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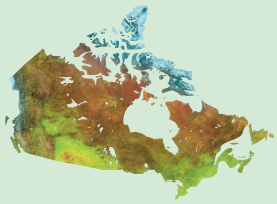

New U-Pb geochronological results from plutonic and sedimentary rocks of Southampton Island, Nunavut

N. Rayner, J. Chakungal, and M. Sanborn-Barrie

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Critical review
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Abstract: A hornblende-biotite monzogranite with a crystallization age of 2692 ± 6 Ma and semipelite-psammite cut by a peraluminous granite dated at 2682 ± 17 Ma establish the presence of plutonic and supracrustal rocks of Archean age on Southampton Island. A potentially Paleoproterozoic carbonate-quartzite cover sequence has a maximum depositional age of 2615 ± 23 Ma, similar to an epiclastic rock (2599 ± 15 Ma) that differs in provenance profile. A quartz porphyry is dated at 1934 ± 8 Ma, similar in age to charnockite dated at 1931 ± 19 Ma. A sample of gabbroic anorthosite is interpreted to have crystallized at 1870 ± 10 Ma. Regionally extensive, foliated biotite granodiorite is dated at 1852 ± 8 Ma. Archean detritus and inheritance, as old as 3.7 Ga, is common in the aforementioned metasedimentary and plutonic rocks, with the exception of the quartz porphyry. Massive to very weakly foliated monzogranite, dated at 1821.7 ± 2.5 Ma, provides a minimum age on penetrative deformation across Southampton Island.

Résumé : Un monzogranite à hornblende-biotite ayant un âge de cristallisation de 2692 ± 6 Ma ainsi qu'une semipélite-psammite recoupée par un granite hyperalumineux datant de 2682 ± 17 Ma témoignent de la présence de roches plutoniques et de roches supracrustales de l'Archéen dans l'île Southampton. Une séquence de couverture de roches carbonatées-quartzite, probablement du Paléoprotérozoïque, possède un âge de dépôt maximal de 2615 ± 23 Ma, lequel est semblable à celui d'une roche épiclastique (2599 ± 15 Ma) affichant un spectre de provenance différent. L'âge d'un porphyre à quartz est évalué à 1934 ± 8 Ma et est semblable à celui d'une charnockite datée à 1931 ± 19 Ma. L'âge de cristallisation d'un échantillon d'anorthosite gabbroïque s'établirait à 1870 ± 10 Ma. Une granodiorite à biotite foliée d'étendue régionale est datée à 1852 ± 8 Ma. Des débris et un héritage de l'Archéen, dont les âges peuvent être aussi anciens que 3,7 Ga, sont révélés fréquemment dans les roches plutoniques et métasédimentaires susmentionnées, sauf dans le porphyre à quartz. Un monzogranite massif à faiblement folié, daté à 1821,7 ± 2,5 Ma, permet d'établir un âge minimal pour la déformation pénétrative dans l'île Southampton.

GEOLOGICAL BACKGROUND

Southampton Island, situated at the junction between the Rae craton and Meta Incognita terrane (Fig. 1), exposes a highland of plutonic-dominated Precambrian rock across its eastern half. The exposed basement comprises remnants of a psammite and semipelite sequence with associated iron formation, a carbonate-quartzite sequence, and voluminous plutonic rocks ranging from ultramafic to monzogranitic compositions (Fig. 2; Sanborn-Barrie et al., 2007, 2008, 2009; Chakungal et al., 2007, 2008). Recent mapping indicates that metasedimentary rocks are typically associated with, and locally cut by, mafic plutonic rocks that include layered peridotite-gabbro-gabbroic anorthosite. These have been subsequently intruded by regionally voluminous granodiorite-tonalite-monzogranite±monzonite intrusions.

Amphibolite-facies metamorphism is widespread, with local evidence for an earlier, high-temperature granulite-facies event. The penetrative nature of Paleoproterozoic tectonometamorphism across the island is highlighted by direct U-Pb monazite dating (Berman et al., in press). D_1 is recognized by a penetrative, moderately to steeply inclined, north-trending planar fabric (S_1) defined in places by granulite-facies mineral assemblages that developed at ca. 1.88 Ga. Between 1.86 and 1.84 Ga, S_1 was strongly reworked (D_2) into recumbent, west-trending, south-vergent F_2 folds and/or relatively straight panels of gently inclined, west-striking S_1+S_2 transposition foliation. Broad, open, northeast-trending upright folds (F_3) of the transposition foliation manifest a non-penetrative component of shortening (D_3) (Sanborn-Barrie et al., 2007, 2008; Chakungal et al., 2007).

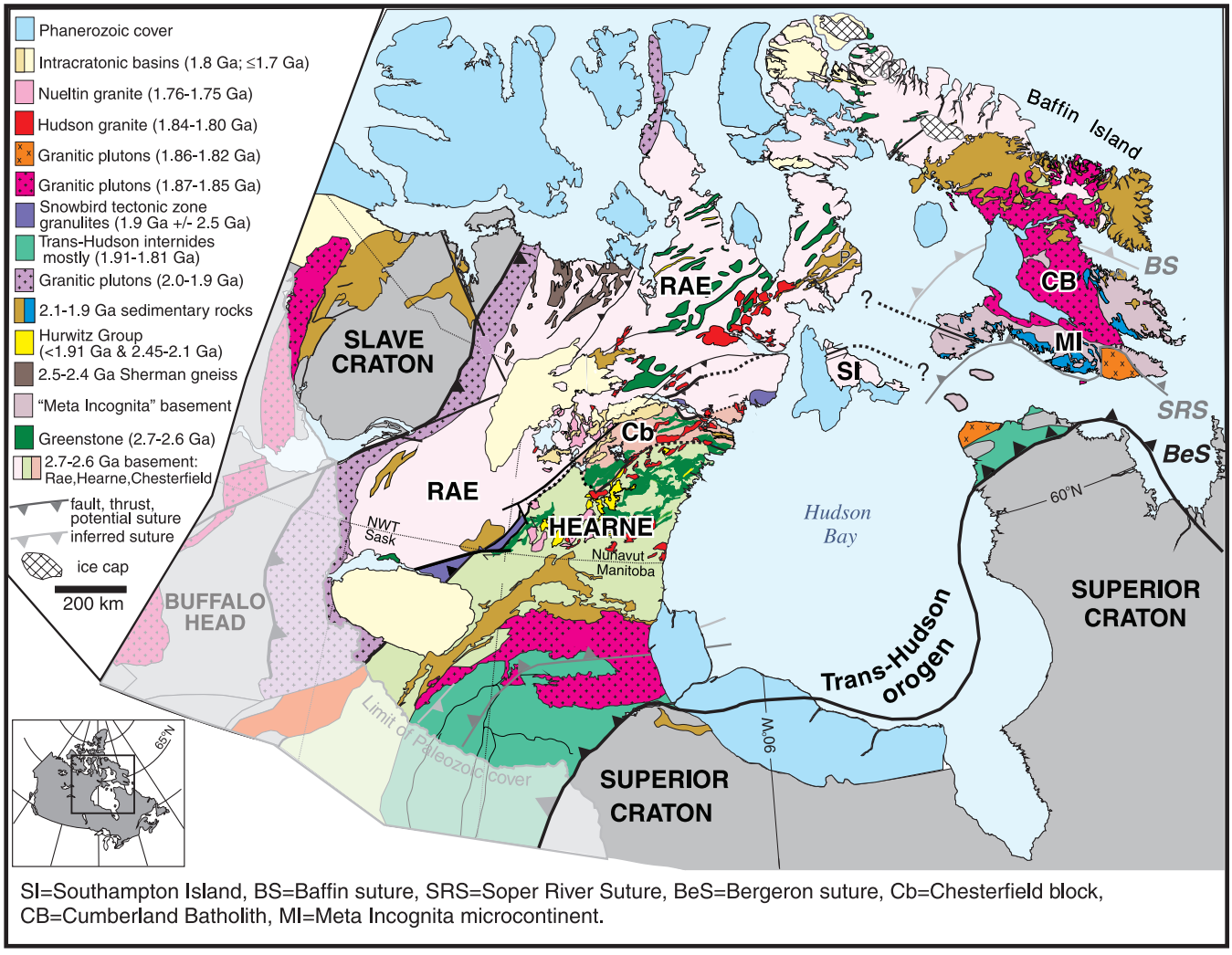

Figure 1. Regional geology of Laurentia flanking Hudson Bay (*modified from* Berman et al., 2005).

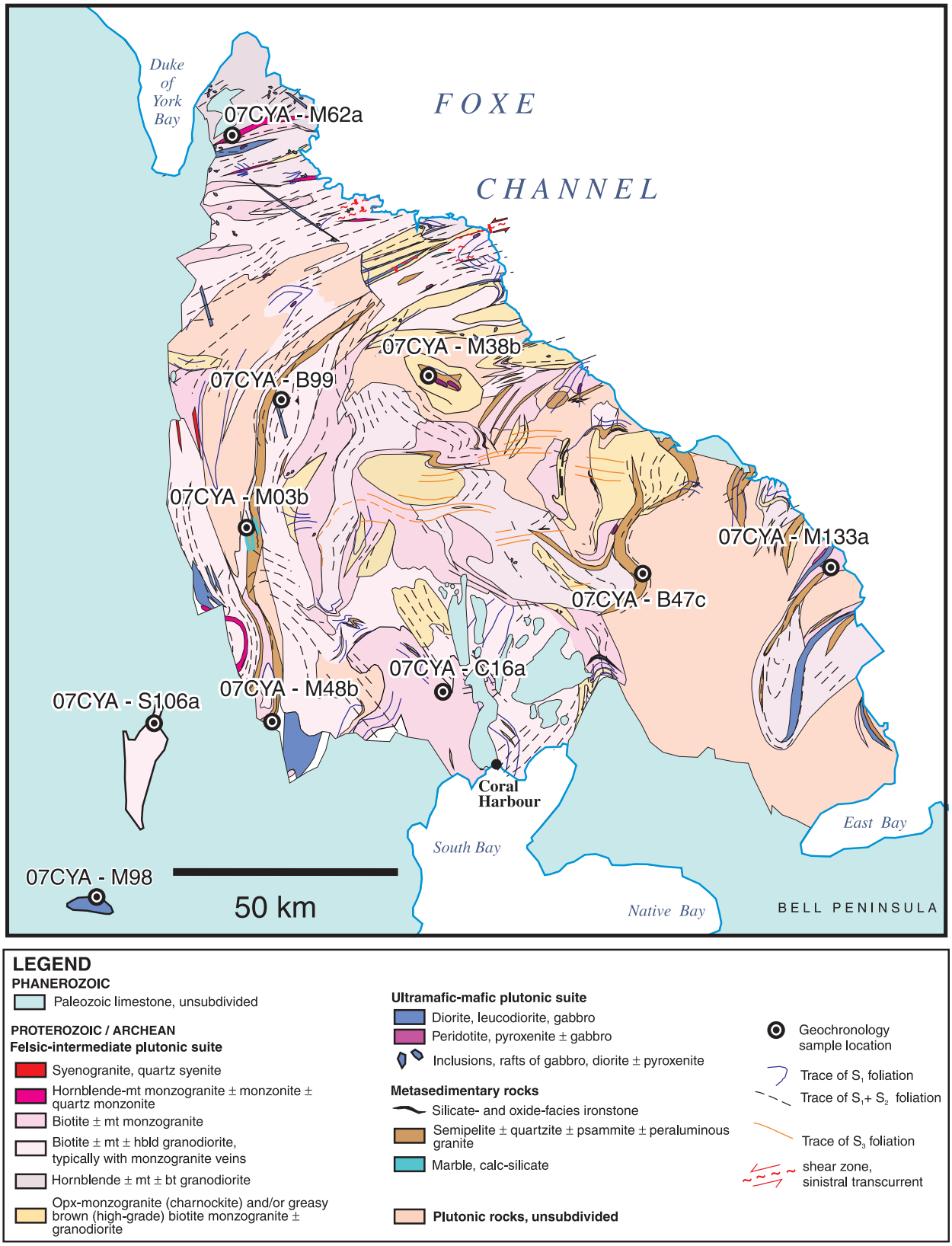

Figure 2. Simplified geological map of study area on Southampton Island.

Although U-Pb ages reveal extensive Paleoproterozoic magmatic (this report) and metamorphic activity (Berman et al., in press), Sm-Nd isotopic data (Whalen et al., in press) indicate Meso-to Paleoarchean antiquity to the basement. Geochronological results presented here will help establish the crustal affinity of Southampton Island and aid in the development of a regional framework through comparison with counterparts of the western Churchill Province and eastern Trans-Hudson Orogen.

ANALYTICAL METHODS

Heavy minerals were separated using standard crushing, grinding, and heavy liquid concentration techniques, followed by magnetic sorting of the heavy minerals. Zircons analyzed by ID-TIMS (isotope dilution thermal ionization mass spectrometry) were mechanically abraded prior to analysis (Krogh, 1982). Dissolution in concentrated HF, extraction of U and Pb, and mass spectrometry followed methods described by Parrish et al. (1987) for zircon, and Davis et al. (1997) for rutile. Mass spectrometric data reduction and numerical propagation of analytical uncertainties follow Roddick (1987). ID-TIMS isotopic data are presented in Table 1.

Prior to SHRIMP (sensitive high resolution ion microprobe) analysis, the internal features of the zircons were characterized with backscattered electrons (BSE) or cathodoluminescence (CL) utilizing a Zeiss Evo scanning electron microscope. SHRIMP analytical procedure and U-Pb calibration details are given in Stern (1997) and Stern and Amelin (2003). The analytical work presented here was collected over three sessions on three separate ion probe epoxy mounts under varying instrumental conditions. Specific analytical details for each sample are given in the footnotes of Table 2. Isoplot v. 3.66 (Ludwig, 2003) was used to generate concordia plots and calculate weighted means. All ages quoted in the text are given at the 95% confidence level. Isotopic ratios in Tables 1 and 2 are given at 1σ uncertainty, as are SHRIMP ages. Uncertainties in the ID-TIMS ages are reported in the table at the 2 σ level. Error ellipses on Concordia diagrams (Fig. 3–12) are plotted at the 2 σ uncertainty level.

U-PB RESULTS

07CYA-M62a (lab # z9427) hornblende monzogranite

A hornblende-biotite monzogranite unit was collected north of the prominent east-west shear zone from the north part of the island (Fig. 2). It is characterized by abundant mafic and ultramafic xenoliths, and locally contains xenoliths of metasedimentary rocks, and biotite-magnetite±orthopyroxene granodiorite. It was metamorphosed to amphibolite facies and is intensely intruded by pink-weathering monzogranite veins. The majority of recovered zircons are prismatic and of varying quality, whereas a secondary population of zircons are clear, colourless, high-quality equant grains. In BSE images the majority of prismatic and equant zircons are concentrically zoned, many with unzoned overgrowths. The pattern of ages observed in these grains corresponds with morphological, zoning, and chemical characteristics. As single-component grains or cores, prismatic and equant zoned zircons typically have low to moderate U concentrations (52–352 ppm U) and moderate Th/U ratios (0.3–0.9). The eleven oldest zoned zircons yielded a weighted mean $^{207}Pb/^{206}Pb$ age of 2692 ± 6 Ma (MSWD=1.12, probability=0.34), which is interpreted as the monzogranite crystallization age (Fig. 3). Rare, unzoned anhedral and equant zircons with low to moderate U content (52–678 ppm) and low Th/U (0.01–0.02) yield a weighted mean $^{207}Pb/^{206}Pb$ age of 1884 ± 14 (n=5, MSWD=0.75,

Table 1. ID-TIMS U-Pb results

							Isotopic ratios[6]								Ages (Ma)[8]						
Fract.[1]	Description[2]	Wt. µg	U ppm	Pb[3] ppm	$^{206}Pb/^{204}Pb$[4]	Pb[5] pg	$^{208}Pb/^{206}Pb$	$^{207}Pb/^{235}U$	±1σ Abs	$^{206}Pb/^{238}U$	±1σ Abs	Corr.[7] coeff.	$^{207}Pb/^{206}Pb$	±1σ Abs	$^{206}Pb/^{238}U$	±2σ	$^{207Pb}/^{235}U$	±2σ	$^{207}Pb/^{206}Pb$	±2σ	% Disc
07CYA-B47c (lab # 9424) S-type granite, 64.5048°N 82.69553°W																					
R1 (17)	Clr, Eu, El, Yel, M5	23	138	40	2706	22	0.00	4.337	0.005	0.3010	0.0003	0.9108	0.10451	0.00006	1696.1	2.7	1700.4	2.0	1705.7	2.0	0.64
R2 (12)	Clr, Eu, El, Gr, M5	24	222	64	9204	3	0.00	4.340	0.005	0.3012	0.0003	0.9392	0.10452	0.00005	1697.1	2.7	1701.0	1.9	1705.9	1.6	0.59
R3 (15)	Clr, Eu, El, Gr, M5	27	246	70	2834	44	0.00	4.330	0.005	0.3004	0.0003	0.9142	0.10454	0.00006	1693.3	2.7	1699.1	2.0	1706.2	2.0	0.86
07CYA-S106a (z9426) late monzogranite, 64.7362°N 83.4776°W																					
Z1A (1)	Pr, pBr, fIn, M3	1	1673	539	1532	29	0.06	4.914	0.007	0.3210	0.0003	0.8508	0.11101	0.00009	1794.7	2.8	1804.6	2.4	1816.1	2.9	1.35
Z1B (1)	Pr, pBr, fIn, M3	3	2246	734	12118	12	0.06	4.971	0.006	0.3242	0.0003	0.9406	0.11121	0.00005	1810.0	2.7	1814.3	1.9	1819.3	1.5	0.59
Z1C (1)	Pr, pBr, fIn, M3	3	2334	776	3354	36	0.09	4.914	0.006	0.3210	0.0003	0.9123	0.11104	0.00006	1794.5	2.7	1804.7	2.0	1816.5	1.9	1.39
Z1D (1)	Pr, pBr, fIn, M3	5	2405	786	10946	24	0.06	4.974	0.006	0.3243	0.0003	0.9419	0.11123	0.00005	1810.9	2.8	1815.0	1.9	1819.6	1.6	0.55

Sample locations are given relative to the NAD27 datum

[1] Z=zircon fraction; R=rutile fraction. All zircon fractions are abraded following the method of Krogh (1982). Number in brackets refers to the number of grains in the analysis.

[2] Fraction descriptions: Clr=clear, pBr=pale brown, Gr=grey, Yel=yellow, fIn=few inclusions, Eu=euhedral, El=elongate, Pr=prismatic, M3=Mag @1.8A 3°SS, M5=Mag @1.8A 5oSS

[3] Radiogenic Pb

[4] Measured ratio, corrected for spike and fractionation

[5] Total common Pb in analysis corrected for fractionation and spike

[6] Corrected for blank Pb and U and common Pb, errors quoted are 1 sigma absolute; procedural blank values for this study are 0.1pg U and 2 pg Pb for zircon analyses and 10 pg Pb for rutile analyses; Pb blank isotopic composition is based on the analysis of procedural blanks; corrections for common Pb were made using Stacey-Kramers compositions (Stacey and Kramers, 1975).

[7] Correlation coefficient

[8] Corrected for blank and common Pb, errors quoted are 2 sigma in Ma

The error on the calibration of the GSC ^{205}Pb-^{233}U-^{238}U spike utilized in this study is 0.22% (2σ).

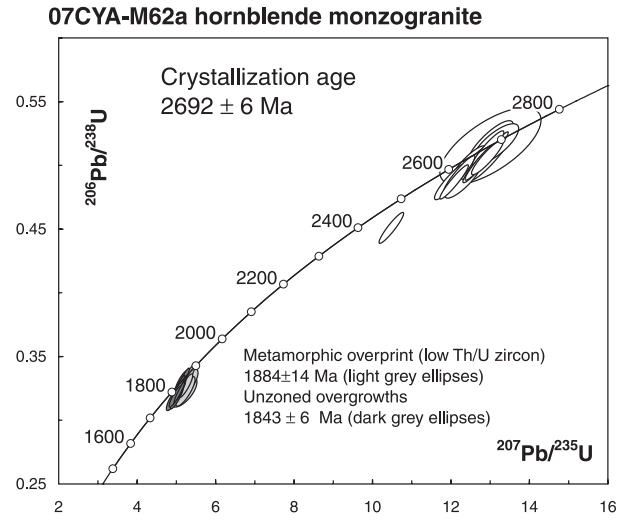

Figure 3. Concordia diagram for sample 07CYA-M62a. Magmatic zircons are shown as unfilled ellipses, metamorphic zircons are shown in shades of grey.

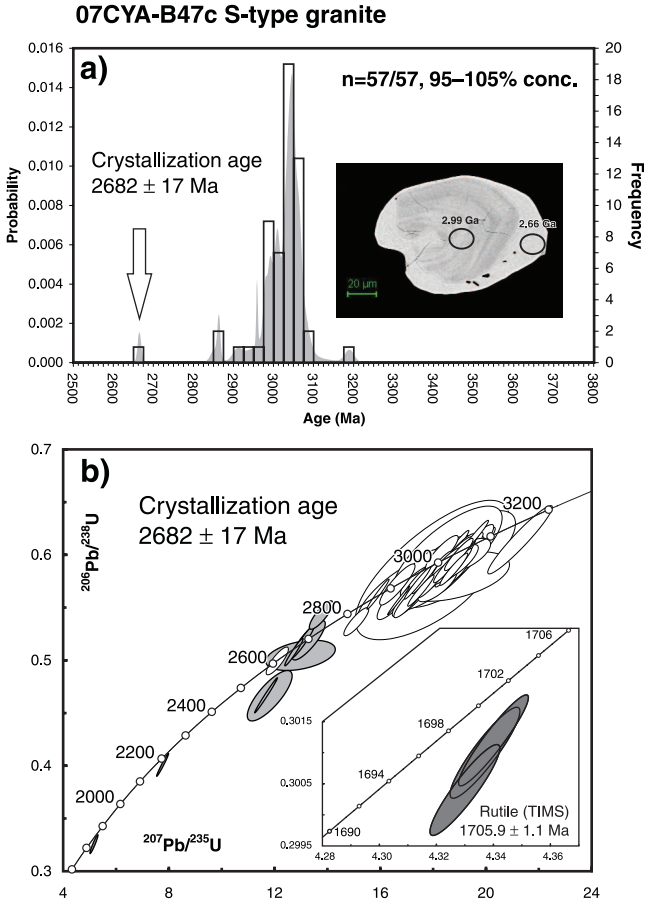

Figure 4. a) Probability density diagram illustrating the distribution of inherited zircon ages as well as the magmatic age for sample 07CYA-B47c. **b**) Corresponding concordia diagram. Inherited zircons are shown as unfilled ellipses, magmatic overgrowths are shown in light grey, and dark grey ellipses record later metamorphic overprint. ID-TIMS results for rutile shown in inset.

probability=0.56). Unzoned rims surrounding ca. 2.7 Ga and 1.88 Ga cores yield a weighted mean $^{207}Pb/^{206}Pb$ age of 1843 ± 6 Ma (n=15 analyses from 14 zircons, MSWD=1.6, probability=0.07). The two younger ages likely reflect an earlier metamorphic episode (ca. 1.88 Ga) and the intrusion of voluminous felsic magma (ca. 1.84 Ga).

