	4.62	n.d.	n.d.	1.84	2.31	0.61	n.d.	1.60	3.21	n.d.	1.41	0.62	0.79	n.d.	n.d.	n.d.	0.57	1.68	4.10	n.d.
Ce <sub>2</sub> O <sub>3</sub>	9.83	n.d.	n.d.	3.56	4.98	1.06	n.d.	1.97	1.86	0.64	1.44	n.d.	0.61	4.53	5.07	4.49	3.33	5.32	7.29	0.94
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	50.36	63.31	61.91	55.58	52.07	64.16	70.25	60.38	60.13	44.26	53.50	50.80	52.27	52.72	44.99	49.34	60.27	57.75	56.69	51.65
UO <sub>2</sub>	4.21	4.12	8.03	6.93	3.38	6.28	3.36	2.81	3.95	22.62	11.61	19.19	18.73	12.67	14.48	11.55	8.33	9.30	10.05	17.12
Total	100.46	98.86	98.46	99.01	99.89	102.26	104.41	98.68	99.17	100.05	97.17	100.37	102.96	99.05	96.36	97.83	101.89	104.47	91.65	101.32

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Rare Th, U, REE minerals

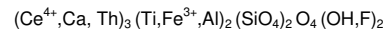
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Chevkinite group		
Label	xx7_1	xx7_2
F	0.00	0.90
MgO	0.00	0.23
Al <sub>2</sub> O <sub>3</sub>	1.57	1.43
SiO <sub>2</sub>	15.75	14.38
P <sub>2</sub> O <sub>5</sub>	0.74	0.86
CaO	1.82	2.09
FeO	1.46	1.85
TiO <sub>2</sub>	10.05	13.46
MnO	0.00	0.00
Y <sub>2</sub> O <sub>3</sub>	0.00	0.00
ZrO <sub>2</sub>	0.52	0.35
La <sub>2</sub> O <sub>3</sub>	1.20	1.08
Ce <sub>2</sub> O <sub>3</sub>	58.69	58.11
Yb <sub>2</sub> O <sub>3</sub>	n.a.	n.a.
HfO <sub>2</sub>	n.a.	n.a.
PbO	n.a.	n.a.
ThO <sub>2</sub>	2.88	3.22
UO <sub>2</sub>	3.03	2.28
Total	97.71	99.11

Normalized at (Si,P) = 2.00

F	0.000	0.375
Mg	0.000	0.045
Al	0.226	0.224
Si	1.923	1.904
P	0.077	0.096
Ca	0.238	0.297
Ti	0.923	1.340
Mn	0.000	0.000
Fe	0.149	0.205
Y	0.000	0.000
Zr	0.031	0.022
La	0.054	0.053
Ce	2.624	2.816
Th	0.080	0.097
U	0.082	0.067
Σ cations	6.407	7.166
O	12.200	13.475

(Si+P)	2.000	2.000
(Ti+Fe+Al+Zr)	1.329	1.791
(Ca+REE+Th+U)	3.078	3.330



Euxenite-(Y)		
Label	xx22_2	xx22_3
F	n.a.	n.a.
MgO	n.a.	n.a.
Al <sub>2</sub> O <sub>3</sub>	< 0.13	< 0.13
SiO <sub>2</sub>	<0.24	<0.24
P <sub>2</sub> O <sub>5</sub>	< 0.06	< 0.06
CaO	1.11	1.02
FeO	3.28	1.75
TiO <sub>2</sub>	4.38	2.15
MnO	n.a.	n.a.
Y <sub>2</sub> O <sub>3</sub>	31.34	33.32
ZrO <sub>2</sub>	<0.42	<0.42
La <sub>2</sub> O <sub>3</sub>	n.a.	n.a.
Ce <sub>2</sub> O <sub>3</sub>	n.a.	n.a.
Yb <sub>2</sub> O <sub>3</sub>	4.50	4.42
HfO <sub>2</sub>	< 0.18	< 0.18
PbO	<0.12	<0.12
ThO <sub>2</sub>	1.63	0.91
UO <sub>2</sub>	3.46	4.15
Total	49.70	47.72

Normalized to A-site = 1.00

Ca	0.025	0.023
Ti	0.097	0.048
Fe	0.073	0.039
Y	0.696	0.740
Yb	0.100	0.098
Th	0.036	0.020
U	0.077	0.092
Total	1.103	1.059



Uraninite	
Label	zr002_uran
F	n.a.
MgO	n.a.
Al <sub>2</sub> O <sub>3</sub>	< 0.13
SiO <sub>2</sub>	6.008
P <sub>2</sub> O <sub>5</sub>	< 0.06
CaO	0.411
FeO	< 0.05
TiO <sub>2</sub>	<0.08
MnO	n.a.
Y <sub>2</sub> O <sub>3</sub>	4.051
ZrO <sub>2</sub>	3.509
La <sub>2</sub> O <sub>3</sub>	n.a.
Ce <sub>2</sub> O <sub>3</sub>	n.a.
Yb <sub>2</sub> O <sub>3</sub>	1.437
HfO <sub>2</sub>	< 0.18
PbO	4.930
ThO <sub>2</sub>	4.276
UO <sub>2</sub>	69.194
Total	93.82

Age (U-Th-Pb)

PbO	4.93 ± 0.09
ThO <sub>2</sub>	4.28 ± 0.06
UO <sub>2</sub>	69.19 ± 0.21

Age 491 ± 20 Ma

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Zircon

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SERIE A : Bulk zircon fraction

Label	zr001	zr002	zr003	zr004	zr005	zr006	zr007	zr008	zr009	zr010	zr011	zr012	zr013	zr014	zr015	zr016	zr017	zr018	zr019	zr020	zr021	zr022	zr023	
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	31.68	31.52	31.69	31.38	31.32	30.88	30.70	31.17	31.31	31.17	31.38	31.40	31.37	31.36	31.42	31.27	31.02	31.32	31.41	31.75	31.69	31.60	31.52	
P <sub>2</sub> O <sub>5</sub>	0.06	0.81	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.84	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.16	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.19	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	0.13	n.d.	n.d.	n.d.	n.d.	n.d.	0.14	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.30	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.15	0.18	0.13	0.27	0.12	0.12	0.23	0.19	0.13	0.39	0.15	0.14	0.24	0.31	0.10	0.31	0.14	0.31	0.14	n.d.	0.13	n.d.	0.33	
ZrO <sub>2</sub>	65.12	65.32	64.88	65.07	65.74	65.99	64.65	64.68	65.57	65.57	65.77	65.68	65.51	64.68	65.61	64.48	66.13	65.13	64.61	65.97	65.94	65.93	65.29	
HfO <sub>2</sub>	1.87	1.63	1.65	1.64	1.62	1.54	1.49	1.82	1.57	1.36	1.56	1.85	1.46	1.73	1.48	1.43	1.65	1.54	1.63	1.73	1.63	1.69	1.41	
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	0.11	0.27	n.d.	n.d.	n.d.	n.d.	0.10	n.d.	n.d.	0.14	n.d.	n.d.	0.11	n.d.	n.d.	n.d.	n.d.	0.08	n.d.	n.d.	n.d.	n.d.	0.10	
UO <sub>2</sub>	0.37	0.26	0.20	0.37	0.30	0.23	0.27	0.38	0.19	0.38	0.25	0.22	0.35	0.78	0.24	0.30	0.18	0.48	0.38	0.22	0.24	0.24	0.46	
Total	99.49	99.99	98.55	98.73	99.10	98.76	97.74	98.24	98.77	99.01	99.11	99.29	99.88	98.86	98.85	97.98	99.42	98.86	98.17	99.67	99.63	99.46	99.11	

Label	zr024	zr025	zr026	zr027	zr028	zr029	zr030	zr032	zr033	zr034	zr035	zr036	zr037	zr038	zr039	zr040	zr041	zr042	zr043	zr044	zr045	zr046	zr047	
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	31.85	31.80	31.71	31.95	31.18	31.83	31.86	31.79	31.56	32.38	31.93	31.79	32.44	31.81	31.74	31.47	31.47	31.65	31.72	31.71	31.75	30.75	31.45	
P <sub>2</sub> O <sub>5</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	0.81	0.85	n.d.	0.83	0.81	n.d.	0.84	n.d.	n.d.	0.82	n.d.	0.62	n.d.	0.83	0.83	0.83	0.83	0.82	n.d.
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.14	n.d.	n.d.	n.d.	n.d.	0.15	n.d.	
FeO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.06	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
Y <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	0.12	n.d.	n.d.	0.44	n.d.	0.19	n.d.	n.d.	n.d.	0.69	n.d.	n.d.	0.61	0.17	n.d.	0.17	0.23	0.19	0.11	0.46	n.d.	
ZrO <sub>2</sub>	65.60	65.59	65.56	65.35	67.15	65.65	66.06	65.49	65.99	64.97	65.50	65.08	65.07	65.55	65.07	65.10	65.69	66.16	65.24	65.91	65.85	65.75	66.17	
HfO <sub>2</sub>	1.66	1.60	1.77	1.85	1.83	1.81	1.93	1.82	1.70	2.08	1.79	1.93	1.80	1.65	1.76	1.81	1.76	1.79	1.55	1.59	1.85	1.63	1.60	
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
ThO <sub>2</sub>	0.11	n.d.	n.d.	0.38	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
UO <sub>2</sub>	0.22	0.37	0.21	0.37	0.13	0.27	0.25	0.22	0.25	0.23	0.34	0.30	0.24	0.31	0.23	0.28	0.34	0.26	0.43	0.30	0.23	0.53	0.17	
Total	99.44	99.36	99.37	99.90	100.29	100.81	100.95	99.51	100.33	100.47	99.62	100.63	99.55	99.32	100.23	98.83	100.14	100.03	100.00	100.53	100.62	100.09	99.39	

Label	zr048	zr049	zr050	zr051	zr052	zr053	zr054	zr055	zr056	zr057	zr058	zr059	zr060	zr061	zr062	zr063	zr064	zr065	zr066	zr067	zr068	zr069	zr070
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	0.07	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	31.09	31.45	32.10	31.76	31.69	31.29	31.83	32.54	31.79	31.94	31.82	31.93	31.59	31.70	31.90	32.01	32.21	31.81	31.95	32.07	30.70	31.53	31.88
P <sub>2</sub> O <sub>5</sub>	0.81	0.84	0.87	0.89	0.82	0.80	n.d.	0.87	0.85	0.85	0.95	n.d.	0.63	n.d.	n.d.	0.85	0.84	0.85	0.84	0.86	0.81	0.85	0.82
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	0.38	0.11	n.d.	n.d.	n.d.	0.08	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.04	n.d.	n.d.	n.d.	0.24	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.15	0.38	n.d.	0.10	n.d.	n.d.	n.d.	n.d.	0.11	n.d.	n.d.	n.d.	n.d.	0.28	0.12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ZrO <sub>2</sub>	65.20	65.59	64.72	66.16	65.89	66.03	65.62	64.50	65.53	65.30	65.25	65.47	65.67	66.16	65.80	65.18	65.42	65.40	65.28	65.26	65.65	65.74	65.61
HfO <sub>2</sub>	1.66	1.72	1.75	1.81	1.66	1.81	1.64	1.88	1.87	1.80	1.70	1.78	1.86	1.94	1.69	1.80	1.69	1.66	1.90	1.87	1.63	1.54	1.72
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
UO <sub>2</sub>	0.66	0.29	0.33	0.29	0.25	0.28	0.30	0.27	0.23	0.23	0.26	0.34	0.20	0.47	0.26	0.18	0.24	0.24	0.34	0.33	0.38	0.32	0.24
Total	99.95	100.38	99.77	101.01	100.31	100.36	99.39	100.06	100.38	100.12	99.98	99.52	100.09	100.55	99.81	100.02	100.40	99.96	100.55	100.39	99.17	99.98	100.27

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Zircon

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Label	zr071	zr072	zr073	zr074	zr075	zr076	zr077	zr078	zr079	zr080	zr081	zr082	zr083	zr084	zr085	zr086	zr087	zr088	zr089	zr090	zr091	zr092	zr093	
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.07	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	31.96	31.85	31.79	31.79	32.15	32.04	32.07	31.87	32.11	31.79	31.70	31.90	31.93	31.91	32.10	32.12	32.44	31.89	31.27	30.98	31.98	31.87	31.95	
P <sub>2</sub> O <sub>5</sub>	0.85	n.d.	n.d.	0.85	0.87	0.86	0.83	n.d.	0.81	n.d.	0.82	0.83	0.90	0.91	0.83	0.83	0.84	n.d.	0.82	0.81	0.83	0.85	0.84	
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	0.05	n.d.	n.d.	n.d.	n.d.	0.15	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.04	n.d.	0.04	n.d.
Y <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.11	0.37	n.d.	n.d.	0.49	0.08	0.52	n.d.	0.10	0.12	n.d.	0.12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ZrO <sub>2</sub>	65.28	65.47	65.66	65.32	65.15	65.34	65.30	65.81	65.31	65.46	65.66	65.41	65.06	65.36	65.67	65.42	64.80	66.49	66.04	65.78	65.24	64.75	65.04	
HfO <sub>2</sub>	1.82	1.73	1.45	1.71	1.59	1.65	1.87	1.70	1.76	1.72	1.92	1.72	1.79	1.84	1.78	1.73	1.81	1.61	1.70	1.81	1.68	1.85	1.97	
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	0.11	n.d.	n.d.	n.d.	n.d.	0.12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
UO <sub>2</sub>	0.37	0.28	0.30	0.34	0.42	0.35	0.22	0.31	0.26	0.33	0.26	0.21	0.29	0.31	0.23	0.20	0.26	0.28	0.35	0.32	0.29	0.45	0.30	
Total	100.44	99.33	99.20	100.01	100.18	100.51	100.40	100.06	100.25	99.30	100.92	100.15	100.49	100.33	100.71	100.42	100.15	100.39	100.18	99.74	100.02	99.81	100.10	

Label	zr094	zr095	zr096	zr097	zr098	zr099	zr100	zr101	zr102	zr103	zr104	zr105	zr106	zr107	zr109	zr110	zr111	zr112	zr113	zr114	zr115	zr116	zr117
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.14	n.d.
SiO <sub>2</sub>	32.15	32.08	31.96	31.87	31.91	32.10	32.18	32.59	32.37	32.50	32.54	32.75	32.25	32.30	32.38	32.35	32.30	32.21	32.61	32.63	32.21	31.80	32.68
P <sub>2</sub> O <sub>5</sub>	0.83	0.83	0.84	n.d.	0.83	0.85	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.10	n.d.	n.d.	0.12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.08	n.d.
FeO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.21	n.d.	n.d.	0.12	n.d.	n.d.	0.14	0.24	0.21	0.11	0.11	0.18	0.15	0.20	0.18	0.63	0.25	0.10	n.d.	0.14	0.13	0.20	0.26
ZrO <sub>2</sub>	65.15	65.21	64.93	65.52	65.51	64.64	65.77	65.29	65.91	65.28	65.76	65.28	64.90	65.50	66.81	65.05	64.86	67.08	66.32	65.73	66.19	65.64	66.60
HfO <sub>2</sub>	2.23	1.91	1.76	1.79	1.61	1.93	1.45	1.75	1.68	1.61	1.66	1.61	1.73	1.83	1.93	1.94	2.23	1.55	1.61	1.78	1.62	1.62	1.82
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.12	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.28	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.13
UO <sub>2</sub>	0.29	0.30	0.29	0.23	0.27	0.30	0.44	0.44	0.38	0.23	0.22	0.37	0.26	0.11	0.24	0.63	0.39	0.23	0.09	0.29	0.21	0.26	0.24
Total	100.86	100.33	99.78	99.53	100.13	99.82	100.08	100.43	100.55	99.85	100.29	100.19	99.29	99.94	101.54	100.88	100.03	101.17	100.63	100.57	100.36	99.74	101.73

Label	zr118	zr119	zr120	zr121	zr122	zr123	zr124	zr125	zr126	zr127	zr128	zr129	zr130	zr131	zr132	zr133	zr134	zr135	zr136	zr137	zr138	zr139	zr140
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	0.36	1.34	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.18	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	32.76	32.83	32.16	31.50	33.04	32.36	31.77	32.03	32.08	31.80	31.87	32.81	32.60	32.12	32.62	31.99	32.76	32.67	32.55	32.45	32.56	32.60	32.15
P <sub>2</sub> O <sub>5</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CaO	n.d.	n.d.	n.d.	0.30	0.41	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.11	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	n.d.	n.d.	n.d.	0.19	0.50	n.d.	n.d.	n.d.	n.d.	0.12	n.d.	n.d.	n.d.	0.13	n.d.	0.16	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.17	0.13	0.08	0.30	0.27	0.15	0.45	0.10	0.33	0.28	0.17	0.14	0.34	0.14	0.10	0.61	0.58	0.12	0.16	0.11	0.08	0.52	0.08
ZrO <sub>2</sub>	66.25	66.82	66.06	62.32	60.22	66.59	66.20	66.18	66.70	66.11	66.63	67.39	66.44	66.65	66.66	66.42	65.85	67.21	66.88	67.17	66.78	67.16	67.60
HfO <sub>2</sub>	1.64	1.70	2.00	1.54	1.54	1.53	1.62	1.84	1.57	1.49	1.68	1.57	1.46	1.55	1.47	1.44	1.58	1.59	1.59	1.59	1.48	1.65	1.54
PbO	n.d.	n.d.	n.d.	0.13	n.d.	n.d.	0.19	n.d.	n.d.	0.12	n.d.	n.d.	0.14	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.10	n.d.	n.d.	0.08	n.d.	n.d.	0.08	n.d.	n.d.	n.d.	0.16	n.d.	0.09	n.d.	n.d.	0.11	n.d.
UO <sub>2</sub>	0.28	0.21	0.18	0.53	0.18	0.35	0.86	0.23	0.51	0.45	0.33	0.24	0.65	0.28	0.21	0.62	0.44	0.24	0.31	0.24	0.21	0.64	0.20
Total	101.10	101.69	100.48	97.17	97.50	100.98	101.19	100.38	101.19	100.45	100.68	102.15	101.71	100.87	101.06	101.53	101.37	101.83	101.58	101.56	101.11	102.68	101.57

APPENDIX IV EMPA analyses from the Yerila gneiss (YER-03)

Zircon

Label	zr141	zr142	zr143	zr144	zr145	zr146	zr147	zr148	zr149	zr150	zr151	zr152	zr153	zr154	zr155	zr156	zr157	zr158	zr159	zr160	zr161	zr162	zr163
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.25	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	32.89	32.59	32.23	32.53	32.54	32.60	32.65	32.00	32.42	32.60	31.96	32.53	32.56	32.24	32.30	32.46	31.96	32.40	32.60	33.02	32.62	32.78	32.67
P <sub>2</sub> O <sub>5</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.20	n.d.	n.d.	n.d.	0.15	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.08	0.11	0.17	0.10	0.19	0.09	0.12	0.38	0.34	0.13	0.11	0.13	0.13	0.13	0.13	0.12	0.17	0.21	0.14	0.10	0.10	0.16	0.12
ZrO <sub>2</sub>	67.39	67.43	67.09	66.68	66.66	67.20	66.96	66.12	66.03	67.06	64.32	66.86	66.88	67.48	66.81	66.31	67.72	67.24	67.46	65.88	66.81	67.44	68.16
HfO <sub>2</sub>	1.97	1.77	1.88	1.75	1.80	1.59	1.55	1.35	1.65	1.57	2.03	2.08	1.73	1.73	1.69	1.53	1.72	1.71	1.54	1.93	1.66	1.80	1.89
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.13	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.11	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.08	0.08	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
UO <sub>2</sub>	0.16	0.20	0.33	0.19	0.36	0.19	0.20	0.73	0.36	0.37	0.18	0.29	0.26	0.21	0.26	0.24	0.20	0.37	0.21	0.21	0.23	0.32	0.24
Total	102.49	102.10	101.70	101.25	101.55	101.67	101.48	100.82	100.80	101.73	99.05	101.89	101.56	101.79	101.34	100.74	101.85	101.93	101.95	101.14	101.42	102.50	103.08

Label	zr164	zr165	zr166	zr167	zr169	zr170	zr171	zr172	zr173	zr174	zr175	zr176	zr177	zr178	zr179	zr180	zr181	zr182	zr183	zr184
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.25	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	33.18	32.28	32.97	32.66	33.27	30.23	30.56	31.59	31.88	31.51	32.01	31.95	31.95	32.49	30.46	31.90	31.18	32.28	31.18	31.18
P <sub>2</sub> O <sub>5</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	0.11	0.33	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.08	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	n.d.	n.d.	n.d.	n.d.	n.d.	0.27	0.19	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.07	n.d.	n.d.	n.d.	n.d.
Y <sub>2</sub> O <sub>3</sub>	0.22	0.11	0.13	0.10	0.17	0.14	0.38	0.22	0.08	0.09	0.15	0.11	0.13	0.24	0.17	0.31	0.13	0.12	0.13	0.13
ZrO <sub>2</sub>	68.45	66.93	67.37	67.30	67.54	66.52	65.42	65.44	67.40	66.87	67.34	66.88	67.68	66.04	66.24	66.73	66.57	66.73	66.73	66.73
HfO <sub>2</sub>	1.77	1.70	1.84	1.92	1.56	2.05	1.65	1.59	1.58	2.04	1.77	1.67	1.79	1.59	1.66	1.53	1.72	1.72	1.72	1.72
PbO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
ThO <sub>2</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.09	0.11	n.d.	n.d.	n.d.	n.d.	n.d.	0.08	0.29	0.09	n.d.	n.d.	n.d.	0.17
UO <sub>2</sub>	0.25	0.18	0.28	0.16	0.23	0.18	0.48	0.33	0.22	0.11	0.22	0.22	0.27	0.40	0.29	0.48	0.23	0.21	0.23	0.23
Total	103.87	101.20	102.59	102.14	102.77	99.50	99.35	99.28	101.16	101.15	101.02	101.29	101.02	102.56	98.91	100.62	99.99	100.90	99.99	100.16

SERIE B : zircon inclusions in allanite

Label	al7_4	al7_5	al8_4	al8_6	al8_7	al7_4	al7_5	al7_6	al8_4	al8_6	al8_7	al17_7	al16_3	al15_5	al15_8	al15_11	al11_1	al10_9	pla8_i	xx_1_2	x_1_2	x_1_3	x_1_6
Al <sub>2</sub> O <sub>3</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
SiO <sub>2</sub>	31.42	32.34	31.59	31.46	31.78	33.29	33.84	32.92	33.65	33.76	33.49	32.77	33.41	33.10	33.55	33.41	32.55	32.41	32.65	32.93	32.43	32.43	32.06
P <sub>2</sub> O <sub>5</sub>	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
CaO	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
FeO	0.26	0.31	0.45	0.27	0.30	0.22	0.31	0.33	0.54	0.00	0.29	0.38	0.41	0.00	0.45	0.35	0.00	0.35	0.00	0.00	0.32	0.00	0.42
Y <sub>2</sub> O <sub>3</sub>	0.40	0.19	0.21	0.25	0.22	0.47	0.06	0.06	0.06	0.06	0.28	0.72	0.40	0.34	0.06	0.34	0.59	0.39	0.06	0.06	0.30	0.06	0.06
ZrO <sub>2</sub>	64.09	64.39	65.62	64.56	65.02	64.10	64.03	64.82	65.14	65.20	65.09	62.44	63.32	64.55	64.20	65.68	63.06	62.80	67.45	67.42	66.02	66.16	65.83
HfO <sub>2</sub>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
PbO	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ThO <sub>2</sub>	0.41	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.62	0.00	0.00	0.00	0.00	0.00	0.00
UO <sub>2</sub>	1.26	0.58	0.31	0.64	0.70	1.43	0.61	0.41	0.36	0.55	0.73	1.19	1.23	0.44	0.33	0.86	1.62	1.06	0.58	0.47	0.41	0.54	0.77
Total	97.84	97.81	98.18	97.18	98.02	99.86	98.85	98.54	99.75	99.57	99.88	97.89	98.77	98.43	98.59	100.64	98.44	97.01	100.74	100.88	99.48	99.19	99.14

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error								Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction							
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$						
<b>Xenotime-(Y) - AMPH9</b>																											
xen01b	9018	8488	1.06	1.0180	0.50	0.0571	0.0784	0.6177	0.0200	0.0006	0.0010	0.0075	0.0002	496	±22	(0)	487	±6	(0)	488	±5	(0)	401	±4	(0)		
xen01c	8274	8364	0.99	1.0179	0.50	0.0571	0.0797	0.6274	0.0212	0.0006	0.0010	0.0076	0.0002	496	±22	(0)	494	±6	(0)	494	±5	(0)	424	±4	(0)		
xen01d	7987	9161	0.87	1.0180	0.50	0.0570	0.0788	0.6191	0.0223	0.0006	0.0010	0.0076	0.0002	492	±22	(0)	489	±6	(0)	489	±5	(0)	445	±5	(0)		
xen01e	7157	9036	0.79	1.0178	0.50	0.0572	0.0802	0.6323	0.0222	0.0006	0.0010	0.0077	0.0002	498	±22	(0)	497	±6	(0)	498	±5	(0)	443	±5	(0)		
xen01f	2696	2438	1.11	1.0178	0.50	0.0570	0.0806	0.6332	0.0233	0.0006	0.0010	0.0081	0.0003	492	±24	(0)	499	±6	(0)	498	±5	(0)	466	±5	(0)		
xen01g	8649	9287	0.93	1.0177	0.50	0.0571	0.0813	0.6391	0.0229	0.0006	0.0010	0.0078	0.0002	493	±22	(0)	504	±6	(0)	502	±5	(0)	457	±5	(0)		
xen01h	6624	8460	0.78	1.0177	0.50	0.0571	0.0797	0.6273	0.0224	0.0006	0.0010	0.0078	0.0002	495	±22	(0)	494	±6	(0)	494	±5	(0)	448	±5	(0)		
xen02a	9241	9401	0.98	1.0177	0.50	0.0570	0.0795	0.6242	0.0216	0.0006	0.0010	0.0077	0.0002	491	±22	(0)	493	±6	(0)	492	±5	(0)	433	±4	(0)		
xen02b	24878	8469	2.94	1.0176	0.50	0.0569	0.0782	0.6133	0.0216	0.0006	0.0010	0.0075	0.0002	486	±22	(0)	486	±6	(0)	486	±5	(0)	432	±4	(0)		
xen02c	23850	7930	3.01	1.0177	0.50	0.0569	0.0802	0.6297	0.0221	0.0006	0.0010	0.0078	0.0002	489	±22	(0)	497	±6	(0)	496	±5	(0)	441	±4	(0)		
<b>Xenotime-(Y) - JB06-01</b>																											
HVXE01	132521	10463	12.67	1.0233	0.50	0.0569	0.0698	0.5467	0.0191	0.0006	0.0009	0.0068	0.0002	487	±22	(0)	435	±5	(0)	443	±4	(0)	382	±4	(0)		
HVXE02a	155330	4499	34.53	1.0227	0.50	0.0553	0.0705	0.5366	0.0175	0.0006	0.0009	0.0067	0.0002	423	±23	(0)	439	±5	(0)	436	±4	(0)	350	±4	(0)		
HVXE03	130634	4961	26.33	1.0224	0.50	0.0557	0.0691	0.5298	0.0187	0.0006	0.0009	0.0066	0.0002	440	±23	(0)	430	±5	(0)	432	±4	(0)	374	±4	(0)		
HVXE04	10716	22795	0.47	1.0220	0.50	0.0553	0.0710	0.5403	0.0198	0.0006	0.0009	0.0066	0.0002	424	±22	(0)	442	±5	(0)	439	±4	(0)	396	±4	(0)		
HVXE05	10260	7963	1.29	1.0216	0.50	0.0573	0.0699	0.5511	0.0094	0.0006	0.0009	0.0071	0.0001	501	±23	(0)	436	±5	(0)	446	±5	(0)	188	±2	(0)		
HVXE06	4783	6896	0.69	1.0213	0.50	0.0576	0.0745	0.5907	0.0204	0.0006	0.0009	0.0073	0.0002	514	±22	(0)	463	±6	(0)	471	±5	(0)	408	±5	(0)		
HVXE07	8270	11880	0.70	1.0210	0.50	0.0562	0.0673	0.5211	0.0181	0.0006	0.0008	0.0065	0.0002	462	±23	(60)	420	±5	(1)	426	±4	(10)	362	±4	(9)		
HVXE08	125580	4749	26.44	1.0207	0.50	0.0558	0.0694	0.5333	0.0186	0.0006	0.0009	0.0066	0.0002	445	±23	(0)	433	±5	(0)	434	±4	(0)	372	±4	(0)		
HVXE09	7568	14401	0.53	1.0206	0.50	0.0556	0.0728	0.5577	0.0207	0.0006	0.0009	0.0068	0.0002	438	±22	(0)	453	±5	(0)	450	±4	(0)	414	±5	(0)		
HVXE10	20855	39413	0.53	1.0205	0.50	0.0630	0.0643	0.5577	0.0206	0.0006	0.0008	0.0068	0.0002	709	±21	(0)	401	±5	(0)	450	±4	(0)	413	±4	(0)		
HVXE11	5612	5652	0.99	1.0202	0.50	0.0560	0.0730	0.5631	0.0173	0.0006	0.0009	0.0070	0.0002	453	±23	(0)	454	±5	(0)	454	±5	(0)	347	±4	(0)		
HVXE12	15459	31201	0.50	1.0200	0.50	0.0586	0.0685	0.5529	0.0202	0.0006	0.0009	0.0068	0.0002	552	±22	(0)	427	±5	(0)	447	±4	(0)	405	±5	(0)		
HVXE13	13021	21116	0.62	1.0200	0.50	0.0561	0.0717	0.5544	0.0188	0.0006	0.0009	0.0068	0.0002	458	±22	(31)	446	±5	(0)	448	±4	(5)	377	±4	(6)		
HVXE14	9553	11817	0.81	1.0199	0.50	0.0565	0.0693	0.5395	0.0140	0.0006	0.0009	0.0066	0.0002	474	±22	(58)	432	±5	(1)	438	±4	(10)	281	±3	(8)		
HVXE15	5249	5963	0.88	1.0199	0.50	0.0578	0.0738	0.5873	0.0160	0.0006	0.0009	0.0074	0.0002	523	±23	(104)	459	±6	(1)	469	±5	(19)	321	±4	(15)		
HVXE15a	5501	6661	0.83	1.0200	0.50	0.0559	0.0736	0.5667	0.0199	0.0006	0.0009	0.0070	0.0002	448	±22	(0)	458	±6	(0)	456	±5	(0)	397	±5	(0)		
HVXE16	6249	7461	0.84	1.0202	0.50	0.0570	0.0728	0.5721	0.0207	0.0006	0.0009	0.0072	0.0002	493	±23	(86)	453	±5	(1)	459	±5	(15)	414	±5	(12)		
HVXE17	5086	10491	0.48	1.0203	0.50	0.0562	0.0730	0.5650	0.0206	0.0006	0.0009	0.0070	0.0003	460	±22	(0)	454	±6	(0)	455	±5	(0)	413	±5	(0)		
HVXE18	4227	6549	0.65	1.0205	0.50	0.0571	0.0723	0.5689	0.0163	0.0006	0.0009	0.0073	0.0002	497	±23	(99)	450	±5	(1)	457	±5	(18)	327	±4	(18)		
HVXE19	5864	7635	0.77	1.0207	0.50	0.0559	0.0688	0.5293	0.0204	0.0006	0.0009	0.0066	0.0003	448	±23	(0)	429	±5	(0)	431	±4	(0)	407	±5	(0)		
<b>Brannerite - Jacob / Hidden Valley</b>																											
BR01	186380	870487	0.21	1.0062	0.25	0.0539	0.0455	0.3383	0.0167	0.0005	0.0005	0.0038	0.0002	367	±22	(2)	287	±3	(0)	296	±3	(0)	335	±3	(1)		
BR02	213728	876832	0.24	1.0097	0.25	0.0538	0.0435	0.3227	0.0149	0.0005	0.0005	0.0036	0.0002	364	±23	(2)	274	±3	(0)	284	±3	(0)	300	±3	(1)		
BR03	198470	842776	0.24	1.0117	0.25	0.0534	0.0426	0.3140	0.0141	0.0005	0.0005	0.0034	0.0001	346	±22	(2)	269	±3	(0)	277	±3	(0)	284	±3	(1)		
BR04	237303	866181	0.27	1.0089	0.25	0.0538	0.0442	0.3274	0.0130	0.0005	0.0005	0.0036	0.0001	361	±23	(2)	279	±3	(0)	288	±3	(0)	262	±3	(1)		
BR05	234579	1025692	0.23	1.0046	0.25	0.0538	0.0387	0.2868	0.0139	0.0005	0.0005	0.0034	0.0001	362	±22	(2)	245	±3	(0)	256	±3	(0)	278	±3	(1)		
BR06	213849	693925	0.31	1.0117	0.25	0.0539	0.0569	0.4228	0.0165	0.0005	0.0006	0.0045	0.0002	366	±22	(2)	357	±4	(0)	358	±3	(0)	331	±3	(1)		
BR07	224806	1032675	0.22	1.0062	0.25	0.0537	0.0419	0.3098	0.0153	0.0005	0.0005	0.0037	0.0002	357	±22	(2)	264	±3	(0)	274	±3	(0)	307	±3	(1)		
BR08	173754	1161802	0.15	1.0045	0.25	0.0537	0.0388	0.2872	0.0166	0.0005	0.0005	0.0035	0.0002	360	±23	(2)	245	±3	(0)	256	±3	(0)	332	±4	(1)		

