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Article abstract

Southern New Brunswick consists of a complex collage of fault-bounded belts of Late Neoproterozoic igneous and metamorphic rocks, Early Paleozoic sedimentary, metamorphic and igneous units, and overlying Carboniferous sedimentary rocks. The area also contains the boundary between the Avalonian and Ganderian terranes as interpreted in the northern Appalachian orogen. New detrital zircon ages reported here provide improved understanding of depositional ages and provenance of diverse Neoproterozoic to Carboniferous rocks in this complex area. Detrital zircon data from samples with Neoproterozoic maximum depositional ages indicate a dominantly Gondwanan provenance with a strong influence from the Amazonian craton. However, quartzite from The Thoroughfare Formation on Grand Manan Island contains dominanly 2 Ga zircon grains, consistent with derivation from the West African Craton. The age spectrum is similar to that from the Hutchins Island Quartzite in the Isleboro block in Penobscot Bay, Maine, strengthening the previously proposed correlation between the two areas. Cambrian samples also show prominent peri-Gondwanan provenance with strong influence from Ediacaran to Early Cambrian arc magmatism. The maximum depositional ages of these samples are consistent with previous interpretations of Cambrian ages based on fossil correlations and field data. A Carboniferous sample from Avalonia shows a significant contribution from Devonian magmatism as the youngest detrital component, although its depositional age based on field relationships is Carboniferous. The results exemplify the need to integrate multiple datasets in making interpretations from detrital zircon data.

Detrital zircon signatures in Precambrian and Paleozoic sedimentary units in Ganderia and Avalonia of southern New Brunswick, Canada – more pieces of the puzzle

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ABSTRACT

Southern New Brunswick consists of a collage of fault-bounded belts of Late Neoproterozoic igneous and metamorphic rocks, early Paleozoic sedimentary, metamorphic and igneous units, and overlying Carboniferous and locally Triassic sedimentary rocks. The area also contains the boundary between Avalonia and Ganderia as interpreted in the northern Appalachian orogen. New detrital zircon ages reported here provide improved understanding of depositional ages and provenance of diverse Neoproterozoic to Carboniferous rocks in this complex area. Detrital zircon data from samples with Neoproterozoic maximum depositional ages indicate a dominantly Gondwanan provenance with strong influence from the Amazonian craton. However, quartzite from The Thoroughfare Formation on Grand Manan Island contains dominanly 2 Ga zircon grains, consistent with derivation from the West African craton. The age spectrum is similar to that of the Hutchins Island Quartzite in the Isleboro block in Penobscot Bay, Maine, strengthening the possibility of correlation between the two areas. Cambrian samples also show prominent peri-Gondwanan provenance with strong influence from Ediacaran to early Cambrian arc magmatism. The maximum depositional ages of these samples are consistent with previous interpretations of Cambrian ages based on fossil correlations and field data. A Carboniferous sample from Avalonia shows a significant contribution from Devonian magmatism as the youngest detrital component, although its depositional age based on field relationships is Carboniferous. The results exemplify the need to integrate multiple datasets in making interpretations from detrital zircon data.

RÉSUMÉ

Le sud du Nouveau-Brunswick est constitué d'un collage de ceintures délimitées par des failles de roches ignées et métamorphiques du Néoprotérozoïque tardif, d'unités sédimentaires, métamorphiques et ignées du Paléozoïque précoce, ainsi que de roches sédimentaires sus-jacentes du Carbonifère et, par endroits, du Trias. Le secteur comprend également la frontière établie entre Avalonia et Ganderia selon son interprétation à l'intérieur de la partie septentrionale de l'orogène des Appalaches. De nouvelles datations de zircon détritique rapportées ici permettent une meilleure compréhension des âges sédimentaires et de la provenance des diverses roches néoprotérozoïques à carbonifères dans ce secteur complexe. Les données relatives au zircon détritique obtenues des échantillons faisant état d'âges sédimentaires remontant au maximum au Néoprotérozoïque signalent une provenance en prédominance gondwanienne avec une forte influence du craton amazonien. Le quartzite de la Formation The Thoroughfare sur l'île Grand Manan renferme toutefois prédominament des grains de zircon de 2 Ga, ce qui correspond à une dérivation du craton de l'Afrique occidentale. Le spectre de l'âge est similaire à celui du quartzite de l'île Hutchins à l'intérieur du bloc Isleboro dans la baie Penobscot, au Maine, ce qui renforce la possibilité d'une corrélation entre les deux secteurs. Les échantillons du Cambrien font eux aussi état d'une provenance périgondwanienne prononcée, marquée d'une forte influence d'un magmatisme d'arc de l'Édiacarien au Cambrien précoce. Les âges sédimentaires maximaux de ces échantillons correspondent aux interprétations antérieures des datations du Cambrien basées sur des corrélations de fossiles et des données d'échantillonnage sur le terrain. Un échantillon du Carbonifère provenant d'Avalonia révèle une contribution prononcée du magmatisme

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dévonien à titre d'élément détritique le plus récent, mais son âge sédimentaire le situe au Carbonifère d'après les relations établies sur le terrain. Les résultats illustrent la nécessité d'une intégration de plusieurs ensembles de données pour effectuer des interprétations à partir de données provenant de zircon détritique.

[*Traduit par la redaction*]

INTRODUCTION AND GEOLOGICAL SETTING

Southern New Brunswick consists of a complex assemblage of three fault-bounded belts of mainly Neoproterozoic rocks with minor Paleozoic rocks termed (from southeast to northwest) Caledonia, Brookville, and New River, as well as five belts of mainly lower Paleozoic rocks termed Kingston, Mascarene, Annidale, St. Croix, and Fredericton (Fig. 1a). The area spans the boundary between Avalonia and Ganderia as defined by Hibbard *et al.* (2006), who placed the northern edge of Avalonia at the Caledonia-Clover Hill Fault that forms the boundary between the Caledonia and Brookville belts (Fig. 1b). In this interpretation most of New Brunswick, including Grand Manan Island, is considered part of Ganderia, as is adjacent New England (e.g., Fyffe *et al.* 2011; van Staal *et al.* 2011), whereas Avalonia extends offshore into the Bay of Fundy from the Caledonia belt of southern New Brunswick, underlies the Gulf of Maine, and re-emerges onshore in the Boston area of southeastern New England (Thompson *et al.* 2010).

The definition of Ganderia and Avalonia in the northern Appalachian orogen is based on multiple lines of evidence including differences in stratigraphy, magmatic and metamorphic histories, isotopic characteristics, and (increasingly) detrital zircon signatures which can provide information regarding source areas for present components of Ganderia and Avalonia during their pre-Appalachian evolution. The distribution of ages of detrital zircon grains in sedimentary units is a means of comparing units of similar age located in different areas, as well as an indicator of provenance. In addition, the youngest detrital zircon grains give an indication of maximum depositional age, significant in units where other age constraints are minimal or lacking. All three of these applications have relevance in southern New Brunswick, and this technique has been applied previously to rock units in that area as well as in adjacent parts of New England and Nova Scotia (Barr *et al.* 2003a, 2012; Fyffe *et al.* 2009; Satkoski *et al.* 2010; Dokken *et al.* 2018; Ludman *et al.* 2018). The significance of differences in detrital zircon populations between Ganderia and Avalonia is an ongoing debate, and the database of detrital zircon U–Pb data for both pre- and post-Appalachian strata is growing. The results reported in this paper add to that database, which may ultimately help to resolve questions about the initial relationships among the fault-bounded geological belts of southern New Brunswick (Fig. 1a).

As in other Appalachian detrital zircon studies the interpretations in the present study have to deal with difficulties in interpreting Meso- to Neoproterozoic zircons that could have multiple sources, for example the commonly encountered 1.4 – 1.0 Ga zircon grains which can be derived from any number of long-lived magmatic systems in arcs and continental settings associated with the Grenville orogen in either the West African or Amazonian craton. This difficulty is magnified in syn- and post-collisional strata because of potential contributions from the Laurentian craton with its very large area of Grenville-age magmatic activity. In addition, in Paleozoic samples the Proterozoic signatures are obscured by extensive contributions from syn-accretional and collisional magmatic systems active through the Ordovician to Devonian history of the Appalachian orogen.

New LA-ICP-MS detrital zircon age spectra are reported here for six sedimentary and metasedimentary rock units in southern New Brunswick. This study includes samples NB12-314 and NB12-315 of Cambrian age in the New River belt (Figs. 2, 3), one sample GM10-01 of uncertain Precambrian age and two samples NB16-356 and NB16-358 of Neoproterozoic to early Cambrian age from Grand Manan Island (Fig. 4), and sample BL15-01 from the Carboniferous Balls Lake Formation near the city of Saint John (Fig. 5). The new data are compared to previously published data, and in combination, shed light on stratigraphic and terrane relations in the area.

METHODS

Detrital zircon U-Th-Pb laser-ablation, inductively coupled plasma mass spectrometry (LA-ICPMS) analyses were conducted at the Texas A & M University R. Ken Williams Radiogenic Isotope Geosciences Laboratory (samples GM10-01, NB12-314, and NB12-315) and the University of New Brunswick (samples BL15-01, NB16-356, and NB16-358).

At Texas A & M University, zircon grains were concentrated from rock samples using standard crushing and density separation (jaw and disc crusher, Wilfley table, heavy liquids) methods. Zircon grains were separated from other dense minerals by hand-picking in a petrie dish under a binocular microscope, but no further separation was performed on the bulk zircon aliquot recovered from heavy liquids. The bulk zircon aliquot was piled and quartered repeatedly in the petrie dish to obtain a sub-sample of about 1000 grains. This zircon sub-sample was mounted on double-sided tape and encased in a 2.5 cm diameter epoxy disc, along with fragments of NIST 610, NIST 612, one primary reference material (zircon 91500; Wiedenbeck *et al.* 1995) and two secondary reference materials (zircons R33 and FC-1; Black *et al.* 2004 and Paces and Miller 1993, respectively). The disk was abraded with 2000 grit sandpaper to expose the interior of zircon grains and polished to 0.25 μm on a diamond-suspension lap wheel. LA-ICPMS analyses were conducted

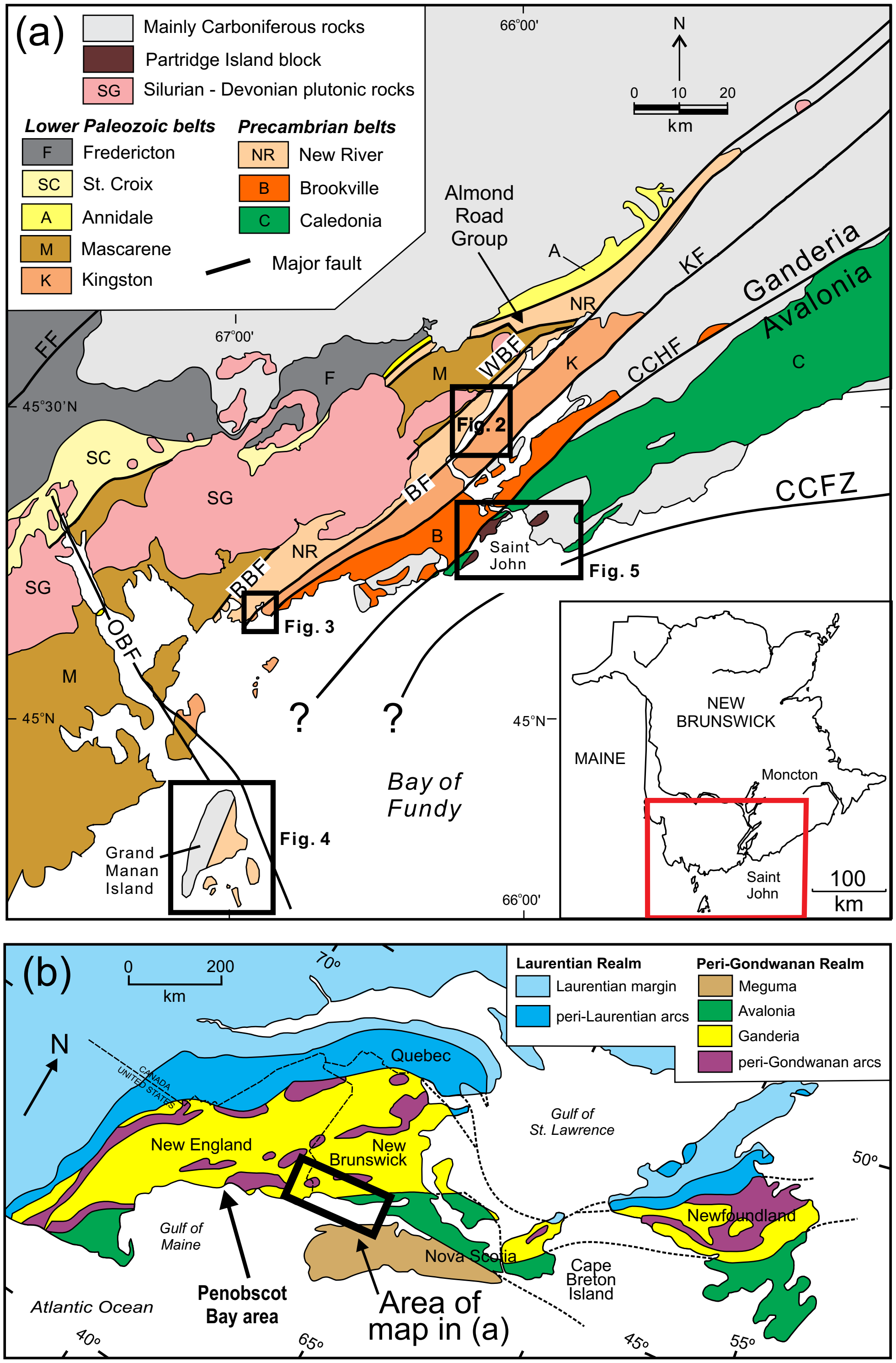


Figure 1. (a) Simplified geological map of part of southwestern New Brunswick after Barr *et al.* (2014c). Boxes indicate the locations of the four areas shown in Figures 2–5 from which detrital zircon ages are presented. Arrow indicates the location of the detrital zircon sample from the Almond Road Group in the New River terrane reported by Johnson *et al.* (2018). Fault abbreviations: CCFZ, Cobequid-Chedabucto fault zone; CCHF, Caledonia-Clover Hill Fault. (b) Divisions of the northern Appalachian orogen after Hibbard *et al.* (2006) showing the location of the study area (black rectangle).

on a ThermoScientific iCAP RQ quadrupole mass spectrometer running in standard high-sensitivity (STDS) mode connected to an esi/NWR 193 nm 4 ns pulsed excimer laser system equipped with a two-volume sample cell (Tv2). Instrument settings and run parameters are given in Table A1 and analytical data in Table A2. Data are reduced using Iolite

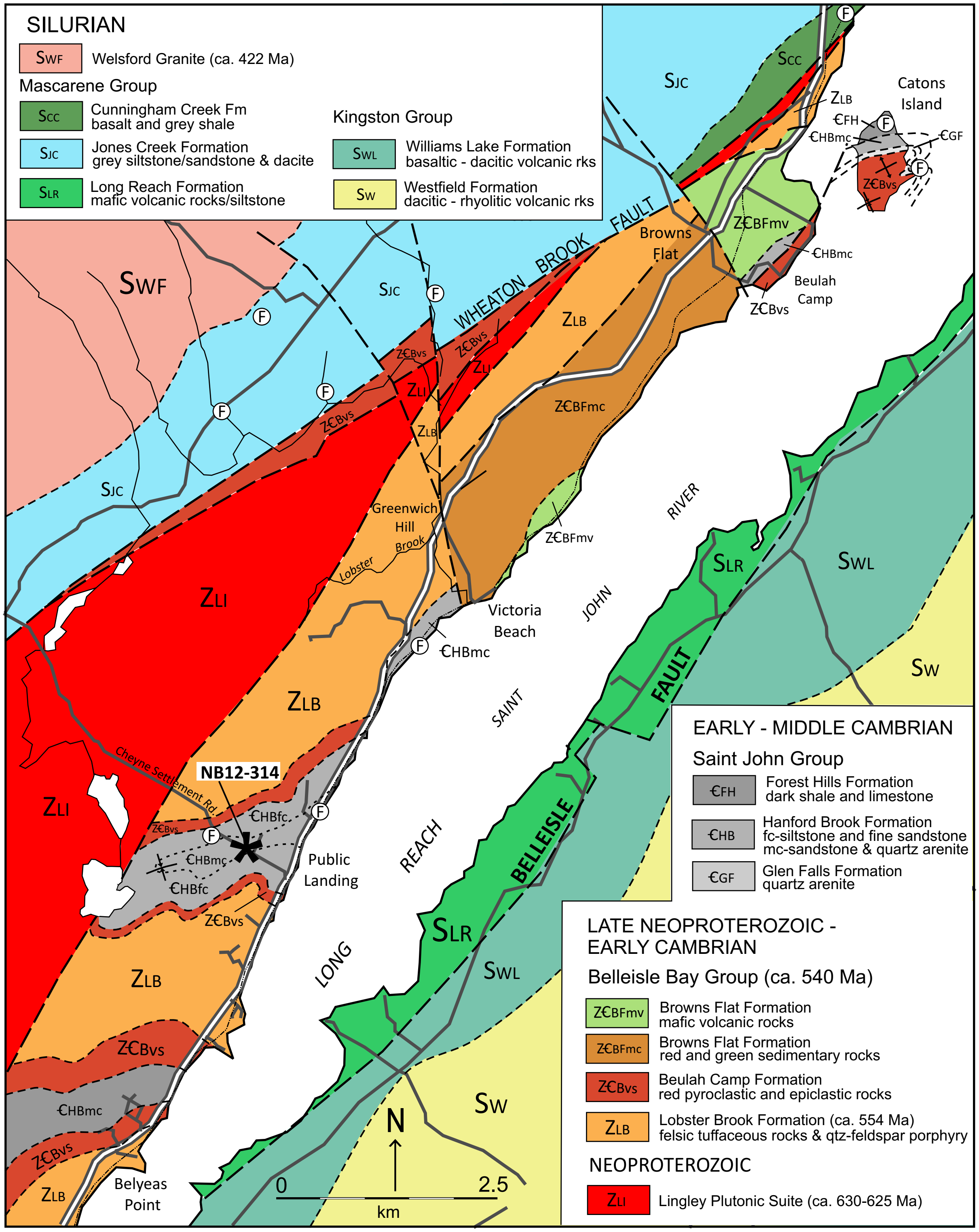


Figure 2. Geological map of the Long Reach area in the New River belt showing the location of dated quartz arenite sample NB12-314. Map is modified from Figure 5 in Barr *et al.* (2014c).

v. 3.5 (Paton *et al.* 2011) under the U–Pb Geochron4 data reduction scheme (Paton *et al.* 2010). Analysis of the primary reference material, each treated separately as an unknown, indicates an internal analytical reproducibility of U–Pb ages to better than 0.7%. The average accuracy of secondary reference materials (Table A2) is better than 2.25% (FC-1) and better than 1.5% (R33).

For the dating done at the University of New Brunswick (UNB), rock samples were sent to Overburden Drilling Management in Ottawa, Ontario, for electro-pulse disaggregation

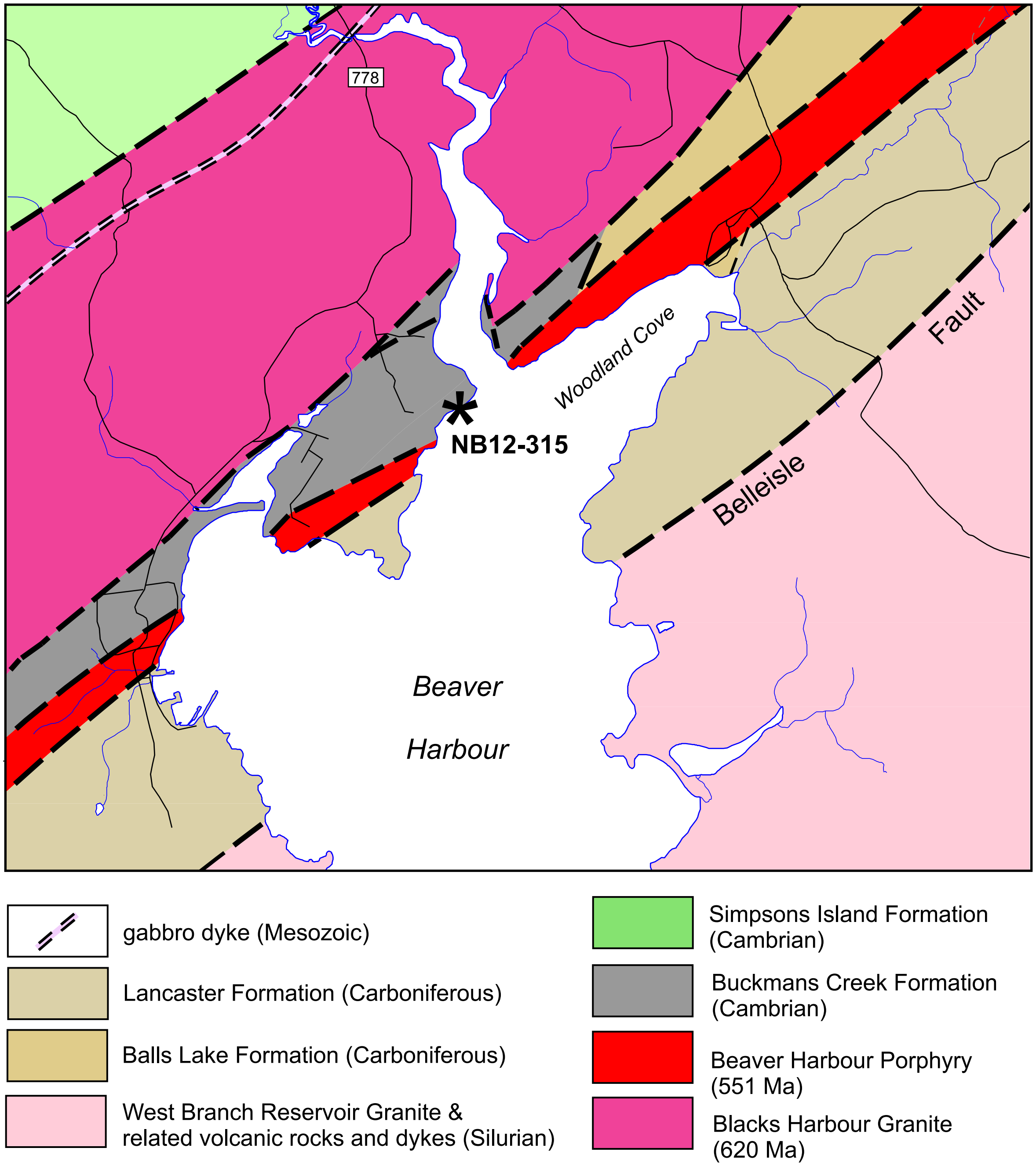
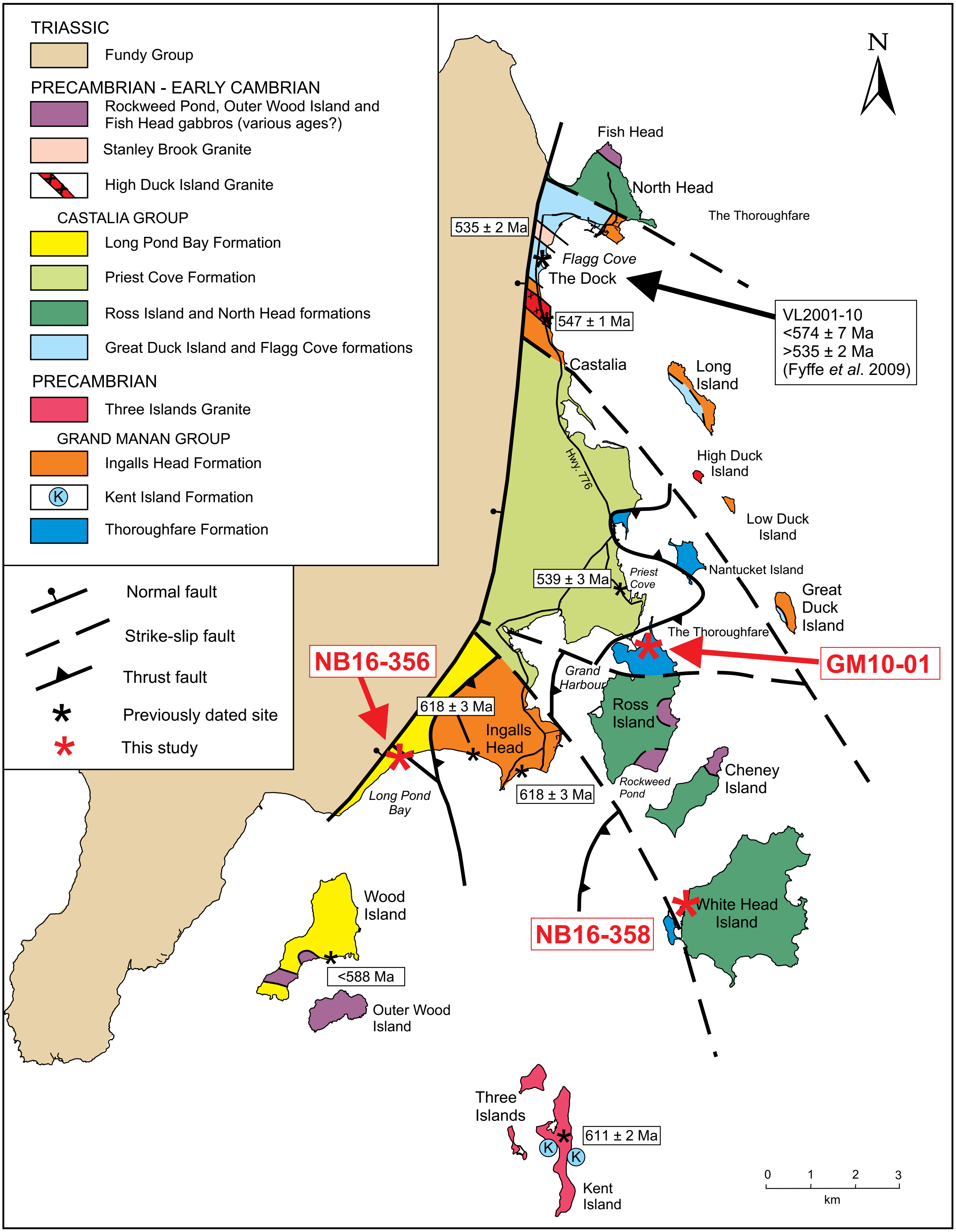


Figure 3. Geological map of the Beaver Harbour area showing the location of dated quartz arenite sample NB12-315. Map is modified from Barr *et al.* (2014a).

and zircon separation. Zircon grains were then hand-picked at Cape Breton University and taken to UNB where they were mounted in epoxy-covered thin sections polished to expose the centres of the zircon grains and imaged using cold cathodoluminescence to identify internal zoning and inclusions. These images were used to select ablation points (30 µm diameter), avoiding any visible inclusions, cracks, or other imperfections. U and Pb isotopic compositions were measured using the Resonetics S-155-LR 193 nm Excimer laser ablation system connected to an Agilent 7700x quadrupole inductively coupled plasma – mass spectrometer, following the procedure outlined by McFarlane and Luo (2012) and Archibald *et al.* (2013). Data reduction was done in-house using Iolite software (Paton *et al.* 2011) to process the laser output into data files, and further reduced for U–Pb geochronology using VizualAge (Petrus and Kamber 2012). Data were sorted by % concordance ($^{206}Pb/^{238}U$ versus $^{207}Pb/^{235}U$), and by the % of radiogenic Pb in the grains as calculated using VizualAge (Table A3, A4).

In all cases we present probability distribution histograms based on $^{206}Pb/^{238}U$ dates for grains <1000 Ma and $^{207}Pb/^{206}Pb$ dates for >1000 Ma, and show all grains that are between 95


TRIASSIC
Fundy Group
PRECAMBRIAN - EARLY CAMBRIAN
Rockweed Pond, Outer Wood Island and Fish Head gabbros (various ages?)
Stanley Brook Granite
High Duck Island Granite
CASTALIA GROUP
Long Pond Bay Formation
Priest Cove Formation
Ross Island and North Head formations
Great Duck Island and Flagg Cove formations
PRECAMBRIAN
Three Islands Granite
GRAND MANAN GROUP
Ingalls Head Formation
Kent Island Formation
Thoroughfare Formation
Normal fault
Strike-slip fault
Thrust fault
Previously dated site
This study
N
Fish Head
North Head
The Thoroughfare
535 ± 2 Ma
Flagg Cove
The Dock
547 ± 1 Ma
VL2001-10
<574 ± 7 Ma
>535 ± 2 Ma
(Fyffe et al. 2009)
Castalia
Long Island
Hwy. 776
High Duck Island
Low Duck Island
Nantucket Island
539 ± 3 Ma
Priest Cove
Great Duck Island
The Thoroughfare
GM10-01
NB16-356
Grand Harbour
Ross Island
618 ± 3 Ma
Ingalls Head
618 ± 3 Ma
Rockweed Pond
Cheney Island
Long Pond Bay
White Head Island
NB16-358
Wood Island
<588 Ma
Outer Wood Island
Three Islands
611 ± 2 Ma
Kent Island
0 1 2 3
km

and 101% concordant. To determine the youngest age represented in each sample we use only clusters of more than 3 grains with ages that overlap within error and are 98–101% concordant. Using only near-concordant grains that overlap within error is a conservative approach which serves to reduce the possibility of misrepresenting the maximum depositional age as too young by using single grains that may have experienced Pb loss (Dickinson and Gehrels 2010).

For each dated sample, the geological setting is described, followed by the results and interpretation. A subsequent Discussion deals with the oveall implications of the new data.

SAMPLE NB12-314 - CHEYNE SETTLEMENT ROAD

Geological setting

Quartz arenite sample NB12-314 was collected from an outcrop on Cheyne Settlement Road in the Long Reach area of the New River belt (Fig. 2). Cheyne Settlement Road crosses an enclave of Cambrian rocks, one of several such occurrences in the Long Reach area (Fig. 2). The Cambrian rocks overlie Late Neoproterozoic to early Cambrian volcanic rocks of the Belleisle Bay Group and have been correlated with the Saint John Group (Fig. 2). Matthew (1891) discovered the acrotretid brachiopod *Linnarsonnia misera* in grey sandstone at Belyeas Landing (now the "Public Landing" shown on Figure 2) about 600 m east of the sampled quartz arenite and Yoon (1970) later discovered trilobites at the same location which he suggested are consistent with a late early Cambrian age, consistent with the work of Boyce and Johnson (2004) based on newly collected material. Small black phosphatic shells tentatively identified as *L. misera* (R. Miller, personal communication, 2001) were discovered also in a sequence of dark grey shale, siltstone and very fine-grained, micaceous sandstone on Cheyne Settlement Road about 1.2 km west of Public Landing. Johnson (2001) assigned all of the rocks within the enclave, including the quartz arenite unit sampled for dating in the present study, to the Hanford Brook Formation of the Saint John Group (Fig. 2).

The dated sample is grey medium-grained quartz arenite. It is dominated by subangular to subrounded quartz grains and less than 10% silt/clay matrix. Feldspar, spherulitic volcanic, and quartzite clasts occur rarely.

Results

Zircon grains separated from sample NB12-314 display a wide range of sizes, morphologies, and colors. Most grains have abraded corners and edges and are rounded. The largest (~150 um diameter) and most highly rounded grains are also commonly the most deeply colored in shades of pink and purple or tan. Other large (100–150 μm long), more elongate zircon grains show light tan color. Relatively rare, small (50–100 μm long), colorless crystals are acicular with sharp corners and tips.

A large percentage of the grains are discordant, and ablation profiles are consistent with Pb-loss being the dominant cause of discordance, as opposed to zircon grains with multiple age components. The main population of grains has ages between 480 and 540 Ma, with only four older grains between 1 and 3.2 Ga (Figs. 6a, b). Three grains have $^{206}Pb/^{238}U$ ages of ca. 450 Ma but they do not overlap within error and all are less than 98% concordant, our cut-off for calculating concordia ages as mentioned earlier, likely because of Pb loss. In contrast, a few grains have ages between 480 and 500 Ma that overlap within error, and three of these grains produce a calculated concordia age of 487.5 ± 13 Ma with very high MSWD of 15 and probability near zero. Using only two grains produces a calculated concordia age of 485.8 ± 19 Ma with a slightly better MSWD of 10.7 and probability of 0.001. The weighted mean of 7 grains between 475 and 495 Ma is 486.8 ± 6.1 at 95% confidence with MSWD = 2.6, and probability = 0.015 (Fig. 6a, inset). Overall, we consider that the best estimate of the maximum depositional age for the sediment is ca. 487 Ma (late Cambrian to Early Ordovician).

This age, although not well constrained, is considerably younger than the age of 508.05 ± 2.75 Ma reported for an ash bed in the Hanford Brook Formation in the Somerset Street section in the city of Saint John (Landing *et al.* 1998; Schmitz 2012). Based on fossils, the age of the Hanford Brook Formation spans the traditional early to middle Cambrian boundary, or in newer time scales, the boundary between Series 2 and 3 (Palacios *et al.* 2016) at about 509 Ma (Cohen *et al.* 2013 updated 2018).

SAMPLE NB12-315 - BUCKMANS CREEK

Geological setting

The Buckmans Creek Formation (e.g., Currie 1988) in the Beaver Harbour area of the New River belt (Fig. 3) is an assemblage of fault-bounded and internally faulted sedimentary and mafic volcanic rocks that are in places fossiliferous. They have been correlated with the Saint John Group of the Saint John area (Fig. 5), implying a link between the New River and Caledonia belts (e.g., Currie 1988; Tanoli and Pickerill 1988; Landing 1996; Johnson 2001; Landing *et al.* 2008). Landing *et al.* (2008) assigned these Cambrian rocks to the marginal platform of the late Proterozoic to early Paleozoic Avalon microcontinent. They identified the lower Cambrian Chapel Island and Random formations in the Buckmans Creek area, unconformably overlain by mafic

Figure 4. (previous page) Geological map of Grand Manan Island showing the location of dated samples NB16-356, NB16-358, and GM10-01. Map is modified from Fyffe (2014).

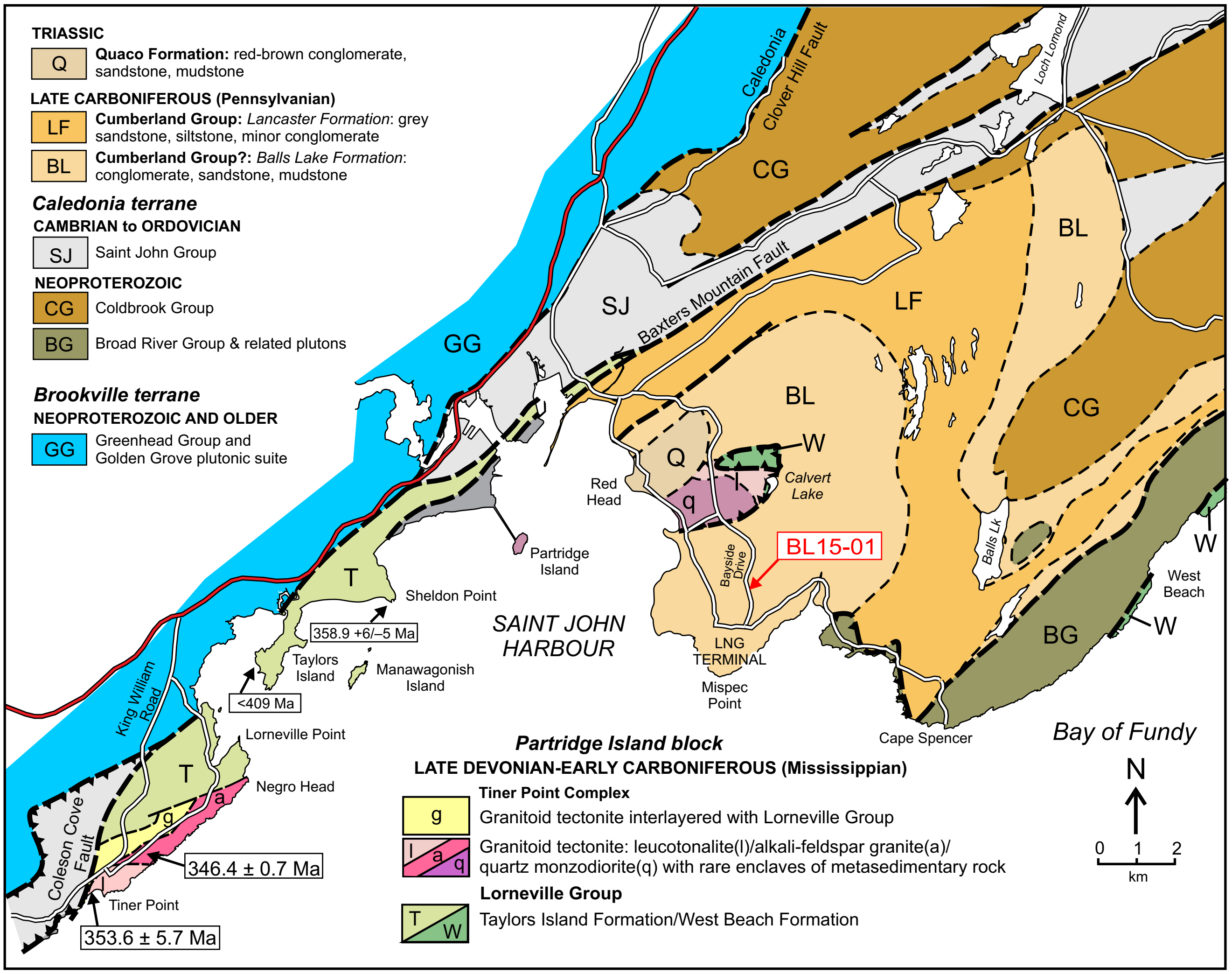


Figure 5. Geological map of the Saint John area showing the location of dated sample BL16-01, Map is modified from Park *et al.* (2014).

volcanic-dominated rocks which Landing *et al.* (2008) assigned to the "Wade's Lane Formation". This name appears to be an incorrect transcription of "Waites Lane" which is shown on road signs in the area and on topographic maps.

Landing *et al.* (2008) reported that the presence of late early Cambrian trilobites and small shelly taxa in the lowest part of their "Wade's Lane Formation" demonstrates a hiatus between rocks that they assigned to the Random Formation and those of their "Wade's Lane Formation". They interpreted the volcanic rocks in the Beaver Harbour section as the result of latest early to middle middle Cambrian pyroclastic volcanism, one of three known volcanic centers that extended 550 km along the northwest margin of the Avalon microcontinent. According to Landing *et al.* (2008), the volcanic rocks are overlain by grey-green mudstone and limestone of the Fossil Brook Member and black mudstone of the upper Manuels River Formation. However, given the uncertainty of long-distance correlations in a complex orogen, we continue to use the earlier established name Buckmans Creek Formation collectively for all these rocks.

Near the mouth of Buckmans Creek, the formation is separated from the plutonic rocks of the Beaver Harbour porphyry by a reverse dip-slip fault (Bartsch 2005). The Beaver Harbour porphyry yielded a U–Pb zircon age of 551 ± 1.2 Ma (Barr et al. 2014a). On its northwestern margin, the formation is in faulted contact with the ca. 620 Ma Blacks Harbour granite (Barr et al. 2003b; Bartsch 2005).

Dated quartz arenite sample NB12-315 is from the unit assigned to the Random Formation by Landing *et al.* (2008). The sample is light grey and consists of recrystallized quartz grains that are sutured and polygonal in places. It contains rare felsic volcanic and quartzite clasts, and almost no matrix.