07CYA-B47c (z9424) S-type granite

An enclave of psammite-semipelite exposed on eastern central part of the island is cut by garnet-muscovite granite interpreted as representing a crustal melt, possibly derived from the metasediments (Fig. 2). A sample of the granite was collected to constrain the timing of crustal melting and provide a minimum age for the sedimentary rocks cut by the granite. Zircons are typically clear, colourless and subhedral to prismatic. In BSE images, oscillatory zoning is observed in most grains and many exhibit unzoned, bright in BSE (high U) rims ranging in thickness from 5 to 20 µm (Fig. 4a inset). Oscillatory zoned zircon yields dates ranging from 2854 to 3190 Ma, with a dominant mode at 3.05 Ga and a subordinate one at 3.00 Ga (Fig. 4a), all interpreted as inherited. Analyses of seven unzoned high-U rims yielded a Tukey's biweight mean (Hoaglin et al., 1983) $^{207}Pb/^{206}Pb$ age of 2682 ± 17 Ma, interpreted as the time of crustal melting and emplacement/crystallization of the S-type granite (Fig 4b). One zircon yielded younger non-reproducible dates of 2224 and 1867 Ma, however, this grain is not interpreted as an original component of the S-type granite. Paleoproterozoic magmatic overprints are common on Southampton Island and spurious younger ages appear to reflect Pb-loss or the inadvertent inclusion of secondary magmatic phases during sampling. The age of 2682 ± 17 Ma for the S-type granite indicates an episode of crustal melting in the Archean and provides a minimum age of the psammite-semipelite sequence.

Three multi-grain rutile fractions were analyzed by TIMS in order to constrain a cooling age for the S-type granite (Table 1). All three fractions gave statistically identical ages of 1705.9 ± 1.0 Ma (MSWD=0.064, probability=0.94), the time of final cooling through ca. 420°C, a field-based estimate of the rutile closure temperature in slowly cooled terranes (Mezger et al. 1989; *see* Fig. 4b inset).

07CYA-M03b (z9421) quartzite

A sample of quartzite, 07CYA-M03b, was taken from the western margin of the exposed basement, where narrow panels of quartzite and calc-silicate are aligned with the dominant north-south fabric (Fig. 2). The ages of detrital zircons provide insight into the provenance of this quartzite-carbonate association and constrain the maximum age of deposition. The zircons are highly variable, and range from clear, colourless prisms to brown, highly fractured grains. Most are euhedral to subhedral with slightly resorbed facets; none exhibit strong mechanical abrasion suggestive of

Table 2. SHRIMP U-Pb results

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb / ^{206}Pb	±^{204}Pb / ^{206}Pb	f(206)^{204}	^{208*}Pb / ^{206*}Pb	±^{208*}Pb / ^{206*}Pb	^{207*}Pb / ^{235}U	±^{207}Pb / ^{235}U	^{206*}Pb / ^{238}U	±^{206}Pb / ^{238}U	Corr coeff	^{207*}Pb / ^{206*}Pb	±^{207}Pb / ^{206}Pb	Apparent ages (Ma) ^{206*}Pb / ^{238}U	±	^{207*}Pb / ^{235}U	±	^{207*}Pb / ^{206*}Pb	±^{207}Pb / ^{206*}Pb	Disc. (%)
07CYA-M62a (lab# z9427) hornblende monzogranite, 65.28948°N 84.53603°W																								
9427-57.1	263	95	0.37	90	1	1.26E-05	2.02E-05	0.0002	0.1053	0.0019	5.019	0.067	0.3263	0.0040	0.9468	0.1116	0.0005	1820	19	1823	11	1825	8	0.3
9427-50.1	343	155	0.47	120	3	3.30E-05	1.37E-05	0.0006	0.1332	0.0022	5.059	0.059	0.3278	0.0034	0.9353	0.1120	0.0005	1828	17	1829	10	1831	8	0.2
9427-26.1	205	98	0.49	73	3	5.10E-05	3.99E-05	0.0009	0.1366	0.0033	5.118	0.071	0.3313	0.0035	0.8403	0.1120	0.0008	1845	17	1839	12	1833	14	-0.7
9427-20.2	238	71	0.31	78	1	2.11E-05	2.04E-05	0.0004	0.0911	0.0030	4.908	0.075	0.3175	0.0036	0.8213	0.1121	0.0010	1778	18	1804	13	1834	16	3.1
9427-16.2	292	167	0.59	103	1	1.00E-05	1.00E-05	0.0002	0.1633	0.0050	4.963	0.061	0.3208	0.0036	0.9523	0.1122	0.0004	1794	18	1813	10	1835	7	2.3
9427-67.1	248	55	0.23	81	0	8.50E-07	2.57E-05	0.0000	0.0703	0.0017	4.951	0.062	0.3197	0.0033	0.8896	0.1123	0.0007	1788	16	1811	11	1838	11	2.7
9427-55.1	248	93	0.39	84	1	1.78E-05	1.21E-05	0.0003	0.1041	0.0035	5.005	0.069	0.3227	0.0037	0.8909	0.1125	0.0007	1803	18	1820	12	1840	11	2
9427-25.1	313	142	0.47	112	2	1.80E-05	2.03E-05	0.0003	0.1338	0.0020	5.170	0.061	0.3333	0.0034	0.9262	0.1125	0.0005	1854	17	1848	10	1840	8	-0.8
9427-113.1	293	111	0.39	100	1	1.00E-05	1.00E-05	0.0002	0.1119	0.0024	5.039	0.070	0.3248	0.0036	0.8544	0.1125	0.0008	1813	17	1826	12	1840	13	1.5
9427-111.1	258	129	0.52	91	1	1.00E-05	1.00E-05	0.0002	0.1467	0.0027	5.043	0.069	0.3250	0.0037	0.8803	0.1125	0.0007	1814	18	1827	12	1841	12	1.5
9427-53.1	363	150	0.43	126	4	4.04E-05	1.49E-05	0.0007	0.1229	0.0023	5.059	0.061	0.3259	0.0036	0.9526	0.1126	0.0004	1818	18	1829	10	1842	7	1.3
9427-58.2	349	164	0.48	121	1	1.00E-05	1.00E-05	0.0002	0.1350	0.0018	5.012	0.058	0.3213	0.0034	0.9630	0.1132	0.0004	1796	17	1821	10	1851	6	3
9427-75.2	734	46	0.06	231	18	8.78E-05	2.33E-05	0.0015	0.0176	0.0011	5.071	0.062	0.3240	0.0034	0.9138	0.1135	0.0006	1809	17	1831	10	1857	9	2.6
9427-45.1	267	119	0.46	93	1	1.00E-05	1.00E-05	0.0002	0.1342	0.0040	5.063	0.058	0.3231	0.0034	0.9580	0.1136	0.0004	1805	17	1830	10	1858	6	2.9
9427-58.1	390	166	0.44	133	18	1.66E-04	4.26E-05	0.0029	0.1310	0.0029	4.994	0.069	0.3187	0.0036	0.8795	0.1137	0.0008	1783	18	1818	12	1859	12	4.1
9427-46.1	678	15	0.02	219	4	2.06E-05	7.09E-06	0.0004	0.0060	0.0004	5.288	0.073	0.3350	0.0039	0.8993	0.1145	0.0007	1863	19	1867	12	1872	11	0.5
9427-9.1	138	1	0.01	43	1	3.71E-05	3.92E-05	0.0006	0.0031	0.0017	5.224	0.076	0.3280	0.0038	0.8619	0.1155	0.0009	1829	18	1857	12	1888	13	3.1
9427-29.1	52	0	0.01	16	1	7.00E-05	1.27E-04	0.0012	0.0021	0.0050	5.164	0.140	0.3231	0.0049	0.6485	0.1159	0.0024	1805	24	1847	23	1894	38	4.7
9427-75.1	61	1	0.02	19	0	3.21E-06	8.99E-05	0.0001	0.0082	0.0044	5.270	0.112	0.3297	0.0046	0.7351	0.1159	0.0017	1837	22	1864	18	1894	26	3
9427-4.1	59	1	0.01	18	0	1.00E-05	1.00E-05	0.0002	0.0079	0.0016	5.214	0.102	0.3236	0.0047	0.8142	0.1169	0.0013	1807	23	1855	17	1909	21	5.3
9427-61.1	352	151	0.44	177	2	1.22E-05	1.43E-05	0.0002	0.1293	0.0038	10.493	0.129	0.4514	0.0049	0.9303	0.1686	0.0008	2402	22	2479	11	2544	8	5.6
9427-104.1	166	46	0.29	88	1	2.15E-05	3.07E-05	0.0004	0.0780	0.0021	12.015	0.173	0.4879	0.0060	0.9037	0.1786	0.0011	2562	26	2606	14	2640	10	3
9427-8.1	143	120	0.87	86	2	3.88E-05	2.29E-05	0.0007	0.2327	0.0070	12.229	0.162	0.4938	0.0058	0.9344	0.1796	0.0009	2587	25	2622	13	2649	8	2.4
9427-12.1	214	124	0.60	121	1	8.43E-06	1.70E-05	0.0002	0.1711	0.0022	12.095	0.149	0.4874	0.0054	0.9459	0.1800	0.0007	2559	24	2612	12	2653	7	3.5
9427-55.2	148	77	0.54	85	0	5.52E-06	3.55E-05	0.0001	0.1448	0.0026	12.455	0.188	0.5009	0.0060	0.8615	0.1803	0.0014	2618	26	2639	14	2656	13	1.4
9427-20.1	52	31	0.63	31	3	1.16E-04	9.63E-05	0.0020	0.1639	0.0080	13.025	0.238	0.5180	0.0071	0.8249	0.1824	0.0019	2691	30	2681	17	*2675*	*17*	-0.6
9427-10.1	60	33	0.57	33	0	1.00E-05	1.00E-05	0.0002	0.1508	0.0061	12.323	0.192	0.4892	0.0059	0.8405	0.1827	0.0016	2567	26	2629	15	*2677*	*14*	4.1
9427-5.1	138	55	0.41	77	7	1.15E-04	3.30E-05	0.0020	0.1134	0.0032	12.685	0.179	0.5035	0.0057	0.8655	0.1827	0.0013	2629	25	2657	13	*2678*	*12*	1.8
9427-104.2	334	185	0.57	198	6	4.28E-05	1.73E-05	0.0007	0.1575	0.0021	12.965	0.166	0.5133	0.0057	0.9224	0.1832	0.0009	2671	24	2677	12	*2682*	*8*	0.4
9427-31.1	219	107	0.51	129	2	1.82E-05	2.58E-05	0.0003	0.1476	0.0041	13.026	0.529	0.5154	0.0123	0.6792	0.1833	0.0055	2680	52	2682	39	*2683*	*51*	0.1
9427-15.1	231	165	0.74	138	1	6.13E-06	1.47E-05	0.0001	0.1992	0.0032	12.707	0.162	0.5010	0.0058	0.9454	0.1840	0.0008	2618	25	2658	12	*2689*	*7*	2.6
9427-6.1	217	147	0.70	129	0	5.33E-06	1.60E-05	0.0001	0.1894	0.0023	12.763	0.161	0.5029	0.0058	0.9462	0.1841	0.0008	2626	25	2662	12	*2690*	*7*	2.4
9427-16.1	121	110	0.94	77	1	1.42E-05	4.66E-05	0.0003	0.2592	0.0041	13.151	0.239	0.5172	0.0064	0.7606	0.1844	0.0022	2687	27	2691	17	*2693*	*20*	0.2
9427-86.1	189	64	0.35	105	2	2.34E-05	1.74E-05	0.0004	0.0901	0.0017	12.942	0.165	0.5066	0.0056	0.9121	0.1853	0.0010	2642	24	2675	12	*2701*	*9*	2.2
9427-34.1	225	134	0.62	134	1	9.63E-06	1.70E-05	0.0002	0.1740	0.0022	13.049	0.176	0.5107	0.0064	0.9653	0.1853	0.0007	2660	27	2683	13	*2701*	*6*	1.5
9427-3.1	189	122	0.67	112	1	6.43E-06	2.27E-05	0.0001	0.1806	0.0024	13.018	0.221	0.5070	0.0075	0.9241	0.1862	0.0012	2644	32	2681	16	*2709*	*11*	2.4
Analytical details: mount IP463, 23 µm spot size, primary beam intensity 7-10 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
07CYA-B47c (lab# z9424) S-type granite, 64.5048°N 82.69553°W																								
9424-133.2	2936	48	0.02	919	0	7.00E-08	2.23E-06	0.0000	0.0048	0.0002	5.122	0.062	0.3254	0.0036	0.9529	0.1142	0.0004	1816	18	1840	10	1867	7	2.7
9424-133.1	2455	54	0.02	971	4	4.43E-06	2.73E-06	0.0001	0.0068	0.0002	7.726	0.090	0.4011	0.0045	0.9803	0.1397	0.0003	2174	21	2200	11	2224	4	2.2
9424-45.1	1795	90	0.05	917	5	5.94E-06	8.06E-06	0.0001	0.0136	0.0005	12.080	0.169	0.4998	0.0054	0.8447	0.1753	0.0013	2613	23	2611	13	2609	13	-0.2
9424-86.2	1383	51	0.04	661	11	1.96E-05	7.37E-06	0.0003	0.0099	0.0005	11.637	0.176	0.4671	0.0069	0.9908	0.1807	0.0004	2471	30	2576	14	*2659*	*3*	7.1
9424-41.1	1738	93	0.06	909	2	2.22E-06	4.34E-06	0.0000	0.0154	0.0003	12.706	0.144	0.5084	0.0054	0.9659	0.1813	0.0005	2650	23	2658	11	*2665*	*5*	0.6
9424-18.1	1780	136	0.08	956	0	4.20E-07	2.14E-06	0.0000	0.0223	0.0004	13.040	0.175	0.5181	0.0064	0.9555	0.1825	0.0007	2691	27	2683	13	*2676*	*7*	-0.6
9424-39.3	1249	26	0.02	596	4	7.38E-06	4.99E-06	0.0001	0.0057	0.0003	11.791	0.346	0.4665	0.0098	0.7910	0.1833	0.0033	2468	43	2588	28	*2683*	*30*	8
9424-87.2	1756	83	0.05	982	1	1.39E-06	2.01E-06	0.0000	0.0131	0.0002	13.736	0.181	0.5433	0.0055	0.8403	0.1834	0.0013	2797	23	2732	13	*2684*	*12*	-4.2
9424-39.1	1171	25	0.02	623	1	1.53E-06	3.20E-06	0.0000	0.0059	0.0003	13.268	0.254	0.5194	0.0077	0.8384	0.1853	0.0020	2697	33	2699	18	*2700*	*17*	0.1
9424-54.2	1841	84	0.05	958	2	2.85E-06	2.83E-06	0.0001	0.0128	0.0002	12.953	0.539	0.5050	0.0058	0.3932	0.1860	0.0072	2635	25	2676	40	*2707*	*65*	2.7
9424-138.2	1008	92	0.09	573	3	6.75E-06	3.33E-06	0.0001	0.0269	0.0004	15.066	0.192	0.5371	0.0055	0.8675	0.2034	0.0013	2771	23	2819	12	2854	10	2.9
9424-107.1	1296	77	0.06	767	0	1.70E-07	2.00E-06	0.0000	0.0168	0.0003	15.892	0.172	0.5633	0.0058	0.9802	0.2046	0.0004	2880	24	2870	10	2864	4	-0.6
9424-3.2	404	20	0.05	243	5	2.39E-05	1.78E-05	0.0004	0.0125	0.0008	16.625	0.276	0.5726	0.0080	0.8939	0.2106	0.0016	2919	33	2913	16	2910	12	-0.3
9424-12.1	668	244	0.38	434	3	1.02E-05	5.29E-06	0.0002	0.1026	0.0016	16.990	0.465	0.5724	0.0136	0.9165	0.2153	0.0024	2918	56	2934	27	2946	18	0.9
9424-95.2	757	469	0.64	507	3	7.89E-06	6.20E-06	0.0001	0.1786	0.0012	16.681	0.173	0.5574	0.0056	0.9923	0.2171	0.0003	2856	23	2917	10	2959	2	3.5
9424-65.2	860	15	0.02	519	4	1.00E-05	1.00E-05	0.0002	0.0041	0.0004	17.390	0.199	0.5738	0.0062	0.9736	0.2198	0.0006	2923	26	2957	11	2979	4	1.9
9424-46.1	266	42	0.16	174	3	2.53E-05	1.23E-05	0.0004	0.0433	0.0013	18.307	0.253	0.6025	0.0068	0.8748	0.2204	0.0015	3040	27	3006	13	2984	11	-1.9
9424-85.1	111	60	0.56	74	19	3.47E-04	6.36E-05	0.0060	0.1404	0.0038	17.482	0.287	0.5752	0.0080	0.9026	0.2204	0.0016	2929	33	2962	16	2984	12	1.8
9424-86.1	329	212	0.67	234	0	1.75E-06	1.04E-05	0.0000	0.1805	0.0080	17.946	1.188	0.5884	0.0263	0.7574	0.2212	0.0096	2983	108	2987	66	2990	72	0.2
9424-95.1	231	108	0.48	155	2	1.65E-05	1.75E-05	0.0003	0.1290	0.0018	17.688	0.205	0.5793	0.0063	0.9708	0.2215	0.0006	2946	26	2973	11	2991	5	1.5
9424-65.1	69	10	0.16	43	26	7.35E-04	9.15E-05	0.0128	0.0248	0.0040	17.600	0.353	0.5759	0.0072	0.7120	0.2217	0.0031	2932	30	2968	19	2993	23	2