#	Corrected isotopic ratios			1 sigma error								Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>						
	Th (ppm)	U (ppm)	Th/U	Yield ratio $^{207}\text{Pb}/^{208}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	
<b>Polycrase-(Y) - FMC</b>																		
poly01	73137	213960	0.34	1.0294	0.50	0.0540	0.0886	0.6664	0.0222	0.0005	0.0011	0.0080	0.0002	372 ±22 (0)	547 ±6 (0)	519 ±5 (0)	443 ±3 (0)	
poly02	70532	237012	0.30	1.0292	0.50	0.0528	0.0745	0.5470	0.0194	0.0005	0.0009	0.0066	0.0002	320 ±22 (0)	463 ±6 (0)	443 ±4 (0)	388 ±3 (0)	
poly03	71612	234915	0.30	1.0289	0.50	0.0535	0.0728	0.5416	0.0189	0.0005	0.0009	0.0066	0.0001	349 ±22 (0)	453 ±5 (0)	439 ±4 (0)	378 ±3 (0)	
poly10	67419	237379	0.28	1.0288	0.50	0.0551	0.0909	0.6970	0.0248	0.0005	0.0011	0.0085	0.0002	418 ±22 (0)	561 ±7 (0)	537 ±5 (0)	496 ±4 (0)	
poly11	61870	231690	0.27	1.0286	0.50	0.0554	0.0936	0.7209	0.0273	0.0005	0.0012	0.0088	0.0002	426 ±22 (0)	577 ±7 (0)	551 ±5 (0)	545 ±4 (0)	
poly12	70236	203563	0.35	1.0284	0.50	0.0552	0.1022	0.7845	0.0257	0.0005	0.0013	0.0096	0.0002	421 ±22 (0)	627 ±7 (0)	588 ±5 (0)	512 ±4 (0)	
poly20	62687	202132	0.31	1.0284	0.50	0.0547	0.0963	0.7328	0.0246	0.0005	0.0012	0.0089	0.0002	400 ±22 (0)	593 ±7 (0)	558 ±5 (0)	491 ±4 (0)	
<b>Titanite - Hidden Valley calcite-diopside-microcline vein</b>																		
tita01	305	226	1.35	1.0159	0.50	0.0628	0.1143	0.9895	0.0405	0.0008	0.0014	0.0141	0.0005	700 ±27 (0)	698 ±8 (0)	698 ±7 (0)	802 ±9 (0)	
tita02	446	419	1.06	1.0154	0.50	0.0625	0.0937	0.8070	0.0314	0.0007	0.0012	0.0106	0.0003	691 ±24 (0)	577 ±7 (0)	601 ±6 (0)	626 ±7 (0)	
tita03	314	158	1.99	1.0146	0.50	0.0612	0.1058	0.8932	0.0342	0.0010	0.0014	0.0154	0.0004	648 ±35 (0)	648 ±8 (0)	648 ±8 (0)	679 ±8 (0)	
tita04	297	190	1.57	1.0148	0.50	0.0617	0.0792	0.6735	0.0302	0.0012	0.0011	0.0131	0.0004	663 ±41 (0)	491 ±6 (0)	523 ±8 (0)	601 ±8 (0)	
tita10	375	301	1.25	1.0145	0.50	0.0616	0.0946	0.8028	0.0327	0.0007	0.0012	0.0107	0.0004	659 ±25 (0)	583 ±7 (0)	598 ±6 (0)	649 ±7 (0)	
tita11	320	145	2.21	1.0134	0.50	0.0598	0.0933	0.7690	0.0307	0.0009	0.0012	0.0127	0.0004	596 ±34 (0)	575 ±7 (0)	579 ±7 (0)	611 ±7 (0)	
<b>Davidite-(La) from Mt Gee (No.10 Workings)</b>																		
Dav02	4106	44872	0.09	1.0164	0.25	0.0519	0.0842	0.6034	0.0261	0.0005	0.0010	0.0073	0.0002	282 ±23 (19)	521 ±6 (0)	479 ±5 (3)	522 ±4 (27)	
Dav03	4052	48412	0.08	1.0165	0.25	0.0521	0.0869	0.6251	0.0251	0.0005	0.0011	0.0076	0.0002	291 ±22 (17)	537 ±6 (0)	493 ±5 (3)	501 ±4 (27)	
<b>Davidite-(La) from Mount Pleasant - South Mount Lofty Ranges</b>																		
DAV3201	4652	69022	0.07	1.0153	0.50	0.0497	0.1145	0.7851	0.0322	0.0005	0.0013	0.0085	0.0003	182 ±23 (8)	699 ±7 (0)	588 ±5 (2)	641 ±5 (20)	
DAV3202	5003	77493	0.06	1.0111	0.50	0.0500	0.1112	0.7674	0.0329	0.0005	0.0013	0.0087	0.0003	197 ±23 (7)	680 ±7 (0)	578 ±5 (1)	654 ±6 (19)	
DAV3203	7424	144434	0.05	1.0165	0.50	0.0497	0.0725	0.4967	0.0232	0.0005	0.0007	0.0049	0.0002	179 ±23 (5)	451 ±4 (0)	409 ±3 (1)	463 ±4 (12)	
<b>Rutile from Skarn JB05-37</b>																		
SKIX (rutile)	0.0	135	0.0000	1.0229	1.50	0.0562	0.0740	0.5729	-	0.0009	0.0009	0.0095	-	459 ±35 (0)	460 ±6 (0)	460 ±6 (0)	- - -	
rut01	0.0	135	0.0000	1.0197	1.50	0.0575	0.0806	0.6393	24.8618	0.0010	0.0010	0.0116	-	511 ±39 (0)	500 ±6 (0)	502 ±7 (0)	65746 - -	
rut02	0.1	143	0.0008	1.0192	1.50	0.0594	0.0751	0.6150	1.0557	0.0010	0.0009	0.0105	0.0934	582 ±36 (0)	467 ±6 (0)	487 ±7 (0)	14565 ±919 (0)	
rut03	0.1	71	0.0014	1.0200	1.50	0.2036	0.1204	3.3808	38.0662	0.0027	0.0015	0.0467	2.4512	2855 ±22 (0)	733 ±9 (0)	1500 ±11 (0)	74083 ±1270 (0)	
rut04	0.0	135	0.0002	1.0181	1.50	0.0549	0.0746	0.5649	0.0983	0.0014	0.0011	0.0146	0.2398	408 ±59 (0)	464 ±6 (0)	455 ±9 (0)	1895 ±4486 (0)	
rut05	0.1	88	0.0014	1.0182	1.50	0.0669	0.0784	0.7224	1.9238	0.0016	0.0011	0.0174	0.1928	834 ±51 (0)	486 ±7 (0)	552 ±10 (0)	21685 ±1335 (0)	
rut06	0.0	133	0.0000	1.0183	1.50	0.0565	0.0746	0.5811	-	0.0008	0.0009	0.0086	-	472 ±31 (0)	464 ±5 (0)	465 ±6 (0)	- - -	
rut07	0.0	130	0.0002	1.0192	1.50	0.0590	0.0809	0.6581	0.4118	0.0009	0.0010	0.0104	0.1425	569 ±32 (0)	501 ±6 (0)	513 ±6 (0)	6970 ±2047 (0)	



#	Th		Th/U	Corrected isotopic ratios										Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction											
	(ppm)	U (ppm)		Yield ratio $^{207}\text{Pb}/^{208}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{208}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{208}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$								
<b>Coffinite – Beverley WC2</b>																									
cof01	46	995448	0.0000	1.0130	0.00	0.1248	0.00013	0.00222	0.00379	0.0013	0.00001	0.00003	0.00004	2025	±18	(141)	±0.8	±0.1	(0.0)	2.3	±0.0	(0.2)	76	±1	(2078)
cof02	145	1026430	0.0001	1.0156	0.00	0.0782	0.00022	0.00237	0.00364	0.0008	0.00001	0.00003	0.00003	1151	±20	(156)	±1.4	±0.1	(0.0)	2.4	±0.0	(0.2)	73	±1	(676)
cof03	18	923608	0.0000	1.0174	0.00	0.0601	0.00034	0.00286	0.00463	0.0006	0.00001	0.00003	0.00005	609	±22	(160)	±2.2	±0.1	(0.0)	2.9	±0.0	(0.2)	93	±1	(5637)
cof04	175	1538763	0.0001	1.0120	0.00	0.0963	0.00014	0.00191	0.00372	0.0010	0.00001	0.00002	0.00003	1554	±19	(120)	±0.9	±0.1	(0.0)	1.9	±0.0	(0.1)	75	±1	(568)
cof05	23	1716439	0.0000	1.0201	0.00	0.0692	0.00021	0.00197	0.00461	0.0007	0.00001	0.00002	0.00004	904	±20	(119)	±1.3	±0.1	(0.0)	2.0	±0.0	(0.1)	93	±1	(4052)
cof06	1057	1347209	0.0008	1.0154	0.00	0.0726	0.00064	0.00640	0.00259	0.0007	0.00001	0.00008	0.00002	1004	±20	(44)	±4.1	±0.0	(0.0)	6.5	±0.1	(0.2)	52	±0	(98)
cof07	145	586259	0.0002	1.0177	0.00	0.0971	0.00017	0.00228	0.00304	0.0010	0.00001	0.00002	0.00003	1568	±19	(243)	±1.1	±0.1	(0.0)	2.3	±0.0	(0.3)	61	±1	(656)
cof08	76	1025206	0.0001	1.0159	0.00	0.1418	0.00006	0.00102	0.00331	0.0016	0.00001	0.00001	0.00004	2250	±19	(330)	±0.4	±0.1	(0.0)	1.0	±0.0	(0.2)	67	±1	(1401)
cof08b	314	960749	0.0003	1.0131	0.00	0.1575	0.00003	0.00069	0.00350	0.0018	0.00001	0.00001	0.00003	2429	±19	(445)	±0.2	±0.0	(0.0)	0.7	±0.0	(0.2)	71	±1	(308)
cof08c	41	607466	0.0001	1.0093	0.00	0.0672	0.00022	0.00199	0.00312	0.0007	0.00001	0.00002	0.00004	843	±22	(327)	±1.4	±0.0	(0.0)	2.0	±0.0	(0.3)	63	±1	(2316)
cof09	249	1334404	0.0002	1.0137	0.00	0.0583	0.00013	0.00104	0.00380	0.0006	0.00001	0.00001	0.00003	540	±22	(363)	±0.8	±0.0	(0.0)	1.1	±0.0	(0.2)	77	±1	(446)
cof10	319	1194741	0.0003	1.0174	0.00	0.0771	0.00004	0.00050	0.00311	0.0009	0.00001	0.00001	0.00003	1123	±22	(680)	±0.3	±0.0	(0.0)	0.5	±0.0	(0.2)	63	±1	(320)
cof10b	879	464343	0.0019	1.0150	0.00	0.0468	0.00105	0.00674	0.1186	0.0005	0.00001	0.00007	0.0009	37	±24	(152)	±6.8	±0.1	(0.0)	6.8	±0.1	(0.5)	2266	±17	(105)
<b>Carnotite – Beverley WC2</b>																									
carn01	31	399695	0.0001	1.0076	0.00	0.0464	0.00085	0.00542	0.5446	0.0005	0.00001	0.00006	0.0053	21	±24	(232)	±5.5	±0.1	(0.0)	5.5	±0.1	(0.6)	8788	±70	(2280)
carn02	90	1414164	0.0001	1.0168	0.00	0.0463	0.00066	0.00425	0.8618	0.0005	0.00001	0.00005	0.0079	13	±24	(96)	±4.3	±0.1	(0.0)	4.3	±0.1	(0.2)	12563	±86	(711)
carn03	37	339625	0.0001	0.9952	0.00	0.0462	0.00072	0.00457	0.2970	0.0005	0.00001	0.00006	0.0035	11	±25	(337)	±4.6	±0.1	(0.0)	4.6	±0.1	(0.7)	5256	±55	(2282)
carn04	67	661112	0.0001	1.0116	0.00	0.0464	0.00065	0.00418	0.5720	0.0005	0.00001	0.00005	0.0056	17	±24	(186)	±4.2	±0.1	(0.0)	4.2	±0.0	(0.3)	9143	±72	(1036)
carn05	25	1209663	0.0000	1.0069	0.00	0.0465	0.00055	0.00352	1.7686	0.0005	0.00001	0.00004	0.0221	22	±24	(130)	±3.5	±0.1	(0.0)	3.6	±0.0	(0.2)	20583	±161	(1720)
carn06	228	1166612	0.0002	1.0204	0.00	0.0462	0.00053	0.00336	0.0468	0.0005	0.00001	0.00004	0.0005	9	±24	(154)	±3.4	±0.1	(0.0)	3.4	±0.0	(0.2)	925	±9	(549)
carn07	25	740907	0.0000	0.9933	0.00	0.0463	0.00063	0.00402	1.3572	0.0005	0.00001	0.00005	0.0165	11	±25	(179)	±4.1	±0.1	(0.0)	4.1	±0.0	(0.3)	17331	±142	(2035)
carn08	283	1530451	0.0002	1.0066	0.00	0.0467	0.00079	0.00508	0.1377	0.0005	0.00001	0.00007	0.0014	35	±24	(79)	±5.1	±0.1	(0.0)	5.1	±0.1	(0.2)	2608	±25	(377)
carn09	242	1130958	0.0002	1.0200	0.00	0.0466	0.00069	0.00442	0.1237	0.0005	0.00001	0.00006	0.0012	29	±24	(125)	±4.4	±0.1	(0.0)	4.5	±0.1	(0.2)	2358	±21	(492)

#	Corrected isotopic ratios													1 sigma error				Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction			
	Th (ppm)	U (ppm)	Th/U	Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$				
Skarn JB05-37 - Allanite-(Ce), zircon, apatite, thorite																					
SKz01	282	1929	0.15	1.0268	1.50	0.0952	0.2349	3.0829	0.0525	0.0010	0.0028	0.0365	0.0006	1532 ±19 (0)	1360 ±15 (0)	1428 ±9 (0)	1035 ±11 (0)				
SKz02	5075	12210	0.42	1.0262	1.50	0.0817	0.1055	1.1883	0.0163	0.0008	0.0013	0.0140	0.0002	1238 ±19 (27)	647 ±7 (1)	795 ±6 (8)	327 ±3 (18)				
SKz03	426	1016	0.42	1.0255	1.50	0.0577	0.0667	0.5310	0.0201	0.0008	0.0008	0.0079	0.0003	519 ±30 (0)	416 ±5 (0)	432 ±5 (0)	402 ±6 (0)				
SKz04	6	79	0.07	1.0245	1.50	0.1489	0.1490	3.0586	1.1676	0.0023	0.0020	0.0490	0.0204	2333 ±27 (0)	896 ±11 (0)	1422 ±12 (0)	15636 ±191 (0)				
SKz05	241	2193	0.11	1.0243	1.50	0.0948	0.2654	3.4683	0.0871	0.0009	0.0032	0.0413	0.0009	1524 ±19 (0)	1517 ±16 (0)	1520 ±9 (0)	1688 ±17 (0)				
all01	6563	138	47.73	1.0189	1.50	0.0820	0.2811	3.1775	0.0704	0.0011	0.0036	0.0447	0.0007	1246 ±26 (831)	1597 ±18 (51)	1452 ±11 (334)	1375 ±13 (11)				
all01b	193	764	0.25	1.0187	1.50	0.0797	0.1618	1.7768	0.0756	0.0008	0.0020	0.0216	0.0008	1189 ±21 (246)	967 ±11 (10)	1037 ±8 (88)	1474 ±15 (376)				
all02	3794	615	6.17	1.0185	1.50	0.0838	0.2286	2.6419	0.0628	0.0008	0.0027	0.0314	0.0006	1289 ±20 (200)	1327 ±14 (12)	1312 ±9 (83)	1231 ±12 (19)				
all03	764	786	0.97	1.0183	1.50	0.0790	0.1518	1.6527	0.0592	0.0008	0.0018	0.0197	0.0006	1171 ±20 (257)	911 ±10 (10)	991 ±8 (89)	1163 ±11 (97)				
all04	381	992	0.38	1.0182	1.50	0.0775	0.1506	1.6088	0.0815	0.0008	0.0018	0.0193	0.0008	1133 ±20 (210)	905 ±10 (8)	974 ±7 (72)	1584 ±15 (190)				
apa02	897	260	3.45	1.0171	1.50	0.0822	0.0723	0.8195	0.0228	0.0012	0.0009	0.0125	0.0003	1250 ±28 (0)	450 ±6 (0)	608 ±7 (0)	456 ±5 (0)				
thsi01	1595624	440697	3.62	1.0175	1.50	0.0520	0.0265	0.1897	0.0078	0.0005	0.0003	0.0022	0.0001	285 ±23 (5)	168 ±2 (0)	176 ±2 (0)	157 ±2 (0)				
fluo01	26	110	0.24	1.0172	1.50	0.0826	0.3417	3.8915	1.6958	0.0009	0.0044	0.0505	0.0209	1260 ±22 (849)	1895 ±21 (61)	1612 ±10 (358)	20045 ±157 (1130)				
zr01	9297	18901	0.49	1.0171	1.50	0.0811	0.1126	1.2593	0.0224	0.0008	0.0014	0.0151	0.0002	1224 ±20 (14)	688 ±8 (0)	828 ±7 (4)	447 ±4 (8)				
Yerila SS (YER-03) allanite-(Ce)																					
Yerall1	6844	60	113.55	1.0135	1.50	0.0896	0.6492	8.0213	0.0742	0.0009	0.0080	0.0990	0.0006	1417 ±20 (579)	3225 ±31 (75)	2233 ±11 (293)	1447 ±12 (11)				
Yerall1b	8735	137	63.77	1.0136	1.50	0.0922	0.4184	5.3167	0.0818	0.0009	0.0052	0.0654	0.0007	1471 ±19 (596)	2253 ±24 (60)	1872 ±11 (287)	1590 ±13 (11)				
Yerall2	8450	150	56.27	1.0137	1.50	0.1250	0.2907	5.0091	0.0802	0.0013	0.0036	0.0631	0.0007	2029 ±19 (0)	1645 ±18 (0)	1821 ±11 (0)	1560 ±13 (0)				
Yerall2b	9146	161	56.71	1.0137	1.50	0.0917	0.2725	3.4468	0.0820	0.0010	0.0034	0.0430	0.0007	1462 ±20 (585)	1553 ±17 (43)	1515 ±10 (258)	1593 ±13 (9)				
Yerall2c	8935	156	57.37	1.0140	1.50	0.1285	0.2905	5.1481	0.0804	0.0014	0.0036	0.0648	0.0007	2078 ±19 (0)	1644 ±18 (0)	1844 ±11 (0)	1564 ±13 (0)				
Yerall3a	12244	221	55.35	1.0139	1.50	0.1368	0.2988	5.6362	0.0763	0.0014	0.0037	0.0707	0.0007	2187 ±18 (0)	1685 ±18 (0)	1922 ±11 (0)	1487 ±12 (0)				
Yerall3b	8074	131	61.77	1.0141	1.50	0.0934	0.3440	4.4281	0.0765	0.0010	0.0043	0.0549	0.0006	1495 ±20 (586)	1906 ±20 (52)	1718 ±10 (275)	1489 ±12 (10)				
Yerall3c	8158	105	77.60	1.0147	1.50	0.0935	0.4049	5.2195	0.0738	0.0010	0.0051	0.0661	0.0006	1498 ±20 (833)	2191 ±23 (79)	1856 ±11 (390)	1439 ±12 (12)				
Yerall4a	10125	86	117.65	1.0141	1.50	0.0796	0.4543	4.9885	0.0705	0.0009	0.0057	0.0633	0.0006	1188 ±21 (4173)	2414 ±25 (145)	1817 ±11 (919)	1377 ±11 (11)				
Yerall4b	8291	85	97.45	1.0144	1.50	0.0804	0.4911	5.4472	0.0743	0.0008	0.0061	0.0676	0.0006	1207 ±20 (1037)	2575 ±26 (88)	1892 ±11 (449)	1448 ±12 (11)				

#	Corrected isotopic ratios			1 sigma error								Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction							
	Th (ppm)	U (ppm)	Th/U	Yield ratio $^{207}\text{Pb}/^{235}\text{U}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$		
<b>Zircons from amphibolite dike AMPH10-11</b>																			
Amp11	1092	1002	1.09	1.0149	1.00	0.0637	0.0327	0.2870	0.0169	0.0007	0.0004	0.0036	0.0002	730 ±22 (1047)	207 ±3 (7)	256 ±3 (105)	339 ±3 (79)		
Amp11	1382	1256	1.10	1.0148	1.00	0.0684	0.0978	0.9226	0.0346	0.0007	0.0012	0.0117	0.0003	880 ±22 (0)	602 ±7 (0)	664 ±6 (0)	688 ±6 (0)		
Amp11	566	538	1.05	1.0150	1.00	0.0673	0.1292	1.2001	0.0400	0.0007	0.0016	0.0156	0.0004	848 ±23 (0)	783 ±9 (0)	801 ±7 (0)	792 ±7 (0)		
Amp11	1333	957	1.39	1.0151	1.00	0.0961	0.1125	1.4909	0.0352	0.0010	0.0014	0.0190	0.0003	1550 ±20 (0)	687 ±8 (0)	927 ±8 (0)	700 ±6 (0)		
Amp11	499	1611	0.31	1.0153	1.00	0.1099	0.1031	1.5635	0.0280	0.0011	0.0013	0.0194	0.0003	1798 ±19 (0)	633 ±7 (0)	956 ±8 (0)	558 ±5 (0)		
Amp11	234	238	0.98	1.0150	1.00	0.0748	0.1201	1.2395	0.0419	0.0009	0.0015	0.0168	0.0004	1064 ±24 (0)	731 ±9 (0)	819 ±8 (0)	829 ±9 (0)		
Amp11	7	20	0.34	1.0138	1.00	0.1530	0.0942	1.9886	0.0680	0.0036	0.0015	0.0446	0.0015	2380 ±40 (0)	580 ±9 (0)	1112 ±15 (0)	1329 ±28 (0)		
Amp11	26	41	0.64	1.0156	1.00	0.1413	0.0860	1.6769	0.0641	0.0027	0.0013	0.0320	0.0011	2244 ±33 (0)	532 ±8 (0)	1000 ±12 (0)	1255 ±21 (0)		
Amp10	143	342	0.42	1.0160	1.00	0.0962	0.2733	3.6281	0.0763	0.0010	0.0034	0.0458	0.0008	1552 ±20 (0)	1557 ±17 (0)	1556 ±10 (0)	1487 ±15 (0)		
Amp10	66	178	0.37	1.0151	1.00	0.0768	0.0840	0.8906	0.0338	0.0010	0.0011	0.0133	0.0005	1117 ±27 (0)	520 ±6 (0)	647 ±7 (0)	673 ±9 (0)		
<b>Zircons from microgabbro - Hidden Valley</b>																			
grey01	508	1132	0.45	1.0191	1.00	0.0851	0.1908	2.2375	0.0547	0.0009	0.0022	0.0258	0.0006	1317 ±20 (0)	1126 ±12 (0)	1193 ±8 (0)	1077 ±11 (0)		
grey02	963	1545	0.62	1.0191	1.00	0.0908	0.2136	2.6743	0.0599	0.0009	0.0025	0.0310	0.0006	1443 ±20 (0)	1248 ±13 (0)	1321 ±9 (0)	1176 ±12 (0)		
grey03	1406	1968	0.71	1.0191	1.00	0.0971	0.2658	3.5551	0.0766	0.0010	0.0031	0.0411	0.0008	1568 ±19 (0)	1519 ±16 (0)	1540 ±9 (0)	1491 ±15 (0)		
grey04	641	1620	0.40	1.0191	1.00	0.0976	0.2642	3.5522	0.0746	0.0010	0.0031	0.0407	0.0008	1578 ±19 (0)	1511 ±16 (0)	1539 ±9 (0)	1454 ±14 (0)		
grey05	618	1367	0.45	1.0190	1.00	0.0976	0.2715	3.6522	0.0753	0.0010	0.0031	0.0418	0.0008	1579 ±19 (0)	1548 ±16 (0)	1561 ±9 (0)	1468 ±14 (0)		
grey06	1854	1952	0.95	1.0190	1.00	0.0977	0.2719	3.6619	0.0755	0.0010	0.0032	0.0419	0.0008	1581 ±19 (0)	1550 ±16 (0)	1563 ±9 (0)	1472 ±14 (0)		
grey07	798	2551	0.31	1.0189	1.00	0.0947	0.2475	3.2306	0.0714	0.0010	0.0029	0.0375	0.0008	1522 ±19 (0)	1426 ±15 (0)	1465 ±9 (0)	1394 ±15 (0)		
grey08	510	1474	0.35	1.0189	1.00	0.0974	0.2696	3.6198	0.0756	0.0010	0.0031	0.0417	0.0008	1575 ±19 (0)	1539 ±16 (0)	1554 ±9 (0)	1473 ±15 (0)		
grey09	583	1919	0.30	1.0189	1.00	0.0940	0.2316	3.0015	0.0649	0.0010	0.0027	0.0348	0.0007	1508 ±19 (0)	1343 ±14 (0)	1408 ±9 (0)	1270 ±13 (0)		
grey10	1489	1974	0.75	1.0188	1.00	0.0968	0.2532	3.3793	0.0714	0.0010	0.0030	0.0389	0.0007	1564 ±19 (0)	1455 ±15 (0)	1500 ±9 (0)	1394 ±13 (0)		
grey11	2992	3555	0.84	1.0187	1.00	0.0981	0.2673	3.6142	0.0743	0.0010	0.0031	0.0418	0.0007	1588 ±18 (0)	1527 ±16 (0)	1553 ±9 (0)	1449 ±14 (0)		
grey12	496	1303	0.38	1.0186	1.00	0.0957	0.2392	3.1565	0.0686	0.0010	0.0028	0.0371	0.0007	1543 ±19 (0)	1382 ±15 (0)	1447 ±9 (0)	1340 ±14 (0)		
grey13	567	2154	0.26	1.0186	1.00	0.0887	0.2057	2.5161	0.0617	0.0009	0.0024	0.0294	0.0006	1399 ±19 (0)	1206 ±13 (0)	1277 ±9 (0)	1209 ±12 (0)		
grey14	1021	1747	0.58	1.0185	1.00	0.0933	0.2322	2.9860	0.0640	0.0009	0.0028	0.0352	0.0007	1494 ±19 (0)	1346 ±14 (0)	1404 ±9 (0)	1253 ±13 (0)		
grey15	799	2000	0.40	1.0184	1.00	0.0965	0.2575	3.4253	0.0736	0.0010	0.0031	0.0406	0.0008	1557 ±19 (0)	1477 ±16 (0)	1510 ±9 (0)	1436 ±15 (0)		
grey16	1022	1928	0.53	1.0185	1.00	0.0977	0.2648	3.5646	0.0752	0.0010	0.0032	0.0419	0.0008	1580 ±19 (0)	1514 ±16 (0)	1542 ±9 (0)	1466 ±14 (0)		
grey17	586	1842	0.32	1.0184	1.00	0.0843	0.1865	2.1665	0.0520	0.0009	0.0022	0.0259	0.0006	1299 ±20 (0)	1102 ±12 (0)	1170 ±8 (0)	1024 ±11 (0)		
grey18	784	1697	0.46	1.0184	1.00	0.0926	0.2217	2.8289	0.0611	0.0010	0.0027	0.0348	0.0007	1479 ±20 (0)	1291 ±14 (0)	1363 ±9 (0)	1199 ±14 (0)		
grey19	1291	1826	0.71	1.0182	1.00	0.0826	0.1696	1.9318	0.0458	0.0009	0.0021	0.0239	0.0005	1260 ±21 (0)	1010 ±11 (0)	1092 ±8 (0)	906 ±10 (0)		
grey21	639	1444	0.44	1.0183	1.00	0.0971	0.2557	3.4245	0.0686	0.0010	0.0031	0.0409	0.0007	1570 ±19 (0)	1468 ±16 (0)	1510 ±9 (0)	1341 ±14 (0)		

APPENDIX V LA-ICPMS U - Pb isotopic analyses

Zircon - YER-03

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#	Corrected isotopic ratios													1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
	Th (ppm)	U (ppm)	Th/U	Yield ratio $^{207}\text{Pb}/^{208}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$				
YERILA (YER-03) zircons - T=850°C/2h treatment, YTL=idem + leaching HF / From YET1: 2005 data																					
YT02b	613	589	1.04	1.0127	1.50	0.0993	0.2868	3.9278	0.0697	0.0010	0.0031	0.0430	0.0006	1612 ±19 (0)	1625 ±15 (0)	1619 ±9 (0)	1362 ±12 (0)				
YT03	279	854	0.33	1.0135	1.50	0.0991	0.2845	3.8861	0.1027	0.0011	0.0033	0.0479	0.0011	1607 ±21 (0)	1614 ±16 (0)	1611 ±10 (0)	1975 ±20 (0)				
YT04	478	790	0.60	1.0155	1.50	0.0990	0.3324	4.5351	0.0769	0.0011	0.0037	0.0551	0.0008	1605 ±21 (0)	1850 ±18 (0)	1737 ±10 (0)	1497 ±15 (0)				
YT05	1365	1284	1.06	1.0142	1.50	0.0971	0.2620	3.5089	0.0738	0.0010	0.0030	0.0409	0.0007	1570 ±20 (0)	1500 ±15 (0)	1529 ±9 (0)	1439 ±13 (0)				
YT06	744	2101	0.35	1.0143	1.50	0.0971	0.2784	3.7251	0.0535	0.0010	0.0032	0.0429	0.0005	1568 ±19 (0)	1583 ±16 (0)	1577 ±9 (0)	1054 ±10 (0)				
YT07	638	713	0.90	1.0124	1.50	0.0971	0.2733	3.6594	0.0746	0.0010	0.0029	0.0395	0.0007	1569 ±19 (0)	1558 ±15 (0)	1563 ±9 (0)	1454 ±12 (0)				
YT08	2269	1595	1.42	1.0093	1.50	0.0899	0.3149	3.8989	0.0289	0.0011	0.0037	0.0511	0.0003	1423 ±23 (59)	1765 ±18 (5)	1613 ±11 (28)	576 ±7 (41)				
YT09	223	1019	0.22	1.0144	1.50	0.0974	0.2815	3.7788	0.0637	0.0011	0.0033	0.0469	0.0008	1575 ±20 (0)	1599 ±17 (0)	1588 ±10 (0)	1249 ±14 (0)				
YT10	516	1876	0.27	1.0145	1.50	0.0992	0.2779	3.7977	0.0942	0.0011	0.0033	0.0459	0.0010	1608 ±20 (0)	1581 ±16 (0)	1592 ±10 (0)	1820 ±19 (0)				
YT11	337	1129	0.30	1.0099	1.50	0.1017	0.2937	4.1140	0.1024	0.0014	0.0041	0.0669	0.0016	1655 ±26 (0)	1660 ±20 (0)	1657 ±13 (0)	1971 ±30 (0)				
YT12	606	1417	0.43	1.0135	1.50	0.0977	0.2750	3.7013	0.0802	0.0011	0.0032	0.0466	0.0009	1580 ±21 (0)	1566 ±16 (0)	1572 ±10 (0)	1559 ±17 (0)				
YTL201	495	1011	0.49	1.0145	1.50	0.0961	0.2706	3.5865	0.0422	0.0011	0.0033	0.0460	0.0005	1550 ±21 (0)	1544 ±17 (0)	1547 ±10 (0)	836 ±9 (0)				
YTL202	113	485	0.23	1.0140	1.50	0.0977	0.3554	4.7856	0.0896	0.0012	0.0042	0.0649	0.0013	1580 ±23 (0)	1960 ±20 (0)	1782 ±11 (0)	1735 ±24 (0)				
YTL203	515	716	0.72	1.0150	1.50	0.0976	0.2742	3.6866	0.0757	0.0012	0.0035	0.0524	0.0009	1578 ±23 (0)	1562 ±18 (0)	1568 ±11 (0)	1474 ±17 (0)				
YTL204	288	2200	0.13	1.0131	1.50	0.0970	0.2681	3.5837	0.0866	0.0010	0.0031	0.0424	0.0010	1566 ±20 (0)	1531 ±16 (0)	1546 ±9 (0)	1679 ±18 (0)				
YTL205	782	1452	0.54	1.0154	1.50	0.0975	0.2604	3.4988	0.0599	0.0010	0.0029	0.0403	0.0006	1576 ±20 (0)	1492 ±15 (0)	1527 ±9 (0)	1175 ±11 (0)				
YTL206	18	42	0.43	1.0155	1.50	0.1540	0.2239	4.7532	0.1774	0.0040	0.0033	0.1192	0.0037	2391 ±44 (0)	1303 ±17 (0)	1777 ±21 (0)	3302 ±64 (0)				
YTL207	315	1595	0.20	1.0156	1.50	0.0964	0.2736	3.6348	0.0591	0.0010	0.0031	0.0428	0.0007	1555 ±20 (0)	1559 ±16 (0)	1557 ±9 (0)	1160 ±13 (0)				
YTL208	887	533	1.66	1.0142	1.50	0.0916	0.3538	4.4705	0.0252	0.0011	0.0041	0.0590	0.0003	1460 ±23 (159)	1953 ±20 (15)	1726 ±11 (77)	502 ±6 (110)				
YTL209	178	285	0.62	1.0153	1.50	0.1012	0.3112	4.3435	0.0524	0.0014	0.0036	0.0609	0.0007	1647 ±25 (0)	1746 ±18 (0)	1702 ±12 (0)	1033 ±14 (0)				
YET1	264	467	0.57	0.9912	1.50	0.1028	0.2688	3.7955	0.0437	0.0020	0.0035	0.0758	0.0010	1675 ±36 (0)	1535 ±18 (0)	1592 ±16 (0)	865 ±19 (0)				
YET1b	782	631	1.24	0.9893	1.50	0.0985	0.2676	3.6224	0.0689	0.0012	0.0031	0.0470	0.0007	1596 ±22 (0)	1529 ±16 (0)	1554 ±10 (0)	1346 ±14 (0)				
YET2b	835	680	1.23	0.9874	1.50	0.1000	0.2646	3.6360	0.0677	0.0011	0.0030	0.0441	0.0007	1624 ±20 (0)	1513 ±15 (0)	1557 ±10 (0)	1325 ±13 (0)				
YE3b	316	460	0.69	0.9854	1.50	0.1003	0.2681	3.6950	0.0461	0.0013	0.0031	0.0505	0.0006	1629 ±24 (0)	1531 ±16 (0)	1570 ±11 (0)	910 ±11 (0)				
YE4	245	32714	0.01	0.9836	1.50	0.0977	0.0153	0.2049	0.0698	0.0011	0.0002	0.0024	0.0008	1581 ±20 (0)	98 ±1 (0)	189 ±2 (0)	1364 ±16 (0)				
YET5	309	401	0.77	0.9760	1.50	0.0979	0.2703	3.6400	0.0765	0.0011	0.0030	0.0432	0.0008	1585 ±21 (0)	1542 ±15 (0)	1558 ±9 (0)	1490 ±15 (0)				
YET5bcore	444	612	0.73	0.9742	1.50	0.1002	0.2711	3.7369	0.0737	0.0017	0.0032	0.0636	0.0011	1627 ±31 (0)	1546 ±16 (0)	1579 ±14 (0)	1436 ±20 (0)				
YET5b	440	654	0.67	0.9722	1.50	0.1007	0.2681	3.7152	0.0743	0.0015	0.0030	0.0550	0.0010	1637 ±27 (0)	1531 ±15 (0)	1575 ±12 (0)	1448 ±18 (0)				
YET7	641	15139	0.04	0.9686	1.50	0.0960	0.0255	0.3362	0.0702	0.0020	0.0003	0.0068	0.0014	1548 ±39 (0)	162 ±2 (0)	294 ±5 (0)	1372 ±27 (0)				
YET8	221	29738	0.01	0.9666	1.50	0.0984	0.0146	0.1975	0.0639	0.0017	0.0002	0.0033	0.0017	1594 ±31 (0)	93 ±1 (0)	183 ±3 (0)	1251 ±32 (0)				
YET9	16	11	1.40	0.9601	1.50	0.2395	0.4926	16.2280	0.1882	0.0084	0.0100	0.5438	0.0049	3117 ±56 (0)	2582 ±43 (0)	2890 ±32 (0)	3486 ±84 (0)				
YET9b	196	169	1.16	0.9590	1.50	0.1211	0.3864	6.4336	0.0657	0.0015	0.0041	0.0821	0.0008	1972 ±23 (0)	2106 ±19 (0)	2037 ±11 (0)	1285 ±15 (0)				
YET9c	263	1082	0.24	0.9571	1.50	0.0957	0.2736	3.6005	0.0493	0.0011	0.0028	0.0415	0.0006	1542 ±21 (0)	1559 ±14 (0)	1550 ±9 (0)	972 ±12 (0)				
YET11rim	963	19511	0.05	0.9553	1.50	0.0945	0.0255	0.3313	0.0892	0.0013	0.0003	0.0045	0.0011	1519 ±26 (0)	162 ±2 (0)	291 ±3 (0)	1727 ±21 (0)				
YET11	904	1452	0.62	0.9534	1.50	0.0974	0.3344	4.4741	0.1034	0.0011	0.0034	0.0507	0.0011	1574 ±21 (0)	1859 ±16 (0)	1726 ±9 (0)	1990 ±20 (0)				
YET13	940	1191	0.79	0.9477	1.50	0.0983	0.3126	4.2211	0.0635	0.0012	0.0032	0.0516	0.0007	1593 ±23 (0)	1753 ±16 (0)	1678 ±10 (0)	1244 ±14 (0)				
YET13b	462	1169	0.40	0.9458	1.50	0.0989	0.2262	3.0707	0.0714	0.0012	0.0023	0.0355	0.0008	1603 ±22 (0)	1315 ±12 (0)	1425 ±9 (0)	1393 ±15 (0)				
YET14	149	481	0.31	0.9439	1.50	0.0985	0.2859	3.8655	0.0881	0.0012	0.0028	0.0442	0.0010	1596 ±22 (0)	1621 ±14 (0)	1607 ±9 (0)	1707 ±19 (0)				
YET14b	155	461	0.34	0.9419	1.50	0.0971	0.2936	3.9115	0.0818	0.0011	0.0029	0.0444	0.0010	1569 ±22 (0)	1659 ±14 (0)	1616 ±9 (0)	1588 ±18 (0)				
YET15	197	120	1.64	0.9373	1.50	0.0741	0.1023	1.0399	0.0341	0.0014	0.0011	0.0190	0.0004	1044 ±38 (0)	628 ±6 (0)	724 ±9 (0)	677 ±8 (0)				