Results

A total of 203 zircon grains were analyzed from sample NB12-315. The main population has ages from 510 to 590 Ma (Figs. 6c, d). Other grains give an almost continuous range of ages from 1 Ga to 2 Ga and a few grains lie between 2 and 3.2 Ga. The youngest 4 grains that overlap within

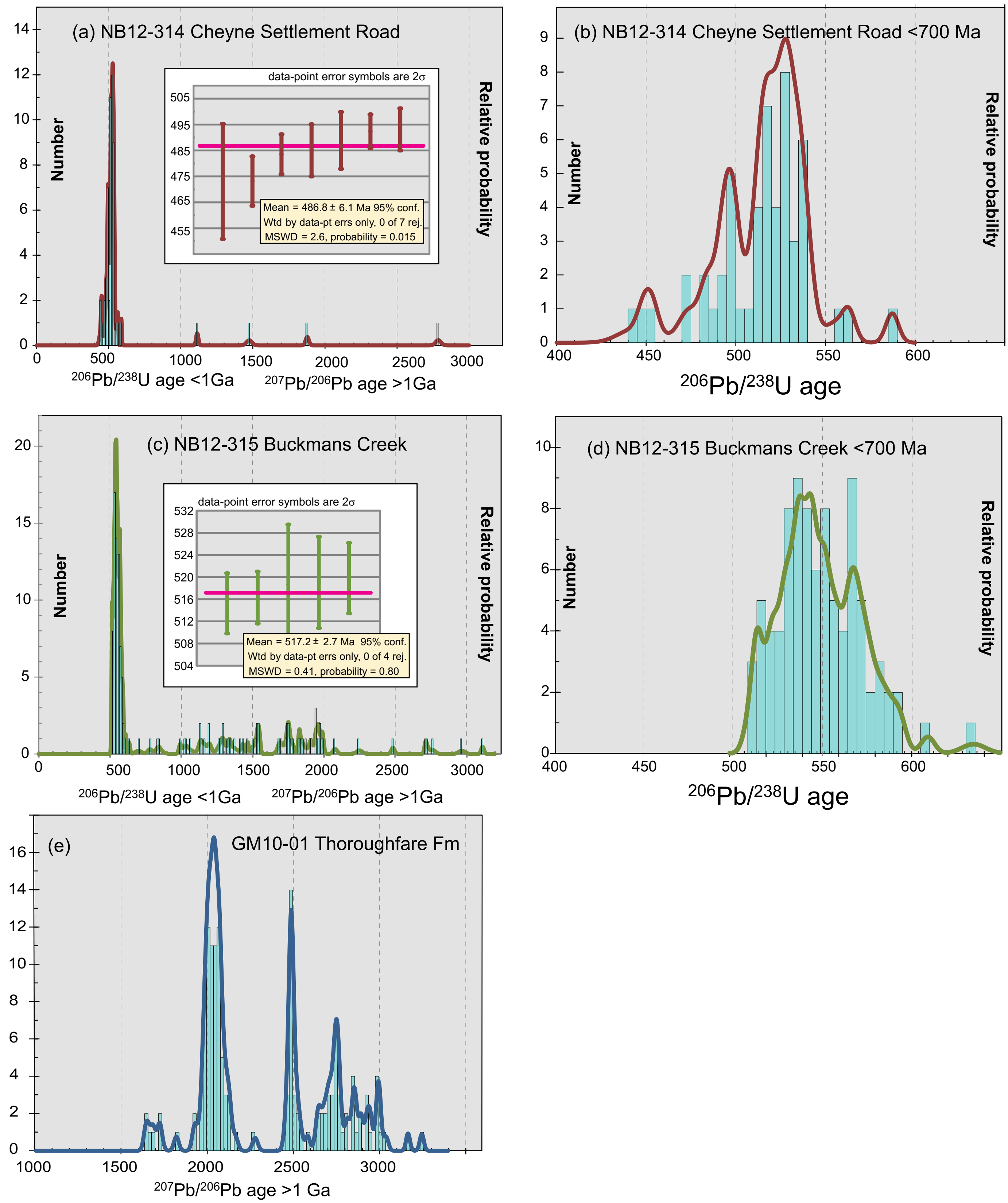


Figure 6. **Probability density plots and histograms for U–Pb data: (a) Sample NB12-314; (b) Expanded view of the data between 400 and 650 Ma for sample NB12-314; (c) Sample NB12-315; (d) Expanded view of the data between 400 and 650 Ma for sample NB12-315; (e) Sample GM10-01. Inserts in (a) and (c) show weighted mean ages for the youngest population of concordant zircon grains in each sample. Data are from Appendix Table A1. Dates with discordance >10% are excluded from these diagrams.**

error have a calculated concordia age of 518.4 ± 2.8 Ma with MSWD = 6.7 and probability = 0.010. The calculated concordia age with 5 overlapping grains including one that is more discordant is 518.3 ± 4.7 Ma with much higher MSWD of 12.0 and lower probability of 0.001. The weighted mean of the same 5 grains is 517.2 ± 2.7 at 95% confidence with MSWD = 0.41 and probability = 0.80 (Fig. 6c, inset). Hence the maximum depositional age for this sample is interpreted to be ca. 517 Ma (Cambrian series 2; Cohen *et al.* 2013, revised 2018).

SAMPLE GM10-01 - THE THOROUGHFARE FORMATION

Geological setting

The Thoroughfare Formation of Grand Manan Island is exposed on Ross, Nantucket, and White Head islands off the southeastern coast (Fig. 4). It is composed of very thick- to thin-bedded, locally cross-bedded, white to light grey quartzite interbedded with grey to black carbonaceous shale. Where exposed on the western shore of The Thoroughfare, the contacts between the formation and volcanic sequences of the Priest Cove Formation are highly sheared and interpreted as thrust faults based on the presence of low-angle cleavages in the vicinity of their mutual boundaries (Fyffe 2014). The inferred age of The Thoroughfare Formation is late Proterozoic as suggested by Alcock (1948) who correlated the quartzite with quartzite interstratified with platformal stromatolitic carbonates of the Late Proterozoic Green Head Group in the Saint John area on the New Brunswick mainland, although the latter unit does not include carbonaceous shale and The Thoroughfare Formation lacks carbonate rocks, so the only rock type in common is the quartzite itself. The Thoroughfare Formation could be correlative with the Hutchins Island Quartzite in Penobscot Bay, Maine (Fig. 1b) which also has an inferred late Proterozoic age (Reusch *et al.* 2018).

The dated quartzite sample consists of recrystallized quartz grains that are rectangular and elongate parallel to a weak foliation. Granular quartz around the larger grains suggests that brittle deformation may have overprinted earlier ductile structures. Rare muscovite and tourmaline are also present.

Results

Sample GM10-01 is distinctive in that it contains only Paleoproterozoic and older zircon grains that are much older than the inferred Late Proterozoic stratigraphic age. Its detrital signature is unlike any others yet seen in New Brunswick, including the nearby Flagg Cove Formation (Fig. 3; Fyffe *et al.* 2009), but like those from samples from Georges Bank and Penobscot Bay inferred to represent sediments deposited on the West African Craton (Kuiper *et al.* 2017; Reusch *et al.* 2018). The biggest population of zircon grains has ages between 1.9 and 2.2 Ga, with another significant peak at ca. 2.5, and an almost continuous range of ages from 2.5 to 3.2 Ga (Fig. 6e). The youngest two grains are around 1.65 Ga, but they do not overlap within error and cannot be used for a concordia age. Based on these youngest grains the maximum depositional age of the sample may be less than 1.65 Ga but this estimate is not robust. The maximum depositional age based on the detrital zircon populations is better constrained at 1.9 Ga based on the major population peaks.

SAMPLE NB16-356 - LONG POND BAY FORMATION

Geological setting

The Long Pond Bay Formation is exposed along Long Pond Bay and on nearby Wood Island on southern Grand Manan Island (Fig. 4). The Long Pond Bay shoreline section consists of subaqueous hyaloclastic basalt flows, mafic volcanic breccia, peperitic basalt, green cherty mudstone, and medium- to thick-bedded wacke. On Wood and adjacent islands, amygdaloidal basalt flows, felsic tuff, and arkosic sandstone appear to have been deposited in shallower water and are associated with coarse-grained gabbroic rocks (Fig. 4). A sample from a rhyolitic tuff or high-level intrusion from Wood Island yielded few zircon grains that were interpreted by Miller *et al.* (2007) to indicate a maximum depositional age of ca. 588 Ma. The relatively undeformed features of the unit and its lithological similarities to Silurian units of the Mascarene terrane on the mainland (McLeod *et al.* 1994) led to the assumption of a Silurian age (Miller *et al.* 2007). However, Fyffe (2014) subsequently interpreted the Long Pond Bay Formation to be part of the Ediacaran–Cambrian Castalia Group, together with the Priest Cove Formation dated at 539 ± 3 Ma by Miller *et al.* (2007). Fyffe (2014) correlated the Long Pond Bay Formation with the Simpsons Island Formation in the New River terrane on the mainland which also yielded an age of 539 ± 4 Ma (Barr *et al.* 2003b).

Dated sample NB16-356 is from a grey sandstone unit in the Long Pond Bay shoreline section (Fig. 4). It is immature and matrix-supported and consists of angular quartz and less abundant plagioclase grains in a fine matrix of clay (sericite) and silt. Detrital muscovite and biotite altered to chlorite are also present.

Results

In this sample only 64 out of 145 grains are between 95 and 101% concordant and a further 22 grains are between 90 and 95% concordant. The largest population of zircon grains in sample NB16-356 is in the range between 690 and 600 Ma, with minor populations at around ca. 790 Ma, 1.1–1.2 Ga, and a few grains between 1.5–2 Ga (Figs. 7a, b). The concordia age of the youngest three grains that overlap is 614.6 ± 6.1 Ma with MSWD = 5.7 and probability (of concordance) = 0.017. The weighted mean of the youngest

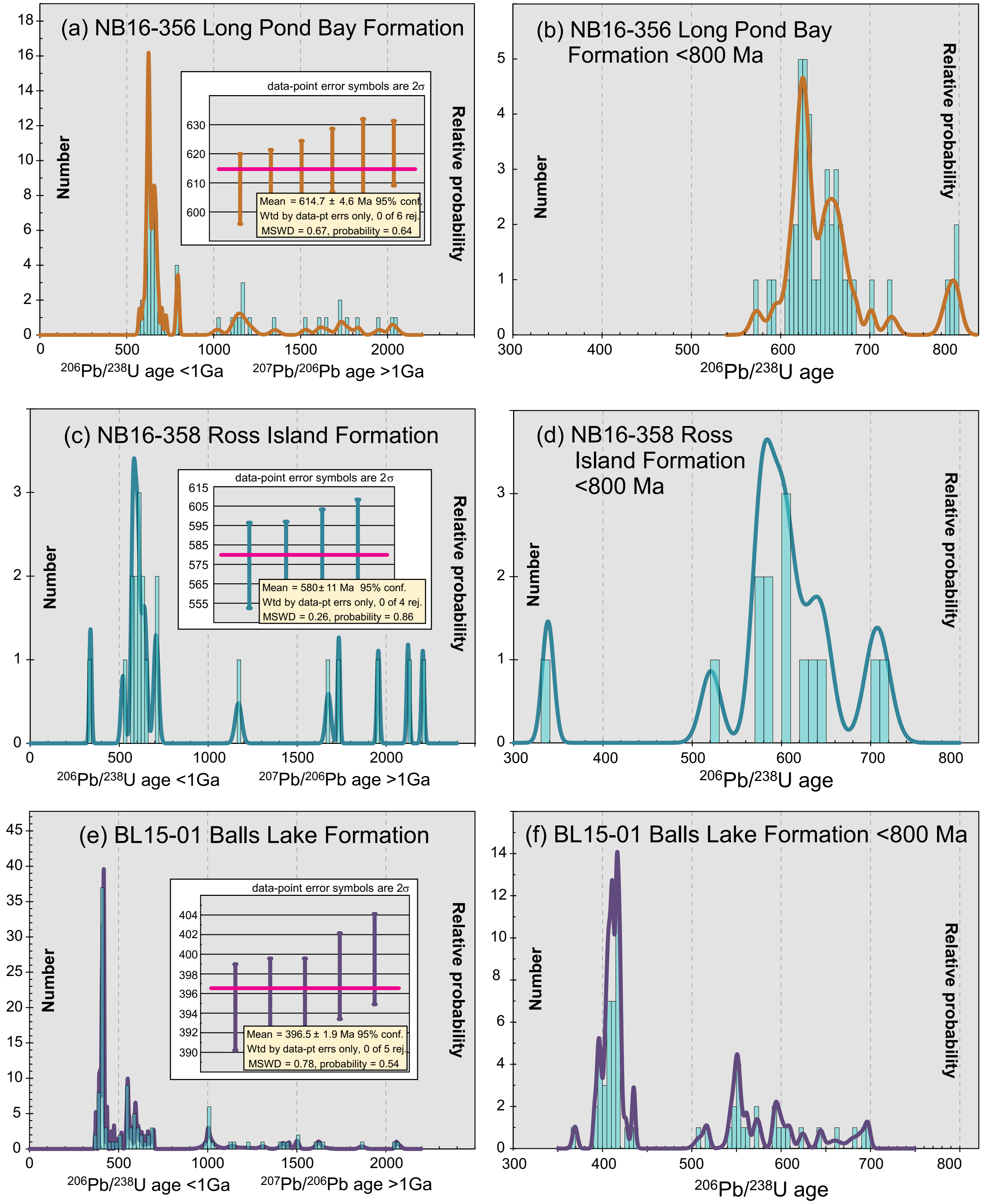


Figure 7. Probability density plots and histograms for U–Pb data: (a) Sample NB16-356; (b) Expanded view of the data between 540 and 840 Ma for sample NB16-356; (c) Sample NB16-358; (d) Expanded view of the data between 300 and 900 Ma for sample NB16-358; (e) Sample BL15-01; (f) Expanded view of the data between 350 and 800 Ma for sample BL15-01. Note that the expanded-scale diagrams in (b), (d), and (f) have different scales. Inserts in (a), (c), and (e) show weighted mean ages for the youngest population of concordant zircon grains in each sample. Data are from Appendix Table A1. Dates with discordance >10% are excluded from these diagrams.

6 grains that overlap within error is 614.7 ± 4.6 at 95% confidence with MSWD = 0.67 and probability = 0.64 (Fig. 7a, inset). The interpreted maximum depositional age for this sample is therefore < 614 Ma. This result does not tighten the limited constraints on the depositional age of the Long Pond Bay Formation, previously suggested to be <588 Ma (Miller *et al.* 2007). However, the similarity of the dates from the youngest detrital grains to the U–Pb (zircon) ages of 617.6 ± 3.2 Ma and 618.3 ± 2.8 Ma for two tuffaceous samples from separate locations in the nearby Ingalls Head Formation (Fig. 4) suggest that the Ingalls Head Formation was the source of the detrital grains. The result is consistent with the inclusion of the Long Pond Bay Formation in the upper part of the Neoproterozoic to Lower Cambrian Castalia Group (Fyffe 2014).

SAMPLE NB16-358 - ROSS ISLAND FORMATION

Geological setting

The Ross Island Formation underlies the greater part of Ross and White Head islands near the southeastern coast of Grand Manan (Fig. 4). It comprises interstratified plagioclase-phyric mafic and intermediate flows and breccias intruded by numerous diabase dykes. The flows are locally pillowed and interbedded with green laminated siltstone. They range from basalt to andesite based on chemical composition, and are calc-alkalic, formed in a volcanic arc setting (Hilyard 1992; Hewitt 1993; Hodgins 1994; Pe-Piper and Wolde 2000; Black 2005). The Ross Island Formation appears to be truncated by faults that separate it from quartzite of The Thoroughare Formation on the northern tip of Ross Island and western tip of White Head Island (Fig. 4). The formation had no previous age constraints but was assumed to be part of the Precambrian to early Cambrian Castalia Group (Fyffe 2014).

Dated sample NB16-358 is dark grey laminated siltstone that occurs in peperitic relationship with basalt near the ferry terminal on the western shore of White Head Island. The sample is fine-grained and contains abundant plagioclase. Its swirly matrix contains abundant sericite and has an ash-like appearance.

Results

NB16-358 is very poor in zircon and only had 25 grains analyzed, 20 of which are betwee 95 and 101% concordant. The largest populations of zircon grains are in the range between ca. 580 Ma and 630 Ma, with a small group at ca. 700 Ma, and a few grains between 1 and 2 Ga (Figs. 7c, d). A single grain at ca. 320 Ma is not considered to be a reliable indicator of maximum depositional age. The concordia age of the youngest three grains that overlap is 585.5 ± 8.4 Ma with MSWD = 2.6 and a probability (of concordance) = 0.11. The weighted mean of the same four grains is 580 ± 11 at 95% confidence with MSWD = 0.26, and probability = 0.86. Based on these data, the maximum depositional age for this sample is interpreted to be ca. 580 Ma, similar to that of the Long Pond Bay Formation as determined by Miller *et al.* (2007). This age is consistent with the suggestion by Fyffe (2014) that the volcanic rocks of the Ross Island Formation represent a proximal facies of the Priest Cove Formation.

SAMPLE BL15-01 - BALLS LAKE FORMATION

Geological setting

The Balls Lake Formation is a coarse clastic sedimentary unit in the Saint John area that is interpreted currently as the lower unit of the Upper Carboniferous Cumberland Group (Fig. 5). However, traditionally it was included in the Mispec Group as the middle formation, underlain by basaltic and sedimentary rocks of the West Beach Formation and overlain by plant-bearing lithic arenite of the Lancaster Formation. The sequence was considered conformable and the entire group regarded as Mississippian(?) to Pennsylvanian or Pennsylvanian based on plant remains in the Lancaster Formation (e.g., Hayes and Howell 1937; Alcock 1938). Plint and van der Poll (1982) reassigned the Balls Lake and Lancaster formations to the Cumberland Group and Park *et al.* (2014) showed that the West Beach Formation and the laterally correlative(?) Taylors Island Formation are part of the allochthonous Partridge Island block and not part of the stratigaphy of the Cumberland Group (Fig. 5). In the Calvert Lake area southeast of Saint John, rocks of the Partridge Island block are contained in a klippe, preserved in a synform in the Balls Lake Formation that plunges gently west-southwest. The conglomerate–sandstone–mudstone sequence of the surrounding Balls Lake Formation is overturned to the south in the footwall of the Calvert Lake klippe along its southern contact, consistent with thrust transport toward the south-southeast. The Balls Lake Formation has no direct biostratigraphic controls on its age.

The dated sample is typical reddish-grey sandstone from the Balls Lake Formation in the overturned section on Bayshore Drive. It contains subangular quartz and plagioclase in a sericitic matrix that contain abundant carbonate cement. The quartz grains are angular to subangular and varied in size and shape. Detrital muscovite and opaque phases are abundant.

Results

The largest populations of zircon grains in sample BL15-01 are in the range between ca. 430 and 390 Ma (Figs. 7e, f). Smaller groups of ages occur at ca. 550 Ma, 600 Ma and 1 Ga, with a few older grains between 1 Ga and 2 Ga. The youngest 5 grains that overlap within error have a calculated concordia age of 397.3 ± 1.9 Ma with MSWD= 5.0, and probability (of concordance) = 0.025. The weighted mean of the same 5 grains is 396.5 ± 1.9 Ma at 95% confidence with MSWD = 0.78 and probability = 0.54 (Fig. 7e, inset).

Based on these data, the maximum depositional age for this sample is interpreted to be ca. 396 Ma, much older than the inferred Late Carboniferous depositional age for the formation based on field relationships. The lack of Late Devonian–Early Carboniferous ages indicates that the Partridge Island block, which contains volcanic and plutonic rocks of that age, was not providing debris to this unit of the Balls Lake Formation. The Middle Devonian – Silurian zircon grains in the sample could have been derived from any number of plutonic suites both locally and farther afield.

DISCUSSION

Depositional ages

The depositional ages of all six samples included in this study are equivocal based on other evidence, and hence the maximum depositional ages described above based on the youngest zircon populations are potentially important. However, as in all detrital zircon studies, the data are viewed in combination with field and other evidence because of the potential for Pb loss which can move zircon ages to younger points along concordia (e.g., Dickinson and Gehrels 2010), as well as the possibility of inclusion of second-cycle detritus or lack of zircon sources close in age to the deposition of sediment. However, even with these caveats in mind, the detrital zircon U–Pb data provide valuable information about sedimentary provenance and maximum depositional ages. The samples are discussed here in reverse age order.

The Silurian and younger populations present in sample BL15-01 from the Balls Lake Formation include prominent populations of Early and Middle Devonian zircon grains but no younger grains, although the depositional age of the Balls Lake Formation is Carboniferous based on stratigraphic and field relationships (e.g., Park *et al.* 2014). A similar pattern of Carboniferous units with Devonian zircon grains as their youngest populations was found in a study in the southern Appalachian orogen by Thomas *et al.* (2017) in which several Pennsylvanian units contain significant Devonian zircon populations but no younger grains. These well-documented examples are a reminder that “maximum deposition ages” provide only an upper limit on stratigraphic age. Pre-Devonian zircon grains are sparse in sample BL15-01 (Figs. 7e, f) and could be evidence for either Gondwanan or Laurentian source areas but could also represent recycled detrital material from multiple sources.

Cheyne Settlement Road sample NB12-314 contains a significant Cambrian zircon population with a maximum depositional age of ca. 487 Ma and, therefore, latest Cambrian or younger (Figs. 6a, b). This maximum age is younger than the broadly “middle Cambrian” age generally assigned to the Hanford Brook Formation based on fossils and a U–Pb zircon date of 508.05 ± 2.75 Ma from an ash bed in the city of Saint John (Landing *et al.* 1998; Schmitz 2012). Although more work needs to be done in order to investigate this apparent age enigma, it is possible that the Cheyne Settlement Formation is correlative instead with the Snider Mountain Formation in the Almond Road Group which occurs in the New River belt to the northeast (Fig. 1a). The youngest zircon population in quartz arenite in the Snider Mountain Formation is ca. 530 Ma, and the age of the upper sequence that contains feldspathic quartz arenite near its base is constrained by a cross-cutting pluton that gave an age of 475.4 ± 1.6 Ma (Johnson *et al.* 2018). It is possible that the Cheyne Settlement sample exemplifies the gradual younging of quart arenite deposition within the same unit outward from the platform during protracted rifting and opening of the ocean basin along the Gondwanan margin as illustrated by Johnson *et al.* (2018).

The sample from Buckmans Creek (Fig. 3) also has a significant Cambrian zircon population but the youngest population (maximum depoisitional age) is older at ca. 517 Ma (Cambrian series 2). Landing *et al.* (2008) interpreted the dated quartz arenite unit at Buckmans Creek to be part of the Random Formation. The age of that formation in the Saint John area (where it is historically known as the Glen Falls Formation) is constrained by volcanic ash beds with ages of ca. 528 Ma in the underlying Ratcliffe Brook Formation and ca. 508 Ma in the overlying Hanford Brook Formation. Hence the maximum depositional age of 517 Ma for sample NB12-315 is consistent with these age constraints.

In contrast to these early Paleozoic samples, the samples from the Long Pond Bay and Ross Island formations (Figs. 7a–d) do not have Cambrian or younger zircon grains and hence their maximum depositional ages based on zircon data alone appear to be Neoproterozoic. The data are broadly consistent with previous interpretations of these units as Neoproterozoic but do not narrow down the depositional age greatly, especially for the Long Pond Bay Formation, due to the small number of zircon grains that yielded concordant results. However, the results are consistent with the interpretations of Fyffe (2014) who included the Long Pond Bay Formation in the upper part of the Neoproterozoic to Lower Cambrian Castalia Group and suggested that the volcanic rocks of the Ross Island Formation are a proximal facies of the Priest Cove Formation of the Castalia Group (Fig. 4).

Provenance implications

To facilitate comparison of datasets of various sizes, data from the present study together with previously published detrital age data for samples from Avalonia and Ganderia in southern New Brunswick are displayed on probability plots normalized for the number of dates (Figs. 8, 9). Because older grains are typically much less abundant than Ediacaran grains and hence tend to be produce less prominent peaks on the probability plots (Fig. 8), the normalized plots in Figure 9 were made using only dates older than 900 Ma. Except for three samples (NB06-232, NB12-314, and NB16-358) in which the number of grains with dates >900 Ma is small (<10), the data give reasonable signatures for comparison of Mesoproterozoic and older zircon signatures among samples (Fig. 9).

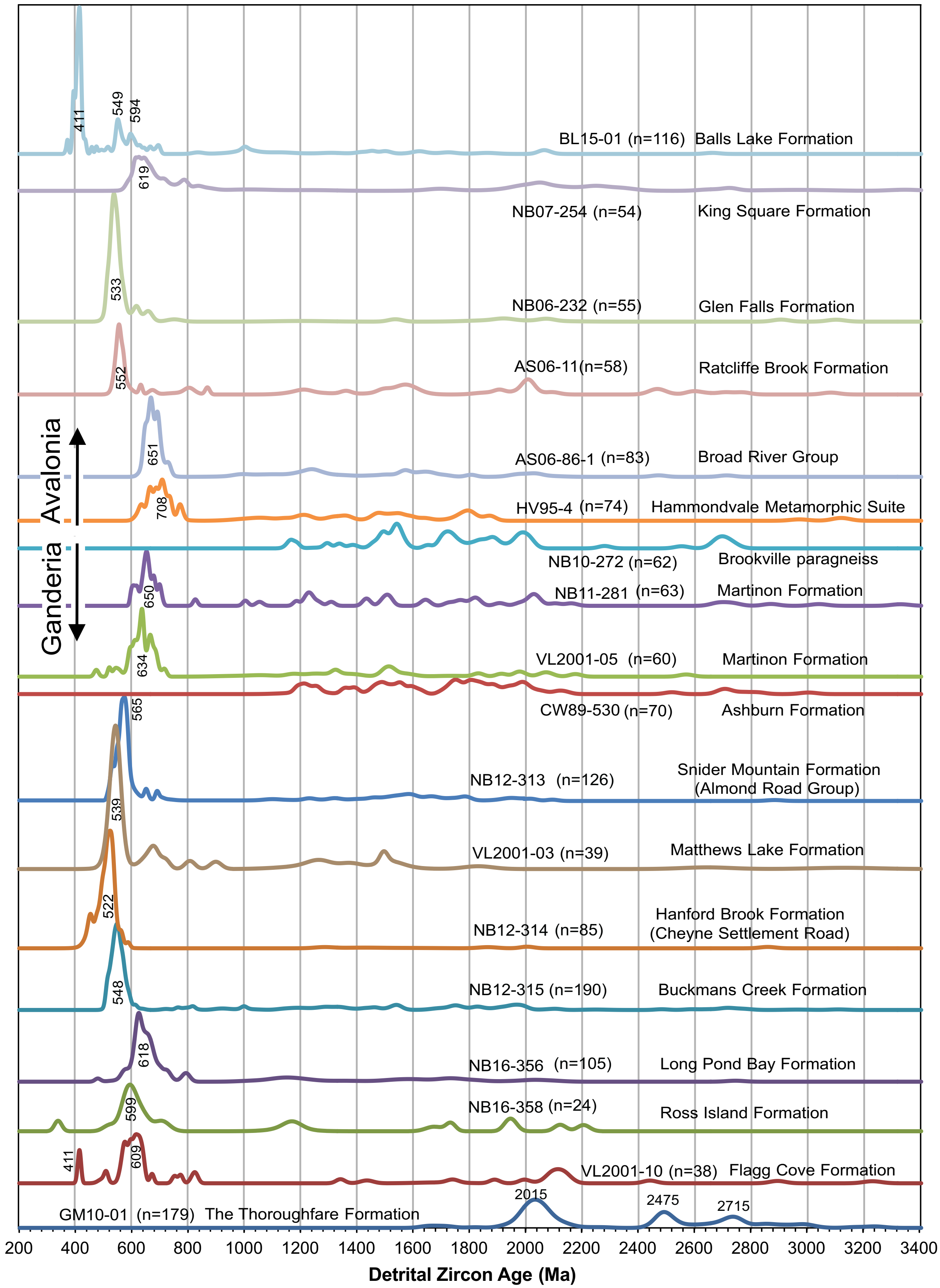


Figure 8. Normalized probability distribution for the six detrital zircon samples of this study in comparison to other samples from southern New Brunswick from Barr *et al.* (2012, 2014b), Johnson *et al.* (2018), Fyffe *et al.* (2009), and Satkoski *et al.* (2010). Data are normalized against the total number of concordant dates for each sample.

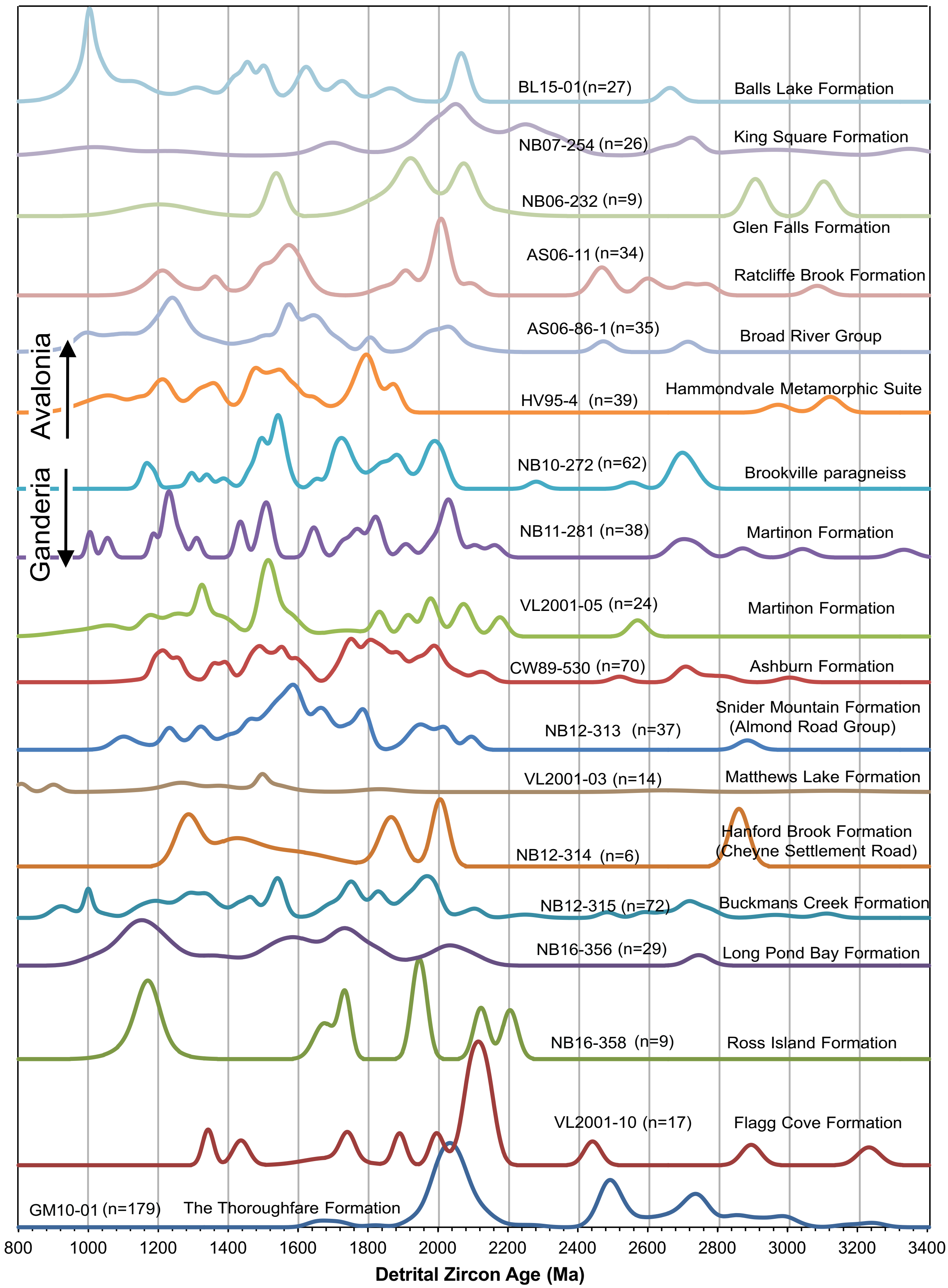


Figure 9. Normalized probability distribution using only ages >900 Ma for the six detrital zircon samples of this study in comparison to other samples from southern New Brunswick from Barr *et al.* (2012, 2014b), Johnson *et al.* (2018), Fyffe *et al.* (2009), and Satkoski *et al.* (2010). Data are normalized against the total number of concordant dates >900 Ma for each sample.

With the exception of sample GM10-01 from The Thoroughfare Formation, all of the samples are characterized by prominent Ediacaran peaks in zircon ages (Fig. 8). Such peaks are characteristic of sedimentary rocks from Gondwana-derived terranes and reflect the widespread pan-African igneous activity related to the assembly of the Gondwanan continent (e.g., Satkoski *et al.* 2010; Pollock *et al.* 2009, 2015; Dokken *et al.* 2018; Ludman *et al.* 2018). It is difficult to assess the significance of the variations in the position of the Ediacaran peak or of the spread in Ediacaran ages in terms of specific provenance areas in Gondwana because even samples from a single belt or stratigraphic unit can display significant differences, as has been documented in the Ganderian parts of New Brunswick, Nova Scotia, and Newfoundland (e.g., Fyffe *et al.* 2009; Satkoski *et al.* 2010; Barr *et al.* 2012; van Rooyen *et al.* 2019).

In addition to the Ediacaran peak somewhere between 539 Ma and 619 Ma, most samples show a scatter of older Neoproterozoic ages back to about 900 Ma, although such older Neoproterozoic ages are notably absent in the Cheyne Settlement Road sample (Fig. 8). In general, Grenville-age (1.0–1.2 Ga) peaks are not present in the samples of this study or those compiled from previous studies (Fig. 9), indicating that Laurentian sources were not significant contributors to these sediments. Also lacking in most samples are prominent "Eburnean" (2.0 –2.2 Ga) peaks, generally considered indicative of African sources. Exceptions include the sample from The Thoroughfare Formation on Grand Manan Island, in which that peak is dominant, and the sample from the nearby Flagg Cove Formation (data from Fyffe *et al.* 2009) which likely derived sediment from The Thoroughfare Formation or equivalent units. In general, Ganderian samples have more abundant Mesoproterozoic peaks than Avalonian samples, a pattern that is generally viewed as indicating Amazonian provenance (e.g., Barr *et al.* 2014b) but all of the Avalonian samples have some Mesoproterozoic peaks and some Ganderian samples, especially those from Grand Manan Island, have relatively few Mesoproterozoic peaks (Fig. 9).

The interpretation of Mesoproterozoic zircon provenance is challenging as illustrated in the Fredericton trough in New Brunswick and Maine northwest of the study area. Although the Fredericton trough is farther outboard of the Gondwanan margin within Ganderia than the current study areas (Fig. 1a), it provides a comparison dataset for areas to the southeast. Ludman *et al.* (2017, 2018) suggested that the Fredericton trough represents an independent basin that was not linked to the more southern New England basins, and interpreted the detrital zircon signatures as being derived from dominantly Gondwanan sources. In contrast, Dokken *et al.* (2018) documented more mixed zircon provenance signature with significant Laurentian contributions. The differences in detrital zircon signatures are likely the result of along-strike variations in the source terranes, and support interpretations that Ganderia may have been a collection of continental fragments that accreted to the Laurentian margin at different times rather than forming one coherent crustal block (Waldron *et al.* 2014, 2018, 2019; Pothier *et al.* 2015).

In Avalonia, Barr *et al.* (2012) noted a change in the provenance of detrital zircon grains through time, Neoproterozoic units being characterized by lack of zircon grains with ages between 2.2 and 1.9 Ga, with the exception of a small peak at 2.0 Ga in the Neoproterozoic Broad River Group in the Caledonia belt (Fig. 9). By the early Cambrian zircon grains of this age are more abundant. Fyffe *et al.* (2009) noted a similar trend in Neoproterozoic to Tremadocian sedimentary units in Ganderia, with 2.2 to 1.9 Ga ages becoming much more abundant overall in Cambrian–Ordovician samples. However, exceptions to the trend occur in Cambrian samples from both Ganderia and Avalonia. For example, a quartz arenite sample from the lower Cambrian Glen Falls Formation (Random Formation of Landing and Westrop 1998) in the Avalonian Caledonia belt (Fig. 8) contains few zircon grains ages between 2.2 to 1.9 Ga, and the dominant age population is ca. 537 Ma (Barr *et al.* 2012). The quartzite sample from the early Cambrian Matthews Lake Formation in the Ganderian New River belt (Fig. 8) also lacks zircon grains with ages between 2.2 and 1.9 Ga and is dominated by a single statistical age population at 539 Ma (Fyffe *et al.* 2009). The abundant volcanic rocks in the ca. 540 Ma Belleisle Bay Group in the New River belt are the most obvious source of the ca. 539 Ma zircon grains in the Matthews Lake quartzite, and along with the voluminous ca. 540 Ma plutonic rocks in the Brookville belt are the closest possible sources for the ca. 537 Ma zircons in the Glen Falls Formation, although $^{40}Ar/^{39}Ar$ cooling ages show that the Brookville plutons were not exposed at the time when the Glen Falls Formation was deposited (Dallmeyer and Nance 1992; White 1996).

The absence of Mesoproterozoic and Neoproterozoic zircon grains in the quartzite samples from The Thoroughfare Formation is intriguing. Grains of those ages form the dominant populations in every other sample in this study, and in every other sedimentary sample from the region (Fig. 8). It is one of only 3 northern Appalachian samples known to have this type of signature, one from drill core recovered from Georges Bank, underlying Mesozoic sedimentary rocks (Kuiper *et al.* 2017) and the other from the Hutchins Island Quartzite in the Islesboro fault block in Penobscot Bay in coastal Maine (Reusch *et al.* 2018). As noted by Kuiper *et al.* (2017) and Reusch *et al.* (2018) these detrital signatures, with a predominant population at ca. 2.0 Ga and a small peak between ca. 2.8 Ga and 2.4 Ga, are remarkably similar to that of the Paleoproterozoic Taghdout Quartzite in Morocco on the West African craton. Similar peaks are also present in the spectrum for the Flagg Cove Formation reported by Fyffe *et al.* (2009), although that sample also contains abundant Mesoproterozoic, Neoproterozoic, and Paleozoic grains. Given its proximity, The Thoroughfare Formation seems the most likely source of the Paleoproterozic grains in the Flagg Cove Formation. The detrital spectrum is very different from that of the Ashburn Formation of the Green Head Group in the Brookville belt, which like other units of that belt (Martinon Formation and Brookville paragneiss) are dominated by Mesoproterozoic zircon grains (Fig. 8). This calls into question the previous correlation (e.g., Alcock 1948) of The Thoroughfare Formation with the Green Head Group and suggests that correlation with the Isleboro fault block in Penobscot Bay may be more likely.

CONCLUSIONS

New U–Pb data from detrital zircon grains in six clastic sedimentary and metasedimentary samples from Ganderian and Avalonian terranes in southern New Brunswick show both similarities and differences in Ediacaran and older age patterns. Like previously published data from southern New Brunswick, four of the samples (BL15-01, NB12-315, NB16-356, NB16-358) have prominent Late Ediacaran to earliest Cambrian zircon age populations, but the position of the modal peak varies from ca. 548 Ma to 618 Ma. The fifth sample (NB12-314) has an early Cambrian peak at ca. 522 Ma, and the sixth sample (GM10-01) has only Paleoproterozoic peaks (Fig. 8). Some samples show a smattering of ages back to ca. 800, but generally lack 800–1200 Ma zircon grains. The samples vary widely in their abundances of older Mesoproterozoic and Paleoproterozoic grains, and a few Archean zircon grains are present in some samples. No consistent differences are apparent between Avalonian and Ganderian samples. Because Gondwanan sources areas contain a wide range of ages which are broadly similar, combined with the many variables inherent in sediment erosion, transport, deposition, and recycling, the use of detrital zircon age signatures to interpret from which part of Gondwana the Gondwana-derived components of the Appalachian orogen were derived may not be possible.

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APPENDIX

Table A1. Instrument settings and run parameters for analyses completed at Texas A & M University.

laser	esi/NWR 193 nm 4 ns excimer
background/washout times	14 s /8 s
laser repetition rate	15 Hz
spot size/shape	30 µm / circle
fluence	3.25 J cm^{-2}
carrier/makeup gas	0.6 l/min He, 0.8 l/min Ar
mass spectrometer	Thermo Scientific iCAP RQ
plasma RF power	1550 W
total duty cycle	195 ms
isotopes measured (dwell times in ms)	^{48}Ti (10), ^{88}Sr (10), ^{96}Zr (2.5), ^{179}Hf (2.5), ^{202}Hg (10), ^{204}Pb (20), ^{206}Pb (20), ^{207}Pb (50), ^{208}Pb (10), ^{232}Th (10), ^{235}U (20), ^{238}U (10), $^{232}Th^{16}O$ (10), $^{238}U^{16}O$ (10)

TableA2. U-Pb geochronologic data for samples GM10-01, NB12-314, and NB12-31 run at Texas A & M University (analyst Brent Miller).