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb/^{206}Pb	±^{204}Pb/^{206}Pb	f(206)^{204}	^{208*}Pb/^{206*}Pb	±^{208}Pb/^{206}Pb	^{207*}Pb/^{235}U	±^{207}Pb/^{235}U	^{206*}Pb/^{238}U	±^{206}Pb/^{238}U	Corr coeff	^{207*}Pb/^{206*}Pb	±^{207}Pb/^{206}Pb	Apparent ages (Ma) ^{206}Pb/^{238}U	±^{206}Pb/^{238}U	^{207}Pb/^{235}U	±^{207}Pb/^{235}U	^{207}Pb/^{206}Pb	±^{207}Pb/^{206}Pb	Disc. (%)
07CYA-B47c (lab# z9424) S-type granite, 64.5048°N 82.69553°W (cont.)																								
9424-101.1	83	45	0.56	55	1	2.08E-05	4.18E-05	0.0004	0.1535	0.0038	17.155	0.293	0.5603	0.0077	0.8645	0.2221	0.0019	2868	32	2944	17	2996	14	4.3
9424-68.1	86	40	0.48	60	4	8.85E-05	4.00E-05	0.0015	0.1321	0.0059	18.182	0.312	0.5937	0.0089	0.9208	0.2221	0.0015	3004	36	2999	17	2996	11	-0.3
9424-87.1	102	83	0.84	71	0	1.00E-05	1.00E-05	0.0002	0.2323	0.0047	17.090	0.240	0.5573	0.0067	0.9030	0.2224	0.0014	2855	28	2940	14	2998	10	4.8
9424-56.1	85	37	0.45	60	1	1.24E-05	2.64E-05	0.0002	0.1289	0.0058	18.536	0.844	0.6027	0.0182	0.7483	0.2231	0.0068	3041	74	3018	45	3003	50	-1.3
9424-40.1	150	88	0.61	103	3	3.40E-05	2.96E-05	0.0006	0.1593	0.0029	17.897	0.242	0.5812	0.0069	0.9225	0.2233	0.0012	2954	28	2984	13	3005	8	1.7
9424-54.1	286	70	0.25	187	0	2.43E-06	8.64E-06	0.0000	0.0678	0.0012	18.120	0.225	0.5878	0.0066	0.9492	0.2236	0.0009	2980	27	2996	12	3007	6	0.9
9424-53.1	180	67	0.38	117	2	2.40E-05	1.21E-05	0.0004	0.1055	0.0020	17.508	0.204	0.5669	0.0061	0.9593	0.2240	0.0007	2895	25	2963	11	3010	5	3.8
9424-113.1	221	171	0.80	165	4	3.11E-05	1.26E-05	0.0005	0.2064	0.0041	18.748	0.243	0.6060	0.0074	0.9724	0.2244	0.0007	3054	30	3029	13	3013	5	-1.4
9424-138.1	149	60	0.42	100	2	3.31E-05	1.88E-05	0.0006	0.1117	0.0032	18.062	0.639	0.5837	0.0145	0.7787	0.2244	0.0050	2964	59	2993	35	3013	36	1.6
9424-97.1	245	3	0.01	146	9	7.40E-05	2.20E-05	0.0013	0.0027	0.0009	17.576	1.033	0.5646	0.0183	0.6479	0.2258	0.0102	2886	76	2967	58	3022	74	4.5
9424-139.1	127	42	0.34	84	2	3.49E-05	2.66E-05	0.0006	0.0927	0.0021	18.292	0.245	0.5865	0.0065	0.8837	0.2262	0.0014	2975	26	3005	13	3025	10	1.7
9424-122.1	131	84	0.67	91	0	7.10E-06	2.66E-05	0.0001	0.1810	0.0029	17.969	0.222	0.5757	0.0063	0.9350	0.2264	0.0010	2931	26	2988	12	3026	7	3.1
9424-77.1	209	66	0.33	140	8	7.36E-05	2.07E-05	0.0013	0.0813	0.0015	18.501	0.241	0.5923	0.0062	0.8716	0.2266	0.0015	2999	25	3016	13	3028	10	1
9424-116.1	226	88	0.40	153	0	6.90E-07	1.82E-05	0.0000	0.1045	0.0019	18.486	0.234	0.5908	0.0067	0.9393	0.2270	0.0010	2992	27	3015	12	3031	7	1.3
9424-120.1	163	79	0.50	112	2	2.95E-05	3.06E-05	0.0005	0.1363	0.0041	18.283	0.255	0.5838	0.0072	0.9331	0.2271	0.0012	2964	29	3005	13	3032	8	2.2
9424-44.1	80	45	0.58	58	2	4.69E-05	3.98E-05	0.0008	0.1556	0.0034	18.950	0.255	0.6038	0.0069	0.9021	0.2276	0.0013	3045	28	3039	13	3035	9	-0.3
9424-10.1	175	89	0.52	124	4	4.55E-05	2.14E-05	0.0008	0.1394	0.0025	18.883	0.248	0.6016	0.0067	0.8990	0.2277	0.0013	3036	27	3036	13	3036	9	0
9424-125.1	165	58	0.36	111	2	2.57E-05	1.53E-05	0.0005	0.0967	0.0022	18.538	0.222	0.5899	0.0064	0.9432	0.2279	0.0009	2989	26	3018	12	3037	6	1.6
9424-33.1	280	361	1.33	223	18	1.30E-04	3.35E-05	0.0023	0.3522	0.0043	18.388	0.324	0.5849	0.0080	0.8403	0.2280	0.0022	2969	32	3010	17	3038	16	2.3
9424-110.1	417	338	0.84	315	1	3.83E-06	6.23E-06	0.0001	0.2285	0.0026	18.947	0.223	0.6010	0.0062	0.9298	0.2286	0.0010	3034	25	3039	11	3042	7	0.3
9424-119.1	299	135	0.47	207	4	2.87E-05	1.11E-05	0.0005	0.1212	0.0023	18.733	0.243	0.5938	0.0072	0.9675	0.2288	0.0008	3005	29	3028	13	3044	5	1.3
9424-20.1	174	24	0.14	112	6	6.74E-05	2.75E-05	0.0012	0.0394	0.0015	18.582	0.253	0.5888	0.0067	0.8935	0.2289	0.0014	2985	27	3020	13	3044	10	2
9424-121.1	209	140	0.69	152	1	1.00E-05	1.00E-05	0.0002	0.1789	0.0034	18.935	0.277	0.6000	0.0075	0.9049	0.2289	0.0014	3030	30	3039	14	3044	10	0.5
9424-38.1	142	43	0.31	96	1	1.13E-05	2.77E-05	0.0002	0.0827	0.0018	18.915	0.245	0.5991	0.0068	0.9197	0.2290	0.0012	3026	27	3037	13	3045	8	0.6
9424-71.1	112	72	0.67	81	7	1.21E-04	3.46E-05	0.0021	0.1715	0.0029	18.909	0.255	0.5988	0.0068	0.8946	0.2290	0.0014	3025	27	3037	13	3045	10	0.7
9424-58.1	195	163	0.87	146	16	1.63E-04	5.44E-05	0.0028	0.2293	0.0082	18.847	0.918	0.5968	0.0189	0.7344	0.2291	0.0076	3017	77	3034	48	3045	54	0.9
9424-39.2	132	93	0.73	96	1	1.84E-05	3.34E-05	0.0003	0.1880	0.0041	18.922	0.268	0.5991	0.0075	0.9317	0.2291	0.0012	3026	30	3038	14	3046	8	0.6
9424-3.1	190	133	0.73	138	1	1.00E-05	1.00E-05	0.0002	0.1930	0.0019	18.760	0.404	0.5931	0.0122	0.9808	0.2294	0.0010	3002	50	3030	21	3048	7	1.5
9424-9.1	308	330	1.11	247	2	1.00E-05	1.00E-05	0.0002	0.2790	0.0022	19.548	0.218	0.6176	0.0065	0.9718	0.2296	0.0006	3100	26	3069	11	3049	4	-1.7
9424-13.1	224	174	0.80	166	2	1.72E-05	2.17E-05	0.0003	0.2138	0.0023	18.917	0.250	0.5971	0.0068	0.9143	0.2298	0.0012	3018	28	3038	13	3050	9	1.1
9424-109.1	118	52	0.45	80	4	7.30E-05	2.97E-05	0.0013	0.1243	0.0025	18.518	0.308	0.5844	0.0084	0.9134	0.2298	0.0016	2967	34	3017	16	3051	11	2.8
9424-75.1	88	75	0.88	63	10	2.19E-04	7.02E-05	0.0038	0.2244	0.0049	18.137	0.306	0.5722	0.0066	0.7635	0.2299	0.0025	2917	27	2997	16	3051	18	4.4
9424-114.1	132	74	0.57	93	4	5.28E-05	2.68E-05	0.0009	0.1534	0.0031	18.774	0.473	0.5916	0.0112	0.8207	0.2302	0.0033	2996	45	3030	25	3053	23	1.9
9424-11.1	131	56	0.44	89	5	7.44E-05	2.13E-05	0.0013	0.1138	0.0029	18.660	0.252	0.5877	0.0072	0.9502	0.2303	0.0010	2980	29	3024	13	3054	7	2.4
9424-28.1	135	42	0.32	90	1	1.00E-05	1.00E-05	0.0002	0.0840	0.0016	18.845	0.419	0.5924	0.0121	0.9553	0.2307	0.0015	2999	49	3034	22	3057	11	1.9
9424-47.1	93	65	0.72	66	9	1.89E-04	1.09E-04	0.0033	0.1878	0.0057	18.563	0.315	0.5828	0.0069	0.7767	0.2310	0.0025	2960	28	3019	17	3059	17	3.2
9424-123.1	230	95	0.43	158	1	9.63E-06	8.43E-06	0.0002	0.1217	0.0032	18.868	0.228	0.5906	0.0067	0.9668	0.2317	0.0007	2992	27	3035	12	3064	5	2.3
9424-30.1	148	82	0.57	104	1	1.00E-05	1.00E-05	0.0002	0.1500	0.0032	18.765	0.220	0.5871	0.0063	0.9499	0.2318	0.0009	2977	25	3030	11	3065	6	2.8
9424-29.1	193	99	0.53	135	12	1.18E-04	5.90E-05	0.0020	0.1340	0.0035	19.006	0.282	0.5943	0.0066	0.8149	0.2320	0.0020	3007	27	3042	14	3066	14	1.9
9424-43.1	120	62	0.53	84	13	2.06E-04	4.79E-05	0.0036	0.1357	0.0058	18.959	0.266	0.5928	0.0073	0.9229	0.2320	0.0013	3001	29	3040	14	3066	9	2.1
9424-25.1	132	70	0.55	94	1	1.59E-05	1.41E-05	0.0003	0.1500	0.0019	19.163	0.453	0.5989	0.0125	0.9278	0.2321	0.0021	3025	50	3050	23	3066	14	1.3
9424-41.2	181	92	0.53	128	1	1.00E-05	1.00E-05	0.0002	0.1370	0.0028	19.232	0.372	0.6001	0.0066	0.6601	0.2324	0.0034	3030	27	3054	19	3069	24	1.3
9424-24.1	92	62	0.70	67	1	2.57E-05	2.90E-05	0.0005	0.1824	0.0056	19.236	0.445	0.5956	0.0127	0.9597	0.2343	0.0015	3012	52	3054	23	3081	11	2.2
9424-80.1	74	38	0.54	51	9	2.51E-04	6.48E-05	0.0044	0.1419	0.0059	18.806	0.846	0.5801	0.0096	0.4771	0.2351	0.0094	2949	39	3032	44	3087	65	4.5
9424-22.1	155	92	0.61	116	1	1.00E-05	1.00E-05	0.0002	0.1694	0.0023	21.272	0.501	0.6151	0.0133	0.9536	0.2508	0.0018	3091	53	3151	23	3190	11	3.1
Analytical details: mount IP463, 23 µm spot size, primary beam intensity 7-10 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
07CYA-M03b (lab# z9421) quartzite, 64.54921°N 84.36997°W																								
9421-104.2	259	59	0.23	86	31	4.21E-04	4.17E-05	0.0073	0.0619	0.0022	5.049	0.085	0.3286	0.0037	0.7519	0.1114	0.0013	1832	18	1828	14	1823	20	-0.5
9421-104.1	268	58	0.22	86	1	1.80E-05	3.03E-05	0.0003	0.0651	0.0018	4.896	0.069	0.3182	0.0037	0.8852	0.1116	0.0007	1781	18	1801	12	1826	12	2.5
9421-22.2	421	238	0.58	142	5	4.77E-05	1.55E-05	0.0008	0.1604	0.0021	4.782	0.070	0.3071	0.0042	0.9621	0.1130	0.0005	1726	21	1782	12	1848	7	6.6
9421-22.1	348	244	0.72	127	19	1.94E-04	3.43E-05	0.0034	0.2045	0.0049	5.007	0.067	0.3206	0.0035	0.8771	0.1133	0.0007	1793	17	1821	11	1853	12	3.3
9421-91.1	138	72	0.54	62	3	6.04E-05	4.97E-05	0.0011	0.1419	0.0046	8.982	0.146	0.3992	0.0044	0.7646	0.1632	0.0017	2165	20	2336	15	2489	18	13

Notes (see Stern, 1997):
Sample locations are given relative to the NAD27 datum
Spot name follows the convention x-y.z;where x = sample number, y = grain number and z = spot number.Multiple analyses in an in dividual spot are labelled as x-y.z.z
Uncertainties reported at 1s (absolute) and are calculated by numerical propagation of all known sources of error
f206204 refers to mole fraction of total 206Pb that is due to common Pb, calculated using the 204Pb-method; common Pb composition used is the surface blank (4/6:0.05770; 7/6:0.89500; 8/6:2.13840)
* refers to radiogenic Pb (corrected for common Pb)
Discordance relative to origin = 100 * (1-(206Pb/238U age)/(207Pb/206Pb age))
Calibration standard 6266; U = 910 ppm; Age = 559 Ma; 206Pb/238U = 0.09059
Th/U calibration: F =0.03900*UO +0.85600
The notes above apply to all data in Table 2.

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb/^{206}Pb	±^{204}Pb/^{206}Pb	f(206)^{204}	^{208*}Pb/^{206*}Pb	±^{208}Pb/^{206}Pb	^{207*}Pb/^{235}U	±^{207}Pb/^{235}U	^{206*}Pb/^{238}U	±^{206}Pb/^{238}U	Corr coeff	^{207*}Pb/^{206*}Pb	±^{207}Pb/^{206}Pb	Apparent ages (Ma) ^{206}Pb/^{238}U	±^{206}Pb/^{238}U	^{207}Pb/^{235}U	±^{207}Pb/^{235}U	^{207}Pb/^{206}Pb	±^{207}Pb/^{206}Pb	Disc. (%)
07CYA-M03b (lab# z9421) quartzite, 64.54921°N 84.36997°W (cont.)																								
9421-47.1	149	55	0.38	71	26	4.57E-04	4.88E-05	0.0079	0.1056	0.0027	10.283	0.151	0.4349	0.0052	0.8732	0.1715	0.0012	2328	23	2461	14	2572	12	9.5
9421-94.1	712	16	0.02	349	2	6.88E-06	4.34E-06	0.0001	0.0058	0.0003	11.667	0.126	0.4824	0.0050	0.9772	0.1754	0.0004	2538	22	2578	10	*2610*	*4*	2.8
9421-94.2	487	166	0.35	265	4	1.74E-05	9.27E-06	0.0003	0.1109	0.0013	11.979	0.143	0.4904	0.0054	0.9586	0.1771	0.0006	2573	23	2603	11	*2626*	*6*	2
9421-94.3	749	91	0.13	378	4	1.40E-05	6.64E-06	0.0002	0.0345	0.0006	11.622	0.163	0.4862	0.0061	0.9373	0.1734	0.0009	2554	26	2575	13	2590	8	1.4
9421-94.4	131	125	0.99	78	4	7.51E-05	2.88E-05	0.0013	0.2724	0.0035	11.582	0.225	0.4793	0.0066	0.7890	0.1753	0.0021	2524	29	2571	18	*2608*	*20*	3.2
9421-13.1	212	218	1.06	132	18	2.02E-04	3.32E-05	0.0035	0.2919	0.0034	12.057	0.173	0.4928	0.0062	0.9211	0.1774	0.0010	2583	27	2609	14	2629	9	1.8
9421-13.2	231	244	1.09	132	2	2.51E-05	1.50E-05	0.0004	0.2906	0.0034	11.238	0.142	0.4505	0.0051	0.9417	0.1809	0.0008	2398	23	2543	12	2661	7	9.9
9421-105.1	999	316	0.33	548	1	2.87E-06	4.70E-06	0.0001	0.0899	0.0010	12.620	0.143	0.5006	0.0053	0.9607	0.1829	0.0006	2616	23	2652	11	2679	5	2.3
9421-76.1	733	813	1.15	484	4	1.22E-05	5.07E-06	0.0002	0.3159	0.0016	12.920	0.140	0.5113	0.0053	0.9764	0.1833	0.0004	2662	23	2674	10	2683	4	0.8
9421-124.1	42	15	0.37	22	5	2.89E-04	1.00E-04	0.0050	0.0913	0.0069	12.111	0.621	0.4786	0.0112	0.5590	0.1835	0.0079	2521	49	2613	49	2685	73	6.1
9421-13.3	171	167	1.01	106	1	1.05E-05	1.28E-05	0.0002	0.2772	0.0037	12.522	0.199	0.4946	0.0070	0.9367	0.1836	0.0010	2591	30	2644	15	2686	9	3.5
9421-32.1	169	165	1.01	105	18	2.53E-04	4.68E-05	0.0044	0.2830	0.0047	12.537	0.272	0.4946	0.0079	0.8106	0.1838	0.0024	2591	34	2645	21	2688	21	3.6
9421-9.1	78	28	0.38	43	11	3.25E-04	9.38E-05	0.0056	0.0939	0.0049	12.722	0.399	0.4988	0.0106	0.7616	0.1850	0.0038	2609	46	2659	30	2698	34	3.3
9421-83.1	80	60	0.78	46	19	5.71E-04	1.33E-04	0.0099	0.1963	0.0094	12.422	0.243	0.4855	0.0059	0.7116	0.1856	0.0026	2551	26	2637	19	2703	23	5.6
9421-19.1	244	270	1.15	158	17	1.65E-04	4.46E-05	0.0029	0.3142	0.0062	12.855	0.181	0.5020	0.0059	0.8913	0.1857	0.0012	2622	25	2669	13	2705	11	3.1
9421-128.1	129	114	0.91	80	0	4.82E-06	6.43E-05	0.0001	0.2483	0.0096	12.925	0.199	0.5032	0.0062	0.8619	0.1863	0.0015	2627	27	2674	15	2710	13	3
9421-45.1	55	28	0.53	28	21	9.56E-04	2.73E-04	0.0166	0.1387	0.0113	11.590	0.406	0.4503	0.0072	0.5608	0.1867	0.0055	2396	32	2572	33	2713	49	11.7
9421-132.1	58	65	1.17	36	4	1.49E-04	5.81E-05	0.0026	0.3186	0.0059	12.459	0.196	0.4835	0.0059	0.8377	0.1869	0.0016	2543	26	2640	15	2715	14	6.3
9421-68.1	99	49	0.51	59	24	5.29E-04	8.67E-05	0.0092	0.1291	0.0065	13.624	0.264	0.5285	0.0071	0.7695	0.1870	0.0023	2735	30	2724	19	2716	21	-0.7
9421-99.1	769	278	0.37	410	40	1.27E-04	1.53E-05	0.0022	0.1071	0.0010	12.331	0.151	0.4783	0.0053	0.9434	0.1870	0.0008	2520	23	2630	12	2716	7	7.2
9421-18.1	272	105	0.40	157	1	6.70E-06	1.19E-05	0.0001	0.1080	0.0015	13.380	0.171	0.5172	0.0058	0.9312	0.1877	0.0009	2687	25	2707	12	2722	8	1.3
9421-40.1	61	51	0.87	40	20	7.02E-04	1.40E-04	0.0122	0.2197	0.0116	13.933	0.455	0.5371	0.0121	0.7724	0.1882	0.0039	2771	51	2745	31	2726	35	-1.7
9421-130.1	322	140	0.45	178	3	1.87E-05	1.44E-05	0.0003	0.1220	0.0015	12.738	0.308	0.4887	0.0055	0.5715	0.1890	0.0038	2565	24	2661	23	2734	33	6.2
9421-16.1	202	116	0.59	121	1	1.31E-05	2.52E-05	0.0002	0.1582	0.0022	13.620	0.470	0.5172	0.0063	0.4667	0.1910	0.0059	2687	27	2724	33	2751	51	2.3
9421-114.1	227	54	0.24	126	12	1.24E-04	5.82E-05	0.0022	0.0654	0.0028	13.603	0.198	0.5130	0.0057	0.8275	0.1923	0.0016	2669	24	2722	14	2762	14	3.4
9421-25.1	57	35	0.64	36	23	8.66E-04	1.30E-04	0.0150	0.1771	0.0126	14.042	0.332	0.5270	0.0076	0.7000	0.1932	0.0033	2729	32	2753	23	2770	28	1.5
9421-127.1	43	11	0.26	23	3	1.72E-04	9.50E-05	0.0030	0.0659	0.0057	13.375	0.575	0.5008	0.0134	0.7112	0.1937	0.0059	2617	58	2707	41	2774	51	5.6
9421-109.1	118	49	0.43	66	20	4.03E-04	8.41E-05	0.0070	0.1084	0.0042	13.425	0.235	0.4967	0.0070	0.8641	0.1961	0.0017	2599	30	2710	17	2794	15	7
9421-87.1	180	110	0.63	105	13	1.70E-04	5.67E-05	0.0029	0.1666	0.0060	13.391	0.337	0.4951	0.0095	0.8301	0.1962	0.0028	2593	41	2708	24	2794	23	7.2
9421-31.1	32	22	0.70	21	2	1.07E-04	7.67E-05	0.0019	0.1803	0.0059	14.584	0.287	0.5382	0.0075	0.7846	0.1965	0.0024	2776	31	2788	19	2797	20	0.8
9421-54.1	84	50	0.61	51	1	3.43E-05	3.65E-05	0.0006	0.1656	0.0035	14.058	0.290	0.5162	0.0077	0.8020	0.1975	0.0025	2683	33	2754	20	2806	20	4.4
9421-33.1	319	184	0.60	199	16	1.09E-04	2.73E-05	0.0019	0.1590	0.0028	14.599	0.180	0.5358	0.0060	0.9473	0.1976	0.0008	2766	25	2789	12	2807	7	1.5
9421-91.2	105	41	0.40	59	1	2.15E-05	3.67E-05	0.0004	0.1142	0.0026	13.564	0.200	0.4970	0.0067	0.9515	0.1979	0.0009	2601	29	2720	14	2809	7	7.4
9421-23.1	92	45	0.50	56	17	4.13E-04	1.24E-04	0.0072	0.1394	0.0065	14.414	0.262	0.5262	0.0064	0.7474	0.1987	0.0024	2725	27	2777	17	2815	20	3.2
9421-4.1	81	15	0.19	46	15	3.99E-04	1.36E-04	0.0069	0.0567	0.0056	14.432	0.505	0.5264	0.0095	0.6137	0.1988	0.0055	2726	40	2779	34	2817	46	3.2
9421-126.1	57	38	0.69	36	6	2.16E-04	6.35E-05	0.0037	0.1810	0.0084	14.744	0.266	0.5346	0.0075	0.8422	0.2000	0.0020	2761	31	2799	17	2826	16	2.3
9421-89.1	74	53	0.73	44	19	6.11E-04	1.57E-04	0.0106	0.1772	0.0080	13.720	0.354	0.4974	0.0076	0.6828	0.2001	0.0038	2602	33	2731	25	2827	31	7.9
9421-20.1	147	54	0.38	84	20	3.18E-04	5.71E-05	0.0055	0.1010	0.0033	14.045	0.200	0.5084	0.0057	0.8544	0.2004	0.0015	2650	25	2753	14	2829	12	6.3
9421-43.1	112	79	0.73	70	8	1.69E-04	4.58E-05	0.0029	0.1956	0.0035	14.392	0.235	0.5194	0.0069	0.8740	0.2010	0.0016	2696	29	2776	16	2834	13	4.9
9421-50.1	131	63	0.49	81	1	1.38E-05	3.55E-05	0.0002	0.1376	0.0028	14.822	0.226	0.5336	0.0067	0.8826	0.2014	0.0015	2757	28	2804	15	2838	12	2.9
9421-91.3	155	72	0.48	90	1	1.50E-05	1.42E-05	0.0003	0.1242	0.0029	14.220	0.240	0.5095	0.0068	0.8549	0.2024	0.0018	2655	29	2765	16	2846	14	6.7
9421-2.1	83	31	0.38	46	6	1.70E-04	5.84E-05	0.0030	0.1025	0.0037	13.834	0.287	0.4956	0.0073	0.7921	0.2025	0.0026	2595	32	2738	20	2846	21	8.8
9421-71.1	159	43	0.28	94	19	2.59E-04	4.61E-05	0.0045	0.0734	0.0025	15.085	0.235	0.5370	0.0069	0.8798	0.2038	0.0015	2771	29	2821	15	2856	12	3
9421-15.1	31	28	0.95	20	13	9.46E-04	3.26E-04	0.0164	0.2444	0.0147	15.018	0.585	0.5322	0.0088	0.5293	0.2047	0.0068	2751	37	2816	38	2864	55	4
9421-14.1	33	18	0.56	21	2	9.71E-05	1.28E-04	0.0017	0.1532	0.0119	15.220	0.304	0.5387	0.0072	0.7539	0.2049	0.0027	2778	30	2829	19	2866	22	3.1
9421-26.1	51	9	0.17	29	20	8.51E-04	2.19E-04	0.0148	0.0434	0.0090	15.024	0.390	0.5317	0.0081	0.6813	0.2049	0.0039	2749	34	2817	25	2866	31	4.1
9421-28.1	59	25	0.45	34	0	1.00E-05	1.00E-05	0.0002	0.1158	0.0025	14.520	0.318	0.5111	0.0084	0.8228	0.2061	0.0026	2661	36	2784	21	2875	21	7.4
9421-74.1	121	112	0.96	87	22	3.76E-04	6.23E-05	0.0065	0.2583	0.0047	16.174	0.286	0.5682	0.0084	0.8934	0.2065	0.0017	2900	35	2887	17	2878	13	-0.8
9421-51.1	166	95	0.59	108	32	4.05E-04	6.30E-05	0.0070	0.1616	0.0037	15.937	0.248	0.5505	0.0066	0.8390	0.2100	0.0018	2827	27	2873	15	2905	14	2.7
9421-21.1	569	120	0.22	345	6	2.32E-05	8.45E-06	0.0004	0.0583	0.0007	16.129	0.181	0.5559	0.0058	0.9624	0.2104	0.0007	2850	24	2884	11	2909	5	2
9421-92.1	203	74	0.37	126	19	2.02E-04	7.72E-05	0.0035	0.0973	0.0035	15.971	0.248	0.5504	0.0064	0.8232	0.2105	0.0019	2827	27	2875	15	2909	14	2.8
9421-72.1	137	70	0.53	90	4	5.36E-05	4.68E-05	0.0009	0.1403	0.0030	16.346	0.251	0.5620	0.0073	0.9003	0.2110	0.0014	2875	30	2897	15	2913	11	1.3
9421-61.1	43	12	0.28	26	3	1.43E-04	8.56E-05	0.0025	0.0770	0.0045	16.165	0.304	0.5548	0.0082	0.8482	0.2113	0.0021	2845	34	2887	18	2916	16	2.4
9421-59.1	90	44	0.51	56	22	5.22E-04	9.73E-05	0.0090	0.1286	0.0069	15.718	0.285	0.5373	0.0071	0.8002	0.2122	0.0023	2772	30	2860	17	2922	18	5.1
9421-131.1	243	112	0.47	154	3	2.36E-05	1.36E-05	0.0004	0.1302	0.0039	16.027	0.393	0.5472	0.0098	0.8037	0.2124	0.0031	2814	41	2878	24	2924	24	3.8
9421-122.1	81	34	0.43	52	2	3.90E-05	3.53E-05	0.0007	0.1072	0.0056	16.678	0.486	0.5648	0.0079	0.5801	0.2142	0.0051	2886	32	2916	28	2937	39	1.7
9421-57.1	109	45	0.43	68	22	4.22E-04	8.66E-05	0.0073	0.1038	0.0045	16.403	0.272	0.5514	0.0071	0.8453	0.2157	0.0019	2831	30	2901	16	2949	14	4
9421-113.1	150	157	1.08	103	27	3.87E-04	6.61E-05	0.0067	0.2666	0.0067	16.023	0.425	0.5386	0.0065	0.5592	0.2157	0.0048	2778	27	2878	26	2949	36	5.8
9421-129.1	247	124	0.52	184	3	2.55E-05	9.84E-06	0.0004	0.1439	0.0019	22.255	0.255	0.6177	0.0065	0.9525	0.2613	0.0009	3101	26	3195	11	3255	6	4.7