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{209}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$		
<b>YERILA - YER-03 zircons untreated</b>																			
YER1	136	1128	0.12	0.9345	1.50	0.0957	0.2673	3.5025	0.0795	0.0015	0.0027	0.0521	0.0018	1541 ±29 (0)	1527 ±14 (0)	1528 ±12 (0)	1546 ±34 (0)		
YER2	666	525	1.27	0.9326	1.50	0.0976	0.1986	2.6526	0.0612	0.0014	0.0020	0.0358	0.0007	1578 ±27 (0)	1168 ±11 (0)	1315 ±10 (0)	1200 ±13 (0)		
YER3	296	536	0.55	0.9306	1.50	0.1003	0.3058	4.1995	0.1186	0.0013	0.0030	0.0531	0.0014	1630 ±25 (0)	1720 ±15 (0)	1674 ±10 (0)	2266 ±26 (0)		
YER4	1116	71786	0.02	0.9288	1.50	0.0678	0.0192	0.1784	0.1702	0.0008	0.0002	0.0019	0.0018	862 ±23 (0)	123 ±1 (0)	167 ±2 (0)	3178 ±31 (0)		
YER5	132	435	0.30	0.9269	1.50	0.0986	0.3002	4.0467	0.1349	0.0012	0.0028	0.0460	0.0016	1598 ±23 (0)	1692 ±14 (0)	1644 ±9 (0)	2558 ±28 (0)		
YER6	448	517	0.87	0.9248	1.50	0.0858	0.1933	2.2670	0.0438	0.0012	0.0019	0.0289	0.0005	1334 ±26 (0)	1139 ±10 (0)	1202 ±9 (0)	867 ±10 (0)		
<b>YER5 - zircons (850°C / 2h)</b>																			
YerV01	449	1656	0.27	1.0163	1.50	0.0957	0.2202	2.9045	0.0466	0.0010	0.0027	0.0357	0.0005	1542 ±19 (0)	1283 ±14 (0)	1383 ±9 (0)	921 ±10 (0)		
YerV02	979	1592	0.62	1.0163	1.50	0.0957	0.2103	2.7735	0.0263	0.0010	0.0026	0.0346	0.0003	1541 ±20 (0)	1231 ±14 (0)	1348 ±9 (0)	524 ±6 (0)		
YerV03	723	1625	0.45	1.0164	1.50	0.0960	0.2424	3.2073	0.0698	0.0010	0.0030	0.0395	0.0007	1548 ±19 (0)	1399 ±16 (0)	1459 ±10 (0)	1363 ±14 (0)		
YerV04	2638	1773	1.49	1.0163	1.50	0.0795	0.0868	0.9510	0.0225	0.0008	0.0011	0.0119	0.0002	1184 ±21 (0)	537 ±6 (0)	679 ±6 (0)	449 ±5 (0)		
<b>Zircons Terrapinna (TERAP2) - 850°C/2h</b>																			
terap03	37	82	0.46	1.0159	1.50	0.0950	0.2151	2.8173	0.0662	0.0010	0.0026	0.0350	0.0008	1529 ±20 (121)	1256 ±14 (8)	1360 ±9 (53)	1295 ±15 (350)		
peg102	103	339	0.30	1.0158	1.50	0.0965	0.2515	3.3437	0.0764	0.0010	0.0031	0.0418	0.0010	1557 ±20 (0)	1446 ±16 (0)	1491 ±10 (0)	1488 ±18 (0)		
peg103	235	427	0.55	1.0158	1.50	0.0974	0.2636	3.5395	0.0801	0.0010	0.0032	0.0431	0.0009	1575 ±19 (0)	1508 ±16 (0)	1536 ±10 (0)	1557 ±16 (0)		
peg104N	103	372	0.28	1.0157	1.50	0.0975	0.2572	3.4558	0.0798	0.0010	0.0031	0.0426	0.0010	1576 ±19 (0)	1475 ±16 (0)	1517 ±10 (0)	1553 ±18 (0)		
terap01	141	315	0.45	1.0159	1.50	0.0979	0.2480	3.3454	0.0714	0.0011	0.0031	0.0427	0.0009	1584 ±20 (0)	1428 ±16 (0)	1492 ±10 (0)	1394 ±17 (0)		
terap02	147	522	0.28	1.0159	1.50	0.0998	0.2783	3.8297	0.0964	0.0011	0.0034	0.0485	0.0013	1621 ±20 (0)	1583 ±17 (0)	1599 ±10 (0)	1860 ±23 (0)		
<b>Titanite Terrapinna (TERAP2) 850°C / 2h</b>																			
peg101	48	63	0.75	1.0140	1.50	0.0670	0.0708	0.6540	0.0310	0.0011	0.0009	0.0108	0.0005	839 ±33 (0)	441 ±5 (0)	511 ±7 (0)	616 ±10 (0)		
terX01	30	59	0.50	1.0125	1.50	0.0719	0.0712	0.7058	0.0304	0.0012	0.0009	0.0122	0.0005	983 ±34 (0)	443 ±6 (0)	542 ±7 (0)	606 ±9 (0)		
terX02	193	811	0.24	1.0158	1.50	0.0794	0.1708	1.8696	0.0602	0.0010	0.0022	0.0270	0.0009	1182 ±26 (0)	1016 ±12 (0)	1070 ±10 (0)	1181 ±17 (0)		
terX03	45	94	0.47	1.0152	1.50	0.0732	0.0664	0.6703	0.0303	0.0013	0.0009	0.0126	0.0006	1019 ±37 (0)	415 ±5 (0)	521 ±8 (0)	603 ±11 (0)		
terX04	43	62	0.70	1.0135	1.50	0.0750	0.0697	0.7209	0.0304	0.0018	0.0010	0.0167	0.0007	1068 ±47 (0)	435 ±6 (0)	551 ±10 (0)	606 ±13 (0)		
<b>SED-BAD - Alluvial zircons on YERILA</b>																			
sb01	91	70	1.30	1.0162	1.50	0.1685	0.0275	0.6385	0.0165	0.0049	0.0005	0.0169	0.0004	2542 ±48 (0)	175 ±3 (0)	501 ±10 (0)	330 ±8 (0)		
sb02	1808	2782	0.65	1.0165	1.50	0.0830	0.1412	1.6157	0.0469	0.0008	0.0017	0.0199	0.0005	1270 ±20 (71)	851 ±10 (3)	976 ±8 (25)	926 ±9 (42)		
sb03	5799	3712	1.56	1.0165	1.50	0.0774	0.0539	0.5742	0.0056	0.0008	0.0007	0.0072	0.0001	1130 ±21 (161)	338 ±4 (2)	461 ±5 (32)	114 ±1 (14)		
sb03bis	143	406	0.35	1.0165	1.50	0.0969	0.2740	3.6583	0.0757	0.0010	0.0034	0.0459	0.0009	1564 ±20 (0)	1561 ±17 (0)	1562 ±10 (0)	1475 ±17 (0)		
sb04	32319	2270	14.24	1.0166	1.50	0.0709	0.2459	2.4043	0.0100	0.0007	0.0030	0.0295	0.0001	956 ±21 (71)	1417 ±16 (4)	1244 ±9 (27)	201 ±2 (3)		
sb06	224	313	0.71	1.0166	1.50	0.0972	0.2757	3.6922	0.0805	0.0010	0.0034	0.0462	0.0009	1570 ±19 (0)	1570 ±17 (0)	1570 ±10 (0)	1564 ±16 (0)		
sb07	139	547	0.25	1.0165	1.50	0.0969	0.2679	3.5777	0.0778	0.0010	0.0033	0.0445	0.0009	1565 ±19 (0)	1530 ±17 (0)	1545 ±10 (0)	1514 ±17 (0)		

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$		
<b>Zircons from SED1 - Mawson Plateau</b>																			
be01	125	112	1.12	1.0308	0.50	0.1046	0.2908	4.2412	0.0630	0.0012	0.0036	0.0541	0.0006	1707 ±20 (0)	1646 ±18 (0)	1682 ±10 (0)	1235 ±10 (0)		
be02	189	229	0.82	1.0308	0.50	0.1008	0.3009	4.2273	0.0639	0.0010	0.0036	0.0511	0.0005	1639 ±19 (0)	1696 ±18 (0)	1679 ±10 (0)	1251 ±9 (0)		
be03	139	73	1.90	1.0302	0.50	0.1037	0.2920	4.2188	0.0632	0.0011	0.0036	0.0533	0.0005	1690 ±20 (0)	1651 ±18 (0)	1678 ±10 (0)	1238 ±10 (0)		
be04	60	113	0.53	1.0305	0.50	0.0983	0.2708	3.7095	0.0584	0.0011	0.0033	0.0465	0.0006	1592 ±20 (0)	1545 ±17 (0)	1573 ±10 (0)	1147 ±11 (0)		
be06	180	148	1.21	1.0300	0.50	0.1042	0.2853	4.1401	0.0625	0.0011	0.0035	0.0524	0.0005	1700 ±20 (0)	1618 ±18 (0)	1662 ±10 (0)	1224 ±10 (0)		
be07	230	337	0.68	1.0299	0.50	0.1084	0.2454	3.7059	0.0354	0.0012	0.0030	0.0477	0.0004	1773 ±20 (0)	1414 ±16 (0)	1573 ±10 (0)	703 ±8 (0)		
be08	421	1709	0.25	1.0299	0.50	0.0951	0.2277	3.0160	0.0504	0.0010	0.0028	0.0367	0.0005	1530 ±19 (0)	1322 ±15 (0)	1412 ±9 (0)	993 ±9 (0)		
<b>Metasomatite - Radium Ridge - zircons</b>																			
RR01	234	354	0.66	1.0122	0.50	0.0980	0.2278	3.0763	0.0558	0.0011	0.0024	0.0348	0.0005	1586 ±21 (0)	1323 ±13 (0)	1427 ±9 (0)	1098 ±10 (0)		
RR02	17	740	0.02	1.0111	0.50	0.0611	0.1015	0.8542	0.0121	0.0008	0.0010	0.0112	0.0007	642 ±29 (0)	623 ±6 (0)	627 ±6 (0)	243 ±13 (0)		
RR03	131	825	0.16	1.0119	0.50	0.0929	0.2108	2.7002	0.0355	0.0010	0.0021	0.0298	0.0005	1486 ±21 (0)	1233 ±11 (0)	1329 ±8 (0)	706 ±10 (0)		
RR04	1516	2492	0.61	1.0125	0.50	0.0966	0.2359	3.1414	0.0648	0.0010	0.0025	0.0332	0.0006	1559 ±19 (0)	1365 ±13 (0)	1443 ±8 (0)	1268 ±11 (0)		
RR05	215	679	0.32	1.0159	0.50	0.0963	0.2679	3.5559	0.0718	0.0013	0.0033	0.0529	0.0011	1553 ±26 (0)	1530 ±17 (0)	1540 ±12 (0)	1402 ±21 (0)		
RR06	243	1008	0.24	1.0113	0.50	0.0982	0.2274	3.0780	0.0667	0.0011	0.0023	0.0349	0.0008	1590 ±22 (0)	1321 ±12 (0)	1427 ±9 (0)	1305 ±15 (0)		
RR07	246	406	0.61	1.0140	0.50	0.0968	0.2721	3.6318	0.0771	0.0011	0.0030	0.0437	0.0008	1564 ±21 (0)	1551 ±15 (0)	1557 ±10 (0)	1500 ±14 (0)		
RR08	189	466	0.41	1.0151	0.50	0.0974	0.2723	3.6558	0.0823	0.0011	0.0032	0.0454	0.0009	1575 ±21 (0)	1552 ±16 (0)	1562 ±10 (0)	1598 ±16 (0)		
RR09	238	705	0.34	1.0121	0.50	0.0975	0.2679	3.6000	0.0514	0.0011	0.0027	0.0387	0.0005	1576 ±20 (0)	1530 ±14 (0)	1550 ±9 (0)	1013 ±10 (0)		
RR10	59	715	0.08	1.0114	0.50	0.0633	0.0928	0.8093	0.0214	0.0009	0.0009	0.0114	0.0005	717 ±31 (0)	572 ±6 (0)	602 ±6 (0)	427 ±10 (0)		
RR11	284	676	0.42	1.0137	0.50	0.0973	0.2393	3.2080	0.0605	0.0013	0.0030	0.0487	0.0009	1572 ±26 (0)	1383 ±16 (0)	1459 ±12 (0)	1187 ±16 (0)		
RR12	1301	2666	0.49	1.0138	0.50	0.0968	0.0686	0.9154	0.0217	0.0010	0.0008	0.0102	0.0002	1563 ±19 (0)	428 ±5 (0)	660 ±5 (0)	433 ±4 (0)		
<b>Zircons - PEG1 - Hidden Valley</b>																			
alk01	441	1846	0.24	1.0154	0.50	0.0959	0.1897	2.5068	0.0536	0.0010	0.0023	0.0299	0.0006	1545 ±19 (0)	1120 ±12 (0)	1274 ±9 (0)	1055 ±11 (0)		
alk02	409	811	0.50	1.0154	0.50	0.0984	0.2805	3.8043	0.0863	0.0010	0.0034	0.0461	0.0009	1594 ±19 (0)	1594 ±17 (0)	1594 ±10 (0)	1672 ±17 (0)		
alk03	711	1414	0.50	1.0154	0.50	0.0983	0.2466	3.3425	0.0779	0.0010	0.0030	0.0401	0.0008	1593 ±19 (0)	1421 ±15 (0)	1491 ±9 (0)	1517 ±15 (0)		
alk04	342	225	1.52	1.0154	0.50	0.0992	0.2601	3.5571	0.0803	0.0010	0.0032	0.0439	0.0008	1609 ±20 (0)	1490 ±16 (0)	1540 ±10 (0)	1562 ±16 (0)		
alk05	581	310	1.88	1.0155	0.50	0.0991	0.2245	3.0676	0.0200	0.0011	0.0028	0.0400	0.0003	1608 ±21 (0)	1305 ±15 (0)	1425 ±10 (0)	401 ±5 (0)		
alk06	418	955	0.44	1.0155	0.50	0.0975	0.2514	3.3775	0.0704	0.0010	0.0031	0.0412	0.0008	1576 ±19 (0)	1446 ±16 (0)	1499 ±10 (0)	1376 ±15 (0)		
alk07	212	325	0.65	1.0155	0.50	0.0984	0.2486	3.3705	0.0676	0.0011	0.0031	0.0429	0.0008	1593 ±21 (0)	1431 ±16 (0)	1498 ±10 (0)	1321 ±16 (0)		
alk08	210	456	0.46	1.0155	0.50	0.0975	0.2568	3.4522	0.0760	0.0010	0.0031	0.0425	0.0009	1577 ±20 (0)	1473 ±16 (0)	1516 ±10 (0)	1480 ±16 (0)		
alk09	215	441	0.49	1.0156	0.50	0.0988	0.2545	3.4667	0.0753	0.0011	0.0031	0.0433	0.0009	1602 ±20 (0)	1461 ±16 (0)	1520 ±10 (0)	1467 ±17 (0)		
alk11	104	163	0.64	1.0155	0.50	0.0966	0.2583	3.4406	0.0297	0.0012	0.0032	0.0470	0.0005	1560 ±23 (0)	1481 ±16 (0)	1514 ±11 (0)	591 ±11 (0)		
<b>Zircons from polycrase-bearing pebble - FMC - 850 °C/2h</b>																			
FMC01	334	3800	0.09	1.0159	0.50	0.0945	0.1688	2.1988	0.0689	0.0009	0.0021	0.0265	0.0007	1518 ±19 (0)	1005 ±11 (0)	1181 ±8 (0)	1346 ±14 (0)		
FMC02	405	1297	0.31	1.0158	0.50	0.0958	0.2320	3.0634	0.0845	0.0010	0.0028	0.0371	0.0009	1544 ±19 (0)	1345 ±15 (0)	1424 ±9 (0)	1640 ±16 (0)		
<b>Leucogranite - Hidden Valley North, zircons (rounded)</b>																			
lco1	7	49	0.14	1.0143	1.50	0.1153	0.0770	1.2239	0.1749	0.0047	0.0016	0.0461	0.0079	1885 ±73 (0)	478 ±10 (0)	812 ±21 (0)	3257 ±137 (0)		
lco2	50	27	1.84	1.0155	1.50	0.2085	0.2563	7.3672	0.1225	0.0050	0.0045	0.1643	0.0026	2894 ±39 (0)	1471 ±23 (0)	2157 ±20 (0)	2336 ±46 (0)		
lco3	17	9	1.89	1.0140	1.50	0.1127	0.3010	4.6744	0.1051	0.0036	0.0055	0.1399	0.0026	1843 ±57 (0)	1696 ±27 (0)	1763 ±25 (0)	2019 ±48 (0)		
lco4d	81	70	1.17	1.0157	1.50	0.1369	0.1743	3.2885	0.0835	0.0021	0.0023	0.0520	0.0012	2188 ±26 (0)	1036 ±13 (0)	1478 ±12 (0)	1620 ±22 (0)		
lco5	78	78	1.00	1.0154	1.50	0.0839	0.1565	1.8106	0.0509	0.0013	0.0021	0.0301	0.0008	1290 ±31 (0)	937 ±11 (0)	1049 ±11 (0)	1004 ±15 (0)		
lco5b	113	94	1.20	1.0163	1.50	0.0953	0.1658	2.1784	0.0588	0.0015	0.0022	0.0355	0.0008	1534 ±29 (0)	989 ±12 (0)	1174 ±11 (0)	1155 ±16 (0)		
lco6	52	56	0.91	1.0161	1.50	0.1669	0.3698	8.5052	0.1719	0.0023	0.0049	0.1241	0.0025	2526 ±23 (0)	2028 ±23 (0)	2286 ±13 (0)	3206 ±43 (0)		

APPENDIX V LA-ICPMS U - Pb isotopic analyses

Zircon – FMC - alluvium

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#	Corrected isotopic ratios			1 sigma error								Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction					
	Th (ppm)	U (ppm)	Th/U	Yield ratio <sup>207</sup> Pb/ <sup>206</sup> Pb	Pb model age (Ga)	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>208</sup> Pb/ <sup>232</sup> Th	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>208</sup> Pb/ <sup>232</sup> Th				
<b>FOUR MILE CREEK ZIRCONS</b>																	
FMJ501	164	284	0.58	1.0118	1.50	0.0977	0.2563	3.4523	0.0789	0.0012	0.0029	0.0437	0.0008	1580 ±23 (0)	1471 ±15 (0)	1516 ±10 (0)	1534 ±16 (0)
FMJ501b	132	275	0.48	1.0118	1.50	0.0979	0.2787	3.7612	0.0864	0.0011	0.0031	0.0441	0.0009	1584 ±21 (0)	1585 ±15 (0)	1585 ±9 (0)	1676 ±16 (0)
FMJ502b	46	41	1.13	1.0118	1.50	0.1162	0.2644	4.2370	0.1021	0.0029	0.0036	0.1035	0.0017	1899 ±45 (0)	1513 ±18 (0)	1681 ±20 (0)	1965 ±30 (0)
FMJ502a	154	122	1.26	1.0118	1.50	0.1054	0.2686	3.9011	0.0863	0.0016	0.0031	0.0605	0.0010	1721 ±28 (0)	1533 ±16 (0)	1614 ±13 (0)	1673 ±18 (0)
FML501	142	204	0.70	1.0119	1.50	0.0958	0.1687	2.2271	0.0653	0.0012	0.0019	0.0283	0.0007	1543 ±23 (0)	1005 ±10 (0)	1190 ±9 (0)	1279 ±12 (0)
FML501b	1088	2180	0.50	1.0119	1.50	0.0788	0.0543	0.5897	0.0265	0.0009	0.0006	0.0070	0.0002	1167 ±22 (258)	341 ±4 (4)	471 ±4 (53)	529 ±5 (74)
FMF01	321	2678	0.12	1.0120	1.50	0.0934	0.1971	2.5384	0.0443	0.0010	0.0022	0.0284	0.0005	1496 ±20 (0)	1160 ±12 (0)	1283 ±8 (0)	875 ±9 (0)
FMF01b	92	1344	0.07	1.0120	1.50	0.0946	0.2609	3.4041	0.0870	0.0010	0.0029	0.0389	0.0011	1521 ±20 (0)	1495 ±15 (0)	1505 ±9 (0)	1687 ±21 (0)
FM6101	454	2045	0.22	1.0120	1.50	0.0953	0.1751	2.3005	0.0320	0.0011	0.0019	0.0273	0.0004	1534 ±21 (66)	1040 ±11 (4)	1212 ±8 (28)	637 ±7 (180)
FM6101b	128	1884	0.07	1.0120	1.50	0.0503	0.0655	0.4542	0.0254	0.0006	0.0007	0.0059	0.0003	208 ±29 (487)	409 ±4 (4)	380 ±4 (68)	507 ±6 (645)
FM6102	31042	3695	8.40	1.0119	1.50	0.0584	0.0285	0.2299	0.0002	0.0008	0.0003	0.0031	0.0000	546 ±28 (460)	181 ±2 (2)	210 ±3 (41)	5 ±0 (3)
FM6103	74	1199	0.06	1.0120	1.50	0.0942	0.2501	3.2485	0.0913	0.0011	0.0028	0.0387	0.0014	1513 ±21 (0)	1439 ±14 (0)	1469 ±9 (0)	1765 ±26 (0)
FM6103b	127	2172	0.06	1.0120	1.50	0.0870	0.1558	1.8698	0.0676	0.0009	0.0017	0.0209	0.0008	1361 ±20 (0)	934 ±9 (0)	1070 ±7 (0)	1321 ±14 (0)
FMG104	673	807	0.83	1.0120	1.50	0.1059	0.2614	3.8172	0.0810	0.0013	0.0029	0.0488	0.0008	1730 ±23 (0)	1497 ±15 (0)	1596 ±10 (0)	1575 ±16 (0)
FMS501	793	542	1.46	1.0120	1.50	0.0981	0.2055	2.7786	0.0232	0.0018	0.0025	0.0509	0.0004	1588 ±34 (0)	1205 ±13 (0)	1350 ±14 (0)	463 ±7 (0)
FMS501b	5305	2240	2.37	1.0121	1.50	0.0879	0.0879	1.0653	0.0018	0.0010	0.0010	0.0133	0.0000	1381 ±23 (137)	543 ±6 (4)	736 ±7 (41)	36 ±0 (16)
FMS502	658	719	0.91	1.0121	1.50	0.1050	0.2766	4.0053	0.0804	0.0011	0.0030	0.0448	0.0007	1714 ±19 (0)	1574 ±15 (0)	1635 ±9 (0)	1563 ±14 (0)
FMS503	4876	2135	2.28	1.0120	1.50	0.0935	0.1265	1.6305	0.0074	0.0011	0.0014	0.0201	0.0001	1498 ±22 (0)	768 ±8 (0)	982 ±8 (0)	149 ±2 (0)
FMS401	179	3236	0.06	1.0121	1.50	0.0976	0.0875	1.1775	0.0620	0.0011	0.0010	0.0135	0.0007	1579 ±20 (0)	541 ±6 (0)	790 ±6 (0)	1216 ±14 (0)
FMS401b	131	1566	0.08	1.0120	1.50	0.0907	0.0980	1.2264	0.0429	0.0010	0.0011	0.0146	0.0006	1441 ±22 (0)	603 ±6 (0)	813 ±7 (0)	849 ±11 (0)
FMS301	678	4735	0.14	1.0121	1.50	0.0969	0.2591	3.4619	0.0794	0.0010	0.0028	0.0374	0.0007	1566 ±19 (0)	1485 ±14 (0)	1519 ±9 (0)	1545 ±14 (0)
FMS201	80	1662	0.05	1.0120	1.50	0.0530	0.0266	0.1942	0.0543	0.0007	0.0003	0.0027	0.0006	331 ±31 (1636)	169 ±2 (5)	180 ±2 (96)	1069 ±12 (1052)
FMS201b	904	4511	0.20	1.0120	1.50	0.0856	0.0495	0.5844	0.0147	0.0009	0.0005	0.0067	0.0001	1329 ±21 (125)	312 ±3 (2)	467 ±4 (27)	294 ±3 (97)
FMS801	238	2254	0.11	1.0121	1.50	0.0599	0.0748	0.6179	0.0244	0.0008	0.0008	0.0083	0.0004	599 ±28 (0)	465 ±5 (0)	489 ±5 (0)	488 ±7 (0)
FMS801b	108	2111	0.05	1.0119	1.50	0.0564	0.0734	0.5707	0.0239	0.0007	0.0008	0.0071	0.0004	469 ±26 (0)	456 ±5 (0)	458 ±5 (0)	477 ±8 (0)
FMS901	137	782	0.17	1.0121	1.50	0.0969	0.2290	3.0589	0.0722	0.0012	0.0025	0.0388	0.0010	1565 ±23 (0)	1329 ±13 (0)	1422 ±10 (0)	1409 ±19 (0)
FMS901b	242	2007	0.12	1.0120	1.50	0.0599	0.0703	0.5810	0.0266	0.0007	0.0008	0.0071	0.0003	601 ±25 (0)	438 ±5 (0)	465 ±5 (0)	531 ±6 (0)
FMS1101	1	6	0.09	1.0020	1.50	0.1554	0.0843	1.8062	0.3933	0.0206	0.0042	0.2254	0.0416	2406 ±225 (0)	522 ±25 (0)	1048 ±82 (0)	6704 ±604 (0)
FMS1204	264	285	0.93	1.0113	1.50	0.0669	0.0831	0.7668	0.0292	0.0011	0.0009	0.0123	0.0003	836 ±33 (0)	515 ±6 (0)	578 ±7 (0)	582 ±6 (0)
FMS1204b	374	461	0.81	1.0122	1.50	0.0637	0.0784	0.6887	0.0254	0.0010	0.0009	0.0109	0.0003	731 ±33 (0)	487 ±5 (0)	532 ±7 (0)	507 ±6 (0)
FMS1203	2722	1412	1.93	1.0120	1.50	0.0915	0.0475	0.5985	0.0052	0.0010	0.0005	0.0071	0.0001	1457 ±22 (0)	299 ±3 (0)	476 ±5 (0)	104 ±1 (0)
FMS1202	137	1765	0.08	1.0120	1.50	0.0622	0.0743	0.6362	0.0244	0.0009	0.0008	0.0091	0.0005	679 ±30 (0)	462 ±5 (0)	500 ±6 (0)	487 ±9 (0)
FMS1201	799	5137	0.16	1.0122	1.50	0.0956	0.1621	2.1368	0.0349	0.0010	0.0018	0.0240	0.0004	1540 ±20 (0)	968 ±10 (0)	1161 ±8 (0)	694 ±8 (0)
FMS1200c	264	367	0.72	1.0121	1.50	0.1062	0.2892	4.2318	0.0853	0.0012	0.0032	0.0495	0.0008	1734 ±20 (0)	1637 ±16 (0)	1680 ±10 (0)	1654 ±15 (0)
FMS1200b	42	142	0.30	1.0121	1.50	0.1060	0.1661	2.4282	0.0955	0.0022	0.0020	0.0489	0.0018	1732 ±37 (0)	991 ±11 (0)	1251 ±14 (0)	1844 ±33 (0)
FMS1200e	141	399	0.35	1.0121	1.50	0.0999	0.1920	2.6431	0.0818	0.0012	0.0021	0.0340	0.0009	1621 ±23 (0)	1132 ±11 (0)	1313 ±9 (0)	1589 ±17 (0)
FMS1401	775	386	2.01	1.0122	1.50	0.1045	0.2310	3.3262	0.0649	0.0015	0.0026	0.0479	0.0007	1705 ±26 (0)	1340 ±14 (0)	1487 ±11 (0)	1272 ±12 (0)
FMS1402	2281	931	2.45	1.0122	1.50	0.0977	0.1469	1.9790	0.0106	0.0012	0.0016	0.0242	0.0001	1581 ±22 (0)	884 ±9 (0)	1108 ±8 (0)	214 ±2 (0)
FMS1403	4650	1169	3.98	1.0213	1.50	0.0964	0.0473	0.6275	0.0023	0.0019	0.0006	0.0126	0.0000	1555 ±38 (0)	298 ±4 (0)	495 ±8 (0)	46 ±1 (0)
FMS1403b	22403	3767	5.95	1.0160	1.50	0.0729	0.0335	0.3367	0.0010	0.0008	0.0004	0.0044	0.0000	1010 ±24 (311)	213 ±3 (3)	295 ±3 (42)	21 ±0 (4)
FMS1404	66	58	1.13	1.0178	1.50	0.1637	0.4584	10.3472	0.1221	0.0024	0.0056	0.1554	0.0015	2494 ±24 (0)	2433 ±25 (0)	2466 ±14 (0)	2328 ±27 (0)
FMS1301	579	2367	0.24	1.0161	1.50	0.0972	0.2529	3.3865	0.0813	0.0010	0.0030	0.0407	0.0008	1571 ±19 (0)	1453 ±16 (0)	1501 ±9 (0)	1579 ±14 (0)
FMS1302	800	2021	0.40	1.0126	1.50	0.0947	0.2157	2.8193	0.0803	0.0011	0.0028	0.0385	0.0009	1523 ±21 (0)	1259 ±15 (0)	1361 ±10 (0)	1562 ±16 (0)