	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	$^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
NB12-314 Cheyne Settlement Road (UTM - 719036E, 5032336N; Grid Zone 19T)																									
NB314a_001	115.7	835	434	1.92	18000	5.2	0.13	0.0297	0.0011	0.067	0.0023	0.727	0.042	0.0784	0.0023	0.5	591	22	816	20	551	24	486	14	88.2
NB314a_002	99.1	592	354	1.67	15000	4.85	0.21	0.0305	0.0018	0.0668	0.0041	0.749	0.059	0.0811	0.0022	0.5	607	35	780	110	561	32	503	13	89.7
NB314a_003	176	988	534	1.85	9980	4.19	0.24	0.0378	0.0022	0.0864	0.0031	0.94	0.043	0.08	0.0018	0.5	750	43	1336	21	672	23	496.1	11	73.8
NB314a_004	59.7	369.3	241.1	1.53	22000	5.04	0.12	0.02669	0.00047	0.05764	0.00082	0.6583	0.012	0.08283	0.0012	0.6433242	532.3	9.2	509	32	513.2	7.4	512.9	7.2	99.9
NB314a_005	65.8	710	247	2.87	14000	7.6	0.42	0.0289	0.0011	0.0614	0.0016	0.666	0.026	0.079	0.0027	0.7543874	576	21	648	22	518	16	490	16	94.6
NB314a_006	45.7	200.1	194.9	1.03	60000	3.05	0.27	0.0264	0.0019	0.0595	0.0074	0.658	0.097	0.0806	0.0022	0.8709235	527	37	570	270	512	60	500	13	97.7
NB314a_007	69	420	261	1.61	40000	4.71	0.24	0.02895	0.00093	0.0607	0.0021	0.698	0.031	0.0838	0.0029	0.6419069	577	18	620	23	537	18	519	17	96.6
NB314a_008	37.7	178.3	145.1	1.23	20000	3.49	0.16	0.02843	0.00098	0.0699	0.0046	0.777	0.04	0.0813	0.0023	0.5	567	19	910	130	583	23	504	14	86.4
NB314a_009	242.6	409.3	257.9	1.59	63000	5.57	0.13	0.0999	0.0018	0.1239	0.0023	5.758	0.12	0.338	0.0048	0.492303	1925	33	2006	24	1938	18	1877	23	96.9
NB314a_011	65.8	505	256	1.97	22000	5.86	0.23	0.02822	0.00071	0.0634	0.0014	0.704	0.019	0.0806	0.0015	0.5844654	562	14	709	48	541	12	499.9	8.9	92.4
NB314a_012	174.4	1073	284	3.78	26000	10.75	0.28	0.0673	0.0016	0.0838	0.0012	2.171	0.044	0.1886	0.0029	0.7093767	1316	31	1283	34	1171	14	1114	16	95.1
NB314a_013	49.9	249.7	205.6	1.21	21900	4.025	0.093	0.02619	0.00052	0.0582	0.0012	0.669	0.015	0.08328	0.0011	0.4255614	522.5	10	524	44	519.1	9.4	515.6	6.7	99.3
NB314a_014	193	227	272	0.83	345	1.151	0.078	0.0852	0.0065	0.317	0.023	5.05	0.49	0.1136	0.0052	0.5	1650	120	3560	35	1786	96	693	30	38.8
NB314a_015	560	1178	128	9.20	2390	10	2.9	0.65	0.45	0.167	0.027	7.3	1.6	0.313	0.016	0.5	8300	4300	2460	230	2100	160	1752	79	83.4
NB314a_016	46.5	400	188	2.13	30000	6.79	0.42	0.0266	0.0018	0.06	0.0023	0.71	0.039	0.086	0.0023	0.7702496	531	35	589	36	543	23	531	13	97.8
NB314a_018	47.4	250	175	1.43	13000	4.26	0.2	0.02972	0.00098	0.0691	0.0021	0.818	0.029	0.086	0.0015	0.5	592	19	886	63	606	16	531.7	9.1	87.7
NB314a_019	181	307	276	1.11	770	1.88	0.11	0.0702	0.0057	0.191	0.016	3.03	0.41	0.1102	0.0052	0.5	1360	110	2590	37	1328	81	672	29	50.6
NB314a_021	65.4	249.3	239.1	1.04	6200	2.93	0.13	0.0306	0.0013	0.0681	0.0026	0.78	0.029	0.0833	0.0022	0.5	609	26	850	77	584	16	516	13	88.4
NB314a_022	21.5	139.8	85.5	1.64	9000	5.67	0.21	0.02736	0.00085	0.0606	0.0013	0.724	0.018	0.08669	0.0013	0.5133702	545	17	611	45	552.1	10	535.9	7.5	97.1
NB314a_024	44.3	261	173	1.51	17000	4.96	0.2	0.02812	0.00084	0.0605	0.0015	0.747	0.019	0.0899	0.0019	0.4454405	560	17	612	55	566.3	11	555.1	11	98.0
NB314a_025	37.4	252.7	143.9	1.76	24600	5.95	0.18	0.02833	0.00078	0.059	0.0011	0.745	0.016	0.09129	0.0012	0.5072991	565	15	555	39	564.7	9.2	563.1	7.3	99.7
NB314a_026	48.4	246	171.9	1.43	10900	4.683	0.1	0.03067	0.00066	0.0613	0.0011	0.803	0.016	0.09523	0.0013	0.480444	611	13	638	39	598	9.2	587.2	7.1	98.2
NB314a_032	65	427	232	1.84	21000	4.76	0.21	0.0296	0.0014	0.0579	0.0017	0.603	0.026	0.0761	0.0037	0.8016144	590	28	517	31	478	17	473	22	99.0
NB314a_033	30.9	1610	49.7	32.39	41000	50.9	4.6	0.0694	0.004	0.06637	0.00098	0.8385	0.014	0.09151	0.0013	0.5534752	1354	76	814	31	618.2	8	564.4	7.7	91.3
NB314a_043	46.8	195.7	152.8	1.28	3300	3.39	0.12	0.0335	0.0016	0.0719	0.0025	0.854	0.029	0.0865	0.0021	0.5	665	31	968	70	626	16	535	13	85.5
NB314a_045	36.7	216	154.1	1.40	9500	4.61	0.11	0.02587	0.00053	0.05791	0.001	0.642	0.014	0.08055	0.0011	0.6108836	516.2	10	514	29	503.3	8.6	499.4	6.8	99.2
NB314a_046	16.7	134	53	2.53	20000	5.9	0.23	0.0333	0.0026	0.0673	0.0026	0.76	0.066	0.0824	0.0063	0.5	661	50	844	80	573	38	510	38	89.0
NB314a_047	155	602	583	1.03	15000	3.01	0.15	0.0292	0.0018	0.0633	0.0065	0.74	0.1	0.0846	0.0023	1.1508639	581	36	620	30	548	41	524	14	95.6
NB314a_048	188	290	560	0.52	630	0.97	0.25	0.0379	0.0025	0.435	0.052	7.8	1.2	0.123	0.01	0.5	752	48	3870	300	2090	210	747	59	35.7
NB314a_049	53.8	346	217	1.59	30000	4.99	0.28	0.02716	0.0008	0.0612	0.0015	0.709	0.023	0.0838	0.0019	0.6564746	542	16	640	31	544	14	519	11	95.4
NB314a_050	51.4	231	166	1.39	5300	3.78	0.11	0.03245	0.001	0.0874	0.0023	1.021	0.032	0.0846	0.0013	0.5	645	20	1357	49	713	16	523.5	8	73.4
NB314a_051	29	176	98	1.80	12000	5.12	0.72	0.0293	0.0053	0.067	0.014	0.74	0.11	0.0817	0.0032	1.7202841	580	100	770	32	561	61	507	19	90.4
NB314a_052	264	420	490	0.86	830	1.25	0.14	0.082	0.013	0.305	0.038	5.6	1.1	0.125	0.013	0.5	1580	250	3410	210	1820	200	757	75	41.6
NB314a_053	472	810	840	0.96	857	1.314	0.057	0.0637	0.0037	0.277	0.012	3.52	0.25	0.0914	0.003	0.5	1266	77	3329	33	1517	56	564	18	37.2
NB314a_054	24	149.4	91.2	1.64	9300	5.1	0.15	0.02824	0.00078	0.0576	0.0013	0.672	0.017	0.0846	0.0015	0.4960102	563	15	496	32	520.9	10	523.4	8.8	100.5
NB314a_055	294	923	985	0.94	4530	2.27	0.11	0.0328	0.0016	0.0982	0.0071	1.09	0.1	0.0804	0.0028	0.5	653	31	1570	130	743	50	498	17	77.0
NB314a_056	62	181	142	1.27	33000	5.007	0.11	0.0459	0.0016	0.1666	0.0034	4.12	0.15	0.179	0.0046	0.5	908	31	2518	34	1653	31	1061	25	64.2
NB314a_057	163	810	700	1.16	48000	3.526	0.094	0.0252	0.00067	0.0594	0.0012	0.626	0.018	0.0762	0.0016	0.7118413	503	13	589	51	493.3	11	473.4	9.6	96.0

TableA2. Continued.

Analysis Identifier	Measured concentrations[1] Pb (ppm)	U (ppm)	Th (ppm)	U/Th	Isotopic ratios ^{206}Pb/^{204}Pb	^{208}Pb/^{206}Pb	±2σ[2]	^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	Rho[3]	Calculated ages (Ma) ^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	% con
NB314a_058	128.7	314	300	1.05	1880	2.187	0.058	0.047	0.0012	0.1462	0.0036	1.867	0.052	0.09246	0.0013	0.5	928	23	2302	35	1066	18	570	7.5	53.5
NB314a_059	27.42	177.3	108.1	1.64	10200	5.38	0.18	0.02741	0.00069	0.0609	0.0013	0.719	0.018	0.08567	0.0012	0.523673	546	13	623	48	549.5	10	529.8	7.4	96.4
NB314a_060	120.5	443.4	352.2	1.26	5200	3.205	0.088	0.0366	0.0011	0.0931	0.0032	1.141	0.039	0.0887	0.0016	0.5	727	22	1482	36	772	18	547.8	9.6	71.0
NB314a_061	105.3	248	288	0.86	2330	2.103	0.059	0.0404	0.0019	0.1334	0.0051	1.728	0.089	0.094	0.0024	0.5	800	37	2124	66	1013	31	579	14	57.2
NB314a_062	73.4	469	356	1.32	14000	4.49	0.37	0.0241	0.0014	0.0669	0.0077	0.667	0.068	0.0732	0.0026	0.5	481	28	750	37	515	39	455	15	88.3
NB314a_063	30.4	122	115	1.06	3200	3.37	0.15	0.0279	0.001	0.0601	0.0019	0.721	0.021	0.0863	0.0018	0.2336851	555	21	616	59	551	13	533.6	11	96.8
NB314a_064	375	1945	1700	1.14	59000	3.65	0.11	0.02389	0.00047	0.05905	0.00075	0.596	0.015	0.07291	0.0012	0.8968335	477.1	9.3	565	38	474.4	9.2	453.6	7.3	95.6
NB314a_065	64.1	381	247.2	1.54	19600	4.745	0.094	0.02806	0.00064	0.05924	0.00086	0.675	0.014	0.0828	0.0014	0.7204625	559	13	568	32	522.8	8.8	512.5	8.4	98.0
NB314a_066	39	131	150	0.87	13000	2.88	0.16	0.0268	0.0012	0.0594	0.0027	0.7	0.032	0.0861	0.0023	0.3018705	535	24	570	100	538	19	532	14	98.9
NB314a_067	18.5	111	62	1.79	20000	4.77	0.48	0.0295	0.0015	0.0738	0.0037	0.797	0.044	0.0789	0.0032	0.5	587	30	1030	39	595	25	490	19	86.4
NB314a_068	51	45	98	0.46	290	0.624	0.036	0.064	0.01	0.559	0.025	9.5	1.5	0.129	0.014	0.5	1250	190	4399	21	2437	82	779	78	32.0
NB314a_070	61.6	225	235	0.96	15000	2.99	0.13	0.02811	0.00096	0.0626	0.002	0.749	0.03	0.087	0.0022	0.6037424	560	19	682	69	566	17	537	13	94.9
NB314a_071	140	144	319	0.45	640	0.98	0.1	0.0491	0.0028	0.366	0.035	5.41	0.61	0.1044	0.0034	0.5	967	54	3690	22	1810	120	640	20	35.4
NB314a_072	60.9	408	233	1.75	11000	5.26	0.27	0.02834	0.00054	0.06422	0.001	0.724	0.016	0.0819	0.0017	0.7376729	564.8	11	744	33	552.9	9.4	507.6	9.9	91.8
NB314a_073	46.1	155.7	188	0.83	4100	2.96	0.11	0.02669	0.00066	0.0587	0.0014	0.706	0.017	0.0872	0.0015	0.3704538	532	13	541	23	541.8	10	539	8.9	99.5
NB314a_074	268.2	1937	1145	1.69	90000	5.21	0.13	0.02551	0.00078	0.0604	0.0018	0.646	0.022	0.0779	0.0013	0.484024	509	15	624	70	506	14	483.5	7.7	65.4
NB314a_075	51	245	184	1.33	12000	4.02	0.19	0.03016	0.00099	0.0697	0.0033	0.816	0.042	0.0853	0.0017	0.5	600	20	899	24	604	22	527.6	10	87.4
NB314a_076	171.7	1210	655	1.85	21000	4.63	0.12	0.02864	0.00094	0.0596	0.0011	0.585	0.017	0.0706	0.0019	0.7851674	571	18	582	33	467.5	11	440	11	94.1
NB314a_077	58	268	126	2.13	2580	3.68	0.11	0.049	0.0028	0.1188	0.003	1.343	0.049	0.0829	0.0016	0.5	966	55	1932	45	869	18	513.5	9.6	59.1
NB314a_078	537	1170	1400	0.84	1560	1.785	0.063	0.0433	0.003	0.1499	0.0043	1.73	0.074	0.0834	0.0018	0.5	856	58	2339	25	1018	27	516.1	11	50.7
NB314a_079	88	516	331	1.56	50000	4.39	0.14	0.02992	0.00079	0.0684	0.0017	0.763	0.025	0.0812	0.0019	0.5	596	15	870	51	575	14	503	11	87.5
NB314a_080	19.1	64	66	0.97	5100	2.93	0.19	0.0282	0.0016	0.0679	0.0035	0.8	0.047	0.0858	0.0025	0.5	563	31	850	26	596	26	531	15	89.1
NB314a_081	76.8	207.1	270.9	0.76	5500	2.289	0.062	0.03052	0.001	0.0912	0.0032	1.067	0.039	0.0848	0.0014	0.5	608	20	1445	67	735	19	524.7	8.2	71.4
NB314a_082	88	400	318	1.26	6200	3.06	0.27	0.0305	0.0025	0.095	0.012	0.98	0.15	0.0746	0.0024	0.5	607	49	1450	27	684	73	464	14	67.8
NB314a_083	32.4	168	126	1.33	10500	4.382	0.11	0.02733	0.00057	0.059	0.0011	0.705	0.015	0.08659	0.0011	0.4929411	545	11	556	41	541.4	9.1	535.3	6.7	98.9
NB314a_084	22	98	86	1.14	500	3.5	0.12	0.02724	0.00079	0.0594	0.0023	0.677	0.02	0.0838	0.0016	0.2322481	543	16	560	28	527	14	518.7	9.8	98.4
NB314a_085	32	91	102	0.89	5200	2.44	0.15	0.032	0.0016	0.0848	0.0039	1.015	0.066	0.0872	0.0034	0.5	636	32	1301	89	710	32	539	20	75.9
NB314a_086	855	1241	2220	0.56	950	1.189	0.054	0.0414	0.0024	0.216	0.019	2.59	0.28	0.086	0.002	0.5	820	47	2900	29	1274	72	532	12	41.8
NB314a_087	349	350	710	0.49	310	0.87	0.13	0.0501	0.002	0.456	0.051	7	1.1	0.1082	0.0067	0.5	988	38	4010	200	2040	160	661	39	32.4
NB314a_089	65	144	47.8	3.01	43000	11.76	0.37	0.1516	0.0037	0.2046	0.0023	15.27	0.31	0.541	0.0089	0.8330032	2851	64	2861	18	2830	19	2786	37	98.4
NB314a_090	29	156	104	1.50	90000	4.31	0.34	0.0294	0.002	0.0667	0.0032	0.783	0.051	0.0857	0.0048	0.6959478	585	40	820	30	586	30	530	29	90.4
NB314a_091	53	207	220	0.94	51000	2.89	0.23	0.02435	0.00092	0.0638	0.0022	0.669	0.049	0.0767	0.0062	0.9044489	486	18	732	73	519	30	476	37	91.7
NB314a_092	43.9	194	153	1.27	4300	3.576	0.11	0.0309	0.001	0.073	0.0021	0.872	0.029	0.0868	0.0017	0.5	616	20	1005	31	636	15	536.6	9.8	84.4
NB314a_093	31	273	85	3.21	5000	6.7	1.4	0.0399	0.0043	0.0883	0.0098	0.96	0.13	0.0788	0.0028	0.5	791	84	1320	230	676	67	489	17	72.3
NB314a_094	26.44	185.1	102.4	1.81	9800	5.98	0.15	0.02779	0.00064	0.05826	0.00099	0.696	0.015	0.08656	0.0012	0.615696	554	13	529	32	535.5	8.8	535.1	7.3	99.9
NB314a_095	93.6	343	376	0.91	16400	3.09	0.085	0.02702	0.00043	0.05775	0.00088	0.674	0.013	0.08496	0.0011	0.6155832	538.9	8.5	512	33	522.7	7.9	525.6	6.8	100.6
NB314a_096	265	1022	681	1.50	1790	2.85	0.14	0.0421	0.0014	0.128	0.0062	1.403	0.086	0.0798	0.0016	0.5	833	28	2040	33	883	36	494.8	9.3	56.0
NB314a_097	55	384	207	1.86	70000	5.02	0.34	0.0289	0.0014	0.0644	0.0031	0.661	0.025	0.0764	0.0021	0.0630735	575	28	731	86	515	15	474	12	92.0
NB314a_098	49.7	132	84	1.57	820	2.13	0.19	0.0733	0.006	0.209	0.018	2.93	0.39	0.0981	0.0042	0.5	1430	110	2800	34	1342	88	603	24	44.9

TableA2. Continued.

	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	$^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
NB314a_099	64.6	333	230	1.45	3700	4.31	0.15	0.02899	0.00067	0.0646	0.0022	0.736	0.022	0.0835	0.0016	0.0880526	578	13	740	34	559	13	516.7	9.5	92.4
NB314a_100	30	187	106	1.76	15000	5.66	0.44	0.0275	0.0017	0.0607	0.0017	0.705	0.029	0.0847	0.0024	0.7338017	548	34	623	61	541	17	524	14	96.9
NB314a_101	10.9	52	40	1.30	18000	3.47	0.27	0.0296	0.0016	0.0697	0.0043	0.782	0.052	0.0819	0.0023	0.5	590	32	910	35	586	30	508	14	86.7
NB314a_102	44	280	169	1.66	19000	5.1	0.22	0.0274	0.0011	0.0594	0.0017	0.678	0.02	0.0839	0.0016	0.3686476	546	21	574	63	525	12	519.4	9.4	98.9
NB314a_103	52.4	184.4	208.5	0.88	4900	2.953	0.07	0.02718	0.00054	0.05989	0.00099	0.708	0.014	0.08567	0.0012	0.566763	542.1	11	590	36	542.9	8.4	529.9	6.9	97.6
NB314a_104	7.3	105	29.7	3.54	80000	10.84	0.53	0.0254	0.0013	0.0579	0.0021	0.62	0.019	0.0781	0.0017	0.0730491	508	26	513	82	489	12	484.9	10	99.2
NB314a_105	27.3	84	83	1.01	3100	2.75	0.38	0.0322	0.0022	0.123	0.019	1.3	0.18	0.0777	0.0025	0.5	641	44	1900	37	835	77	482	15	57.7
NB314a_106	59.1	325	244	1.33	4100	4.85	0.32	0.0274	0.00094	0.0602	0.0013	0.694	0.017	0.0837	0.0013	0.4927479	546	18	603	46	534.5	10	517.9	7.8	96.9
NB314a_107	80	32	57	0.56	213	0.59	0.022	0.152	0.027	0.651	0.027	16.9	1.7	0.188	0.016	0.5	2830	460	4622	38	2903	95	1109	88	38.2
NB314a_108	137	100	201	0.50	310	0.809	0.056	0.0813	0.0093	0.445	0.023	8.3	1.1	0.133	0.01	0.5	1570	170	4053	83	2220	120	826	71	37.2
NB314a_109	250	121	570	0.21	161	0.591	0.063	0.051	0.011	0.605	0.029	10.3	1.3	0.124	0.014	0.5	1000	210	4514	72	2440	110	751	80	30.8
NB314a_110	156	67	178	0.38	228	0.61	0.028	0.0943	0.0053	0.627	0.029	14.4	1.2	0.166	0.011	0.5	1819	98	4577	39	2765	75	986	63	35.7
NB314a_111	167	202	336	0.60	1550	1.48	0.36	0.0501	0.0067	0.278	0.065	4	1.2	0.0959	0.0051	0.5	990	130	3060	460	1500	250	590	30	39.3
NB314a_112	179	242	234	1.03	457	1.193	0.089	0.112	0.015	0.333	0.026	5.7	0.83	0.1205	0.0092	0.5	2210	310	3570	40	1880	130	731	52	38.9
NB314a_113	640	1100	1570	0.70	605	1.249	0.056	0.0482	0.0028	0.266	0.018	3.41	0.42	0.0942	0.0066	0.5	951	53	3250	22	1497	95	580	38	38.7
NB314a_114	179	1150	530	2.17	10100	3.66	0.89	0.0324	0.0049	0.087	0.02	0.76	0.16	0.0645	0.003	0.5	644	95	1280	440	569	90	403	18	70.8
NB314a_115	64.9	230.8	260.4	0.89	14600	2.917	0.074	0.02697	0.00053	0.0583	0.0013	0.686	0.017	0.08529	0.0013	0.462268	537.9	10	529	23	529.7	10	527.6	7.8	99.6
NB314a_116	49.2	310.9	198.9	1.56	400	4.95	0.15	0.02697	0.00079	0.0592	0.0015	0.682	0.018	0.0843	0.0015	0.3952024	538	16	566	55	530	12	521.6	9	98.4
NB314a_117	50.2	188.5	158.1	1.19	600	3.207	0.087	0.03421	0.00087	0.0796	0.0019	0.981	0.028	0.0898	0.0015	0.5	680	17	1174	24	695	14	554	9.2	79.7
NB314a_118	77.8	132	297	0.44	780	1.22	0.079	0.0296	0.0018	0.257	0.019	3.19	0.37	0.0842	0.0033	0.5	597	37	3100	130	1389	79	521	19	37.5
NB314a_119	132	570	420	1.36	19300	3.19	0.48	0.0356	0.0094	0.09	0.036	1.06	0.55	0.0815	0.0066	0.5	700	180	1120	25	670	200	505	39	75.4
NB314a_120	136	368	309	1.19	1090	2.1	0.12	0.0452	0.0038	0.155	0.012	1.68	0.18	0.0794	0.0091	0.5	893	73	2400	35	997	65	492	54	49.3
NB314a_121	52	272	137	1.99	5800	4.84	0.21	0.0347	0.0016	0.0776	0.0047	0.897	0.065	0.0843	0.0029	0.5	689	31	1130	120	649	36	522	17	80.4
NB314a_122	43	240	125	1.92	5500	3.3	1.3	0.054	0.02	0.12	0.064	1.31	0.74	0.0783	0.0071	0.5	1060	390	1640	26	800	320	486	42	60.7
NB314a_123	26	160	103	1.55	41000	3.1	1.4	0.041	0.017	0.096	0.061	1.02	0.7	0.0766	0.0062	0.5	810	330	1300	1100	690	330	476	37	69.0
NB314a_124	43.8	191.9	162.3	1.18	8600	3.6	0.11	0.02945	0.001	0.0594	0.0015	0.709	0.017	0.0872	0.0019	0.3942885	586	20	571	27	543.6	10	539.1	11	99.2
NB314a_125	91	267	165	1.62	1600	3.11	0.39	0.0526	0.0054	0.118	0.018	1.4	0.27	0.0869	0.0086	0.5	1040	100	1870	290	880	110	537	51	61.0
NB314a_126	100	460	420	1.10	18000	3.04	0.14	0.02469	0.00067	0.063	0.0029	0.61	0.027	0.0708	0.0028	0.40111	493	13	700	28	483	18	441	17	91.3
NB314a_127	10.3	61	33	1.85	30000	4.25	0.5	0.0316	0.0034	0.0671	0.0022	0.72	0.12	0.079	0.013	0.5	629	66	840	69	551	75	488	77	88.6
NB314a_128	36	157	109	1.44	60000	3.18	0.19	0.0339	0.0019	0.0699	0.0022	0.8	0.15	0.0782	0.0082	0.5	673	36	920	29	588	78	485	50	82.5
NB314a_129	51	450	167	2.69	100000	6.41	0.33	0.033	0.0011	0.0666	0.0026	0.725	0.037	0.0793	0.0028	0.5	655	21	809	79	552	22	492	17	89.1
NB314a_130	65	480	228	2.11	18000	4.93	0.18	0.02987	0.00095	0.058	0.0011	0.571	0.022	0.071	0.0028	0.8819089	595	19	527	30	458	14	442	17	96.5
NB314a_131	88	417	289	1.44	10600	3.75	0.28	0.0334	0.0037	0.082	0.01	0.98	0.16	0.0855	0.0044	0.5	663	73	1170	210	679	75	529	26	77.9
NB314a_132	52.1	220.6	178.3	1.24	700	3.26	0.15	0.03132	0.00099	0.0748	0.0025	0.855	0.03	0.0831	0.0019	0.5	623	19	1050	66	626	16	514.3	11	82.2
NB314a_133	46	266.9	183	1.46	6400	4.49	0.18	0.02783	0.00096	0.0592	0.0013	0.657	0.017	0.0804	0.0015	0.5545158	555	19	569	36	512.2	10	498.2	8.9	97.3
NB314a_134	83.1	362	259.7	1.39	2100	3.511	0.097	0.0342	0.0011	0.0739	0.0018	0.865	0.021	0.0856	0.002	0.5	680	22	1027	47	632	12	529	12	83.7
NB314a_135	215	450	620	0.73	431	1.24	0.14	0.0521	0.009	0.321	0.033	4.87	0.82	0.1096	0.0096	0.5	1020	170	3490	37	1750	150	669	56	38.2
NB314a_136	44	173.4	174.8	0.99	9700	3.12	0.083	0.02723	0.00068	0.0582	0.0012	0.666	0.016	0.0831	0.0014	0.5384437	543	13	524	45	517.8	9.8	514.4	8.5	99.3
NB314a_137	11	60	30	2.00	40000	4.68	0.38	0.0388	0.0053	0.08	0.0054	0.937	0.067	0.0855	0.0026	0.5	770	100	1180	38	670	35	529	15	79.0

TableA2. Continued.

	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	^{206}Pb/^{204}Pb	^{208}Pb/^{206}Pb	$\pm 2\sigma^2$	^{208}Pb/^{232}Th	$\pm 2\sigma^2$	^{207}Pb/^{206}Pb	$\pm 2\sigma^2$	^{207}Pb/^{235}U	$\pm 2\sigma^2$	^{206}Pb/^{238}U	$\pm 2\sigma^2$	Rho[3]	^{208}Pb/^{232}Th	$\pm 2\sigma^2$	^{207}Pb/^{206}Pb	$\pm 2\sigma^2$	^{207}Pb/^{235}U	$\pm 2\sigma^2$	^{206}Pb/^{238}U	$\pm 2\sigma^2$	% con
NB314a_138	59	290	165	1.76	31000	3.79	0.69	0.0372	0.0093	0.083	0.036	0.88	0.36	0.0782	0.004	0.5	740	180	1040	540	620	160	485	24	78.2
NB314a_139	45.7	286	176	1.63	20000	5.11	0.26	0.0292	0.0013	0.0589	0.0018	0.68	0.021	0.084	0.0014	0.2890654	582	26	550	39	526	12	519.9	8.4	98.8
NB314a_140	94.2	506	347	1.46	80000	4.35	0.17	0.02926	0.00083	0.0688	0.0027	0.788	0.036	0.0828	0.0025	0.5	583	16	886	76	589	20	513	15	87.1
NB314a_141	500	386	413	0.93	5900	2.93	0.38	0.1295	0.007	0.253	0.017	15.05	0.64	0.443	0.032	0.5	2460	120	3180	40	2814	41	2360	150	83.9
NB314a_142	51.9	373	210	1.78	30000	5.86	0.38	0.0281	0.0017	0.0612	0.0019	0.707	0.024	0.0843	0.0022	0.4907848	559	33	636	25	543	14	522	13	96.1
NB314a_143	104	90	196	0.46	257	0.807	0.05	0.113	0.036	0.432	0.03	7.9	1.5	0.131	0.02	0.5	2090	610	4023	94	2130	150	790	110	37.1
NB314a_144	94	167	267	0.63	620	1.41	0.13	0.0431	0.0027	0.284	0.025	3.92	0.5	0.0973	0.0042	0.5	851	52	3240	41	1570	100	598	24	38.1
NB314a_145	40	230	125	1.84	16000	4.32	0.29	0.0321	0.0028	0.0648	0.0044	0.66	0.064	0.0743	0.0046	0.7183748	638	55	760	23	513	38	462	28	90.1
NB314a_146	310	990	786	1.26	980	2.26	0.12	0.0432	0.0021	0.1591	0.0087	1.72	0.12	0.0777	0.0016	0.5	855	40	2426	94	1009	45	482.1	9.5	47.8
NB314a_147	72.5	295.5	209	1.41	2630	3.36	0.14	0.038	0.0011	0.0996	0.0038	1.213	0.048	0.0886	0.0017	0.5	754	22	1605	24	805	22	547.4	10	68.0
NB314a_148	94.7	446	315.7	1.41	2300	3.67	0.12	0.0325	0.0012	0.0724	0.0027	0.827	0.028	0.0834	0.0022	0.5	645	24	973	76	611	15	517	13	84.6
NB314a_149	38.23	148.6	148.1	1.00	8500	3.136	0.087	0.02804	0.00072	0.0589	0.0014	0.697	0.019	0.0853	0.0014	0.5001025	559	14	549	25	536	12	527.8	8.2	98.5
NB314a_150	50.4	361.8	191.6	1.89	21000	5.75	0.16	0.02851	0.00066	0.0621	0.0011	0.727	0.02	0.0848	0.0017	0.7660355	568	13	672	37	554	12	524.5	10	94.7
NB314a_151	111.7	641	457	1.40	15000	4.115	0.076	0.02647	0.00045	0.06155	0.00098	0.651	0.016	0.0767	0.0013	0.7655638	528	8.9	652	26	508.7	10	476.3	7.9	93.6
NB314a_152	94.8	684	346.2	1.98	33000	5.62	0.13	0.02969	0.00067	0.06176	0.00082	0.7	0.014	0.0823	0.0015	0.7625137	591	13	661	28	538.6	8.5	509.6	8.7	94.6
NB314a_153	157.7	961	640	1.50	29000	4.397	0.11	0.02625	0.00062	0.0602	0.0016	0.609	0.019	0.07345	0.001	0.5324457	524	12	601	50	482	11	456.9	6.3	94.8
NB314a_154	101.6	797	297.1	2.68	6600	6.13	0.17	0.0363	0.0013	0.0764	0.0018	0.82	0.019	0.0781	0.0013	0.5	721	25	1094	27	607.5	11	484.8	7.7	79.8
NB314a_155	166	430	400	1.08	60000	2.53	0.49	0.0394	0.0096	0.118	0.07	1.18	0.46	0.0851	0.0092	0.5	780	180	1350	700	750	170	526	55	70.1
NB314a_157	120	738	437	1.69	8000	4.29	0.2	0.0301	0.0018	0.0746	0.005	0.763	0.068	0.0737	0.0017	0.5	600	36	1020	28	570	35	458.3	10	80.4
NB314a_158	24.2	158.4	81.6	1.94	9300	5.49	0.25	0.0328	0.0021	0.0693	0.0036	0.837	0.047	0.0879	0.0015	0.5	651	41	860	110	613	25	543	8.9	88.6
NB314a_159	27	92	62	1.48	2500	2.47	0.78	0.048	0.011	0.116	0.04	1.41	0.55	0.0882	0.0083	0.5	940	220	1770	29	870	240	545	49	62.6
NB314a_160	21.1	316	88.3	3.58	9800	11.25	0.43	0.02603	0.00085	0.0574	0.0013	0.634	0.017	0.0804	0.0017	0.575992	519	17	497	50	498.1	11	498.3	10	100.0
NB314a_161	82.7	406	288	1.41	90000	3.83	0.13	0.0316	0.0011	0.0795	0.0034	0.926	0.045	0.0853	0.0017	0.5	628	21	1169	30	671	20	527.7	10	78.6
NB314a_162	39.3	262	161.9	1.62	16700	5	0.16	0.02657	0.00074	0.0583	0.0014	0.641	0.018	0.0801	0.0015	0.5349065	530	15	527	53	502	11	496.6	8.7	98.9
NB314a_163	66.1	313	282	1.11	10700	3.564	0.079	0.02543	0.00054	0.0588	0.0011	0.65	0.013	0.08013	0.0012	0.4579106	507.6	11	558	31	508.1	8.2	496.9	7	97.8
NB314a_164	7.1	65	24	2.71	36000	7.55	0.56	0.0282	0.0021	0.0728	0.0095	0.74	0.093	0.0743	0.0024	0.5	563	41	1000	26	562	55	462	14	82.2
NB314a_165	61.5	304	197.1	1.54	3300	3.74	0.2	0.0343	0.0021	0.0758	0.0026	0.873	0.04	0.0842	0.0035	0.5	682	41	1083	68	637	22	521	21	81.8
NB314a_166	127	600	590	1.02	90000	4.38	0.93	0.0266	0.0022	0.065	0.017	0.646	0.07	0.0737	0.0068	2.4078989	531	43	910	32	504	40	458	41	90.9
NB314a_167	69.4	245	244.1	1.00	70000	2.72	0.27	0.0312	0.003	0.0657	0.0021	0.778	0.05	0.0866	0.0067	0.9145187	620	59	796	65	584	28	535	40	91.6
NB314a_168	272.6	562	409	1.37	13600	4.8	0.34	0.0761	0.0058	0.1146	0.0036	4.11	0.15	0.2617	0.0057	0.5155055	1480	110	1866	33	1655	29	1498	29	90.5
NB314a_169	176	558	731	0.76	23000	2.459	0.063	0.02651	0.00054	0.06281	0.0009	0.711	0.018	0.0819	0.0016	0.8262124	528.8	11	702	32	544.9	10	507.4	9.3	93.1
NB314a_170	164	172	520	0.33	242	0.912	0.1	0.0532	0.009	0.439	0.033	7.15	0.95	0.1165	0.0088	0.5	1040	170	4000	34	2100	130	708	50	33.7
NB314a_171	157.9	450	248	1.81	771	2.322	0.088	0.0707	0.0027	0.1657	0.0073	2.02	0.13	0.0887	0.0028	0.5	1379	50	2497	64	1113	39	547	16	49.1
NB314a_172	33.2	157	119	1.32	9200	4.11	0.49	0.0314	0.0027	0.086	0.02	1	0.25	0.0834	0.0026	0.5	624	53	1070	35	670	100	516	15	77.0
NB314a_173	166	85	166	0.51	142	0.597	0.057	0.124	0.044	0.65	0.044	19.6	5.9	0.219	0.056	0.5	2330	760	4620	100	3020	240	1260	280	47.7
NB314a_174	333	1140	702	1.62	963	2.498	0.083	0.055	0.0025	0.1453	0.005	1.643	0.088	0.0823	0.002	0.5	1080	48	2280	36	990	36	509	12	51.4
NB314a_175	63.7	162.4	170.8	0.95	2940	2.197	0.073	0.0406	0.0012	0.1269	0.0032	1.623	0.051	0.093	0.0015	0.5	805	23	2050	46	978	20	573.1	8.8	58.6
NB314a_176	149	883	231	3.82	36000	11.3	1.8	0.0698	0.0025	0.0897	0.0032	2.45	0.23	0.197	0.015	0.93298	1364	48	1411	69	1244	73	1157	79	93.0
NB314a_177	64.5	376	253	1.49	11000	4.53	0.16	0.02777	0.00082	0.0612	0.0022	0.713	0.026	0.0849	0.002	0.3448343	554	16	634	37	546	15	525	12	96.2

TableA2. Continued.

Analysis Identifier	Measured concentrations[1] Pb (ppm)	U (ppm)	Th (ppm)	U/Th	Isotopic ratios $^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	Calculated ages (Ma) $^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
NB314a_178	357	1770	1230	1.44	36000	3.79	0.52	0.0313	0.0051	0.084	0.026	0.75	0.17	0.0747	0.0018	0.5	622	99	1040	400	610	140	472	18	77.4
NB314a_179	171	674	463	1.46	1370	2.887	0.1	0.0413	0.0021	0.1106	0.0038	1.254	0.076	0.0824	0.003	0.5	819	40	1801	38	822	34	510	18	62.0
NB314a_180	32.8	177.7	131.6	1.35	12800	4.59	0.15	0.02698	0.00053	0.0584	0.0011	0.686	0.014	0.08563	0.0012	0.4512286	538.1	10	533	41	529.9	8.4	529.6	6.9	99.9
NB314a_181	56.8	203	208	0.98	6700	2.76	0.29	0.0295	0.002	0.0715	0.009	0.85	0.11	0.0879	0.0034	0.5	587	39	910	39	619	53	543	20	87.7
NB314a_182	133.9	835	516.4	1.62	80000	4.51	0.12	0.02788	0.00094	0.0654	0.0017	0.66	0.018	0.0736	0.0013	0.5	556	19	781	55	514	11	457.7	8.1	89.0
NB314a_183	87.1	387.5	368.5	1.05	12000	3.374	0.095	0.02583	0.00067	0.0598	0.0017	0.671	0.021	0.0817	0.0014	0.4334907	515	13	584	40	521	12	506.5	8.1	97.2
NB314a_184	116	147	292	0.50	392	1.147	0.047	0.045	0.0026	0.269	0.017	3.78	0.3	0.1012	0.0033	0.5	888	51	3270	110	1573	69	621	19	39.5
NB314a_185	156.7	1048	664	1.58	19000	4.39	0.12	0.02587	0.00081	0.0636	0.0014	0.632	0.017	0.0725	0.0014	0.5889966	516	16	722	41	497.2	11	451	8.6	90.7
NB314a_186	50.4	306.4	182.1	1.68	10300	4.52	0.42	0.0303	0.0027	0.079	0.0043	0.889	0.046	0.0822	0.0015	0.5	604	53	1170	27	645	25	509	8.8	78.9
NB314a_187	115	400	430	0.93	14000	2.95	0.17	0.02621	0.001	0.0675	0.0048	0.734	0.06	0.0795	0.0043	0.5	523	20	830	140	557	34	493	26	88.5
NB314a_188	62	280	186	1.51	4100	4.4	4.4	0.033	0.033	0.073	0.073	0.81	0.81	0.08	0.08	0.5	650	650	1000	42	600	600	500	500	83.3
NB314a_189	23.9	95.3	96.2	0.99	5400	3.12	0.14	0.02711	0.00091	0.0627	0.003	0.727	0.034	0.0846	0.0022	0.2360362	541	18	670	24	554	20	523	13	94.4
NB314a_190	84.8	534	353.2	1.51	14000	4.81	0.12	0.02608	0.00062	0.0606	0.0011	0.666	0.016	0.0795	0.0014	0.6592134	520	12	614	39	517.7	10	493.1	8.2	95.2
NB314a_191	65.8	484	278.8	1.74	21000	5.35	0.19	0.02544	0.00071	0.0595	0.0019	0.639	0.022	0.0788	0.0019	0.449934	508	14	572	25	504	15	489	11	97.0
NB314a_192	39	215.1	160	1.34	14400	4.38	0.12	0.02652	0.00056	0.0584	0.0012	0.663	0.014	0.08256	0.0013	0.4084449	529	11	532	47	516.3	8.8	511.4	7.6	99.1
NB314a_193	247	175	460	0.38	240	0.619	0.054	0.0593	0.0041	0.61	0.049	10.65	1	0.1232	0.0092	0.5	1164	79	4490	26	2460	150	748	53	30.4
NB314a_194	223.9	1336	1027	1.30	37000	3.937	0.1	0.02384	0.00055	0.0598	0.0014	0.593	0.015	0.0721	0.0012	0.4379545	476	11	591	50	472.4	9.8	448.8	7.5	95.0
NB314a_195	44.3	162.4	170.3	0.95	8400	3.137	0.084	0.02804	0.00055	0.0609	0.0019	0.734	0.023	0.08737	0.0013	0.2465725	558.8	11	595	27	554	11	539.9	7.5	97.5
NB314a_196	69.7	379	265.7	1.43	36000	4.2	0.19	0.02842	0.00086	0.0619	0.0017	0.723	0.028	0.0851	0.0026	0.7095127	566	17	664	57	552	17	526	15	95.3
NB314a_197	252.8	798	552.7	1.44	2730	2.475	0.058	0.0491	0.0012	0.1328	0.0033	1.441	0.041	0.07872	0.0012	0.5	968	23	2129	43	909	19	488.4	7.1	53.7
NB314a_198	1200	1260	286	4.41	303	1.5	0.15	0.484	0.065	0.343	0.018	7.21	0.54	0.158	0.011	0.5	7720	860	3636	28	2131	48	942	59	44.2
NB314a_199	34.1	243	122.3	1.99	2400	5.46	0.54	0.0306	0.0024	0.0827	0.0067	0.932	0.07	0.0825	0.0022	0.5	609	47	1230	150	666	36	511	13	76.7
NB314a_200	208	400	301	1.33	384	1.53	0.081	0.0754	0.002	0.257	0.015	3.64	0.31	0.0996	0.0026	0.5	1469	38	3189	29	1521	60	611	15	40.2
NB314a_201	62.8	216	243	0.89	12000	2.74	0.17	0.0285	0.0013	0.0664	0.0027	0.795	0.032	0.0876	0.0023	0.3104085	568	26	810	80	593	18	541	14	91.2
NB314a_202	56.5	305	242	1.26	23000	4.184	0.11	0.0254	0.00054	0.05804	0.00095	0.6328	0.012	0.07939	0.0011	0.5398206	506.8	11	521	30	498.3	8	492.5	6.5	98.2
NB314a_203	154	295	225.6	1.31	17000	4.36	0.32	0.075	0.005	0.0977	0.0058	3.44	0.23	0.2572	0.0074	0.4610627	1461	95	1580	110	1512	54	1475	38	97.6
NB314a_204	176	402	436	0.92	1360	2.204	0.091	0.04346	0.001	0.1288	0.0065	1.7	0.096	0.0953	0.0016	0.5	860	20	2018	31	994	34	586.7	9.3	59.0
NB314a_205	284	748	744	1.01	520	1.817	0.068	0.041	0.0028	0.1937	0.0077	2.078	0.1	0.078	0.0024	0.5	813	54	2767	64	1139	33	484	14	42.5
NB314a_206	50	340	197	1.73	19000	5.25	0.14	0.02801	0.00098	0.0643	0.0019	0.739	0.025	0.0832	0.0015	0.488871	558	19	739	32	561	15	515.3	9	91.9
NB314a_207	124.9	878	467	1.88	36000	5	0.21	0.0289	0.00088	0.0644	0.002	0.664	0.019	0.0761	0.0016	0.2463087	576	17	758	69	516	12	472.6	9.9	91.6
NB314a_208	79	590	310	1.90	38000	5.24	0.39	0.0272	0.0017	0.0623	0.0025	0.628	0.031	0.0734	0.002	0.5832058	543	34	675	28	494	19	457	12	92.5
NB314a_209	68.4	311	231	1.35	5400	3.555	0.094	0.0323	0.0012	0.0764	0.0025	0.887	0.034	0.0846	0.0016	0.5	643	23	1094	33	644	18	523.7	9.5	81.3
Primary reference material5																									
91500 (n=32)	15.04	80.26	30.03	2.67	10150	9.3655	0.294	0.0542	0.00161	0.07488	0.0013	1.8538	0.0381	0.17962	0.00246	0.5497078	1062.7	6.5	1052.2	6.1	1063.3	2.9	1065.6	2.9	
Secondary reference material(s)5																									
R33 (n=10)	43.15	258.48	212.72	1.22	8741.666667	4.7078	0.177	0.02198	0.00072	0.05786	0.0017	0.5362	0.0189	0.06715	0.00118	0.558043	422.6	3.1	406.0	14.0	417.3	2.6	418.2	1.9	

TableA2. Continued.

Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	^{206}Pb/^{204}Pb	^{208}Pb/^{206}Pb	±2σ[2]	^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	Rho[3]	^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	% con
	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
NB12-315 Buckmans Creek (UTM - 678894E, 4994291N; Grid Zone 19T)																									
NB315a_01	75.3	363	306	1.19	21000	2.92	0.25	0.0257	0.0011	0.0641	0.0014	0.793	0.016	0.0927	0.0013	0.2239513	513	21	730	46	591.9	8.8	571.2	7.6	96.5
NB315a_02	67.2	240.9	85.8	2.81	59000	6.67	0.49	0.0846	0.0035	0.1216	0.0023	5.064	0.096	0.3095	0.0049	0.4202736	1641	65	1976	33	1829	16	1738	24	95.0
NB315a_03	37	320	138	2.32	23300	4.66	0.36	0.0288	0.0014	0.0673	0.0019	0.828	0.02	0.0925	0.0014	0.0211745	574	28	825	59	613	12	570.1	8.1	93.0
NB315a_04	185	812	232.1	3.50	205000	7.71	0.54	0.0879	0.0035	0.1229	0.0014	4.987	0.076	0.3027	0.0034	0.6678714	1703	65	1997	20	1816	13	1704	17	93.8
NB315a_05	18.8	217	78.3	2.77	12300	5.99	0.46	0.02592	0.0012	0.0616	0.0019	0.745	0.021	0.0901	0.0012	0.0274095	517	24	631	66	564	12	556.1	7	98.6
NB315a_06	53.3	135.6	37.9	3.58	38000	9.1	0.66	0.1555	0.0065	0.2393	0.0029	19.91	0.25	0.6202	0.0089	0.6014034	2919	110	3112	20	3086	12	3109	35	100.7
NB315a_07	16.4	68.3	71	0.96	3000	2.27	0.18	0.02576	0.0013	0.0647	0.003	0.774	0.033	0.0892	0.0019	0.0669106	514	26	700	100	582	18	550	11	94.5
NB315a_08	62.5	109	55.4	1.97	34000	5.45	0.39	0.1297	0.0054	0.1737	0.0026	11.98	0.16	0.5087	0.0072	0.4090556	2464	96	2588	25	2602	12	2650	31	101.8
NB315a_09	59.4	413	267	1.55	13800	3.997	0.29	0.0253	0.001	0.0596	0.0013	0.703	0.015	0.08702	0.00091	0.1991273	505	21	582	49	539.6	9.1	537.8	5.4	99.7
NB315a_10	69.6	342.2	310	1.10	16900	3.165	0.23	0.02581	0.0011	0.0602	0.0014	0.727	0.017	0.0885	0.0012	0.2993411	515	21	594	52	554	10	546.8	7.2	98.7
NB315a_11	228	519	335	1.55	69000	5.92	0.42	0.0813	0.0033	0.1069	0.0012	4.627	0.07	0.312	0.0043	0.7021688	1580	61	1745	20	1753	12	1750	21	99.8
NB315a_12	51.3	231	211	1.09	7600	3.27	0.25	0.02911	0.0013	0.0627	0.002	0.785	0.022	0.0912	0.0014	0.0041829	580	25	678	69	590	13	562.6	8.5	95.4
NB315a_13	386	414	310	1.34	74000	4.489	0.32	0.1538	0.0058	0.1866	0.0016	14.2	0.13	0.5483	0.0057	0.621833	2891	100	2710	14	2762.3	8.6	2817	24	102.0
NB315a_14	18.3	111.8	81.3	1.38	3600	4.07	0.32	0.0281	0.0014	0.0569	0.0016	0.698	0.022	0.0877	0.0011	0.455363	560	28	475	65	536	13	541.8	6.6	101.1
NB315a_15	86.6	1081	375	2.88	29000	8.56	0.61	0.02844	0.0011	0.05762	0.00079	0.758	0.013	0.0951	0.0015	0.656057	567	22	508	30	572.5	7.3	585.8	8.6	102.3
NB315a_16	202	247.9	195.4	1.27	124	1.074	0.1	0.1202	0.0097	0.299	0.015	5.13	0.29	0.1245	0.0036	0.463423	2290	180	3449	83	1834	51	756	21	41.2
NB315a_17	20	134.9	86.4	1.56	5100	4.23	0.33	0.0274	0.0014	0.0586	0.0019	0.701	0.023	0.0866	0.0014	0.2701615	546	27	519	70	537	14	535.5	8	99.7
NB315a_19	17.5	157	66.3	2.37	5300	6.73	0.53	0.0299	0.0014	0.0596	0.0019	0.775	0.023	0.0946	0.0014	0.0950376	595	28	559	67	581	13	582.4	8.1	100.2
NB315a_20	48.8	202.7	191.7	1.06	9100	3.29	0.25	0.02803	0.0012	0.0585	0.0014	0.721	0.018	0.0895	0.0012	0.3440297	559	23	538	52	550	11	552.6	7.2	100.5
NB315a_21	16.29	41.6	43.6	0.95	11100	5.27	0.43	0.0316	0.0017	0.0598	0.0022	0.793	0.027	0.0945	0.0019	0.1534212	628	34	586	81	591	15	582	11	98.5
NB315a_22	17.5	34.8	43.8	0.79	6900	4.53	0.45	0.0313	0.0031	0.0652	0.0073	0.85	0.11	0.0923	0.0021	0.8031105	622	60	650	170	594	42	569	13	95.8
NB315a_23	188.8	371	216.4	1.71	203000	10.29	0.72	0.0734	0.0028	0.08611	0.00085	2.751	0.04	0.2282	0.0029	0.7454191	1432	53	1338	19	1341	11	1325	15	98.8
NB315a_24	25.3	89.1	69	1.29	6900	7.52	0.57	0.03031	0.0014	0.0583	0.0012	0.754	0.015	0.0924	0.0013	0.303766	603	28	532	49	571.3	8.5	569.8	7.8	99.7
NB315a_26	86.3	92.2	230	0.40	14200	2.469	0.18	0.03153	0.0012	0.0594	0.002	0.776	0.024	0.0932	0.0016	0.110725	627	24	563	74	582	14	574.2	9.2	98.7
NB315a_27	127.6	206	105.3	1.96	143000	11.7	0.84	0.0965	0.0039	0.1166	0.0016	5.031	0.087	0.3104	0.0043	0.6316865	1862	72	1901	24	1823	15	1742	21	95.6
NB315a_28	49.4	55.2	48.94	1.13	28000	7.6	1.2	0.0841	0.0042	0.1114	0.004	4.02	0.17	0.2571	0.0083	0.5644697	1631	79	1810	66	1627	37	1472	43	90.5
NB315a_29	41.9	71.8	123	0.58	12800	3.72	0.28	0.02814	0.0013	0.0594	0.0014	0.742	0.015	0.0892	0.001	0.0466522	561	25	576	49	562.8	9.1	550.7	5.9	97.9
NB315a_30	84.9	104.9	74.4	1.41	92000	9.38	0.72	0.0966	0.0041	0.1075	0.0014	4.677	0.071	0.3119	0.0038	0.5657753	1863	76	1754	25	1762	13	1750	19	99.3
NB315b_01	180.3	301	224.8	1.34	12600	4.875	0.15	0.08717	0.00087	0.10699	0.0015	4.491	0.053	0.3037	0.0039	0.3550648	1689	16	1749	27	1728.6	9.7	1709	19	98.9
NB315b_03	11.79	73	44.5	1.64	1790	5.68	0.29	0.0293	0.0011	0.0579	0.0017	0.723	0.022	0.0909	0.0015	0.3347255	584	21	502	67	553	12	560.6	8.6	101.4
NB315b_04	331.2	1110	394	2.82	60000	6.37	0.36	0.0924	0.003	0.1025	0.0024	2.91	0.12	0.2056	0.0056	0.8431913	1785	56	1662	43	1379	30	1205	30	87.4
NB315b_05	28.9	145.4	96.4	1.51	2200	4.83	0.21	0.0302	0.0012	0.0655	0.0028	0.8	0.038	0.0885	0.0014	0.451881	601	23	756	72	593	18	546.9	8	92.2
NB315b_06	127.9	181	144.8	1.25	13700	4.485	0.14	0.0973	0.0015	0.1194	0.0019	5.446	0.1	0.3305	0.0061	0.6264296	1876	29	1944	28	1890	16	1840	30	97.4
NB315b_07	58.5	308	222.5	1.38	10300	4.67	0.19	0.02872	0.00051	0.0598	0.0012	0.76	0.014	0.09245	0.0013	0.2594005	572	10	585	46	574.8	8.6	569.9	7.5	99.1
NB315b_09	18.77	94.2	79.4	1.19	3000	4.07	0.18	0.02612	0.00086	0.0578	0.0017	0.668	0.018	0.0839	0.0014	0.1551042	521	17	500	67	518	11	519.1	8.2	100.2
NB315b_10	29.9	234	112.8	2.07	5100	6.98	0.56	0.0289	0.00078	0.0588	0.0013	0.754	0.015	0.0931	0.0017	0.3308796	576	15	549	48	570.1	8.6	573.7	9.9	100.6
NB315b_11	56.9	193	220	0.88	9200	3.013	0.11	0.02789	0.00054	0.0579	0.0014	0.721	0.018	0.0906	0.0015	0.3782956	556	11	512	52	550	11	559	8.9	101.6
NB315b_12	237	129.9	179	0.73	26000	2.738	0.087	0.1432	0.0018	0.1883	0.0028	13.61	0.19	0.5256	0.0071	0.414286	2705	32	2725	24	2722	13	2722	30	100.0

TableA2. Continued.

	Measured concentrations[1]				Isotopic ratios											Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	$^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
NB315b_13	48.2	284	198	1.43	7700	4.87	0.17	0.02606	0.00052	0.05807	0.0012	0.692	0.013	0.0864	0.0013	0.2693665	520	10	535	40	533.7	7.6	534.3	8	100.1
NB315b_14	238.3	315.7	256.8	1.23	79000	4.431	0.16	0.0998	0.0015	0.1193	0.0017	5.678	0.077	0.3447	0.0052	0.5093968	1922	28	1944	26	1929	12	1909	25	99.0
NB315b_15	70.5	184.5	82	2.25	36000	8.05	0.27	0.0918	0.0016	0.1127	0.0017	4.939	0.064	0.318	0.0043	0.3516189	1774	29	1841	27	1808.1	11	1780	21	98.4
NB315b_16	49.9	64.4	34.3	1.88	27000	7.17	0.34	0.153	0.0053	0.2191	0.0061	17.29	0.71	0.571	0.014	0.7510166	2875	93	2966	45	2942	40	2908	57	98.8
NB315b_17	22.2	71.8	82.6	0.87	6500	2.852	0.12	0.02865	0.0008	0.06	0.0021	0.752	0.024	0.091	0.0015	0.0620324	571	16	583	73	567	14	561.3	8.9	99.0
NB315b_18	50.2	203.7	78.2	2.60	127000	9.32	0.34	0.0686	0.0015	0.0864	0.0014	2.826	0.042	0.237	0.0034	0.3848936	1340	28	1342	32	1361.4	11	1371	18	100.7
NB315b_19	37.6	184	148.5	1.24	900000	4.12	0.15	0.02703	0.00062	0.0592	0.0014	0.716	0.014	0.08797	0.0012	0.0171363	539	12	561	50	547.8	8.1	543.5	7.3	99.2
NB315b_20	44.9	268.8	81	3.32	78000	12.8	2.3	0.0609	0.0018	0.0752	0.0017	1.71	0.1	0.1627	0.0076	0.9318062	1195	34	1062	46	997	39	969	42	97.2
NB315b_21	205.6	977	464	2.11	34000	8.37	0.28	0.0502	0.0013	0.084	0.0016	2.154	0.06	0.1856	0.0045	0.741042	989	24	1285	37	1163	19	1097	24	94.3
NB315b_22	140.2	361	568	0.64	6800	2.144	0.069	0.02736	0.00037	0.05809	0.0012	0.701	0.012	0.08728	0.0012	0.1175531	545.6	7.2	524	44	539	7.1	539.4	7.2	100.1
NB315b_24	17.52	121.9	71.7	1.70	3600	5.97	0.24	0.02661	0.00079	0.0586	0.0016	0.716	0.018	0.0881	0.0014	0.1740104	531	15	540	63	547	11	544.1	8.4	99.5
NB315b_25	136.7	772	123.9	6.23	70000	24.27	0.78	0.1198	0.0018	0.1629	0.0023	10.057	0.12	0.4463	0.0054	0.3096923	2286	33	2484	24	2440.8	11	2381	25	97.5
NB315b_26	31.8	128.5	120.3	1.07	2000	3.56	0.16	0.0286	0.0011	0.0657	0.0037	0.806	0.043	0.0905	0.0015	0.02863	570	21	733	92	595	22	558.3	9.1	93.8
NB315b_28	254.4	697	274.2	2.54	27000	9.46	0.4	0.0987	0.0012	0.12127	0.0017	6.067	0.081	0.3628	0.0054	0.5114642	1902	21	1973	25	1986	12	1995	25	100.5
NB315b_29	8.26	42	12.3	3.41	2040	9.81	0.65	0.0743	0.0068	0.0862	0.0033	2.211	0.089	0.1882	0.0039	0.3501519	1440	120	1324	76	1178	27	1111	21	94.3
NB315b_30	156.1	306	221.4	1.38	29000	4.92	0.17	0.074	0.0012	0.09385	0.0014	3.421	0.042	0.2639	0.0033	0.2754212	1447	21	1502	28	1508.7	9.5	1510	17	100.1
NB315c_01	31.88	127.9	42.79	2.99	26000	10.61	0.35	0.0806	0.0015	0.09139	0.0011	3.59	0.089	0.2767	0.0054	0.8790411	1566	27	1451	24	1546	20	1574.5	27	101.8
NB315c_02	133.4	285	184.4	1.55	11000	3.991	0.14	0.0786	0.0019	0.083	0.0016	2.352	0.091	0.1983	0.0056	0.8799239	1528	35	1267	38	1226	27	1166	30	95.1
NB315c_03	136.7	173.2	136.8	1.27	37000	4.115	0.14	0.1084	0.0017	0.1133	0.0018	5.55	0.15	0.3314	0.007	0.8094742	2080	32	1852	29	1910	25	1845	34	97.6
NB315c_04	48.5	130.6	56.1	2.33	27000	8.09	0.27	0.0932	0.0018	0.1038	0.0014	5.03	0.16	0.3159	0.0064	0.9623553	1800	33	1689	25	1817	28	1770	31	97.4
NB315c_05	188.7	900	190.1	4.73	190000	16.68	0.63	0.1062	0.0019	0.1287	0.0022	7.07	0.17	0.3721	0.012	0.8549881	2041	36	2078	30	2118	22	2051	48	96.8
NB315c_06	330.6	902	471.8	1.91	170000	6.946	0.2	0.07594	0.00084	0.0904	0.00089	3.375	0.038	0.263	0.0053	0.9606779	1479	16	1432	19	1497.7	8.7	1505	27	100.5
NB315c_07	57.1	218.5	219.4	1.00	22000	3.221	0.12	0.02799	0.00052	0.0575	0.0013	0.731	0.02	0.08519	0.0018	0.5914716	558	10	495	50	556	12	527	11	94.8
NB315c_08	71.2	69.9	50.1	1.40	66000	5.311	0.16	0.153	0.0025	0.1941	0.0024	16.15	0.53	0.552	0.011	1.0101379	2877	44	2777	19	2879	32	2833	46	98.4
NB315c_09	48.1	216.7	160	1.35	15000	4.76	0.22	0.03276	0.00065	0.05846	0.0011	0.902	0.024	0.1034	0.0022	0.7123977	651	13	535	40	651	12	634.2	13	97.4
NB315c_10	54.1	236	95.3	2.48	85000	8.52	0.26	0.061	0.00092	0.07753	0.00096	2.254	0.039	0.2005	0.004	0.7880695	1197	18	1134	24	1196	12	1177.6	21	98.5
NB315c_11	47.9	48.7	131.6	0.37	7000	1.279	0.061	0.03901	0.00066	0.0721	0.0021	1.284	0.055	0.1309	0.0031	0.762668	773	13	971	58	836	25	793	18	94.9
NB315c_12	42.9	230	158	1.46	42000	4.56	0.18	0.02893	0.00058	0.0675	0.002	0.814	0.028	0.0906	0.002	0.5219134	576	11	830	55	602	15	559.2	12	92.9
NB315c_13	74	218	75	2.91	180000	12.53	0.75	0.1135	0.0028	0.1311	0.0015	7.03	0.18	0.4083	0.0097	0.8951994	2171	50	2110	20	2109	23	2206	44	104.6
NB315c_14	31.5	727	40.4	18.00	160000	66.4	2.7	0.0839	0.0026	0.09617	0.0012	3.566	0.073	0.2887	0.0064	0.8316286	1628	49	1549	24	1541	16	1635	32	106.1
NB315c_15	27.9	129.8	113.4	1.14	32000	3.947	0.14	0.02643	0.00058	0.0607	0.0012	0.725	0.021	0.08794	0.0018	0.7312881	527	11	621	46	551	13	543.3	11	98.6
NB315c_16	22.4	104.3	87.9	1.19	13000	4.11	0.15	0.02728	0.00062	0.0608	0.0016	0.732	0.027	0.0911	0.0021	0.7052968	544	12	608	57	555	15	562	12	101.3
NB315c_17	19.8	92.3	73.1	1.26	19000	4.25	0.18	0.02913	0.00084	0.0627	0.0018	0.802	0.031	0.0924	0.0021	0.6752841	580	16	680	60	594	17	569.8	12	95.9
NB315c_18	60	205.1	84.2	2.44	115000	6.63	0.3	0.0769	0.0022	0.0973	0.0017	2.453	0.083	0.1875	0.0045	0.8716163	1496	40	1568	32	1260	26	1107	24	87.9
NB315c_19	20.17	127.3	71.8	1.77	14000	5.93	0.25	0.03005	0.00082	0.0608	0.0013	0.78	0.02	0.09461	0.002	0.5969758	601	15	618	45	584	12	582.7	12	99.8
NB315c_20	264	406.8	308	1.32	160000	4.82	0.23	0.0921	0.0012	0.1197	0.0014	5.069	0.081	0.3125	0.0062	0.8077635	1784	24	1949	21	1829	13	1753	31	95.8
NB315c_21	39.7	216.6	89.9	2.41	16000	6.87	0.4	0.048	0.0013	0.063	0.0014	1.095	0.035	0.1185	0.0029	0.7202137	948	25	700	46	749	17	722	17	96.4
NB315c_22	19.66	98.7	78.8	1.25	50000	4.26	0.21	0.02705	0.00097	0.0574	0.0017	0.701	0.029	0.0838	0.0019	0.7187582	539	19	490	63	537	17	518.5	11	96.6
NB315c_23	31.8	77.1	43.2	1.78	62000	6.04	0.24	0.0783	0.0015	0.0878	0.0015	3.34	0.11	0.2617	0.0056	0.8873326	1528	27	1371	33	1486	26	1498	29	100.8

TableA2. Continued.

	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	^{206}Pb/^{204}Pb	^{208}Pb/^{206}Pb	±2σ[2]	^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	Rho[3]	^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	% con
NB315c_24	32.9	134.8	132.2	1.02	41000	3.508	0.11	0.02664	0.0005	0.0551	0.0012	0.741	0.023	0.0883	0.0019	0.7127908	531.4	9.9	398	48	561	13	545.7	11	97.3
NB315c_25	30.5	160.1	116.9	1.37	42000	4.66	0.16	0.02796	0.00055	0.0555	0.0011	0.74	0.021	0.09064	0.0019	0.7160523	557	11	418	46	561	12	559.3	11	99.7
NB315c_26	20.07	123.2	77	1.60	48000	4.99	0.2	0.02781	0.00088	0.0562	0.0019	0.737	0.037	0.0865	0.0023	0.7807494	554	17	444	73	558	21	534.5	14	95.8
NB315c_27	39.1	152	140	1.09	19000	3.9	0.2	0.03097	0.00098	0.0554	0.0014	0.796	0.029	0.0953	0.0023	0.7228514	616	19	415	57	593	16	587	14	99.0
NB315c_28	100.4	424	389	1.09	42000	3.744	0.11	0.02788	0.00045	0.05468	0.00085	0.727	0.013	0.09122	0.0019	0.6872612	555.7	8.8	391	35	554.1	7.8	562.7	11	101.6
NB315c_29	30.7	115.9	121.3	0.96	48000	3.41	0.14	0.02714	0.0005	0.0539	0.0014	0.738	0.023	0.08952	0.0019	0.5647321	541.3	9.9	347	56	559	14	552.6	11	98.9
NB315c_30	12.6	66.5	41.2	1.61	41000	5.3	0.26	0.0327	0.0013	0.0658	0.002	0.981	0.05	0.0988	0.0022	0.9558975	649	26	788	62	689	25	607.5	13	88.2
NB315d_01	27.9	222	107.8	2.06	32000	5.95	0.15	0.02762	0.0016	0.06527	0.0017	0.74	0.019	0.0908	0.0026	0.5446025	550.6	31	780	53	561.8	11	560.2	15	99.7
NB315d_02	181.8	283	142.3	1.99	230000	6.464	0.13	0.1363	0.0076	0.1927	0.0044	12	0.29	0.4993	0.014	0.6263602	2582	140	2764	38	2604	22	2610	60	100.2
NB315d_03	89.8	1352	222	6.09	330000	18.9	1.2	0.04346	0.0025	0.07336	0.0017	1.238	0.03	0.1345	0.0038	0.6196214	860	48	1023	49	817.3	14	813.3	22	99.5
NB315d_04	129.5	422	509	0.83	92000	2.597	0.083	0.02725	0.0015	0.06425	0.0016	0.715	0.02	0.0888	0.0026	0.6224444	543.4	30	744	53	546.8	12	548.2	15	100.3
NB315d_05	56.8	276	207.8	1.33	48000	3.949	0.097	0.02901	0.0017	0.06584	0.0017	0.755	0.02	0.0906	0.0026	0.5647148	578	33	799	55	570.8	12	558.9	16	97.9
NB315d_06	193.2	733	246	2.98	139000	9.57	0.23	0.0848	0.0048	0.10634	0.0025	3.641	0.096	0.2692	0.0076	0.6310864	1645	90	1735	43	1560	20	1537	38	98.5
NB315d_07	84.4	110.4	77.5	1.42	64000	4.892	0.1	0.1141	0.0064	0.1421	0.0034	7.183	0.18	0.3942	0.011	0.5964373	2183	120	2249	41	2135	21	2141	52	100.3
NB315d_08	39	341.5	54.6	6.25	130000	12.95	0.44	0.0777	0.0045	0.08018	0.002	1.579	0.044	0.1514	0.0044	0.6167339	1513	84	1203	46	961	17	909	25	94.6
NB315d_09	31.3	126.1	122.6	1.03	34000	3.52	0.15	0.02655	0.0015	0.0618	0.0017	0.689	0.019	0.0854	0.0025	0.5331076	529	30	658	58	531.5	11	528.1	15	99.4
NB315d_10	23.93	79.3	61.7	1.29	18000	4.352	0.1	0.04019	0.0024	0.0677	0.0018	1.18	0.031	0.1314	0.0038	0.539383	796	46	849	55	790.5	15	795.5	22	100.6
NB315d_11	72.6	480	122	3.93	310000	17.78	0.67	0.064	0.005	0.0896	0.0023	3.282	0.094	0.2542	0.0083	0.6562948	1252	95	1414	50	1476	22	1460	42	98.9
NB315d_12	22.8	125.4	82.2	1.53	32000	5.19	0.17	0.02798	0.0016	0.05787	0.0015	0.748	0.02	0.0892	0.0025	0.5528361	558	32	516	58	566.4	12	551	15	97.3
NB315d_13	21.7	113.6	79.4	1.43	20000	4.66	0.2	0.02779	0.0017	0.0612	0.0027	0.744	0.031	0.0836	0.0025	0.2744803	554	33	604	82	562	17	517.3	15	92.0
NB315d_14	35.2	148.9	129.9	1.15	19000	3.778	0.099	0.02798	0.0016	0.0582	0.0017	0.735	0.02	0.08754	0.0024	0.4281882	558	32	523	62	559	12	540.9	14	96.8
NB315d_15	51.2	148	59.5	2.49	14000	8.34	0.25	0.0885	0.0052	0.105	0.0026	4.311	0.11	0.2844	0.008	0.5776244	1713	97	1709	45	1694.2	20	1613	40	95.2
NB315d_16	66.9	122	96.5	1.26	33000	4.261	0.086	0.0716	0.0041	0.08492	0.002	2.85	0.072	0.2343	0.0066	0.6162145	1397	77	1310	47	1368	19	1357	35	99.2
NB315d_17	58.1	153.7	65	2.36	105000	8.88	0.23	0.095	0.0054	0.10791	0.0025	5.173	0.13	0.3343	0.0094	0.6265354	1834	100	1762	43	1847	21	1859	46	100.6
NB315d_18	27.9	102	108	0.94	12800	3.27	0.12	0.0271	0.0016	0.0575	0.0016	0.705	0.022	0.086	0.0025	0.5757394	540	31	499	62	540.5	13	531.8	15	98.4
NB315d_19	109.5	317	401	0.79	15000	2.651	0.073	0.02888	0.0017	0.05857	0.0015	0.761	0.021	0.0918	0.0027	0.5979723	575	33	543	57	573.7	12	566.4	16	98.7
NB315d_20	31.4	176.9	44.84	3.95	30000	9.86	0.38	0.0721	0.0045	0.0807	0.0023	2.019	0.071	0.1785	0.0065	0.6834465	1406	85	1209	56	1120	24	1058	35	94.5
NB315d_21	51.8	263	205.9	1.28	70000	4.638	0.096	0.02934	0.0017	0.06096	0.0015	0.757	0.02	0.0936	0.0026	0.5887492	584.5	33	632	54	572.5	11	576.5	15	100.7
NB315d_22	55.7	264.5	173.9	1.52	6400	4.28	0.23	0.0392	0.0035	0.0922	0.0068	1.111	0.086	0.091	0.0026	0.3094573	775	68	1370	120	746	38	561.4	15	75.3
NB315d_23	49.9	154.3	213.6	0.72	19100	2.598	0.054	0.02729	0.0015	0.0609	0.0017	0.696	0.019	0.08689	0.0024	0.4833582	544.2	30	626	60	535.9	11	537.1	14	100.2
NB315d_24	22.4	122.7	101.8	1.21	12000	4.54	0.15	0.02615	0.0016	0.0613	0.0018	0.679	0.019	0.08423	0.0023	0.4360782	522	31	645	64	525.4	12	521.3	14	99.2
NB315d_25	123.5	218	156.4	1.39	28000	5.455	0.12	0.0929	0.0052	0.11472	0.0027	4.817	0.12	0.3207	0.0093	0.6281815	1796	97	1873	42	1788	21	1793	45	100.3
NB315d_26	169.4	461	413	1.12	22900	4.116	0.1	0.04827	0.0027	0.07755	0.0019	1.565	0.042	0.1548	0.0044	0.6081936	953	52	1132	48	955	17	928	25	97.2
NB315d_27	31.2	152	61.7	2.46	28000	9.43	0.24	0.0625	0.0038	0.0835	0.0021	2.203	0.064	0.202	0.0062	0.646837	1226	73	1277	50	1180	20	1186	33	100.5
NB315d_28	76	150.5	106.6	1.41	46000	5.275	0.12	0.0844	0.0049	0.1039	0.0025	3.78	0.12	0.2792	0.0091	0.7205752	1638	91	1692	45	1584	25	1586	46	100.1
NB315d_29	11.34	69.2	47.2	1.47	3100	5.38	0.17	0.02829	0.0017	0.063	0.0021	0.759	0.025	0.0929	0.0027	0.4275027	564	34	683	71	572	14	572.9	16	100.2
NB315d_30	14.19	63.8	27.1	2.35	5900	8.85	0.24	0.0619	0.0037	0.0842	0.0022	2.238	0.06	0.2049	0.0058	0.5516819	1213	71	1291	52	1191	19	1201	31	100.8
NB315e_01	63.1	196	237	0.83	16000	3	0.18	0.02929	0.0012	0.0602	0.0011	0.778	0.016	0.0935	0.0011	0.4700784	583	24	602	42	583.7	9.2	576.2	6.3	98.7
NB315e_02	19.85	103.1	76.5	1.35	50000	4.25	0.22	0.02765	0.0012	0.0617	0.0015	0.739	0.017	0.0874	0.0012	0.2005182	551	23	646	51	561	10	541.6	7.6	96.5

TableA2. Continued.

Analysis Identifier	Measured concentrations[1] Pb (ppm)	U (ppm)	Th (ppm)	U/Th	Isotopic ratios $^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	Calculated ages (Ma) $^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
NB315e_03	15.25	116.4	60.7	1.92	10000	6.46	0.33	0.02686	0.0011	0.0584	0.0011	0.709	0.014	0.08818	0.00091	0.3475069	536	22	530	42	543.2	8.3	544.7	5.4	100.3
NB315e_04	52.5	267.8	251.1	1.07	20000	4.069	0.2	0.02216	0.00099	0.0635	0.0013	0.771	0.02	0.0885	0.0015	0.6153002	443	20	719	43	580	11	546.6	9.2	94.2
NB315e_05	274	243	199	1.22	200000	4.9	0.47	0.1514	0.0067	0.1868	0.0018	13.2	0.22	0.5147	0.008	0.8232209	2847	120	2712	16	2692	16	2675	34	99.4
NB315e_06	23.2	109.7	95.8	1.15	16000	4.041	0.2	0.02644	0.0011	0.0586	0.0012	0.705	0.016	0.08689	0.00099	0.4361122	527	21	547	49	540.8	9.6	537	5.9	99.3
NB315e_07	18.81	91.7	78.8	1.16	1000	4.01	0.2	0.02601	0.0011	0.0595	0.0013	0.693	0.016	0.0845	0.0011	0.3745602	519	23	570	49	533.5	9.5	523.1	6.3	98.1
NB315e_08	42.5	149.9	164.7	0.91	30000	3.003	0.14	0.02783	0.0011	0.0585	0.0011	0.725	0.011	0.09029	0.00098	0.016878	554.7	21	534	40	552.8	6.8	557.2	5.8	100.8
NB315e_09	28.7	164	115.1	1.42	21000	4.81	0.24	0.027	0.0011	0.0595	0.0011	0.709	0.014	0.08687	0.0009	0.3799605	538	22	579	38	544.9	8.6	537	5.4	98.6
NB315e_10	12.11	59.1	44.3	1.33	5000	4.61	0.24	0.02949	0.0013	0.0609	0.0012	0.835	0.019	0.0991	0.0012	0.5010813	587	26	633	46	615	10	609	7.3	99.0
NB315e_11	31.8	172	134.2	1.28	17000	4.33	0.22	0.02557	0.001	0.0582	0.0011	0.685	0.013	0.08574	0.00089	0.2809545	510.3	20	522	41	528.8	7.6	530.3	5.3	100.3
NB315e_12	32.1	174	134.2	1.30	40000	4.381	0.22	0.02566	0.001	0.0579	0.001	0.678	0.013	0.08526	0.00095	0.4528638	512.1	20	512	40	524.6	7.6	527.4	5.6	100.5
NB315e_13	83.5	411	336	1.22	23000	4.026	0.19	0.02677	0.001	0.05871	0.0007	0.708	0.01	0.08727	0.00088	0.558252	533.9	20	550	26	542.9	6.1	539.3	5.2	99.3
NB315e_14	23.09	146.2	94.1	1.55	11000	5.08	0.26	0.02691	0.0012	0.0622	0.0018	0.697	0.019	0.0819	0.00096	0.0673279	537	23	659	58	536	11	507.4	5.7	94.7
NB315e_15	30.2	139.7	130	1.07	90000	3.634	0.17	0.02505	0.00099	0.0585	0.001	0.669	0.012	0.08321	0.00091	0.380136	500	19	538	38	519.2	7.3	515.2	5.4	99.2
NB315e_16	58.7	457	225.9	2.02	90000	6.91	0.33	0.02834	0.0011	0.05965	0.00067	0.758	0.011	0.0923	0.001	0.6417968	564.8	22	586	24	572.3	6.5	569.1	6.1	99.4
NB315e_17	90.2	186.8	172.6	1.08	13000	3.795	0.19	0.05667	0.0021	0.0802	0.00098	2.12	0.032	0.1922	0.0026	0.640383	1114	41	1197	24	1154	11	1133	14	98.2
NB315e_18	108.8	218.8	126.1	1.74	105000	6.38	0.3	0.094	0.0036	0.1224	0.0012	5.462	0.072	0.3241	0.0034	0.6786632	1816	67	1989	18	1894	11	1809	16	95.5
NB315e_19	26.5	208	105.9	1.96	14000	6.64	0.32	0.0269	0.0011	0.05866	0.00079	0.728	0.011	0.09044	0.00098	0.5019068	536	21	546	30	555	6.5	558.1	5.8	100.6
NB315e_20	28.65	130.1	124.4	1.05	1600	3.651	0.18	0.02515	0.001	0.0601	0.001	0.685	0.014	0.08297	0.00086	0.58603	502	20	598	39	528.9	8.3	513.8	5.1	97.2
NB315e_21	79.7	217	318	0.68	18000	2.282	0.11	0.02718	0.001	0.05804	0.00083	0.7135	0.0096	0.0896	0.001	0.336594	542.1	20	527	32	546.4	5.7	553.3	6	101.3
NB315e_22	60.8	246	251.3	0.98	18000	3.363	0.17	0.02624	0.001	0.05845	0.00089	0.706	0.013	0.0879	0.0011	0.5724344	523.5	20	540	33	541.7	7.5	542.9	6.3	100.2
NB315e_23	32.4	215	134.1	1.60	17000	5.24	0.26	0.02614	0.0011	0.05888	0.00089	0.677	0.011	0.08339	0.00079	0.4069205	521	21	553	33	524.4	6.4	516.3	4.7	98.5
NB315e_24	120.4	939	454.4	2.07	12000	6.67	0.33	0.02894	0.0013	0.0602	0.0011	0.766	0.019	0.09194	0.0009	0.7767253	576	25	598	35	576	10	567	5.3	98.4
NB315e_25	45.2	61.8	50	1.24	20000	4.65	0.29	0.0981	0.004	0.1199	0.0016	5.787	0.087	0.3518	0.0041	0.5244095	1890	73	1950	23	1943	13	1942	19	99.9
NB315e_26	59.1	292.1	236.8	1.23	20000	4.214	0.21	0.027	0.001	0.0618	0.0012	0.759	0.015	0.0895	0.00091	0.2909111	538.4	20	654	40	572.2	8.7	552.5	5.4	96.6
NB315e_27	278.3	250.4	304.3	0.82	75000	3.035	0.14	0.0999	0.0036	0.12051	0.00085	5.846	0.049	0.352	0.0029	0.6399274	1924	67	1964	12	1952.7	7.3	1944	14	99.6
NB315e_28	106.3	298	157.2	1.90	51000	6.88	0.33	0.07354	0.0027	0.09619	0.00077	3.534	0.043	0.2668	0.0025	0.7532943	1434	52	1549	15	1533.7	9.5	1524	13	99.4
NB315e_29	77	354.7	118.4	3.00	32000	11.4	0.69	0.0707	0.0027	0.09206	0.00064	3.162	0.035	0.2498	0.0025	0.7869409	1384	53	1466	13	1448.3	8.3	1437	13	99.2
NB315e_30	24.9	146	99.2	1.47	2900	4.98	0.25	0.02723	0.0011	0.0614	0.0012	0.755	0.016	0.08944	0.00096	0.4008179	543	21	639	43	570.3	9.5	552.1	5.6	96.8
NB315f_01	46.9	293	186	1.58	30000	5.5	0.32	0.0269	0.0011	0.0627	0.0017	0.775	0.026	0.0886	0.0013	0.6151961	536	21	684	51	581	14	547.3	7.4	94.2
NB315f_02	117	306	244	1.25	30000	4.96	0.45	0.0529	0.002	0.0738	0.0012	1.723	0.029	0.1702	0.0025	0.4745635	1041	38	1030	33	1019	12	1013	14	99.4
NB315f_03	65	241	176	1.37	30000	4.87	0.23	0.04086	0.0014	0.06728	0.00097	1.257	0.02	0.1354	0.0014	0.4625932	809	27	839	30	825.8	8.7	818.7	7.9	99.1
NB315f_04	105.2	137.6	116	1.19	34000	4.429	0.19	0.0988	0.0032	0.1225	0.0012	5.995	0.075	0.3547	0.0039	0.6595387	1904	59	1990	18	1974	11	1957	19	99.1
NB315f_05	15.63	62.05	58.85	1.05	500	3.56	0.21	0.0296	0.0015	0.0739	0.0027	0.907	0.033	0.0887	0.0014	0.2072425	590	29	1014	73	653	17	547.7	8.1	83.9
NB315f_06	98	359	202	1.78	93000	5.8	0.27	0.0521	0.0022	0.078	0.0012	1.798	0.037	0.1678	0.0027	0.673009	1027	42	1142	31	1043	13	999	15	95.8
NB315f_07	35.2	169	116.6	1.45	35000	4.58	0.26	0.0319	0.0014	0.068	0.0021	0.881	0.03	0.0934	0.0012	0.4238884	635	27	868	66	641	16	576.9	7.3	90.0
NB315f_08	38.8	244	157.8	1.55	70000	5.41	0.25	0.02693	0.00091	0.05957	0.00099	0.733	0.013	0.0892	0.001	0.4124917	537.1	18	578	37	557.6	7.5	550.7	6.2	98.8
NB315f_09	20.92	80.7	78.3	1.03	90000	3.22	0.18	0.0294	0.0014	0.0759	0.004	0.875	0.048	0.0831	0.0015	0.2816301	585	28	1060	100	633	25	514.6	8.8	81.3
NB315f_10	39.4	185	162	1.14	70000	4.07	0.21	0.0265	0.00092	0.05855	0.00092	0.691	0.012	0.0856	0.0011	0.4925028	529	18	541	34	532.8	7	529.3	6.5	99.3
NB315f_11	16.82	369	48.41	7.62	110000	27.9	1.5	0.0381	0.0016	0.06536	0.00098	1.137	0.02	0.1257	0.0016	0.5507305	756	30	780	32	770.3	9.3	763.1	9.3	99.1

TableA2. Continued.