Analytical details: mount IP463, 23 µm spot size, primary beam intensity 7-10 nA, 6 scans
Error in 206Pb/238U calibration 1.0%
207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb / ^{206}Pb	±^{204}Pb / ^{206}Pb	f(206)^{204}	^{208*}Pb / ^{206*}Pb	±^{208}Pb / ^{206}Pb	^{207*}Pb / ^{235}U	±^{207}Pb / ^{235}U	^{206*}Pb / ^{238}U	±^{206}Pb / ^{238}U	Corr coeff	^{207*}Pb / ^{206*}Pb	±^{207}Pb / ^{206}Pb	Apparent ages (Ma) ^{206}Pb / ^{238}U	±^{206}Pb / ^{238}U	^{207}Pb / ^{235}U	±^{207}Pb / ^{235}U	^{207}Pb / ^{206}Pb	±^{207}Pb / ^{206}Pb	Disc. (%)
07CYA-M98 (lab# z9425) quartz porphyry tonalite, 63.83916°N 85.01008°W																								
9425-26.1	118	109	0.96	49	2	4.47E-05	4.82E-05	0.0008	0.2732	0.0044	5.462	0.087	0.3460	0.0040	0.8084	0.1145	0.0011	1915	19	1895	14	1872	17	-2.3
9425-2.1	45	22	0.50	16	2	1.81E-04	1.90E-04	0.0031	0.1469	0.0157	5.358	0.183	0.3342	0.0051	0.5534	0.1163	0.0033	1859	25	1878	30	1900	52	2.2
9425-112.1	38	106	2.88	22	2	2.00E-04	1.19E-04	0.0035	0.7991	0.0145	5.510	0.137	0.3432	0.0047	0.6501	0.1165	0.0022	1902	23	1902	22	*1902*	*35*	0
9425-96.1	58	163	2.91	33	4	2.09E-04	9.95E-05	0.0036	0.8254	0.0176	5.417	0.122	0.3370	0.0042	0.6491	0.1166	0.0020	1872	20	1888	19	*1905*	*31*	1.7
9425-26.3	153	172	1.16	60	7	1.75E-04	7.14E-05	0.0030	0.3259	0.0052	5.118	0.090	0.3182	0.0039	0.7790	0.1167	0.0013	1781	19	1839	15	1906	20	6.6
9425-54.1	464	31	0.07	159	2	1.22E-05	1.02E-05	0.0002	0.0195	0.0007	5.650	0.077	0.3512	0.0043	0.9476	0.1167	0.0005	1940	21	1924	12	1906	8	-1.8
9425-4.1	81	58	0.73	31	0	1.00E-05	1.00E-05	0.0002	0.2067	0.0040	5.485	0.102	0.3384	0.0044	0.7805	0.1175	0.0014	1879	21	1898	16	*1919*	*21*	2.1
9425-26.2	109	95	0.90	41	4	1.40E-04	6.00E-05	0.0024	0.2532	0.0086	5.186	0.087	0.3199	0.0037	0.7732	0.1176	0.0013	1789	18	1850	14	*1920*	*19*	6.8
9425-1.1	77	67	0.90	31	0	1.00E-05	1.00E-05	0.0002	0.2611	0.0068	5.523	0.084	0.3392	0.0043	0.8849	0.1181	0.0009	1883	21	1904	13	*1927*	*13*	2.3
9425-9.1	146	496	3.51	92	0	1.03E-06	5.83E-05	0.0000	1.0326	0.0086	5.504	0.091	0.3380	0.0041	0.8044	0.1181	0.0012	1877	20	1901	14	*1928*	*18*	2.6
9425-13.1	50	35	0.72	19	0	1.00E-05	1.00E-05	0.0002	0.1999	0.0053	5.563	0.088	0.3415	0.0042	0.8360	0.1182	0.0010	1894	20	1910	14	*1929*	*16*	1.8
9425-23.1	185	105	0.59	68	1	1.36E-05	2.87E-05	0.0002	0.1621	0.0047	5.450	0.073	0.3344	0.0038	0.9040	0.1182	0.0007	1859	18	1893	12	*1930*	*10*	3.6
9425-74.1	85	95	1.16	36	1	5.16E-05	5.98E-05	0.0009	0.3298	0.0064	5.477	0.101	0.3360	0.0040	0.7238	0.1182	0.0015	1867	19	1897	16	*1930*	*23*	3.2
9425-20.1	97	4	0.04	32	0	1.00E-05	1.00E-05	0.0002	0.0144	0.0019	5.502	0.094	0.3375	0.0048	0.8843	0.1182	0.0010	1875	23	1901	15	*1930*	*14*	2.9
9425-2.2	34	19	0.56	11	2	1.97E-04	1.03E-04	0.0034	0.1445	0.0117	4.877	0.130	0.2987	0.0038	0.5833	0.1184	0.0026	1685	19	1798	23	1932	40	12.8
9425-19.1	114	111	1.01	48	1	1.60E-05	6.10E-05	0.0003	0.2899	0.0049	5.609	0.091	0.3435	0.0039	0.7852	0.1184	0.0012	1903	19	1917	14	*1933*	*18*	1.5
9425-15.1	84	39	0.48	31	1	5.16E-05	5.35E-05	0.0009	0.1294	0.0037	5.587	0.096	0.3415	0.0043	0.8076	0.1187	0.0012	1894	21	1914	15	*1936*	*18*	2.2
9425-12.1	93	9	0.10	31	4	1.39E-04	8.11E-05	0.0024	0.0249	0.0034	5.497	0.103	0.3355	0.0041	0.7289	0.1188	0.0015	1865	20	1900	16	*1939*	*23*	3.8
9425-49.1	59	67	1.17	25	0	1.00E-05	1.00E-05	0.0002	0.3286	0.0106	5.652	0.081	0.3438	0.0039	0.8645	0.1192	0.0009	1905	19	1924	12	*1945*	*13*	2
9425-17.1	120	135	1.16	52	0	3.13E-06	5.09E-05	0.0001	0.3422	0.0102	5.642	0.090	0.3430	0.0043	0.8481	0.1193	0.0010	1901	21	1922	14	*1946*	*15*	2.3
9425-53.1	75	19	0.26	27	1	4.07E-05	9.95E-05	0.0007	0.0807	0.0048	5.686	0.131	0.3453	0.0045	0.6562	0.1194	0.0021	1912	21	1929	20	*1948*	*32*	1.8
9425-51.1	104	213	2.12	53	1	3.53E-05	4.50E-05	0.0006	0.6091	0.0066	5.643	0.091	0.3414	0.0040	0.7919	0.1199	0.0012	1894	19	1923	14	*1954*	*18*	3.1
9425-54.2	80	60	0.77	30	1	3.05E-05	5.24E-05	0.0005	0.2260	0.0053	5.264	0.114	0.3178	0.0049	0.7929	0.1201	0.0016	1779	24	1863	19	*1958*	*24*	9.1
9425-2.3	39	20	0.52	15	1	9.21E-05	1.64E-04	0.0016	0.1437	0.0081	5.751	0.205	0.3465	0.0068	0.6461	0.1204	0.0033	1918	33	1939	31	*1962*	*50*	2.3
9425-5.1	882	111	0.13	309	17	6.31E-05	1.72E-05	0.0011	0.0367	0.0009	6.123	0.096	0.3505	0.0043	0.8517	0.1267	0.0011	1937	21	1994	14	2053	15	5.7
9425-25.1	625	122	0.20	259	1	4.69E-06	7.27E-06	0.0001	0.0567	0.0020	8.029	0.194	0.4003	0.0071	0.8036	0.1455	0.0021	2170	33	2234	22	2293	25	5.4
9425-27.1	995	47	0.05	417	4	1.00E-05	1.00E-05	0.0002	0.0125	0.0005	8.699	0.254	0.4194	0.0043	0.4597	0.1504	0.0039	2258	19	2307	27	2351	45	3.9
Analytical details: mount IP463, 23 µm spot size, primary beam intensity 7-10 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
07CYA-B99 (lab# z9423) bi-opx granodiorite, 64.79338°N 84.22337°W																								
9423-70.1	212	372	1.81	94	1	1.33E-05	3.18E-05	0.0002	0.5231	0.0062	4.874	0.074	0.3158	0.0038	0.8550	0.1119	0.0009	1769	18	1798	13	1831	14	3.4
9423-47.1	567	638	1.16	233	3	1.57E-05	1.15E-05	0.0003	0.3311	0.0025	5.121	0.078	0.3309	0.0037	0.8133	0.1123	0.0010	1843	18	1840	13	1836	16	-0.4
9423-16.1	309	365	1.22	127	3	3.59E-05	1.69E-05	0.0006	0.3477	0.0049	5.070	0.066	0.3275	0.0036	0.9027	0.1123	0.0006	1826	18	1831	11	1837	10	0.6
9423-54.1	228	368	1.67	102	2	3.85E-05	2.18E-05	0.0007	0.4873	0.0066	5.013	0.065	0.3237	0.0035	0.9020	0.1123	0.0006	1808	17	1822	11	1837	10	1.6
9423-54.2	159	238	1.54	71	2	4.64E-05	3.82E-05	0.0008	0.4452	0.0056	5.121	0.085	0.3305	0.0040	0.8111	0.1124	0.0011	1841	20	1840	14	1838	18	-0.1
9423-55.1	230	386	1.73	104	1	1.83E-05	2.07E-05	0.0003	0.4966	0.0044	5.060	0.068	0.3261	0.0038	0.9150	0.1125	0.0006	1820	18	1829	11	1840	10	1.1
9423-79.1	183	157	0.89	69	3	5.52E-05	4.71E-05	0.0010	0.2552	0.0037	4.998	0.086	0.3219	0.0037	0.7547	0.1126	0.0013	1799	18	1819	15	1842	21	2.3
9423-43.2	183	112	0.63	64	2	4.59E-05	2.78E-05	0.0008	0.1773	0.0042	4.908	0.067	0.3160	0.0037	0.8993	0.1127	0.0007	1770	18	1804	12	1843	11	3.9
9423-22.1	153	221	1.49	67	0	1.00E-05	1.00E-05	0.0002	0.4280	0.0093	5.152	0.067	0.3317	0.0038	0.9254	0.1127	0.0006	1846	18	1845	11	1843	9	-0.2
9423-48.1	2142	167	0.08	717	6	1.00E-05	1.00E-05	0.0002	0.0224	0.0007	5.331	0.063	0.3429	0.0038	0.9697	0.1128	0.0003	1901	18	1874	10	1844	5	-3
9423-80.1	294	479	1.68	131	0	5.40E-07	1.55E-05	0.0000	0.4815	0.0041	5.044	0.063	0.3242	0.0035	0.9113	0.1129	0.0006	1810	17	1827	11	1846	9	1.9
9423-111.1	122	308	2.62	63	4	1.30E-04	6.98E-05	0.0023	0.7521	0.0089	5.041	0.107	0.3228	0.0041	0.6890	0.1133	0.0018	1803	20	1826	18	1852	28	2.7
9423-62.1	2772	271	0.10	941	4	4.98E-06	5.13E-06	0.0001	0.0290	0.0004	5.400	0.063	0.3455	0.0038	0.9766	0.1134	0.0003	1913	18	1885	10	1854	5	-3.2
9423-121.1	2604	283	0.11	889	5	6.56E-06	3.57E-06	0.0001	0.0323	0.0007	5.417	0.063	0.3464	0.0038	0.9683	0.1134	0.0003	1917	18	1888	10	1855	5	-3.4
9423-96.1	2342	232	0.10	784	1	9.80E-07	2.09E-06	0.0000	0.0286	0.0007	5.335	0.061	0.3410	0.0036	0.9645	0.1135	0.0003	1892	17	1875	10	1856	5	-1.9
9423-33.1	54	0	0.00	17	4	2.38E-04	1.22E-04	0.0041	-0.0010	0.0050	5.194	0.137	0.3319	0.0049	0.6535	0.1135	0.0023	1848	24	1852	23	*1856*	*37*	0.4
9423-94.1	2279	213	0.10	770	0	1.70E-07	3.67E-06	0.0000	0.0284	0.0004	5.402	0.061	0.3442	0.0037	0.9811	0.1138	0.0003	1907	18	1885	10	1862	4	-2.4
9423-36.1	2468	199	0.08	832	3	3.73E-06	3.65E-06	0.0001	0.0238	0.0007	5.421	0.060	0.3444	0.0036	0.9817	0.1142	0.0002	1908	17	1888	9	1867	4	-2.2
9423-59.2	36	0	0.00	11	3	2.95E-04	2.03E-04	0.0051	-0.0021	0.0077	5.238	0.185	0.3302	0.0052	0.5459	0.1151	0.0034	1839	25	1859	31	*1881*	*55*	2.2
9423-20.2	88	1	0.01	28	0	1.00E-05	1.00E-05	0.0002	0.0054	0.0008	5.175	0.082	0.3260	0.0036	0.7799	0.1152	0.0012	1819	18	1849	14	*1882*	*18*	3.4
9423-33.2	39	2	0.05	13	4	3.25E-04	1.65E-04	0.0056	0.0109	0.0065	5.255	0.174	0.3291	0.0043	0.5060	0.1158	0.0033	1834	21	1862	29	*1892*	*53*	3.1
9423-59.1	36	0	0.01	11	1	7.37E-05	1.44E-04	0.0013	0.0071	0.0060	5.359	0.149	0.3323	0.0045	0.5889	0.1169	0.0027	1850	22	1878	24	*1910*	*41*	3.2

Notes (see Stern, 1997):
Sample locations are given relative to the NAD27 datum
Spot name follows the convention x-y.z;where x = sample number, y = grain number and z = spot number.Multiple analyses in an in dividual spot are labelled as x-y.z.z
Uncertainties reported at 1s (absolute) and are calculated by numerical propagation of all known sources of error
f206204 refers to mole fraction of total 206Pb that is due to common Pb, calculated using the 204Pb-method; common Pb composition used is the surface blank (4/6:0.05770; 7/6:0.89500; 8/6:2.13840)
* refers to radiogenic Pb (corrected for common Pb)
Discordance relative to origin = 100 * (1-(206Pb/238U age)/(207Pb/206Pb age))
Calibration standard 6266; U = 910 ppm; Age = 559 Ma; 206Pb/238U = 0.09059
Th/U calibration: F =0.03900*UO +0.85600
The notes above apply to all data in Table 2.

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb/^{206}Pb	±^{204}Pb/^{206}Pb	f(206)^{204}	^{208*}Pb/^{206*}Pb	±^{208}Pb/^{206}Pb	^{207*}Pb/^{235}U	±^{207}Pb/^{235}U	^{206*}Pb/^{238}U	±^{206}Pb/^{238}U	Corr coeff	^{207*}Pb/^{206*}Pb	±^{207}Pb/^{206}Pb	Apparent ages (Ma) ^{206}Pb/^{238}U	±^{206}Pb/^{238}U	^{207}Pb/^{235}U	±^{207}Pb/^{235}U	^{207}Pb/^{206}Pb	±^{207}Pb/^{206}Pb	Disc. (%)
07CYA-B99 (lab# z9423) bi-opx granodiorite, 64.79338°N 84.22337°W (cont.)																								
9423-18.1	62	1	0.02	20	0	1.00E-05	1.00E-05	0.0002	0.0091	0.0011	5.416	0.092	0.3354	0.0048	0.9002	0.1171	0.0009	1864	23	1887	15	*1913*	*13*	2.5
9423-13.1	55	0	0.00	18	0	1.00E-05	1.00E-05	0.0002	0.0059	0.0011	5.568	0.112	0.3444	0.0043	0.7074	0.1173	0.0017	1908	21	1911	18	*1915*	*26*	0.4
9423-26.1	43	0	0.00	14	1	4.74E-05	1.39E-04	0.0008	0.0055	0.0055	5.337	0.150	0.3290	0.0045	0.5879	0.1177	0.0027	1834	22	1875	24	*1921*	*42*	4.5
9423-18.2	33	1	0.03	10	1	1.30E-04	1.31E-04	0.0023	0.0042	0.0051	5.062	0.140	0.3083	0.0051	0.6859	0.1191	0.0024	1732	25	1830	24	*1943*	*37*	10.8
9423-89.2.2	381	2	0.01	125	2	1.69E-05	1.02E-05	0.0003	0.0018	0.0004	5.585	0.080	0.3399	0.0046	0.9679	0.1192	0.0004	1886	22	1914	12	*1944*	*6*	3
9423-20.1	18	0	0.00	6	0	1.00E-05	1.00E-05	0.0002	0.0134	0.0025	5.506	0.113	0.3343	0.0048	0.7771	0.1194	0.0016	1859	23	1902	18	*1948*	*23*	4.5
9423-89.2	397	2	0.01	131	3	2.93E-05	2.44E-05	0.0005	0.0009	0.0009	5.630	0.076	0.3416	0.0042	0.9427	0.1196	0.0006	1894	20	1921	12	*1950*	*8*	2.8
9423-89.1	395	2	0.01	129	2	2.08E-05	2.08E-05	0.0004	0.0017	0.0008	5.581	0.069	0.3385	0.0035	0.8857	0.1196	0.0007	1880	17	1913	11	*1950*	*10*	3.6
9423-40.2	34	0	0.01	11	2	1.79E-04	2.24E-04	0.0031	0.0047	0.0085	5.482	0.252	0.3314	0.0064	0.5290	0.1200	0.0047	1845	31	1898	40	*1956*	*72*	5.7
9423-51.1	17	1	0.06	5	0	1.00E-05	1.00E-05	0.0002	0.0295	0.0038	5.513	0.149	0.3331	0.0054	0.6912	0.1200	0.0024	1854	26	1903	23	*1957*	*35*	5.3
9423-31.1	109	1	0.01	35	1	4.69E-05	5.68E-05	0.0008	0.0022	0.0024	5.594	0.089	0.3378	0.0039	0.8069	0.1201	0.0011	1876	19	1915	14	*1958*	*17*	4.2
9423-103.1	22	0	0.01	7	0	1.00E-05	1.00E-05	0.0002	0.0098	0.0032	5.488	0.096	0.3292	0.0043	0.8122	0.1209	0.0012	1835	21	1899	15	*1970*	*18*	6.9
9423-40.1	24	0	0.01	8	0	1.00E-05	1.00E-05	0.0002	0.0103	0.0023	5.690	0.140	0.3313	0.0059	0.7963	0.1246	0.0019	1845	28	1930	21	*2022*	*27*	8.8
9423-65.2	119	2	0.01	37	3	8.56E-05	4.79E-05	0.0015	0.0049	0.0021	5.633	0.097	0.3163	0.0039	0.7989	0.1292	0.0014	1771	19	1921	15	2087	18	15.1
9423-65.1	111	1	0.01	37	6	1.72E-04	8.09E-05	0.0030	0.0027	0.0031	6.080	0.109	0.3413	0.0041	0.7487	0.1292	0.0015	1893	20	1987	16	2087	21	9.3
9423-65.3	112	1	0.01	38	3	9.45E-05	4.49E-05	0.0016	0.0030	0.0018	6.486	0.102	0.3513	0.0045	0.8804	0.1339	0.0010	1941	22	2044	14	2150	13	9.7
9423-72.1	2118	268	0.13	1135	9	1.00E-05	1.00E-05	0.0002	0.0353	0.0008	12.711	0.155	0.5127	0.0058	0.9605	0.1798	0.0006	2668	25	2658	12	2651	6	-0.6
9423-72.3	2547	272	0.11	1358	10	8.63E-06	2.21E-06	0.0002	0.0304	0.0004	12.730	0.213	0.5121	0.0068	0.8593	0.1803	0.0016	2666	29	2660	16	2655	14	-0.4
9423-1.1	104	51	0.51	69	0	1.00E-05	1.00E-05	0.0002	0.1417	0.0025	19.716	0.262	0.5513	0.0064	0.9234	0.2594	0.0013	2831	27	3078	13	3243	8	12.7
9423-113.1	38	30	0.81	34	4	1.93E-04	9.37E-05	0.0033	0.2180	0.0058	28.300	0.478	0.7020	0.0091	0.8366	0.2924	0.0027	3428	35	3430	17	3430	15	0.1
9423-72.2	93	30	0.33	72	3	6.72E-05	2.68E-05	0.0012	0.0846	0.0046	27.203	0.434	0.6408	0.0077	0.8281	0.3079	0.0028	3192	30	3391	16	3510	14	9.1
9423-30.1	138	100	0.75	116	2	2.10E-05	2.85E-05	0.0004	0.1981	0.0028	27.898	0.382	0.6447	0.0080	0.9456	0.3138	0.0014	3208	31	3416	14	3540	7	9.4
9423-35.1	77	42	0.57	69	2	4.75E-05	2.97E-05	0.0008	0.1460	0.0063	31.331	0.564	0.7040	0.0097	0.8334	0.3228	0.0032	3436	37	3530	18	3583	16	4.1
9423-58.1	152	93	0.63	141	1	1.00E-05	1.00E-05	0.0002	0.1629	0.0027	32.899	0.400	0.7208	0.0080	0.9501	0.3311	0.0013	3499	30	3578	12	3622	6	3.4
9423-3.1	84	43	0.53	75	0	3.05E-06	2.02E-05	0.0001	0.1406	0.0025	32.522	0.392	0.7105	0.0078	0.9486	0.3320	0.0013	3460	29	3566	12	3626	6	4.6
9423-41.1	95	56	0.61	86	2	3.65E-05	2.64E-05	0.0006	0.1580	0.0042	32.331	0.497	0.7059	0.0093	0.9100	0.3322	0.0021	3443	35	3560	15	3627	10	5.1
9423-27.1	63	40	0.66	60	2	3.95E-05	3.48E-05	0.0007	0.1786	0.0035	33.977	0.500	0.7360	0.0092	0.9015	0.3348	0.0022	3556	34	3609	15	3639	10	2.3
9423-9.1	146	97	0.69	138	2	1.66E-05	1.44E-05	0.0003	0.1704	0.0023	33.843	0.511	0.7285	0.0092	0.8904	0.3369	0.0023	3528	34	3606	15	3649	11	3.3
9423-16.2	47	25	0.54	44	1	3.10E-05	7.97E-05	0.0005	0.1389	0.0089	34.238	0.718	0.7340	0.0118	0.8381	0.3383	0.0039	3548	44	3617	21	3655	18	2.9
9423-64.1	257	267	1.07	272	4	2.21E-05	1.05E-05	0.0004	0.2805	0.0039	35.371	0.391	0.7579	0.0079	0.9718	0.3385	0.0009	3636	29	3649	11	3656	4	0.5
9423-19.1	107	48	0.46	102	1	7.47E-06	1.91E-05	0.0001	0.1161	0.0043	35.304	0.507	0.7549	0.0087	0.8669	0.3392	0.0025	3626	32	3647	14	3659	11	0.9
9423-39.1	187	95	0.53	175	3	2.36E-05	1.67E-05	0.0004	0.1379	0.0032	34.481	0.444	0.7360	0.0089	0.9677	0.3398	0.0011	3556	33	3624	13	3662	5	2.9
9423-108.1	168	105	0.64	160	2	1.59E-05	1.05E-05	0.0003	0.1670	0.0019	34.395	0.444	0.7316	0.0087	0.9545	0.3410	0.0013	3540	32	3621	13	3667	6	3.5
9423-44.1	167	111	0.69	165	2	1.49E-05	1.40E-05	0.0003	0.1784	0.0019	35.655	0.434	0.7570	0.0083	0.9384	0.3416	0.0015	3633	30	3657	12	3670	6	1
9423-46.1	74	63	0.88	75	0	1.00E-05	1.00E-05	0.0002	0.2244	0.0055	35.345	0.500	0.7490	0.0092	0.9145	0.3422	0.0020	3604	34	3648	14	3673	9	1.9
9423-60.1	71	28	0.41	66	1	2.33E-05	4.86E-05	0.0004	0.1064	0.0028	35.429	0.483	0.7469	0.0089	0.9194	0.3440	0.0019	3596	33	3651	14	3681	8	2.3
Analytical details: mount IP463, 23 µm spot size, primary beam intensity 7-10 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
07CYA-M48b (lab# z9548) aphanitic epiclastic, 64.20804°N 84.24516°W																								
9548-114.1	2059	20	0.01	638	6	1.00E-05	1.00E-05	0.0002	0.0027	0.0004	4.823	0.053	0.3243	0.0033	0.9652	0.1079	0.0003	1811	16	1789	9	1764	5	-2.7
9548-114.2	1949	20	0.01	597	1	1.68E-06	2.23E-06	0.0000	0.0029	0.0002	4.772	0.058	0.3209	0.0037	0.9820	0.1079	0.0003	1794	18	1780	10	1764	4	-1.7
9548-110.1	2387	15	0.01	750	2	3.29E-06	1.67E-06	0.0001	0.0020	0.0001	4.938	0.055	0.3289	0.0034	0.9682	0.1089	0.0003	1833	17	1809	9	1781	5	-2.9
9548-100.1	1814	21	0.01	571	2	3.54E-06	2.14E-06	0.0001	0.0036	0.0001	4.980	0.052	0.3291	0.0033	0.9865	0.1098	0.0002	1834	16	1816	9	1795	3	-2.2
9548-26.1	2662	52	0.02	880	1	1.13E-06	1.09E-06	0.0000	0.0061	0.0002	5.268	0.064	0.3443	0.0039	0.9695	0.1110	0.0003	1907	19	1864	10	1815	5	-5.1
9548-17.1	438	37	0.09	206	1	8.13E-06	9.55E-06	0.0001	0.0245	0.0009	10.536	0.130	0.4593	0.0051	0.9500	0.1664	0.0006	2436	23	2483	11	2522	7	3.4
9548-76.1	338	65	0.20	163	2	1.68E-05	6.82E-06	0.0003	0.0578	0.0014	10.551	0.127	0.4584	0.0051	0.9537	0.1669	0.0006	2433	22	2484	11	2527	6	3.7
9548-89.2	262	60	0.23	132	0	3.62E-06	1.25E-05	0.0001	0.0663	0.0015	11.028	0.155	0.4723	0.0061	0.9543	0.1693	0.0007	2494	27	2525	13	2551	7	2.2
9548-91.1	1481	18	0.01	720	0	3.10E-07	1.63E-06	0.0000	0.0032	0.0001	11.384	0.166	0.4815	0.0051	0.8063	0.1715	0.0015	2534	22	2555	14	2572	15	1.5
9548-91.2	440	75	0.18	210	4	2.48E-05	1.09E-05	0.0004	0.0488	0.0013	10.812	0.128	0.4554	0.0051	0.9704	0.1722	0.0005	2419	22	2507	11	2579	5	6.2
9548-89.1	143	51	0.37	75	0	2.07E-06	1.58E-05	0.0000	0.1015	0.0043	11.317	0.156	0.4767	0.0058	0.9336	0.1722	0.0009	2513	26	2550	13	2579	8	2.6
9548-49.4	253	79	0.32	128	1	6.44E-06	1.37E-05	0.0001	0.0909	0.0015	11.053	0.208	0.4651	0.0084	0.9784	0.1724	0.0007	2462	37	2528	18	2581	7	4.6
9548-49.2.2	342	77	0.23	174	2	1.08E-05	4.33E-06	0.0002	0.0651	0.0012	11.373	0.181	0.4764	0.0069	0.9499	0.1731	0.0009	2512	30	2554	15	*2588*	*8*	3
9548-49.1	396	87	0.23	208	2	1.00E-05	1.00E-05	0.0002	0.0618	0.0016	11.802	0.135	0.4936	0.0053	0.9682	0.1734	0.0005	2586	23	2589	11	*2591*	*5*	0.2
9548-92.1	318	81	0.26	167	1	1.00E-05	1.00E-05	0.0002	0.0717	0.0011	11.726	0.153	0.4904	0.0056	0.9252	0.1734	0.0009	2572	24	2583	12	2591	8	0.7
9548-105.1	412	168	0.42	224	2	1.01E-05	7.53E-06	0.0002	0.1172	0.0021	11.701	0.143	0.4889	0.0054	0.9390	0.1736	0.0007	2566	23	2581	12	2592	7	1
9548-67.1	207	60	0.30	111	1	7.01E-06	1.55E-05	0.0001	0.0805	0.0016	11.870	0.182	0.4953	0.0065	0.9104	0.1738	0.0011	2593	28	2594	14	2595	11	0.1
9548-119.1	194	84	0.45	104	2	2.61E-05	2.01E-05	0.0005	0.1236	0.0020	11.469	0.165	0.4782	0.0056	0.8731	0.1740	0.0012	2519	24	2562	14	2596	12	3
9548-8.1	1110	127	0.12	576	1	1.22E-06	2.86E-06	0.0000	0.0339	0.0004	12.006	0.126	0.4994	0.0051	0.9868	0.1744	0.0003	2611	22	2605	10	2600	3	-0.4
9548-5.1	328	101	0.32	176	1	9.59E-06	9.84E-06	0.0002	0.0895	0.0014	11.842	0.135	0.4921	0.0052	0.9610	0.1745	0.0006	2580	22	2592	11	2601	5	0.8
9548-40.1	190	53	0.29	101	1	1.00E-05	1.00E-05	0.0002	0.0827	0.0015	11.822	0.150	0.4908	0.0056	0.9427	0.1747	0.0007	2574	24	2590	12	2603	7	1.1
9548-54.1	357	112	0.32	191	1	4.64E-06	8.03E-06	0.0001	0.0893	0.0011	11.871	0.150	0.4927	0.0058	0.9663	0.1747	0.0006	2582	25	2594	12	2603	5	0.8