APPENDIX V LA-ICPMS U - Pb isotopic analyses

Zircon – FMC - alluvium

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#	Corrected isotopic ratios		1 sigma error										Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction				
	Th (ppm)	U (ppm)	Th/U	Yield ratio <sup>207</sup> Pb/ <sup>206</sup> Pb	Pb model age (Ga)	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>208</sup> Pb/ <sup>232</sup> Th	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>208</sup> Pb/ <sup>232</sup> Th	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>208</sup> Pb/ <sup>232</sup> Th	
FOUR MILE CREEK ZIRCONS																	
FMS1303	349	327	1.07	1.0096	1.50	0.1067	0.3059	4.5006	0.0833	0.0017	0.0041	0.0777	0.0010	1743 ±29 (0)	1720 ±20 (0)	1731 ±14 (0)	1617 ±19 (0)
FMS1303b	170	125	1.36	1.0143	1.50	0.1066	0.3058	4.4923	0.0825	0.0017	0.0039	0.0757	0.0010	1742 ±29 (0)	1720 ±19 (0)	1730 ±14 (0)	1602 ±18 (0)
FMS1304	222	192	1.15	1.0156	1.50	0.1013	0.2864	4.0006	0.0809	0.0013	0.0034	0.0551	0.0008	1649 ±23 (0)	1624 ±17 (0)	1634 ±11 (0)	1573 ±15 (0)
FMS1305	61	401	0.15	1.0145	1.50	0.0975	0.2712	3.6443	0.0717	0.0011	0.0030	0.0426	0.0008	1577 ±20 (0)	1547 ±15 (0)	1559 ±9 (0)	1400 ±15 (0)
FMS1501	292	1048	0.28	1.0148	1.50	0.0965	0.2562	3.4093	0.0741	0.0010	0.0029	0.0385	0.0007	1558 ±19 (0)	1470 ±15 (0)	1507 ±9 (0)	1445 ±13 (0)
FMS1701	6483	2976	2.18	1.0170	1.50	0.1018	0.0915	1.2854	0.0048	0.0011	0.0010	0.0154	0.0000	1658 ±20 (83)	565 ±6 (3)	839 ±7 (29)	96 ±1 (14)
FMS1702	222	200	1.11	1.0115	1.50	0.0995	0.2682	3.6779	0.0798	0.0014	0.0029	0.0522	0.0009	1615 ±27 (0)	1532 ±15 (0)	1567 ±11 (0)	1552 ±16 (0)
FMS1703	90	58	1.55	1.0143	1.50	0.0980	0.2792	3.7726	0.0788	0.0015	0.0033	0.0603	0.0009	1587 ±29 (0)	1587 ±17 (0)	1587 ±13 (0)	1533 ±16 (0)
FMS1704	224	741	0.30	1.0106	1.50	0.0941	0.1518	1.9708	0.0810	0.0015	0.0020	0.0336	0.0011	1510 ±29 (0)	911 ±11 (0)	1106 ±11 (0)	1574 ±21 (0)
FMS1901	116	113	1.03	1.0171	1.50	0.0993	0.2706	3.7034	0.0768	0.0017	0.0034	0.0663	0.0010	1611 ±32 (0)	1544 ±17 (0)	1572 ±14 (0)	1496 ±19 (0)
FMS1902	46	145	0.31	1.0199	1.50	0.3025	0.0946	3.9423	0.2726	0.0059	0.0015	0.0720	0.0042	3483 ±30 (391)	582 ±9 (61)	1622 ±15 (287)	4872 ±66 (1634)
FMS1903	252	2288	0.11	1.0165	1.50	0.0952	0.2699	3.5406	0.0735	0.0010	0.0031	0.0411	0.0008	1531 ±19 (0)	1540 ±16 (0)	1536 ±9 (0)	1434 ±14 (0)
FMS1903b	802	2547	0.32	1.0112	1.50	0.0970	0.2658	3.5567	0.0762	0.0011	0.0034	0.0469	0.0008	1568 ±20 (0)	1519 ±17 (0)	1540 ±10 (0)	1483 ±16 (0)
FMS1801	838	433	1.94	1.0299	1.50	0.0987	0.2502	3.3994	0.0540	0.0019	0.0038	0.0721	0.0009	1599 ±36 (0)	1439 ±20 (0)	1504 ±17 (0)	1064 ±17 (0)
FMS1801b	213	92	2.31	1.0116	1.50	0.0985	0.2741	3.7231	0.0766	0.0015	0.0031	0.0567	0.0008	1596 ±28 (0)	1562 ±16 (0)	1576 ±12 (0)	1492 ±14 (0)
FMS1802	49	42	1.19	1.0136	1.50	0.1073	0.2929	4.3309	0.0848	0.0019	0.0036	0.0759	0.0011	1754 ±32 (0)	1656 ±18 (0)	1699 ±14 (0)	1645 ±20 (0)
FMS1803	551	502	1.10	1.0136	1.50	0.0983	0.2770	3.7510	0.0783	0.0011	0.0032	0.0443	0.0007	1591 ±20 (0)	1576 ±16 (0)	1582 ±9 (0)	1524 ±13 (0)
FMS1804	6	7	0.88	1.0132	1.50	0.1096	0.2989	4.5154	0.0821	0.0041	0.0051	0.1640	0.0024	1793 ±68 (0)	1686 ±25 (0)	1734 ±30 (0)	1594 ±45 (0)
FMS1805	226	2019	0.11	1.0142	1.50	0.0959	0.2599	3.4370	0.0830	0.0011	0.0034	0.0468	0.0011	1545 ±21 (0)	1489 ±17 (0)	1513 ±11 (0)	1611 ±21 (0)
FMS1806	547	350	1.56	1.0132	1.50	0.1553	0.4315	9.2348	0.1233	0.0016	0.0047	0.1023	0.0011	2405 ±17 (0)	2312 ±21 (0)	2362 ±10 (0)	2349 ±19 (0)
FMS2301	2056	1743	1.18	1.0090	1.50	0.0611	0.0491	0.4137	0.0038	0.0008	0.0005	0.0053	0.0000	643 ±27 (511)	309 ±3 (5)	352 ±4 (73)	77 ±1 (41)
FMS2301b	1083	1844	0.59	1.0133	1.50	0.0574	0.0482	0.3808	0.0058	0.0008	0.0005	0.0054	0.0001	508 ±32 (548)	303 ±3 (5)	328 ±4 (71)	117 ±1 (80)
FMS2302	431	1461	0.30	1.0078	1.50	0.0980	0.0808	1.0909	0.0333	0.0012	0.0009	0.0138	0.0004	1586 ±23 (0)	501 ±5 (0)	749 ±7 (0)	662 ±8 (0)
FMS2302b	524	1670	0.31	1.0097	1.50	0.0992	0.1197	1.6366	0.0250	0.0014	0.0013	0.0230	0.0005	1609 ±27 (0)	729 ±7 (0)	984 ±9 (0)	500 ±9 (0)
FMS2303	188	1711	0.11	1.0151	1.50	0.0732	0.0750	0.7573	0.0272	0.0010	0.0009	0.0107	0.0004	1019 ±27 (0)	466 ±5 (0)	572 ±6 (0)	541 ±9 (0)
FMS2304	1529	2099	0.73	1.0142	1.50	0.0961	0.2438	3.2286	0.0158	0.0011	0.0030	0.0420	0.0002	1549 ±21 (0)	1407 ±15 (0)	1464 ±10 (0)	316 ±4 (0)
FMS2001	347	3224	0.11	1.0203	1.50	0.0954	0.2515	3.3068	0.0817	0.0010	0.0030	0.0414	0.0011	1536 ±20 (0)	1446 ±16 (0)	1483 ±10 (0)	1588 ±20 (0)
FMS2002	457	692	0.66	1.0125	1.50	0.0971	0.2644	3.5377	0.0773	0.0010	0.0029	0.0398	0.0007	1569 ±19 (0)	1512 ±15 (0)	1536 ±9 (0)	1505 ±13 (0)
FMS2003	132	752	0.18	1.0123	1.50	0.0573	0.0731	0.5770	0.0237	0.0012	0.0009	0.0119	0.0005	503 ±45 (0)	455 ±5 (0)	463 ±8 (0)	473 ±10 (0)
FMS2003b	357	847	0.42	1.0113	1.50	0.0635	0.0722	0.6321	0.0227	0.0009	0.0008	0.0093	0.0003	725 ±30 (0)	450 ±5 (0)	497 ±6 (0)	453 ±5 (0)
FMS2004	242	2481	0.10	1.0149	1.50	0.0958	0.2572	3.3975	0.0495	0.0010	0.0030	0.0402	0.0006	1544 ±19 (0)	1476 ±15 (0)	1504 ±9 (0)	976 ±11 (0)
FMS2005	227	367	0.62	1.0119	1.50	0.1038	0.2887	4.1311	0.0918	0.0011	0.0032	0.0487	0.0009	1693 ±20 (0)	1635 ±16 (0)	1660 ±10 (0)	1776 ±16 (0)
FMS2501	862	2311	0.37	1.0163	1.50	0.0954	0.2799	3.6797	0.0223	0.0012	0.0034	0.0510	0.0005	1536 ±24 (0)	1591 ±17 (0)	1567 ±11 (0)	446 ±9 (0)
FMS2502	420	2869	0.15	1.0009	1.50	0.0974	0.1723	2.3136	0.0861	0.0011	0.0017	0.0252	0.0010	1575 ±21 (0)	1025 ±9 (0)	1216 ±8 (0)	1669 ±19 (0)
FMS2503	666	1694	0.39	1.0182	1.50	0.0860	0.1353	1.6037	0.0365	0.0010	0.0016	0.0214	0.0004	1338 ±23 (146)	818 ±9 (6)	972 ±8 (52)	724 ±8 (149)
FMS2504	260	637	0.41	1.0142	1.50	0.0975	0.2737	3.6780	0.0783	0.0011	0.0032	0.0460	0.0008	1576 ±21 (0)	1559 ±16 (0)	1567 ±10 (0)	1523 ±16 (0)
FMS2505	599	1304	0.46	1.0130	1.50	0.0792	0.1032	1.1256	0.0139	0.0010	0.0012	0.0158	0.0002	1176 ±26 (0)	633 ±7 (0)	766 ±8 (0)	279 ±4 (0)
FMS2506	259	748	0.35	1.0214	1.50	0.0976	0.2739	3.6844	0.0766	0.0012	0.0033	0.0506	0.0010	1578 ±23 (0)	1561 ±17 (0)	1568 ±11 (0)	1491 ±19 (0)
FMS2507	10057	3534	2.85	1.0135	1.50	0.0794	0.2116	2.3145	0.0076	0.0008	0.0022	0.0245	0.0001	1182 ±20 (41)	1238 ±12 (2)	1217 ±8 (16)	154 ±1 (9)
FMS2508	476	3163	0.15	1.0144	1.50	0.0891	0.1404	1.7253	0.1662	0.0009	0.0017	0.0204	0.0016	1407 ±20 (0)	847 ±9 (0)	1018 ±8 (0)	3107 ±27 (0)
FMS2509	165	208	0.79	1.0091	1.50	0.0965	0.2101	2.7946	0.0787	0.0012	0.0023	0.0352	0.0008	1558 ±23 (0)	1229 ±12 (0)	1354 ±9 (0)	1530 ±14 (0)
FMP101	291	13563	0.02	1.0139	1.50	0.0725	0.0067	0.0667	0.1203	0.0008	0.0001	0.0007	0.0011	1001 ±22 (377)	43 ±0 (1)	66 ±1 (12)	2296 ±19 (254)
FMP102	402	4540	0.09	1.0117	1.50	0.0563	0.0736	0.5710	0.0225	0.0006	0.0008	0.0069	0.0003	464 ±24 (0)	458 ±5 (0)	459 ±4 (0)	449 ±5 (0)
FMP102b	1728	4295	0.40	1.0164	1.50	0.0957	0.2571	3.3909	0.0782	0.0010	0.0031	0.0412	0.0008	1541 ±19 (0)	1475 ±16 (0)	1502 ±10 (0)	1521 ±15 (0)



#	Corrected isotopic ratios			1 sigma error								Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction							
	Th (ppm)	U (ppm)	Th/U	Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{208}\text{Pb}/^{206}\text{Pb}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{208}\text{Pb}/^{206}\text{Pb}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$		
FOUR MILE CREEK ZIRCONS																			
FMP201	148	2339	0.06	1.0074	1.50	0.0598	0.0694	0.5717	0.0344	0.0010	0.0007	0.0092	0.0008	596 ±36 (0)	432 ±4 (0)	459 ±6 (0)	684 ±16 (0)		
FMP201b	662	3580	0.18	1.0130	1.50	0.0953	0.1567	2.0586	0.0353	0.0010	0.0017	0.0231	0.0004	1535 ±20 (0)	938 ±9 (0)	1135 ±8 (0)	702 ±8 (0)		
FMP202	1147	5030	0.23	1.0123	1.50	0.0576	0.0708	0.5622	0.0089	0.0006	0.0008	0.0064	0.0001	516 ±23 (0)	441 ±5 (0)	453 ±4 (0)	178 ±2 (0)		
FMP203	663	5355	0.12	1.0122	1.50	0.0604	0.0686	0.5705	0.0364	0.0008	0.0008	0.0080	0.0005	617 ±28 (0)	428 ±5 (0)	458 ±5 (0)	722 ±9 (0)		
FMP204	455	1647	0.28	1.0115	1.50	0.0916	0.1237	1.5625	0.0352	0.0011	0.0014	0.0206	0.0005	1460 ±24 (0)	752 ±8 (0)	955 ±8 (0)	698 ±9 (0)		
FMP205	254	2124	0.12	1.0133	1.50	0.0952	0.2570	3.3722	0.0548	0.0010	0.0030	0.0404	0.0007	1532 ±20 (0)	1474 ±15 (0)	1498 ±9 (0)	1078 ±14 (0)		
FMP207	37243	8589	4.34	1.0131	1.50	0.0760	0.0143	0.1498	0.0013	0.0012	0.0002	0.0025	0.0000	1094 ±31 (296)	92 ±1 (1)	142 ±2 (21)	26 ±0 (3)		
FMP208	1079	4598	0.23	1.0125	1.50	0.0963	0.2517	3.3399	0.0711	0.0010	0.0029	0.0395	0.0007	1554 ±19 (0)	1447 ±15 (0)	1490 ±9 (0)	1388 ±14 (0)		
FMP208b	411	2177	0.19	1.0122	1.50	0.0975	0.2353	3.1573	0.0422	0.0011	0.0023	0.0345	0.0006	1576 ±21 (0)	1362 ±12 (0)	1447 ±8 (0)	835 ±11 (0)		
FMP210	694	4100	0.17	1.0149	1.50	0.0860	0.1776	2.1059	0.0272	0.0009	0.0022	0.0265	0.0004	1338 ±20 (0)	1054 ±12 (0)	1151 ±9 (0)	543 ±7 (0)		
FMP301	374	1341	0.28	1.0109	1.50	0.0975	0.2469	3.3150	0.0263	0.0014	0.0029	0.0486	0.0006	1577 ±26 (0)	1422 ±15 (0)	1485 ±11 (0)	525 ±12 (0)		
FMP302	957	6196	0.15	1.0125	1.50	0.0649	0.0124	0.1112	0.0165	0.0009	0.0001	0.0016	0.0002	772 ±28 (582)	80 ±1 (2)	107 ±1 (29)	331 ±4 (96)		
FMP303	1787	4352	0.41	1.0134	1.50	0.0906	0.0940	1.1734	0.0144	0.0011	0.0011	0.0156	0.0002	1438 ±22 (72)	579 ±7 (2)	788 ±7 (23)	290 ±4 (54)		
FMP305	1059	8891	0.12	1.0138	1.50	0.0836	0.2085	2.4021	0.0659	0.0009	0.0021	0.0244	0.0006	1284 ±20 (0)	1221 ±11 (0)	1243 ±7 (0)	1290 ±11 (0)		
FMP305b	400	907	0.44	1.0133	1.50	0.1100	0.2796	4.2386	0.0954	0.0012	0.0031	0.0492	0.0009	1799 ±19 (0)	1589 ±16 (0)	1682 ±10 (0)	1842 ±17 (0)		
FMP307	285	2073	0.14	1.0113	1.50	0.0965	0.2528	3.3631	0.0819	0.0010	0.0027	0.0373	0.0009	1558 ±20 (0)	1453 ±14 (0)	1496 ±9 (0)	1591 ±17 (0)		
FMP307b	728	2997	0.24	1.0139	1.50	0.0908	0.1672	2.0924	0.0478	0.0010	0.0019	0.0259	0.0005	1442 ±21 (58)	997 ±11 (3)	1146 ±9 (23)	944 ±10 (127)		
FMP310	299	4000	0.07	1.0103	1.50	0.0962	0.1924	2.5515	0.1127	0.0010	0.0020	0.0281	0.0013	1552 ±20 (0)	1134 ±11 (0)	1287 ±8 (0)	2159 ±23 (0)		
FMP401	1631	8493	0.19	1.0120	1.50	0.0875	0.0228	0.2753	0.0241	0.0011	0.0003	0.0035	0.0002	1373 ±24 (149)	145 ±2 (1)	247 ±3 (19)	482 ±5 (55)		
FMP402	1287	12361	0.10	1.0120	1.50	0.0941	0.0543	0.7043	0.0224	0.0010	0.0006	0.0087	0.0003	1509 ±20 (43)	341 ±4 (1)	541 ±5 (11)	448 ±5 (77)		
FMP404	762	2285	0.33	1.0132	1.50	0.0970	0.2020	2.6999	0.0744	0.0011	0.0022	0.0309	0.0007	1567 ±20 (0)	1186 ±12 (0)	1328 ±8 (0)	1451 ±14 (0)		
FMP406	4166	5768	0.72	1.0131	1.50	0.0754	0.0465	0.4834	0.0149	0.0009	0.0005	0.0056	0.0001	1078 ±23 (128)	293 ±3 (2)	400 ±4 (23)	299 ±3 (21)		
FMS2401	222	105	2.12	1.0127	1.50	0.0986	0.2635	3.5812	0.0795	0.0014	0.0029	0.0521	0.0008	1598 ±27 (0)	1508 ±15 (0)	1545 ±12 (0)	1547 ±14 (0)		
FMS2401b	216	143	1.52	1.0118	1.50	0.1000	0.2692	3.7102	0.0824	0.0020	0.0035	0.0768	0.0011	1624 ±38 (0)	1537 ±18 (0)	1574 ±17 (0)	1601 ±21 (0)		
FMS2402	598	6867	0.09	1.0131	1.50	0.0962	0.0407	0.5399	0.0346	0.0010	0.0004	0.0059	0.0003	1551 ±19 (0)	257 ±3 (0)	438 ±4 (0)	688 ±6 (0)		
FMS2403	299	612	0.49	1.0142	1.50	0.1000	0.2918	4.0219	0.0938	0.0012	0.0034	0.0527	0.0010	1624 ±22 (0)	1650 ±17 (0)	1639 ±11 (0)	1811 ±19 (0)		
FMDR01	112079	16119	6.95	1.0127	1.50	0.0685	0.0121	0.1144	0.0008	0.0008	0.0001	0.0014	0.0000	884 ±23 (226)	78 ±1 (1)	110 ±1 (12)	15 ±0 (1)		
FMDR03	178	400	0.45	1.0145	1.50	0.0976	0.2710	3.6451	0.0777	0.0013	0.0032	0.0508	0.0010	1579 ±24 (0)	1546 ±16 (0)	1559 ±11 (0)	1513 ±18 (0)		
FMDR04	132	327	0.40	1.0124	1.50	0.0977	0.2627	3.5386	0.0743	0.0011	0.0028	0.0405	0.0007	1581 ±21 (0)	1504 ±14 (0)	1536 ±9 (0)	1448 ±14 (0)		
FMDR06	196	328	0.60	1.0132	1.50	0.0986	0.2719	3.6947	0.0817	0.0014	0.0032	0.0548	0.0010	1597 ±27 (0)	1551 ±16 (0)	1570 ±12 (0)	1587 ±19 (0)		
FMDR07	171	421	0.41	1.0122	1.50	0.0977	0.2713	3.6538	0.0813	0.0011	0.0028	0.0405	0.0008	1580 ±21 (0)	1548 ±14 (0)	1561 ±9 (0)	1579 ±15 (0)		
FMDB02	496	2808	0.18	1.0133	1.50	0.0964	0.2317	3.0790	0.0420	0.0010	0.0027	0.0358	0.0005	1556 ±19 (0)	1343 ±14 (0)	1427 ±9 (0)	832 ±9 (0)		
FMDB08	276	1601	0.17	1.0072	1.50	0.0929	0.1917	2.4554	0.0573	0.0011	0.0019	0.0286	0.0008	1486 ±23 (0)	1131 ±10 (0)	1259 ±8 (0)	1126 ±15 (0)		
FMAR01	20126	4909	4.10	1.0130	1.50	0.0718	0.0381	0.3767	0.0013	0.0008	0.0004	0.0044	0.0000	980 ±22 (207)	241 ±3 (2)	325 ±3 (30)	27 ±0 (5)		
FMAR03	22	19	1.17	1.0108	1.50	0.1062	0.2786	4.0791	0.0882	0.0023	0.0035	0.0867	0.0013	1735 ±40 (0)	1585 ±18 (0)	1650 ±17 (0)	1708 ±24 (0)		
FMAR07	123	101	1.21	1.0109	1.50	0.0592	0.0905	0.7387	0.0302	0.0012	0.0011	0.0154	0.0004	575 ±46 (0)	558 ±6 (0)	562 ±9 (0)	602 ±7 (0)		
FMP201	148	2339	0.06	1.0074	1.50	0.0598	0.0694	0.5717	0.0344	0.0010	0.0007	0.0092	0.0008	596 ±36 (0)	432 ±4 (0)	459 ±6 (0)	684 ±16 (0)		
FMP501	144	1438	0.10	1.0117	1.50	0.0875	0.1625	1.9590	0.0529	0.0009	0.0017	0.0211	0.0006	1370 ±21 (0)	971 ±9 (0)	1102 ±7 (0)	1041 ±12 (0)		

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$		
Beverley WC2																			
BE01z01	197	182	1.08	1.0122	0.50	0.0543	0.0596	0.4461	0.0194	0.0014	0.0008	0.0112	0.0003	383 ±56 (0)	373 ±5 (0)	375 ±8 (0)	387 ±5 (0)		
BE01z02	39	60	0.65	1.0127	0.50	0.0515	0.0407	0.2893	0.0134	0.0027	0.0007	0.0148	0.0004	263 ±119 (0)	257 ±4 (0)	258 ±12 (0)	270 ±8 (0)		
BE01z03	60	58	1.04	0.9952	0.50	0.0542	0.0207	0.1545	0.0077	0.0039	0.0004	0.0108	0.0002	379 ±161 (0)	132 ±3 (0)	146 ±9 (0)	155 ±5 (0)		
BE01z04	478	490	0.98	1.0079	0.50	0.0546	0.0496	0.3727	0.0169	0.0015	0.0007	0.0105	0.0003	394 ±63 (0)	312 ±4 (0)	322 ±8 (0)	338 ±5 (0)		
BE01z05	51	79	0.65	1.0133	0.50	0.0519	0.0451	0.3228	0.0151	0.0043	0.0010	0.0262	0.0007	282 ±189 (0)	284 ±6 (0)	284 ±20 (0)	303 ±14 (0)		
BE01z06	155	145	1.07	1.0114	0.50	0.0528	0.0512	0.3727	0.0166	0.0016	0.0007	0.0112	0.0003	318 ±69 (0)	322 ±4 (0)	322 ±8 (0)	333 ±5 (0)		
BE01z07	87	104	0.84	1.0114	0.50	0.0537	0.0311	0.2298	0.0103	0.0024	0.0005	0.0102	0.0002	357 ±101 (0)	197 ±3 (0)	210 ±8 (0)	207 ±5 (0)		
BE01z08	255	346	0.74	1.0114	0.50	0.0525	0.0464	0.3353	0.0152	0.0012	0.0006	0.0076	0.0002	306 ±51 (0)	292 ±4 (0)	294 ±6 (0)	305 ±4 (0)		
BE01z09	215	200	1.08	1.0119	0.50	0.0538	0.0473	0.3506	0.0150	0.0017	0.0006	0.0113	0.0003	361 ±73 (0)	298 ±4 (0)	305 ±8 (0)	300 ±5 (0)		
BE01z10	469	380	1.24	1.0158	0.50	0.0624	0.0543	0.4673	0.0185	0.0016	0.0008	0.0121	0.0003	689 ±54 (0)	341 ±5 (0)	389 ±8 (0)	370 ±5 (0)		
BE01z11	237	264	0.90	1.0073	0.50	0.0672	0.0506	0.4682	0.0197	0.0032	0.0008	0.0220	0.0005	843 ±100 (0)	318 ±5 (0)	390 ±15 (0)	395 ±10 (0)		
BE01z12	174	164	1.06	1.0114	0.50	0.0568	0.0679	0.5318	0.0212	0.0014	0.0009	0.0135	0.0003	485 ±56 (0)	423 ±5 (0)	433 ±9 (0)	424 ±6 (0)		
BE01z13	169	192	0.88	1.0144	0.50	0.1162	0.0196	0.3144	0.0118	0.0059	0.0004	0.0153	0.0003	1898 ±91 (0)	125 ±3 (0)	278 ±12 (0)	236 ±6 (0)		
BE01z14	120	111	1.08	1.0037	0.50	0.0500	0.0211	0.1454	0.0067	0.0027	0.0003	0.0077	0.0002	195 ±125 (0)	134 ±2 (0)	138 ±7 (0)	135 ±3 (0)		
BE01z15	208	239	0.87	1.0138	0.50	0.0533	0.0501	0.3681	0.0155	0.0014	0.0006	0.0100	0.0002	343 ±61 (0)	315 ±4 (0)	318 ±7 (0)	311 ±5 (0)		
BE01z16	135	111	1.22	1.0085	0.50	0.0584	0.0687	0.5527	0.0195	0.0014	0.0009	0.0131	0.0003	543 ±51 (0)	428 ±5 (0)	447 ±9 (0)	390 ±5 (0)		
BE01z17	68	51	1.34	1.0027	0.50	0.0517	0.0454	0.3233	0.0138	0.0041	0.0009	0.0250	0.0004	273 ±181 (0)	286 ±6 (0)	284 ±19 (0)	278 ±9 (0)		
BE01z18	145	185	0.78	1.0086	0.50	0.0524	0.0453	0.3267	0.0132	0.0014	0.0006	0.0087	0.0002	302 ±61 (0)	285 ±4 (0)	287 ±7 (0)	264 ±4 (0)		
BE01z19	249	181	1.38	1.0081	0.50	0.0572	0.0443	0.3491	0.0132	0.0024	0.0007	0.0142	0.0003	498 ±91 (0)	279 ±4 (0)	304 ±11 (0)	266 ±5 (0)		
BE01z20	185	141	1.31	1.0071	0.50	0.0546	0.0466	0.3502	0.0144	0.0015	0.0006	0.0096	0.0002	395 ±62 (0)	293 ±4 (0)	305 ±7 (0)	289 ±4 (0)		
BE02z01	178	598	0.30	1.0098	0.50	0.0567	0.0699	0.5465	0.0091	0.0010	0.0008	0.0101	0.0002	480 ±40 (0)	436 ±5 (0)	443 ±7 (0)	184 ±4 (0)		
BE02z02	104	128	0.81	1.0088	0.50	0.0564	0.0733	0.5699	0.0237	0.0017	0.0010	0.0170	0.0004	469 ±66 (0)	456 ±6 (0)	458 ±11 (0)	473 ±8 (0)		
BE02z03	219	161	1.37	1.0098	0.50	0.0528	0.0492	0.3575	0.0152	0.0012	0.0006	0.0084	0.0002	319 ±53 (0)	309 ±4 (0)	310 ±6 (0)	306 ±4 (0)		
BE02z04	217	289	0.75	1.0097	0.50	0.0522	0.0410	0.2947	0.0130	0.0009	0.0005	0.0054	0.0002	292 ±41 (0)	259 ±3 (0)	262 ±4 (0)	260 ±3 (0)		
BE02z05	70	87	0.81	1.0098	0.50	0.0575	0.0513	0.4063	0.0161	0.0037	0.0010	0.0256	0.0006	510 ±142 (0)	323 ±6 (0)	346 ±18 (0)	322 ±11 (0)		
BE02z06	188	182	1.03	1.0055	0.50	0.0497	0.0210	0.1439	0.0069	0.0024	0.0003	0.0068	0.0002	179 ±111 (0)	134 ±2 (0)	137 ±6 (0)	139 ±3 (0)		

APPENDIX V LA-ICPMS U - Pb isotopic analyses

Zircon – Beverley WC2

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#				Corrected isotopic ratios										1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
	Th (ppm)	U (ppm)	Th/U	Yield ratio <sup>207</sup> Pb/ <sup>206</sup> Pb	Pb model age (Ga)	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>206</sup> Pb/ <sup>232</sup> Th	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>206</sup> Pb/ <sup>232</sup> Th	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>206</sup> Pb/ <sup>232</sup> Th				
Beverley WC2																					
BE02z07	303	280	1.08	1.0088	0.50	0.0496	0.0191	0.1306	0.0064	0.0026	0.0003	0.0067	0.0002	176 ±122 (0)	122 ±2 (0)	125 ±6 (0)	130 ±3 (0)				
BE02z08	279	290	0.96	1.0091	0.50	0.0569	0.0618	0.4840	0.0196	0.0013	0.0008	0.0115	0.0003	487 ±52 (0)	386 ±5 (0)	401 ±8 (0)	393 ±5 (0)				
BE02z09	139	153	0.91	1.0100	0.50	0.0563	0.0711	0.5516	0.0212	0.0011	0.0009	0.0107	0.0003	465 ±42 (0)	443 ±5 (0)	446 ±7 (0)	425 ±5 (0)				
BE02z10	145	122	1.18	1.0075	0.50	0.0539	0.0455	0.3379	0.0146	0.0028	0.0008	0.0172	0.0003	366 ±116 (0)	287 ±5 (0)	296 ±13 (0)	293 ±7 (0)				
BE02z11	76	126	0.60	1.0100	0.50	0.1949	0.5314	14.2681	0.1409	0.0028	0.0067	0.2139	0.0022	2784 ±23 (0)	2747 ±28 (0)	2768 ±14 (0)	2664 ±38 (0)				
BE02z12	272	245	1.11	1.0115	0.50	0.0674	0.0698	0.6488	0.0215	0.0013	0.0008	0.0123	0.0003	851 ±39 (0)	435 ±5 (0)	508 ±8 (0)	430 ±5 (0)				
BE02z13	71	76	0.94	1.0101	0.50	0.0579	0.0472	0.3765	0.0151	0.0021	0.0007	0.0133	0.0003	524 ±78 (0)	297 ±4 (0)	324 ±10 (0)	302 ±6 (0)				
BE02z14	182	173	1.05	1.0109	0.50	0.0527	0.0443	0.3218	0.0143	0.0014	0.0005	0.0084	0.0002	314 ±59 (0)	280 ±3 (0)	283 ±6 (0)	287 ±4 (0)				
BE02z15	254	312	0.81	1.0114	0.50	0.0604	0.0735	0.6125	0.0241	0.0009	0.0008	0.0093	0.0003	619 ±32 (0)	457 ±5 (0)	485 ±6 (0)	481 ±5 (0)				
BE02z16	388	358	1.08	1.0115	0.50	0.0578	0.0661	0.5263	0.0208	0.0009	0.0008	0.0085	0.0002	521 ±35 (0)	413 ±5 (0)	429 ±6 (0)	416 ±4 (0)				
BE02z17	65	81	0.80	1.0102	0.50	0.0634	0.0644	0.5623	0.0229	0.0020	0.0009	0.0174	0.0004	720 ±67 (0)	402 ±5 (0)	453 ±11 (0)	457 ±8 (0)				
BE02z18	196	128	1.52	1.0087	0.50	0.0575	0.0408	0.3237	0.0133	0.0021	0.0006	0.0118	0.0002	510 ±82 (0)	258 ±4 (0)	285 ±9 (0)	267 ±4 (0)				
BE02z19	305	302	1.01	1.0115	0.50	0.0531	0.0528	0.3864	0.0164	0.0010	0.0006	0.0075	0.0002	334 ±44 (0)	331 ±4 (0)	332 ±5 (0)	328 ±4 (0)				
BE02z20	658	397	1.66	1.0116	0.50	0.0975	0.1797	2.4147	0.0541	0.0016	0.0021	0.0396	0.0006	1576 ±30 (0)	1065 ±12 (0)	1247 ±12 (0)	1065 ±11 (0)				
BE02z21	327	659	0.50	1.0118	0.50	0.0635	0.0524	0.4587	0.0099	0.0016	0.0007	0.0111	0.0002	724 ±52 (0)	329 ±4 (0)	383 ±8 (0)	199 ±4 (0)				
BE02z22	239	196	1.22	1.0109	0.50	0.0570	0.0725	0.5697	0.0223	0.0012	0.0009	0.0121	0.0003	490 ±47 (0)	451 ±5 (0)	458 ±8 (0)	446 ±5 (0)				
BE02z23	250	231	1.08	1.0098	0.50	0.0538	0.0489	0.3622	0.0155	0.0011	0.0006	0.0076	0.0002	361 ±47 (0)	308 ±4 (0)	314 ±6 (0)	310 ±4 (0)				
BE02z24	101	81	1.25	1.0043	0.50	0.0511	0.0211	0.1482	0.0068	0.0023	0.0003	0.0067	0.0001	244 ±106 (0)	134 ±2 (0)	140 ±6 (0)	138 ±3 (0)				
BE02z25	667	359	1.86	1.0087	0.50	0.0611	0.0168	0.1418	0.0058	0.0021	0.0002	0.0048	0.0001	643 ±74 (0)	108 ±1 (0)	135 ±4 (0)	117 ±2 (0)				
BE02z26	317	277	1.14	1.0114	0.50	0.0500	0.0211	0.1453	0.0067	0.0014	0.0003	0.0040	0.0001	194 ±64 (0)	135 ±2 (0)	138 ±4 (0)	136 ±2 (0)				
BE02z27	244	306	0.80	1.0110	0.50	0.0533	0.0449	0.3296	0.0143	0.0012	0.0005	0.0073	0.0002	342 ±50 (0)	283 ±3 (0)	289 ±6 (0)	286 ±4 (0)				
BE02z28	146	217	0.67	1.0118	0.50	0.0895	0.1414	1.7451	0.0437	0.0021	0.0018	0.0398	0.0008	1415 ±44 (0)	853 ±10 (0)	1025 ±15 (0)	865 ±15 (0)				
BE03z01	115	99	1.16	1.0008	0.50	0.0516	0.0190	0.1348	0.0067	0.0031	0.0003	0.0079	0.0002	267 ±137 (0)	121 ±2 (0)	128 ±7 (0)	135 ±3 (0)				
BE03z02	230	168	1.37	1.0106	0.50	0.0532	0.0462	0.3387	0.0152	0.0014	0.0006	0.0086	0.0002	335 ±58 (0)	291 ±3 (0)	296 ±7 (0)	305 ±4 (0)				