Analysis Identifier	Measured concentrations[1] Pb (ppm)	U (ppm)	Th (ppm)	U/Th	Isotopic ratios $^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	Calculated ages (Ma) $^{208}Pb/^{232}Th$[2]	±2σ[2]	$^{207}Pb/^{206}Pb$[2]	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
NB315f_12	64.4	62.9	95.1	0.66	50000	2.484	0.12	0.0738	0.0025	0.095	0.0016	3.318	0.058	0.2527	0.0036	0.4514762	1438	48	1521	32	1484	14	1452	19	97.8
NB315f_13	107.4	228.1	132.6	1.72	600000	3.92	0.19	0.0866	0.0031	0.1022	0.002	2.808	0.074	0.2002	0.0048	0.7014206	1679	57	1660	36	1356	20	1176	25	86.7
NB315f_14	63.7	148.4	91.2	1.63	90000	5.901	0.26	0.0761	0.0025	0.09565	0.0011	3.458	0.036	0.2616	0.0025	0.3389965	1482	46	1537	22	1516.8	8.3	1498	13	98.8
NB315f_15	7.97	365	8.6	42.44	1000000	149.9	8	0.1014	0.0045	0.11705	0.0011	5.418	0.067	0.3351	0.0039	0.6950185	1949	83	1911	18	1886	11	1862	19	98.7
NB315f_16	45	288.3	200.6	1.44	29000	5.162	0.23	0.0243	0.00078	0.05864	0.00083	0.666	0.011	0.0823	0.001	0.5483517	485.2	15	546	31	517.8	6.6	510	5.9	98.5
NB315f_17	47.5	140.9	197	0.72	50000	2.536	0.12	0.02628	0.00093	0.0584	0.0012	0.71	0.014	0.0882	0.0011	0.2483244	524	18	530	46	543.8	8.5	544.6	6.4	100.1
NB315f_18	74.2	319	285	1.12	44000	3.67	0.18	0.02822	0.0011	0.0618	0.0014	0.782	0.022	0.0921	0.0019	0.6063828	562	23	657	48	586	12	568	11	96.9
NB315f_19	89.4	219	166.5	1.32	65000	4.731	0.22	0.058	0.002	0.0803	0.0014	2.317	0.046	0.2096	0.0032	0.5332714	1140	38	1199	35	1216	14	1226	17	100.8
NB315f_20	14.59	81.6	50.8	1.61	12000	5.14	0.32	0.0318	0.0016	0.0637	0.002	0.782	0.027	0.0888	0.0018	0.4409434	632	32	713	66	585	16	548	11	93.7
NB315f_21	41.9	241.6	164.4	1.47	43000	5.14	0.25	0.0279	0.00099	0.0595	0.0012	0.732	0.017	0.0885	0.0012	0.5024741	556	20	586	45	557	10	546.3	7.3	98.1
NB315f_22	86.8	293	356	0.82	30000	2.71	0.15	0.02647	0.001	0.0693	0.002	0.793	0.024	0.084	0.002	0.450985	528	20	893	62	595	15	520	12	87.4
NB315f_23	37.3	200	160	1.25	18000	4.78	0.28	0.02588	0.00097	0.0581	0.0011	0.673	0.015	0.084	0.0011	0.5307124	516	19	524	43	521.7	8.8	519.8	6.3	99.6
NB315f_24	51.4	249.6	198.3	1.26	11000	4.07	0.21	0.02789	0.0011	0.0654	0.0028	0.763	0.033	0.0845	0.0011	0.1838833	556	21	780	90	573	18	522.7	6.6	91.2
NB315f_25	27.6	151.6	111.4	1.36	80000	4.57	0.22	0.02712	0.00099	0.0616	0.0013	0.735	0.016	0.0863	0.001	0.3226472	541	20	650	47	558.4	9.5	533.3	6	95.5
NB315f_26	229	285	280	1.02	100000	3.87	0.17	0.0896	0.0029	0.1091	0.0013	4.649	0.064	0.3078	0.0033	0.550418	1735	53	1782	22	1757	12	1730	16	98.5
NB315f_27	170.2	931	382.2	2.44	130000	8.85	0.38	0.04829	0.0015	0.07223	0.00067	1.671	0.018	0.1677	0.0017	0.607867	953	29	992	18	996.8	6.8	999.1	9.3	100.2
NB315f_28	36	145	145	1.00	0	3.552	0.17	0.02713	0.00094	0.0585	0.0012	0.735	0.016	0.0911	0.0011	0.3783494	541	18	539	46	560	9.3	562.1	6.7	100.4
NB315f_29	63.1	256.6	244.6	1.05	90000	3.687	0.18	0.02829	0.0011	0.0626	0.0021	0.773	0.027	0.0892	0.0011	0.2864193	564	21	679	65	580	15	550.6	6.6	94.9
NB315f_30	116.5	862	479	1.80	300000	6.473	0.28	0.02654	0.00087	0.05807	0.00064	0.7284	0.0092	0.091	0.0011	0.6031709	529.4	17	531	25	555.3	5.4	561.5	6.4	101.1
NB315g_01	245.2	947	373	2.54	220000	9.59	0.36	0.0675	0.0014	0.09543	0.00088	3.591	0.051	0.2698	0.0036	0.7775842	1321	26	1534	17	1547	11	1539	18	99.5
NB315g_02	23.4	145	98.3	1.48	12000	4.99	0.2	0.02467	0.00056	0.06	0.00095	0.702	0.011	0.08469	0.00093	0.335405	492	11	593	34	540.7	6.7	524	5.5	96.9
NB315g_03	60.4	363.4	77	4.72	16000	21.3	1.9	0.0826	0.0016	0.11149	0.00086	4.808	0.058	0.3107	0.0036	0.7879638	1603	29	1824	14	1785	10	1744	18	97.7
NB315g_04	27	147.6	115.3	1.28	0	4.49	0.18	0.02445	0.00051	0.0603	0.0012	0.706	0.016	0.0845	0.0011	0.4864734	488	10	615	44	541.3	9.2	523.1	6.3	96.5
NB315g_05	49.2	131	95.6	1.37	30000	5.05	0.26	0.0555	0.0011	0.07895	0.00097	2.109	0.03	0.1926	0.0024	0.5829705	1091	20	1165	24	1150.6	9.8	1135	13	98.6
NB315g_06	14.9	57	55.8	1.02	4400	3.8	0.27	0.0277	0.0011	0.0613	0.0018	0.741	0.022	0.0874	0.0013	0.2722793	552	22	619	65	561	13	539.9	8	96.2
NB315g_07	77.3	199.6	100.1	1.99	59000	7.413	0.26	0.0825	0.0012	0.10742	0.00098	4.546	0.055	0.3054	0.0032	0.6820824	1602	23	1753	17	1738.3	10	1718	16	98.8
NB315g_08	58.2	314.8	259.8	1.21	26000	4.277	0.16	0.02393	0.00039	0.05904	0.00088	0.676	0.01	0.08293	0.00087	0.3438478	478	7.7	559	33	524	6.3	513.6	5.2	98.0
NB315g_09	101	115.1	86.5	1.33	25000	5.05	0.19	0.1264	0.0026	0.1797	0.0023	11.14	0.24	0.4499	0.0069	0.8104089	2405	46	2648	21	2533	20	2394	30	94.5
NB315g_10	26.3	103	100	1.03	800	3.6	0.18	0.02861	0.0008	0.0636	0.0016	0.832	0.022	0.0952	0.0015	0.3775149	570	16	721	52	615	13	586.2	8.9	95.3
NB315g_11	185	297	140	2.12	120000	7.33	0.31	0.1505	0.0047	0.239	0.0026	16.15	0.4	0.491	0.011	0.8983976	2832	82	3111	18	2883	24	2574	47	89.3
NB315g_12	55.5	234	222	1.05	18000	3.89	0.21	0.02846	0.00061	0.05908	0.00092	0.727	0.012	0.0896	0.0011	0.4458169	567	12	560	34	554.2	6.9	553.1	6.6	99.8
NB315g_13	16.5	95.6	65.3	1.46	50000	5.1	0.24	0.02785	0.00067	0.0599	0.0013	0.728	0.016	0.08834	0.00096	0.2723907	555	13	581	47	554.1	9.1	545.7	5.7	98.5
NB315g_14	59.8	176.8	221.4	0.80	20000	2.695	0.1	0.03019	0.00055	0.0611	0.001	0.806	0.015	0.096	0.0013	0.5195274	601	11	633	35	599.6	8.4	590.8	7.4	98.5
NB315g_15	28.5	86.7	70.9	1.22	10900	2.75	0.13	0.0445	0.0017	0.1113	0.0039	1.422	0.055	0.0928	0.0013	0.4285439	880	33	1796	66	896	24	572	7.9	63.8
NB315g_16	54.1	515	221.8	2.32	90000	8.24	0.31	0.02723	0.00046	0.05847	0.00063	0.737	0.01	0.0916	0.001	0.6318556	542.9	9.1	542	23	560.2	5.9	565	6	100.9
NB315g_17	42.4	203	179	1.13	21000	3.9	0.16	0.0261	0.00066	0.0587	0.0012	0.705	0.016	0.0872	0.0012	0.4587154	521	13	545	45	542.5	9.9	538.9	7.1	99.3
NB315g_18	51.2	291.4	161.2	1.81	70000	5.208	0.19	0.03559	0.00086	0.06254	0.00098	0.831	0.015	0.0966	0.0011	0.5106962	707	17	693	33	614.8	8.5	594.4	6.5	96.7
NB315g_19	125.7	454	158.3	2.87	160000	11.04	0.48	0.0876	0.0012	0.11188	0.00086	4.909	0.065	0.3184	0.0036	0.8151592	1697	23	1830	13	1802	11	1782	18	98.9
NB315g_20	105	203.7	150.6	1.35	35000	4.831	0.17	0.0774	0.0012	0.0958	0.00086	3.553	0.04	0.2692	0.0028	0.6590326	1506	23	1541	17	1538.2	9	1536	14	99.9

TableA2. Continued.

	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	$^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	$\pm 2\sigma^2$	$^{208}Pb/^{232}Th$	$\pm 2\sigma^2$	$^{207}Pb/^{206}Pb$	$\pm 2\sigma^2$	$^{207}Pb/^{235}U$	$\pm 2\sigma^2$	$^{206}Pb/^{238}U$	$\pm 2\sigma^2$	Rho[3]	$^{208}Pb/^{232}Th$	$\pm 2\sigma^2$	$^{207}Pb/^{206}Pb$	$\pm 2\sigma^2$	$^{207}Pb/^{235}U$	$\pm 2\sigma^2$	$^{206}Pb/^{238}U$	$\pm 2\sigma^2$	% con
NB315g_22	42.6	164.5	178.3	0.92	20000	3.164	0.14	0.02539	0.00052	0.0569	0.0016	0.672	0.02	0.085	0.0013	0.3613656	507	10	471	61	521	12	525.8	7.9	100.9
NB315g_23	19.03	88.4	83.6	1.06	2500	3.91	0.17	0.02428	0.00079	0.061	0.0019	0.732	0.023	0.0865	0.0013	0.2572564	485	16	639	72	556	13	534.5	7.4	96.1
NB315g_24	79.1	182.5	123.8	1.47	69000	4.99	0.2	0.0664	0.0013	0.08411	0.00091	2.648	0.034	0.2267	0.0027	0.6201043	1298	24	1290	21	1312.9	9.5	1317	14	100.3
NB315g_25	22.82	144.9	91.9	1.58	90000	5.24	0.2	0.02625	0.00063	0.0599	0.0013	0.733	0.017	0.0884	0.00099	0.370172	524	12	581	47	557.4	9.8	546	5.8	98.0
NB315g_26	48.9	236	164	1.44	27000	3.96	0.48	0.03078	0.00066	0.0665	0.0014	0.925	0.02	0.1003	0.0013	0.343048	613	13	812	47	664	11	615.9	7.7	92.8
NB315g_27	25.9	114.3	106.9	1.07	13000	3.595	0.14	0.02573	0.00058	0.0583	0.0012	0.696	0.016	0.086	0.0011	0.4564116	513	11	521	47	535.2	9.4	531.7	6.7	99.3
NB315g_28	37.4	184	153	1.20	70000	4.18	0.2	0.02617	0.00059	0.05837	0.00099	0.695	0.012	0.08591	0.00096	0.3506846	522	12	532	37	535.3	7.3	531.2	5.7	99.2
NB315g_29	32	170.8	117.9	1.45	90000	4.55	0.18	0.02842	0.00051	0.0634	0.0018	0.791	0.026	0.0898	0.0011	0.5270426	566	10	691	58	589	14	554.5	6.4	94.1
NB315g_30	28.1	169.4	111.5	1.52	17000	5.2	0.35	0.0263	0.001	0.0596	0.0019	0.765	0.023	0.0932	0.002	0.2698019	525	20	573	68	576	13	574	12	99.7
Weighted means of primary reference material																									
91500 (n=85)	15.04	81.54	30.09	2.71	38364.94253	9.3729	0.522	0.05412	0.0026	0.0749	0.00189	1.8559	0.0523	0.17951	0.00355	0.4940114	1065.1	9.4	1054.7	11.8	1063.1	3.4	1063.8	3.7	
Weighted means of secondary reference material(s)																									
FC1 (n=77)	140.56	501.73	257.14	1.95	301474.7126	6.3923	0.269	0.05701	0.002	0.07679	0.00131	1.9806	0.0414	0.18743	0.00367	0.6451225	1093.7	3.0	1104.2	3.4	1105.8	1.4	1102.3	1.8	
Peixe (n=37)	6.75	202.58	26.36	7.69	35802.5	26.65	1.555	0.02735	0.00149	0.05941	0.00129	0.7427	0.0169	0.09084	0.00157	0.4405425	548.7	4.5	559.4	7.3	562.9	1.5	562.4	1.3	
R33 (n=50)	50.51	302.64	263.06	1.15	34333.89831	4.6885	0.255	0.02059	0.00091	0.05616	0.00172	0.5176	0.0168	0.06693	0.00146	0.416241	401.4	2.0	423.6	7.7	419.1	1.3	417.0	1.1	
GM10-01 Throughfare Formation (UTM - 680759E, 4948958N; Grid Zone 19T)																									
GM10-01a_001	166.7	170.7	136.4	1.25	108000	4.358	0.27	0.1321	0.0049	0.1629	0.0025	10.273	0.09	0.4572	0.009	0.6631424	2507	88	2484	20	2459.1	8.1	2427	40	98.7
GM10-01a_002	137.8	349.6	134.3	2.60	300000	8.45	0.54	0.1117	0.0043	0.1281	0.0021	6.35	0.1	0.3591	0.0084	0.7145333	2140	78	2069	29	2024	15	1977	40	97.7
GM10-01a_003	7.69	33.5	7.57	4.43	5000	13.74	1	0.1117	0.0063	0.1217	0.0025	5.72	0.1	0.3417	0.0083	0.5577116	2136	110	1973	37	1931	15	1894	40	98.1
GM10-01a_004	9.88	78.2	9.56	8.18	50000	28	2.2	0.1165	0.0063	0.1293	0.0024	6.598	0.081	0.3718	0.0085	0.585835	2224	110	2082	33	2061	11	2037	40	98.8
GM10-01a_005	105.1	165.8	100.4	1.65	14000	5.097	0.32	0.1156	0.0047	0.1254	0.002	6.261	0.076	0.3606	0.008	0.715121	2210	85	2033	29	2013	11	1987	36	98.7
GM10-01a_006	294.3	696	239.3	2.91	280000	8.75	0.56	0.1358	0.0056	0.159	0.0025	9.01	0.14	0.4113	0.0096	0.7430956	2573	100	2442	26	2337	14	2219	44	95.0
GM10-01a_007	52.9	78.8	53.7	1.47	21000	4.693	0.3	0.1114	0.0045	0.1229	0.0022	6.078	0.092	0.3606	0.0081	0.607704	2134	82	1993	33	1985	13	1984	38	99.9
GM10-01a_008	230	1670	756	2.21	64700	11.41	0.74	0.0348	0.0021	0.106	0.0018	2.464	0.036	0.1674	0.0039	0.6872764	691	41	1730	32	1264	12	998	22	79.0
GM10-01a_009	1209	2890	2197	1.32	161000	3.79	0.27	0.0636	0.0034	0.1324	0.0034	3.51	0.12	0.1928	0.008	0.7863809	1246	64	2127	44	1527	28	1136	43	74.4
GM10-01a_010	151.4	384.9	149.7	2.57	250000	8.2	0.52	0.1153	0.0046	0.126	0.002	6.209	0.088	0.3588	0.0083	0.7381851	2204	83	2042	27	2008	13	1979	38	98.6
GM10-01a_011	224.4	326	162.7	2.00	160000	6.39	0.42	0.1579	0.0062	0.1929	0.0035	13.22	0.33	0.502	0.016	0.8231186	2962	110	2764	30	2692	24	2621	67	97.4
GM10-01a_014	348.2	649	362.1	1.79	150000	4.81	0.32	0.112	0.0046	0.1178	0.0022	4.875	0.099	0.3016	0.0081	0.7195702	2145	84	1920	33	1796	17	1698	40	94.5
GM10-01a_015	75.8	192.8	75.1	2.57	57000	8.11	0.52	0.115	0.0047	0.1277	0.0021	6.372	0.097	0.3623	0.0085	0.7164184	2200	84	2063	28	2026	13	1992	40	98.3
GM10-01a_016	326.5	316	241	1.31	220000	4.395	0.28	0.1559	0.0059	0.1892	0.003	13.51	0.18	0.5186	0.012	0.7485016	2927	100	2734	26	2714	13	2691	52	99.2
GM10-01a_017	209	939	151.8	6.19	330000	18.7	2.2	0.1586	0.0092	0.1875	0.0064	11.66	0.37	0.454	0.018	0.5618699	2970	160	2716	54	2575	30	2411	80	93.6
GM10-01a_018	340.5	525	373.6	1.41	270000	4.596	0.29	0.105	0.0041	0.1256	0.002	5.867	0.086	0.339	0.0079	0.738265	2017	74	2035	28	1954	13	1881	38	96.3
GM10-01a_019	224.1	873	171.7	5.08	130000	14.9	0.94	0.1521	0.0059	0.1764	0.0029	10.77	0.15	0.4448	0.011	0.7770625	2861	100	2617	27	2502	13	2370	51	94.7
GM10-01a_020	73.9	256.4	89.8	2.86	107000	9.75	0.63	0.0941	0.0038	0.1058	0.0019	4.484	0.055	0.3066	0.0064	0.5149119	1817	70	1725	33	1727	10	1724	32	99.8
GM10-01a_021	438	612	331.8	1.84	600000	5.79	0.38	0.1538	0.0061	0.191	0.0035	12.47	0.24	0.477	0.013	0.741033	2892	110	2748	30	2639	18	2512	58	95.2
GM10-01a_022	360	1560	791	1.97	98000	11.46	0.78	0.0534	0.0031	0.1701	0.0031	6.72	0.12	0.2863	0.0063	0.5992674	1051	60	2557	31	2075	16	1623	31	78.2
GM10-01a_023	288.8	180.4	237.2	0.76	120000	2.563	0.16	0.1427	0.0056	0.1689	0.0028	10.89	0.15	0.4677	0.01	0.631661	2696	100	2544	28	2512	13	2473	46	98.4

TableA2. Continued.

	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	$^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
GM10-01a_024	422	1743	442.2	3.94	0	11.43	0.72	0.1111	0.0043	0.1225	0.0019	5.349	0.047	0.3166	0.0068	0.7893947	2130	78	1990	28	1876.1	7.5	1773	33	94.5
GM10-01a_025	114	163.2	118.1	1.38	26000	4.399	0.29	0.1143	0.0047	0.1264	0.0027	6.27	0.12	0.3604	0.0096	0.6076334	2187	84	2043	38	2012	17	1983	46	98.6
GM10-01a_026	172	513	247	2.08	32000	7.11	0.47	0.083	0.004	0.1845	0.0034	7.4	0.16	0.2937	0.0092	0.818797	1612	74	2692	31	2159	19	1659	46	76.8
GM10-01a_027	202.8	237.4	154	1.54	200000	5.72	0.36	0.1515	0.0058	0.2024	0.0033	15.02	0.15	0.536	0.011	0.6222731	2851	100	2844	26	2816.2	9.6	2766	46	98.2
GM10-01a_028	1.15	55.4	1.9	29.16	18000	215	42	0.095	0.02	0.1222	0.0029	5.456	0.097	0.3281	0.0095	0.5742916	1780	350	1981	43	1892	15	1827	46	96.6
GM10-01a_029	432.6	229.4	325.8	0.70	500000	2.321	0.15	0.1571	0.006	0.1881	0.0032	13.28	0.2	0.5144	0.013	0.7567916	2948	100	2723	28	2701	13	2674	54	99.0
GM10-01a_030	132.9	510	365	1.40	64200	9.68	0.7	0.0432	0.0024	0.1356	0.0022	5.51	0.13	0.2959	0.0079	0.7987113	854	46	2170	29	1899	20	1670	39	87.9
GM10-01a_031	80.6	413	104.6	3.95	700000	12.24	0.78	0.0907	0.0036	0.101	0.0015	3.894	0.061	0.2797	0.0067	0.7976565	1755	67	1642	27	1611	13	1589	34	98.6
GM10-01a_032	319	166.4	268	0.62	30000	2.135	0.13	0.14	0.0052	0.1634	0.0025	10.56	0.11	0.4702	0.0098	0.7112136	2648	93	2488	26	2485.9	9.1	2484	43	99.9
GM10-01a_033	115.6	86.4	90.6	0.95	42000	3.267	0.21	0.1504	0.006	0.1845	0.0034	12.82	0.16	0.5073	0.011	0.5290366	2831	110	2689	29	2665	12	2644	47	99.2
GM10-01a_034	29.5	39.5	24.86	1.59	15000	5.17	0.36	0.1412	0.0065	0.1637	0.0036	10.02	0.19	0.4454	0.011	0.5187581	2666	120	2493	35	2433	18	2373	49	97.5
GM10-01a_035	100.4	404	520	0.78	42000	10.71	1	0.056	0.012	0.1313	0.0027	5.87	0.13	0.3246	0.01	0.7450757	1090	220	2111	36	1954	18	1810	49	92.6
GM10-01a_036	254.7	295	192	1.54	6000	5.118	0.32	0.1558	0.0058	0.1901	0.0029	13.43	0.2	0.5129	0.012	0.7698247	2925	100	2741	25	2708	14	2667	51	98.5
GM10-01a_037	312	378	188.5	2.01	84000	5.86	0.5	0.192	0.014	0.2046	0.005	14.65	0.31	0.5193	0.011	0.3338071	3540	230	2857	39	2790	20	2696	47	96.6
GM10-01a_038	150.7	601	176.6	3.40	110000	10.47	0.66	0.1003	0.0039	0.11149	0.0017	4.721	0.069	0.3072	0.0073	0.7857454	1932	71	1821	28	1769	12	1726	36	97.6
GM10-01a_039	371	199.1	299.4	0.66	120000	2.362	0.15	0.1467	0.0062	0.1909	0.003	13.25	0.19	0.5033	0.011	0.6961262	2765	110	2747	26	2695	13	2626	49	97.4
GM10-01a_040	148.5	135.4	128	1.06	11000	3.614	0.23	0.1386	0.0052	0.164	0.0026	10.38	0.13	0.46	0.01	0.6943735	2623	92	2494	27	2470	12	2438	45	98.7
GM10-01a_041	155.2	151.3	134.8	1.12	57000	3.89	0.26	0.1374	0.0052	0.163	0.0026	10.18	0.12	0.4536	0.0097	0.6780024	2601	92	2484	27	2453	11	2410	43	98.2
GM10-01a_042	68.9	541	79.6	6.80	270000	24	3	0.1021	0.0045	0.1242	0.0019	5.243	0.094	0.3057	0.0079	0.8150302	1963	83	2015	28	1857	16	1718	39	92.5
GM10-01a_043	37.1	35.2	27.2	1.29	52000	4.44	0.32	0.1644	0.0089	0.1725	0.004	12.66	0.4	0.529	0.018	0.7526742	3070	150	2578	39	2650	30	2734	75	103.2
GM10-01a_044	114.6	161.4	92.1	1.75	77000	6.133	0.39	0.1489	0.0056	0.1831	0.0027	12.75	0.15	0.5056	0.011	0.770248	2804	99	2679	24	2660	11	2636	47	99.1
GM10-01a_045	110.2	471	137	3.44	106000	9.35	0.63	0.096	0.0042	0.1408	0.0023	5.13	0.11	0.266	0.0072	0.7973831	1852	76	2235	29	1843	17	1520	37	82.5
GM10-01a_046	141.7	361	153.1	2.36	180000	7.9	0.5	0.1098	0.0042	0.1285	0.0019	6.38	0.088	0.3599	0.0081	0.7701477	2106	76	2077	25	2028	12	1981	39	97.7
GM10-01a_047	162.6	215.1	139.9	1.54	200000	5.36	0.34	0.1387	0.0052	0.1637	0.0026	10.56	0.13	0.468	0.01	0.6764214	2625	93	2491	27	2483	12	2473	46	99.6
GM10-01a_048	180.2	310	196	1.58	150000	5.284	0.34	0.1103	0.0041	0.1259	0.002	6.135	0.07	0.3518	0.0078	0.7301385	2114	76	2041	28	1995.7	9.5	1945	38	97.5
GM10-01a_049	374	419	326	1.29	170000	4.346	0.27	0.1362	0.005	0.1644	0.0026	10.34	0.17	0.4558	0.011	0.7593812	2580	89	2501	25	2463	15	2419	48	98.2
GM10-01a_050	353	254.4	313	0.81	260000	3.15	0.25	0.1346	0.005	0.1616	0.0025	10.15	0.11	0.4545	0.0093	0.669238	2552	89	2470	26	2447	10	2415	41	98.7
GM10-01a_051	206	207	214.6	0.96	60000	3.209	0.2	0.1134	0.0043	0.1298	0.0022	6.597	0.08	0.3686	0.0082	0.6573681	2170	78	2092	29	2058	11	2022	39	98.3
GM10-01a_052	94.7	442	99.8	4.43	110000	14.21	0.9	0.1128	0.0044	0.1265	0.002	6.214	0.099	0.356	0.0085	0.7544021	2160	80	2047	28	2006	14	1962	41	97.8
GM10-01a_053	237.8	503	255	1.97	120000	6.08	0.41	0.1115	0.0043	0.1238	0.0019	5.685	0.085	0.3331	0.008	0.7864561	2137	78	2008	28	1927	13	1852	39	96.1
GM10-01a_054	190.8	299.1	181	1.65	240000	5.08	0.34	0.1266	0.0058	0.1445	0.0026	7.5	0.15	0.3799	0.011	0.7897089	2407	100	2278	31	2174	20	2074	51	95.4
GM10-01a_055	62.3	150	69.6	2.16	32000	7.15	0.46	0.1065	0.0042	0.122	0.002	5.846	0.068	0.3475	0.0074	0.6460043	2044	76	1982	29	1952	10	1922	35	98.5
GM10-01a_056	569	1720	999	1.72	80600	5.739	0.36	0.0666	0.0028	0.161	0.0024	4.878	0.067	0.2191	0.0049	0.7594981	1302	53	2464	25	1799	12	1277	26	71.0
GM10-01a_057	44	71	34.8	2.04	25000	7.43	0.49	0.15	0.0062	0.1927	0.0032	13.97	0.17	0.5249	0.011	0.610723	2823	110	2762	27	2746	12	2722	47	99.1
GM10-01a_058	492.3	805	429.7	1.87	600000	5.956	0.37	0.1345	0.005	0.1661	0.0025	9.66	0.13	0.4206	0.0095	0.764453	2550	89	2516	25	2401	12	2262	43	94.2
GM10-01a_059	210	889	174.6	5.09	510000	16.23	1	0.1414	0.0053	0.1747	0.0027	10.7	0.15	0.443	0.011	0.8248181	2673	94	2601	26	2496	13	2362	48	94.6
GM10-01a_060	197	621	241	2.58	203000	7.4	0.5	0.0983	0.004	0.1244	0.0021	4.619	0.071	0.27	0.0066	0.730338	1895	74	2018	30	1752	13	1540	34	87.9
GM10-01a_061	210.1	225.3	152.5	1.48	100000	5.155	0.32	0.158	0.0059	0.205	0.0031	15.47	0.14	0.5453	0.011	0.7125231	2964	100	2864	25	2843.7	8.5	2805	46	98.6
GM10-01a_062	98.3	107.5	74.2	1.45	20000	4.955	0.31	0.1524	0.0058	0.1917	0.003	13.76	0.15	0.5194	0.01	0.5827318	2866	100	2756	25	2732	10	2696	44	98.7

TableA2. Continued.

Analysis Identifier	Measured concentrations[1] Pb (ppm)	U (ppm)	Th (ppm)	U/Th	Isotopic ratios ^{206}Pb/^{204}Pb	^{208}Pb/^{206}Pb	±2σ[2]	^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	Rho[3]	Calculated ages (Ma) ^{208}Pb/^{232}Th	±2σ[2]	^{207}Pb/^{206}Pb	±2σ[2]	^{207}Pb/^{235}U	±2σ[2]	^{206}Pb/^{238}U	±2σ[2]	% con
GM10-01a_063	63.9	73.2	49.4	1.48	46000	4.612	0.29	0.1478	0.0058	0.1729	0.0028	11	0.15	0.4612	0.01	0.665989	2786	100	2583	27	2521	12	2444	44	96.9
GM10-01a_064	156.7	199.1	111.6	1.78	110000	5.92	0.37	0.1597	0.0059	0.2145	0.0034	15.85	0.19	0.5363	0.011	0.6368074	2999	110	2937	25	2866	11	2767	47	96.5
GM10-01a_065	225	71	169	0.42	58000	1.506	0.095	0.1504	0.0064	0.255	0.0069	18.29	0.51	0.523	0.016	0.5751464	2832	110	3212	42	3003	27	2709	70	90.2
GM10-01a_066	289.9	373	243.1	1.53	290000	5.032	0.32	0.135	0.005	0.1615	0.0024	9.95	0.12	0.4484	0.0099	0.7737748	2559	88	2469	25	2432	11	2387	44	98.1
GM10-01a_067	150.3	165.5	127.9	1.29	45000	4.299	0.27	0.1329	0.005	0.1601	0.0025	10.03	0.14	0.4534	0.0098	0.6930432	2522	88	2454	27	2436	13	2409	44	98.9
GM10-01a_068	459	491	464	1.06	170000	3.058	0.21	0.1138	0.005	0.1268	0.0023	5.93	0.15	0.3391	0.011	0.83061	2177	90	2051	32	1962	22	1881	52	95.9
GM10-01a_069	4.65	142.4	4.61	30.89	55000	94.7	7.6	0.1142	0.0073	0.1189	0.0019	5.518	0.062	0.3352	0.0069	0.6369154	2180	130	1936	29	1902.3	9.7	1863	33	97.9
GM10-01a_070	157.6	283.2	157	1.80	600000	5.801	0.36	0.1125	0.0043	0.1276	0.0019	6.412	0.069	0.3634	0.0075	0.7204787	2154	78	2062	27	2034.5	9	1998	35	98.2
GM10-01a_071	188	221.3	192.6	1.15	100000	3.653	0.23	0.1104	0.0045	0.1275	0.0021	6.29	0.086	0.3575	0.0088	0.7748748	2116	81	2061	29	2016	12	1969	42	97.7
GM10-01a_072	179.3	153	145.5	1.05	53000	3.44	0.22	0.1354	0.005	0.1632	0.0025	10.28	0.12	0.4569	0.0096	0.6993843	2567	90	2487	26	2459	11	2425	43	98.6
GM10-01a_073	210.4	207.1	176.7	1.17	138000	3.561	0.23	0.1297	0.005	0.1686	0.0028	9.28	0.17	0.4002	0.011	0.8095755	2463	89	2541	28	2364	16	2168	50	91.2
GM10-01a_074	137.3	234.5	137.7	1.70	140000	5.44	0.35	0.1093	0.0041	0.1241	0.0019	6.252	0.076	0.3658	0.0077	0.6965287	2096	75	2013	27	2014	11	2009	36	99.8
GM10-01a_075	109.8	115.7	108.5	1.07	50000	3.409	0.23	0.1101	0.0042	0.1264	0.0021	6.249	0.073	0.3582	0.0073	0.5791819	2110	76	2045	29	2010	10	1973	35	98.2
GM10-01a_076	88.2	204	86.1	2.37	190000	7.31	0.46	0.1112	0.0043	0.1279	0.002	6.421	0.064	0.3625	0.0076	0.7043548	2131	77	2066	28	2034.2	8.7	1993	36	98.0
GM10-01a_077	77.5	523	95.61	5.47	180000	16.02	1	0.0878	0.0035	0.10177	0.0015	3.781	0.046	0.2699	0.0058	0.7507736	1700	64	1654	27	1587	10	1540	30	97.0
GM10-01a_078	105.3	312	113	2.76	57900	7.04	0.49	0.1007	0.005	0.1895	0.0031	6.85	0.13	0.2594	0.0063	0.740269	1939	91	2737	27	2091	17	1487	32	71.1
GM10-01a_079	53.7	62.6	50.1	1.25	13000	3.919	0.25	0.1155	0.0045	0.129	0.0022	6.766	0.093	0.3802	0.0084	0.6358823	2208	82	2080	30	2079	12	2076	39	99.9
GM10-01a_080	237.8	299.1	178.2	1.68	260000	5.808	0.37	0.1412	0.0052	0.1861	0.0029	12.94	0.15	0.5018	0.011	0.7321227	2670	93	2706	26	2674	11	2621	45	98.0
GM10-01a_081	255	346	255	1.36	210000	4.129	0.27	0.107	0.004	0.1237	0.0019	5.869	0.091	0.3438	0.0082	0.7752016	2055	73	2007	27	1956	13	1904	40	97.3
GM10-01a_082	150.9	331	114.9	2.88	500000	9.04	0.62	0.1393	0.0052	0.1639	0.0025	10.27	0.13	0.4551	0.0098	0.7177226	2636	91	2494	26	2458	12	2417	44	98.3
GM10-01a_083	153.7	159.5	135.5	1.18	105000	3.679	0.24	0.1199	0.0057	0.1646	0.0028	9.13	0.2	0.4029	0.011	0.7824245	2298	99	2503	31	2347	21	2180	53	92.9
GM10-01a_084	86.2	141.1	92.6	1.52	147000	4.3	0.29	0.1004	0.005	0.1355	0.0031	5.69	0.14	0.3064	0.011	0.7759547	1931	93	2164	41	1926	21	1721	52	89.4
GM10-01a_085	152.8	111.2	98	1.13	200000	3.64	0.25	0.1663	0.0066	0.2214	0.0036	17.17	0.24	0.5633	0.013	0.7185624	3108	110	2989	27	2945	13	2879	53	97.8
GM10-01a_086	202	468	633	0.74	82000	3.98	0.27	0.0351	0.0026	0.144	0.0034	4.13	0.11	0.2055	0.0077	0.779513	698	50	2272	41	1659	21	1204	41	72.6
GM10-01a_087	43.2	48.5	29.39	1.65	44000	5.17	0.33	0.1538	0.0063	0.1949	0.0034	14.02	0.18	0.521	0.011	0.5649514	2890	110	2780	29	2749	12	2702	45	98.3
GM10-01a_088	27.8	44	17.6	2.50	25000	8.8	0.69	0.1707	0.0078	0.2284	0.0039	18.79	0.23	0.5963	0.013	0.624965	3180	140	3037	28	3029	12	3013	52	99.5
GM10-01a_089	148	194.3	91.8	2.12	300000	6.8	0.43	0.1679	0.0063	0.2219	0.0033	17.87	0.18	0.5811	0.012	0.7373293	3135	110	2992	24	2981.4	9.7	2952	51	99.0
GM10-01a_090	128	136.3	129.9	1.05	500000	2.128	0.16	0.1061	0.0058	0.1425	0.0054	4.94	0.25	0.251	0.017	0.8332857	2038	110	2253	67	1806	43	1442	86	79.8
GM10-01a_091	60.7	232	58.2	3.99	800000	11.94	0.77	0.1079	0.0043	0.1227	0.002	5.91	0.064	0.3489	0.0074	0.6561861	2070	79	1995	28	1961.6	9.5	1929	36	98.3
GM10-01a_092	66.2	158.9	290	0.55	46000	6.24	0.44	0.02309	0.0012	0.2239	0.0036	8.78	0.17	0.2829	0.0077	0.8132775	461	24	3007	26	2313	17	1605	39	69.4
GM10-01a_093	551	325	350	0.93	220000	2.721	0.18	0.1615	0.006	0.2032	0.0032	14.84	0.21	0.5301	0.012	0.7253165	3026	100	2849	26	2803	14	2740	50	97.8
GM10-01a_094	172.4	484	165	2.93	160000	7.45	0.53	0.1111	0.0052	0.1256	0.0024	5.56	0.16	0.3222	0.011	0.8288158	2128	95	2035	35	1908	24	1799	54	94.3
GM10-01a_095	239.1	367	227.5	1.61	200000	4.23	0.27	0.1085	0.0042	0.1177	0.0019	5.148	0.086	0.3167	0.0075	0.7321634	2081	76	1923	27	1841	14	1772	37	96.3
GM10-01a_096	190.2	201.6	123	1.64	34600	2.746	0.18	0.1614	0.0065	0.1724	0.0041	7.25	0.12	0.3058	0.0087	0.5497831	3023	110	2573	40	2141	15	1719	43	80.3
GM10-01a_097	94.7	240.9	85.4	2.82	700000	8.25	0.57	0.112	0.0044	0.1282	0.002	6.429	0.081	0.3622	0.0076	0.6726277	2144	80	2071	28	2035	11	1992	36	97.9
GM10-01a_098	127.8	97.7	94.1	1.04	40000	3.058	0.2	0.1405	0.0055	0.1631	0.0028	10.34	0.12	0.4601	0.0099	0.6065941	2656	97	2484	29	2464	10	2439	44	99.0
GM10-01a_099	121	204.6	112	1.83	100000	5.305	0.34	0.1123	0.0043	0.1245	0.002	6.165	0.073	0.3579	0.0083	0.7646745	2150	78	2018	28	1998	10	1975	38	98.8
GM10-01a_100	206.1	418.8	192.1	2.18	150000	6.255	0.4	0.1112	0.0043	0.1274	0.0019	6.19	0.1	0.3506	0.0085	0.7995945	2131	79	2062	26	2003	14	1936	40	96.7
GM10-01a_101	54.2	206.5	48.1	4.29	900000	12.44	0.8	0.1166	0.0048	0.1284	0.0021	6.595	0.077	0.3735	0.008	0.6549978	2228	87	2073	29	2057	10	2045	38	99.4

TableA2. Continued.