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb / ^{206}Pb	±^{204}Pb / ^{206}Pb	f(206)^{204}	^{208*}Pb / ^{206*}Pb	±^{208}Pb / ^{206}Pb	^{207*}Pb / ^{235}U	±^{207}Pb / ^{235}U	^{206*}Pb / ^{238}U	±^{206}Pb / ^{238}U	Corr coeff	^{207*}Pb / ^{206*}Pb	±^{207}Pb / ^{206}Pb	Apparent ages (Ma) ^{206}Pb / ^{238}U	±^{206}Pb / ^{238}U	^{207*}Pb / ^{235}U	±^{207}Pb / ^{235}U	^{207}Pb / ^{206}Pb	±^{207}Pb / ^{206}Pb	Disc. (%)
07CYA-M48b (lab# z9548) aphanitic epiclastic, 64.20804°N 84.24516°W (cont.)																								
9548-53.1	276	48	0.18	145	3	2.15E-05	9.11E-06	0.0004	0.0499	0.0016	12.027	0.148	0.4990	0.0054	0.9235	0.1748	0.0008	2609	23	2607	12	2604	8	-0.2
9548-9.1	446	73	0.17	233	0	2.59E-06	9.59E-06	0.0000	0.0463	0.0009	11.997	0.144	0.4976	0.0053	0.9392	0.1749	0.0007	2603	23	2604	11	2605	7	0
9548-17.2	798	107	0.14	422	1	3.29E-06	4.47E-06	0.0001	0.0378	0.0012	12.231	0.177	0.5071	0.0071	0.9861	0.1749	0.0004	2644	30	2622	14	2605	4	-1.5
9548-115.1	235	38	0.17	123	1	5.27E-06	1.75E-05	0.0001	0.0477	0.0012	12.039	0.181	0.4991	0.0064	0.9075	0.1750	0.0011	2610	28	2607	14	2606	11	-0.2
9548-20.1	381	100	0.27	202	3	1.84E-05	1.20E-05	0.0003	0.0734	0.0019	11.896	0.144	0.4931	0.0051	0.9141	0.1750	0.0009	2584	22	2596	11	2606	8	0.8
9548-49.2	366	84	0.24	189	3	2.26E-05	9.51E-06	0.0004	0.0639	0.0013	11.699	0.169	0.4849	0.0063	0.9445	0.1750	0.0008	2548	28	2581	14	*2606*	*8*	2.2
9548-49.3	366	109	0.31	189	3	2.21E-05	1.14E-05	0.0004	0.0850	0.0027	11.507	0.138	0.4768	0.0054	0.9765	0.1750	0.0005	2513	24	2565	11	*2606*	*4*	3.6
9548-87.1	437	66	0.16	227	0	2.29E-06	5.69E-06	0.0000	0.0422	0.0017	11.982	0.150	0.4965	0.0057	0.9569	0.1750	0.0006	2599	25	2603	12	2606	6	0.3
9548-77.1	302	56	0.19	157	0	3.26E-06	8.18E-06	0.0001	0.0521	0.0014	11.891	0.149	0.4927	0.0056	0.9413	0.1751	0.0008	2582	24	2596	12	2607	7	0.9
9548-48.1	516	85	0.17	264	2	1.00E-05	1.00E-05	0.0002	0.0479	0.0008	11.742	0.146	0.4865	0.0056	0.9656	0.1751	0.0006	2555	24	2584	12	2607	5	2
9548-76.2	260	90	0.36	131	1	1.00E-05	1.00E-05	0.0002	0.0964	0.0014	11.115	0.136	0.4604	0.0052	0.9567	0.1751	0.0006	2441	23	2533	11	2607	6	6.4
9548-18.1	175	94	0.56	98	2	2.57E-05	2.09E-05	0.0005	0.1545	0.0026	11.871	0.210	0.4915	0.0064	0.8105	0.1752	0.0018	2577	28	2594	17	2608	18	1.2
9548-11.1	293	101	0.36	156	1	1.00E-05	1.00E-05	0.0002	0.0962	0.0018	11.737	0.133	0.4859	0.0051	0.9639	0.1752	0.0005	2553	22	2584	11	2608	5	2.1
9548-57.1	537	85	0.16	288	1	3.64E-06	7.44E-06	0.0001	0.0445	0.0009	12.351	0.166	0.5108	0.0060	0.9203	0.1754	0.0009	2660	26	2631	13	2610	9	-1.9
9548-36.1	167	75	0.46	92	0	4.21E-06	1.47E-05	0.0001	0.1289	0.0021	11.868	0.156	0.4903	0.0055	0.9090	0.1756	0.0010	2572	24	2594	12	2611	9	1.5
9548-31.1	760	104	0.14	395	0	1.35E-06	4.90E-06	0.0000	0.0400	0.0006	12.040	0.132	0.4974	0.0052	0.9753	0.1756	0.0004	2603	22	2608	10	2611	4	0.3
9548-83.1	213	68	0.33	116	1	1.00E-05	1.00E-05	0.0002	0.0896	0.0031	12.144	0.171	0.5015	0.0057	0.8627	0.1756	0.0013	2620	24	2616	13	2612	12	-0.3
9548-71.1	181	73	0.42	97	1	9.09E-06	2.05E-05	0.0002	0.1154	0.0030	11.695	0.165	0.4827	0.0059	0.9137	0.1757	0.0010	2539	26	2580	13	2613	10	2.8
9548-86.1	352	112	0.33	191	3	2.19E-05	9.55E-06	0.0004	0.0908	0.0012	12.047	0.145	0.4972	0.0052	0.9179	0.1757	0.0009	2602	22	2608	11	2613	8	0.4
9548-84.1	159	77	0.50	89	1	1.00E-05	1.00E-05	0.0002	0.1359	0.0028	11.925	0.179	0.4921	0.0055	0.8137	0.1758	0.0016	2580	24	2599	14	2613	15	1.3
9548-4.1	228	69	0.31	123	0	2.50E-06	9.76E-06	0.0000	0.0887	0.0024	11.992	0.151	0.4948	0.0055	0.9249	0.1758	0.0009	2591	24	2604	12	2613	8	0.8
9548-41.1	251	81	0.33	133	1	1.00E-05	1.00E-05	0.0002	0.0927	0.0014	11.754	0.153	0.4850	0.0057	0.9421	0.1758	0.0008	2549	25	2585	12	2613	7	2.5
9548-61.1	418	108	0.27	216	2	1.30E-05	6.91E-06	0.0002	0.0756	0.0017	11.649	0.135	0.4805	0.0052	0.9623	0.1758	0.0006	2529	23	2577	11	2614	5	3.2
9548-16.1	901	178	0.20	482	1	1.93E-06	6.24E-06	0.0000	0.0561	0.0007	12.245	0.131	0.5050	0.0052	0.9808	0.1758	0.0004	2635	22	2623	10	2614	3	-0.8
9548-16.1	730	115	0.16	375	1	4.28E-06	3.28E-06	0.0001	0.0459	0.0006	11.861	0.138	0.4892	0.0051	0.9429	0.1759	0.0007	2567	22	2594	11	2614	7	1.8
9548-5.4	368	71	0.20	185	2	1.52E-05	7.29E-06	0.0003	0.0546	0.0010	11.495	0.156	0.4739	0.0059	0.9591	0.1759	0.0007	2501	26	2564	13	2615	6	4.4
9548-46.1	163	49	0.31	89	1	1.65E-05	1.20E-05	0.0003	0.0814	0.0024	12.252	0.209	0.5052	0.0058	0.7524	0.1759	0.0020	2636	25	2624	16	2615	19	-0.8
9548-21.1	124	65	0.54	70	1	1.00E-05	1.00E-05	0.0002	0.1497	0.0026	11.937	0.198	0.4921	0.0058	0.7837	0.1759	0.0018	2580	25	2599	16	2615	17	1.3
9548-39.1	343	73	0.22	183	0	2.66E-06	7.90E-06	0.0001	0.0605	0.0010	12.168	0.146	0.5016	0.0057	0.9710	0.1759	0.0005	2621	24	2617	11	2615	5	-0.2
9548-65.1	385	82	0.22	203	0	2.93E-06	6.73E-06	0.0001	0.0609	0.0012	12.051	0.155	0.4967	0.0058	0.9435	0.1760	0.0008	2599	25	2608	12	2615	7	0.6
9548-66.1	531	114	0.22	279	2	1.00E-05	1.00E-05	0.0002	0.0618	0.0011	12.004	0.147	0.4945	0.0056	0.9530	0.1761	0.0007	2590	24	2605	12	2616	6	1
9548-37.1	487	89	0.19	254	2	1.08E-05	5.43E-06	0.0002	0.0523	0.0010	11.985	0.136	0.4936	0.0052	0.9689	0.1761	0.0005	2586	23	2603	11	2616	5	1.2
9548-2.1	365	73	0.21	193	2	1.00E-05	1.00E-05	0.0002	0.0567	0.0013	12.139	0.147	0.4998	0.0053	0.9235	0.1762	0.0008	2613	23	2615	11	2617	8	0.2
9548-30.1	494	86	0.18	261	2	8.33E-06	6.12E-06	0.0001	0.0510	0.0008	12.162	0.135	0.5006	0.0053	0.9765	0.1762	0.0004	2616	23	2617	10	2617	4	0
9548-40.4.2	257	81	0.33	129	3	2.54E-05	1.91E-05	0.0004	0.0893	0.0018	11.216	0.175	0.4616	0.0066	0.9532	0.1762	0.0008	2447	29	2541	15	2618	8	6.5
9548-5.3	408	100	0.25	202	0	1.06E-06	1.64E-05	0.0000	0.0698	0.0015	11.238	0.194	0.4625	0.0073	0.9557	0.1762	0.0009	2451	32	2543	16	2618	9	6.4
9548-73.1	236	81	0.35	128	1	1.00E-05	1.00E-05	0.0002	0.0967	0.0025	12.064	0.168	0.4964	0.0060	0.9203	0.1763	0.0010	2598	26	2609	13	2618	9	0.7
9548-81.1	200	57	0.29	108	1	1.00E-05	1.00E-05	0.0002	0.0807	0.0015	12.118	0.178	0.4984	0.0058	0.8582	0.1763	0.0013	2607	25	2614	14	2619	13	0.4
9548-92.2	324	88	0.28	170	1	6.86E-06	1.16E-05	0.0001	0.0780	0.0013	11.781	0.179	0.4846	0.0064	0.9129	0.1763	0.0011	2547	28	2587	14	2619	10	2.7
9548-62.1	293	106	0.38	157	1	1.00E-05	1.00E-05	0.0002	0.1032	0.0021	11.828	0.160	0.4864	0.0061	0.9653	0.1764	0.0006	2555	27	2591	13	2619	6	2.4
9548-19.1	209	66	0.33	112	1	1.00E-05	1.00E-05	0.0002	0.0886	0.0028	11.975	0.161	0.4923	0.0057	0.9167	0.1764	0.0010	2581	25	2602	13	2619	9	1.5
9548-35.1	286	42	0.15	148	1	8.40E-06	9.57E-06	0.0002	0.0415	0.0009	12.062	0.147	0.4956	0.0056	0.9659	0.1765	0.0006	2595	24	2609	11	2620	5	1
9548-6.1	418	187	0.46	231	0	1.12E-06	1.05E-05	0.0000	0.1291	0.0017	11.980	0.131	0.4921	0.0051	0.9711	0.1766	0.0005	2580	22	2603	10	2621	4	1.6
9548-118.1	463	82	0.18	244	2	1.00E-05	1.00E-05	0.0002	0.0507	0.0011	12.156	0.139	0.4994	0.0053	0.9648	0.1766	0.0005	2611	23	2617	11	2621	5	0.4
9548-3.1	418	72	0.18	218	0	2.26E-06	7.42E-06	0.0000	0.0483	0.0008	12.032	0.136	0.4942	0.0052	0.9673	0.1766	0.0005	2589	23	2607	11	2621	5	1.2
9548-63.1	169	47	0.28	89	1	1.01E-05	1.42E-05	0.0002	0.0815	0.0017	11.855	0.174	0.4867	0.0061	0.9016	0.1767	0.0011	2556	26	2593	14	2622	11	2.5
9548-5.2	444	78	0.18	214	1	6.64E-06	2.22E-05	0.0001	0.0500	0.0012	11.133	0.154	0.4570	0.0053	0.8997	0.1767	0.0011	2426	24	2534	13	2622	10	7.5
9548-13.1	312	91	0.30	165	1	6.37E-06	8.95E-06	0.0001	0.0844	0.0012	11.922	0.162	0.4892	0.0057	0.9035	0.1768	0.0010	2567	25	2598	13	2623	10	2.1
9548-88.1	240	49	0.21	125	1	1.02E-05	1.11E-05	0.0002	0.0562	0.0012	11.916	0.151	0.4888	0.0056	0.9480	0.1768	0.0007	2565	24	2598	12	2623	7	2.2
9548-44.1	367	64	0.18	189	1	5.28E-06	1.11E-05	0.0001	0.0475	0.0011	11.943	0.146	0.4899	0.0056	0.9702	0.1768	0.0005	2570	24	2600	12	2623	5	2
9548-79.1	208	71	0.35	114	1	1.00E-05	1.00E-05	0.0002	0.0963	0.0019	12.203	0.153	0.5004	0.0054	0.9060	0.1769	0.0010	2615	23	2620	12	2624	9	0.3
9548-40.3	243	86	0.36	119	2	2.39E-05	1.10E-05	0.0004	0.0988	0.0021	10.934	0.178	0.4476	0.0066	0.9415	0.1772	0.0010	2384	29	2518	15	2627	9	9.2
9548-85.1	249	42	0.17	130	1	1.00E-05	1.00E-05	0.0002	0.0460	0.0011	12.140	0.166	0.4968	0.0056	0.8845	0.1772	0.0011	2600	24	2615	13	2627	11	1

Notes (see Stern, 1997):
Sample locations are given relative to the NAD27 datum
Spot name follows the convention x-y.z;where x = sample number, y = grain number and z = spot number.Multiple analyses in an individual spot are labelled as x-y.z.z
Uncertainties reported at 1s (absolute) and are calculated by numerical propagation of all known sources of error
f206204 refers to mole fraction of total 206Pb that is due to common Pb, calculated using the 204Pb-method; common Pb composition used is the surface blank (4/6:0.05770; 7/6:0.89500; 8/6:2.13840)
* refers to radiogenic Pb (corrected for common Pb)
Discordance relative to origin = 100 * (1-(206Pb/238U age)/(207Pb/206Pb age))
Calibration standard 6266; U = 910 ppm; Age = 559 Ma; 206Pb/238U = 0.09059
Th/U calibration: F =0.03900*UO +0.85600
The notes above apply to all data in Table 2.