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$		
DC1 Mt Gee conglomerate																			
DC1-S1-1	128	304	0.42	1.0114	0.50	0.0563	0.0672	0.5212	0.0185	0.0011	0.0007	0.0092	0.0004	463 ±41 (0)	419 ±4 (0)	426 ±6 (0)	371 ±9 (0)		
DC1-S1-2	66	95	0.69	1.0127	0.50	0.0525	0.0507	0.3670	0.0163	0.0016	0.0007	0.0109	0.0005	308 ±71 (0)	319 ±4 (0)	317 ±8 (0)	327 ±9 (0)		
DC1-S3-2	172	687	0.25	1.0144	0.50	0.0800	0.1360	1.4990	0.0454	0.0009	0.0015	0.0175	0.0006	1196 ±21 (0)	822 ±9 (0)	930 ±7 (0)	897 ±11 (0)		
DC1-S1-4	80	151	0.53	1.0112	0.50	0.1144	0.3396	5.3562	0.1006	0.0012	0.0036	0.0578	0.0010	1870 ±19 (0)	1885 ±17 (0)	1878 ±9 (0)	1937 ±19 (0)		
DC1-S1-5	123	621	0.20	1.0103	0.50	0.0762	0.1683	1.7691	0.0409	0.0009	0.0016	0.0189	0.0006	1101 ±22 (0)	1003 ±9 (0)	1034 ±7 (0)	811 ±12 (0)		
DC1-S1-6	78	176	0.44	1.0139	0.50	0.0558	0.0701	0.5388	0.0248	0.0012	0.0009	0.0113	0.0006	443 ±47 (0)	437 ±5 (0)	438 ±7 (0)	496 ±11 (0)		
DC1-S1-7	0	1	0.55	1.0170	0.50	0.3239	0.1095	4.8926	0.2124	0.0182	0.0037	0.2354	0.0107	3588 ±86 (0)	670 ±21 (0)	1801 ±41 (0)	3893 ±179 (0)		
DC1-S1-8	566	1174	0.48	1.0109	0.50	0.0719	0.0756	0.7499	0.0248	0.0008	0.0008	0.0081	0.0003	983 ±22 (0)	470 ±5 (0)	568 ±5 (0)	496 ±5 (0)		
DC1-S1-9	52	374	0.14	1.0141	0.50	0.1435	0.3950	7.8092	0.1090	0.0017	0.0040	0.0855	0.0026	2270 ±20 (0)	2146 ±19 (0)	2209 ±10 (0)	2091 ±47 (0)		
DC1-S110	386	911	0.42	1.0159	0.50	0.0742	0.1179	1.2052	0.0393	0.0008	0.0014	0.0147	0.0004	1046 ±22 (0)	718 ±8 (0)	803 ±7 (0)	780 ±9 (0)		
DC1-S111	72	47	1.53	1.0127	0.50	0.0964	0.2475	3.2887	0.0794	0.0014	0.0028	0.0462	0.0010	1555 ±27 (0)	1426 ±14 (0)	1478 ±11 (0)	1545 ±18 (0)		
DC1-S112	2413	2286	1.06	1.0133	0.50	0.0653	0.0210	0.1892	0.0058	0.0007	0.0002	0.0023	0.0001	785 ±24 (0)	134 ±2 (0)	176 ±2 (0)	116 ±1 (0)		
DC1S112b	712	732	0.97	1.0141	0.50	0.0758	0.0417	0.4360	0.0107	0.0011	0.0005	0.0064	0.0002	1088 ±28 (0)	264 ±3 (0)	367 ±5 (0)	215 ±3 (0)		
DC1-S113	369	378	0.98	1.0119	0.50	0.1016	0.2837	3.9729	0.0866	0.0011	0.0029	0.0411	0.0008	1653 ±19 (0)	1610 ±15 (0)	1629 ±8 (0)	1679 ±14 (0)		
DC1-S114	104	144	0.72	1.0135	0.50	0.0592	0.0833	0.6799	0.0265	0.0012	0.0011	0.0137	0.0005	574 ±44 (0)	516 ±6 (0)	527 ±8 (0)	529 ±10 (0)		
DC1-S115	657	358	1.83	1.0130	0.50	0.1033	0.3018	4.2979	0.0874	0.0011	0.0031	0.0452	0.0008	1684 ±19 (0)	1700 ±15 (0)	1693 ±9 (0)	1694 ±14 (0)		
DC1-S116	137	213	0.64	1.0131	0.50	0.1038	0.2630	3.7658	0.0823	0.0011	0.0028	0.0415	0.0009	1694 ±20 (0)	1505 ±14 (0)	1585 ±9 (0)	1598 ±16 (0)		
DC1-S117	154	1403	0.11	1.0084	0.50	0.0965	0.2525	3.3589	0.0595	0.0010	0.0025	0.0343	0.0008	1558 ±19 (0)	1451 ±13 (0)	1495 ±8 (0)	1168 ±15 (0)		
DC1S117b	321	1849	0.17	1.0140	0.50	0.0974	0.2341	3.1446	0.0453	0.0010	0.0025	0.0338	0.0005	1575 ±19 (0)	1356 ±13 (0)	1444 ±8 (0)	896 ±9 (0)		
DC1-S118	264	217	1.22	1.0113	0.50	0.0616	0.0999	0.8474	0.0303	0.0007	0.0011	0.0104	0.0003	659 ±25 (0)	614 ±6 (0)	623 ±6 (0)	604 ±6 (0)		
DC1-S119	261	447	0.58	1.0130	0.50	0.0575	0.0827	0.6558	0.0256	0.0006	0.0009	0.0078	0.0003	511 ±24 (0)	512 ±6 (0)	512 ±5 (0)	510 ±5 (0)		
DC1-S120	1175	884	1.33	1.0139	0.50	0.0639	0.0567	0.4994	0.0178	0.0007	0.0007	0.0060	0.0002	738 ±23 (0)	356 ±4 (0)	411 ±4 (0)	356 ±3 (0)		
DC1-S121	34	56	0.62	1.0075	0.50	0.0565	0.0739	0.5749	0.0255	0.0018	0.0011	0.0179	0.0008	471 ±71 (0)	459 ±7 (0)	461 ±12 (0)	510 ±16 (0)		
DC1S121b	64	52	1.22	1.0130	0.50	0.1015	0.0667	0.9339	0.0238	0.0016	0.0008	0.0149	0.0003	1652 ±30 (0)	416 ±5 (0)	670 ±8 (0)	475 ±7 (0)		
DC-1S122	4940	3880	1.27	1.0135	0.50	0.0522	0.0259	0.1866	0.0004	0.0005	0.0003	0.0022	0.0000	295 ±24 (463)	165 ±2 (2)	174 ±2 (33)	9 ±0 (15)		
DC1S122b	5011	4929	1.02	1.0103	0.50	0.0571	0.0235	0.1850	0.0012	0.0006	0.0003	0.0022	0.0000	495 ±24 (347)	150 ±2 (2)	172 ±2 (26)	23 ±0 (15)		
DC1-S123	74	111	0.67	1.0113	0.50	0.0809	0.1746	1.9454	0.0545	0.0011	0.0022	0.0284	0.0008	1218 ±27 (0)	1037 ±12 (0)	1097 ±10 (0)	1072 ±15 (0)		
DC1-S124	163	120	1.36	1.0095	0.50	0.1063	0.2847	4.1693	0.0937	0.0013	0.0034	0.0552	0.0011	1737 ±23 (0)	1615 ±17 (0)	1668 ±11 (0)	1811 ±20 (0)		
DC1-S125	120	130	0.93	1.0138	0.50	0.0861	0.0586	0.6945	0.0252	0.0015	0.0007	0.0118	0.0004	1340 ±33 (0)	367 ±5 (0)	536 ±7 (0)	502 ±7 (0)		
DC1S126	2345	669	3.51	1.0080	0.50	0.0648	0.0759	0.6779	0.0276	0.0009	0.0009	0.0097	0.0003	769 ±28 (0)	472 ±6 (0)	526 ±6 (0)	551 ±6 (0)		
DC1S126b	514	679	0.76	1.0092	0.50	0.0667	0.0743	0.6822	0.0205	0.0009	0.0009	0.0096	0.0003	827 ±27 (0)	462 ±5 (0)	528 ±6 (0)	411 ±5 (0)		
DC1S127	253	126	2.01	1.0155	0.50	0.0561	0.0695	0.5374	0.0215	0.0009	0.0008	0.0090	0.0003	456 ±37 (0)	433 ±5 (0)	437 ±6 (0)	429 ±5 (0)		
DC1S127b	140	98	1.44	1.0175	0.50	0.0564	0.0733	0.5697	0.0227	0.0011	0.0009	0.0111	0.0003	469 ±44 (0)	456 ±5 (0)	458 ±7 (0)	454 ±7 (0)		
DC1S128	441	604	0.73	1.0233	0.50	0.1632	0.4769	10.7302	0.1149	0.0016	0.0060	0.1329	0.0011	2489 ±17 (0)	2514 ±26 (0)	2500 ±12 (0)	2199 ±21 (0)		
DC1S129	187	313	0.60	1.0112	0.50	0.0984	0.2735	3.7079	0.0716	0.0010	0.0032	0.0439	0.0007	1594 ±19 (0)	1558 ±16 (0)	1573 ±9 (0)	1398 ±13 (0)		
DC1S130	263	213	1.24	0.9870	0.50	0.1162	0.2473	3.9544	0.0717	0.0021	0.0034	0.0714	0.0018	1898 ±32 (0)	1424 ±18 (0)	1625 ±15 (0)	1400 ±34 (0)		
DC1S130b	252	170	1.48	1.0116	0.50	0.1241	0.3040	5.2005	0.0679	0.0017	0.0040	0.0759	0.0010	2017 ±24 (0)	1711 ±20 (0)	1853 ±12 (0)	1327 ±19 (0)		
DC1S201	325	862	0.38	0.9996	0.50	0.0604	0.0990	0.8253	0.0320	0.0009	0.0013	0.0135	0.0006	619 ±33 (0)	608 ±8 (0)	611 ±8 (0)	637 ±12 (0)		
DC1S202	219	120	1.82	1.0062	0.50	0.0647	0.0877	0.7824	0.0271	0.0013	0.0011	0.0149	0.0004	765 ±41 (0)	542 ±6 (0)	587 ±9 (0)	540 ±8 (0)		
DC1S204	241	372	0.65	1.0097	0.50	0.0588	0.0919	0.7449	0.0293	0.0008	0.0011	0.0112	0.0003	560 ±31 (0)	567 ±6 (0)	565 ±7 (0)	583 ±6 (0)		

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$		
DC1 Mt Gee conglomerate																			
DC1S205	79	72	1.11	1.0088	0.50	0.0584	0.0875	0.7052	0.0290	0.0015	0.0011	0.0181	0.0004	546 ±56 (0)	541 ±6 (0)	542 ±11 (0)	577 ±8 (0)		
DC1S206	139	200	0.69	1.0023	0.50	0.1164	0.3345	5.3677	0.1026	0.0018	0.0043	0.0879	0.0014	1902 ±27 (0)	1860 ±21 (0)	1880 ±14 (0)	1975 ±26 (0)		
DC1S207	23	81	0.28	1.0135	0.50	0.1448	0.4265	8.5095	0.1249	0.0017	0.0049	0.1061	0.0016	2285 ±20 (0)	2290 ±22 (0)	2287 ±11 (0)	2379 ±28 (0)		
DC1S208	110	65	1.68	1.0118	0.50	0.0593	0.0946	0.7730	0.0301	0.0017	0.0012	0.0216	0.0004	576 ±62 (0)	583 ±7 (0)	581 ±12 (0)	598 ±8 (0)		
DC1S208b	114	75	1.53	1.0187	0.50	0.0594	0.0880	0.7205	0.0298	0.0019	0.0012	0.0228	0.0004	581 ±70 (0)	544 ±7 (0)	551 ±13 (0)	593 ±9 (0)		
DC1S209	21	6	3.42	1.0186	0.50	0.4821	0.6103	40.5501	0.3211	0.0092	0.0099	0.7578	0.0041	4187 ±28 (0)	3071 ±40 (0)	3784 ±19 (0)	5628 ±63 (0)		
DC1S210	33	68	0.48	1.0152	0.50	0.0625	0.1013	0.8723	0.0332	0.0017	0.0013	0.0238	0.0007	690 ±59 (0)	622 ±7 (0)	637 ±13 (0)	660 ±13 (0)		
DC1S210b	26	49	0.52	1.0194	0.50	0.0624	0.1006	0.8647	0.0339	0.0018	0.0013	0.0249	0.0007	686 ±62 (0)	618 ±8 (0)	633 ±14 (0)	673 ±13 (0)		
DC1S211	154	323	0.48	1.0166	0.50	0.0760	0.1862	1.9513	0.0542	0.0009	0.0021	0.0246	0.0006	1096 ±24 (0)	1101 ±11 (0)	1099 ±8 (0)	1066 ±11 (0)		
DC1S201b	231	647	0.36	1.0116	0.50	0.0601	0.0970	0.8033	0.0322	0.0006	0.0011	0.0093	0.0003	606 ±23 (0)	597 ±6 (0)	599 ±5 (0)	641 ±6 (0)		
DC1S202b	487	269	1.81	1.0116	0.50	0.0605	0.0967	0.8062	0.0319	0.0007	0.0011	0.0103	0.0003	620 ±26 (0)	595 ±6 (0)	600 ±6 (0)	635 ±6 (0)		
DC1S203	534	919	0.58	1.0119	0.50	0.0578	0.0857	0.6820	0.0278	0.0006	0.0010	0.0078	0.0003	520 ±23 (0)	530 ±6 (0)	528 ±5 (0)	555 ±5 (0)		
DC1S209b	56	40	1.40	1.0089	0.50	0.3819	0.2223	11.6952	0.2429	0.0069	0.0035	0.1924	0.0039	3839 ±27 (0)	1294 ±18 (0)	2580 ±15 (0)	4394 ±63 (0)		
DC1S212	696	904	0.77	1.0090	0.50	0.0795	0.1350	1.4789	0.0484	0.0009	0.0015	0.0176	0.0005	1184 ±22 (0)	816 ±8 (0)	922 ±7 (0)	956 ±10 (0)		
DC1S214	295	200	1.47	1.0117	0.50	0.0593	0.0929	0.7590	0.0292	0.0007	0.0011	0.0097	0.0003	577 ±26 (0)	572 ±6 (0)	573 ±6 (0)	581 ±6 (0)		
DC1S215	106	77	1.37	1.0101	0.50	0.0730	0.1630	1.6404	0.0505	0.0010	0.0019	0.0232	0.0006	1014 ±27 (0)	973 ±11 (0)	986 ±9 (0)	995 ±11 (0)		
DC1S216	209	143	1.46	1.0102	0.50	0.1143	0.3333	5.2494	0.0969	0.0012	0.0038	0.0604	0.0009	1868 ±19 (0)	1854 ±18 (0)	1861 ±10 (0)	1870 ±17 (0)		
DC1S217	155	256	0.61	1.0119	0.50	0.0778	0.1767	1.8943	0.0533	0.0008	0.0020	0.0225	0.0006	1141 ±19 (0)	1049 ±11 (0)	1079 ±8 (0)	1049 ±11 (0)		
DC1S218	145	209	0.70	1.0116	0.50	0.0601	0.0968	0.8014	0.0304	0.0007	0.0011	0.0101	0.0003	606 ±25 (0)	596 ±7 (0)	598 ±6 (0)	606 ±6 (0)		
DC1S219	183	100	1.84	1.0111	0.50	0.1015	0.2843	3.9784	0.0846	0.0012	0.0034	0.0514	0.0009	1652 ±22 (0)	1613 ±17 (0)	1630 ±10 (0)	1642 ±16 (0)		
DC1S220	358	328	1.09	1.0128	0.50	0.0600	0.0915	0.7564	0.0285	0.0007	0.0011	0.0096	0.0003	603 ±25 (0)	564 ±6 (0)	572 ±6 (0)	567 ±6 (0)		
DC1S220b	252	239	1.05	1.0118	0.50	0.0609	0.0919	0.7716	0.0279	0.0008	0.0010	0.0105	0.0003	635 ±29 (0)	567 ±6 (0)	581 ±6 (0)	556 ±6 (0)		
DC1S221	125	229	0.54	1.0106	0.50	0.0702	0.1438	1.3912	0.0435	0.0008	0.0017	0.0178	0.0005	934 ±24 (0)	866 ±10 (0)	885 ±8 (0)	860 ±10 (0)		
DC1S221b	158	340	0.46	1.0127	0.50	0.0709	0.1519	1.4858	0.0436	0.0008	0.0018	0.0192	0.0005	956 ±23 (0)	912 ±10 (0)	925 ±8 (0)	862 ±10 (0)		
DC1S222	96	106	0.90	1.0095	0.50	0.0730	0.1508	1.5169	0.0460	0.0011	0.0019	0.0244	0.0007	1013 ±31 (0)	906 ±11 (0)	937 ±10 (0)	909 ±13 (0)		
DC1S223	49	171	0.29	1.0106	0.50	0.0598	0.0987	0.8131	0.0303	0.0008	0.0011	0.0108	0.0005	596 ±27 (0)	606 ±7 (0)	604 ±6 (0)	603 ±9 (0)		
DC1S223b	37	141	0.27	1.0117	0.50	0.0600	0.0953	0.7875	0.0298	0.0009	0.0012	0.0127	0.0006	602 ±33 (0)	587 ±7 (0)	590 ±7 (0)	594 ±12 (0)		
DC1S224	760	445	1.71	1.0140	0.50	0.0604	0.0934	0.7774	0.0286	0.0008	0.0012	0.0109	0.0003	616 ±27 (0)	576 ±7 (0)	584 ±6 (0)	570 ±6 (0)		
DC1S225	487	269	1.81	1.0110	0.50	0.0600	0.0967	0.7996	0.0302	0.0007	0.0011	0.0100	0.0003	603 ±25 (0)	595 ±6 (0)	597 ±6 (0)	602 ±6 (0)		
DC1S226	58	110	0.53	1.0112	0.50	0.0597	0.0904	0.7434	0.0281	0.0009	0.0011	0.0110	0.0004	592 ±31 (0)	558 ±6 (0)	564 ±6 (0)	560 ±8 (0)		
DC1S226b	111	177	0.63	1.0109	0.50	0.0596	0.0887	0.7291	0.0285	0.0008	0.0011	0.0105	0.0004	589 ±30 (0)	548 ±6 (0)	556 ±6 (0)	568 ±8 (0)		
DC1S227	118	125	0.94	1.0112	0.50	0.1102	0.3162	4.8020	0.0887	0.0012	0.0036	0.0559	0.0009	1802 ±19 (0)	1771 ±18 (0)	1785 ±10 (0)	1718 ±17 (0)		
DC1S228	86	116	0.74	1.0119	0.50	0.1877	0.5021	12.9895	0.1457	0.0020	0.0056	0.1460	0.0016	2722 ±17 (0)	2623 ±24 (0)	2679 ±11 (0)	2749 ±27 (0)		
DC1S229	152	196	0.77	1.0123	0.50	0.0811	0.1975	2.2090	0.0603	0.0009	0.0023	0.0260	0.0006	1225 ±21 (0)	1162 ±12 (0)	1184 ±8 (0)	1183 ±12 (0)		
DC1S230	88	134	0.66	1.0137	0.50	0.3051	0.6497	27.3252	0.1775	0.0031	0.0080	0.3327	0.0021	3496 ±16 (0)	3227 ±31 (0)	3395 ±12 (0)	3303 ±35 (0)		
DC1S231	65	50	1.29	1.0127	0.50	0.0788	0.1951	2.1211	0.0611	0.0011	0.0023	0.0299	0.0007	1168 ±26 (0)	1149 ±13 (0)	1156 ±10 (0)	1199 ±14 (0)		
DC1S232	94	127	0.73	1.0128	0.50	0.0856	0.2338	2.7597	0.0761	0.0010	0.0028	0.0362	0.0009	1330 ±23 (0)	1354 ±15 (0)	1345 ±10 (0)	1481 ±17 (0)		
DC1S233	586	1164	0.50	1.0153	0.50	0.0944	0.1926	2.5067	0.0598	0.0010	0.0024	0.0313	0.0007	1517 ±20 (0)	1135 ±13 (0)	1274 ±9 (0)	1174 ±13 (0)		

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>									
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{206}\text{Pb}/^{232}\text{Th}$								
DC1 Mt Gee conglomerate																									
DC1S234b	105	636	0.17	1.0125	0.50	0.1874	0.4432	11.4519	0.1290	0.0019	0.0050	0.1272	0.0013	2720	±16	(0)	2365	±22	(0)	2561	±10	(0)	2453	±23	(0)
DC1S301	223	275	0.81	1.0098	0.50	0.1730	0.4746	11.3193	0.1340	0.0020	0.0054	0.1351	0.0018	2587	±19	(0)	2504	±24	(0)	2550	±11	(0)	2541	±31	(0)
DC1S302	58	62	0.94	1.0117	0.50	0.0934	0.2498	3.2162	0.0730	0.0012	0.0030	0.0435	0.0009	1496	±24	(0)	1437	±15	(0)	1461	±10	(0)	1424	±18	(0)
DC1S302b	65	54	1.19	1.0118	0.50	0.0929	0.2449	3.1364	0.0749	0.0011	0.0028	0.0396	0.0008	1486	±22	(0)	1412	±15	(0)	1442	±10	(0)	1459	±16	(0)
DC1S303	91	75	1.22	1.0124	0.50	0.1328	0.3911	7.1598	0.1145	0.0014	0.0044	0.0824	0.0012	2135	±19	(0)	2128	±20	(0)	2132	±10	(0)	2191	±21	(0)
DC1S303b	241	162	1.49	1.0123	0.50	0.1309	0.3476	6.2722	0.0958	0.0014	0.0040	0.0720	0.0009	2110	±18	(0)	1923	±19	(0)	2015	±10	(0)	1848	±17	(0)
DC1S304	249	189	1.32	1.0124	0.50	0.0936	0.2663	3.4365	0.0797	0.0010	0.0031	0.0405	0.0008	1500	±20	(0)	1522	±16	(0)	1513	±9	(0)	1551	±15	(0)
DC1S305	1801	4028	0.45	1.0088	0.50	0.0714	0.0398	0.3915	0.0173	0.0008	0.0005	0.0050	0.0002	969	±23	(198)	251	±3	(2)	335	±4	(30)	348	±4	(43)
DC1S306	205	364	0.56	1.0125	0.50	0.0584	0.0943	0.7588	0.0308	0.0007	0.0011	0.0094	0.0003	544	±24	(0)	581	±6	(0)	573	±5	(0)	612	±6	(0)
DC1S307	401	318	1.26	1.0124	0.50	0.0622	0.1052	0.9020	0.0339	0.0007	0.0012	0.0111	0.0003	681	±24	(0)	645	±7	(0)	653	±6	(0)	673	±7	(0)
DC1S308	92	118	0.78	1.0127	0.50	0.2643	0.6521	23.7568	0.1848	0.0027	0.0076	0.2733	0.0019	3272	±16	(0)	3237	±29	(0)	3258	±11	(0)	3427	±32	(0)
DC1S308b	75	91	0.82	1.0105	0.50	0.2621	0.5693	20.5557	0.1684	0.0030	0.0063	0.2345	0.0023	3259	±18	(0)	2905	±26	(0)	3118	±11	(0)	3145	±40	(0)
DC1S309	106	230	0.46	1.0115	0.50	0.0975	0.2896	3.8905	0.0871	0.0011	0.0036	0.0505	0.0011	1576	±21	(0)	1640	±18	(0)	1612	±10	(0)	1688	±21	(0)
DC1S310	58	51	1.14	1.0099	0.50	0.1602	0.3929	8.6740	0.1141	0.0023	0.0047	0.1229	0.0019	2458	±25	(0)	2136	±22	(0)	2304	±13	(0)	2184	±34	(0)
DC1S401	192	321	0.60	1.0134	0.50	0.0974	0.2712	3.6393	0.0796	0.0011	0.0029	0.0399	0.0009	1575	±20	(0)	1547	±14	(0)	1558	±9	(0)	1547	±16	(0)
DC1S402	160	286	0.56	1.0127	0.50	0.0978	0.2822	3.8040	0.0801	0.0011	0.0033	0.0462	0.0009	1582	±20	(0)	1603	±17	(0)	1594	±10	(0)	1557	±17	(0)
DC1S403	48	100	0.48	1.0127	0.50	0.0981	0.2805	3.7923	0.0842	0.0011	0.0032	0.0454	0.0010	1588	±21	(0)	1594	±16	(0)	1591	±10	(0)	1633	±19	(0)
DC1S404	99	242	0.41	1.0143	0.50	0.0972	0.2759	3.6976	0.0799	0.0011	0.0034	0.0486	0.0011	1571	±21	(0)	1571	±17	(0)	1571	±10	(0)	1554	±20	(0)
DC1S405	182	430	0.42	1.0133	0.50	0.0984	0.2723	3.6938	0.0806	0.0010	0.0031	0.0425	0.0008	1594	±19	(0)	1552	±16	(0)	1570	±9	(0)	1567	±15	(0)
DC1S406	95	222	0.43	1.0126	0.50	0.0981	0.2882	3.8981	0.0870	0.0010	0.0033	0.0462	0.0010	1589	±20	(0)	1632	±17	(0)	1613	±10	(0)	1687	±18	(0)
DC1S407	148	276	0.54	1.0135	0.50	0.1017	0.2791	3.9129	0.0862	0.0011	0.0033	0.0473	0.0009	1655	±19	(0)	1587	±17	(0)	1616	±10	(0)	1671	±17	(0)
DC1S408	146	381	0.38	1.0125	0.50	0.0984	0.2839	3.8490	0.0860	0.0010	0.0033	0.0444	0.0009	1593	±19	(0)	1611	±16	(0)	1603	±9	(0)	1668	±16	(0)
DC1S408b	98	242	0.40	1.0124	0.50	0.0980	0.2806	3.7896	0.0848	0.0010	0.0034	0.0464	0.0010	1585	±20	(0)	1595	±17	(0)	1591	±10	(0)	1644	±18	(0)
DC1S409	63	126	0.50	1.0126	0.50	0.0987	0.2831	3.8534	0.0897	0.0012	0.0035	0.0512	0.0012	1600	±22	(0)	1607	±18	(0)	1604	±11	(0)	1736	±22	(0)
DC1S410	66	166	0.40	1.0134	0.50	0.0980	0.2828	3.8207	0.0907	0.0010	0.0032	0.0445	0.0010	1586	±20	(0)	1606	±16	(0)	1597	±9	(0)	1754	±19	(0)
DC1S411	113	248	0.46	1.0126	0.50	0.0983	0.2959	4.0079	0.0983	0.0010	0.0034	0.0474	0.0011	1591	±20	(0)	1671	±17	(0)	1636	±10	(0)	1895	±20	(0)
DC1S412	31	82	0.39	1.0128	0.50	0.0989	0.2838	3.8666	0.0957	0.0014	0.0033	0.0535	0.0018	1603	±26	(0)	1610	±16	(0)	1607	±11	(0)	1847	±33	(0)
DC1S413	100	174	0.57	1.0134	0.50	0.0985	0.2775	3.7661	0.0874	0.0010	0.0031	0.0433	0.0009	1595	±20	(0)	1579	±16	(0)	1586	±9	(0)	1694	±17	(0)
DC1S413b	52	115	0.45	1.0137	0.50	0.0983	0.2819	3.8182	0.0922	0.0011	0.0032	0.0455	0.0011	1591	±20	(0)	1601	±16	(0)	1597	±10	(0)	1782	±20	(0)
DC1S414	83	153	0.55	1.0127	0.50	0.0982	0.2863	3.8770	0.0913	0.0010	0.0033	0.0459	0.0010	1591	±20	(0)	1623	±17	(0)	1609	±10	(0)	1765	±18	(0)
DC1S415	77	155	0.50	1.0124	0.50	0.0982	0.2767	3.7471	0.0872	0.0010	0.0032	0.0443	0.0009	1591	±20	(0)	1575	±16	(0)	1581	±9	(0)	1689	±17	(0)

#				Corrected isotopic ratios										Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
	Th (ppm)	U (ppm)	Th/U	Yield ratio $^{207}\text{Pb}/^{208}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$
DC6 Mt Gee conglomerate																	
DC6L1Z01	80	80	1.00	1.0111	0.50	0.0734	0.1509	1.5273	0.0574	0.0014	0.0018	0.0298	0.0007	1026 ±39 (0)	906 ±10 (0)	941 ±12 (0)	1128 ±13 (0)
DC6L102	215	96	2.25	1.0098	0.50	0.0595	0.0945	0.7758	0.0295	0.0012	0.0011	0.0156	0.0003	587 ±43 (0)	582 ±7 (0)	583 ±9 (0)	588 ±6 (0)
DC6L103	66	153	0.43	1.0113	0.50	0.1053	0.2639	3.8322	0.0959	0.0015	0.0031	0.0569	0.0013	1720 ±26 (0)	1510 ±16 (0)	1600 ±12 (0)	1851 ±23 (0)
DC6L104	206	278	0.74	1.0115	0.50	0.2264	0.5035	15.7179	0.1496	0.0027	0.0059	0.1999	0.0018	3027 ±19 (0)	2629 ±25 (0)	2860 ±12 (0)	2818 ±31 (0)
DC6L104b	298	334	0.89	1.0115	0.50	0.2336	0.5623	18.1123	0.1535	0.0024	0.0063	0.2016	0.0014	3077 ±16 (0)	2876 ±26 (0)	2996 ±11 (0)	2887 ±25 (0)
DC6L105	226	116	1.94	1.0111	0.50	0.0842	0.2042	2.3713	0.0614	0.0011	0.0023	0.0334	0.0006	1298 ±26 (0)	1198 ±12 (0)	1234 ±10 (0)	1204 ±11 (0)
DC6L106	232	287	0.81	1.0113	0.50	0.0605	0.0970	0.8095	0.0300	0.0009	0.0011	0.0118	0.0003	623 ±30 (0)	597 ±6 (0)	602 ±7 (0)	598 ±6 (0)
DC6L106b	275	273	1.01	1.0109	0.50	0.0611	0.0972	0.8185	0.0295	0.0009	0.0011	0.0121	0.0003	642 ±31 (0)	598 ±6 (0)	607 ±7 (0)	588 ±6 (0)
DC6L107	66	46	1.45	1.0116	0.50	0.1077	0.3088	4.5840	0.0900	0.0016	0.0036	0.0692	0.0010	1760 ±27 (0)	1735 ±18 (0)	1746 ±13 (0)	1742 ±18 (0)
DC6L107b	91	64	1.41	1.0115	0.50	0.1024	0.2917	4.1161	0.0874	0.0020	0.0036	0.0788	0.0011	1667 ±35 (0)	1650 ±18 (0)	1658 ±16 (0)	1694 ±21 (0)
DC6L108	116	108	1.07	1.0079	0.50	0.0553	0.0580	0.4425	0.0184	0.0018	0.0008	0.0139	0.0003	424 ±71 (0)	364 ±5 (0)	372 ±10 (0)	368 ±6 (0)
DC6L109	137	302	0.45	1.0115	0.50	0.0985	0.2717	3.6872	0.0781	0.0011	0.0030	0.0436	0.0008	1595 ±20 (0)	1549 ±15 (0)	1569 ±9 (0)	1520 ±15 (0)
DC6L110	108	295	0.37	1.0110	0.50	0.0587	0.0859	0.6953	0.0276	0.0009	0.0010	0.0105	0.0003	557 ±32 (0)	531 ±6 (0)	536 ±6 (0)	550 ±7 (0)
DC6L111	74	142	0.52	1.0117	0.50	0.0983	0.2718	3.6846	0.0849	0.0012	0.0031	0.0472	0.0009	1593 ±23 (0)	1550 ±16 (0)	1568 ±10 (0)	1647 ±17 (0)
DC6L112	115	225	0.51	1.0115	0.50	0.0977	0.2764	3.7232	0.0865	0.0011	0.0031	0.0450	0.0009	1581 ±21 (0)	1573 ±16 (0)	1576 ±10 (0)	1676 ±16 (0)
DC6L113	44	185	0.24	1.0116	0.50	0.1025	0.2937	4.1518	0.1804	0.0018	0.0035	0.0721	0.0030	1671 ±32 (0)	1660 ±18 (0)	1665 ±14 (0)	3353 ±51 (0)
DC6L114	145	412	0.35	1.0115	0.50	0.0975	0.2777	3.7328	0.0886	0.0010	0.0031	0.0432	0.0009	1577 ±20 (0)	1580 ±16 (0)	1578 ±9 (0)	1716 ±16 (0)
DC6L114b	88	190	0.46	1.0114	0.50	0.1005	0.2779	3.8516	0.0927	0.0013	0.0032	0.0526	0.0011	1634 ±24 (0)	1581 ±16 (0)	1604 ±11 (0)	1793 ±21 (0)
DC6L201	161	847	0.19	1.0117	0.50	0.0900	0.2395	2.9703	0.0379	0.0010	0.0027	0.0345	0.0004	1424 ±20 (123)	1384 ±14 (9)	1400 ±9 (55)	753 ±8 (506)
DC6L203	42	88	0.47	1.0113	0.50	0.0988	0.2870	3.9101	0.0898	0.0013	0.0033	0.0531	0.0011	1602 ±24 (0)	1627 ±16 (0)	1616 ±11 (0)	1738 ±20 (0)
DC6L204	1130	2177	0.52	1.0117	0.50	0.1389	0.1409	2.6980	0.0164	0.0014	0.0016	0.0305	0.0002	2214 ±18 (45)	849 ±9 (4)	1328 ±8 (23)	329 ±3 (74)
DC6L205	99	205	0.48	1.0115	0.50	0.0983	0.2812	3.8113	0.0765	0.0014	0.0032	0.0552	0.0010	1592 ±26 (0)	1598 ±16 (0)	1595 ±12 (0)	1491 ±19 (0)
DC6L206	153	415	0.37	1.0116	0.50	0.0733	0.1697	1.7146	0.0509	0.0008	0.0019	0.0210	0.0005	1022 ±23 (0)	1010 ±10 (0)	1014 ±8 (0)	1003 ±10 (0)