Analysis Identifier	Measured concentrations[1] Pb (ppm)	U (ppm)	Th (ppm)	U/Th	Isotopic ratios $^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	Calculated ages (Ma) $^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
GM10-01a_102	26.01	56.8	18.74	3.03	38000	9.45	0.63	0.1454	0.0063	0.1804	0.0031	12.33	0.17	0.4937	0.01	0.5462084	2740	110	2653	28	2628	13	2586	45	98.4
GM10-01a_103	157.9	240.6	104.3	2.31	110000	7.32	0.51	0.167	0.0097	0.2601	0.0049	20.84	0.61	0.58	0.018	0.8063663	3120	170	3250	32	3134	27	2947	74	94.0
GM10-01a_104	59.5	79.2	56.6	1.40	55000	4.54	0.33	0.1123	0.0047	0.131	0.0022	6.643	0.082	0.3672	0.008	0.6414089	2150	86	2108	30	2065	11	2015	38	97.6
GM10-01a_105	111.5	366	270	1.36	54200	5.37	0.39	0.0451	0.0028	0.1477	0.0029	4	0.15	0.197	0.0088	0.9002763	890	54	2321	31	1634	32	1157	47	70.8
GM10-01a_106	117.8	306	107.4	2.85	900000	7.53	0.58	0.1194	0.0053	0.1231	0.0025	5.93	0.16	0.351	0.012	0.8045905	2278	95	1997	35	1962	24	1937	57	98.7
GM10-01a_107	80.2	172.9	74.2	2.33	100000	6.74	0.43	0.1155	0.0047	0.1258	0.0021	6.365	0.075	0.3668	0.008	0.6534558	2209	85	2039	30	2026	10	2014	38	99.4
GM10-01a_108	29.2	107.4	74.58	1.44	68000	10.3	0.67	0.0422	0.0022	0.1329	0.0024	5.994	0.08	0.326	0.0071	0.5613551	836	42	2131	32	1975	11	1818	34	92.1
GM10-01a_109	144.3	176.5	137.4	1.28	800000	3.827	0.24	0.1128	0.0044	0.1257	0.0022	6.357	0.069	0.3664	0.008	0.6080823	2159	80	2034	30	2025.2	9.5	2012	38	99.3
GM10-01a_110	160.7	215	156.2	1.38	300000	4.094	0.26	0.1113	0.0043	0.1251	0.002	6.248	0.071	0.3611	0.0077	0.6773058	2133	78	2027	29	2010	10	1987	37	98.9
GM10-01a_111	98.4	170	94.4	1.80	700000	5.41	0.36	0.115	0.0046	0.1243	0.0021	6.264	0.091	0.365	0.0086	0.7022834	2199	84	2014	30	2011	13	2005	40	99.7
GM10-01a_112	10.62	19.2	10.12	1.90	80000	5.75	0.4	0.1168	0.0058	0.1316	0.0035	6.75	0.16	0.3724	0.0093	0.4039067	2230	100	2110	46	2074	21	2039	44	98.3
GM10-01a_113	59.5	199	59.4	3.35	900000	10.21	0.66	0.1116	0.0045	0.1264	0.002	6.269	0.066	0.3583	0.0074	0.6600301	2138	82	2046	29	2013.1	9.3	1976	36	98.2
GM10-01a_114	159.8	187	116.4	1.61	150000	5.04	0.36	0.1547	0.0059	0.198	0.0031	14.44	0.14	0.5272	0.011	0.702492	2906	100	2807	25	2777.8	9	2728	47	98.2
GM10-01a_115	398.8	1659	615	2.70	301000	8.14	0.53	0.0762	0.0038	0.119	0.002	3.892	0.055	0.2386	0.0059	0.7564809	1483	71	1938	31	1611	11	1379	31	85.6
GM10-01a_116	212.8	799	220.1	3.63	320000	9.91	0.63	0.111	0.0043	0.121	0.0021	5.38	0.1	0.323	0.0089	0.7844372	2127	78	1968	31	1879	16	1803	44	96.0
GM10-01a_117	75.6	113.5	72.7	1.56	900000	4.868	0.31	0.1193	0.0046	0.1351	0.0023	7.295	0.093	0.3904	0.0085	0.6245996	2277	83	2164	30	2147	12	2124	40	98.9
GM10-01a_118	643	1193	490	2.43	2000000	7.012	0.44	0.151	0.0056	0.1878	0.0028	11.75	0.13	0.4526	0.0094	0.7212499	2842	99	2721	24	2585.2	9.6	2406	42	93.1
GM10-01a_119	492	248	324	0.77	410000	2.465	0.16	0.1729	0.0064	0.222	0.0034	17.93	0.25	0.5851	0.013	0.731954	3223	110	2995	26	2986	13	2968	53	99.4
GM10-01a_120	258.4	277	189.2	1.46	130000	4.85	0.31	0.1591	0.0059	0.2038	0.0031	15.33	0.2	0.5426	0.012	0.741586	2984	100	2854	25	2836	12	2792	52	98.4
GM10-01a_121	37.6	44	40.15	1.10	20000	3.588	0.24	0.1085	0.0049	0.1229	0.0029	6.02	0.11	0.3544	0.0079	0.3363348	2082	89	1990	42	1976	16	1955	38	98.9
GM10-01a_122	94.1	312	113.8	2.74	240000	8.94	0.57	0.1011	0.0043	0.1266	0.002	5.78	0.068	0.3291	0.0069	0.6657343	1946	78	2051	29	1942	10	1833	34	94.6
GM10-01a_123	92.5	371	168	2.21	207000	10.42	0.69	0.0681	0.0032	0.1769	0.0028	7.469	0.095	0.3042	0.0068	0.7226611	1330	61	2622	27	2168	12	1712	34	79.0
GM10-01a_124	79.2	101.4	54.4	1.86	100000	6.66	0.43	0.1801	0.007	0.2601	0.004	22.72	0.23	0.633	0.013	0.6920297	3346	120	3245	24	3215	10	3160	51	98.3
GM10-01a_125	92.1	155	131.3	1.18	110000	3.925	0.25	0.0874	0.0034	0.103	0.0018	4.111	0.052	0.2878	0.006	0.548394	1693	63	1677	34	1655	10	1630	30	98.5
GM10-01a_126	78.1	163.2	87	1.88	900000	6.21	0.4	0.1119	0.0043	0.1257	0.0021	6.378	0.064	0.3666	0.0076	0.6041612	2144	78	2035	29	2029.6	9.1	2013	36	99.2
GM10-01a_127	172.6	337.1	150.1	2.25	190000	8.11	0.52	0.1412	0.0057	0.178	0.0028	11.98	0.14	0.4852	0.01	0.6516384	2668	100	2633	26	2602	11	2549	45	98.0
GM10-01a_128	216.8	318	304	1.05	150000	3.353	0.21	0.0895	0.0034	0.10352	0.0016	4.038	0.05	0.2822	0.0058	0.661816	1732	62	1688	28	1641	10	1602	29	97.6
GM10-01a_129	275.2	261.2	222.8	1.17	100000	4.131	0.26	0.1552	0.0066	0.2085	0.0033	15.38	0.19	0.533	0.012	0.7352489	2913	120	2891	25	2838	12	2752	52	97.0
GM10-01a_130	363	349	332	1.05	210000	3.415	0.21	0.137	0.0052	0.166	0.0025	10.1	0.15	0.4412	0.0098	0.7383447	2593	93	2515	25	2442	13	2355	44	96.4
GM10-01a_131	196.4	181.3	183	0.99	300000	3.378	0.21	0.1353	0.0051	0.1627	0.0024	10.221	0.097	0.4545	0.0092	0.7345321	2565	90	2481	25	2454	8.8	2414	41	98.4
GM10-01a_132	143.8	368	164.8	2.23	350000	7.56	0.63	0.1111	0.0042	0.1282	0.002	6.336	0.084	0.3572	0.0078	0.706767	2129	76	2070	27	2024	11	1968	37	97.2
GM10-01a_133	143.8	354	163.6	2.16	590000	7.02	0.44	0.1117	0.0042	0.124	0.0019	6.081	0.087	0.3548	0.008	0.7413643	2141	75	2011	28	1992	11	1960	37	98.4
GM10-01a_134	146.3	339	113.2	2.99	350000	10.94	0.69	0.1618	0.0061	0.2125	0.0032	16.55	0.18	0.5613	0.012	0.7495719	3031	110	2923	24	2908	10	2871	50	98.7
GM10-01a_135	154	350	174.5	2.01	700000	6.74	0.43	0.112	0.0042	0.1286	0.002	6.52	0.078	0.3672	0.0076	0.6656247	2145	76	2076	27	2047	11	2016	36	98.5
GM10-01a_136	180.5	215.3	208.8	1.03	320000	3.316	0.22	0.1112	0.0044	0.1248	0.0022	6.086	0.099	0.3533	0.0079	0.6238763	2130	80	2027	34	1987	14	1950	38	98.1
GM10-01a_137	44.7	74.4	50.3	1.48	200000	4.918	0.32	0.1125	0.0044	0.131	0.0023	6.574	0.093	0.363	0.0078	0.5816015	2153	80	2107	31	2054	12	1996	37	97.2
GM10-01a_138	234	218	198	1.10	140000	3.965	0.26	0.1509	0.0057	0.1907	0.0028	13.56	0.13	0.5141	0.011	0.8144673	2840	100	2747	24	2718.3	9.2	2673	46	98.3
GM10-01a_139	334	596	321	1.86	4000000	6.336	0.4	0.1335	0.0049	0.1635	0.0024	10.16	0.14	0.4491	0.0099	0.7577553	2533	88	2490	25	2447	13	2390	44	97.6
GM10-01a_140	200.6	528	188.1	2.81	4000000	9.91	0.65	0.1353	0.0051	0.1644	0.0024	10.66	0.12	0.4687	0.0097	0.7338032	2564	91	2500	24	2493	11	2477	43	99.4

TableA2. Continued.

	Measured concentrations[1]				Isotopic ratios												Calculated ages (Ma)								
Analysis Identifier	Pb (ppm)	U (ppm)	Th (ppm)	U/Th	$^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
GM10-01a_141	60.3	493	75	6.57	870000	19.93	1.3	0.1031	0.0042	0.1327	0.002	5.509	0.078	0.3	0.0068	0.7588777	1982	78	2132	27	1900	12	1691	34	89.0
GM10-01a_142	192	678	217	3.12	2300000	10.36	0.7	0.1103	0.0044	0.1397	0.0026	6.76	0.17	0.3472	0.011	0.8094187	2114	81	2222	32	2078	23	1920	53	92.4
GM10-01a_143	87.1	550	181.5	3.03	680000	21.87	1.5	0.0625	0.0042	0.2507	0.0051	15.19	0.28	0.4412	0.011	0.5957095	1223	80	3186	31	2826	17	2355	51	83.3
GM10-01a_144	335	807	269.9	2.99	1500000	9.62	0.6	0.1573	0.0064	0.1992	0.0029	13.87	0.17	0.503	0.011	0.7769922	2951	110	2818	24	2739	12	2625	48	95.8
GM10-01a_145	159.9	198.4	146	1.36	610000	4.574	0.29	0.1384	0.0054	0.1617	0.0027	10.17	0.13	0.4544	0.01	0.65568	2618	95	2469	29	2449	12	2417	46	98.7
GM10-01a_146	58.5	204.3	66.7	3.06	500000	10.15	0.65	0.1107	0.0044	0.1235	0.0019	6.209	0.065	0.3632	0.0078	0.7430639	2121	80	2004	28	2004.7	9.2	1996	37	99.6
GM10-01a_148	3.85	83.5	4.22	19.79	270000	67.6	6	0.1144	0.0088	0.1256	0.0021	6.208	0.086	0.3576	0.0078	0.6422409	2180	160	2033	29	2006	12	1970	37	98.2
GM10-01a_149	725	794	879	0.90	1000000	2.894	0.18	0.1044	0.0039	0.12254	0.0018	5.679	0.081	0.3346	0.0076	0.7772054	2007	71	1993	27	1926	13	1860	37	97.6
GM10-01a_150	43.3	31.1	37.2	0.84	500000	2.888	0.2	0.1469	0.006	0.1872	0.0037	13.22	0.18	0.5115	0.012	0.5402197	2769	110	2712	33	2693	13	2661	50	98.8
GM10-01a_152	232	398	285	1.40	6000000	4.768	0.3	0.1018	0.0045	0.1245	0.0019	6.023	0.07	0.3497	0.0074	0.711491	1958	83	2019	27	1978	10	1933	36	97.7
GM10-01a_153	243	478	272	1.76	8000000	5.571	0.35	0.1121	0.0042	0.1262	0.0019	6.177	0.084	0.3534	0.0078	0.7419834	2146	77	2045	28	1999	12	1950	37	97.5
GM10-01a_155	326	463	236	1.96	2000000	6.92	0.46	0.1752	0.0068	0.2472	0.0036	20.3	0.23	0.5945	0.013	0.7960604	3262	120	3165	23	3104	11	3006	51	96.8
GM10-01a_156	158	370	182.1	2.03	9000000	6.65	0.43	0.1091	0.0042	0.1245	0.002	6.059	0.066	0.3525	0.0073	0.6415957	2092	76	2022	27	1983.3	9.5	1946	35	98.1
GM10-01a_157	94.1	142.2	102.6	1.39	240000	4.557	0.29	0.1156	0.0044	0.1303	0.0022	6.734	0.082	0.3727	0.0077	0.5764501	2211	80	2098	29	2077	10	2042	37	98.3
GM10-01a_158	144.9	456	162.2	2.81	3000000	8.81	0.56	0.1121	0.0045	0.12414	0.0018	6.088	0.084	0.3551	0.0079	0.7738351	2147	81	2016	25	1987	12	1958	38	98.5
GM10-01a_159	118.4	184.8	139.6	1.32	70000	4.58	0.32	0.108	0.0042	0.1228	0.002	6.002	0.069	0.3541	0.0075	0.6478984	2072	76	1994	29	1976.5	9.6	1953	35	98.8
GM10-01a_160	858	785	821	0.96	8100000	3.117	0.2	0.1319	0.005	0.1644	0.0025	9.63	0.14	0.4235	0.01	0.7831299	2503	88	2499	26	2398	13	2275	46	94.9
GM10-01a_161	312	327	287	1.14	2100000	3.87	0.25	0.1363	0.005	0.1633	0.0025	10.34	0.12	0.4574	0.0096	0.699609	2581	89	2488	25	2467.7	9.9	2427	43	98.4
GM10-01a_162	183.1	325.1	168.2	1.93	100000000	6.684	0.42	0.1356	0.0051	0.1666	0.0025	10.58	0.11	0.4595	0.0097	0.7484651	2569	91	2521	25	2486.1	9.7	2436	43	98.0
GM10-01a_163	723	2140	633	3.38	100000000	10.25	0.65	0.1433	0.0054	0.1675	0.0025	9.85	0.095	0.4262	0.0091	0.7918753	2705	95	2531	25	2419.9	9	2288	41	94.5
GM10-01a_164	696	933	566	1.65	270000000	4.79	0.31	0.1548	0.0065	0.1889	0.0034	11.83	0.25	0.4576	0.012	0.7310953	2907	110	2734	31	2593	21	2427	54	93.6
GM10-01a_165	79.5	299	67.5	4.43	30000000	14.18	0.92	0.1462	0.006	0.1816	0.0028	11.69	0.14	0.4661	0.01	0.7122171	2757	100	2665	26	2580	11	2465	44	95.5
GM10-01a_166	178	174	202	0.86	4100000	3.15	0.22	0.1139	0.0044	0.1256	0.0019	6.511	0.063	0.3747	0.0077	0.7218908	2179	81	2037	26	2046.5	8.5	2051	36	100.2
GM10-01a_167	660	928	563	1.65	30000000	5.55	0.36	0.1446	0.0053	0.1794	0.0025	11.89	0.16	0.4789	0.011	0.8322438	2730	94	2646	23	2594	13	2521	47	97.2
GM10-01a_168	25.98	37.9	19.45	1.95	800000	6.99	0.48	0.1637	0.0077	0.2215	0.0045	17.86	0.41	0.583	0.016	0.6884226	3059	130	2985	32	2976	22	2958	65	99.4
GM10-01a_169	129.2	259.5	129.8	2.00	8000000	6.86	0.46	0.1228	0.0049	0.135	0.002	7.643	0.073	0.4098	0.0086	0.7786672	2340	89	2162	26	2189.1	8.5	2213	39	101.1
GM10-01a_170	66.9	135.1	70	1.93	1200000	6.63	0.43	0.1175	0.0047	0.1328	0.0021	7.326	0.09	0.3976	0.0087	0.7061691	2245	86	2133	27	2150	11	2157	40	100.3
GM10-01a_171	159	243.1	186	1.31	3000000	4.572	0.29	0.1045	0.0039	0.1239	0.0019	6.235	0.062	0.3636	0.0073	0.6682077	2009	71	2010	28	2008.5	8.7	1999	34	99.5
GM10-01a_172	75.7	112.6	61.4	1.83	370000	6.57	0.43	0.1493	0.0059	0.1924	0.0029	14.18	0.13	0.5335	0.011	0.7458854	2811	100	2760	24	2762.4	8.7	2756	45	99.8
GM10-01a_173	113.2	463.5	151.2	3.07	1300000	10.05	0.64	0.0902	0.0035	0.10566	0.0015	4.339	0.044	0.2964	0.0063	0.8190384	1746	65	1724	26	1700	8.4	1673	31	98.4
GM10-01a_174	64	51.9	51	1.02	500000	3.33	0.23	0.1536	0.0074	0.2141	0.0051	15.55	0.43	0.528	0.019	0.7497692	2886	130	2933	38	2846	27	2729	80	95.9
GM10-01a_175	252.3	249.3	224.2	1.11	7000000	3.845	0.24	0.1346	0.005	0.1627	0.0024	10.652	0.094	0.4731	0.0096	0.7595847	2552	88	2482	25	2492.4	8.3	2496	42	100.1
GM10-01a_176	260	284	194.1	1.46	30000	5.329	0.34	0.1605	0.0059	0.2159	0.0031	17.65	0.13	0.5904	0.012	0.8723781	3008	100	2949	23	2970.2	6.9	2990	47	100.7
GM10-01a_177	51.8	87.4	55.7	1.57	600000	5.26	0.34	0.1114	0.0045	0.1271	0.0022	6.607	0.093	0.3764	0.0081	0.59691	2133	82	2054	31	2060	13	2059	38	100.0
GM10-01a_178	281.8	751	588	1.28	468000	5.4	0.35	0.0567	0.0026	0.1394	0.0023	4.725	0.076	0.2452	0.0063	0.7823446	1114	49	2217	29	1770	14	1413	32	79.8
GM10-01a_179	545	618	479	1.29	20000	4.54	0.36	0.1384	0.0059	0.1871	0.0031	13.14	0.28	0.509	0.015	0.8344446	2619	110	2715	28	2688	20	2652	65	98.7
GM10-01a_180	69.3	167.5	78.6	2.13	200000	7.18	0.46	0.1051	0.0042	0.1221	0.0019	6.062	0.061	0.3587	0.0072	0.6486113	2019	77	1986	27	1983.8	8.7	1976	34	99.6
GM10-01a_181	72.6	141.9	76.2	1.86	200000	6.19	0.4	0.1135	0.0048	0.1325	0.0023	7.06	0.089	0.3861	0.0085	0.6166278	2173	86	2128	30	2118	11	2104	39	99.3
GM10-01a_182	856	1140	1061	1.07	1800000	3.78	0.24	0.0976	0.0044	0.1815	0.0031	9.22	0.33	0.368	0.013	0.8847241	1881	81	2664	28	2353	35	2016	63	83.7

TableA2. Continued.

Analysis Identifier	Measured concentrations[1] Pb (ppm)	U (ppm)	Th (ppm)	U/Th	Isotopic ratios $^{206}Pb/^{204}Pb$	$^{208}Pb/^{206}Pb$	±2σ[2]	$^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	Rho[3]	Calculated ages (Ma) $^{208}Pb/^{232}Th$	±2σ[2]	$^{207}Pb/^{206}Pb$	±2σ[2]	$^{207}Pb/^{235}U$	±2σ[2]	$^{206}Pb/^{238}U$	±2σ[2]	% con
GM10-01a_183	286	326	216	1.51	8000000	5.328	0.34	0.1554	0.0058	0.2088	0.0031	16.34	0.15	0.5653	0.011	0.6787407	2919	100	2894	24	2896.2	9.1	2888	46	99.7
GM10-01a_184	60.2	147.2	65.5	2.25	700000	7.58	0.49	0.107	0.0042	0.1273	0.0022	6.469	0.071	0.3667	0.0075	0.5348087	2055	76	2056	30	2040.5	9.6	2013	35	98.7
GM10-01a_185	246.7	322.3	266.7	1.21	670000	3.997	0.26	0.1084	0.0043	0.1232	0.002	6.346	0.086	0.3735	0.0084	0.6987253	2080	79	2001	29	2024	12	2045	39	101.0
GM10-01a_186	70.8	133.3	56.7	2.35	260000	8.13	0.57	0.1503	0.0076	0.1922	0.0037	14.47	0.29	0.5457	0.014	0.6702629	2829	130	2759	32	2779	19	2806	57	101.0
GM10-01a_187	179	1402	232	6.04	1800000	17.99	1.2	0.0916	0.0064	0.1209	0.0024	4.96	0.16	0.2969	0.011	0.8447432	1770	120	1968	35	1811	27	1675	53	92.5
GM10-01a_188	204	227	209	1.09	700000	3.693	0.24	0.1132	0.0042	0.1285	0.002	6.906	0.067	0.3879	0.0078	0.6566932	2167	76	2074	27	2098.6	8.6	2113	36	100.7
GM10-01a_189	172.1	214	179	1.20	200000	4.05	0.29	0.1115	0.0042	0.132	0.002	7.033	0.068	0.3842	0.0078	0.7032426	2136	76	2122	26	2114.7	8.5	2095	37	99.1
GM10-01a_190	49.7	88.9	51.49	1.73	600000	5.93	0.4	0.1114	0.0045	0.1264	0.0022	6.79	0.1	0.3876	0.0088	0.6421416	2135	82	2044	32	2083	13	2111	41	101.3
GM10-01a_191	50.9	78.7	55.5	1.42	600000	4.818	0.31	0.1065	0.0043	0.1246	0.0023	6.431	0.076	0.3724	0.0079	0.4965025	2044	78	2018	32	2035	10	2040	37	100.2
GM10-01a_192	141.3	84.6	111.8	0.76	100000	2.599	0.16	0.1448	0.0055	0.185	0.0029	13.12	0.16	0.5114	0.011	0.6969874	2732	97	2697	27	2687	12	2662	46	99.1
GM10-01a_193	94	99	66.6	1.49	1000000	5.39	0.47	0.1667	0.0076	0.1715	0.0029	12.02	0.18	0.5073	0.011	0.6290031	3112	130	2569	28	2606	14	2644	47	101.5
GM10-01a_194	93.6	334.1	101.3	3.30	110000	11.09	0.7	0.1055	0.004	0.12163	0.0018	6.133	0.054	0.3641	0.0073	0.7378134	2028	74	1978	26	1994.2	7.7	2001	34	100.3
GM10-01a_196	269.6	236.4	287.8	0.82	200000	2.729	0.17	0.1068	0.0039	0.1227	0.0019	6.212	0.061	0.3645	0.0072	0.6362553	2051	72	1996	28	2005.3	8.5	2003	34	99.9
GM10-01a_197	138.3	225	263	0.86	160000	3.167	0.21	0.0614	0.0033	0.1464	0.0048	4.87	0.15	0.243	0.012	0.7601317	1204	62	2296	57	1795	26	1400	60	78.0
GM10-01a_198	207.7	366	227	1.61	1000000	5.34	0.34	0.1051	0.0041	0.1232	0.002	6.125	0.065	0.3595	0.0077	0.677173	2020	75	2004	31	1993	9.3	1979	37	99.3
GM10-01a_199	208.4	170	158.4	1.07	110000	3.87	0.33	0.1501	0.0056	0.1895	0.003	14.86	0.24	0.5662	0.014	0.7782812	2826	98	2735	26	2806	15	2889	56	103.0
GM10-01a_200	167.8	174	140.6	1.24	270000	4.166	0.26	0.1373	0.0052	0.1638	0.0025	10.706	0.088	0.4722	0.0096	0.7418581	2600	92	2492	26	2497.2	7.7	2493	42	99.8
GM10-01a_201	184.2	909	187.2	4.86	400000	14.76	0.97	0.1122	0.0042	0.12579	0.0018	6.089	0.075	0.3492	0.0074	0.7586085	2150	75	2038	25	1987	11	1930	35	97.1
GM10-01a_202	254	264.9	174.2	1.52	800000	5.342	0.34	0.1677	0.0063	0.2232	0.0033	18.28	0.15	0.5911	0.012	0.7830088	3133	110	3002	23	3005.1	7.7	2993	48	99.6
GM10-01a_203	135.6	206	113.9	1.81	180000	6.2	0.39	0.1375	0.0053	0.1674	0.0025	11.22	0.11	0.4849	0.0099	0.724213	2603	94	2529	26	2540.9	9.2	2548	43	100.3
GM10-01a_204	198	634	272	2.33	930000	10.16	0.7	0.0846	0.0034	0.1266	0.0019	6.266	0.068	0.3573	0.0072	0.6827228	1640	63	2049	27	2012.6	9.5	1969	34	97.8
GM10-01a_206	72.9	153	57.7	2.65	120000	9.38	0.63	0.1485	0.0062	0.1877	0.0034	13.86	0.23	0.5349	0.012	0.6051167	2797	110	2718	31	2738	16	2767	49	101.1
GM10-01a_207	217	355	238	1.49	640000	5.006	0.32	0.1073	0.0041	0.1298	0.0022	6.701	0.086	0.3745	0.0084	0.6609666	2060	74	2093	30	2072	11	2050	39	98.9
GM10-01a_209	145.6	40.5	113.9	0.36	16000	1.269	0.081	0.1489	0.0057	0.1893	0.0033	13.74	0.16	0.5253	0.011	0.5540467	2804	100	2735	30	2734	12	2721	47	99.5
Primary reference material5																									
91500 (n=34)	16.09	96.51	34.36	2.81	125919	9.4114	0.722	0.05423	0.0031	0.07484	0.00222	1.8572	0.0465	0.17965	0.00424	0.255882	1068.9	12.6	1056.9	10.7	1063.9	3.2	1065.4	5.0	
Secondary reference material(s)5																									
FC1 (n=15)	176.27	417.65	280.48	1.49	490475	4.9564	0.332	0.03976	0.00156	0.06701	0.00134	1.2713	0.0192	0.12838	0.00276	0.4430287	1099.8	10.3	1108.9	6.7	1094.1	2.1	1082.5	5.4	
R33 (n=13)	34.90	265.25	191.02	1.39	75280	4.8899	0.35	0.02132	0.00093	0.05586	0.00143	0.5185	0.0112	0.06735	0.00146	0.302341	426.5	5.1	426.5	12.3	423.2	2.0	421.4	2.4	

[1] U–Th–Pb concentrations referenced to either NIST 612 glass or 91500 zircon; concentration uncertainty approximately ± 20%.

[2] Isotope ratios not corrected for common Pb.

[3] Dates calculated with decay constants of Jaffey *et al*. (1971) and $^{238}U/^{235}U$ = 137.818 (Hiess *et al*. 2012) using Iolite v. 3.5 (Paton *et al*. 2011) and U–Pb Geochron4 DRS (Paton *et al*. 2010).

Preferred dates used in plots are 206/238 dates less than 700Ma and 207/206 dates greater than 700 Ma.

[4] Discordance calculated as (1-($^{206}Pb/^{238}U$ age / $^{207}Pb/^{235}U$ age))*100.

[5] Concentration data are means of all anlayses; dates and isotope ratios are weighted means of all analyses <2% discordant

Average reproducibility of individual U–Pb dates from primary reference material is better than 0.7% (reduced separately as unknowns) and average accuracy of secondary reference material is 1.5% or better.

Table A3. U–Pb geochronologic data for samples BL15-01, NB16-356, and NB16-358 run at the University of New Brunswick (analyst Deanne van Rooyen).

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						%
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	^{206}Pb/^{204}Pb[2]	%Pb[3]	C[4]	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	ρ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	con
NB16-356A and NB16-356B Long Pond Bay Formation (UTM - 674199E, 4947299N; Grid Zone 19T)																								
NB16-356B-01	174100000	4.9	0.8	6.4	20	14	70	1416	97.69	1	1.843	0.088	0.152	0.003	0.070	0.0889	0.0040	1376	82	1056	31	911	17	64.1
NB16-356B-02	174000000	8.9	2.7	3.3	470	42	9	140	87.29	3	1.720	0.250	0.163	0.004	0.686	0.0754	0.0085	1160	190	993	99	971	24	80.6
NB16-356B-03	106900000	6.2	7.1	0.9	58	18	31	267	92.97	1	1.547	0.072	0.097	0.002	0.436	0.1132	0.0045	1849	68	951	31	598	12	62.9
NB16-356B-04	168300000	5.0	3.9	1.3	122	26	21	159	88.69	2	0.820	0.340	0.096	0.004	0.874	0.0550	0.0230	1480	320	540	180	590	25	109.3
NB16-356B-05	175500000	1.8	1.3	1.4	2	12	600	3288	97.37	1	1.010	0.062	0.092	0.002	0.017	0.0796	0.0047	1150	120	701	32	565	12	80.6
NB16-356B-06	178700000	14.5	3.1	4.6	3	11	367	45233	98.17	1	3.375	0.084	0.238	0.004	0.699	0.1033	0.0013	1682	23	1497	20	1376	21	79.6
NB16-356B-08	188200000	16.5	0.9	19.4	11	17	155	7827	99.52	1	1.234	0.037	0.130	0.003	0.500	0.0699	0.0015	919	45	816	17	788	14	83.8
NB16-356B-09	165100000	11.8	0.2	72.6	71	28	39	603	96.91	1	1.239	0.060	0.105	0.003	0.281	0.0875	0.0036	1360	80	816	27	643	15	78.8
NB16-356B-10	152500000	15.1	1.0	15.0	2550	110	4	40	55.47	3	1.610	0.250	0.122	0.004	0.644	0.0940	0.0100	1460	200	946	100	739	21	78.1
NB16-356B-11	169100000	8.0	3.5	2.3	73	23	32	409	96.10	1	1.300	0.150	0.102	0.002	0.450	0.0922	0.0095	1370	190	824	62	626	11	75.9
NB16-356B-13	173700000	12.1	0.4	34.1	371	42	11	143	87.20	3	0.890	0.130	0.102	0.002	0.503	0.0633	0.0085	920	200	644	67	628	12	97.5
NB16-356B-14	150500000	10.4	0.8	13.1	1546	80	5	38	53.98	3	1.060	0.470	0.101	0.004	0.756	0.0700	0.0210	1860	190	660	260	621	22	94.1
NB16-356B-15	120000000	4.6	1.6	2.9	232	31	13	103	79.09	3	2.140	0.570	0.151	0.007	0.863	0.0990	0.0230	1820	240	1240	120	906	39	42.8
NB16-356B-16	120700000	2.9	2.9	1.0	629	73	12	28	56.70	3	0.800	1.400	0.111	0.012	0.858	-0.0200	0.1200	2470	540	1060	360	677	68	63.9
NB16-356B-17	185800000	1.6	0.7	2.4	605	68	11	39	65.10	3	4.000	1.400	0.253	0.013	0.849	0.1080	0.0330	2080	330	1640	250	1454	65	59.2
NB16-356B-18	191500000	10.7	9.0	1.2	214	33	15	231	91.65	3	1.000	0.170	0.106	0.003	0.751	0.0690	0.0100	1150	190	674	92	648	15	96.1
NB16-356B-19	182800000	7.0	0.1	96.8	14	17	121	2093	99.17	1	1.004	0.036	0.108	0.002	0.178	0.0686	0.0021	873	63	705	18	659	11	93.5
NB16-356B-20	192700000	8.3	2.0	4.1	59	24	41	710	97.45	1	1.520	0.110	0.128	0.004	0.895	0.0873	0.0036	1354	79	933	42	776	23	54.4
NB16-356B-21	162500000	11.6	1.5	7.7	74	14	19	874	97.02	1	1.918	0.054	0.150	0.003	0.092	0.0926	0.0019	1470	39	1085	19	898	15	58.9
NB16-356B-22	171400000	20.6	0.9	23.4	399	35	9	257	92.74	3	1.085	0.072	0.119	0.002	0.585	0.0653	0.0036	834	98	736	37	725	13	98.5
NB16-356B-23	193700000	12.2	0.2	49.7	50	27	54	2484	98.29	1	3.660	0.093	0.252	0.006	0.436	0.1077	0.0019	1759	31	1562	20	1450	28	78.7
NB16-356B-24	174600000	2.5	2.2	1.1	333	30	9	48	65.10	3	0.990	0.740	0.117	0.006	0.841	0.0570	0.0360	1950	360	680	370	711	36	104.6
NB16-356B-25	183900000	7.1	0.0	150.4	11	14	127	2782	99.66	1	0.939	0.036	0.109	0.002	0.361	0.0631	0.0020	697	68	671	19	668	13	99.5
NB16-356B-26	164200000	1.3	0.7	1.8	-3	10	-333	4310	99.09	1	0.829	0.051	0.093	0.002	0.015	0.0642	0.0039	680	130	605	28	573	13	94.7
NB16-356B-27	167600000	2.5	2.1	1.2	9	10	111	943	98.40	1	0.879	0.039	0.091	0.002	0.069	0.0706	0.0029	900	90	637	21	559	10	87.7
NB16-356B-28	168000000	11.8	0.3	34.2	32	11	34	1416	98.70	1	0.988	0.026	0.102	0.002	0.018	0.0704	0.0013	928	39	697	13	623	10	89.5
NB16-356B-29	147500000	10.0	11.1	0.9	1843	97	5	70	78.18	3	5.770	0.520	0.316	0.008	0.567	0.1328	0.0075	2122	95	1917	83	1774	35	81.5
NB16-356B-30	157000000	2.7	2.1	1.3	136	18	13	81	78.99	3	0.680	0.510	0.096	0.005	0.889	0.0340	0.0350	1920	300	600	270	589	29	98.2
NB16-356B-31	167000000	5.4	5.4	1.0	311	29	9	87	79.29	3	0.970	0.360	0.108	0.004	0.775	0.0620	0.0210	1380	280	680	170	662	20	97.4
NB16-356B-32	156900000	12.8	0.1	112.2	86	16	19	584	96.85	1	1.315	0.042	0.110	0.002	0.029	0.0868	0.0026	1331	59	850	18	670	10	78.9
NB16-356B-33	175900000	5.8	4.7	1.2	0	12	n.d.	23310	99.56	1	0.910	0.033	0.106	0.002	0.109	0.0629	0.0020	682	71	656	17	647	10	98.7
NB16-356B-34	161000000	4.2	1.2	3.4	1	11	1100	25750	99.54	1	1.731	0.051	0.170	0.003	0.227	0.0738	0.0017	1021	47	1018	19	1010	16	99.8
NB16-356B-35	175000000	13.0	0.9	13.8	1233	57	5	79	77.63	3	1.870	0.340	0.160	0.005	0.630	0.0866	0.0081	1360	170	1053	120	956	30	66.4
NB16-356B-36	168400000	14.9	5.1	2.9	504	41	8	274	92.24	3	3.420	0.170	0.236	0.006	0.629	0.1053	0.0028	1705	51	1503	40	1365	30	78.4
NB16-356B-37	163300000	13.4	0.5	28.2	-7	9	-126	58620	98.84	1	1.196	0.038	0.119	0.002	0.643	0.0722	0.0014	980	40	796	18	727	12	91.4
NB16-356B-38	162200000	1.7	1.2	1.4	9	10	111	666	99.53	1	0.841	0.054	0.099	0.002	0.181	0.0619	0.0038	590	130	612	30	608	12	99.3
NB16-356B-39	143700000	6.8	0.1	53.2	-3	15	-500	25060	99.12	1	0.975	0.044	0.106	0.002	0.380	0.0654	0.0026	762	87	689	23	648	11	94.0
NB16-356B-40	139900000	10.9	1.0	11.1	73	15	21	573	96.93	1	1.372	0.051	0.114	0.002	0.375	0.0856	0.0026	1316	59	875	22	698	11	79.7

Table A3. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	^{206}Pb/^{204}Pb[2]	%Pb[3]	C[4]	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	ρ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	% con
NB16-356B-41	178800000	2.4	1.0	2.5	26	17	65	763	98.55	1	2.840	0.130	0.217	0.006	0.594	0.0961	0.0032	1538	61	1360	33	1267	29	80.0
NB16-356B-42	108600000	3.2	3.0	1.1	150	27	18	66	74.70	3	0.310	0.540	0.089	0.005	0.892	0.0150	0.0400	1650	410	390	320	546	31	140.0
NB16-356B-43	160600000	10.2	0.6	16.9	6	9	155	7521	99.32	1	1.064	0.027	0.114	0.002	0.370	0.0674	0.0012	853	36	735	13	694	11	94.4
NB16-356B-44	183500000	4.2	3.3	1.3	69	24	35	240	93.45	1	1.595	0.076	0.103	0.002	0.144	0.1152	0.0050	1865	81	965	30	629	14	65.2
NB16-356B-45	158000000	14.2	1.9	7.4	970	130	13	69	76.00	3	0.930	0.160	0.104	0.002	0.712	0.0679	0.0095	1220	170	658	78	637	11	96.8
NB16-356B-46	163200000	7.3	0.7	10.2	281	26	9	135	87.36	3	1.160	0.240	0.129	0.004	0.403	0.0636	0.0084	1120	150	743	120	782	25	57.7
NB16-356B-47	127300000	8.5	8.9	1.0	245	26	11	110	83.80	3	0.750	0.160	0.094	0.002	0.767	0.0590	0.0110	1350	150	543	93	577	13	106.2
NB16-356B-48	172600000	5.6	2.5	2.2	4	12	300	6028	99.78	1	0.969	0.030	0.114	0.002	0.296	0.0622	0.0015	667	52	687	15	695	12	101.1
NB16-356B-49	180300000	28.5	9.2	3.1	92	24	26	1276	98.54	1	1.057	0.034	0.105	0.002	0.335	0.0736	0.0016	1021	45	731	17	645	9	88.2
NB16-356B-50	194700000	23.5	0.2	125.2	21	28	133	4843	99.47	1	0.945	0.035	0.107	0.002	0.100	0.0661	0.0023	799	73	675	18	652	12	96.6
NB16-356B-51	132900000	10.0	3.3	3.1	77	32	42	761	97.50	1	2.984	0.100	0.212	0.005	0.133	0.1050	0.0035	1708	60	1402	25	1239	24	68.2
NB16-356B-52	161800000	12.5	2.9	4.3	99	23	23	709	95.67	1	2.215	0.079	0.155	0.005	0.250	0.1056	0.0045	1693	76	1182	24	929	26	51.5
NB16-356B-53	137600000	11.2	0.9	12.8	1023	70	7	66	71.38	3	1.770	0.440	0.138	0.004	0.740	0.0890	0.0150	1510	250	960	190	835	23	51.7
NB16-356B-54	179600000	16.9	6.7	2.5	116	16	14	1334	96.73	3	3.260	0.140	0.230	0.004	0.660	0.1041	0.0020	1693	36	1473	31	1333	22	75.9
NB16-356B-55	133200000	87.6	55.2	1.6	3260	200	6	77	76.05	3	0.688	0.120	0.077	0.002	0.553	0.0650	0.0077	970	170	531	63	480	10	90.3
NB16-356B-56	175800000	19.8	0.5	40.2	87	17	20	1051	97.96	1	1.294	0.044	0.118	0.002	0.264	0.0799	0.0020	1182	50	841	20	719	11	85.5
NB16-356B-57	168400000	16.1	2.8	5.7	77	14	18	861	97.98	1	1.170	0.028	0.109	0.002	0.441	0.0781	0.0011	1144	27	786	13	667	10	84.8
NB16-356B-58	173200000	8.3	0.1	91.8	13	11	85	2502	99.09	1	0.915	0.028	0.099	0.002	0.324	0.0668	0.0016	814	49	658	15	611	10	92.8
NB16-356A-01	109900000	154.1	110.1	1.4	-7	11	-157	-5113	99.76	1	4.682	0.110	0.3184	0.0053	0.407	0.1067	0.0024	1737	42	1764	19	1782	26	96.7
NB16-356A-02	93100000	506.4	31.0	16.3	9	20	222	10726	99.02	1	4.019	0.099	0.2763	0.0044	0.394	0.1048	0.0025	1708	44	1637	20	1573	22	91.8
NB16-356A-03	115400000	458.0	8.8	52.0	4	12	300	9100	99.73	1	0.907	0.026	0.1068	0.0019	0.197	0.0620	0.0017	667	58	655	14	654	11	99.8
NB16-356A-04	110000000	437.7	193.9	2.3	53	17	32	1496	99.16	1	3.290	0.130	0.2452	0.0055	0.927	0.0965	0.0025	1547	48	1470	30	1413	29	91.7
NB16-356A-05	104200000	459.0	184.6	2.5	-7	11	-157	-17800	99.75	1	6.450	0.180	0.3724	0.0086	0.916	0.1246	0.0025	2022	36	2041	23	2040	41	98.0
NB16-356A-06	110100000	510.0	1.9	264.2	2	12	600	20500	99.79	1	0.926	0.025	0.1098	0.0017	0.325	0.0610	0.0016	627	57	664	13	671	10	101.1
NB16-356A-07	72000000	337.7	247.7	1.4	115	15	13	152	88.58	3	0.720	0.220	0.0953	0.0030	0.754	0.0480	0.0170	1450	220	430	150	586	18	136.3
NB16-356A-08	107800000	55.9	42.8	1.3	7	10	143	595	99.73	1	0.862	0.057	0.1033	0.0023	0.030	0.0609	0.0042	530	140	621	32	633	13	101.9
NB16-356A-09	107800000	123.1	83.0	1.5	-5	12	-240	-1990	99.67	1	0.912	0.038	0.1093	0.0021	0.278	0.0604	0.0025	576	89	654	20	669	12	102.2
NB16-356A-10	95400000	161.7	143.7	1.1	-9	17	-189	-1278	98.87	1	0.956	0.053	0.1010	0.0027	0.347	0.0685	0.0038	850	110	678	28	620	16	91.4
NB16-356A-11	96400000	310.7	163.2	1.9	19	15	79	2303	99.77	1	2.178	0.071	0.1996	0.0047	0.763	0.0789	0.0020	1164	50	1172	23	1173	26	98.5
NB16-356A-12	109000000	140.1	118.1	1.2	1	11	1100	10480	99.72	1	0.862	0.037	0.1028	0.0019	0.087	0.0610	0.0028	590	97	627	21	631	11	100.6
NB16-356A-13	107800000	178.0	191.4	0.9	6	9	134	2094	99.57	1	0.868	0.033	0.1026	0.0018	0.012	0.0616	0.0025	620	89	632	18	630	11	99.6
NB16-356A-14	108000000	191.1	252.9	0.8	6	12	200	2375	99.65	1	0.840	0.030	0.1013	0.0017	0.060	0.0601	0.0022	585	81	617	16	622	10	100.8
NB16-356A-15	108900000	408.9	246.8	1.7	-3	10	-333	-19827	99.77	1	2.135	0.047	0.1974	0.0030	0.291	0.0783	0.0017	1152	46	1159	15	1161	16	98.8
NB16-356A-16	95900000	104.8	41.1	2.5	-4	13	-325	-2715	98.95	1	1.496	0.078	0.1473	0.0042	0.410	0.0738	0.0036	1022	95	923	32	885	24	86.2
NB16-356A-17	108400000	344.0	509.0	0.7	-7	10	-143	-3457	99.70	1	0.837	0.025	0.1006	0.0019	0.194	0.0604	0.0019	605	71	616	14	618	11	100.3
NB16-356A-18	129100000	566.6	862.0	0.7	99	18	18	465	96.20	3	0.790	0.110	0.0967	0.0019	0.510	0.0592	0.0080	800	180	595	56	595	11	100.0
NB16-356A-19	106100000	75.0	73.4	1.0	10	11	110	1948	99.24	1	6.290	0.170	0.3634	0.0063	0.482	0.1268	0.0034	2050	46	2019	26	1998	30	96.3
NB16-356A-20	105800000	46.3	0.5	89.0	3	11	367	1330	99.90	1	1.024	0.064	0.1202	0.0032	0.140	0.0618	0.0040	590	130	705	32	731	19	103.7