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb / ^{206}Pb	±^{204}Pb / ^{206}Pb	f(206)^{204}	^{208*}Pb / ^{206}Pb	±^{208}Pb / ^{206}Pb	^{207*}Pb / ^{235}U	±^{207}Pb / ^{235}U	^{206*}Pb / ^{238}U	±^{206}Pb / ^{238}U	Corr coeff	^{207*}Pb / ^{206*}Pb	±^{207}Pb / ^{206}Pb	Apparent ages (Ma) ^{206}Pb / ^{238}U	±^{206}Pb / ^{238}U	^{207*}Pb / ^{235}U	±^{207}Pb / ^{235}U	^{207*}Pb / ^{206*}Pb	±^{207}Pb / ^{206}Pb	Disc. (%)
07CYA-M48b (lab# z9548) aphanitic epiclastic, 64.20804°N 84.24516°W (cont.)																								
9548-70.1	481	81	0.17	250	1	2.69E-06	5.65E-06	0.0001	0.0484	0.0007	12.059	0.141	0.4934	0.0054	0.9628	0.1773	0.0006	2585	23	2609	11	2628	5	1.6
9548-42.1	253	72	0.30	134	2	2.13E-05	1.79E-05	0.0004	0.0800	0.0015	11.939	0.155	0.4882	0.0057	0.9389	0.1774	0.0008	2563	25	2600	12	2628	8	2.5
9548-40.2	279	97	0.36	145	1	8.25E-06	7.63E-06	0.0001	0.1001	0.0021	11.560	0.159	0.4726	0.0059	0.9522	0.1774	0.0008	2495	26	2569	13	2629	7	5.1
9548-40.4	250	74	0.31	126	1	8.61E-06	1.89E-05	0.0002	0.0834	0.0030	11.388	0.184	0.4653	0.0066	0.9233	0.1775	0.0011	2463	29	2555	15	2630	10	6.3
9548-10.1	317	185	0.60	178	1	1.00E-05	1.00E-05	0.0002	0.1660	0.0016	11.850	0.158	0.4841	0.0054	0.8966	0.1775	0.0011	2545	24	2593	13	2630	10	3.2
9548-69.1	195	61	0.32	105	0	4.65E-06	1.40E-05	0.0001	0.0914	0.0035	12.092	0.163	0.4932	0.0061	0.9495	0.1778	0.0008	2584	26	2612	13	2633	7	1.8
9548-12.1	237	76	0.33	127	1	1.00E-05	1.00E-05	0.0002	0.0914	0.0017	12.020	0.140	0.4895	0.0052	0.9529	0.1781	0.0006	2569	23	2606	11	2635	6	2.5
9548-75.1	245	71	0.30	132	1	9.73E-06	1.30E-05	0.0002	0.0838	0.0015	12.172	0.158	0.4952	0.0057	0.9275	0.1783	0.0009	2593	24	2618	12	2637	8	1.7
9548-55.1	102	50	0.50	58	2	4.45E-05	2.10E-05	0.0008	0.1347	0.0026	12.921	0.222	0.5054	0.0074	0.8996	0.1854	0.0014	2637	32	2674	16	2702	13	2.4
9548-59.1	167	75	0.46	96	0	4.75E-06	1.38E-05	0.0001	0.1355	0.0020	12.942	0.184	0.5043	0.0065	0.9438	0.1861	0.0009	2632	28	2675	14	2708	8	2.8
9548-1.1	271	168	0.64	163	1	4.27E-06	1.18E-05	0.0001	0.1799	0.0042	13.233	0.181	0.5119	0.0055	0.8491	0.1875	0.0014	2665	23	2696	13	2720	12	2
9548-64.1	83	87	1.08	57	1	3.47E-05	6.00E-05	0.0006	0.2955	0.0086	14.656	0.257	0.5343	0.0062	0.7464	0.1990	0.0023	2759	26	2793	17	2818	19	2.1
9548-80.1	80	55	0.71	52	3	7.47E-05	5.07E-05	0.0013	0.1900	0.0042	15.343	0.282	0.5410	0.0085	0.9049	0.2057	0.0016	2787	36	2837	18	2872	13	2.9
9548-78.1	155	72	0.48	115	2	2.76E-05	1.29E-05	0.0005	0.1271	0.0023	21.464	0.278	0.6292	0.0068	0.8866	0.2474	0.0015	3146	27	3160	13	3168	10	0.7
Analytical details: mount IP481, 23 µm spot size, primary beam intensity 6-7 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
07CYA-M38b (lab# z9422) gabbroic anorthosite, 64.84525°N 83.60701°W																								
9422-1.1	32	6	0.18	10	1	1.60E-04	1.66E-04	0.0028	0.0437	0.0073	4.881	0.185	0.3188	0.0052	0.5355	0.1110	0.0036	1784	25	1799	32	*1817*	*60*	1.8
9422-6.2	102	125	1.27	41	0	9.12E-06	3.90E-05	0.0002	0.3688	0.0052	4.879	0.073	0.3186	0.0037	0.8354	0.1111	0.0009	1783	18	1799	13	1817	15	1.9
9422-86.1	119	129	1.12	48	3	8.69E-05	6.89E-05	0.0015	0.3277	0.0053	4.992	0.101	0.3259	0.0037	0.6492	0.1111	0.0017	1818	18	1818	17	1817	28	0
9422-72.1	38	6	0.15	12	2	1.49E-04	1.65E-04	0.0026	0.0389	0.0073	4.982	0.173	0.3251	0.0061	0.6358	0.1112	0.0030	1814	30	1816	30	*1818*	*50*	0.2
9422-96.1	191	71	0.39	67	13	2.36E-04	7.04E-05	0.0041	0.1150	0.0037	5.124	0.094	0.3341	0.0042	0.7577	0.1113	0.0014	1858	20	1840	16	1820	*22*	-2.1
9422-17.1	104	76	0.75	39	0	2.89E-06	4.46E-05	0.0001	0.2121	0.0042	5.015	0.082	0.3260	0.0038	0.7922	0.1116	0.0011	1819	19	1822	14	*1825*	*18*	0.3
9422-68.1	36	8	0.23	12	2	1.63E-04	1.06E-04	0.0028	0.0569	0.0054	5.016	0.160	0.3255	0.0068	0.7365	0.1118	0.0024	1817	33	1822	27	*1828*	*40*	0.6
9422-6.1	23	8	0.36	8	0	1.00E-05	1.00E-05	0.0002	0.1092	0.0058	5.043	0.165	0.3256	0.0056	0.6260	0.1123	0.0029	1817	27	1827	28	1838	47	1.1
9422-76.3	79	11	0.14	24	3	1.60E-04	6.77E-05	0.0028	0.0370	0.0034	4.843	0.112	0.3125	0.0052	0.7876	0.1124	0.0016	1753	25	1792	20	*1839*	*26*	4.7
9422-98.1	89	17	0.20	30	1	2.44E-05	4.99E-05	0.0004	0.0609	0.0029	5.222	0.089	0.3365	0.0043	0.8126	0.1126	0.0011	1870	21	1856	15	*1841*	*18*	-1.5
9422-98.2	44	6	0.13	13	1	6.92E-05	1.26E-04	0.0012	0.0429	0.0063	4.546	0.140	0.2925	0.0053	0.6761	0.1127	0.0026	1654	26	1739	26	*1844*	*42*	10.3
9422-76.1	69	9	0.13	22	1	3.20E-05	6.94E-05	0.0006	0.0368	0.0032	5.069	0.094	0.3261	0.0041	0.7642	0.1128	0.0014	1819	20	1831	16	*1844*	*22*	1.4
9422-72.2	35	5	0.14	11	1	1.47E-04	1.19E-04	0.0026	0.0359	0.0075	4.779	0.161	0.3066	0.0047	0.5562	0.1131	0.0032	1724	23	1781	29	*1849*	*52*	6.8
9422-33.2	34	5	0.14	11	0	1.33E-05	1.03E-04	0.0002	0.0420	0.0050	5.023	0.139	0.3215	0.0049	0.6471	0.1133	0.0024	1797	24	1823	24	*1853*	*39*	3
9422-8.2	336	78	0.24	113	7	7.07E-05	1.57E-05	0.0012	0.0710	0.0013	5.149	0.066	0.3292	0.0037	0.9256	0.1134	0.0006	1835	18	1844	11	1855	9	1.1
9422-88.1	89	44	0.51	31	1	3.88E-05	8.28E-05	0.0007	0.1511	0.0046	5.011	0.120	0.3204	0.0047	0.6953	0.1134	0.0020	1792	23	1821	21	1855	32	3.4
9422-77.1	64	17	0.28	21	0	1.00E-05	1.00E-05	0.0002	0.0832	0.0043	5.106	0.117	0.3259	0.0045	0.6958	0.1136	0.0019	1819	22	1837	20	*1858*	*30*	2.1
9422-33.1	35	6	0.19	11	1	9.41E-05	1.11E-04	0.0016	0.0651	0.0056	5.127	0.149	0.3272	0.0058	0.6995	0.1137	0.0024	1825	28	1841	25	*1859*	*38*	1.8
9422-68.2	19	4	0.22	6	1	1.95E-04	3.00E-04	0.0034	0.0697	0.0132	5.003	0.288	0.3191	0.0081	0.5448	0.1137	0.0055	1786	40	1820	50	*1859*	*91*	4
9422-26.1	107	32	0.31	37	1	3.71E-05	3.49E-05	0.0006	0.0891	0.0031	5.181	0.093	0.3303	0.0046	0.8412	0.1138	0.0011	1840	22	1850	15	1860	18	1.1
9422-63.2	252	141	0.58	89	3	5.01E-05	2.25E-05	0.0009	0.1633	0.0053	5.072	0.073	0.3232	0.0035	0.8240	0.1138	0.0009	1805	17	1832	12	1862	15	3
9422-77.2	36	5	0.15	11	1	8.60E-05	1.98E-04	0.0015	0.0399	0.0080	5.014	0.201	0.3192	0.0072	0.6570	0.1140	0.0035	1786	35	1822	34	*1863*	*56*	4.2
9422-96.2	230	119	0.53	82	5	7.24E-05	3.48E-05	0.0013	0.1496	0.0027	5.155	0.079	0.3280	0.0041	0.8793	0.1140	0.0008	1828	20	1845	13	1864	13	1.9
9422-63.1	223	112	0.52	81	3	5.43E-05	1.98E-05	0.0009	0.1519	0.0024	5.274	0.075	0.3351	0.0040	0.8990	0.1142	0.0007	1863	19	1865	12	1867	11	0.2
9422-20.1	155	37	0.25	51	0	1.00E-05	1.00E-05	0.0002	0.0670	0.0030	5.158	0.070	0.3273	0.0039	0.9221	0.1143	0.0006	1825	19	1846	12	*1869*	*10*	2.4
9422-47.1	28	10	0.37	10	1	9.95E-05	1.40E-04	0.0017	0.1104	0.0098	5.034	0.147	0.3192	0.0048	0.6106	0.1144	0.0027	1786	23	1825	25	1870	43	4.5
9422-16.1	60	21	0.36	21	3	1.74E-04	1.38E-04	0.0030	0.0964	0.0061	5.184	0.153	0.3284	0.0047	0.5822	0.1145	0.0028	1831	23	1850	25	1872	44	2.2
9422-55.1	67	15	0.24	22	0	1.00E-05	1.00E-05	0.0002	0.0684	0.0046	5.260	0.093	0.3317	0.0043	0.8148	0.1150	0.0012	1846	21	1862	15	*1880*	*19*	1.8
9422-20.2	63	11	0.18	20	0	1.00E-05	1.00E-05	0.0002	0.0564	0.0026	4.932	0.084	0.3098	0.0044	0.8864	0.1154	0.0009	1740	22	1808	15	*1887*	*14*	7.8
9422-49.1	253	19	0.08	83	1	1.43E-05	1.52E-05	0.0003	0.0229	0.0009	5.362	0.067	0.3364	0.0037	0.9217	0.1156	0.0006	1869	18	1879	11	*1889*	*9*	1.1
9422-24.1	45	14	0.32	16	0	1.00E-05	1.00E-05	0.0002	0.1031	0.0039	5.289	0.127	0.3317	0.0067	0.8913	0.1157	0.0013	1847	32	1867	21	*1890*	*20*	2.3
9422-24.2	51	13	0.26	17	0	1.00E-05	1.00E-05	0.0002	0.0738	0.0034	5.157	0.097	0.3233	0.0043	0.7830	0.1157	0.0014	1806	21	1845	16	*1891*	*21*	4.5
9422-3.1	205	82	0.41	71	1	1.00E-05	1.00E-05	0.0002	0.1230	0.0022	5.196	0.079	0.3244	0.0040	0.8694	0.1162	0.0009	1811	19	1852	13	1898	14	4.6
9422-2.2	69	46	0.69	26	0	1.00E-05	1.00E-05	0.0002	0.2007	0.0048	5.420	0.095	0.3363	0.0044	0.8257	0.1169	0.0012	1869	21	1888	15	1909	18	2.1
9422-43.2	173	62	0.37	62	1	1.21E-05	3.14E-05	0.0002	0.1079	0.0024	5.486	0.075	0.3374	0.0039	0.8902	0.1179	0.0007	1874	19	1898	12	1925	11	2.7
9422-76.2	72	10	0.14	23	0	1.00E-05	1.00E-05	0.0002	0.0405	0.0039	5.166	0.085	0.3177	0.0037	0.7883	0.1180	0.0012	1778	18	1847	14	1925	18	7.6
9422-88.4	102	71	0.72	38	1	3.17E-05	4.11E-05	0.0006	0.2161	0.0097	5.206	0.099	0.3201	0.0048	0.8559	0.1180	0.0012	1790	24	1854	16	1926	18	7
9422-57.1	272	140	0.53	101	4	5.21E-05	3.29E-05	0.0009	0.1598	0.0023	5.541	0.081	0.3390	0.0039	0.8480	0.1185	0.0009	1882	19	1907	13	1934	14	2.7
9422-39.1	121	59	0.51	46	27	7.27E-04	1.51E-04	0.0126	0.1453	0.0065	5.811	0.151	0.3509	0.0042	0.5599	0.1201	0.0026	1939	20	1948	23	1958	39	1
9422-32.1	118	95	0.84	47	2	7.26E-05	5.57E-05	0.0013	0.2436	0.0046	5.691	0.161	0.3404	0.0041	0.5289	0.1212	0.0029	1889	20	1930	25	1975	44	4.4
9422-86.2	23	6	0.28	8	3	5.17E-04	2.09E-04	0.0090	0.1078	0.0107	5.350	0.234	0.3193	0.0068	0.5891	0.1215	0.0043	1786	33	1877	38	1979	65	9.7
9422-47.2	133	63	0.49	49	0	1.00E-05	1.00E-05	0.0002	0.1496	0.0032	5.703	0.088	0.3388	0.0041	0.8556	0.1221	0.0010	1881	20	1932	13	1987	14	5.4
9422-97.2	160	110	0.71	63	2	3.49E-05	2.86E-05	0.0006	0.2032	0.0048	5.872	0.084	0.3447	0.0037	0.8267	0.1235	0.0010	1909	18	1957	13	2008	15	4.9
9422-88.3	60	40	0.69	23	3	1.79E-04	8.05E-05	0.0031	0.1955	0.0068	6.056	0.165	0.3392	0.0058	0.7110	0.1295	0.0025	1883	28	1984	24	2091	34	10

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th/U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb/^{206}Pb	±^{204}Pb/^{206}Pb	f(206)^{204}	^{208*}Pb/^{206*}Pb	±^{208}Pb/^{206}Pb	^{207*}Pb/^{235}U	±^{207}Pb/^{235}U	^{206*}Pb/^{238}U	±^{206}Pb/^{238}U	Corr coeff	^{207*}Pb/^{206*}Pb	±^{207}Pb/^{206}Pb	Apparent ages (Ma) ^{206}Pb/^{238}U	±^{206}Pb/^{238}U	^{207}Pb/^{235}U	±^{207}Pb/^{235}U	^{207}Pb/^{206}Pb	±^{207}Pb/^{206}Pb	Disc. (%)
9422-43.1	69	58	0.87	29	1	5.59E-05	5.87E-05	0.0010	0.2480	0.0070	6.331	0.125	0.3525	0.0048	0.7737	0.1302	0.0017	1947	23	2023	18	2101	22	7.4
9422-88.2	93	47	0.52	36	1	1.93E-05	8.38E-05	0.0003	0.1556	0.0050	6.373	0.132	0.3512	0.0046	0.7237	0.1316	0.0019	1940	22	2029	18	2120	25	8.5
9422-21a.3	131	95	0.74	56	3	8.59E-05	5.51E-05	0.0015	0.2383	0.0043	6.675	0.128	0.3580	0.0052	0.8310	0.1352	0.0015	1973	25	2069	17	2167	19	9
9422-92.2	78	30	0.40	29	0	1.49E-05	6.11E-05	0.0003	0.1110	0.0040	6.605	0.136	0.3516	0.0055	0.8316	0.1362	0.0016	1942	26	2060	18	2180	20	10.9
9422-21a.6	154	122	0.81	65	4	8.53E-05	3.14E-05	0.0015	0.2476	0.0080	6.670	0.106	0.3511	0.0049	0.9298	0.1378	0.0008	1940	24	2069	14	2200	10	11.8
9422-22.1	109	50	0.48	44	0	1.00E-05	1.00E-05	0.0002	0.1371	0.0028	7.150	0.110	0.3698	0.0043	0.8255	0.1402	0.0012	2028	20	2130	14	2230	15	9
9422-47.3	131	106	0.84	59	0	1.00E-05	1.00E-05	0.0002	0.2600	0.0040	7.242	0.129	0.3731	0.0049	0.8096	0.1408	0.0015	2044	23	2142	16	2237	18	8.6
9422-50.1	263	465	1.83	146	2	2.02E-05	1.21E-05	0.0004	0.5439	0.0039	7.642	0.096	0.3814	0.0042	0.9298	0.1453	0.0007	2083	20	2190	11	2292	8	9.1
9422-30.1	112	115	1.05	51	1	4.05E-05	3.14E-05	0.0007	0.3074	0.0101	7.352	0.321	0.3660	0.0110	0.7673	0.1457	0.0041	2010	52	2155	40	2296	49	12.4
9422-13.1	86	74	0.89	41	1	2.50E-05	5.88E-05	0.0004	0.2576	0.0046	8.106	0.150	0.3954	0.0045	0.6987	0.1487	0.0020	2148	21	2243	17	2331	23	7.9
9422-28.1	41	46	1.15	20	1	3.80E-05	1.00E-04	0.0007	0.3128	0.0094	7.904	0.192	0.3821	0.0049	0.6230	0.1501	0.0029	2086	23	2220	22	2346	33	11.1
9422-34.1	82	71	0.90	39	2	7.53E-05	8.01E-05	0.0013	0.2787	0.0057	8.028	0.165	0.3856	0.0051	0.7277	0.1510	0.0021	2102	24	2234	19	2357	24	10.8
9422-36.1	79	58	0.75	36	1	2.89E-05	6.32E-05	0.0005	0.2202	0.0051	8.229	0.172	0.3875	0.0062	0.8377	0.1540	0.0018	2111	29	2257	19	2391	20	11.7
9422-48.2	162	148	0.94	80	2	4.19E-05	2.04E-05	0.0007	0.2738	0.0059	8.632	0.121	0.4002	0.0048	0.9054	0.1564	0.0009	2170	22	2300	13	2417	10	10.2
9422-4.1	77	41	0.55	35	1	5.08E-05	3.14E-05	0.0009	0.1616	0.0038	8.737	0.133	0.3997	0.0051	0.8892	0.1586	0.0011	2167	23	2311	14	2440	12	11.2
9422-11.1	138	77	0.57	61	0	1.00E-05	1.00E-05	0.0002	0.1657	0.0039	8.608	0.277	0.3875	0.0083	0.7459	0.1611	0.0035	2111	38	2297	30	2467	37	14.4
9422-5.1	199	293	1.52	113	2	2.90E-05	1.82E-05	0.0005	0.4504	0.0046	9.154	0.124	0.4100	0.0050	0.9377	0.1619	0.0008	2215	23	2353	12	2476	8	10.5
9422-48.1	87	80	0.94	42	3	9.52E-05	6.21E-05	0.0017	0.2704	0.0048	8.904	0.162	0.3954	0.0055	0.8370	0.1633	0.0016	2148	26	2328	17	2490	17	13.8
9422-2.1	46	24	0.53	21	0	1.00E-05	1.00E-05	0.0002	0.1657	0.0075	9.138	0.206	0.4029	0.0060	0.7414	0.1645	0.0025	2183	27	2352	21	2502	26	12.8
9422-92.1	30	18	0.63	15	3	2.35E-04	2.06E-04	0.0041	0.1747	0.0124	9.794	0.327	0.4291	0.0072	0.6016	0.1656	0.0045	2301	32	2416	31	2513	46	8.4
9422-15.1	33	33	1.04	17	1	1.03E-04	8.86E-05	0.0018	0.2935	0.0141	9.859	0.251	0.4166	0.0060	0.6583	0.1716	0.0033	2245	27	2422	24	2574	33	12.8
9422-12.1	113	99	0.91	61	2	4.86E-05	2.90E-05	0.0008	0.2701	0.0066	10.267	0.143	0.4330	0.0050	0.8916	0.1720	0.0011	2319	23	2459	13	2577	11	10
9422-21a.2	91	62	0.70	47	0	4.20E-06	3.53E-05	0.0001	0.2012	0.0039	10.645	0.183	0.4354	0.0054	0.8000	0.1773	0.0019	2330	24	2493	16	2628	17	11.4
9422-8.1	79	28	0.36	39	0	1.00E-05	1.00E-05	0.0002	0.1103	0.0026	11.348	0.163	0.4469	0.0052	0.8650	0.1842	0.0013	2381	23	2552	14	2691	12	11.5
9422-21a.5	68	45	0.69	43	3	8.33E-05	6.17E-05	0.0014	0.1855	0.0091	15.619	0.369	0.5226	0.0091	0.8141	0.2168	0.0030	2710	39	2854	23	2957	22	8.3
9422-21a.4	140	157	1.16	99	4	5.91E-05	2.63E-05	0.0010	0.3115	0.0076	16.299	0.302	0.5385	0.0082	0.8835	0.2195	0.0019	2777	35	2895	18	2977	14	6.7
9422-21a.1	126	135	1.11	94	0	8.00E-06	3.02E-05	0.0001	0.3011	0.0049	17.555	0.256	0.5700	0.0068	0.8797	0.2234	0.0016	2908	28	2966	14	3005	11	3.2
Analytical details: mount IP481, 23 µm spot size, primary beam intensity 6-7 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
07CYA-C16a (lab# z9557) bi-mt granodiorite 64.27769°N 83.4888°W																								
9557-30.1	239	194	0.84	88	34	5.17E-04	1.09E-04	0.0090	0.2389	0.0095	4.723	0.123	0.3154	0.0043	0.6211	0.1086	0.0022	1767	21	1771	22	1777	38	0.5
9557-75.1	138	337	2.52	70	5	1.40E-04	9.76E-05	0.0024	0.7250	0.0124	4.835	0.132	0.3210	0.0051	0.6719	0.1092	0.0022	1795	25	1791	23	1787	38	-0.5
9557-81.1	193	93	0.50	68	4	7.66E-05	7.72E-05	0.0013	0.1456	0.0050	4.888	0.105	0.3244	0.0045	0.7353	0.1093	0.0016	1811	22	1800	18	1788	27	-1.3
9557-63.1	299	287	0.99	117	6	7.35E-05	7.54E-05	0.0013	0.2971	0.0115	4.872	0.095	0.3220	0.0042	0.7498	0.1098	0.0014	1799	20	1797	17	1795	24	-0.2
9557-136.1	265	184	0.72	98	5	7.28E-05	3.98E-05	0.0013	0.2009	0.0052	4.945	0.078	0.3259	0.0040	0.8492	0.1100	0.0009	1819	20	1810	13	1800	15	-1
9557-52.1	298	185	0.64	108	3	3.09E-05	3.71E-05	0.0005	0.1892	0.0063	4.926	0.069	0.3222	0.0036	0.8543	0.1109	0.0008	1801	17	1807	12	1814	13	0.7
9557-57.1	137	469	3.54	80	8	2.21E-04	1.67E-04	0.0038	1.0399	0.0154	4.838	0.172	0.3161	0.0049	0.5387	0.1110	0.0034	1771	24	1791	30	1816	56	2.5
9557-38.2	280	155	0.57	98	11	1.37E-04	6.59E-05	0.0024	0.1604	0.0046	4.912	0.081	0.3201	0.0036	0.7638	0.1113	0.0012	1790	18	1804	14	1821	20	1.7
9557-103.1	181	171	0.98	68	5	1.10E-04	5.67E-05	0.0019	0.2790	0.0055	4.831	0.081	0.3146	0.0037	0.7856	0.1114	0.0012	1763	18	1790	14	1822	19	3.3
9557-135.2	744	102	0.14	242	4	2.02E-05	1.13E-05	0.0004	0.0381	0.0019	5.057	0.072	0.3287	0.0043	0.9562	0.1116	0.0005	1832	21	1829	12	1825	8	-0.4
9557-56.1	154	156	1.05	61	3	6.52E-05	6.82E-05	0.0011	0.3119	0.0065	5.012	0.103	0.3249	0.0049	0.8057	0.1119	0.0014	1814	24	1821	18	1830	22	0.9
9557-107.1	885	426	0.50	312	10	4.08E-05	1.37E-05	0.0007	0.1448	0.0030	5.041	0.072	0.3257	0.0038	0.8727	0.1123	0.0008	1817	18	1826	12	1836	13	1
9557-23.1	353	351	1.03	138	1	9.02E-06	1.96E-05	0.0002	0.2986	0.0038	4.995	0.073	0.3225	0.0041	0.9088	0.1123	0.0007	1802	20	1818	13	1837	11	1.9
9557-140.1	200	185	0.96	77	1	1.93E-05	3.37E-05	0.0003	0.2776	0.0054	5.019	0.113	0.3239	0.0055	0.8306	0.1124	0.0014	1809	27	1823	19	1838	23	1.6
9557-102.1	311	263	0.87	114	1	1.21E-05	2.26E-05	0.0002	0.2738	0.0047	4.753	0.064	0.3066	0.0035	0.8978	0.1124	0.0007	1724	17	1777	11	1839	11	6.3
9557-75.2	231	394	1.76	105	3	4.49E-05	4.50E-05	0.0008	0.5138	0.0067	5.027	0.077	0.3236	0.0038	0.8267	0.1127	0.0010	1807	18	1824	13	1843	16	1.9
9557-71.1	292	194	0.69	106	1	1.60E-05	6.86E-05	0.0003	0.1994	0.0051	5.005	0.101	0.3214	0.0039	0.6900	0.1130	0.0017	1796	19	1820	17	1847	27	2.8
9557-39.1	823	258	0.32	277	4	1.75E-05	8.32E-06	0.0003	0.0959	0.0014	5.049	0.059	0.3240	0.0034	0.9439	0.1130	0.0004	1809	17	1828	10	1849	7	2.1
9557-146.1	189	241	1.32	77	2	3.79E-05	6.41E-05	0.0007	0.3802	0.0130	4.941	0.091	0.3170	0.0037	0.7175	0.1131	0.0015	1775	18	1809	16	1849	24	4
9557-87.1	279	259	0.96	110	11	1.35E-04	6.17E-05	0.0023	0.2778	0.0065	5.116	0.135	0.3279	0.0055	0.7263	0.1132	0.0021	1828	27	1839	23	1851	33	1.2
9557-122.1	701	661	0.97	272	2	1.09E-05	1.68E-05	0.0002	0.2805	0.0059	5.053	0.059	0.3236	0.0034	0.9379	0.1132	0.0005	1807	17	1828	10	1852	7	2.4
9557-7.1	1021	421	0.43	362	4	1.20E-05	1.05E-05	0.0002	0.1235	0.0028	5.204	0.081	0.3333	0.0040	0.8401	0.1132	0.0010	1854	19	1853	13	1852	16	-0.1
9557-110.2	171	147	0.89	64	7	1.44E-04	5.42E-05	0.0025	0.2566	0.0058	4.987	0.107	0.3188	0.0052	0.8248	0.1135	0.0014	1784	25	1817	18	1855	22	3.9
9557-124.1	366	320	0.90	142	1	5.00E-06	2.37E-05	0.0001	0.2747	0.0086	5.082	0.070	0.3236	0.0037	0.8910	0.1139	0.0007	1807	18	1833	12	1863	11	3