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios								1 sigma error				Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>			
				Yield ratio <sup>207</sup> Pb/ <sup>208</sup> Pb	Pb model age (Ga)	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>206</sup> Pb/ <sup>232</sup> Th	<sup>207</sup> Pb/ <sup>208</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>206</sup> Pb/ <sup>232</sup> Th	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>206</sup> Pb/ <sup>232</sup> Th		
MtG001	173	157	1.10	1.0128	0.50	0.0600	0.0970	0.8022	0.0273	0.0009	0.0013	0.0128	0.0003	605 ±31 (0)	597 ±8 (0)	598 ±7 (0)	545 ±7 (0)		
MtG002	174	154	1.13	1.0132	0.50	0.0548	0.0518	0.3913	0.0147	0.0012	0.0007	0.0090	0.0003	405 ±51 (0)	326 ±5 (0)	335 ±7 (0)	296 ±5 (0)		
MtG002a	175	147	1.20	1.0141	0.50	0.0547	0.0506	0.3818	0.0150	0.0012	0.0007	0.0087	0.0003	402 ±50 (0)	318 ±4 (0)	328 ±6 (0)	301 ±5 (0)		
MtG003	193	225	0.86	1.0148	0.50	0.1003	0.2684	3.7086	0.0808	0.0011	0.0034	0.0481	0.0008	1629 ±19 (0)	1533 ±17 (0)	1573 ±10 (0)	1570 ±15 (0)		
MtG004	75	57	1.30	1.0138	0.50	0.0573	0.0527	0.4159	0.0161	0.0017	0.0008	0.0122	0.0003	502 ±65 (0)	331 ±5 (0)	353 ±9 (0)	322 ±7 (0)		
MtG004a	92	78	1.19	1.0158	0.50	0.0545	0.0528	0.3969	0.0163	0.0014	0.0008	0.0103	0.0003	393 ±58 (0)	332 ±5 (0)	339 ±7 (0)	327 ±6 (0)		
MtG005	103	252	0.41	1.0160	0.50	0.0566	0.0686	0.5352	0.0210	0.0008	0.0009	0.0081	0.0003	476 ±29 (0)	428 ±5 (0)	435 ±5 (0)	420 ±6 (0)		
MtG005a	84	156	0.54	1.0161	0.50	0.0583	0.0707	0.5682	0.0217	0.0009	0.0010	0.0099	0.0004	540 ±35 (0)	441 ±6 (0)	457 ±6 (0)	433 ±7 (0)		
MtG006	161	255	0.63	1.0164	0.50	0.0556	0.0665	0.5098	0.0204	0.0008	0.0009	0.0078	0.0003	436 ±30 (0)	415 ±5 (0)	418 ±5 (0)	407 ±5 (0)		
MtG006a	220	274	0.80	1.0175	0.50	0.0584	0.0654	0.5266	0.0205	0.0010	0.0009	0.0095	0.0003	546 ±36 (0)	408 ±5 (0)	430 ±6 (0)	410 ±6 (0)		
MtG007	131	338	0.39	1.0182	0.50	0.0962	0.2775	3.6800	0.0798	0.0010	0.0036	0.0479	0.0009	1551 ±20 (0)	1579 ±18 (0)	1567 ±10 (0)	1552 ±16 (0)		
MtG008	156	132	1.18	1.0182	0.50	0.0552	0.0523	0.3982	0.0163	0.0011	0.0007	0.0081	0.0003	422 ±44 (0)	329 ±4 (0)	340 ±6 (0)	327 ±5 (0)		
MtG008a	148	130	1.14	1.0202	0.50	0.0575	0.0501	0.3972	0.0160	0.0011	0.0007	0.0078	0.0002	512 ±40 (0)	315 ±4 (0)	340 ±6 (0)	321 ±5 (0)		
MtG009	265	270	0.98	1.0202	0.50	0.0591	0.0800	0.6518	0.0261	0.0007	0.0011	0.0096	0.0003	572 ±27 (0)	496 ±6 (0)	510 ±6 (0)	520 ±6 (0)		
MtG009a	428	288	1.49	1.0211	0.50	0.0598	0.0818	0.6741	0.0259	0.0007	0.0011	0.0097	0.0003	596 ±26 (0)	507 ±6 (0)	523 ±6 (0)	517 ±6 (0)		
MtG010	214	117	1.83	1.0210	0.50	0.0609	0.0534	0.4480	0.0166	0.0026	0.0010	0.0186	0.0004	635 ±92 (0)	335 ±6 (0)	376 ±13 (0)	333 ±9 (0)		
MtG010a	538	299	1.80	1.0214	0.50	0.0578	0.0510	0.4065	0.0161	0.0011	0.0007	0.0080	0.0002	523 ±41 (0)	320 ±4 (0)	346 ±6 (0)	322 ±4 (0)		
MtG011	224	74	3.04	1.0222	0.50	0.0656	0.0921	0.8339	0.0288	0.0014	0.0014	0.0183	0.0004	795 ±45 (0)	568 ±8 (0)	616 ±10 (0)	573 ±8 (0)		
MtG011a	179	52	3.41	1.0224	0.50	0.0614	0.0939	0.7948	0.0285	0.0029	0.0019	0.0367	0.0007	652 ±103 (0)	579 ±11 (0)	594 ±21 (0)	567 ±13 (0)		
MtG011b	214	63	3.41	1.0211	0.50	0.0644	0.0945	0.8388	0.0293	0.0016	0.0014	0.0207	0.0004	753 ±52 (0)	582 ±8 (0)	618 ±11 (0)	584 ±8 (0)		
MtG012	74	97	0.76	1.0220	0.50	0.0536	0.0516	0.3816	0.0164	0.0019	0.0009	0.0131	0.0005	356 ±79 (0)	324 ±5 (0)	328 ±10 (0)	330 ±10 (0)		
MtG012a	76	90	0.84	1.0223	0.50	0.0584	0.0520	0.4182	0.0171	0.0016	0.0008	0.0114	0.0004	543 ±60 (0)	327 ±5 (0)	355 ±8 (0)	342 ±8 (0)		
MtG013	123	255	0.48	1.0250	0.50	0.0986	0.2761	3.7551	0.0861	0.0010	0.0037	0.0500	0.0010	1598 ±20 (0)	1572 ±18 (0)	1583 ±11 (0)	1669 ±19 (0)		
MtG014	148	153	0.97	1.0249	0.50	0.0560	0.0664	0.5129	0.0216	0.0010	0.0009	0.0098	0.0003	454 ±40 (0)	414 ±6 (0)	420 ±7 (0)	432 ±7 (0)		
MtG014a	219	262	0.84	1.0249	0.50	0.0544	0.0668	0.5017	0.0210	0.0009	0.0009	0.0087	0.0003	389 ±35 (0)	417 ±6 (0)	413 ±6 (0)	421 ±6 (0)		
MtG015	101	143	0.70	1.0257	0.50	0.0605	0.0538	0.4489	0.0189	0.0012	0.0008	0.0092	0.0003	622 ±42 (0)	338 ±5 (0)	376 ±6 (0)	377 ±7 (0)		
MtG016	80	391	0.21	1.0256	0.50	0.0554	0.0702	0.5367	0.0240	0.0008	0.0010	0.0087	0.0005	429 ±32 (0)	437 ±6 (0)	436 ±6 (0)	480 ±9 (0)		
MtG016a	86	398	0.22	1.0264	0.50	0.0578	0.0728	0.5800	0.0264	0.0008	0.0010	0.0092	0.0005	521 ±30 (0)	453 ±6 (0)	464 ±6 (0)	526 ±10 (0)		
MtG017	476	290	1.64	1.0259	0.50	0.0551	0.0657	0.4990	0.0209	0.0009	0.0009	0.0088	0.0003	414 ±36 (0)	410 ±6 (0)	411 ±6 (0)	418 ±5 (0)		
MtG018	67	167	0.40	1.0269	0.50	0.0969	0.2888	3.8605	0.0843	0.0011	0.0039	0.0550	0.0013	1565 ±22 (0)	1635 ±20 (0)	1605 ±11 (0)	1636 ±24 (0)		
MtG019	357	332	1.08	1.0264	0.50	0.0557	0.0506	0.3892	0.0168	0.0008	0.0007	0.0065	0.0002	441 ±33 (0)	318 ±4 (0)	334 ±5 (0)	337 ±4 (0)		
MtG019a	1051	784	1.34	1.0272	0.50	0.0687	0.0386	0.3661	0.0142	0.0008	0.0005	0.0052	0.0002	890 ±24 (0)	244 ±3 (0)	317 ±4 (0)	285 ±3 (0)		
MtG019b	281	335	0.84	1.0271	0.50	0.0603	0.0516	0.4292	0.0180	0.0011	0.0007	0.0085	0.0003	614 ±40 (0)	324 ±5 (0)	363 ±6 (0)	361 ±6 (0)		
MtG020	176	160	1.10	1.0261	0.50	0.0548	0.0530	0.4010	0.0172	0.0012	0.0008	0.0090	0.0003	406 ±49 (0)	333 ±5 (0)	342 ±7 (0)	344 ±6 (0)		
MtG020a	279	190	1.47	1.0276	0.50	0.0543	0.0531	0.3977	0.0170	0.0012	0.0008	0.0091	0.0003	383 ±50 (0)	334 ±5 (0)	340 ±7 (0)	340 ±6 (0)		
MtG021	179	214	0.83	1.0281	0.50	0.0565	0.0648	0.5045	0.0211	0.0010	0.0009	0.0092	0.0003	470 ±37 (0)	405 ±6 (0)	415 ±6 (0)	421 ±7 (0)		
MtG022	230	369	0.62	1.0282	0.50	0.0539	0.0520	0.3869	0.0177	0.0008	0.0007	0.0065	0.0003	369 ±33 (0)	327 ±4 (0)	332 ±5 (0)	355 ±5 (0)		
MtG022a	223	370	0.60	1.0288	0.50	0.0528	0.0522	0.3802	0.0177	0.0009	0.0007	0.0069	0.0003	320 ±37 (0)	328 ±4 (0)	327 ±5 (0)	355 ±6 (0)		
MtG023	329	457	0.72	1.0292	0.50	0.0588	0.0487	0.3946	0.0157	0.0009	0.0007	0.0068	0.0002	560 ±34 (0)	306 ±4 (0)	338 ±5 (0)	314 ±5 (0)		
MtG023a	355	363	0.98	1.0293	0.50	0.0541	0.0537	0.4002	0.0177	0.0008	0.0007	0.0066	0.0002	375 ±32 (0)	337 ±5 (0)	342 ±5 (0)	355 ±5 (0)		



#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios										1 sigma error					Ages and errors (Ma) (1 sigma) - indicative error related to common lead correction				
				Yield ratio $^{207}\text{Pb}/^{208}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$		
MtG024	202	268	0.75	1.0292	0.50	0.0590	0.0881	0.7165	0.0294	0.0009	0.0012	0.0123	0.0004	566 ±34 (0)	544 ±7 (0)	549 ±7 (0)	585 ±9 (0)						
MtG025	177	119	1.49	1.0276	0.50	0.0557	0.0648	0.4973	0.0218	0.0011	0.0009	0.0104	0.0003	440 ±44 (0)	405 ±6 (0)	410 ±7 (0)	435 ±7 (0)						
MtG026	1	30	0.02	1.0264	0.50	0.0604	0.1040	0.8661	0.1296	0.0022	0.0018	0.0304	0.0152	619 ±77 (0)	638 ±11 (0)	633 ±17 (0)	2463 ±273 (0)						
MtG026a	2	52	0.03	1.0272	0.50	0.0646	0.0971	0.8652	0.0813	0.0013	0.0014	0.0184	0.0046	762 ±43 (0)	597 ±8 (0)	633 ±10 (0)	1579 ±86 (0)						
MtG027	171	199	0.86	1.0297	0.50	0.0587	0.0811	0.6559	0.0277	0.0011	0.0012	0.0127	0.0005	556 ±39 (0)	502 ±7 (0)	512 ±8 (0)	553 ±9 (0)						
MtG028	105	214	0.49	1.0300	0.50	0.0973	0.2766	3.7089	0.0908	0.0012	0.0038	0.0534	0.0013	1573 ±22 (0)	1574 ±19 (0)	1573 ±12 (0)	1756 ±24 (0)						
MtG029	138	57	2.40	1.0302	0.50	0.0803	0.2021	2.2363	0.0649	0.0011	0.0028	0.0358	0.0008	1205 ±27 (0)	1186 ±15 (0)	1193 ±11 (0)	1272 ±15 (0)						
MtG030	393	878	0.45	1.0304	0.50	0.0966	0.2848	3.7893	0.0895	0.0010	0.0038	0.0494	0.0010	1559 ±18 (0)	1616 ±19 (0)	1590 ±10 (0)	1733 ±18 (0)						
MtG031	258	305	0.84	1.0299	0.50	0.0573	0.0820	0.6472	0.0258	0.0008	0.0011	0.0105	0.0004	504 ±31 (0)	508 ±7 (0)	507 ±6 (0)	514 ±7 (0)						
MtG032	382	210	1.82	1.0292	0.50	0.0538	0.0523	0.3876	0.0168	0.0011	0.0008	0.0086	0.0003	363 ±48 (0)	329 ±5 (0)	333 ±6 (0)	337 ±5 (0)						
MtG032a	490	215	2.28	1.0303	0.50	0.0539	0.0520	0.3860	0.0166	0.0012	0.0008	0.0089	0.0002	367 ±50 (0)	327 ±5 (0)	331 ±7 (0)	333 ±5 (0)						
MtG033	210	432	0.49	1.0305	0.50	0.0963	0.2921	3.8740	0.0895	0.0010	0.0039	0.0512	0.0010	1553 ±19 (0)	1652 ±19 (0)	1608 ±11 (0)	1733 ±19 (0)						
MtG034	150	250	0.60	1.0300	0.50	0.0543	0.0638	0.4767	0.0201	0.0011	0.0009	0.0099	0.0004	382 ±44 (0)	398 ±6 (0)	396 ±7 (0)	402 ±8 (0)						
MtG035	69	159	0.43	1.0305	0.50	0.0974	0.2834	3.8024	0.0901	0.0010	0.0038	0.0511	0.0011	1575 ±20 (0)	1608 ±19 (0)	1593 ±11 (0)	1743 ±21 (0)						
MtG036	104	357	0.29	1.0304	0.50	0.0585	0.0910	0.7330	0.0296	0.0007	0.0012	0.0109	0.0005	548 ±27 (0)	562 ±7 (0)	558 ±6 (0)	589 ±9 (0)						
MtG037	94	149	0.63	1.0305	0.50	0.0596	0.0956	0.7845	0.0322	0.0008	0.0013	0.0127	0.0005	588 ±31 (0)	589 ±8 (0)	588 ±7 (0)	641 ±9 (0)						
MtG038	153	197	0.78	1.0298	0.50	0.0580	0.0842	0.6720	0.0269	0.0008	0.0012	0.0107	0.0004	528 ±30 (0)	521 ±7 (0)	522 ±6 (0)	537 ±7 (0)						
MtGee039	51	82	0.63	1.0285	0.50	0.0628	0.0949	0.8202	0.0310	0.0019	0.0016	0.0241	0.0009	701 ±63 (0)	585 ±9 (0)	608 ±13 (0)	616 ±18 (0)						
MtGee040	141	295	0.48	1.0301	0.50	0.1088	0.3092	4.6308	0.0769	0.0017	0.0045	0.0809	0.0020	1780 ±29 (0)	1737 ±22 (0)	1755 ±15 (0)	1497 ±38 (0)						
MtGee041	223	208	1.07	1.0300	0.50	0.1018	0.2890	4.0461	0.0872	0.0012	0.0039	0.0569	0.0011	1656 ±21 (0)	1636 ±20 (0)	1644 ±11 (0)	1690 ±20 (0)						
MtGee042	284	1346	0.21	1.0299	0.50	0.0649	0.0765	0.6834	0.0109	0.0009	0.0011	0.0110	0.0003	772 ±30 (0)	475 ±6 (0)	529 ±7 (0)	220 ±7 (0)						
MtGee043	83	114	0.73	1.0277	0.50	0.0597	0.0507	0.4167	0.0176	0.0020	0.0009	0.0139	0.0006	594 ±74 (0)	319 ±5 (0)	354 ±10 (0)	352 ±11 (0)						
MtGee043a	111	163	0.68	1.0290	0.50	0.0595	0.0496	0.4059	0.0174	0.0011	0.0007	0.0077	0.0003	585 ±38 (0)	312 ±4 (0)	346 ±6 (0)	348 ±6 (0)						
MtGee044a	204	576	0.35	1.0296	0.50	0.1565	0.4554	9.8008	0.1310	0.0016	0.0061	0.1292	0.0017	2418 ±17 (0)	2419 ±27 (0)	2416 ±12 (0)	2488 ±31 (0)						
MtGee045	117	63	1.86	1.0273	0.50	0.0688	0.0966	0.9140	0.0312	0.0025	0.0018	0.0326	0.0008	892 ±76 (0)	594 ±10 (0)	659 ±17 (0)	622 ±15 (0)						
MtGee046	168	244	0.69	1.0291	0.50	0.0596	0.0801	0.6571	0.0258	0.0010	0.0011	0.0116	0.0004	591 ±35 (0)	497 ±7 (0)	513 ±7 (0)	515 ±8 (0)						
MtGee047	223	861	0.26	1.0291	0.50	0.0859	0.1144	1.3502	0.0233	0.0009	0.0015	0.0184	0.0004	1335 ±21 (0)	698 ±9 (0)	868 ±8 (0)	466 ±7 (0)						
MtGee048	112	140	0.80	1.0275	0.50	0.0562	0.0651	0.5034	0.0200	0.0012	0.0009	0.0107	0.0004	461 ±45 (0)	407 ±6 (0)	414 ±7 (0)	400 ±8 (0)						
MtGee049	47	45	1.05	1.0262	0.50	0.0565	0.0837	0.6504	0.0248	0.0023	0.0015	0.0254	0.0008	474 ±88 (0)	518 ±9 (0)	509 ±16 (0)	495 ±16 (0)						
MtGee050	131	151	0.86	1.0455	0.50	0.0596	0.0623	0.5110	0.0192	0.0014	0.0010	0.0119	0.0004	589 ±49 (0)	390 ±6 (0)	419 ±8 (0)	383 ±8 (0)						
MtGee050a	326	258	1.26	1.0465	0.50	0.0601	0.0607	0.5018	0.0188	0.0008	0.0008	0.0078	0.0002	606 ±29 (0)	380 ±5 (0)	413 ±5 (0)	376 ±4 (0)						
MtGee051	82	316	0.26	1.0475	0.50	0.0586	0.0803	0.6468	0.0250	0.0007	0.0011	0.0096	0.0004	551 ±27 (0)	498 ±7 (0)	507 ±6 (0)	499 ±8 (0)						
MtGee052	153	306	0.50	1.0479	0.50	0.0577	0.0862	0.6841	0.0254	0.0008	0.0012	0.0109	0.0004	517 ±30 (0)	533 ±7 (0)	529 ±7 (0)	507 ±7 (0)						
MtGee053	276	723	0.38	1.0486	0.50	0.0600	0.0983	0.8109	0.0289	0.0007	0.0014	0.0115	0.0004	602 ±25 (0)	604 ±8 (0)	603 ±6 (0)	576 ±7 (0)						
MtGee054	59	76	0.77	1.0490	0.50	0.0556	0.0513	0.3919	0.0162	0.0013	0.0008	0.0095	0.0003	435 ±53 (0)	322 ±5 (0)	336 ±7 (0)	325 ±7 (0)						
MtGee054a	55	78	0.70	1.0462	0.50	0.0552	0.0505	0.3835	0.0160	0.0017	0.0008	0.0119	0.0005	421 ±70 (0)	318 ±5 (0)	330 ±9 (0)	320 ±9 (0)						
MtGee055	147	79	1.87	1.0482	0.50	0.0643	0.0991	0.8764	0.0298	0.0018	0.0016	0.0239	0.0006	751 ±58 (0)	609 ±9 (0)	639 ±13 (0)	593 ±11 (0)						
MtGee056	126	118	1.07	1.0493	0.50	0.0585	0.0759	0.6104	0.0230	0.0012	0.0011	0.0132	0.0004	548 ±45 (0)	471 ±7 (0)	484 ±8 (0)	459 ±8 (0)						
MtGee057	216	276	0.78	1.0506	0.50	0.0543	0.0622	0.4640	0.0185	0.0010	0.0009	0.0094	0.0003	382 ±43 (0)	389 ±5 (0)	387 ±6 (0)	370 ±6 (0)						
MtGee058	153	282	0.54	1.0504	0.50	0.0721	0.0600	0.5951	0.0162	0.0015	0.0009	0.0131	0.0005	988 ±43 (0)	376 ±6 (0)	474 ±8 (0)	325 ±10 (0)						

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios									Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>				
				Yield ratio $^{207}\text{Pb}/^{206}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$
MtGee059	178	395	0.45	1.0524	0.50	0.1002	0.2741	3.7790	0.0758	0.0010	0.0037	0.0494	0.0008	1628 ±19 (0)	1562 ±19 (0)	1588 ±11 (0)	1476 ±16 (0)
MtGee60	118	208	0.57	1.0524	0.50	0.0952	0.2826	3.6990	0.0768	0.0010	0.0038	0.0489	0.0009	1531 ±19 (0)	1604 ±19 (0)	1571 ±11 (0)	1495 ±16 (0)
MtGee061	101	221	0.45	1.0525	0.50	0.1010	0.2788	3.8733	0.0792	0.0011	0.0038	0.0531	0.0010	1643 ±20 (0)	1585 ±19 (0)	1608 ±11 (0)	1540 ±19 (0)
MtGee062	282	560	0.50	1.0527	0.50	0.0977	0.2838	3.8145	0.0794	0.0010	0.0038	0.0497	0.0009	1580 ±19 (0)	1611 ±19 (0)	1596 ±10 (0)	1543 ±16 (0)
MtGee063	1425	1699	0.84	1.0527	0.50	0.1171	0.3420	5.5113	0.1042	0.0011	0.0046	0.0704	0.0010	1913 ±17 (0)	1896 ±22 (0)	1902 ±11 (0)	2003 ±19 (0)
MtGee064	290	269	1.08	1.0522	0.50	0.0549	0.0536	0.4048	0.0165	0.0010	0.0008	0.0079	0.0003	407 ±40 (0)	337 ±5 (0)	345 ±6 (0)	331 ±5 (0)
MtGee064a	640	638	1.00	1.0526	0.50	0.0584	0.0479	0.3851	0.0158	0.0008	0.0007	0.0062	0.0002	546 ±31 (0)	302 ±4 (0)	331 ±5 (0)	317 ±4 (0)
MtGee065	240	175	1.37	1.0525	0.50	0.0664	0.0910	0.8307	0.0291	0.0011	0.0013	0.0145	0.0004	818 ±33 (0)	561 ±8 (0)	614 ±8 (0)	580 ±8 (0)
MtGee066	77	138	0.55	1.0524	0.50	0.1044	0.2732	3.9230	0.0822	0.0013	0.0038	0.0568	0.0012	1703 ±22 (0)	1557 ±19 (0)	1618 ±12 (0)	1597 ±22 (0)
MtGee067	527	486	1.08	1.0520	0.50	0.0559	0.0507	0.3897	0.0160	0.0008	0.0007	0.0061	0.0002	447 ±30 (0)	319 ±4 (0)	334 ±4 (0)	322 ±4 (0)
MtGee067a	374	359	1.04	1.0514	0.50	0.0556	0.0509	0.3896	0.0156	0.0007	0.0007	0.0061	0.0002	437 ±30 (0)	320 ±4 (0)	334 ±4 (0)	312 ±4 (0)
MtGee068	164	282	0.58	1.0511	0.50	0.0947	0.2857	3.7226	0.0762	0.0010	0.0039	0.0496	0.0009	1522 ±20 (0)	1620 ±19 (0)	1576 ±11 (0)	1484 ±17 (0)
MtGee069	81	154	0.53	1.0508	0.50	0.1220	0.2995	5.0282	0.1399	0.0014	0.0041	0.0705	0.0019	1985 ±21 (0)	1689 ±20 (0)	1824 ±12 (0)	2646 ±33 (0)
MtGee070	78	163	0.48	1.0504	0.50	0.0956	0.2719	3.5784	0.0773	0.0010	0.0037	0.0482	0.0010	1540 ±20 (0)	1550 ±19 (0)	1545 ±11 (0)	1506 ±18 (0)
MtGee071	128	284	0.45	1.0501	0.50	0.0945	0.2758	3.5866	0.0765	0.0011	0.0038	0.0496	0.0011	1517 ±21 (0)	1570 ±19 (0)	1547 ±11 (0)	1490 ±20 (0)
MtGee072	149	251	0.59	1.0497	0.50	0.0949	0.2742	3.5842	0.0764	0.0010	0.0037	0.0479	0.0009	1527 ±20 (0)	1562 ±19 (0)	1546 ±11 (0)	1488 ±17 (0)
MtGee073	118	328	0.36	1.0493	0.50	0.0951	0.2768	3.6229	0.0782	0.0010	0.0037	0.0474	0.0009	1530 ±19 (0)	1575 ±19 (0)	1555 ±10 (0)	1522 ±18 (0)
MtGee074	185	473	0.39	1.0489	0.50	0.0952	0.2735	3.5844	0.0789	0.0010	0.0037	0.0470	0.0009	1532 ±19 (0)	1559 ±19 (0)	1546 ±10 (0)	1534 ±18 (0)
MtGee075	111	288	0.39	1.0485	0.50	0.0956	0.2739	3.6047	0.0801	0.0010	0.0037	0.0484	0.0011	1540 ±20 (0)	1560 ±19 (0)	1551 ±11 (0)	1557 ±20 (0)
MtGee076	1582	1600	0.99	1.0480	0.50	0.1159	0.1962	3.1292	0.0472	0.0012	0.0026	0.0404	0.0005	1893 ±18 (0)	1155 ±14 (0)	1440 ±10 (0)	931 ±10 (0)
MtGee077	157	295	0.53	1.0475	0.50	0.0959	0.2846	3.7608	0.0859	0.0010	0.0038	0.0493	0.0010	1547 ±19 (0)	1615 ±19 (0)	1584 ±11 (0)	1665 ±19 (0)
MtG078	44	62	0.71	1.0179	0.50	0.0871	0.1333	1.6002	0.0583	0.0023	0.0019	0.0423	0.0010	1362 ±51 (0)	807 ±11 (0)	970 ±17 (0)	1146 ±19 (0)
MtG079	130	173	0.75	1.0186	0.50	0.1059	0.3016	4.4038	0.0883	0.0013	0.0038	0.0604	0.0009	1730 ±22 (0)	1699 ±19 (0)	1713 ±11 (0)	1711 ±17 (0)
MtG080	155	352	0.44	1.0185	0.50	0.0572	0.0603	0.6033	0.0232	0.0009	0.0010	0.0098	0.0003	500 ±33 (0)	475 ±6 (0)	479 ±6 (0)	464 ±6 (0)
MtG081	97	238	0.41	1.0190	0.50	0.0957	0.2501	3.3011	0.0785	0.0011	0.0031	0.0451	0.0009	1542 ±22 (0)	1439 ±16 (0)	1481 ±11 (0)	1528 ±17 (0)
MtG082	86	163	0.53	1.0192	0.50	0.1095	0.3195	4.8255	0.0903	0.0014	0.0040	0.0682	0.0011	1792 ±23 (0)	1787 ±20 (0)	1789 ±12 (0)	1746 ±20 (0)
MtG083	67	79	0.86	1.0190	0.50	0.0809	0.1984	2.2136	0.0617	0.0018	0.0027	0.0507	0.0010	1220 ±44 (0)	1167 ±15 (0)	1185 ±16 (0)	1211 ±18 (0)
MtG083a	92	81	1.13	1.0196	0.50	0.0817	0.1941	2.1876	0.0590	0.0024	0.0029	0.0630	0.0010	1239 ±56 (0)	1144 ±15 (0)	1177 ±20 (0)	1158 ±19 (0)
MtG084	98	133	0.74	1.0199	0.50	0.0708	0.1492	1.4566	0.0468	0.0011	0.0019	0.0239	0.0005	951 ±31 (0)	897 ±11 (0)	913 ±10 (0)	924 ±10 (0)
MtG085	255	93	2.75	1.0200	0.50	0.1094	0.3151	4.7532	0.0932	0.0030	0.0048	0.1309	0.0013	1789 ±50 (0)	1766 ±24 (0)	1777 ±23 (0)	1802 ±24 (0)
MtG086	159	188	0.85	1.0200	0.50	0.0556	0.0498	0.3815	0.0157	0.0014	0.0007	0.0096	0.0002	437 ±55 (0)	313 ±4 (0)	328 ±7 (0)	314 ±5 (0)
MtG086a	111	144	0.77	1.0194	0.50	0.0648	0.0520	0.4646	0.0187	0.0016	0.0007	0.0114	0.0003	769 ±51 (0)	327 ±4 (0)	387 ±8 (0)	373 ±6 (0)
MtG087	230	310	0.74	1.0209	0.50	0.0548	0.0501	0.3786	0.0159	0.0010	0.0007	0.0076	0.0002	406 ±42 (0)	315 ±4 (0)	326 ±6 (0)	320 ±4 (0)
MtG087a	148	180	0.82	1.0208	0.50	0.0540	0.0500	0.3724	0.0158	0.0016	0.0007	0.0110	0.0003	371 ±66 (0)	315 ±4 (0)	321 ±8 (0)	317 ±5 (0)
MtG087b	97	78	1.24	1.0199	0.50	0.0553	0.0539	0.4110	0.0170	0.0026	0.0009	0.0188	0.0004	426 ±103 (0)	338 ±5 (0)	350 ±14 (0)	340 ±7 (0)
MtG088	133	419	0.32	1.0213	0.50	0.0558	0.0621	0.4779	0.0200	0.0009	0.0008	0.0084	0.0003	446 ±36 (0)	388 ±5 (0)	397 ±6 (0)	400 ±6 (0)
MtG088a	147	306	0.48	1.0214	0.50	0.0546	0.0630	0.4748	0.0204	0.0012	0.0009	0.0110	0.0003	397 ±50 (0)	394 ±5 (0)	394 ±8 (0)	409 ±7 (0)
MtG089	406	465	0.87	1.0216	0.50	0.0584	0.0794	0.6385	0.0209	0.0011	0.0011	0.0129	0.0003	543 ±42 (0)	492 ±6 (0)	501 ±8 (0)	418 ±6 (0)
MtG090	306	81	3.80	1.0211	0.50	0.0616	0.0975	0.8272	0.0303	0.0015	0.0013	0.0205	0.0003	659 ±52 (0)	600 ±8 (0)	612 ±11 (0)	603 ±6 (0)
MtG091	55	118	0.46	1.0219	0.50	0.0984	0.2728	3.6998	0.0840	0.0013	0.0036	0.0561	0.0011	1593 ±25 (0)	1555 ±18 (0)	1571 ±12 (0)	1630 ±20 (0)

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios									Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>				
				Yield ratio $^{207}\text{Pb}/^{208}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{209}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$
MtG092	92	349	0.26	1.0219	0.50	0.0628	0.1090	0.9439	0.0357	0.0010	0.0014	0.0157	0.0005	701 ±32 (0)	667 ±8 (0)	675 ±8 (0)	708 ±10 (0)
MtG093	76	106	0.71	1.0221	0.50	0.0600	0.1008	0.8336	0.0325	0.0017	0.0014	0.0232	0.0006	602 ±60 (0)	619 ±8 (0)	616 ±13 (0)	646 ±11 (0)
MtG094	665	1211	0.55	1.0224	0.50	0.0992	0.2738	3.7440	0.0736	0.0010	0.0035	0.0474	0.0007	1609 ±19 (0)	1560 ±18 (0)	1581 ±10 (0)	1436 ±14 (0)
MtGEE095	107	96	1.11	1.0227	0.50	0.1614	0.4305	9.5781	0.1229	0.0023	0.0058	0.1501	0.0015	2470 ±24 (0)	2308 ±26 (0)	2395 ±14 (0)	2343 ±28 (0)
MtGEE096	234	291	0.80	1.0224	0.50	0.0539	0.0514	0.3817	0.0166	0.0011	0.0007	0.0084	0.0002	368 ±47 (0)	323 ±4 (0)	328 ±6 (0)	333 ±4 (0)
MtGEE096a	173	185	0.93	1.0217	0.50	0.0518	0.0504	0.3599	0.0163	0.0015	0.0007	0.0103	0.0003	275 ±65 (0)	317 ±4 (0)	312 ±8 (0)	326 ±5 (0)
MtGEE097	651	755	0.86	1.0230	0.50	0.0927	0.2141	2.7343	0.0597	0.0010	0.0028	0.0372	0.0006	1481 ±21 (0)	1250 ±15 (0)	1338 ±10 (0)	1172 ±12 (0)
MtGEE098	1242	1473	0.84	1.0231	0.50	0.4857	0.0764	5.1130	0.1354	0.0052	0.0010	0.0668	0.0014	4198 ±16 (0)	474 ±6 (0)	1838 ±11 (0)	2567 ±24 (0)
MtGEE099	42	59	0.71	1.0232	0.50	0.2656	0.5629	20.6092	0.1677	0.0036	0.0078	0.3175	0.0025	3280 ±21 (0)	2879 ±32 (0)	3120 ±15 (0)	3134 ±44 (0)
MtGEE099a	51	105	0.49	1.0233	0.50	0.2596	0.5404	19.3412	0.1740	0.0030	0.0072	0.2658	0.0022	3244 ±18 (0)	2785 ±30 (0)	3059 ±13 (0)	3243 ±38 (0)
MtGEE100	81	153	0.53	1.0231	0.50	0.0605	0.0926	0.7725	0.0300	0.0011	0.0012	0.0148	0.0004	623 ±38 (0)	571 ±7 (0)	581 ±8 (0)	597 ±8 (0)
MtGEE101	142	352	0.40	1.0233	0.50	0.0999	0.2908	4.0041	0.0803	0.0011	0.0038	0.0554	0.0009	1622 ±21 (0)	1646 ±19 (0)	1635 ±11 (0)	1561 ±17 (0)
MtGEE102	105	121	0.87	1.0233	0.50	0.0794	0.1844	2.0173	0.0587	0.0013	0.0025	0.0350	0.0007	1181 ±31 (0)	1091 ±13 (0)	1121 ±12 (0)	1152 ±14 (0)
MtGee103	80	852	0.09	1.0237	0.50	0.1598	0.4527	9.9731	0.1050	0.0016	0.0059	0.1284	0.0013	2454 ±17 (0)	2407 ±26 (0)	2432 ±12 (0)	2018 ±23 (0)
MtGee103a	108	426	0.25	1.0238	0.50	0.1632	0.4492	10.1060	0.1247	0.0017	0.0059	0.1306	0.0013	2489 ±17 (0)	2392 ±26 (0)	2445 ±12 (0)	2375 ±24 (0)
MtGee104	104	215	0.48	1.0237	0.50	0.1006	0.2737	3.7947	0.0887	0.0011	0.0036	0.0525	0.0010	1635 ±21 (0)	1560 ±18 (0)	1592 ±11 (0)	1718 ±18 (0)
MtGee105	62	50	1.23	1.0239	0.50	0.1436	0.4620	9.1446	0.1206	0.0019	0.0063	0.1413	0.0014	2271 ±23 (0)	2448 ±28 (0)	2353 ±14 (0)	2302 ±26 (0)
MtGee106	146	198	0.73	1.0236	0.50	0.0562	0.0519	0.4024	0.0171	0.0016	0.0008	0.0114	0.0003	461 ±62 (0)	326 ±5 (0)	343 ±8 (0)	344 ±6 (0)
MtGee106a	145	163	0.89	1.0221	0.50	0.0550	0.0519	0.3936	0.0157	0.0016	0.0008	0.0117	0.0003	412 ±65 (0)	326 ±5 (0)	337 ±9 (0)	314 ±5 (0)
MtGee107	261	252	1.04	1.0238	0.50	0.0745	0.1478	1.5178	0.0484	0.0011	0.0020	0.0257	0.0006	1055 ±31 (0)	889 ±11 (0)	938 ±10 (0)	955 ±11 (0)
MtGee108	88	154	0.57	1.0239	0.50	0.0548	0.0630	0.4757	0.0195	0.0014	0.0009	0.0125	0.0003	405 ±57 (0)	394 ±5 (0)	395 ±9 (0)	391 ±7 (0)
MtGee109	132	162	0.82	1.0230	0.50	0.0577	0.0822	0.6539	0.0255	0.0012	0.0011	0.0140	0.0003	520 ±44 (0)	509 ±7 (0)	511 ±9 (0)	508 ±7 (0)
MtGee110	255	210	1.21	1.0233	0.50	0.0547	0.0538	0.4062	0.0174	0.0014	0.0008	0.0103	0.0002	401 ±55 (0)	338 ±5 (0)	346 ±7 (0)	349 ±5 (0)
MtGee111	158	245	0.65	1.0232	0.50	0.0619	0.0721	0.6144	0.0254	0.0023	0.0012	0.0229	0.0006	669 ±80 (0)	449 ±7 (0)	486 ±14 (0)	508 ±11 (0)
MtGee112	381	332	1.15	1.0238	0.50	0.0598	0.0988	0.8149	0.0292	0.0010	0.0013	0.0145	0.0003	597 ±34 (0)	608 ±8 (0)	605 ±8 (0)	582 ±6 (0)
MtGee113	2020	3135	0.64	1.0240	0.50	0.0935	0.0801	1.0320	0.0140	0.0010	0.0011	0.0138	0.0002	1497 ±20 (0)	497 ±6 (0)	720 ±7 (0)	281 ±3 (0)
MtGee113a	178	366	0.49	1.0240	0.50	0.0974	0.2736	3.6734	0.0701	0.0011	0.0036	0.0506	0.0008	1575 ±21 (0)	1559 ±18 (0)	1566 ±11 (0)	1369 ±15 (0)
MtGee114	96	369	0.26	1.0240	0.50	0.2442	0.5450	18.3430	0.4354	0.0024	0.0072	0.2381	0.0044	3147 ±16 (0)	2804 ±30 (0)	3008 ±12 (0)	7306 ±63 (0)
MtGee115	32	290	0.11	1.0240	0.50	0.2488	0.2203	7.5558	1.5316	0.0028	0.0030	0.1034	0.0167	3177 ±18 (0)	1284 ±16 (0)	2180 ±12 (0)	18774 ±134 (0)
MtGee116	44	46	0.95	1.0231	0.50	0.0601	0.0932	0.7727	0.0284	0.0020	0.0014	0.0264	0.0005	608 ±73 (0)	575 ±8 (0)	581 ±15 (0)	566 ±11 (0)
MtGee117	197	1114	0.18	1.0239	0.50	0.0603	0.0785	0.6530	0.0172	0.0007	0.0010	0.0094	0.0002	616 ±26 (0)	487 ±6 (0)	510 ±6 (0)	344 ±5 (0)
MtGee118	200	173	1.16	1.0235	0.50	0.0583	0.0783	0.6293	0.0247	0.0011	0.0011	0.0130	0.0003	542 ±42 (0)	486 ±6 (0)	496 ±8 (0)	493 ±6 (0)
MtGee119	72	157	0.46	1.0236	0.50	0.0572	0.0525	0.4140	0.0167	0.0018	0.0008	0.0131	0.0004	499 ±69 (0)	330 ±5 (0)	352 ±9 (0)	335 ±8 (0)
MtGee119a	151	243	0.62	1.0230	0.50	0.0565	0.0516	0.4016	0.0165	0.0012	0.0007	0.0089	0.0002	471 ±46 (0)	324 ±4 (0)	343 ±6 (0)	330 ±5 (0)
MtGee120	272	595	0.46	1.0233	0.50	0.0593	0.0964	0.7885	0.0285	0.0008	0.0013	0.0129	0.0004	579 ±31 (0)	593 ±8 (0)	590 ±7 (0)	569 ±7 (0)
MtGee121	102	466	0.22	1.0234	0.50	0.0554	0.0712	0.5433	0.0225	0.0009	0.0010	0.0094	0.0003	427 ±34 (0)	443 ±6 (0)	441 ±6 (0)	450 ±7 (0)
MtGee122	35	22	1.60	1.0232	0.50	0.0934	0.2548	3.2786	0.0746	0.0029	0.0041	0.1017	0.0013	1495 ±58 (0)	1463 ±21 (0)	1476 ±24 (0)	1454 ±24 (0)
MtGee123	80	49	1.62	1.0215	0.50	0.0690	0.0495	0.4712	0.0170	0.0036	0.0009	0.0241	0.0004	900 ±107 (0)	311 ±6 (0)	392 ±17 (0)	341 ±7 (0)
MtGee123a	92	60	1.53	1.0215	0.50	0.0593	0.0511	0.4175	0.0157	0.0040	0.0011	0.0275	0.0004	579 ±146 (0)	321 ±7 (0)	354 ±20 (0)	314 ±9 (0)
MtGee124	117	279	0.42	1.0233	0.50	0.0974	0.2739	3.6784	0.0782	0.0011	0.0037	0.0521	0.0009	1575 ±22 (0)	1561 ±19 (0)	1567 ±11 (0)	1521 ±17 (0)