Table A3. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	$^{206}Pb/^{204}Pb$ [2]	%Pb [3]	C [4]	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	ρ	$^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	% con
NB16-356A-21	109000000	76.3	60.2	1.3	10	12	120	576	99.49	1	0.876	0.045	0.1029	0.0022	0.052	0.0621	0.0033	610	110	633	24	631	13	99.7
NB16-356A-22	88300000	433.6	304.7	1.4	27	18	67	1090	98.65	1	1.019	0.036	0.1042	0.0019	0.050	0.0711	0.0027	960	74	716	17	639	11	89.2
NB16-356A-23	108800000	1097.0	12.0	91.6	3	12	400	30620	99.89	1	0.991	0.020	0.1150	0.0017	0.495	0.0627	0.0012	695	42	699	10	702	10	100.4
NB16-356A-24	90100000	452.0	18.5	24.4	15	14	93	2513	99.34	1	1.218	0.041	0.1268	0.0025	0.283	0.0696	0.0024	900	71	807	19	769	14	85.4
NB16-356A-25	108300000	100.7	44.4	2.3	0	11	n.d.	n.d.	99.73	1	4.051	0.110	0.2989	0.0052	0.237	0.0988	0.0026	1591	50	1641	22	1685	26	93.2
NB16-356A-26	108900000	58.8	32.4	1.8	-8	10	-131	-583	99.55	1	0.870	0.050	0.1014	0.0023	0.259	0.0626	0.0036	620	120	628	27	622	13	99.0
NB16-356A-27	109400000	304.3	241.4	1.3	-12	12	-100	-1899	99.61	1	0.851	0.025	0.1014	0.0016	0.160	0.0612	0.0018	626	64	624	14	623	9	99.8
NB16-356A-28	110300000	151.1	128.7	1.2	9	11	122	1262	99.56	1	0.869	0.030	0.1020	0.0019	0.255	0.0622	0.0022	652	75	633	16	626	11	98.9
NB16-356A-29	108900000	178.2	129.2	1.4	-2	9	-541	-7829	99.29	1	0.880	0.034	0.0994	0.0019	0.060	0.0643	0.0025	730	87	638	18	611	11	95.7
NB16-356A-29b-1	109000000	81.1	55.9	1.5	-12	12	-100	-535	99.83	1	0.898	0.055	0.1081	0.0027	0.435	0.0605	0.0033	550	110	642	29	661	16	103.0
NB16-356A-30	110400000	555.1	10.9	50.9	67	15	22	696	97.69	1	1.261	0.044	0.1124	0.0017	0.396	0.0813	0.0026	1225	65	825	19	687	10	83.2
NB16-356A-31	125800000	218.0	64.1	3.4	8	17	213	6163	99.15	1	4.250	0.160	0.2883	0.0079	0.780	0.1078	0.0029	1757	49	1681	31	1632	39	91.5
NB16-356A-32	109300000	1491.0	8.4	176.9	14	11	79	8864	99.84	1	0.966	0.019	0.1121	0.0016	0.411	0.0628	0.0012	697	42	686	10	685	10	99.8
NB16-356A-33	108800000	96.3	56.0	1.7	-4	11	-275	-3533	99.58	1	2.144	0.077	0.2008	0.0037	0.307	0.0779	0.0028	1117	70	1158	25	1179	20	93.0
NB16-356A-34	108700000	157.9	233.0	0.7	-2	10	-500	-5820	99.47	1	0.869	0.031	0.1020	0.0018	0.024	0.0624	0.0025	648	85	632	17	626	11	99.0
NB16-356A-35	109200000	325.3	93.9	3.5	8	9	115	4890	99.10	1	1.789	0.046	0.1644	0.0029	0.611	0.0792	0.0018	1176	48	1042	17	981	16	81.9
NB16-356A-36	108900000	153.8	80.8	1.9	194	26	13	229	94.35	3	5.950	0.410	0.3662	0.0053	0.574	0.1168	0.0075	1880	120	1929	64	2011	25	89.2
NB16-356A-37	107300000	517.0	110.5	4.7	86	16	19	528	97.29	3	0.961	0.110	0.1173	0.0024	0.641	0.0588	0.0067	888	120	659	64	715	14	108.5
NB16-356A-38	125100000	778.3	678.1	1.1	39	14	36	1654	98.95	1	1.027	0.027	0.1065	0.0019	0.083	0.0706	0.0021	937	60	717	14	652	11	91.0
NB16-356A-39	107100000	122.9	116.4	1.1	0	11	n.d.	n.d.	99.86	1	0.883	0.038	0.1074	0.0023	0.371	0.0596	0.0024	548	89	638	20	657	13	103.0
NB16-356A-40	93400000	251.7	121.8	2.1	-13	12	-92	-3605	99.80	1	3.585	0.096	0.2737	0.0051	0.403	0.0954	0.0025	1530	48	1545	21	1559	26	97.9
NB16-356A-41	107500000	139.6	102.9	1.4	-15	11	-73	-1434	99.70	1	2.363	0.063	0.2130	0.0037	0.393	0.0813	0.0022	1217	52	1229	19	1244	20	97.9
NB16-356A-42	107400000	414.9	611.0	0.7	40	16	40	888	98.01	1	1.295	0.047	0.1183	0.0019	0.402	0.0797	0.0028	1165	67	840	21	721	11	85.8
NB16-356A-43	105600000	158.5	139.5	1.1	-2	13	-650	-5775	99.64	1	0.863	0.036	0.1030	0.0019	0.290	0.0615	0.0026	615	89	628	19	632	11	100.7
NB16-356A-44	108600000	79.5	30.8	2.6	-13	11	-85	-1265	99.32	1	3.951	0.110	0.2828	0.0052	0.272	0.1021	0.0029	1651	53	1624	22	1605	26	96.8
NB16-356A-45	121200000	242.5	97.4	2.5	-3	12	-400	-14140	99.55	1	2.698	0.071	0.2269	0.0041	0.343	0.0870	0.0023	1353	52	1327	20	1318	22	96.7
NB16-356A-46	108100000	645.0	30.1	21.4	6	12	200	10400	99.81	1	1.179	0.026	0.1315	0.0020	0.304	0.0654	0.0015	778	49	790	12	796	12	97.6
NB16-356A-47	106400000	75.6	30.8	2.5	12	11	92	943	99.36	1	2.288	0.088	0.2074	0.0040	0.035	0.0806	0.0032	1177	76	1202	27	1214	21	95.4
NB16-356A-47b-1	107800000	154.4	23.7	6.5	1	11	1100	22560	99.59	1	2.183	0.062	0.2006	0.0032	0.068	0.0794	0.0024	1164	60	1173	20	1179	17	98.3
NB16-356A-48	106800000	519.0	202.6	2.6	1100	110	10	96	83.10	3	2.960	0.180	0.2333	0.0043	0.635	0.0903	0.0051	1441	95	1382	48	1351	23	94.4
NB16-356A-49	107700000	194.9	53.0	3.7	-4	10	-249	-4708	99.60	1	1.159	0.035	0.1297	0.0023	0.184	0.0651	0.0020	758	65	779	16	786	13	95.6
NB16-356A-50	108000000	436.2	110.6	3.9	1	11	1100	59900	99.75	1	1.990	0.073	0.1876	0.0052	0.896	0.0769	0.0018	1110	48	1106	25	1107	28	99.7
NB16-356A-51	125400000	269.4	170.7	1.6	10	15	150	6700	99.73	1	4.726	0.120	0.3166	0.0061	0.511	0.1088	0.0027	1776	45	1770	22	1773	30	99.5
NB16-356A-52	108800000	95.2	48.8	2.0	7	11	157	1011	99.62	1	0.841	0.044	0.1010	0.0019	0.050	0.0602	0.0032	580	110	614	25	620	11	101.0
NB16-356A-53	108100000	122.2	90.7	1.3	-3	10	-333	-3047	99.50	1	0.901	0.038	0.1047	0.0020	0.374	0.0629	0.0026	665	88	652	21	642	12	98.4
NB16-356A-54	107800000	401.1	90.5	4.4	8	10	128	7560	99.81	1	2.079	0.047	0.1952	0.0033	0.424	0.0773	0.0018	1128	43	1140	16	1149	18	97.9
NB16-356A-55	106800000	297.9	224.5	1.3	-4	10	-250	-17500	99.70	1	5.034	0.110	0.3256	0.0052	0.209	0.1122	0.0023	1832	36	1824	18	1817	25	99.2
NB16-356A-56	88600000	877.0	39.4	22.3	22	16	73	3427	99.75	1	1.180	0.037	0.1300	0.0022	0.280	0.0653	0.0020	776	68	790	17	791	15	97.2
NB16-356A-57	107500000	135.2	78.7	1.7	7	11	157	7014	98.41	1	#####	0.270	0.4979	0.0082	0.647	0.1907	0.0038	2746	32	2687	20	2604	35	94.1

Table A3. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	^{206}Pb/^{204}Pb[2]	%Pb[3]	C[4]	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	ρ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	% con
NB16-356A-58	106300000	134.9	138.8	1.0	8	11	138	1259	99.86	1	0.850	0.039	0.1035	0.0021	0.327	0.0595	0.0026	542	94	620	21	635	12	102.4
NB16-356A-59	121500000	161.0	87.6	1.8	-9	14	-156	-1500	99.49	1	0.955	0.045	0.1101	0.0025	0.073	0.0632	0.0032	670	110	678	23	673	14	99.3
NB16-356A-60	129700000	494.0	13.1	37.7	16	20	125	2625	99.49	1	0.964	0.037	0.1089	0.0021	0.145	0.0643	0.0025	737	86	684	19	666	12	97.4
NB16-356A-60a	90100000	244.3	189.4	1.3	21	19	90	2781	99.65	1	5.880	0.170	0.3554	0.0068	0.398	0.1201	0.0034	1953	50	1957	25	1960	32	99.4
NB16-356A-61	132200000	678.0	14.5	46.8	5	22	440	11660	99.69	1	0.920	0.041	0.1080	0.0020	0.052	0.0611	0.0030	661	89	661	22	661	12	100.0
NB16-356A-62	104700000	118.1	111.3	1.1	8	11	138	1114	99.62	1	0.940	0.043	0.1082	0.0019	0.282	0.0627	0.0027	648	95	668	22	662	11	99.2
NB16-356A-63	123900000	510.0	28.0	18.2	399	61	15	135	86.00	3	1.200	0.170	0.1194	0.0026	0.592	0.0708	0.0094	1140	170	787	75	727	15	92.4
NB16-356A-64	130300000	761.0	45.3	16.8	22	17	77	3186	99.23	1	1.087	0.035	0.1146	0.0026	0.455	0.0687	0.0020	886	60	746	17	699	15	93.7
NB16-356A-65	88700000	118.0	82.0	1.4	187	23	12	140	90.40	3	4.120	0.700	0.3030	0.0110	0.673	0.0950	0.0160	1590	270	1590	150	1705	53	91.2
NB16-356A-66	106900000	67.0	42.3	1.6	4	10	250	1225	99.76	1	0.837	0.046	0.1016	0.0023	0.080	0.0598	0.0034	520	120	611	26	624	13	102.1
NB16-356A-67	106800000	167.7	97.1	1.7	-1	11	-1100	-34600	99.67	1	3.978	0.087	0.2881	0.0046	0.306	0.0995	0.0022	1609	42	1628	18	1632	23	97.4
NB16-356A-68	109100000	234.6	234.3	1.0	-9	9	-109	-2214	99.67	1	0.931	0.031	0.1106	0.0021	0.441	0.0608	0.0019	609	68	666	16	676	12	101.5
NB16-356A-69	107600000	317.7	338.7	0.9	0	10	n.d.	n.d.	99.65	1	0.861	0.023	0.1021	0.0016	0.276	0.0611	0.0017	636	61	632	13	627	10	99.2
NB16-356A-70	106200000	86.0	30.0	2.9	12	10	83	1835	98.87	1	6.510	0.170	0.3599	0.0067	0.532	0.1305	0.0033	2097	44	2043	23	1981	32	94.5
NB16-356A-71	103900000	60.6	38.6	1.6	13	10	77	349	99.15	1	0.975	0.053	0.1075	0.0025	0.137	0.0662	0.0038	730	120	688	28	658	15	95.6
NB16-356A-72	113400000	64.5	74.3	0.9	-2	15	-750	-2510	99.35	1	0.934	0.069	0.1077	0.0039	0.189	0.0632	0.0049	640	160	664	36	659	23	99.2
NB16-356A-73	104900000	205.6	59.7	3.4	5	12	240	3844	99.51	1	1.233	0.043	0.1319	0.0024	0.525	0.0671	0.0020	839	68	812	19	798	14	96.0
NB16-356A-74	111900000	227.7	281.0	0.8	25	13	52	679	98.71	1	0.968	0.043	0.1010	0.0018	0.025	0.0694	0.0032	869	95	684	22	620	10	90.6
NB16-356A-75	91800000	142.5	155.3	0.9	12	12	100	810	99.24	1	0.896	0.045	0.1029	0.0024	0.111	0.0638	0.0037	680	120	646	24	631	14	97.7
NB16-356A-76	109600000	113.5	93.4	1.2	3	10	333	2970	99.59	1	0.916	0.042	0.1067	0.0023	0.343	0.0620	0.0027	626	93	655	22	653	13	99.7
NB16-356A-77	93400000	222.0	62.0	3.6	4	15	375	11850	97.89	1	5.440	0.210	0.3136	0.0081	0.835	0.1252	0.0031	2028	44	1887	33	1757	40	85.4
NB16-356A-78	129300000	794.0	8.4	94.5	248	72	29	294	93.80	2	0.980	0.130	0.1104	0.0019	0.438	0.0655	0.0068	880	150	697	56	675	11	96.9
NB16-356A-79	106000000	255.0	115.2	2.2	8	13	163	7185	99.92	1	4.656	0.099	0.3171	0.0048	0.403	0.1060	0.0023	1728	39	1758	18	1775	23	96.2
NB16-356A-80	127400000	232.6	141.9	1.6	-14	20	-143	-1204	99.73	1	0.760	0.041	0.0930	0.0020	0.177	0.0593	0.0033	550	120	572	24	573	12	100.2
NB16-356A-81	105400000	675.0	50.6	13.3	41	13	32	1505	99.13	1	1.299	0.030	0.1303	0.0020	0.307	0.0718	0.0017	979	48	844	13	789	11	80.1
NB16-356A-81b-1	104800000	143.2	39.7	3.6	0	12	n.d.	n.d.	99.68	1	2.453	0.064	0.2185	0.0037	0.308	0.0812	0.0021	1214	52	1256	19	1274	19	93.6
NB16-356A-82	109200000	131.7	73.1	1.8	-7	11	-157	-1376	99.58	1	0.835	0.033	0.0999	0.0019	0.177	0.0604	0.0024	578	86	613	18	614	11	100.1
NB16-356A-83	89700000	197.4	187.0	1.1	-4	15	-375	-3233	99.25	1	0.898	0.043	0.1014	0.0025	0.306	0.0640	0.0030	711	100	648	23	622	15	96.0
NB16-356A-84	104300000	54.6	41.3	1.3	-11	10	-93	-359	99.32	1	0.885	0.058	0.1007	0.0023	0.197	0.0636	0.0042	630	130	634	31	618	14	97.5
NB16-356A-84b-1	117200000	63.2	55.2	1.1	15	14	93	329	99.65	1	0.874	0.060	0.1049	0.0031	0.039	0.0607	0.0047	550	160	632	33	643	18	101.7
NB16-358A Ross Island Formation (UTM - 680619E, 4944150N; Grid Zone 19T)																								
NB16-358A-01	183900000	688.8	740.0	0.9	8	11	138	24225	99.85	1	4.521	0.13	0.3079	0.012	0.823	0.1062	0.0008	1734	14	1733	24	1730	58	99.9
NB16-358A-02	173700000	75.3	46.9	1.6	3.1	9.3	300	2132	99.68	1	0.812	0.05	0.0975	0.004	0.055	0.0606	0.0037	550	120	598	29	600	23	100.3
NB16-358A-03	171500000	227.8	193.3	1.2	14	14	100	1694	99.74	1	1.006	0.04	0.1154	0.005	0.398	0.0632	0.0019	700	63	705	21	704.1	26	99.9
NB16-358A-04	165900000	90.3	27.3	3.3	6	12	200	2708	99.68	1	2.24	0.11	0.2064	0.008	0.494	0.0787	0.003	1158	70	1188	35	1209	45	94.7
NB16-358A-05	179700000	228.9	211.9	1.1	15.8	9.6	61	1299	99.65	1	0.823	0.03	0.0987	0.004	0.213	0.0605	0.0017	602	58	608	17	606.6	22	99.8
NB16-358A-06	162900000	198.2	230.6	0.9	2	11	550	8480	99.76	1	0.778	0.03	0.0969	0.004	0.306	0.0583	0.0018	524	70	583	19	596.3	22	102.3
NB16-358A-07	193000000	409.8	8.1	50.7	7	13	186	5901	99.72	1	0.898	0.03	0.106	0.004	0.404	0.0617	0.0014	653	49	650	17	649.5	23	99.9

Table A3. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						%
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	$^{206}Pb/^{204}Pb$[2]	%Pb[3]	C[4]	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	ρ	$^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	con
NB16-358A-08	181000000	456.2	458.4	1.0	13	11	85	3385	99.69	1	0.891	0.03	0.1043	0.004	0.289	0.0623	0.0014	673	51	646	17	639.5	23	99.0
NB16-358A-09	187500000	730.0	120.4	6.1	3	10	333	91333	99.86	1	7.75	0.26	0.4073	0.016	0.944	0.1384	0.0013	2206	16	2199	30	2202	73	99.6
NB16-358A-10	162700000	560.0	288.0	1.9	3	12	400	34100	99.96	1	2.302	0.07	0.2122	0.008	0.286	0.0791	0.0012	1171	29	1212	21	1240.4	42	93.8
NB16-358A-11	176800000	214.0	118.1	1.8	12	13	108	1662	99.62	1	0.85	0.04	0.1017	0.004	0.231	0.061	0.002	614	69	623	19	624.5	23	100.2
NB16-358A-12	213100000	415.0	199.5	2.1	28	18	64	4221	99.69	1	4.119	0.13	0.292	0.012	0.591	0.1029	0.0017	1675	30	1657	26	1651	59	98.0
NB16-358A-13	187500000	153.2	123.1	1.2	20	11	55	695	99.51	1	0.786	0.04	0.0946	0.004	0.202	0.0607	0.0022	597	81	589	19	582.5	21	98.9
NB16-358A-14	175000000	366.2	356.7	1.0	9.2	8.1	88	12576	99.79	1	5.834	0.17	0.3541	0.013	0.699	0.1201	0.0011	1956	16	1950	25	1954	64	99.5
NB16-358A-15	180000000	378.5	402.5	0.9	14	16	114	2100	99.55	1	0.678	0.03	0.0841	0.004	0.468	0.0594	0.002	564	72	529	18	521	22	98.5
NB16-358A-16	178100000	204.8	170.7	1.2	-0.4	9.8	-2450	-93350	99.66	1	2.16	0.07	0.1984	0.008	0.403	0.0793	0.0015	1170	37	1166	23	1167	41	99.8
NB16-358A-17	195100000	437.1	132.2	3.3	2	13	650	66500	98.91	1	5.159	0.15	0.3166	0.012	0.793	0.1188	0.0008	1937	13	1845.4	24	1773	59	89.9
NB16-358A-18	182000000	225.5	278.7	0.8	7	14	200	2883	99.67	1	0.789	0.04	0.0952	0.004	0.465	0.0603	0.0021	596	75	589	20	586.4	22	99.6
NB16-358A-19	169900000	658.0	637.0	1.0	15.8	8.8	56	3595	99.72	1	0.824	0.03	0.098	0.004	0.353	0.0615	0.001	653	34	610.7	15	602.4	22	98.6
NB16-358A-20	170600000	183.6	297.0	0.6	16	10	63	979	99.47	1	0.797	0.03	0.0935	0.004	0.042	0.0621	0.0023	643	80	593	20	576.2	21	97.2
NB16-358A-21	158600000	163.9	41.3	4.0	25	14	56	690	99.53	1	1.03	0.05	0.1167	0.005	0.253	0.064	0.0024	742	74	717	24	711	27	99.2
NB16-358A-22	179200000	82.8	36.2	2.3	2.1	9	429	2036	99.72	1	0.409	0.03	0.0539	0.002	0.373	0.0548	0.004	330	150	343	24	338.4	13	98.7
NB16-358A-23	175000000	68.1	142.8	0.5	10	10	100	596	99.55	1	0.79	0.06	0.0932	0.004	0.258	0.0614	0.004	580	140	584	33	574.5	22	98.4
NB16-358A-24	182500000	348.4	136.5	2.6	4.6	9.1	198	27893	99.61	1	6.968	0.2	0.3821	0.014	0.699	0.132	0.0012	2123	15	2106	25	2086	67	98.3
NB16-358A-25	141300000	129.2	72.8	1.8	19	12	63	312	93.47	1	0.807	0.06	0.0559	0.003	0.261	0.1046	0.0075	1670	130	595	36	350.4	16	58.9
BL15-001 Balls Lake Formation (UTM - 266288E, 5011710N; Grid Zone 20T)																								
BL15-01-001	280200000	481.1	97.8	0.2	-4	11	275	-9108	99.75	1	0.467	0.01	0.0625	5E-04	0.191	0.0535	0.0011	340	47	388.6	7	391	3	100.6
BL15-01-002	271500000	305.0	141.7	0.5	10	12	120	6250	99.83	1	1.751	0.02	0.1725	0.001	0.371	0.0729	0.0008	1008	23	1026.9	7.6	1025.7	7.1	99.9
BL15-01-003	273100000	256.0	227.0	0.9	-7	13	186	-4671	99.70	1	0.917	0.02	0.1088	0.001	0.305	0.0611	0.0013	643	44	662	10	665.4	6.5	100.5
BL15-01-004	256800000	61.3	50.3	0.8	-15	21	140	-987	99.49	1	2.362	0.1	0.2086	0.004	0.225	0.0825	0.0039	1231	92	1228	29	1225	21	99.8
BL15-01-005	289200000	607.0	57.7	0.1	-21	12	57	-2338	99.76	1	0.499	0.01	0.0651	6E-04	0.226	0.0553	0.0012	435	44	410.8	6.8	406.8	3.6	99.0
BL15-01-006	275600000	567.2	375.8	0.7	-4	11	275	-11150	99.72	1	0.5	0.01	0.0659	5E-04	0.021	0.0549	0.001	402	40	411.4	5.6	411.1	3.2	99.9
BL15-01-007	305600000	258.2	304.9	1.2	-10	23	230	-2068	99.52	1	0.508	0.03	0.0657	8E-04	0.168	0.0557	0.0028	420	110	416	18	410.3	4.8	98.6
BL15-01-008	258600000	688.0	222.2	0.3	2	15	750	26325	99.76	1	0.501	0.01	0.0661	6E-04	0.076	0.055	0.001	411	44	412	6.2	412.4	3.3	100.1
BL15-01-009	268700000	358.1	121.7	0.3	-15	17	113	-1861	99.61	1	0.505	0.02	0.0655	1E-03	0.226	0.0563	0.0016	453	62	414.7	9.8	408.9	5.7	98.6
BL15-01-010	311900000	1054.6	20.2	0.0	1	21	2100	149600	99.90	1	0.983	0.02	0.1132	0.002	0.661	0.0627	0.0008	697	28	694.8	8.4	691.3	8.9	99.5
BL15-01-011	282400000	190.9	124.6	0.7	1	18	1800	20250	99.55	1	0.716	0.02	0.088	0.001	0.116	0.059	0.002	554	71	549	14	543.8	6.4	99.1
BL15-01-012	255800000	145.6	77.4	0.5	-13	20	154	-2195	99.82	1	1.676	0.06	0.1693	0.002	0.185	0.072	0.0022	991	58	1002	20	1008	13	100.6
BL15-01-013	248200000	255.6	122.9	0.5	-15	18	120	-4373	99.82	1	2.652	0.05	0.2251	0.002	0.224	0.085	0.0016	1311	35	1314	14	1309	12	99.6
BL15-01-014	272600000	275.9	103.1	0.4	-10	13	130	-8130	99.83	1	3.061	0.03	0.2463	0.002	0.262	0.0898	0.001	1422	21	1423.1	8.2	1419	11	99.7
BL15-01-015	281500000	303.7	273.0	0.9	11	13	118	2285	99.66	1	0.526	0.01	0.0683	7E-04	0.081	0.0558	0.0013	429	52	428.8	7.9	426	4.2	99.3
BL15-01-016	275500000	92.3	42.0	0.5	18	20	111	563	99.75	2	0.72	0.02	0.0904	0.002	0.764	0.0579	0.0006	525	23	550	8.7	557.9	10	101.4
BL15-01-017	244700000	122.0	99.0	0.8	11	22	200	834	99.77	1	0.508	0.03	0.0659	0.001	0.179	0.0554	0.0036	390	140	415	22	411.5	8.8	99.2
BL15-01-018	250600000	214.4	166.9	0.8	-14	16	114	-1823	99.64	1	0.888	0.02	0.1051	0.001	0.003	0.0611	0.0018	648	64	646	13	644	6.9	99.7
BL15-01-019	272200000	306.8	90.5	0.3	-2	12	600	-30480	99.79	1	1.696	0.02	0.168	0.001	0.221	0.0728	0.001	1006	28	1007.2	8.5	1001.2	7.6	99.4

Table A3. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	^{206}Pb/^{204}Pb[2]	%Pb[3]	C[4]	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	ρ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	% con
BL15-01-020	269800000	110.1	29.6	0.3	5	13	260	5160	97.21	1	3.590	0.410	0.218	0.019	0.984	0.1106	0.0051	1768	90	1420	110	1250	100	88.0
BL15-01-021	287000000	610.7	428.0	0.7	4	16	400	14010	99.84	1	0.594	0.01	0.0764	6E-04	0.364	0.0565	0.001	468	38	473	7.1	474.3	3.6	100.3
BL15-01-022	256600000	37.3	16.2	0.4	-3	15	500	-2453	99.54	1	1.701	0.09	0.1688	0.003	0.394	0.0729	0.0035	1009	90	1009	32	1005	17	99.6
BL15-01-023	260100000	522.0	289.4	0.6	11	15	136	3543	99.74	1	0.49	0.01	0.0646	6E-04	0.176	0.0551	0.0011	405	47	404.6	6.8	403.3	3.8	99.7
BL15-01-024	277500000	183.9	101.3	0.6	6	11	183	3205	99.51	1	0.717	0.02	0.0885	0.001	0.129	0.0588	0.0017	567	64	550	12	547.3	6.4	99.5
BL15-01-025	265600000	376.5	155.9	0.4	11	21	191	2682	99.67	1	0.507	0.01	0.0666	8E-04	0.026	0.0555	0.0015	418	61	417.4	7.9	415.4	4.8	99.5
BL15-01-026	282800000	300.0	56.5	0.2	11	12	109	3382	99.54	1	0.899	0.02	0.1027	0.001	0.43	0.0634	0.0013	725	45	650	10	630.3	6.6	97.0
BL15-01-027	274400000	282.6	83.7	0.3	1	13	1300	138140	95.30	1	10.32	0.110	0.415	0.004	0.801	0.1812	0.0012	2664	11	2466	10	2236	19	90.7
BL15-01-029	274400000	553.4	96.4	0.2	-13	12	92	-3397	99.81	1	0.504	0.01	0.0667	5E-04	0.162	0.0549	0.0009	406	36	414	5.4	416	3.1	100.5
BL15-01-030	271800000	603.5	140.2	0.2	9	19	211	5149	99.64	1	0.488	0.01	0.0637	7E-04	0.182	0.056	0.0014	450	55	403.4	8.6	397.8	4.4	98.6
BL15-01-031	273600000	231.0	36.0	0.2	5	14	280	18100	98.46	1	5.882	0.07	0.3332	0.003	0.605	0.1279	0.0011	2068	15	1958.7	9.8	1854	15	94.7
BL15-01-032	275800000	109.9	118.6	1.1	2	23	1150	21840	99.79	1	5.196	0.09	0.332	0.003	0.103	0.1136	0.002	1866	32	1851	14	1850	15	99.9
BL15-01-033	265600000	68.1	23.7	0.3	-3	15	500	-6427	99.45	1	2.992	0.06	0.2423	0.004	0.181	0.0903	0.0021	1419	45	1403	16	1398	18	99.6
BL15-01-034	273800000	331.3	85.4	0.3	-4	12	300	-24200	99.56	1	3.199	0.04	0.2476	0.002	0.636	0.0937	0.0009	1502	18	1455.9	9.6	1425.8	12	97.9
BL15-01-035	273000000	1017.1	555.3	0.5	-14	11	79	-5693	99.80	1	0.51	0.01	0.0667	5E-04	0.265	0.0556	0.0007	440	29	418.4	4.5	415.9	2.8	99.4
BL15-01-036	284300000	222.3	88.7	0.4	-2	15	750	-8775	99.59	1	0.504	0.01	0.0654	8E-04	0.133	0.0559	0.0017	436	66	413.6	9.3	408.4	4.7	98.7
BL15-01-037	284400000	131.6	108.6	0.8	10	13	130	1344	99.62	1	0.665	0.02	0.0835	0.001	0.092	0.0578	0.0017	520	66	518	12	516.9	6.3	99.8
BL15-01-038	270900000	175.8	83.9	0.5	2	12	600	7295	99.82	1	0.54	0.02	0.0698	8E-04	0.022	0.0557	0.0017	426	67	437	10	434.6	5	99.5
BL15-01-039	270700000	60.0	52.1	0.9	4	20	500	5103	99.58	1	3.99	0.13	0.2881	0.005	0.303	0.1006	0.0028	1644	56	1634	26	1632	23	99.9
BL15-01-040	271700000	174.6	142.0	0.8	-5	13	260	-2786	99.75	1	0.515	0.02	0.0673	7E-04	0.152	0.0557	0.0018	422	69	422	11	419.8	4.3	99.5
BL15-01-041	236500000	116.8	92.7	0.8	12	18	150	1063	99.56	1	0.859	0.04	0.1017	0.001	0.255	0.0608	0.0026	630	92	627	19	624.2	8	99.6
BL15-01-042	262400000	353.4	224.5	0.6	8	13	163	3316	99.71	1	0.498	0.02	0.0651	7E-04	0.071	0.0556	0.002	418	75	409	11	406.4	4.3	99.4
BL15-01-043	309500000	305.6	44.0	0.1	-6	23	383	-4287	99.68	1	0.506	0.02	0.0657	9E-04	0.324	0.0555	0.002	413	79	415	12	410.2	5.3	98.8
BL15-01-044	300200000	606.0	28.2	0.0	-2	15	750	-39600	99.71	1	0.922	0.03	0.1078	0.003	0.782	0.0628	0.0013	721	47	662	17	660	15	99.7
BL15-01-045	274600000	302.2	132.9	0.4	5	12	240	4742	99.73	1	0.507	0.01	0.0666	6E-04	0.064	0.0552	0.0012	414	50	417	7.5	415.7	3.6	99.7
BL15-01-046	279800000	234.6	81.5	0.3	-7	11	157	-4611	99.76	1	0.996	0.02	0.1142	0.001	0.234	0.0633	0.0012	718	39	702	10	697.2	5.9	99.3
BL15-01-047	274200000	337.9	197.4	0.6	-4	10	250	-6645	99.73	1	0.508	0.01	0.0669	6E-04	0.146	0.0549	0.0012	396	49	416.4	7.7	417.5	3.6	100.3
BL15-01-048	279500000	105.0	57.7	0.5	6	15	250	2002	99.48	1	0.8	0.03	0.0966	0.001	0.098	0.0603	0.0027	568	98	598	18	594.2	7	99.4
BL15-01-049	275900000	473.9	115.7	0.2	11	15	136	12900	99.86	1	3.21	0.04	0.2539	0.002	0.714	0.0914	0.0007	1456	14	1458.5	8.7	1458.3	11	100.0
BL15-01-050	265100000	590.5	694.0	1.2	-18	12	67	-2511	99.79	1	0.501	0.01	0.0663	6E-04	0.156	0.0546	0.0009	393	38	412	5.7	413.8	3.7	100.4
BL15-01-051	296000000	52.1	71.0	1.4	-3	14	467	-1820	99.67	1	0.71	0.05	0.0883	0.002	0.017	0.0583	0.0041	510	150	550	28	545	13	99.1
BL15-01-052	244300000	125.5	63.5	0.5	-1	27	2700	-11740	99.74	1	0.646	0.04	0.0821	0.002	0.042	0.0567	0.004	480	160	516	26	509	11	98.6
BL15-01-053	275200000	185.7	29.8	0.2	5	13	260	3958	99.67	1	0.727	0.02	0.0892	9E-04	0.139	0.0589	0.0014	576	51	555.1	9.9	550.9	5.1	99.2
BL15-01-054	269100000	264.5	163.6	0.6	12	13	108	1718	99.64	1	0.508	0.01	0.067	7E-04	0.131	0.0547	0.0015	391	62	416.4	9.2	417.8	4.1	100.3
BL15-01-055	280100000	993.0	116.4	0.1	4	13	325	19850	99.84	1	0.515	0.01	0.0672	6E-04	0.386	0.0552	0.0007	417	27	421.4	4.5	419.4	3.4	99.5
BL15-01-056	256300000	121.8	97.9	0.8	20	16	80	454	99.67	2	0.503	0.01	0.0678	0.001	0.856	0.0543	0.0006	380	28	413	9.3	422.9	8.1	102.4
BL15-01-057	265400000	803.8	422.9	0.5	-2	13	650	-32675	99.80	1	0.54	0.01	0.0698	5E-04	0.027	0.0556	0.0009	439	37	438.4	5.5	435	3.2	99.2
BL15-01-058	258600000	495.0	62.8	0.1	-8	17	213	-4493	99.68	1	0.482	0.01	0.0633	7E-04	0.212	0.0548	0.0014	420	56	400	8	395.6	4.1	98.9
BL15-01-059	279400000	140.0	125.0	0.9	3	13	433	3270	99.71	1	0.441	0.02	0.059	9E-04	0.011	0.0543	0.0023	370	89	370	12	369.2	5.5	99.8

Table A3. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						%
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	^{206}Pb/^{204}Pb[2]	%Pb[3]	C[4]	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	ρ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	con
BL15-01-060	281600000	409.3	261.9	0.6	13	14	108	2411	99.44	1	0.508	0.01	0.0628	6E-04	0.012	0.0577	0.0013	526	51	417.5	7.5	392.4	3.6	94.0
BL15-01-061	258800000	565.0	498.0	0.9	14	17	121	2886	99.76	1	0.473	0.01	0.0626	6E-04	0.265	0.0547	0.0009	394	39	392.8	5.8	391.1	3.6	99.6
BL15-01-062	281000000	51.1	22.8	0.4	-11	14	127	-930	99.41	1	1.711	0.06	0.1697	0.002	0.084	0.0731	0.0027	1012	74	1010	23	1010	13	100.0
BL15-01-063	296200000	267.3	83.5	0.3	-1	16	1600	-21440	99.57	1	0.518	0.02	0.067	8E-04	0.139	0.0566	0.002	452	78	423	13	418.2	4.9	98.9
BL15-01-064	290400000	134.4	80.5	0.6	12	14	117	1321	99.50	1	0.807	0.03	0.0974	0.001	0.158	0.0603	0.002	605	76	599	16	599	7.6	100.0
BL15-01-065	280400000	1351.8	333.5	0.2	17	13	76	5541	99.64	2	0.441	0	0.0595	4E-04	0.739	0.0538	0.0002	362.9	6.5	370.7	2.3	372.6	2.7	100.5
BL15-01-066	274600000	75.6	30.7	0.4	1	14	1400	15390	99.58	1	1.759	0.04	0.1727	0.002	0.193	0.0732	0.0019	1012	50	1031	17	1028	12	99.7
BL15-01-067	296500000	944.0	784.0	0.8	6	15	250	12750	99.86	1	0.509	0.01	0.0666	6E-04	0.308	0.0552	0.0009	414	38	417.3	5.8	415.5	3.5	99.6
BL15-01-068	271100000	162.1	31.5	0.2	1	11	1100	12430	99.62	1	0.502	0.02	0.0659	7E-04	0.044	0.0545	0.0017	380	71	412	10	411.2	4.3	99.8
BL15-01-069	277500000	243.6	182.7	0.8	11	14	127	1919	99.71	1	0.568	0.01	0.0737	8E-04	0.306	0.0557	0.0012	428	50	456.2	8.3	458.8	4.8	100.6
BL15-01-070	295100000	79.8	55.3	0.7	8	14	175	3144	99.20	1	3.541	0.07	0.2595	0.004	0.276	0.0995	0.002	1613	35	1539	16	1487	18	96.6
BL15-01-071	287200000	725.6	152.3	0.2	12	19	158	4673	99.69	1	0.507	0.01	0.0661	6E-04	0.083	0.0562	0.0012	453	49	416.3	7.4	412.5	3.7	99.1
BL15-01-072	273600000	218.3	248.7	1.1	5	11	220	3420	99.74	1	0.513	0.02	0.0671	7E-04	0.004	0.0556	0.0018	419	72	419	10	418.9	4.1	100.0
BL15-01-073	275400000	111.5	98.8	0.9	-7	11	157	-3220	99.63	1	1.766	0.05	0.1732	0.002	0.112	0.0735	0.002	1026	54	1034	16	1029.5	9.9	99.6
BL15-01-074	250400000	195.2	209.8	1.1	1	12	1200	19770	99.55	1	0.729	0.02	0.0895	0.001	0.104	0.0587	0.002	542	78	557	14	552.3	6.5	99.2
BL15-01-075	264400000	113.0	44.7	0.4	21	19	90	578	99.96	2	0.727	0.05	0.093	0.005	0.906	0.0573	0.0017	499	67	553	26	573	27	103.6
BL15-01-076	277000000	321.3	227.7	0.7	-7	14	200	-3403	99.76	1	0.467	0.01	0.0623	8E-04	0.247	0.0544	0.0015	375	60	389	8.8	389.8	4.5	100.2
BL15-01-077	308800000	272.5	80.9	0.3	-4	19	475	-5575	99.77	1	0.514	0.02	0.067	0.001	0.07	0.056	0.0027	430	110	420	16	418	6.1	99.5
BL15-01-078	254600000	921.0	147.7	0.2	23	21	91	2930	99.83	2	0.466	0.01	0.0632	7E-04	0.74	0.0535	0.0006	348	25	388.2	4.6	395.3	4	101.8
BL15-01-079	277400000	111.9	67.0	0.6	4	14	350	2990	99.47	1	0.737	0.02	0.0899	0.001	0.199	0.0598	0.002	581	74	559	14	554.8	8.2	99.2
BL15-01-080	259600000	45.3	34.1	0.8	10	15	150	573	99.45	1	0.945	0.04	0.1114	0.002	0.196	0.0629	0.003	720	100	681	23	681	12	100.0
BL15-01-081	273500000	961.0	111.9	0.1	-6	13	217	-12317	99.78	1	0.502	0.01	0.0659	5E-04	0.134	0.0556	0.0007	435	30	412.7	3.7	411.2	2.9	99.6
BL15-01-082	271700000	151.3	178.0	1.2	-2	19	950	-8710	99.50	1	0.829	0.03	0.0997	0.002	0.089	0.0607	0.0027	631	89	611	19	612.5	9.6	100.2
BL15-01-083	269200000	403.0	265.0	0.7	11	13	118	5436	98.85	1	1.453	0.05	0.1384	0.003	0.912	0.0764	0.0013	1105	34	910	22	835	19	91.8
BL15-01-084	282300000	58.0	55.1	1.0	1	15	1500	6110	99.58	1	0.734	0.05	0.0899	0.003	0.106	0.0596	0.0043	560	150	555	28	555	15	100.0
BL15-01-085	280700000	198.7	46.0	0.2	3	13	433	4990	99.69	1	0.476	0.01	0.0631	7E-04	0.186	0.0552	0.0017	394	67	395	10	394.6	4.4	99.9
BL15-01-086	261200000	348.0	66.6	0.2	18	15	83	3818	99.46	2	1.681	0.02	0.1684	0.002	0.943	0.0726	0.0004	1003	9.7	1000.7	8.4	1003.4	9.2	100.3
BL15-01-087	282000000	104.5	23.2	0.2	9	14	156	5240	99.80	1	6.691	0.09	0.3799	0.004	0.424	0.128	0.0017	2076	23	2072	11	2075	18	100.1
BL15-01-088	272000000	81.3	46.0	0.6	5	14	280	4836	98.55	1	3.763	0.08	0.2608	0.004	0.73	0.106	0.0014	1727	24	1589	16	1493	20	94.0
BL15-01-089	286400000	138.3	94.2	0.7	-4	15	375	-2720	99.68	1	0.518	0.02	0.067	0.001	0.098	0.0555	0.0025	440	93	422	15	417.8	6	99.0
BL15-01-090	280200000	95.9	30.3	0.3	4	15	375	2598	99.44	1	0.769	0.03	0.0933	0.001	0.292	0.0601	0.0023	607	86	577	17	574.9	7.6	99.6
BL15-01-091	284700000	277.8	243.0	0.9	-3	14	467	-10770	99.76	1	0.827	0.02	0.0991	0.001	0.145	0.0608	0.0015	621	52	611	10	609.3	6.9	99.7
BL15-01-092	268300000	176.8	21.3	0.1	8	14	175	1615	99.77	1	0.491	0.02	0.0646	8E-04	0.004	0.0551	0.0019	395	70	406	11	403.5	4.8	99.4
BL15-01-093	293900000	376.0	223.0	0.6	-11	12	109	-2713	99.56	1	0.513	0.02	0.0671	7E-04	0.162	0.0561	0.0018	453	70	420	10	418.7	4.1	99.7
BL15-01-094	242200000	91.7	55.8	0.6	1	21	2100	9860	99.46	1	0.819	0.05	0.0979	0.002	0.149	0.0609	0.0033	600	120	605	26	602	11	99.5
BL15-01-095	275400000	201.4	72.5	0.4	-13	12	92	-1631	99.65	1	0.747	0.02	0.091	8E-04	0.038	0.0595	0.0016	587	59	566	11	561.6	4.8	99.2
BL15-01-096	278900000	291.2	52.4	0.2	4	11	275	5308	99.57	1	0.487	0.01	0.0633	6E-04	0.2	0.0564	0.0014	461	53	402.4	7.9	395.8	3.9	98.4
BL15-01-097	294900000	97.1	54.5	0.6	8	21	263	1136	99.55	1	0.615	0.03	0.079	0.001	0.104	0.0569	0.0028	480	110	488	17	490.2	8.2	100.5
BL15-01-098	296600000	206.1	136.3	0.7	-2	18	900	-11025	99.60	1	0.719	0.03	0.0902	0.001	0.013	0.0589	0.0023	541	87	552	16	556.7	7.7	100.9