Notes (see Stern, 1997):
Sample locations are given relative to the NAD27 datum
Spot name follows the convention x-y.z;where x = sample number, y = grain number and z = spot number.Multiple analyses in an individual spot are labelled as x-y.z.z
Uncertainties reported at 1s (absolute) and are calculated by numerical propagation of all known sources of error
f206204 refers to mole fraction of total 206Pb that is due to common Pb, calculated using the 204Pb-method; common Pb composition used is the surface blank (4/6:0.05770; 7/6:0.89500; 8/6:2.13840)
* refers to radiogenic Pb (corrected for common Pb)
Discordance relative to origin = 100 * (1-(206Pb/238U age)/(207Pb/206Pb age))
Calibration standard 6266; U = 910 ppm; Age = 559 Ma; 206Pb/238U = 0.09059
Th/U calibration: F =0.03900*UO +0.85600
The notes above apply to all data in Table 2.

Table 2. (cont.)

Spot name	U (ppm)	Th (ppm)	Th U	Pb* (ppm)	^{204}Pb (ppb)	^{204}Pb/^{206}Pb	±^{204}Pb/^{206}Pb	f(206)^{204}	^{208*}Pb/^{206*}Pb	±^{208}Pb/^{206}Pb	^{207*}Pb/^{235}U	±^{207}Pb/^{235}U	^{206*}Pb/^{238}U	±^{206}Pb/^{238}U	Corr coeff	^{207*}Pb/^{206*}Pb	±^{207}Pb/^{206}Pb	Apparent ages (Ma) ^{206}Pb/^{238}U	±^{206}Pb/^{238}U	^{207}Pb/^{235}U	±^{207}Pb/^{235}U	^{207}Pb/^{206}Pb	±^{207}Pb/^{206}Pb	Disc. (%)
07CYA-C16a (lab# z9557) bi-mt granodiorite 64.27769°N 83.4888°W (cont.)																								
9557-30.2	217	173	0.83	75	3	5.99E-05	8.76E-05	0.0010	0.2426	0.0116	4.678	0.117	0.2972	0.0045	0.6959	0.1142	0.0021	1677	22	1763	21	1866	33	10.1
9557-104.1	781	135	0.18	258	4	1.60E-05	1.37E-05	0.0003	0.0518	0.0015	5.248	0.088	0.3299	0.0041	0.8169	0.1154	0.0011	1838	20	1861	14	1886	18	2.5
9557-135.1	847	104	0.13	277	2	1.00E-05	1.00E-05	0.0002	0.0370	0.0015	5.269	0.078	0.3305	0.0038	0.8442	0.1156	0.0009	1841	18	1864	13	1889	15	2.6
9557-110.1	190	169	0.92	72	6	1.15E-04	5.59E-05	0.0020	0.2689	0.0064	5.078	0.107	0.3175	0.0047	0.7805	0.1160	0.0016	1777	23	1832	18	1895	24	6.2
9557-54.1	767	176	0.24	344	15	5.34E-05	1.56E-05	0.0009	0.0689	0.0012	9.362	0.114	0.4238	0.0045	0.9248	0.1602	0.0008	2278	21	2374	11	2458	8	7.3
9557-38.1	1573	93	0.06	770	5	7.77E-06	4.69E-06	0.0001	0.0166	0.0004	11.208	0.143	0.4799	0.0057	0.9649	0.1694	0.0006	2527	25	2541	12	2552	6	1
9557-99.1	702	93	0.14	337	14	5.17E-05	2.59E-05	0.0009	0.0341	0.0013	10.928	0.147	0.4624	0.0050	0.8579	0.1714	0.0012	2450	22	2517	13	2571	12	4.7
9557-24.1	890	181	0.21	451	4	1.00E-05	1.00E-05	0.0002	0.0609	0.0011	11.493	0.148	0.4765	0.0052	0.9076	0.1749	0.0010	2512	23	2564	12	2605	9	3.6
9557-6.1	744	84	0.12	379	17	5.27E-05	1.33E-05	0.0009	0.0304	0.0014	11.851	0.176	0.4910	0.0061	0.8935	0.1751	0.0012	2575	26	2593	14	2607	11	1.2
9557-32.1	651	196	0.31	348	25	9.24E-05	1.98E-05	0.0016	0.0812	0.0014	12.191	0.150	0.4919	0.0056	0.9531	0.1797	0.0007	2579	24	2619	12	2650	6	2.7
9557-31.1	915	139	0.16	471	2	4.17E-06	3.38E-06	0.0001	0.0395	0.0008	12.432	0.161	0.4889	0.0055	0.9121	0.1844	0.0010	2566	24	2638	12	2693	9	4.7
9557-118.1	291	345	1.22	191	6	4.76E-05	1.75E-05	0.0008	0.3402	0.0038	12.766	0.183	0.5001	0.0057	0.8651	0.1851	0.0013	2614	25	2663	14	2700	12	3.2
9557-36.1	354	125	0.37	194	14	9.10E-05	3.45E-05	0.0016	0.0864	0.0021	12.867	0.190	0.5001	0.0057	0.8397	0.1866	0.0015	2614	25	2670	14	2712	13	3.6
Analytical details: mount IP491, 23 µm spot size, primary beam intensity 5 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
07CYA-M133a (lab# z9558) quartz diorite 64.54453°N 81.90056°W																								
9558-84.1	201	113	0.58	74	1	1.00E-05	1.00E-05	0.0002	0.1641	0.0037	5.049	0.087	0.3358	0.0040	0.7665	0.1091	0.0012	1866	19	1828	15	1784	21	-4.6
9558-22.1	133	60	0.47	48	1	3.13E-05	4.01E-05	0.0005	0.1486	0.0053	5.121	0.130	0.3357	0.0059	0.7705	0.1106	0.0018	1866	28	1840	22	1810	30	-3.1
9558-93.1	134	116	0.90	51	7	1.78E-04	5.73E-05	0.0031	0.2626	0.0054	4.924	0.088	0.3210	0.0042	0.8142	0.1112	0.0012	1795	21	1806	15	1820	19	1.4
9558-1.1	758	169	0.23	252	4	2.04E-05	1.37E-05	0.0004	0.0650	0.0013	5.076	0.074	0.3289	0.0038	0.8592	0.1120	0.0008	1833	18	1832	12	1831	14	-0.1
9558-40.1	1029	149	0.15	338	2	5.78E-06	5.29E-06	0.0001	0.0438	0.0009	5.114	0.058	0.3306	0.0035	0.9662	0.1122	0.0003	1841	17	1839	10	1835	5	-0.3
9558-20.1	960	241	0.26	326	5	1.68E-05	1.54E-05	0.0003	0.0785	0.0015	5.131	0.071	0.3315	0.0038	0.8806	0.1122	0.0007	1846	18	1841	12	1836	12	-0.5
9558-94.1	893	170	0.20	297	3	1.00E-05	1.00E-05	0.0002	0.0566	0.0010	5.121	0.062	0.3304	0.0035	0.9074	0.1124	0.0006	1841	17	1840	10	1838	9	-0.1
9558-48.1	1090	147	0.14	356	2	7.49E-06	1.33E-05	0.0001	0.0417	0.0019	5.106	0.060	0.3290	0.0035	0.9484	0.1126	0.0004	1834	17	1837	10	1841	7	0.4
9558-37.1	278	65	0.24	92	3	3.92E-05	3.22E-05	0.0007	0.0728	0.0039	5.045	0.091	0.3250	0.0037	0.7230	0.1126	0.0014	1814	18	1827	15	1842	23	1.5
9558-35.1	353	224	0.65	130	2	2.33E-05	1.42E-05	0.0004	0.1951	0.0029	5.070	0.081	0.3263	0.0042	0.8677	0.1127	0.0009	1821	21	1831	14	1843	15	1.2
9558-71.1	544	133	0.25	176	1	5.62E-06	1.06E-05	0.0001	0.0740	0.0017	4.933	0.072	0.3175	0.0037	0.8646	0.1127	0.0008	1778	18	1808	12	1843	13	3.6
9558-36.1	1043	361	0.36	362	1	3.33E-06	6.54E-06	0.0001	0.1005	0.0017	5.167	0.064	0.3325	0.0037	0.9344	0.1127	0.0005	1851	18	1847	11	1843	8	-0.4
9558-46.1	121	32	0.27	40	1	2.29E-05	2.95E-05	0.0004	0.0826	0.0040	5.027	0.107	0.3231	0.0043	0.7110	0.1128	0.0017	1805	21	1824	18	1846	28	2.2
9558-5.1	928	144	0.16	304	1	4.69E-06	5.90E-06	0.0001	0.0469	0.0016	5.119	0.064	0.3291	0.0036	0.9172	0.1128	0.0006	1834	17	1839	11	1846	9	0.6
9558-16.1	1142	131	0.12	376	3	8.85E-06	7.93E-06	0.0002	0.0338	0.0008	5.202	0.062	0.3340	0.0036	0.9398	0.1130	0.0005	1858	17	1853	10	1848	7	-0.5
9558-64.1	121	45	0.38	41	5	1.38E-04	1.72E-04	0.0024	0.1114	0.0109	5.032	0.188	0.3220	0.0052	0.5379	0.1134	0.0036	1799	25	1825	32	1854	59	2.9
9558-13.1	1006	208	0.21	339	5	1.64E-05	1.02E-05	0.0003	0.0639	0.0020	5.210	0.064	0.3331	0.0037	0.9482	0.1134	0.0005	1853	18	1854	11	1855	7	0.1
9558-85.1	1042	183	0.18	341	4	1.53E-05	9.01E-06	0.0003	0.0521	0.0013	5.113	0.067	0.3266	0.0037	0.9149	0.1136	0.0006	1822	18	1838	11	1857	10	1.9
9558-67.1	124	44	0.37	42	3	7.41E-05	1.34E-04	0.0013	0.1079	0.0084	5.079	0.147	0.3238	0.0056	0.6924	0.1138	0.0024	1808	28	1833	25	1861	39	2.8
9558-49.2	995	708	0.73	491	0	1.15E-06	4.62E-06	0.0000	0.2113	0.0037	8.649	0.108	0.4216	0.0046	0.9190	0.1488	0.0007	2268	21	2302	11	2332	9	2.7
9558-70.1	831	667	0.83	435	3	1.00E-05	1.00E-05	0.0002	0.2369	0.0022	9.378	0.179	0.4363	0.0053	0.7207	0.1559	0.0021	2334	24	2376	18	2412	23	3.2
9558-91.1	633	454	0.74	327	1	6.12E-06	1.17E-05	0.0001	0.2101	0.0022	9.518	0.120	0.4393	0.0050	0.9424	0.1571	0.0007	2347	22	2389	12	2425	7	3.2
9558-10.2	528	334	0.65	279	9	4.48E-05	1.72E-05	0.0008	0.1771	0.0024	10.111	0.131	0.4587	0.0051	0.9135	0.1599	0.0009	2434	23	2445	12	2454	9	0.8
9558-12.1	695	416	0.62	364	3	9.50E-06	1.37E-05	0.0002	0.1822	0.0044	10.014	0.128	0.4532	0.0050	0.9165	0.1603	0.0008	2409	22	2436	12	2458	9	2
9558-49.1	505	405	0.83	272	5	2.45E-05	1.21E-05	0.0004	0.2347	0.0026	9.963	0.145	0.4488	0.0055	0.8913	0.1610	0.0011	2390	24	2431	14	2466	11	3.1
9558-10.1	540	289	0.55	285	7	3.40E-05	1.39E-05	0.0006	0.1538	0.0021	10.601	0.135	0.4651	0.0051	0.9089	0.1653	0.0009	2462	22	2489	12	2511	9	1.9
Analytical details: mount IP491, 23 µm spot size, primary beam intensity 5 nA, 6 scans Error in 206Pb/238U calibration 1.0% 207Pb/206Pb ages given *in italics* were used to calculate the weighted mean age given in the text.																								
Notes (see Stern, 1997): Sample locations are given relative to the NAD27 datum Spot name follows the convention x-y.z;where x = sample number, y = grain number and z = spot number.Multiple analyses in an individual spot are labelled as x-y.z.z Uncertainties reported at 1s (absolute) and are calculated by numerical propagation of all known sources of error f206204 refers to mole fraction of total 206Pb that is due to common Pb, calculated using the 204Pb-method; common Pb composition used is the surface blank (4/6:0.05770; 7/6:0.89500; 8/6:2.13840) * refers to radiogenic Pb (corrected for common Pb) Discordance relative to origin = 100 * (1-(206Pb/238U age)/(207Pb/206Pb age)) Calibration standard 6266; U = 910 ppm; Age = 559 Ma; 206Pb/238U = 0.09059 Th/U calibration: F =0.03900*UO +0.85600 The notes above apply to all data in Table 2.																								

sedimentary transport across long distances (Fig. 5a inset). In BSE, most zircons exhibit oscillatory zoning, although some grains are unzoned. Sixty-four analyses, carried out on 55 separate zircon grains, yield $^{207}Pb/^{206}Pb$ ages between 1823 and 3255 Ma (Fig. 5a). Paleoproterozoic ages were obtained from a distinct tip on grain 104 and an equant, unzoned zircon (grain 22). These zircons are not interpreted as detrital, rather as representing geological contamination from the pervasive Paleoproterozoic plutonism in the area (*see* results for plutonic samples below). Interpreted detrital age distributions are highlighted in the probability density diagram (Fig. 5b), with the majority of results between 2.68 Ga and 2.95 Ga and prominent modes at 2.7 Ga, 2.82 Ga, and 2.91 Ga. The youngest detrital zircon yielded a weighted mean $^{207}Pb/^{206}Pb$ age of 2615 ± 23 Ma (n=3, MSWD=2.9, probability of fit=0.06). A fourth high U replicate analysis was excluded from the calculation of the mean and the remaining excess scatter may also be the result of minor Pb loss. As such, 2615 ± 23 Ma is considered the minimum age for the youngest detrital zircon, and a maximum age of deposition. This dataset does not confirm if the quartzite/calc-silicate sequence on Southampton Island was deposited during the late Archean or during the Paleoproterozoic (i.e., time equivalent to Paleoproterozoic Amer and Ketyet River groups; Rainbird et al., 2010). It does, however, effectively distinguish the quartzite-carbonate sequence from the psammite-semipelite sequence described earlier, which was deposited prior to 2682 ± 17 Ma.

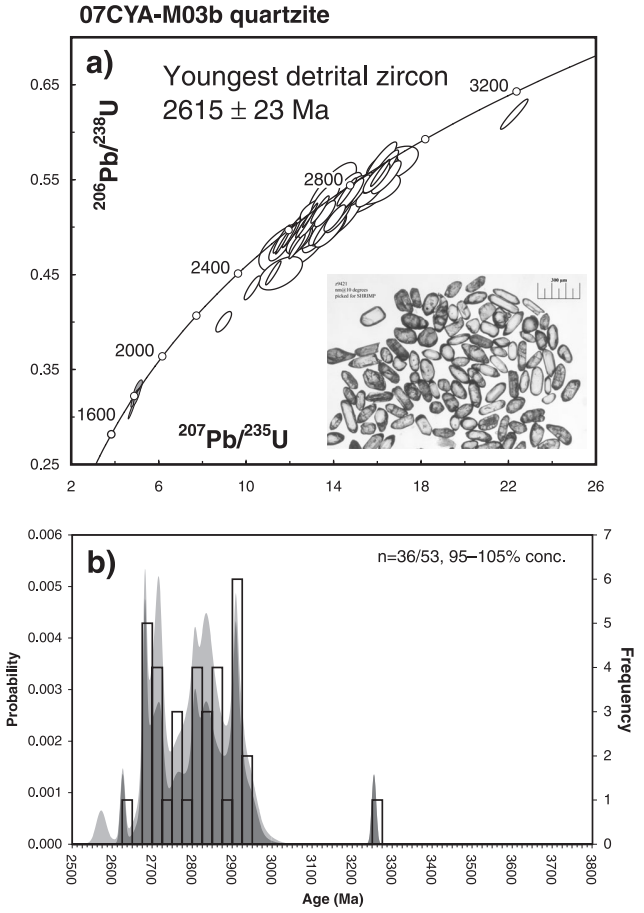

Figure 5. a) Concordia diagram for sample 07CYA-M03b. Detrital zircon results are shown as unfilled ellipses, grey ellipses record later overprint. Scale bar on inset photo is 300µm. **b**) Probability density diagram illustrating the distribution of detrital age results. The dark grey curve and histogram represent data within 5% of concordance (n=36); the light grey curve illustrates all data regardless of concordance (n=53). Replicate analyses are not plotted.

07CYA-M48b (z9548) aphanitic epiclastic rock

A distinctive, grey, aphanitic, strongly foliated, folded and quartz-veined unit associated with quartzose wacke in the southwest corner of the exposed basement (Fig. 2) was considered the best candidate for an intermediate metavolcanic rock on Southampton Island. Subsequent examination of zircon morphology and evaluation of the consistency of ages has revised this interpretation to an epiclastic origin. Zircons recovered from the sample are highly variable in colour and morphology, ranging from clear and colourless to dark brown and turbid. Most grains are prismatic to stubby, ranging from well-faceted to well-rounded (Fig. 6a inset). The recovery of rounded and frosted zircon implies some degree of sedimentary transport. Oscillatory zoning is visible in brown zircons in both plane light and in BSE images, whereas the colourless grains are typically unzoned in plane light but may exhibit faint concentric zoning in BSE images. The $^{207}Pb/^{206}Pb$ age profile is dominated by 2.60 and 2.62 Ga dates with sporadic results between 2.70 Ga and 3.17 Ga (Fig. 6b). The dominant mode at ca 2.61 Ga is a composite population of minor ca. 2.60 Ga zircon and more prevalent 2.62 Ga ages. A metamorphic overprint is observed in high U, low Th/U overgrowths with ages between 1815 and 1764 Ma (Fig. 6a). Further evidence for late disturbance of the isotopic systematics is provided by non-reproducible replicate analyses within the same zircon domain (*see* analyses of grains 17, 76, 89, Table 2). The youngest detrital zircon yields two replicate analyses with a mean age of 2578 ± 9 Ma; however, this grain is of poor quality, and considering that Pb-loss is documented in other grains, this age may underestimate the maximum age of deposition. A more conservative age estimate for the youngest detrital zircon is 2599 ± 15 Ma (MSWD=2.7, probability=0.042) constrained by the four oldest replicate analyses of grain 49. The provenance profile for this sample differs substantially from that of 07-CYA-M03b, although both constrain maximum ages of deposition to be late Archean.