#	Th (ppm)	U (ppm)	Th/U	Corrected isotopic ratios										1 sigma error								Ages and errors (Ma) (1 sigma) - <i>indicative error related to common lead correction</i>							
				Yield ratio $^{207}\text{Pb}/^{208}\text{Pb}$	Pb model age (Ga)	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{238}\text{U}$	$^{207}\text{Pb}/^{235}\text{U}$	$^{208}\text{Pb}/^{232}\text{Th}$								
MtGee125	117	83	1.41	1.0231	0.50	0.0995	0.2782	3.8151	0.0740	0.0016	0.0039	0.0684	0.0009	1614 ±30 (0)	1582 ±19 (0)	1596 ±14 (0)	1442 ±17 (0)												
MtGee126	100	409	0.24	1.0230	0.50	0.1043	0.2848	4.0963	0.0864	0.0012	0.0038	0.0576	0.0011	1703 ±21 (0)	1615 ±19 (0)	1654 ±11 (0)	1675 ±20 (0)												
MtGee127	148	140	1.06	1.0228	0.50	0.0553	0.0583	0.4444	0.0172	0.0014	0.0008	0.0117	0.0003	425 ±57 (0)	365 ±5 (0)	373 ±8 (0)	345 ±5 (0)												
MtGee128	104	157	0.67	1.0227	0.50	0.0589	0.0516	0.4195	0.0166	0.0026	0.0009	0.0183	0.0004	564 ±95 (0)	325 ±5 (0)	356 ±13 (0)	334 ±9 (0)												
MtGee128a	133	144	0.92	1.0213	0.50	0.0545	0.0520	0.3905	0.0155	0.0015	0.0008	0.0113	0.0003	390 ±63 (0)	327 ±5 (0)	335 ±8 (0)	311 ±5 (0)												

# APPENDIX VI Sample location and description

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Nr	Sample	Name	Northing (GDA)	Easting (GDA)	Rock category	Formation	Nb ech.	Polished	Section	HM's	Epoxy	Analysis	Dating	Description
1	NOO1	Nooldoonooldoona trondjemite	6'651'274	340'405	Granitoid	Mt Neil Granite	1	1	1	Y		Y		Porphyritic pink granite, brown weathering, magnetite-rich.
2	PW08-001	Leucosome with brannerite	6'661'231	350'038	Vein	Hot Spring gneiss	1							Aplitic leucosome next to large pegmatite. Hosting large brannerite+ microlite ? (1600 cps) / in Paralana Creek bed. Local bkg = 500 cps
3	PEG7	Microcline xx	6'672'976	358'366	Mineral	Hidden Valley Complex	1							14 x 9 x 4 cm monocrystal of pink microcline with minor graphic quartz
4	RR-N2	Hematite-monzazite-(Ce) breccia	6'655'606	339'325	Mineralisation	Radium Ridge Breccia	2			1		1		Hematite, monazite, quartz rock with uranium weathered minerals. Samarskite/Euxenite-(Y) and minor schoepite, spriggite, uranophane, françoisite-(Ce). Type locality
5	RR-N2X	Spriggite & schoepite	6'655'606	339'325	Mineral	Radium Ridge Breccia	2							Hematite breccia with secondary uranium minerals
6	PW-160A	Pegmatite intrusion	6'669'447	356'107	Vein	Hidden Valley Complex	2		2					Graphic texture, pegmatite with microcline & quartz only
7	PW-160B	Calc-silicate rock	6'669'447	356'107	Metasediment	Hidden Valley Complex	3		2					Skarn 1 meter from pegmatite intrusion
8	PW-160C	Magnetite skarn in limestone	6'669'447	356'107	Metasediment	Hidden Valley Complex	1		1					Coarse magneite (up to 5 cm) in impure limestone. 8m from pegmatite
9	PW-160D	Magnetite skarn in limestone	6'669'447	356'107	Metasediment	Hidden Valley Complex	1		2	1		?		Siliceous limestone with magnetite, 8 m from pegmatite. Contains, pyrite, aegyrine, tremolite, zircon, apatite, minor molybdenite, magnetite, rutile
10	JB05-35	Muscovite pegmatite	6'683'085	369'967	Vein	"Metasediments"	1							Garnet (1 cm) in muscovite, microcline, quartz pegmatite vein.
11	PW-161	Titanite pegmatite	6'669'837	353'789	Vein	Freeling Heights Unit	5	1			1			Coarse green titanite (3 cm) in a muscovite-quartz pegmatite rock. Not in place (scree)
12	PEG-13B	Pegmatite	6'669'964	355'852	Vein	Hidden Valley Complex	2			1	1			Graphic texture, pegmatite with microcline & quartz only
13	PHG	Prospect Hill Granite	6705' 772	359'568	Granite	Babbage Inlier NW	2	2	2				?	Porphyritic granite with fluorite, cassiterite, topaz, tourmaline and large ovoidal feldspars
14	SN-1	Rhyodacite Sn prospect	6703' 156	358'027	Granite	Petermorra Volcanics	...	1	2					Porphyritic subvolcanic intrusive, large feldspars, greisen
15	JB05-37	Calc-silicate à allanite (skarn)	6683' 063	369'945	Skarn	Yerila metasomatites	2	2	2	Y	Y	Y	Y	Calcsilicate rock, metasomatized carbonate with zircon, allanite, fluorite and magnetite
16	JB05-36	Paragneiss à allanite	6683078	369896	Skarn	Yerila metasomatites	1	1				Y		More felsic metasediment, allanite-bearing, amphibole
17	YER4	Pegmatite dike in Yerila	6692326	360327	Pegmatite	Yerila gneiss		1						Pegmatite vein (5 cm wide in the Yerila Gneiss. Quartz, feldspar, muscovite
18	YER5	Yerila gneiss "rhyolitique"	6692400	360955	Granite	Yerila gneiss		1		Y		Y		Silicified Yerila gneiss (originally porphyritic rock). Allanite, bastnäsité, thorite
19	BRX	Brannerite crystals (free)	6457500	386800	Minerals	Crockers Well New	35	1	1	Y	1			300g of loose crystals of brannerite (thorium-rich)
20	CW1	Crockers Well adamellite	6457500	386800	Granite	Crockers Well New	3	1		Y		Y		White adamellite with minor veinlets of quartz, Nb-rutile & brannerite
21	CW2	Crockers Well leucogranite	6457500	386800	Granite	Crockers Well New	1	1				Y		Coarse granite with biotite
22	CW2	Crockers Well granite rose	6457500	386800	Granite	Crockers Well New	1	1				Y		Granite, more alkaline (biotite poor)
23	SED-RIVER	Mt Neill Granite (silicified)	6669039	355694	Granite	Hidden Valley Complex		1				Y		Pink silicified granite, disappearance of biotite, chlorite

## APPENDIX VI Sample location and description

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Nr	Sample	Name	Northing (GDA)	Easting (GDA)	Rock category	Formation	Nb ech.	Polished	Section	HM's	Epoxy	Analysis	Dating	Description
24	NEIL03	Mt Neill Granite (hydrothermalized)	6675000	369700	Granite	Mt Neill-Adams Unit	1	1	4	Y	1	Y		Porphyritic, biotite, chlorite granite with pink alteration. Used for HM study
25	JB05-10	Microgabbro	6672786	358119	Mafic rock	Hidden Valley Complex		2	1	Y	1	Y	Y	Finely crystallized gabbro, with pyroxene
26	GX01	Leucogranite rose	6670116	356698	Granite	Hidden Valley Complex		1	2	Y		Y		Oligoclase alkaline granite with pyrite. Analysed Au (3 ppb)
27	PAR1	Paralana Quartzite	6648525	339700	Metasediment	Adelaidean	1	1						Silicified quartzite, 10 cm over the unconformity on crystalline basement at Arkaroola Waterhole
28	HSG-FMC	Hot Spring Gneiss (FMC)	6662273	354105	Granite	Alluvium		1	2	Y	Y	Y	Y	Pebble of migmatitic gneiss with polycrase-(Y) crystals
29	JB05-32	Gneiss mylonitique (Box Bore?)	6681580	371685	Granite	Box Bore Gneiss		1	2	Y		Y	Y	Red sheared orthogneiss with biotite, allanite, fluorite (Mt Neill style?)
30	JB05-19	British Empire granite	6669768	352526	Granite	British Empire Gr.	2	1		Y	Y	Y	Y	Coarse leucogranite with muscovite, biotite, qz and feldspars
31	YER03	Yerila Gneiss S.S.	6693159	360642	Granite	Yerila Gneiss	3	2	6	Y	Y	Y	Y	Coarse porphyritic biotite gneiss with allanite, fluorite, K-hastingsite, fluorapatite, titanite, etc.
32	MUD1	Mudnawatana tonalite	6693293	360791	Granite	Mudnawatana tonalite		2	2					Medium coarse leucogranite with biotite
33	PEPE	Pepegoona rhyolite	6670100	365400	Granite	Alluvium		2	2					Boulder of Pepegoona rhyolite, near Well, dark porphyritic subvolcanic intrusive
34	SED-TER	Metasediments in Terrapina	6695104	360969	Metasediment	Metasediment in Terrapina	1	1		Y	Y	Y		Sheared paragneiss in Terrapina granite batholith. E-W orientation
35	TERAP2	Rapakivi granite (Terrapina)	6693650	360726	Granite	Terrapina granite	1	1	1	Y	Y	Y	Y	rapakivi, porphyritic alkaline granite, xenotime, titanite, zircon, biotite, fluorite, apatite.
36	ILM07	Pegmatite à ilmenite, ilmenite	6669030	354863	Pegmatite	Freeling Heights Unit	5							Quartz, ilmenite, amphibole pegmatite (1 m long amphiboles) and coarse ilmenite xx (up to 4 cm). Microclinalization
37	PW-161	Pegmatite à titanite	6669837	353789	Pegmatite	Freeling Heights Unit	2	1			1			Coarse muscovite, green titanite ? (diopside) pegmatite
38	HM-QZ	Heavy sand laminations	6670514	343117	Metasediment	Paralana Quartzite					Y			Heavy mineral bed (1cm) in quartzite. Visible zircon, ilmenite, hematite
39	BB1	Box Bore gneiss	6681458	371249	Granite	Box Bore Gneiss		1		Y		Y		Coarse sheared orthogneiss
40	EAP-Mo	Brèche uranifère à molybdenite	6654678	344452	Hydrothermal	East Painter breccia	2	3				Y		Coarse granitic hematite, magnetite breccia with pyrite, molybdenite and chlorite 0.5% UO2
41	AMPH11	Amphibolite grenue	6691188	362418	Mafic rock	Amphibolite	1			Y		Y		Main amphibolite dike in Yerila gneiss / Babbage inlier
42	AMPH10	Amphibolite microgrenue	6691167	362320	Mafic rock	Amphibolite	0			Y	Y		Y	Main amphibolite dike in Yerila gneiss / Babbage inlier
43	STUB	Tillite (conglomeratic)	6646400	346200	Metasediment	Adelaidean				Y				Coarse glacial formation, Stubbs Waterhole
44	JB05-39	Yerila gneiss à allanite	6693515	360763	Métasomatite	Yerila gneiss				Y	N	Y		coarse biotite-rich, allanite gneiss
45	GEE-W	Conglomerat Mt Gee W	6655297	340121	Metasediment	Permo-carboniferous		2		Y			Y	Coarse conglomerate, mostly matrix-supported, cobbles of quartzite and porphyritic rhyolites or granites
46	GEE-E	Conglomerat Mt Gee E	6655250	340780	Metasediment	Permo-carboniferous	3	2	2	Y			Y	Trench in pebble conglomerate (dike-like structure)
47	DC08	Green sediment (chlorite-rich)	6669632	355948	Metasediment	Adelaidean				Y				Green carbonate metasomatised sediments

# APPENDIX VI Sample location and description

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Nr	Sample	Name	Northing (GDA)	Easting (GDA)	Rock category	Formation	Nb ech.	Polished	Section	HM's	Epoxy	Analysis	Dating	Description
48	DC11	Quartzite poreuse	6669983	356022	Metasediment	Adelaidean	1			Y				Quartzite with dark rutile
49	GEE-NW	Arkose Mt Gee NE	6655500	340050	Metasediment	Permo-carboniferous	3	2						Sandstone, arkose, hydrothermally altered by MtGee system
50	DC1	Arkosic sandstone	6655119	344729	Metasediment	Permo-carboniferous				Y				
51	JB06-1	Pegmatite granite	6671275	357500	Pegmatite	Pegmatite	1	1	1					Pegmatite à muscovite, qz, microcline, plagioc.
52	CONT-YER	Yerila Gneiss contact	6693610	360706	Metasediment	Yerila gneiss	1	1	2	Y		Y		gneiss à biotite et allanite
53	AMPH9	Amphibolite	6691196	361667	Mafic rock	Amphibolite	1		2	Y		Y		Main amphibolite dike in Yerila gneiss / Babbage inlier, crosscut the creek. Abundant xenotime in HM's
54	WC2-coff	Argile à coffinite	6658366	364916	Sediments	Beverley Sands	1			Y	Y	Y	Y	Mudstone with coffinite nodules and coal fragments, 1% UO2 ore
55	BRA-2005	Pegmatite à brannerite	6668685	354876	Pegmatite	Hidden Valley Complex	1	1			Y	Y	Y	"Jacob" prospect, Brannerite Hill, microcline, quartz, amphibole pegmatitic vein
56	Y-HEM	Hematite fault	6671708	344338	Hydrothermal	Hydrothermal	4					Y		Hematite-quartz vein on fault
57	DC15	Green sediment	6668298	354622	Metasediment		1			Y				Altered Hidden Valley sediment, metasomatized. Rutile
58	BLU-MC	Blue Mine conglomerate	6647575	349830	Metasediment	Adelaidean			1	Y				Conglomerate, clast supported.
59	SED1	Heavy minerals	6670213	351847	HM's	British Empire Gr.				Y	Y		Y	HM from main creek alluvium
60	Yerila Ck	Heavy minerals	6691885	360061	HM's	Yerila Gneiss				Y	Y			contains scheelite, tourmaline, 3mm black zircons, xenotime, cerite...
61	Sed121	Heavy minerals	6698070	364059	HM's					Y				Mudnawutana Ck, near track
62	Sed-Badd	Heavy minerals	6691800	361271	HM's	Yerila Gneiss / pegm.				Y	Y		Y	riche en monazite, xenotime, columbite, scheelite, tornbomite, cerite, hollandite...
63	DD06-sec	Mt Gee quartz-pyrite-hematite	6654800	341000	Hydrothermal	Mt Gee hematite breccia	3	1						Core fragment from Mt Gee East
64	CORUN	Corundum schist	6653700	339700	Metasediment	Radium R. metamorp.	1			Y				Phlogopite schist with corundum (meta mafic intrusive/ Mg-rich)
65	JB05-27	Mt Shanahan conglomerate	6670830	343044	Metasediment	Adelaidean	1	1		Y				Metaconglomeratic formation near granitic basement
66	DC13	Quartzite	6668863	355572	Metasediment	Hidden Valley Sed.	1			Y				Weathered porous quartzite from the HV complex
67	PEG13B	Pegmatite	6669964	355852	Pegmatite	Hidden Valley Complex	1	1		Y			Y	Pegmatite intrusion
68	Amph8	Amphibolite grenue	6691731	361279	Mafic rock	Amphibolite	2							Coarse amphibolite in a gully bed
69	PEG8	Pegmatite	6672818	358721	Pegmatite	Hidden Valley Complex	1							Pegmatite in HV
70	JB05-35	Pegmatite à grenat	6683085	369967	Pegmatite	British Empire Gr.	1							pegmatite with muscovite, garnet
71	JB05-17	Pegmatite à lepidolite	6670080	352035	Pegmatite	British Empire Gr.	1							Pegmatite with Li-mica / Mawson Plateau
72	PEG1	Heavy minerals	6669713	356129	HM's	Hidden Valley Complex				Y				zircons from pegmatite (inherited?)
73	PEG7	Microcline de 15 cm	6672976	358366	Pegmatite	Hidden Valley Complex	1							pink microcline xx
74	SED-ALL	Heavy minerals	6681619	371979	HM's	BoxBore Gneiss				Y				Creek alluvium (6 kg)





# APPENDIX VI Sample location and description

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Nr	Sample	Name	Northing (GDA)	Easting (GDA)	Rock category	Formation	Nb ech.	Polished	Section	HM's	Epoxy	Analysis	Dating	Description
101	BREC01	Granitic /gneiss breccia in metasediments	6665514	353994	Breccia	Breccia (recent)	2							Granitic /gneiss breccia in metasediments
102	PW-269	sheared red gneiss	6661525	349999		Hot Spring Gneiss Unit	2							sheared red gneiss
103	PW-273	metasomatised gneiss in tectonic breccia	6665928	353747	Breccia	Hidden Valley Complex	2							metasomatised gneiss in tectonic breccia
104	PW-272	red Mt Neill style chlorite alteration	6665900	353883	Granite	Hidden Valley Complex	2							red Mt Neill style chlorite alteration
105	PW-283	band of gneiss	6668950	355201	Gneiss	Hot Spring Gneiss Unit	2							band of gneiss
106	PW-196	red-pink gneiss	6671555	357588	Gneiss	Hot Spring Gneiss Unit	2							red-pink gneiss
107	PW-247	Biotite-rich schist	6668817	355119	Gneiss	Hot Spring Gneiss Unit	2							Biotite-rich schist
108	PW-284	Oligoclaseite!!	6668988	355015	Mafic rock	Hidden Valley Complex	2							Oligoclaseite. Adjacent to the main gabbro, high K plagioclaseite
109	BRA14	Vein quartz-ilmenite-microcl & brannerite	6668286	354718	Mineralisation	Hidden Valley Complex	2							"Charlotte" mineralisation with brannerite
110	BRA01	pegmatitic vein with brannerite	6668736	354895	Mineralisation	Hidden Valley Complex	2							"Jacob" prospect, Brannerite Hill, microcline, quartz, amphibole pegmatitic vein
111	BRA02A	pegmatitic vein with brannerite	6668685	354876	Mineralisation	Hidden Valley Complex	2							"Jacob" prospect, Brannerite Hill, microcline, quartz, amphibole pegmatitic vein
112	BRA02B	pegmatitic vein with brannerite	6668685	354876	Mineralisation	Hidden Valley Complex	2							"Jacob" prospect, Brannerite Hill, microcline, quartz, amphibole pegmatitic vein
113	BRA02C	pegmatitic vein with brannerite	6668685	354876	Mineralisation	Hidden Valley Complex	2							"Jacob" prospect, Brannerite Hill, microcline, quartz, amphibole pegmatitic vein
114	PW-211	hematite-U-microcline-vein mineralised	6668532	354846	Mineralisation	Hidden Valley Complex	2							Breccia in the roots of Brannerite Hill. Hematite. Unknown U mineral in the matrix to be checked
115	BRA12	allanite-rich calc-silicate	6665968	353528	Calcsilicate	Hot Spring Gneiss	2							Allanite skarn
116	PW-285	hematite-Cu mineralisation	6668983	354813	Mineralisation		2							"Lysandre" Gossan mineralisation. Hematite, cuprite, biotite
117	BRA5	muscovite pegmatite	6668822	355024	Vein	Hidden Valley Complex	2							pegmatoid from the gneiss unit (leucogranitic melt)
118	LI-PEG	Li-pegmatite	6671251	357482	Vein	Hidden Valley Complex	2							coarse pegmatite from Hidden Valley North tectonic block. Lithium micas to be confirmed
119	BRA11	pink granite	6665604	352878	granite	Hidden Valley Complex	2							pink granite
120	PW08-001	Brannerite vein	6661232	350036	Metasomatite	Hot Springs gneiss Unit	8		1					Brannerite vein in syenitic matrix ( Albite, K-feldspar only). Up to 3 cm xx of brannerite. Close to wide pegmatite dike (500m x 12m)
121	PW08-002	Allanite gneisses & calcsilicate	6661612	349698	Metasomatite	Hot Springs gneiss Unit	3							Boulder from narrow gully. Allanite-rich rocks / monazite. Draining the "Monazite Hill" from Marathon Lease.
122	PW08-005	Breccia with torbernite	6664954	353818	Mineralisation	Freeling Heights Quartzite breccia	1							torbernite mineralisation on a vertical fault. U only on spectrometer reading. No thorium
123	PW08-007	Gabbro	6666478	354136	Mafic Rock	Hidden Valley Complex	1							Coarse gabbro with minor gabbro pegmatite
124	PW08-008	Monazite shear zone	6666697	353645	Vein	Hot Springs gneiss Unit	3							Orange monazite mineralisation in a shear zone crosscutting a vein of quartz. Very dense
125	PW08-009	Granite Mt Neill altered	6664042	353207	Chlorite altered granite	Mt Neill-Adams Unit	1							Chlorite, K-feldspar altered granite (porphyritic)

## APPENDIX VII

## Electron microprobe analysis and dating of monazite

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Label	Age Ma	Error Age Ma	$\frac{Ce}{(La+Ce)}$	Huttonite-%	Monazite-%	Brabantite-%	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	CaO	Y <sub>2</sub> O <sub>3</sub>	La <sub>2</sub> O <sub>3</sub>	Ce <sub>2</sub> O <sub>3</sub>	Pr <sub>2</sub> O <sub>3</sub>	Nd <sub>2</sub> O <sub>3</sub>	Sm <sub>2</sub> O <sub>3</sub>	Gd <sub>2</sub> O <sub>3</sub>	Dy <sub>2</sub> O <sub>3</sub>	Er <sub>2</sub> O <sub>3</sub>	PbO	ThO <sub>2</sub>	UO <sub>2</sub>	Somme
sedbad_1	624	279	0.67	6	92	2	0.49	1.63	27.74	0.23	0.35	16.53	34.72	2.75	8.95	1.07	0.57	0.24	0.00	0.09	3.26	0.06	98.68
sedbad_1bis	523	129	0.65	6	90	4	0.00	1.48	27.16	0.40	1.05	14.99	29.34	2.61	8.94	1.36	0.94	0.38	0.00	0.17	7.12	0.17	96.09
sedbad_1rbis	1572	157	0.64	8	91	1	0.00	1.85	26.42	0.09	0.73	15.24	29.11	2.69	9.15	1.31	0.75	0.28	0.00	0.55	7.05	0.26	95.47
sedbad_2			0.65	2	97	1	0.00	0.41	29.41	0.12	0.43	17.76	35.46	3.00	10.38	1.72	1.04	0.31	0.00	0.00	1.62	0.00	101.67
sedbad_3	550	113	0.66	6	90	3	0.00	1.58	27.57	0.39	1.55	14.96	31.36	2.66	9.36	1.71	1.21	0.45	0.00	0.21	8.23	0.20	101.46
sedbad_3bis	365	163	0.64	5	88	7	0.18	1.19	26.39	0.73	1.36	14.20	27.18	2.59	8.99	1.54	1.25	0.37	0.00	0.09	5.16	0.19	91.44
sedbad_4	690	299	0.66	6	92	2	0.00	1.51	27.64	0.20	1.83	15.23	31.86	2.81	9.70	1.60	1.25	0.60	0.20	0.51	6.22	0.26	101.42
sedbad_4b	259	48	0.66	18	78	3	0.00	4.43	23.27	0.36	3.64	12.69	26.21	2.07	7.97	1.32	1.45	1.02	0.42	0.22	16.56	1.08	102.71
sedbad_4	1634	171	0.67	1	98	0	0.00	0.31	29.41	0.05	0.44	18.50	39.00	3.14	9.56	0.72	0.34	0.00	0.00	0.00	0.61	0.00	102.09
sedbad_4 bbis	1614	184	0.65	6	92	2	0.00	1.46	27.27	0.18	1.80	14.28	28.16	2.73	9.62	1.66	1.34	0.65	0.00	0.48	5.83	0.27	95.73
sedbad_1	597	186	0.66	5	91	4	0.00	1.32	27.81	0.41	1.08	15.27	31.50	2.70	9.27	1.30	0.93	0.27	0.00	0.18	7.35	0.20	99.56
sedbad_1_r	603	130	0.67	6	91	4	0.00	1.35	25.63	0.39	1.05	14.97	31.64	2.72	9.03	1.29	0.92	0.36	0.00	0.18	7.09	0.00	96.63
sedbad_2	1504	166	0.66	7	91	2	0.00	1.71	26.94	0.23	0.96	15.51	31.54	2.70	9.28	1.36	0.89	0.38	0.00	0.48	6.76	0.17	98.91
sedbad_3	683	227	0.66	4	91	5	0.00	0.99	26.38	0.58	1.06	14.93	30.61	2.67	9.11	1.56	1.11	0.41	0.00	0.12	4.03	0.00	93.57
sedbad_6	490	100	0.66	7	89	3	0.00	1.70	26.67	0.36	1.57	14.29	29.78	2.57	8.65	1.28	0.95	0.48	0.00	0.21	8.69	0.36	97.54
sedbad_9	891	361	0.66	2	97	1	0.00	0.59	28.91	0.09	0.44	16.53	33.70	2.81	9.77	1.36	0.78	0.23	0.00	0.11	2.53	0.09	97.91
sedbad_10	583	253	0.65	2	95	4	0.00	0.40	29.81	0.39	1.95	17.17	33.48	2.52	7.80	0.72	0.67	0.52	0.00	0.09	2.31	0.45	98.28
sedbad_12	945	347	0.66	2	96	2	0.00	0.57	28.66	0.19	0.60	15.77	32.43	2.80	10.18	1.59	1.20	0.35	0.00	0.12	2.72	0.05	97.22
sedbad_13	1465	272	0.65	4	92	4	0.00	1.03	27.36	0.44	1.53	15.52	30.71	2.63	9.72	1.51	1.07	0.39	0.20	0.26	3.77	0.10	96.23
sedbad_14	897	177	0.70	6	84	10	0.00	1.34	25.22	0.95	1.61	10.21	24.97	2.44	8.73	1.82	1.08	0.44	0.00	0.21	5.42	0.00	84.44
sedbad_15			0.66	2	98	1	0.00	0.38	28.96	0.09	0.41	16.05	33.15	2.92	10.41	1.70	1.11	0.25	0.00	0.00	1.50	0.00	96.94
sedbad_17	1375	633	0.67	3	96	1	0.00	0.76	25.62	0.06	0.35	14.74	31.24	2.72	10.22	1.70	1.11	0.25	0.00	0.08	1.42	0.00	90.27
sedbad_18	1090	266	0.66	3	94	3	0.00	0.80	28.53	0.29	0.59	16.02	32.34	2.79	9.55	1.30	0.89	0.25	0.00	0.19	3.59	0.11	97.23
sedbad_19	1123	187	0.66	6	90	4	0.00	1.42	26.97	0.40	1.49	14.99	30.18	2.58	9.05	1.33	1.09	0.49	0.00	0.28	5.57	0.06	95.92
sedbad_20			0.61	0	97	3	0.00	0.00	21.38	0.23	0.33	10.89	17.74	1.84	5.32	0.92	0.67	0.18	0.00	0.00	0.98	0.00	60.47
sedbad_21	501	85	0.67	9	86	5	0.00	1.98	26.40	0.52	1.73	12.82	27.87	2.65	9.30	1.56	1.14	0.50	0.00	0.25	10.33	0.45	97.51
sedbad_22	555	100	0.66	8	88	4	0.00	1.74	25.97	0.44	1.89	13.38	27.54	2.45	9.00	1.52	1.26	0.50	0.00	0.24	9.35	0.24	95.52
sedbad_23			0.69	3	96	1	0.00	0.69	27.46	0.12	0.29	14.84	35.63	3.01	10.22	1.25	0.68	0.00	0.00	0.00	1.19	0.00	95.38
sedbad_24	1208	340	0.66	4	91	5	0.00	0.86	28.28	0.55	1.40	14.80	30.28	2.90	9.79	1.27	0.99	0.39	0.00	0.14	2.77	0.00	94.41
sedbad_25	558	160	0.65	6	91	3	0.00	1.45	27.52	0.36	2.27	15.14	30.26	2.53	8.89	1.14	0.91	0.37	0.28	0.15	5.24	0.29	96.78
sedbad_26	390	91	0.67	7	72	21	0.00	1.63	25.73	2.43	1.51	11.55	24.83	2.41	8.44	1.32	0.96	0.38	0.00	0.17	9.60	0.27	91.24
sedbad_27	1714	159	0.66	7	91	2	0.00	1.55	27.27	0.23	2.24	13.65	28.26	2.58	9.15	1.54	1.39	0.60	0.27	0.60	6.92	0.31	96.56
sedbad_28	1026	135	0.66	9	87	3	0.00	2.11	26.40	0.34	2.05	13.76	27.75	2.45	8.76	1.36	1.13	0.52	0.22	0.37	7.63	0.23	95.09
sedbad_29	419	200	0.66	4	95	1	0.00	1.01	28.29	0.11	1.25	15.28	31.56	2.59	9.25	1.40	0.84	0.29	0.00	0.09	4.37	0.13	96.48
sedbad_30	583	129	0.67	6	91	2	0.00	1.42	26.95	0.25	1.30	13.85	29.63	2.63	9.84	1.39	0.96	0.38	0.00	0.19	7.14	0.19	96.13
sedbad_31	3080	1039	0.83	54	45	1	0.00	14.59	3.53	0.15	0.00	4.13	21.68	1.79	6.11	0.60	0.20	0.00	0.00	0.10	0.74	0.00	53.63
sedbad_32	776	218	0.63	21	71	8	0.00	5.61	25.37	1.00	0.77	14.13	25.77	2.43	8.52	1.35	0.93	0.25	0.00	0.14	4.16	0.00	90.43
sedbad_33			0.66	2	95	3	0.00	0.53	27.44	0.29	0.33	15.46	31.14	2.75	9.71	1.45	0.92	0.18	0.00	0.00	2.18	0.00	92.38
sedbad_34	590	187	0.66	3	92	5	0.00	0.60	28.84	0.57	1.46	14.65	30.10	2.64	9.02	1.33	1.05	0.41	0.00	0.13	4.69	0.18	95.68
sedbad_35	774	191	0.66	3	90	7	0.00	0.60	29.39	0.76	1.48	14.53	29.38	2.59	8.88	1.35	0.99	0.45	0.00	0.18	5.08	0.08	95.74
sedbad_36	578	179	0.66	4	93	3	0.00	0.93	28.30	0.34	0.94	14.64	29.59	2.63	9.97	1.54	1.17	0.38	0.00	0.14	5.12	0.13	95.81
sedbad_37	520	94	0.66	9	90	1	0.00	2.05	26.30	0.12	2.59	13.44	28.12	2.47	8.71	1.27	1.09	0.56	0.00	0.24	8.43	0.67	96.06
sedbad_38	586	153	0.66	5	91	4	0.00	1.26	27.70	0.40	1.45	14.02	29.39	2.63	9.61	1.46	1.22	0.42	0.00	0.16	5.99	0.16	95.88
sedbad_39	772	125	0.66	7	88	5	0.00	1.67	26.88	0.48	2.03	13.32	27.75	2.46	8.91	1.41	1.21	0.46	0.00	0.28	7.87	0.15	94.85
sedbad_40	618	219	0.66	4	94	2	0.00	0.90	28.12	0.19	1.36	14.98	30.49	2.71	10.09	1.57	1.18	0.29	0.00	0.12	4.10	0.13	96.23
sedbad_41	601	139	0.66	6	92	2	0.00	1.32	27.30	0.22	1.34	14.35	30.09	2.72	9.23	1.40	0.96	0.35	0.00	0.18	6.48	0.21	96.15