Table A3. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	$^{206}Pb/^{204}Pb$ [2]	%Pb [3]	C [4]	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	ρ	$^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	% con
BL15-01-099	278300000	210.5	101.9	0.5	9	14	156	1773	99.67	1	0.5	0.01	0.0654	8E-04	0.356	0.056	0.0015	437	63	412	10	408.5	4.6	99.2
BL15-01-100	279600000	296.0	184.7	0.6	-2	12	600	-11115	99.80	1	0.489	0.01	0.0647	7E-04	0.081	0.0556	0.0015	424	60	403.5	9	404.5	3.9	100.2
BL15-01-101	265700000	222.1	100.8	0.5	-5	14	280	-13300	99.72	1	3.31	0.04	0.2585	0.002	0.198	0.0935	0.0013	1501	25	1484	9.9	1482	12	99.9
BL15-01-102	274700000	132.6	67.9	0.5	-2	12	600	-4900	99.71	1	0.49	0.02	0.0639	8E-04	0.013	0.0561	0.002	425	77	403	11	399.5	4.6	99.1
BL15-01-103	293700000	493.0	280.0	0.6	1	19	1900	56500	99.78	1	0.8	0.01	0.0964	0.001	0.234	0.0605	0.0011	620	39	596.5	7.4	593	6	99.4
BL15-01-104	273300000	120.7	151.9	1.3	-5	11	220	-2620	99.38	1	0.767	0.03	0.0927	0.001	0.038	0.0604	0.0023	604	81	576	15	571.6	7.4	99.2
BL15-01-105	278600000	388.8	167.5	0.4	3	13	433	10080	99.59	1	0.515	0.01	0.0668	7E-04	0.073	0.0564	0.0013	467	53	421.9	6.9	416.5	3.9	98.7
BL15-01-106	272500000	300.5	116.4	0.4	4	13	325	5673	99.65	1	0.492	0.01	0.065	6E-04	0.138	0.0553	0.0014	411	54	406.7	7.3	405.9	3.7	99.8
BL15-01-107	292100000	243.8	39.2	0.2	-3	11	367	-6263	99.54	1	0.509	0.01	0.0655	8E-04	2E-04	0.057	0.0018	487	68	416.7	9.2	408.9	4.9	98.1
BL15-01-108	281500000	244.1	93.1	0.4	8	10	125	2331	99.78	1	0.493	0.01	0.0647	6E-04	0.09	0.0553	0.0015	426	63	408.3	9.4	403.9	3.9	98.9
BL15-01-109	269800000	408.0	21.3	0.1	-8	13	163	-3800	99.76	1	0.495	0.01	0.0655	5E-04	0.081	0.0546	0.001	405	47	407.4	6.9	408.8	3.3	100.3
BL15-01-110	278400000	219.6	53.4	0.2	11	12	109	2267	99.45	1	0.831	0.04	0.0957	0.003	0.795	0.0627	0.0016	695	53	609	20	589	18	96.7
BL15-01-111	278200000	182.5	11.3	0.1	-4	11	275	-19275	99.45	1	6.304	0.06	0.3602	0.003	0.462	0.1272	0.001	2058	14	2019.9	7.6	1983	14	98.2
BL15-01-112	274900000	174.7	85.1	0.5	-3	13	433	-6423	99.64	1	0.793	0.02	0.0966	0.002	0.382	0.0595	0.0016	590	60	591	13	594.4	9.2	100.6
BL15-01-113	268900000	148.0	20.2	0.1	12	13	108	2427	99.38	1	1.868	0.03	0.1739	0.002	0.222	0.0778	0.0014	1136	36	1068	12	1033.3	9.1	96.8
BL15-01-114	272000000	173.0	105.4	0.6	7	14	200	2519	99.62	1	0.724	0.02	0.0892	0.001	0.132	0.0589	0.0014	562	49	553.1	9.4	550.7	6	99.6
BL15-01-115	273400000	226.4	108.3	0.5	2	14	700	37300	99.87	1	3.975	0.05	0.2882	0.002	0.339	0.1001	0.0011	1623	20	1629.1	9	1632.5	11	100.2
BL15-01-116	267500000	285.0	260.0	0.9	-2	13	650	-10860	99.69	1	0.51	0.01	0.0669	7E-04	0.184	0.0553	0.0013	418	54	418.7	8.8	417.1	4.3	99.6
BL15-01-117	282400000	31.2	26.3	0.8	3	12	400	2133	99.01	1	1.975	0.09	0.1794	0.003	0.216	0.0795	0.0037	1150	95	1107	33	1066	19	96.3

[1] after Hg correction
[2] in counts per second
[3] radiogenic
[4] Correction factor: 1 = threshold ^{204}Pb cps for no correction (80 cps); 2 = threshold % for ^{204}Pb-based correction (21 %error); 3 = threshold % for ^{208}Pb-basedcorrection (98.5 % radiogenic Pb)

Table A4. U–Pb geochronologic data for zircon reference materials analyzed at the University of New Brunswick.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	^{206}Pb/^{204}Pb^{2}	%Pb^{3}	C^{4}	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	ρ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	% con
FC-1 - 1	276300000	191.4	85.98	0.45	2	12	600.0	21255	99.70	1	1.960	0.029	0.186	0.002	0.043	0.0761	0.0013	1092	33	1102	10	1100	9	99.8
FC-1 - 2	267900000	249.6	154.3	0.62	-4	13	325.0	-13650	99.72	1	1.954	0.029	0.186	0.002	0.069	0.0763	0.0011	1101	30	1099	10	1097	8	99.8
FC-1 - 5	273600000	270	152.4	0.56	-11	13	118.2	-5371	99.78	1	1.942	0.025	0.185	0.001	0.179	0.0762	0.0010	1100	26	1095	9	1095	8	100.0
FC-1 - 6	277600000	400	227.6	0.57	6	13	216.7	14798	99.88	1	1.950	0.021	0.186	0.001	0.386	0.0760	0.0007	1092	19	1099	7	1102	7	100.3
FC-1 - 8	280100000	193.24	89.22	0.46	5	12	240.0	8470	99.72	1	1.967	0.031	0.185	0.002	0.372	0.0769	0.0011	1114	28	1104	11	1095	9	99.2
FC-1 - 9	276700000	241.3	144.07	0.60	10	12	120.0	5308	99.79	1	1.950	0.026	0.186	0.001	0.287	0.0763	0.0010	1101	26	1101	9	1097	8	99.7
FC-1 - 10	275400000	197.1	126.3	0.64	8	13	162.5	5394	99.79	1	1.948	0.024	0.186	0.002	0.303	0.0761	0.0010	1096	26	1098	8	1097	9	100.0
FC-1 - 12	288100000	204.86	102.77	0.50	-5	15	300.0	-9038	99.73	1	1.950	0.028	0.186	0.002	0.050	0.0759	0.0012	1092	31	1098	10	1098	9	100.0
FC-1 - 13	267800000	122.1	42.27	0.35	6	11	183.3	4345	99.68	1	1.954	0.036	0.187	0.002	0.148	0.0762	0.0015	1102	38	1100	13	1103	10	100.2
FC-1 - 14	294500000	205.7	103.56	0.50	2	16	800.0	22880	99.73	1	1.957	0.034	0.185	0.002	0.164	0.0771	0.0014	1128	33	1100	12	1097	9	99.7
FC-1 - 15	277900000	313.8	189	0.60	6	12	200.0	11420	99.83	1	1.940	0.024	0.186	0.001	0.442	0.0759	0.0008	1089	22	1095	8	1101	8	100.5
FC-1 - 16	264700000	285.9	162.68	0.57	-5	14	280.0	-12270	99.82	1	1.960	0.022	0.187	0.002	0.242	0.0759	0.0009	1093	25	1101	8	1105	9	100.3
FC-1 - 17	273500000	211.5	135.02	0.64	7	14	200.0	6489	99.75	1	1.957	0.031	0.186	0.002	0.170	0.0762	0.0012	1102	30	1101	11	1098	8	99.7
FC-1 - 18	283700000	230.9	83.8	0.36	-8	14	175.0	-6246	99.79	1	1.946	0.025	0.185	0.001	0.184	0.0763	0.0010	1099	27	1098	8	1094	8	99.7
Plesovice - 1	255700000	856	73.9	0.086	1	15	1500.0	52600.00	99.71	1	0.393	0.01	0.0528	0.0004	0.019	0.0531	0.0011	332	47	336.5	5.9	331.4	2.6	98.5
Plesovice - 10	268200000	901.4	95.26	0.106	13	12	92.3	4234.62	99.76	1	0.398	0.01	0.0536	0.0004	0.082	0.0536	0.0009	346	36	339.6	4.5	336.7	2.5	99.1
Plesovice - 2	262800000	627.3	65	0.104	5	14	280.0	7752.00	99.72	1	0.394	0.01	0.053	0.0005	0.034	0.0537	0.001	352	43	336.9	5.1	333	2.8	98.8
Plesovice - 3	258600000	805	68.2	0.085	8	12	150.0	6050.00	99.81	1	0.389	0.01	0.0538	0.0005	0.035	0.0526	0.001	303	45	333	5.3	337.6	3	101
Plesovice - 4	274300000	605.7	56.71	0.094	2	14	700.0	18825.00	99.72	1	0.391	0.01	0.0529	0.0004	0.034	0.0535	0.0011	353	44	334.7	5.3	332	2.7	99.2
Plesovice - 5	273200000	896	100.57	0.112	-5	12	240.0	-11154.00	99.78	1	0.393	0.01	0.0532	0.0004	0.244	0.0534	0.0008	340	34	336.6	4.4	334.3	2.4	99.3
Plesovice - 6	263900000	585.2	51.42	0.088	-6	14	233.3	-5990.00	99.80	1	0.389	0.01	0.0533	0.0005	0.201	0.0527	0.0011	305	46	333.3	6	334.9	2.8	100
Plesovice - 7	271700000	689.8	64.09	0.093	8	12	150.0	5282.50	99.80	1	0.39	0.01	0.0531	0.0004	0.142	0.0533	0.0008	340	34	334.3	4.4	333.7	2.5	99.8
Plesovice - 8	272100000	2195.3	268.5	0.122	1	12	1200.0	136000.00	99.84	1	0.397	0	0.0535	0.0004	0.184	0.0538	0.0006	368	23	339.4	3	336.2	2.3	99.1
Plesovice - 9	273000000	470.2	38.11	0.081	-12	11	91.7	-2392.50	99.72	1	0.393	0.01	0.053	0.0005	0.066	0.0537	0.0012	353	50	336.3	5.7	333.1	3	99
FC-1 - 1	114800000	144	84.24	1.71	7	11	157.1	2873	99.55	1	1.945	0.054	0.1854	0.0033	0.200	0.0751	0.0022	1062	57	1094	19	1096	18	94.7
FC-1 - 2	121500000	134.2	86.64	1.55	10	12	120.0	2000	99.66	1	1.921	0.056	0.1867	0.0032	0.272	0.0741	0.0022	1028	59	1085	19	1103	17	90.4
FC-1 - 3	122200000	238.6	107.4	2.22	-5	11	-220.0	-7160	99.60	1	1.978	0.048	0.1859	0.0029	0.257	0.0770	0.0019	1111	50	1106	17	1099	16	99.6
FC-1 - 4	127500000	173	65.1	2.66	5	12	240.0	5186	99.57	1	1.961	0.057	0.1850	0.0035	0.218	0.0772	0.0024	1113	61	1100	20	1094	19	98.4
FC-1 - 5	118500000	362	243.5	1.49	7	11	157.1	7657	99.76	1	1.929	0.044	0.1850	0.0028	0.310	0.0756	0.0017	1078	47	1090	15	1094	15	98.0
FC-1 - 6	118400000	204.1	95.3	2.14	8	11	137.5	3863	99.74	1	1.982	0.052	0.1885	0.0030	0.396	0.0761	0.0019	1086	52	1107	18	1113	16	96.5
FC-1 - 7	117100000	348.9	195.1	1.79	-3	10	-333.3	-17090	99.70	1	1.963	0.046	0.1855	0.0028	0.406	0.0767	0.0017	1107	46	1102	16	1097	15	99.4
FC-1 - 8	114100000	325.3	198	1.64	15	11	73.3	3106	99.72	1	1.975	0.043	0.1860	0.0027	0.367	0.0776	0.0017	1131	43	1108	14	1100	15	96.5
FC-1 - 9	112800000	318.7	196.5	1.62	-20	11	-55.0	-2233	99.83	1	1.919	0.047	0.1854	0.0029	0.518	0.0753	0.0017	1069	47	1086	16	1096	16	97.1
FC-1 - 10	113600000	283.8	178.1	1.59	-5	11	-220.0	-8070	99.74	1	1.939	0.044	0.1856	0.0027	0.285	0.0759	0.0018	1085	46	1094	15	1097	15	98.5
FC-1 - 11	113300000	300.7	195.3	1.54	2	10	471.4	20424	99.83	1	1.941	0.045	0.1864	0.0028	0.378	0.0753	0.0017	1068	47	1094	16	1102	15	95.8
FC-1 - 12	111800000	248.1	136.5	1.82	10	10	98.0	3466	99.67	1	1.957	0.044	0.1861	0.0028	0.199	0.0763	0.0018	1095	48	1100	15	1100	15	99.1
FC-1 - 13	114600000	276.2	181.9	1.52	13	10	76.9	3068	99.70	1	1.963	0.051	0.1860	0.0030	0.473	0.0765	0.0019	1100	49	1101	17	1100	16	99.6
FC-1 - 14	112200000	320.1	212.2	1.51	20	10	50.0	2250	99.66	1	1.956	0.046	0.1855	0.0028	0.182	0.0770	0.0019	1113	49	1099	16	1097	15	98.2

Table A4. Continued.

Sample	Measured concentrations										Isotopic ratios							Calculated ages (Ma)						
	^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	^{206}Pb/^{204}Pb^{2}	%Pb^{3}	C^{4}	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	ρ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{206}Pb	±2σ	^{207}Pb/^{235}U	±2σ	^{206}Pb/^{238}U	±2σ	% con
FC-1 - 15	111500000	211.4	109	1.94	-1	11	-1100.0	-29670	99.66	1	1.948	0.047	0.1865	0.0029	0.131	0.0763	0.0020	1091	52	1096	16	1102	16	99.0
FC-1 - 16	109500000	207.2	128.9	1.61	-4	12	-300.0	-7075	99.59	1	1.953	0.051	0.1849	0.0028	0.265	0.0769	0.0020	1106	53	1097	18	1094	15	99.0
FC-1 - 17	109800000	285.3	178.4	1.60	7	10	142.9	5654	99.76	1	1.959	0.042	0.1868	0.0029	0.165	0.0758	0.0017	1082	47	1100	15	1104	16	97.0
FC-1 - 18	110900000	324	190.3	1.70	12	11	91.7	3760	99.80	1	1.949	0.044	0.1863	0.0028	0.357	0.0755	0.0017	1075	45	1097	15	1101	15	96.5
FC-1 - 19	108400000	733.2	504.2	1.45	5	11	220.0	19760	99.83	1	1.950	0.039	0.1854	0.0027	0.427	0.0762	0.0015	1096	40	1098	13	1096	15	99.6
Plesovice - 1	112300000	485	40.6	11.95	-4	11	-275.0	-4955	99.94	1	0.402	0.012	0.0554	0.0009	0.220	0.0522	0.0016	279	68	344	9	348	5	101.2
Plesovice - 2	112200000	407.1	37.07	10.98	2	11	550.0	8125	99.78	1	0.400	0.014	0.0540	0.0009	0.223	0.0536	0.0019	332	75	341	10	339	5	99.4
Plesovice - 3	118200000	393.8	31.31	12.58	6	11	183.3	2690	99.85	1	0.379	0.014	0.0518	0.0009	0.128	0.0533	0.0020	321	81	326	10	326	5	100.0
Plesovice - 4	110800000	909.7	99.9	9.11	-5	11	-220.0	-7284	99.80	1	0.391	0.010	0.0535	0.0008	0.085	0.0532	0.0014	325	58	335	7	336	5	100.2
Plesovice - 5	107100000	505.8	44.29	11.42	-12	12	-100.0	-1643	99.78	1	0.401	0.013	0.0541	0.0008	0.177	0.0540	0.0018	352	71	342	9	339	5	99.3
Plesovice - 6	111900000	376.3	30.01	12.54	9	11	122.2	1654	99.90	1	0.395	0.016	0.0542	0.0009	0.161	0.0530	0.0021	306	84	337	12	340	6	100.9
Plesovice - 7	106100000	842.9	88.8	9.49	14	12	85.7	2343	99.74	1	0.403	0.010	0.0542	0.0008	0.178	0.0537	0.0014	346	60	343	8	341	5	99.2
Plesovice - 8	104100000	706.6	67.2	10.51	8	12	150.0	3370	99.78	1	0.395	0.012	0.0541	0.0009	0.295	0.0535	0.0016	332	66	339	9	340	6	100.2
Plesovice - 9	107400000	652.6	59.51	10.97	4	11	275.0	6335	99.92	1	0.395	0.012	0.0544	0.0009	0.148	0.0528	0.0017	304	69	337	9	342	5	101.4
Plesovice - 10	115200000	869.6	131.3	6.62	11	16	145.5	3095	99.72	1	0.405	0.018	0.0538	0.0010	0.054	0.0546	0.0026	371	110	344	13	338	6	98.2
Plesovice - 11	117200000	647.7	59.9	10.81	6	13	216.7	4253	99.95	1	0.393	0.016	0.0545	0.0010	0.146	0.0524	0.0021	290	88	336	12	342	6	101.8
FC-1 - 1	172400000	229.7	136.5	1.683	7.8	9.3	119.2	4655.13	99.69	1	1.957	0.06	0.186	0.007	0.283	0.0761	0.0013	1089	34	1099	21	1099.8	38	98.2
FC-1 - 2	173600000	217.8	100.7	2.163	6.6	8.3	125.8	5381.82	99.72	1	1.933	0.06	0.1856	0.007	0.272	0.076	0.0015	1082	41	1090	22	1097.1	38	98.4
FC-1 - 4	164700000	694	328	2.116	0.6	9.4	1566.7	189666.67	99.81	1	1.965	0.06	0.1863	0.0069	0.474	0.0764	0.0008	1102	21	1102.9	19	1101.2	38	99.8
FC-1 - 5	165700000	469.9	282.6	1.663	2.9	8.9	306.9	26068.97	99.86	1	1.935	0.06	0.1857	0.0069	0.486	0.0759	0.0009	1087	24	1092.4	20	1097.8	37	99.1
FC-1 - 6	166000000	270.9	151.8	1.785	2.5	9.1	364.0	17420.00	99.76	1	1.958	0.06	0.1858	0.0069	0.375	0.0766	0.0011	1104	28	1100	20	1098.3	38	99.6
FC-1 - 7	164700000	333.6	192.9	1.729	6.1	9.8	160.7	8814.75	99.77	1	1.952	0.06	0.1863	0.0069	0.189	0.0754	0.0011	1071	31	1098	20	1101.3	38	95.7
FC-1 - 8	162100000	327.9	144.2	2.274	-1.4	7.2	-514.3	-36500.00	99.74	1	1.951	0.06	0.1855	0.0069	0.235	0.0764	0.0011	1101	28	1099.2	21	1096.9	38	99.7
FC-1 - 9	160500000	201.7	102.15	1.975	1	10	1000.0	31230.00	99.70	1	1.95	0.06	0.1861	0.007	0.281	0.0762	0.0015	1088	40	1096	22	1100.1	38	98.4
FC-1 - 10	158700000	346	214.6	1.612	4.1	9.1	222.0	12948.78	99.77	1	1.959	0.06	0.186	0.0069	0.442	0.0764	0.0011	1100	30	1100	20	1099.5	38	99.8
FC-1 - 11	157400000	348.6	217	1.606	8.3	8.8	106.0	6383.13	99.78	1	1.944	0.06	0.1856	0.0069	0.447	0.0761	0.0011	1092	29	1095	21	1097.3	38	99.3
FC-1 - 12	159300000	147.7	110.2	1.34	5.3	9.5	179.2	4369.81	99.71	1	1.965	0.07	0.1868	0.0071	0.306	0.0759	0.0015	1082	40	1104	22	1104	38	96.7
FC-1 - 13	155600000	387	240	1.613	10	10	100.0	5750.00	99.74	1	1.946	0.06	0.1853	0.0069	0.239	0.0762	0.0011	1095	29	1096.1	20	1095.7	38	99.7
FC-1 - 14	158400000	326.4	203.5	1.604	5.7	8.4	147.4	8954.39	99.81	1	1.956	0.06	0.1863	0.0069	0.101	0.0757	0.0012	1087	29	1099.5	19	1101.4	38	98
FC-1 - 15	155700000	251	124.5	2.016	12.3	9.5	77.2	3126.83	99.73	1	1.949	0.06	0.1856	0.0069	0.166	0.0762	0.0013	1094	33	1097	20	1097.6	38	99.4
FC-1 - 16	158300000	281.3	155.1	1.814	5.5	9.1	165.5	8090.91	99.70	1	1.952	0.06	0.1858	0.0069	0.202	0.076	0.0012	1090	31	1098	21	1098.7	38	98.6
FC-1 - 17	155900000	262.1	148.3	1.767	11	11	100.0	3717.27	99.78	1	1.966	0.06	0.1867	0.007	0.274	0.0758	0.0013	1086	34	1105	20	1103.1	38	97.3
FC-1 - 18	152900000	386.5	210.7	1.834	6.7	9.1	135.8	8552.24	99.76	1	1.935	0.06	0.1848	0.007	0.442	0.0769	0.0011	1113	29	1092	20	1092.8	38	97.1
FC-1 - 19	157700000	268	162.8	1.646	8	8.7	108.8	5262.50	99.75	1	1.959	0.06	0.1864	0.007	0.248	0.0763	0.0011	1096	29	1100.6	20	1101.9	38	99.2
FC-1 - 20	154700000	175.4	85.6	2.049	5.8	7.8	134.5	4641.38	99.69	1	1.949	0.06	0.1857	0.007	0.276	0.0756	0.0014	1074	37	1099	21	1097.9	38	96.3
Plesovice - 1	172700000	730.8	68.2	10.72	18.3	9.8	53.6	1814.75	99.84	1	0.387	0.01	0.0531	0.002	0.011	0.0528	0.0013	304	53	331.7	9.8	333.4	12	101
Plesovice - 1	177600000	730.3	68.1	10.72	19	11	57.9	1789.47	99.85	1	0.385	0.01	0.0531	0.002	0.022	0.0526	0.0014	295	58	330.5	10	333.3	12	101

Table A4. Continued.

Sample	Measured concentrations: ^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	$^{206}Pb/^{204}Pb$ [2]	%Pb[3]	C[4]	Isotopic ratios: $^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	ρ	$^{207}Pb/^{206}Pb$	±2σ	Calculated ages (Ma): $^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	% con
Plesovice - 2	170900000	604.5	54.1	11.17	7.1	9	126.8	3921.13	99.71	1	0.403	0.02	0.0539	0.002	0.024	0.0545	0.0015	373	59	343.4	11	338.2	12	98.5
Plesovice - 2	180300000	604.5	54.1	11.17	7	11	157.1	4150.00	99.81	1	0.398	0.02	0.054	0.002	0.089	0.0537	0.0016	340	65	339.6	11	339	12	99.8
Plesovice - 3	157400000	617.9	54.16	11.41	15	12	80.0	1874.67	99.92	1	0.383	0.01	0.0529	0.002	0.356	0.0525	0.0012	297	53	328.4	10	332.3	12	101
Plesovice - 3	170500000	619	54.41	11.38	13	11	84.6	2261.54	99.90	1	0.382	0.01	0.0528	0.002	0.182	0.0526	0.0011	300	47	328.3	9.5	331.7	12	101
Plesovice - 4	167500000	665.7	59.31	11.22	3.2	9.1	284.4	9575.00	99.78	1	0.376	0.01	0.0513	0.0019	0.082	0.0531	0.0013	317	52	323.3	9.6	322.3	12	99.7
Plesovice - 4	167800000	665.7	59.3	11.23	3.3	9	272.7	9287.88	99.76	1	0.375	0.01	0.0513	0.0019	0.1	0.053	0.0013	314	52	323.1	9.6	322.4	12	99.8
Plesovice - 5	164000000	585	51	11.47	4.5	9.8	217.8	6044.44	99.81	1	0.392	0.01	0.0532	0.002	0.236	0.0536	0.0014	342	56	335.3	11	334.2	12	99.7
Plesovice - 5	164100000	587	51.3	11.44	10.5	9.4	89.5	2571.43	99.76	1	0.393	0.01	0.0529	0.002	0.165	0.0541	0.0013	360	51	336.1	10	332.3	12	98.9
Plesovice - 6	161400000	559	48.7	11.48	8	10	125.0	3161.25	99.85	1	0.39	0.01	0.0536	0.002	0.338	0.053	0.0013	314	54	333.8	10	336.4	12	101
Plesovice - 6	161400000	559	48.7	11.48	8	10	125.0	3161.25	99.85	1	0.39	0.01	0.0536	0.002	0.338	0.053	0.0013	314	54	333.8	10	336.4	12	101
Plesovice - 7	163400000	613.4	52.96	11.58	6.7	9	134.3	4153.73	99.65	1	0.397	0.01	0.0525	0.0019	0.046	0.0544	0.0014	367	57	338.8	10	329.8	12	97.3
Plesovice - 7	178000000	613.6	52.93	11.59	11	11	100.0	2634.55	99.66	1	0.394	0.02	0.0526	0.002	0.08	0.054	0.0016	350	65	336.7	11	330.2	12	98.1
Plesovice - 8	161500000	658.4	59.57	11.05	0.1	9.5	9500.0	293600.00	99.81	1	0.391	0.01	0.0533	0.002	0.017	0.0534	0.0014	327	56	334.4	10	334.5	12	100
Plesovice - 8	161500000	658.4	59.57	11.05	0.1	9.5	9500.0	293600.00	99.81	1	0.391	0.01	0.0533	0.002	0.017	0.0534	0.0014	327	56	334.4	10	334.5	12	100
Plesovice - 9	162500000	791.8	77.53	10.21	1.4	9.2	657.1	25464.29	99.91	1	0.386	0.01	0.0534	0.002	0.125	0.0525	0.0011	295	46	330.7	9.4	335.2	12	101
Plesovice - 9	162500000	791.8	77.53	10.21	1.4	9.2	657.1	25464.29	99.91	1	0.386	0.01	0.0534	0.002	0.125	0.0525	0.0011	295	46	330.7	9.4	335.2	12	101
Plesovice - 10	160700000	1185.1	159.2	7.444	11.4	9.3	81.6	4631.58	99.81	1	0.391	0.01	0.0533	0.002	0.138	0.0533	0.0009	333	38	334.5	8.8	334.6	12	100
Plesovice - 10	160700000	1185.1	159.2	7.444	11.4	9.3	81.6	4631.58	99.81	1	0.391	0.01	0.0533	0.002	0.138	0.0533	0.0009	333	38	334.5	8.8	334.6	12	100
Plesovice - 11	158600000	618.1	53.99	11.45	3.2	8.6	268.8	8459.38	99.81	1	0.391	0.01	0.0531	0.002	0.149	0.0535	0.0013	333	54	334.8	10	333.8	12	99.7
Plesovice - 11	158600000	618.1	53.99	11.45	3.2	8.6	268.8	8459.38	99.81	1	0.391	0.01	0.0531	0.002	0.149	0.0535	0.0013	333	54	334.8	10	333.8	12	99.7
Plesovice - 12	159500000	747.9	71.37	10.48	0.6	9.9	1650.0	55316.67	99.73	1	0.39	0.01	0.0523	0.0019	0.194	0.0535	0.0011	337	47	333.6	9.5	328.6	12	98.5
Plesovice - 12	173300000	748.6	71.46	10.48	-3	12	-400.0	-11450.00	99.73	1	0.389	0.02	0.0524	0.002	0.179	0.0535	0.0014	334	59	333.5	11	329.5	12	98.8
Plesovice - 13	153800000	473.6	38.91	12.17	15.6	9.9	63.5	1328.21	99.93	1	0.392	0.02	0.054	0.002	0.108	0.0528	0.0015	301	62	335.3	11	339.2	12	101
Plesovice - 13	155500000	473.6	38.93	12.17	15.8	9.5	60.1	1312.66	99.93	1	0.392	0.02	0.054	0.002	0.126	0.0528	0.0015	303	61	335.2	11	338.9	12	101
Plesovice - 14	166500000	412.2	37.35	11.04	7	13	185.7	2681.43	99.71	1	0.395	0.02	0.0527	0.002	0.154	0.0543	0.0022	364	87	337	13	331.2	12	98.3
Plesovice - 14	157600000	412.2	37.29	11.05	8.7	9.1	104.6	2086.21	99.57	1	0.403	0.02	0.0527	0.002	0.093	0.0554	0.0017	404	66	342.9	11	330.9	12	96.5
Plesovice - 15	156100000	610.3	54.76	11.14	17.1	8.4	49.1	1560.23	99.82	1	0.388	0.01	0.053	0.002	0.247	0.0532	0.0012	321	49	332.3	9.8	333.1	12	100
Plesovice - 15	156100000	610.3	54.76	11.14	17.1	8.4	49.1	1560.23	99.82	1	0.388	0.01	0.053	0.002	0.247	0.0532	0.0012	321	49	332.3	9.8	333.1	12	100
Plesovice - 16	155600000	612.7	55.4	11.06	6.4	9.2	143.8	4201.56	99.71	1	0.395	0.02	0.0529	0.002	0.261	0.054	0.0014	352	55	337.6	11	332.4	12	98.5
Plesovice - 16	155600000	612.7	55.4	11.06	6.4	9.2	143.8	4201.56	99.71	1	0.395	0.02	0.0529	0.002	0.261	0.054	0.0014	352	55	337.6	11	332.4	12	98.5
Plesovice - 17	156500000	972.6	105.7	9.202	7.2	8.9	123.6	6025.00	99.75	1	0.393	0.01	0.0532	0.002	0.174	0.0533	0.001	329	44	336.3	9.3	333.9	12	99.3
Plesovice - 17	156500000	972.6	105.7	9.202	7.2	8.9	123.6	6025.00	99.75	1	0.393	0.01	0.0532	0.002	0.174	0.0533	0.001	329	44	336.3	9.3	333.9	12	99.3
Plesovice - 18	152800000	518.7	43.51	11.92	7.9	8.2	103.8	2849.37	99.85	1	0.395	0.02	0.0548	0.0021	0.221	0.0531	0.0014	317	59	337.2	11	344.1	13	102
Plesovice - 18	163200000	518.7	43.51	11.92	9	10	111.1	2608.89	99.81	1	0.397	0.02	0.0546	0.0021	0.27	0.0537	0.0017	342	69	338.6	12	342.5	13	101
Plesovice - 19	158000000	412.1	33.25	12.39	8	10	125.0	2281.25	#####	1	0.379	0.02	0.0538	0.002	0.114	0.0513	0.0016	242	66	325.9	11	337.5	12	104
Plesovice - 19	153100000	412.1	33.25	12.39	9	9.1	101.1	1988.89	#####	1	0.381	0.02	0.0537	0.002	0.094	0.0515	0.0015	250	62	326.8	11	337.2	12	103
Plesovice - 20	153300000	676	62.46	10.82	0.1	7.7	7700.0	288900.00	99.90	1	0.38	0.01	0.0524	0.002	0.004	0.0525	0.0012	292	52	326.7	9.6	329.1	12	101
Plesovice - 20	155800000	676.3	62.48	10.82	0.9	8.3	922.2	32466.67	99.89	1	0.378	0.01	0.0521	0.0019	0.081	0.0524	0.0014	291	57	325	10	327.5	12	101

Table A4. Continued.

Sample	Measured concentrations: ^{90}Zr (cps)	U (ppm)	Th (ppm)	Th/U	^{204}Pb (cps)	±2σ	% error	$^{206}Pb/^{204}Pb$[2]	%Pb[3]	C[4]	Isotopic ratios: $^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	ρ	$^{207}Pb/^{206}Pb$	±2σ	Calculated ages (Ma): $^{207}Pb/^{206}Pb$	±2σ	$^{207}Pb/^{235}U$	±2σ	$^{206}Pb/^{238}U$	±2σ	% con
FC-1 - 2	178400000	4.483	2.003	2.24	0	10	-4800.0	32790	99.59	1	1.965	0.054	0.186	0.003	0.010	0.0771	0.0017	1118	45	1102	18	1100	16	97.9
FC-1 - 3	171900000	7.397	3.232	2.29	0	10	n.d.	53200	99.75	1	1.948	0.050	0.186	0.003	0.329	0.0759	0.0012	1084	32	1096	17	1100	15	97.9
FC-1 - 4	167500000	8.475	4.63	1.83	-5	9	-193.6	60100	99.74	1	1.977	0.047	0.186	0.003	0.325	0.0767	0.0010	1108	27	1107	16	1101	15	99.9
FC-1 - 5	176400000	7.253	4.377	1.66	0	12	n.d.	52590	99.86	1	1.920	0.047	0.185	0.003	0.434	0.0757	0.0011	1082	29	1087	16	1091	16	99.1
FC-1 - 6	177500000	3.386	1.572	2.15	-7	11	-157.1	24700	99.69	1	1.920	0.060	0.187	0.004	0.174	0.0753	0.0020	1061	54	1086	21	1102	19	95.8
FC-1 - 7	165300000	6.101	3.499	1.74	6	11	183.3	7118	99.75	1	1.948	0.048	0.186	0.003	0.251	0.0754	0.0011	1076	32	1096	17	1099	16	96.7
FC-1 - 8	179600000	10.06	6.01	1.67	15	15	100.0	4926	99.83	1	1.971	0.048	0.188	0.003	0.300	0.0766	0.0013	1109	33	1105	17	1109	17	99.5
FC-1 - 10	159800000	4.329	1.805	2.40	-5	10	-200.0	28890	99.60	1	1.948	0.055	0.185	0.003	0.249	0.0762	0.0016	1089	42	1095	19	1093	16	98.7
FC-1 - 12	162500000	2.998	1.302	2.30	5	10	200.0	4014	99.57	1	1.931	0.059	0.183	0.003	0.227	0.0765	0.0017	1093	46	1089	20	1085	17	99.8
FC-1 - 13	154700000	8.257	5.192	1.59	3	10	396.0	21836	99.71	1	1.973	0.050	0.188	0.003	0.119	0.0763	0.0013	1094	34	1105	17	1109	16	98.2
FC-1 - 14	149400000	5.299	3.247	1.63	3	10	293.9	10273	99.63	1	1.954	0.055	0.187	0.003	0.095	0.0761	0.0017	1083	45	1097	19	1103	17	97.5
FC-1 - 15	150200000	3.489	1.752	1.99	4	12	300.0	5648	99.55	1	1.982	0.070	0.185	0.004	0.138	0.0772	0.0023	1116	60	1106	24	1096	19	99.0
FC-1 - 16	146400000	11.28	7.37	1.53	-2	9	-430.0	70100	99.83	1	1.932	0.045	0.185	0.003	0.452	0.0757	0.0010	1083	26	1093	15	1095	16	98.6
FC-1 - 17	147300000	6.98	3.56	1.96	2	10	500.0	22500	99.73	1	1.965	0.048	0.187	0.003	0.382	0.0767	0.0012	1107	31	1104	17	1105	17	99.5
FC-1 - 18	132700000	6.06	2.841	2.13	8	13	162.5	4529	99.64	1	1.946	0.066	0.184	0.003	0.139	0.0756	0.0022	1075	56	1095	22	1090	18	96.6
FC-1 - 19	149000000	2.762	1.022	2.70	2	10	633.3	11847	99.40	1	1.953	0.065	0.184	0.003	0.129	0.0770	0.0022	1099	57	1096	22	1089	18	99.9
FC-1 - 20	146000000	5.356	3.211	1.67	-2	11	-550.0	34300	99.71	1	1.970	0.052	0.188	0.003	0.390	0.0763	0.0014	1093	36	1105	19	1108	16	98.2
FC-1 - 21	148700000	2.796	1.108	2.52	-3	10	-306.3	17890	99.59	1	1.927	0.061	0.185	0.003	0.239	0.0754	0.0020	1067	50	1087	21	1094	18	96.4
Plesovice - 1	167900000	23.35	1.955	11.94	7	13	185.7	6687	99.81	1	0.399	0.011	0.054	0.001	0.523	0.0536	0.0010	342	41	340	8	340	5	99.9
Plesovice - 2	157500000	31.53	3.043	10.36	19	11	57.9	3175	99.28	1	0.434	0.011	0.054	0.001	0.187	0.0583	0.0013	527	48	366	8	338	5	92.5
Plesovice - 3	159400000	17.738	1.775	9.99	2	11	550.0	17270	99.96	1	0.389	0.013	0.054	0.001	0.157	0.0521	0.0015	272	63	333	10	339	5	101.9
Plesovice - 4	157200000	21.165	1.776	11.92	5	10	190.4	7856	99.95	1	0.387	0.011	0.054	0.001	0.113	0.0520	0.0012	273	49	333	8	338	5	101.7
Plesovice - 5	156400000	18.53	1.499	12.36	1	11	1100.0	35120	99.88	1	0.396	0.012	0.054	0.001	0.205	0.0530	0.0013	314	54	338	9	339	5	100.1
Plesovice - 6	152500000	40.55	4.885	8.30	15	12	80.0	4975	99.27	1	0.437	0.012	0.054	0.001	0.692	0.0586	0.0008	547	29	367	8	338	5	91.9
Plesovice - 7	152300000	16.72	1.574	10.62	-4	10	-264.9	30780	99.79	1	0.397	0.013	0.054	0.001	0.378	0.0535	0.0013	337	51	339	9	337	5	99.6
Plesovice - 8	150400000	17.78	1.736	10.24	4	12	300.0	8128	99.71	1	0.404	0.013	0.054	0.001	0.360	0.0545	0.0013	376	53	344	9	337	5	98.1
Plesovice - 9	148900000	27.41	2.476	11.07	-4	9	-230.0	50200	99.84	1	0.393	0.011	0.054	0.001	0.381	0.0528	0.0010	319	44	337	8	338	5	100.3
Plesovice - 10	142700000	19.28	2.133	9.04	6	9	143.8	5352	99.79	1	0.397	0.011	0.054	0.001	0.329	0.0536	0.0011	340	45	339	8	338	6	99.9
Plesovice - 11	139100000	21.34	1.858	11.49	-5	11	-220.0	36520	99.75	1	0.396	0.012	0.053	0.001	0.303	0.0539	0.0012	355	49	338	9	335	5	98.9
Plesovice - 12	140600000	15.95	1.321	12.07	-2	10	-500.0	27530	99.75	1	0.393	0.012	0.053	0.001	0.290	0.0537	0.0013	339	55	336	9	333	5	99.2
Plesovice - 13	150900000	12.491	1.012	12.34	-1	12	-1200.0	23180	99.92	1	0.389	0.014	0.054	0.001	0.473	0.0525	0.0015	296	61	335	11	341	6	101.8
Plesovice - 14	140600000	16.91	1.636	10.34	10	10	100.0	2953	99.86	1	0.398	0.013	0.054	0.001	0.388	0.0533	0.0013	328	52	339	9	339	5	99.8
Plesovice - 15	139400000	9.581	0.776	12.35	4	9	244.4	4544	99.67	1	0.400	0.015	0.053	0.001	0.269	0.0543	0.0017	356	68	341	11	335	6	98.2

[1] after Hg correction
[2] in counts per second
[3] radiogenic
[4] Correction factor: 1 = threshold ^{204}Pb cps for no correction (80 cps); 2 = threshold % for ^{204}Pb-based correction (21 %error); 3 = threshold % for ^{208}Pb-basedcorrection (98.5 % radiogenic Pb)