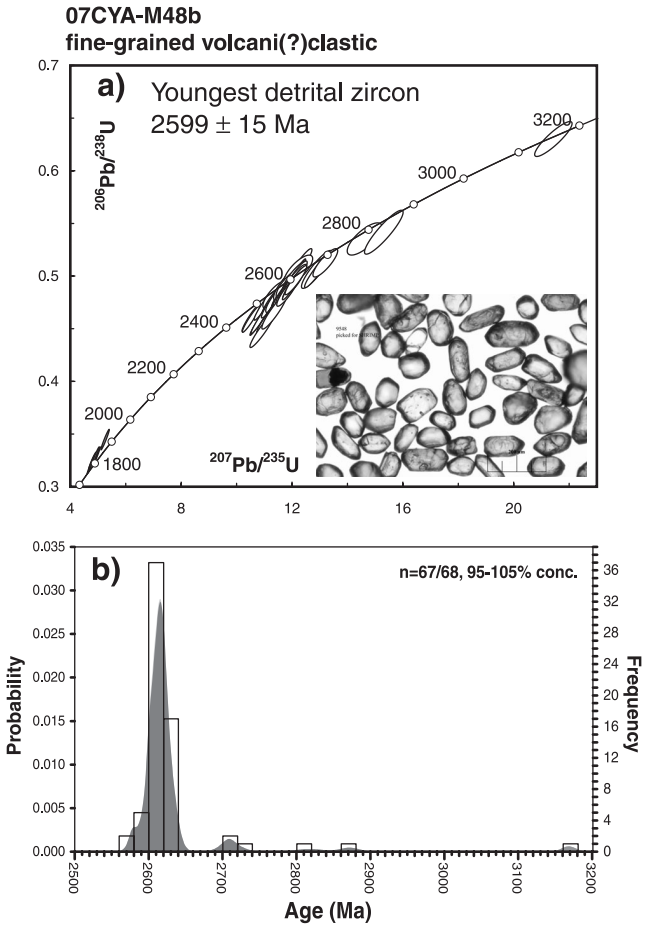

Figure 6. a) Concordia diagram for sample 07CYA-M48b. Detrital zircon results are shown as unfilled ellipses; grey ellipses record later overprint. **b**) Probability density diagram illustrating the distribution of detrital age results. The dark grey curve and histogram represent data within 5% of concordance (n=67); the light grey curve illustrates all data regardless of concordance (n=68). Replicate analyses are not plotted.

07CYA-M98 (z9425) quartz porphyry tonalite

A distinctive blue quartz porphyry of intermediate composition collected from an inlier in the southwest corner of the map area (Fig. 2) intrudes locally retrogressed mafic granulites. Felsic granitic rocks, regionally pervasive elsewhere, are notably absent in this inlier such that retrogression of the mafic granulites is attributed to the intrusive porphyritic phase. Zircons recovered from this sample are largely clear, colourless, high-quality, subhedral, equant prisms with a smaller proportion of light brown, highly fractured prisms. Twenty-seven analyses were carried out on twenty-two zircon grains. A weighted mean $^{207}Pb/^{206}Pb$ age of 1934 ± 8 Ma (n=19, MSWD=0.42, probability=0.98) is interpreted as the crystallization age of the porphyry (Fig. 7). In the case of grains with replicate analyses, only the oldest replicate was included in the mean, since multiple

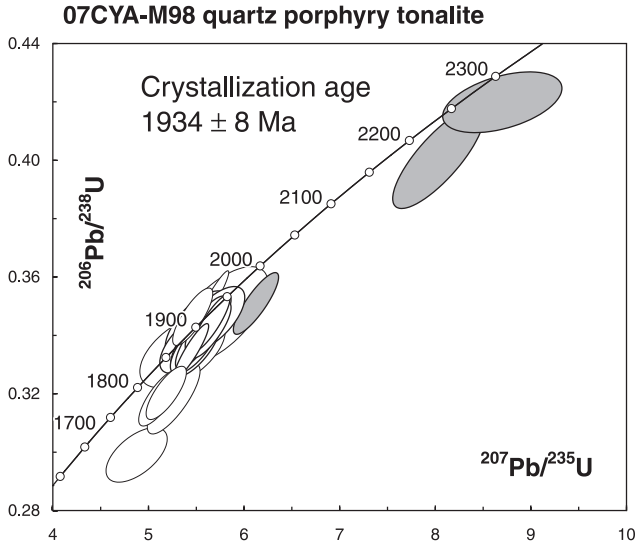

Figure 7. Concordia diagram for sample 07CYA-M98. Magmatic zircons are shown as unfilled ellipses; inherited zircons are shown in shades of grey.

analyses from other individual grains (grain 2, 26, 54) were not reproducible. Three zircons belonging to the subordinate group of poor-quality zircon gave older ages of between 2050 and 2351 Ma. All three results are 4–6% discordant and are considered minimum ages of inheritance. Given that the porphyry retrogresses the host mafic granulite rocks, its crystallization age of 1934 ± 8 Ma not only provides a minimum age for a mafic plutonic event at this locality, but also provides a minimum age on a high-grade metamorphic event that affected this region.

07CYA-B99 (z9423) biotite-orthopyroxene granodiorite

This sample of bi±opx granodiorite appears representative of regionally extensive granulite facies plutonic rocks exposed on Southampton Island. It was collected in the western part of the exposed basement characterized by a dominant north-south fabric (Fig. 2). Close to the sampling site, the opx-bearing granodiorite is flooded with pink weathering, non-granulite facies monzogranite. In order to minimize contamination through sampling, a homogenous 40 cm wide layer was targeted for geochronology. Recovered zircons are highly variable, and include a population of clear, colourless prisms with multi-faceted or resorbed faces, and a second population of fractured and oscillatory zoned, pale brown, elongate prisms. Wide, pale brown overgrowths are noted in plane light, however these are rare. In BSE images the overgrowths are relatively bright, indicating elevated U concentrations. A second generation of overgrowth is also apparent in BSE images, and is characterized by lower U content. Oscillatory zoned zircons, both as cores or single-component grains, yield a range of Archean ages between 2.65 and 3.68 Ga that are interpreted as inherited. The dominant inherited component

is Eoarchean, 3.63 to 3.66 Ga (Fig 8a, Table 2). A second population of low U (17–397 ppm), and very low Th (1–2 ppm) unzoned zircons yields a mean $^{207}Pb/^{206}Pb$ age of 1931 ± 19 Ma (Tukey's Biweight mean) from 18 analyses of 11 zircon grains (Fig. 8b). Three replicate analyses of a grain with similar chemistry yield distinctly older ages (2087 Ma and 2150 Ma) and are not included in the calculation of the mean. High U (2142–2772 ppm) zircon overgrowths yield a weighted mean $^{207}Pb/^{206}Pb$ age of 1860 ± 4 Ma (n=5, MSWD=1.7, probability=0.15). Moderate U (122–567 ppm) zircon overgrowths and rare, single-component grains have distinctly higher Th/U (0.6–2.6, most greater than 1) that yield a weighted mean $^{207}Pb/^{206}Pb$ age of 1840 ± 7 Ma (n=11, MSWD=0.14, probability=0.999).

Although the isotopic data from this sample highlight several significant ages, 1931 ± 19 Ma is the preferred crystallization age of the bi + opx granodiorite as it is consistent with the fact that this rock contains S_1, determined to have

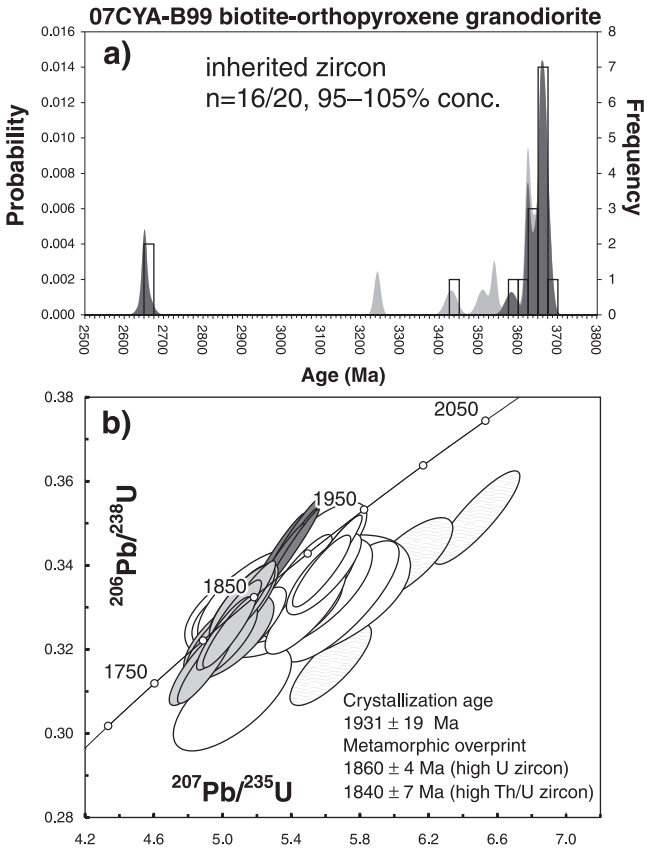

Figure 8. a) Probability density diagram illustrating the distribution of inherited zircon ages for sample 07CYA-B99. The dark grey curve and histogram represent data within 5% of concordance (n=16); the light grey curve illustrates all data regardless of concordance (n=20). **b**) Concordia diagram illustrating Paleoproterozoic ages only. Low U, Th, magmatic zircons are shown as unfilled ellipses. Three zircons of similar chemistry that were not included in the calculation of the mean are shown by the striped pattern. Two generations of overgrowths are shown as dark grey (high U zircon) and light grey (moderate U, Th, high Th/U zircon) ellipses.

developed at ca. 1.88 Ga (Berman et al., in press) and F_2 folds (dated at 1.86–1.84 Ga). Overgrowth ages younger than 1880 Ma in this sample are interpreted as reflecting the influence of a pervasive Paleoproterozoic thermo-magmatic event(s), as recorded by the ubiquitous pink granitic veins that cut the unit.

07CYA-M38b (z9422) gabbroic anorthosite

Gabbroic anorthosite forms a minor component of a layered ultramafic complex exposed on northeastern Southampton Island (Fig. 2). The presence of garnet + orthopyroxene + clinopyroxene reflects attainment of granulite facies conditions (Yakymchuk et al., 2008). Elsewhere on the island, mafic-ultramafic units are spatially associated with metasedimentary units and are commonly observed as enclaves and inclusions within intermediate to felsic plutonic units, suggesting that mafic–ultramafic plutonism postdates the supracrustal rocks and predates granitoid emplacement. Zircons recovered from the gabbroic anorthosite are typically clear and colourless. Grains may be anhedral or equant, the former characterized by abundant quartz and plagioclase inclusions sub-1 µm to 10 µm in diameter, and the latter with few inclusions or fractures. Equant zircons exhibit relatively straightforward sector zoning in CL images (Fig. 9 inset top left). Anhedral grains typically have poor CL response (dark) and are variably "speckled" with bright CL domains (Fig. 9 inset). This unusual inner structure is broadly similar to features documented in zircon recovered from granulite-grade rocks elsewhere (Corfu et al., 2003; Bröcker and Enders, 1999). The weighted mean $^{207}Pb/^{206}Pb$ age of twenty analyses of twelve sector-zoned grains is 1870 ± 10 Ma (MSWD=1.2, probability=0.21,

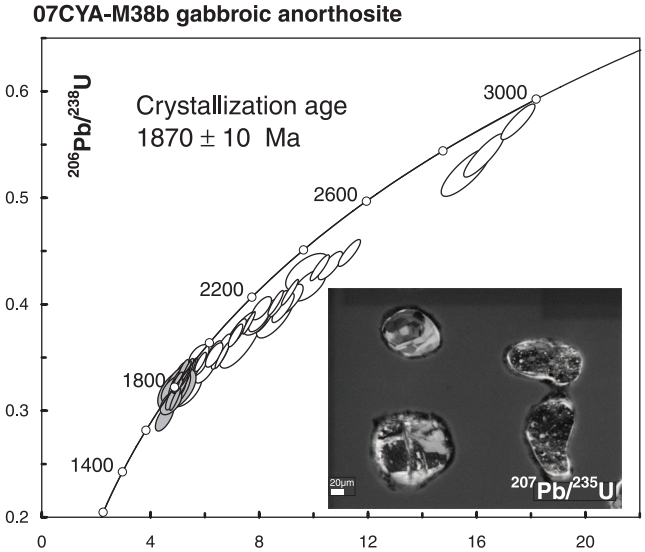

Figure 9. Concordia diagram for sample 07CYA-M38b. Sector-zoned zircons are shown as grey ellipses; speckled zircons are unfilled. Inset presents a CL image of typical zircons illustrating the two dominant textures (top left: sector-zoned zircon, remaining three: speckled zircon).

Fig. 9). Speckled zircons yield discordant $^{207}Pb/^{206}Pb$ ages between 1820 ± 44 Ma (2μ) to 2577 ± 22 Ma (2 σ) aligned with an upper intercept of ca. 3.0 Ga. Grain 21a comprises an oscillatory zoned inner region and a speckled outer region separated by diffuse boundaries. The oldest, most concordant analysis from this grain constrains the upper intercept at 3005 ± 22 Ma with younger, more discordant analyses along the same chord as the bulk of the data (*see* Table 2).

Peak metamorphic conditions of 850–900°C and 0.9–1.0 GPa were determined from an opx-cpx-plag assemblage within garnet from the mafic granulite complex (Yakymchuk et al., 2008), and the preservation of garnet mantled by plag-opx-spinel symplectite provides a record of exhumation and decompression. Consideration of the geochronological data suggests two main scenarios: emplacement at ca. 3.0 Ga with subsequent burial to granulite facies conditions at 1870 ± 10 Ma, or intrusion of the ultramafic complex at 1870 ± 10 Ma at a deep crustal level (granulite facies stability). The texture and isotopic systematics of the zircon in this sample provide some insight into the preferred scenario. The unique speckled appearance and strongly disturbed isotopic systematics of the older zircons are not typical of rocks that reach granulite facies conditions through slow burial or tectonic thickening (i.e. opx-granodiorite 07CYA-B99). Rather, we suggest these are xenocrystic in origin and strongly disturbed by exceptional conditions, such as interaction with the ultra-high temperatures of a mafic magma (ca 1200°C, Wyllie, 1981) and prolonged residence in the elevated thermal regime of the deep crust. Accordingly, our preferred interpretation is intrusion of ultramafic magma at 1870 ± 10 Ma at depth into crust with Mesoarchean ancestry.

07CYA-C16a (z9557) biotite-magnetite granodiorite

A sample of pink weathering, regionally extensive, biotite-magnetite granodiorite, bearing no evidence of attainment of granulite facies metamorphism, was collected from the south-central part of the exposed Precambrian basement (Fig. 2). This unit cuts metasedimentary and mafic lithologies and contains a strong D_2 fabric. It is inferred to correlate with the pervasive, cm-wide, pink-weathering granodiorite veins that are ubiquitous and cut granulite-facies felsic plutonic rocks. Recovered zircons are prismatic to equant, with well-developed facets reflecting minor resorption. In plane light, oscillatory zoning is apparent in pale brown grains but not in the colourless variety. Most grains exhibit broad, concentric zoning patterns that are visible in BSE images. Results are variably discordant, with $^{207}Pb/^{206}Pb$ ages between 2458 Ma and 2712 Ma from pale brown zircons with moderate to high U, and interpreted as minimum inheritance ages (Fig. 10). A subset of clear, colourless, prismatic zircon yield a weighted mean $^{207}Pb/^{206}Pb$ age of 1852 ± 8 Ma (n=18, MSWD=1.2, probability=0.22), the interpreted crystallization age of the granodiorite (Fig. 10). In addition, ten younger analyses yield dates between 1825 Ma and 1777 Ma. These younger ages are interpreted as being the result of Pb-loss from igneous zircon grains given their non-reproducibility within the same internal zircon zonation domain. The crystallization age for this S_2 foliated biotite granodiorite provides a maximum age of penetrative D_2 strain.

07CYA-M133a (z9558) quartz diorite

Quartz diorite forms a prominent ridge on the east coast of the island, south of Cape Fisher (Fig. 2), and occurs as mafic enclaves in surrounding monzogranite-granodiorite, becoming more abundant with increasing proximity to the ridge. The quartz diorite ridge exhibits a well-developed fabric parallel to S_2. Accordingly, the age of this diorite provides insight into mafic plutonic activity in this region and a maximum age for the onset of D_2. Zircons recovered from the quartz diorite are fragmental to anhedral or equant, and pale brown to colourless. Six analyses of pale brown fragmental or anhedral zircons yield discordant $^{207}Pb/^{206}Pb$ ages between 2332 Ma and 2511 Ma. The results fall on a chord suggesting Pb-loss from zircons of a single age, with the oldest $^{207}Pb/^{206}Pb$ age (i.e., ca. 2511 Ma) representing the minimum age of inherited material in the diorite (Fig. 11). The remaining 19 analyses, from both pale brown, fragmental zircon and colourless, equant zircon yield a weighted mean $^{207}Pb/^{206}Pb$ age of 1842 ± 5 Ma (MSWD=1.12, probability of fit=0.33), interpreted as the crystallization age (Fig. 11). This age highlights a third, separate, younger mafic plutonic event and establishes that penetrative D_2 strain affected this part of the island after ca. 1842 ± 5 Ma.

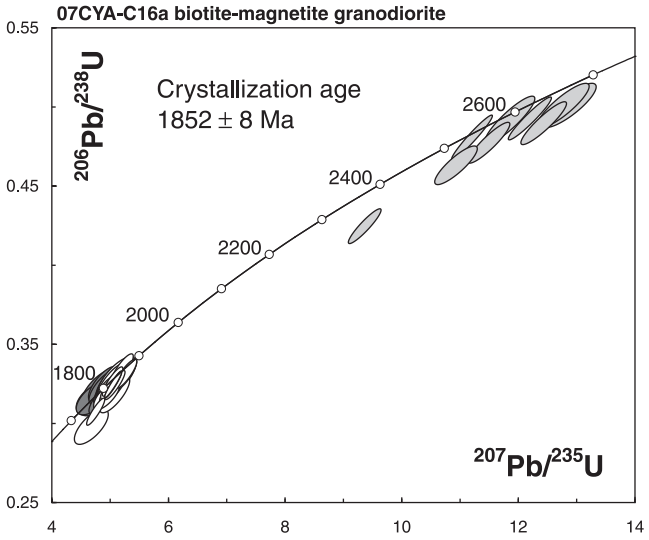

Figure 10. Concordia diagram for sample 07CYA-C16a. Magmatic zircons are shown as unfilled ellipses; inherited zircons are shown in light grey. Analyses not included in the calculation of the weighted mean are shown in dark grey.

07CYA-S106a (z9426) late syenogranite

Undeformed syenogranite collected from a basement inlier 25 km west of the main Precambrian highland (Fig. 2), represents a plutonic phase that has not sustained penetrative deformation recorded by the other samples across Southampton Island described earlier. A homogeneous population of moderate quality, pale brown prisms with few inclusions or fractures was deemed suitable for ID-TIMS analyses. Four single fractions were submitted and the results are presented in Table 1 and Figure 12. The fractions are 0.6% and 1.4% discordant and contain 1600–2400 ppm U. They yield an upper intercept age of 1821.7 ± 2.5 Ma (MSWD=0.09, probability of fit=0.92) interpreted as the time of crystallization and a minimum age of penetrative deformation. This agrees with *in situ* monazite results that suggest pervasive D_2 deformation ended shortly after ca. 1.84 Ga (Berman et al., in press).

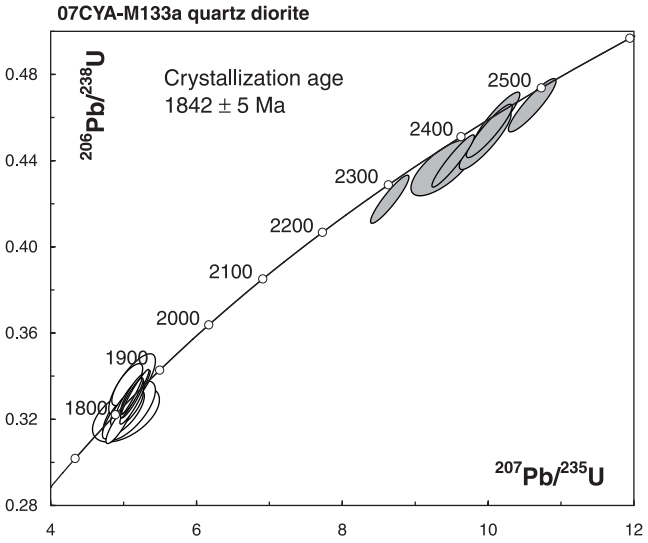

Figure 11. Concordia diagram for sample 07CYA-M133a. Magmatic zircons are shown as unfilled ellipses; inherited zircons are shown in light grey. See text for discussion.

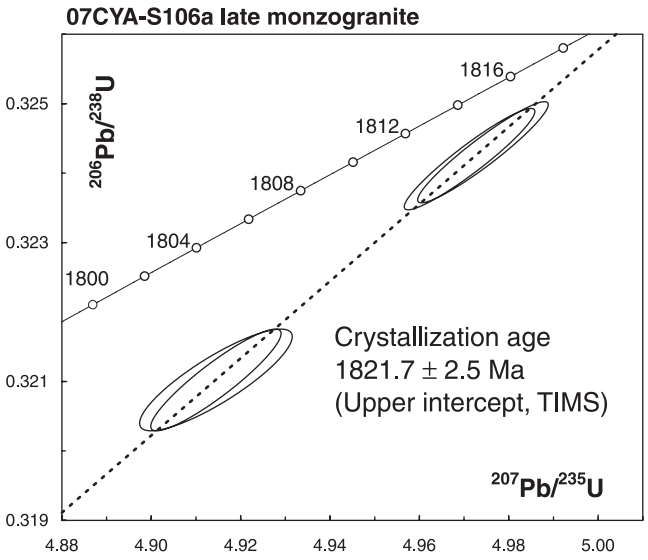

Figure 12. Concordia diagram for sample 07CYA-S106a.

CONCLUSIONS

1. Archean rocks form a component of Southampton Island and are documented here as comprising both northern (07CYA-M62a) and eastern (07CYA-B47c) parts of the basement complex. The profound influence of a Meso-to Eoarchean substrate is documented by extensive zircon detritus and inheritance and widespread ancient Sm-Nd model ages (Whalen et al., in press).
2. Geochronological data presented here document at least two sedimentary packages: an Archean psammite-semipelite sequence older than 2682 ± 17 Ma, and a carbonate-quartzite (continental margin?) sequence younger than 2615 ± 17 Ma. We are currently unable to determine if this younger sequence was deposited in the Archean or Paleoproterozoic. An aphanitic epiclastic rock may be time-equivalent to the younger sequence, however their dissimilar provenance profiles indicate distinct source regions.
3. At least three mafic-ultramafic plutonic events are documented: 1) a pre-1930 Ma event cut by quartz porphyry, 2) a 1870 ± 10 Ma gabbro-anorthosite event, and 3) a 1842 ± 5 Ma diorite event.
4. At one locality, orthopyroxene-bearing granodiorite is dated at 1931 ± 19 Ma. This is coeval with the quartz porphyry from the southern inlier, suggesting these regions experienced a similar magmatic event at ca. 1930 Ma.
5. Regional penetrative D_2 strain across Southampton Island is bracketed between ca. 1.85–1.84 Ga (the ages of S_2 foliated granodiorite and quartz diorite, respectively) and 1821.7 ± 2.5 Ma, the age of an undeformed to very weakly deformed monzogranite.

ACKNOWLEDGMENTS

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