## APPENDIX VII

## Electron microprobe analysis and dating of monazite

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Label	AgeMa	ErrorAgeMa	$\frac{Ce}{(La+Ce)}$	Huttonite-%	Monazite-%	Brabantite-%	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	CaO	Y <sub>2</sub> O <sub>3</sub>	La <sub>2</sub> O <sub>3</sub>	Ce <sub>2</sub> O <sub>3</sub>	Pr <sub>2</sub> O <sub>3</sub>	Nd <sub>2</sub> O <sub>3</sub>	Sm <sub>2</sub> O <sub>3</sub>	Gd <sub>2</sub> O <sub>3</sub>	Dy <sub>2</sub> O <sub>3</sub>	Er <sub>2</sub> O <sub>3</sub>	PbO	ThO <sub>2</sub>	UO <sub>2</sub>	Somme
sedbad_43			0.65	1	96	3	0.00	0.23	28.55	0.32	1.12	16.59	32.20	2.69	8.95	1.39	1.14	0.45	0.00	0.00	1.37	0.00	95.00
sedbad_44	639	184	0.66	4	93	3	0.00	0.88	30.65	0.32	1.56	14.49	29.76	2.72	9.44	1.53	1.29	0.48	0.00	0.15	5.16	0.13	98.55
sedbad_45	561	170	0.66	5	93	2	0.00	1.13	27.26	0.23	1.25	14.32	29.79	2.80	9.39	1.53	1.13	0.43	0.00	0.14	5.23	0.18	94.81
sedbad_46	878	296	0.65	3	95	1	0.00	0.80	28.75	0.11	0.76	15.98	31.53	2.81	9.47	1.29	1.09	0.43	0.00	0.13	3.19	0.08	96.41
sedbad_47	467	204	0.66	4	93	3	0.00	0.85	27.28	0.31	1.27	14.34	29.02	2.59	9.86	1.66	1.21	0.39	0.00	0.09	4.55	0.00	93.41
sedbad_48	570	197	0.65	4	94	3	0.00	0.88	27.66	0.27	1.21	14.89	29.54	2.61	9.95	1.54	1.11	0.34	0.00	0.11	4.66	0.00	94.78
sedbad_49			0.65	2	95	2	0.00	0.49	22.41	0.21	0.49	13.89	27.76	2.50	9.11	1.47	1.02	0.25	0.00	0.00	2.24	0.00	81.83
sedbad_50	1194	392	0.71	1	93	6	0.00	0.20	30.00	0.68	1.02	13.09	33.10	3.13	10.74	1.48	0.91	0.33	0.00	0.14	2.06	0.19	97.08
sedbad_51			0.72	2	97	1	0.00	0.36	28.81	0.13	0.58	12.54	34.45	3.26	11.51	1.37	0.72	0.00	0.00	0.00	1.55	0.00	95.28
sedbad_52	1188	168	0.66	6	92	2	0.00	1.42	27.77	0.22	1.75	13.83	28.89	2.66	9.78	1.62	1.39	0.63	0.00	0.35	6.04	0.20	96.55
sedbad_54	551	182	0.65	4	92	4	0.00	0.93	28.09	0.40	1.55	15.48	30.35	2.80	9.27	1.51	1.24	0.45	0.00	0.13	4.79	0.19	97.18
sedbad_55	1818	317	0.66	3	93	4	0.00	0.70	28.54	0.38	0.90	15.12	30.88	2.79	9.56	1.40	1.01	0.40	0.00	0.26	3.23	0.00	95.17
sedbad_56	915	308	0.67	3	96	1	0.00	0.73	28.56	0.10	0.69	14.57	31.49	2.86	10.01	1.51	1.12	0.34	0.00	0.13	3.07	0.08	95.26
sedbad_57	420	161	0.67	5	92	3	0.00	1.04	27.65	0.32	1.00	13.41	29.09	2.69	10.27	1.58	1.11	0.42	0.00	0.11	5.58	0.13	94.40
sedbad_58	1072	316	0.66	5	93	2	0.00	1.22	27.48	0.19	0.97	14.86	30.51	2.68	9.46	1.50	1.10	0.42	0.00	0.15	3.01	0.09	93.65
sed1_1			0.64	1	95	4	0.00	0.22	29.51	0.40	1.48	17.10	32.63	2.52	8.11	0.78	0.64	0.28	0.00	0.00	0.56	0.06	94.29
sed1_2			0.64	1	92	7	0.00	0.14	28.83	0.79	1.19	16.36	30.34	2.77	9.81	1.70	1.09	0.29	0.00	0.00	0.36	0.00	93.67
sed1_3			0.66	1	97	2	0.00	0.19	28.88	0.27	1.62	16.42	33.25	2.79	9.01	0.93	0.67	0.25	0.00	0.00	0.00	0.08	94.36
sed1_4			0.67	1	97	3	0.00	0.18	29.73	0.28	1.49	16.16	34.04	2.89	8.95	0.90	0.74	0.30	0.00	0.00	0.00	0.10	95.75
sed1_5	673	164	0.70	2	84	14	0.00	0.43	28.44	1.62	1.15	11.06	27.62	2.77	10.93	2.55	1.64	0.41	0.00	0.18	5.53	0.19	94.53
sed1_7			0.65	0	95	4	0.00	0.11	29.28	0.48	1.46	16.41	32.66	2.69	9.04	1.03	0.70	0.36	0.00	0.00	0.00	0.19	94.41
sed1_9			0.67	1	94	6	0.00	0.14	29.57	0.63	1.52	15.50	32.80	2.83	9.40	1.39	1.01	0.47	0.00	0.00	0.00	0.13	95.40
sed1_10			0.71	1	97	2	0.00	0.28	29.61	0.18	1.69	11.69	30.02	3.12	12.95	2.74	1.79	0.56	0.00	0.00	0.55	0.20	95.38
sed1_11			0.65	1	90	9	0.00	0.21	29.26	1.11	1.87	16.74	32.98	2.75	8.42	1.02	0.78	0.41	0.00	0.00	0.98	0.20	96.73
sed1_12			0.66	1	94	6	0.00	0.17	29.62	0.62	1.64	15.28	31.04	2.72	9.33	1.18	0.86	0.38	0.22	0.00	0.71	0.32	94.09
sed1_13			0.66	1	95	4	0.00	0.19	29.38	0.40	1.68	14.99	30.81	2.78	9.52	1.25	0.91	0.49	0.00	0.00	1.13	0.20	93.73
sed1_14			0.67	2	94	4	0.00	0.56	28.63	0.40	0.33	14.20	30.95	2.97	11.04	1.41	0.72	0.00	0.00	0.00	1.32	0.00	92.53
sed1_16			0.64	2	93	5	0.00	0.43	28.34	0.55	0.84	16.83	32.15	2.55	8.01	0.63	0.43	0.18	0.00	0.00	0.20	0.00	91.14
sed1_17			0.68	1	94	4	0.00	0.33	28.53	0.46	0.85	14.78	32.95	2.87	9.83	0.90	0.60	0.26	0.00	0.00	0.51	0.06	92.93
sed1_18			0.64	1	94	5	0.00	0.20	28.40	0.51	1.27	17.09	31.59	2.52	7.64	0.96	0.78	0.38	0.00	0.00	0.24	0.08	91.67
sed1_19			0.69	1	96	3	0.00	0.34	28.78	0.29	0.94	14.38	33.60	2.96	10.50	1.04	0.67	0.19	0.00	0.00	0.33	0.00	94.01
sed1_20			0.61	1	92	7	0.00	0.13	29.56	0.79	1.24	18.38	30.38	2.22	6.54	0.78	0.67	0.33	0.00	0.00	2.18	0.53	93.73
sed1_21			0.64	17	80	3	0.00	4.41	25.42	0.41	1.08	15.91	30.50	2.58	7.91	0.94	0.77	0.30	0.00	0.00	0.64	0.00	90.85
sed1_24	590	98	0.68	8	86	7	0.00	1.65	26.77	0.71	2.12	11.77	26.25	2.53	9.25	1.36	1.14	0.47	0.22	0.26	9.06	0.40	93.97
sed1_25			0.67	1	94	5	0.00	0.16	29.54	0.52	2.23	14.84	31.21	2.77	9.24	0.99	0.87	0.39	0.00	0.00	0.00	0.31	93.06
sed1_26			0.67	1	97	3	0.00	0.16	28.86	0.28	1.41	15.31	32.34	2.75	9.36	0.96	0.64	0.34	0.00	0.00	0.00	0.13	92.55
sed1_27	509	57	0.71	2	68	30	0.00	0.55	26.80	3.07	2.70	7.50	19.42	2.20	8.35	2.24	1.57	0.79	0.19	0.39	12.67	1.68	90.11
sed1_28			0.67	1	95	3	0.00	0.32	28.58	0.37	0.93	15.35	32.44	2.87	9.42	0.85	0.63	0.00	0.00	0.00	0.61	0.00	92.38
sed1_29			0.67	1	94	5	0.00	0.17	29.47	0.56	1.48	14.62	31.59	2.90	10.12	1.08	0.82	0.29	0.00	0.00	0.64	0.08	93.84
sed1_30	1442	530	0.65	2	96	2	0.00	0.38	29.36	0.23	0.32	16.30	31.55	2.78	8.91	1.52	0.95	0.20	0.00	0.11	1.77	0.00	94.38
sed1_31	497	63	0.67	3	67	30	0.00	0.70	28.52	3.18	2.79	9.47	20.36	2.09	7.55	1.23	1.24	0.70	0.24	0.35	13.89	0.83	93.14
sed1_32			0.66	1	91	9	0.00	0.17	29.40	0.95	0.92	15.10	31.21	2.64	8.75	0.93	0.60	0.30	0.00	0.00	2.10	0.14	93.22
sed1_33	501	50	0.73	9	63	27	0.00	2.03	25.64	2.76	2.58	5.83	17.05	2.12	8.14	2.87	1.82	0.80	0.25	0.47	20.09	0.56	93.02
sed1_34			0.66	2	96	2	0.00	0.46	27.59	0.24	1.47	14.97	30.83	2.88	9.79	1.21	0.72	0.30	0.20	0.00	0.27	0.00	90.93
sed1_35			0.66	1	95	5	0.00	0.14	28.64	0.51	1.77	15.19	31.01	2.82	9.11	1.07	0.88	0.39	0.00	0.00	0.00	0.00	91.53
sed1_36			0.65	1	95	5	0.00	0.14	29.25	0.52	1.41	15.78	31.18	2.62	9.03	1.23	0.90	0.41	0.00	0.00	0.00	0.28	92.76

APPENDIX VII

Electron microprobe analysis and dating of monazite

Label	Age Ma	Error Age Ma	$\frac{Ce}{(La+Ce)}$	Huttonite-%	Monazite-%	Brabantite-%	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	CaO	Y <sub>2</sub> O <sub>3</sub>	La <sub>2</sub> O <sub>3</sub>	Ce <sub>2</sub> O <sub>3</sub>	Pr <sub>2</sub> O <sub>3</sub>	Nd <sub>2</sub> O <sub>3</sub>	Sm <sub>2</sub> O <sub>3</sub>	Gd <sub>2</sub> O <sub>3</sub>	Dy <sub>2</sub> O <sub>3</sub>	Er <sub>2</sub> O <sub>3</sub>	PbO	ThO <sub>2</sub>	UO <sub>2</sub>	Somme
sed1_37			0.67	1	94	5	0.00	0.18	28.38	0.53	1.45	14.30	30.74	2.91	10.25	1.44	1.05	0.46	0.00	0.00	0.00	0.09	91.80
sed1_38	727	232	0.67	3	91	6	0.00	0.69	28.29	0.66	1.89	12.96	28.21	2.61	9.95	1.74	1.08	0.52	0.00	0.14	4.00	0.11	92.82
sed1_39			0.62	1	97	3	0.00	0.14	29.40	0.30	1.01	17.91	30.56	2.51	8.16	1.02	0.81	0.34	0.00	0.00	0.00	0.16	92.30
sed1_41			0.62	0	92	7	0.00	0.10	29.23	0.76	1.32	17.45	29.78	2.41	7.35	0.90	0.80	0.38	0.00	0.00	0.63	0.84	91.94
sed1_42			0.66	1	95	4	0.00	0.16	29.02	0.48	1.62	14.75	30.84	2.93	9.57	1.11	0.88	0.38	0.00	0.00	0.34	0.20	92.28
sed1_43	499	68	0.68	1	72	27	0.00	0.22	29.24	2.84	2.39	9.47	21.27	2.25	8.25	2.00	1.41	0.66	0.26	0.33	10.28	1.59	92.46
sed1_44			0.63	1	92	7	0.00	0.16	28.43	0.75	1.47	17.42	31.72	2.58	7.64	0.68	0.54	0.29	0.00	0.00	0.10	0.00	91.78
sed1_45			0.65	1	95	4	0.00	0.15	29.52	0.43	2.18	15.99	31.41	2.78	8.87	0.97	0.79	0.42	0.00	0.00	0.00	0.18	93.68
sed1_46	468	45	0.72	4	59	37	0.00	0.91	27.96	3.94	2.52	6.18	16.49	2.05	7.61	2.44	1.65	0.77	0.24	0.47	18.92	1.49	93.64
sed1_47			0.67	1	94	5	0.00	0.15	28.31	0.53	1.18	14.61	30.78	2.83	9.39	0.89	0.67	0.18	0.00	0.00	1.17	0.19	90.89
sed1_48	682	121	0.66	4	85	11	0.00	0.93	27.95	1.12	1.27	12.32	25.03	2.65	9.97	1.62	1.29	0.47	0.00	0.25	7.71	0.24	92.84
sed1_49	506	97	0.65	7	82	11	0.00	1.49	26.37	1.14	2.11	12.97	25.04	2.33	7.68	1.10	1.02	0.57	0.00	0.22	9.04	0.40	91.48
sed1_50			0.65	1	95	4	0.00	0.15	29.17	0.41	1.52	15.23	30.54	2.72	9.15	1.27	0.89	0.44	0.00	0.00	0.33	0.19	92.02
sed1_51	584	140	0.65	1	88	11	0.00	0.19	29.11	1.18	1.62	13.62	27.14	2.67	8.88	1.26	0.94	0.42	0.00	0.18	3.15	1.21	91.57
sed1_52			0.66	4	94	2	0.00	0.79	27.93	0.21	0.92	15.28	30.74	2.75	9.22	0.83	0.47	0.25	0.00	0.00	2.98	0.00	92.35
sed1_53	608	74	0.68	3	72	26	0.00	0.59	28.19	2.65	2.24	9.31	21.16	2.28	8.12	1.66	1.21	0.60	0.00	0.37	11.57	0.84	90.80
sed1_54			0.66	1	96	3	0.00	0.16	29.11	0.35	1.12	15.06	30.43	2.85	9.33	1.09	0.81	0.32	0.00	0.00	0.31	0.18	91.10
sed1_56			0.67	2	96	2	0.00	0.34	28.92	0.22	1.09	13.88	30.43	3.15	10.75	1.25	0.84	0.21	0.00	0.00	0.75	0.00	91.84
sed1_57			0.65	76	18	6	0.00	39.38	10.82	1.48	0.44	6.08	11.82	1.26	5.07	0.98	0.69	0.26	0.00	0.00	1.38	0.17	79.84
sed1_58			0.65	1	96	3	0.00	0.13	29.63	0.33	1.11	15.26	30.60	2.85	9.18	1.13	0.84	0.39	0.00	0.00	0.28	0.10	91.83
sed1_59line_1			0.64	1	96	3	0.00	0.12	29.01	0.33	1.29	16.20	30.40	2.64	8.28	0.91	0.66	0.29	0.00	0.00	0.12	0.00	90.25
sed1_59line_2			0.64	1	94	5	0.00	0.12	29.13	0.57	1.56	16.11	29.69	2.49	8.12	0.88	0.70	0.37	0.00	0.00	0.17	0.24	90.14
sed1_59line_3	1991	1017	0.63	1	95	5	0.00	0.17	28.39	0.48	1.23	16.60	29.33	2.50	7.68	0.78	0.74	0.30	0.00	0.08	0.92	0.00	89.19
sed1_59line_4			0.62	1	96	3	0.00	0.16	15.99	0.27	0.66	14.75	25.12	2.44	7.52	0.86	0.61	0.30	0.00	0.00	0.34	0.00	69.03
sed1_59line_5			0.63	1	95	5	0.00	0.16	28.48	0.48	1.28	16.32	29.36	2.49	8.10	0.88	0.60	0.30	0.00	0.00	1.01	0.06	89.51
sed1_59line_6			0.63	1	97	3	0.00	0.14	28.67	0.29	1.14	16.41	29.95	2.59	8.15	0.95	0.73	0.36	0.00	0.00	0.46	0.00	89.84
sed1_59line_7			0.66	1	96	4	0.00	0.15	29.05	0.39	1.50	15.03	30.19	2.77	9.22	1.04	0.78	0.29	0.00	0.00	0.11	0.09	90.61
sed1_59line_8			0.63	0	94	6	0.00	0.09	29.20	0.63	1.41	16.68	29.77	2.64	7.91	0.81	0.60	0.35	0.00	0.00	0.55	0.21	90.86
sed1_59line_9			0.62	1	97	3	0.00	0.13	29.09	0.28	1.20	18.79	32.71	2.60	7.90	0.92	0.67	0.32	0.00	0.00	0.37	0.00	94.98
sed1_59line_10			0.62	1	96	3	0.00	0.15	24.40	0.34	0.88	16.94	29.22	2.38	7.55	0.77	0.57	0.26	0.00	0.00	0.39	0.00	83.87
sed1_59line_11			0.63	1	97	3	0.00	0.14	26.85	0.30	1.25	17.53	31.95	2.78	8.43	0.87	0.69	0.30	0.00	0.00	0.13	0.00	91.23
sed1_59line_12			0.63	1	94	5	0.00	0.12	28.93	0.56	1.51	17.71	31.65	2.55	7.90	0.94	0.67	0.34	0.00	0.00	0.33	0.00	93.21
sed1_59line_13			0.62	1	95	4	0.00	0.16	29.33	0.46	1.25	18.32	31.58	2.49	8.03	0.87	0.73	0.33	0.00	0.00	0.98	0.09	94.62
sed1_59line_14			0.63	1	96	3	0.00	0.17	7.90	0.22	0.35	13.36	24.50	1.89	6.18	0.67	0.57	0.27	0.00	0.00	0.30	0.00	56.39
sed1_59line_15			0.62	1	95	4	0.00	0.17	28.17	0.43	1.32	17.99	31.40	2.55	8.16	1.00	0.72	0.30	0.00	0.00	0.59	0.00	92.79
sed1_59line_16			0.63	1	97	3	0.00	0.15	28.87	0.30	1.20	18.06	32.00	2.66	8.36	0.95	0.73	0.33	0.00	0.00	0.53	0.00	94.15
sed1_59line_17			0.64	1	96	4	0.00	0.17	29.24	0.41	1.45	16.86	32.12	2.75	8.99	1.04	0.76	0.40	0.00	0.00	0.00	0.15	94.33
sed1_59line_18			0.63	1	94	5	0.00	0.12	29.17	0.56	1.39	17.77	32.08	2.60	7.96	0.89	0.73	0.31	0.00	0.00	0.56	0.24	94.37
sed1_59line_19			0.62	1	96	3	0.00	0.17	28.90	0.31	1.21	18.67	31.82	2.66	8.04	0.96	0.69	0.25	0.00	0.00	0.38	0.00	94.04
sed1_59line_20			0.62	1	96	3	0.00	0.18	26.64	0.36	1.06	18.35	31.31	2.35	7.38	0.79	0.68	0.28	0.00	0.00	0.39	0.00	89.76
sed1_59line_21			0.62	0	96	3	0.00	0.09	28.66	0.37	1.09	18.27	31.59	2.44	7.66	0.88	0.72	0.30	0.00	0.00	0.42	0.00	92.47
sed1_59line_22			0.62	1	96	3	0.00	0.14	28.98	0.36	1.22	18.33	32.00	2.57	8.05	0.91	0.71	0.28	0.00	0.00	0.45	0.00	93.99
sed1_59line_23			0.62	0	95	4	0.00	0.10	29.26	0.47	1.18	18.76	32.35	2.59	7.51	0.81	0.54	0.35	0.00	0.00	0.15	0.11	94.20
sed1_59line_24			0.62	0	96	3	0.00	0.10	29.29	0.33	1.34	18.47	32.45	2.68	7.55	0.80	0.64	0.33	0.00	0.00	0.25	0.00	94.24
sed1_59line_25			0.63	1	97	3	0.00	0.12	28.98	0.32	1.29	18.17	32.77	2.69	8.07	0.87	0.55	0.25	0.00	0.00	0.00	0.10	94.16
sed1_59line_26			0.63	1	96	4	0.00	0.15	28.96	0.41	1.47	17.62	32.12	2.68	8.12	0.83	0.58	0.31	0.00	0.00	0.16	0.00	93.42

APPENDIX VII

Electron microprobe analysis and dating of monazite

Label	Age Ma	Error Age Ma	Ce (La+Ce)	Huttonite-%	Monazite-%	Brabantite-%	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	CaO	Y <sub>2</sub> O <sub>3</sub>	La <sub>2</sub> O <sub>3</sub>	Ce <sub>2</sub> O <sub>3</sub>	Pr <sub>2</sub> O <sub>3</sub>	Nd <sub>2</sub> O <sub>3</sub>	Sm <sub>2</sub> O <sub>3</sub>	Gd <sub>2</sub> O <sub>3</sub>	Dy <sub>2</sub> O <sub>3</sub>	Er <sub>2</sub> O <sub>3</sub>	PbO	ThO <sub>2</sub>	UO <sub>2</sub>	Somme
sed1_59line_17			0.63	0	96	4	0.00	0.08	29.31	0.39	1.21	18.36	32.76	2.56	7.71	0.75	0.55	0.26	0.00	0.00	0.13	0.07	94.14
sed1_59line_18			0.62	0	96	3	0.00	0.11	29.17	0.38	1.28	18.74	32.69	2.58	7.54	0.76	0.53	0.25	0.00	0.00	0.00	0.08	94.10
fmc_1	442	107	0.67	6	86	8	0.00	1.35	26.88	0.89	2.33	11.90	25.72	2.74	9.75	1.92	1.36	0.59	0.26	0.17	7.82	0.42	94.10
fmc_2	459	107	0.68	6	85	9	0.00	1.35	26.13	0.89	2.33	11.68	26.02	2.64	9.66	1.89	1.38	0.59	0.25	0.18	7.85	0.40	93.24
fmc_3	863	382	0.68	4	95	2	0.00	0.92	27.93	0.17	0.68	13.62	29.91	3.25	12.03	2.10	1.04	0.37	0.00	0.09	2.41	0.00	94.52
fmc_4	392	79	0.66	14	82	4	0.00	3.08	23.85	0.43	1.79	12.66	25.50	2.40	8.83	1.36	0.97	0.44	0.00	0.21	11.35	0.44	93.33
fmc_5	675	135	0.65	9	88	3	0.00	2.10	25.28	0.32	2.03	13.78	27.54	2.56	8.80	1.12	0.87	0.33	0.00	0.20	7.10	0.00	92.03
fmc_6	568	122	0.63	7	86	6	0.00	1.61	26.44	0.68	2.38	14.00	25.52	2.55	8.99	1.44	1.17	0.56	0.24	0.19	7.86	0.00	93.65
fmc_8	491	82	0.65	13	83	4	0.00	2.83	24.14	0.42	1.46	13.23	25.84	2.43	8.62	1.24	0.94	0.40	0.00	0.26	11.08	0.44	93.32
fmc_9	573	136	0.66	4	84	12	0.00	0.90	26.50	1.31	1.68	13.27	27.53	2.61	8.79	1.11	0.81	0.44	0.00	0.17	6.98	0.00	92.10
fmc_10	508	68	0.66	18	78	4	0.00	4.06	22.43	0.36	2.92	11.58	23.51	2.36	7.99	1.24	0.99	0.64	0.25	0.33	13.75	0.50	92.91
fmc_11	478	175	0.66	4	90	7	0.00	0.86	27.43	0.71	2.10	14.16	28.79	2.73	9.28	1.26	0.99	0.46	0.00	0.11	5.18	0.10	94.17
fmc_12	1991	1179	0.63	1	97	2	0.00	0.26	28.41	0.18	0.92	16.79	30.47	2.87	9.46	1.90	1.12	0.36	0.00	0.08	0.73	0.06	93.59
fmc_13	668	148	0.66	4	89	7	0.00	0.87	27.36	0.76	2.48	13.65	27.54	2.66	8.51	1.32	1.06	0.65	0.26	0.19	5.60	0.37	93.27
fmc_14	623	135	0.66	5	88	7	0.00	1.14	27.05	0.70	2.22	13.54	27.56	2.72	8.75	1.32	1.13	0.67	0.00	0.20	6.49	0.29	93.78
fmc_15	670	74	0.67	16	76	8	0.00	3.59	21.87	0.88	1.36	11.39	23.93	2.71	9.09	1.19	0.77	0.31	0.00	0.42	13.07	0.44	91.03
fmc_16	1760	445	0.65	2	95	4	0.00	0.34	28.36	0.37	1.91	14.67	29.37	2.90	9.42	1.89	1.40	0.60	0.00	0.20	1.72	0.23	93.38
fmc_17	1389	535	0.65	1	96	2	0.00	0.31	28.57	0.26	1.27	15.41	30.75	2.89	9.56	1.95	1.29	0.39	0.00	0.12	1.48	0.15	94.41
fmc_18	583	122	0.66	10	84	6	0.00	2.20	25.28	0.69	2.69	12.79	25.76	2.54	9.06	1.45	1.23	0.64	0.21	0.20	7.18	0.32	92.25
fmc_19	453	72	0.64	12	80	8	0.00	2.72	24.45	0.78	2.47	12.46	23.88	2.31	7.95	1.23	1.00	0.60	0.26	0.27	12.61	0.47	93.47
fmc_20	463	72	0.65	13	80	6	0.00	2.87	24.02	0.65	2.73	11.84	23.04	2.25	8.24	1.26	1.12	0.67	0.00	0.28	12.68	0.49	92.15
fmc_21	500	106	0.65	7	86	7	0.00	1.51	26.55	0.68	2.54	12.54	25.10	2.50	9.04	1.55	1.22	0.61	0.21	0.20	7.94	0.46	92.65
fmc_22	895	228	0.68	4	93	3	0.00	0.86	27.36	0.33	1.76	12.39	27.75	3.11	11.33	2.05	1.56	0.56	0.24	0.17	3.93	0.18	93.58
fmc_23	528	116	0.65	5	87	8	0.00	1.15	27.12	0.84	2.48	13.05	25.32	2.54	9.17	1.52	1.30	0.64	0.00	0.19	7.10	0.46	92.89
fmc_24	528	107	0.66	8	86	6	0.00	1.69	26.02	0.67	1.52	12.72	25.62	2.60	9.67	1.77	1.29	0.46	0.00	0.21	8.42	0.26	92.92
fmc_25	467	75	0.68	2	76	22	0.00	0.47	28.37	2.28	2.78	9.90	22.64	2.53	9.56	1.65	1.51	0.77	0.35	0.27	9.23	1.27	93.58
fmc_27			0.69	2	97	1	0.00	0.52	28.47	0.12	0.74	13.26	30.66	3.22	12.48	1.97	1.12	0.34	0.00	0.00	1.43	0.00	94.33
fmc_29	459	75	0.67	17	79	4	0.00	3.86	22.50	0.40	1.57	12.15	25.98	2.59	8.34	1.14	0.67	0.31	0.00	0.27	12.10	0.48	92.35
fmc_31	539	175	0.65	1	86	13	0.00	0.27	28.10	1.38	2.34	13.18	25.46	2.61	9.58	1.59	1.35	0.64	0.00	0.13	4.31	0.35	91.28
fmc_32	746	172	0.67	6	92	2	0.00	1.25	26.58	0.25	1.13	12.69	27.80	3.07	10.82	2.07	1.23	0.38	0.00	0.19	5.38	0.17	93.00
fmc_33	1211	593	0.65	2	97	1	0.00	0.43	27.90	0.12	0.37	15.44	30.07	2.97	10.15	1.85	1.20	0.21	0.00	0.08	1.58	0.00	92.38
fmc_34	471	110	0.65	11	85	5	0.00	2.45	24.59	0.50	1.68	12.99	25.65	2.72	9.72	1.45	1.01	0.38	0.21	0.18	7.98	0.34	91.86
fmc_35line_1	423	124	0.65	9	88	3	0.00	1.92	25.43	0.30	1.68	13.39	26.67	2.68	9.17	1.57	1.24	0.42	0.00	0.14	7.18	0.22	92.02
fmc_35line_2	509	73	0.65	18	79	3	0.00	3.89	22.31	0.34	1.80	12.03	23.70	2.44	8.35	1.32	0.89	0.41	0.00	0.31	12.73	0.48	91.01
fmc_35line_3	443	69	0.66	18	79	3	0.00	3.88	18.46	0.33	1.50	12.06	24.33	2.10	7.43	1.14	0.79	0.38	0.00	0.27	13.65	0.16	86.48
fmc_35line_4	465	72	0.65	17	79	3	0.00	3.85	22.04	0.36	1.84	12.15	23.80	2.46	8.49	1.25	1.04	0.40	0.00	0.28	12.77	0.47	91.20
fmc_35line_5	508	79	0.65	19	77	4	0.00	4.42	21.75	0.40	1.60	12.24	24.25	2.24	7.95	1.28	0.85	0.39	0.00	0.28	12.62	0.13	90.40
fmc_35line_6	505	106	0.65	15	81	4	0.00	3.36	19.88	0.38	1.61	12.76	24.93	2.40	8.18	1.24	0.90	0.36	0.00	0.18	8.45	0.00	84.64
fmc_35line_7	532	98	0.65	29	68	3	0.00	7.30	20.45	0.36	1.15	11.45	22.76	2.39	8.19	1.32	0.97	0.30	0.00	0.23	9.86	0.13	86.86
fmc_35line_8	456	65	0.65	19	77	3	0.00	4.22	21.58	0.36	1.82	11.51	22.98	2.46	8.22	1.33	0.93	0.42	0.21	0.31	14.26	0.56	91.19
fmc_35line_9	402	115	0.65	10	89	0	0.00	2.30	24.56	0.03	0.88	13.52	26.85	2.72	9.34	1.41	0.92	0.32	0.00	0.14	8.00	0.13	91.13
fmc_35line_10	464	63	0.65	19	78	3	0.00	4.15	21.78	0.33	1.99	11.44	22.66	2.32	8.21	1.36	1.05	0.42	0.00	0.33	14.68	0.57	91.28
fmc_35line_11	511	83	0.65	15	80	4	0.00	3.35	24.06	0.44	2.01	12.43	23.98	2.47	8.29	1.26	1.02	0.39	0.00	0.27	11.46	0.33	91.78
fmc_35line_12	454	66	0.65	19	78	3	0.00	4.03	21.76	0.35	2.01	11.53	22.61	2.37	8.18	1.33	0.93	0.44	0.00	0.30	13.84	0.52	90.20
fmc_36			0.65	3	94	3	0.00	0.76	27.23	0.29	1.43	14.53	28.40	2.87	10.11	1.54	0.99	0.39	0.00	0.00	2.63	0.10	91.28
fmc_38	469	77	0.65	13	80	7	0.00	2.82	24.07	0.67	2.70	11.94	23.58	2.44	8.18	1.30	1.05	0.61	0.22	0.27	11.71	0.49	92.03

## Common lead corection

### GLITTER exported data

(Raw cps)-bkg	<sup>204</sup> Pb	<sup>206</sup> Pb	<sup>207</sup> Pb	<sup>208</sup> Pb	<sup>232</sup> Th	<sup>238</sup> U
	R204	R206	R207	R208	R232	R238

Isotopic ratios	<sup>207</sup> Pb/ <sup>206</sup> Pb	<sup>206</sup> Pb/ <sup>238</sup> U	<sup>207</sup> Pb/ <sup>235</sup> U	<sup>208</sup> Pb/ <sup>232</sup> Th
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Errors (1σ) on isotopic ratios

### GLITTER calculations

$$(1) \quad {}^{238}\text{U}/{}^{235}\text{U} = 137.88 \qquad (2) \quad {}^{207}\text{Pb}/{}^{206}\text{Pb} = \frac{R207}{R206} \times \Psi^{207/206}$$

Ψ = Yield ratio (fractionation correction)

$$(3) \quad {}^{207}\text{Pb}/{}^{235}\text{U} = \frac{{}^{207}\text{Pb}/({}^{238}\text{U}/137.88)}{R238} = \frac{R207 \times 137.88}{R238} \times \Psi^{207/238}$$

$$(4) \quad {}^{206}\text{Pb}/{}^{238}\text{U} = \frac{R206}{R238} \times \Psi^{206/238} \qquad (5) \quad {}^{208}\text{Pb}/{}^{232}\text{Th} = \frac{R208}{R232} \times \Psi^{208/232}$$

$$(6) \quad {}^{207}\text{Pb}/{}^{206}\text{Pb} = \frac{R207}{R206} \times \Psi^{207/206}$$

### Assumptions for calculations

$$(7) \quad \Psi^{208/206} = (\Psi^{207/206})^2 = (\Psi^{206/204})^2$$

(8) Common lead is second stage Pb reservoir (Stacey & Kramers, 1975)

(9) U and Th composition of GJ is constant: 11.2 ppm Th, 291.15 ppm U

LA-ICPMS Integrated signals

