U–Pb geochronology and *P*–*T* constraints on moraine samples from the Windmill Islands, east Antarctica: Implications for the Proterozoic evolution of east Antarctica and Australia

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U–PB GEOCHRONOLOGY AND *P–T* CONSTRAINTS ON MORAINE SAMPLES FROM THE WINDMILL ISLANDS, EAST ANTARCTICA: IMPLICATIONS FOR THE PROTEROZOIC EVOLUTION OF EAST ANTARCTICA AND AUSTRALIA

RUNNING TITLE: CONSTRAINTS ON MORAINE SAMPLES FROM EAST ANTARCTICA

ABSTRACT

The interior of Wilkes Land in east Antarctica remains one of the least understood geological regions on earth, as it is completely covered by the East Antarctic Ice Sheet (EAIS). An under-utilised avenue to access the geology under the EAIS is to study glacial moraine samples. With the integration of recent geophysical data and high-resolution ice sheet drainage maps, the source region of glacial moraine samples from the Windmill Islands extends up to 200 km inland of the Windmill Islands. Similarities in magmatic and metamorphic U–Pb ages at c. 1360–1300 Ma and 1260–1125 Ma between the Windmill Islands and the moraine samples suggest a continuation of the Mesoproterozoic metamorphic terrane inland of the Windmill Islands. Calculated phase equilibria modelling constrain peak metamorphic conditions to ~800°C and 5 kbar for the c. 1260–1125 Ma event. Peak metamorphic assemblages are associated with high to ultrahigh thermal gradients and coeval magmatism. This combination implies that the glacial moraine samples are sourced from a terrane that records metamorphism in thin crust, suggesting a possible extensional setting for metamorphism. Similarities between geochronological data and peak metamorphic conditions confirm links between the Windmill Islands and the formerly contiguous Mesoproterozoic Albany–Fraser orogenic belt. However, in contrast to the Albany–Fraser Orogen, the presence of c. 1450–1400 and c. 1900 Ma detrital zircon ages suggests new links between the interior of Wilkes Land and southern Australian geology such as the Madura and Musgrave Provinces.

KEYWORDS

U–Pb geochronology, phase equilibria modelling, moraine sampling, subglacial geology, Proterozoic east Antarctica, Proterozoic southern Australia

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INTRODUCTION

Despite the importance of the east Antarctic region in constraining models of continental assembly, its remoteness and extreme paucity of rock exposure has meant that the contribution of Antarctic geology to such models is limited. In particular, the Antarctic ice sheet is a major hindrance to accessing the effectually unknown geology under it. As a consequence, there have been no studies that have addressed the integrated age and metamorphic conditions of rocks under the ice. Such basic data is of fundamental importance to understanding the tectonic evolution of the East Antarctic Craton, which records the assembly and breakup of supercontinents such as Rodinia (e.g. Fitzsimmons, 2000; Boger, 2011; Aitken et al., 2015). In addition, as Australia and Antarctica contain geology that was contiguous prior to c. 65 Ma (e.g. Nelson et al., 1995; Post et al., 1997; Clark et al., 1999; Post, 2000; Fitzsimmons, 2003; Boger, 2011; Spaggiari et al., 2011; Zhang et al., 2012; Kirkland et al., 2013; Occhipinti et al., 2014), greater knowledge of the geology under the Australian sector of the east Antarctic ice sheet could enable a better understanding of the geology of southern Australia, much of which is covered by recent sediment.

A recent geophysical study by Aitken et al. (2014) proposes that the ice-covered geology of the Australian sector of east Antarctica contains a mix of known geology (from coastal outcrops) that is contiguous with southern Australian geology, as well as unknown geological provinces of considerable size (extending over 1000 km; Fig. 1b). An under-utilised avenue for accessing the geology under the Antarctic ice sheet is to study glacial moraine samples. As glacial moraine samples provide a window to the buried geology they serve as ‘virtual drillholes’ through the ice. Whereas the absolute location of moraine samples cannot be known, their source can be reasonably constrained on the basis of high-resolution ice sheet drainage maps (Fig. 1c) and in the context of the recent geophysical data/interpretations (Fig. 1a-b; Aitken et al., 2014).

This project uses samples from glacial moraines sampled by major ice streams that terminate at the Windmill Islands in Wilkes Land, east Antarctica (Fig. 2) to obtain U–Pb geochronological and metamorphic *P–T* data for a range of sub-ice bed rock samples. These data are used to: (a) place the first constraints on the geological character and *P–T–t* evolution of the interior of Wilkes Land in light of the Aitken et al. (2014) study; and (b) discuss how this new data contributes to greater understanding of the geology of southern Australia, in particular the Albany–Fraser Orogen and Madura Province.

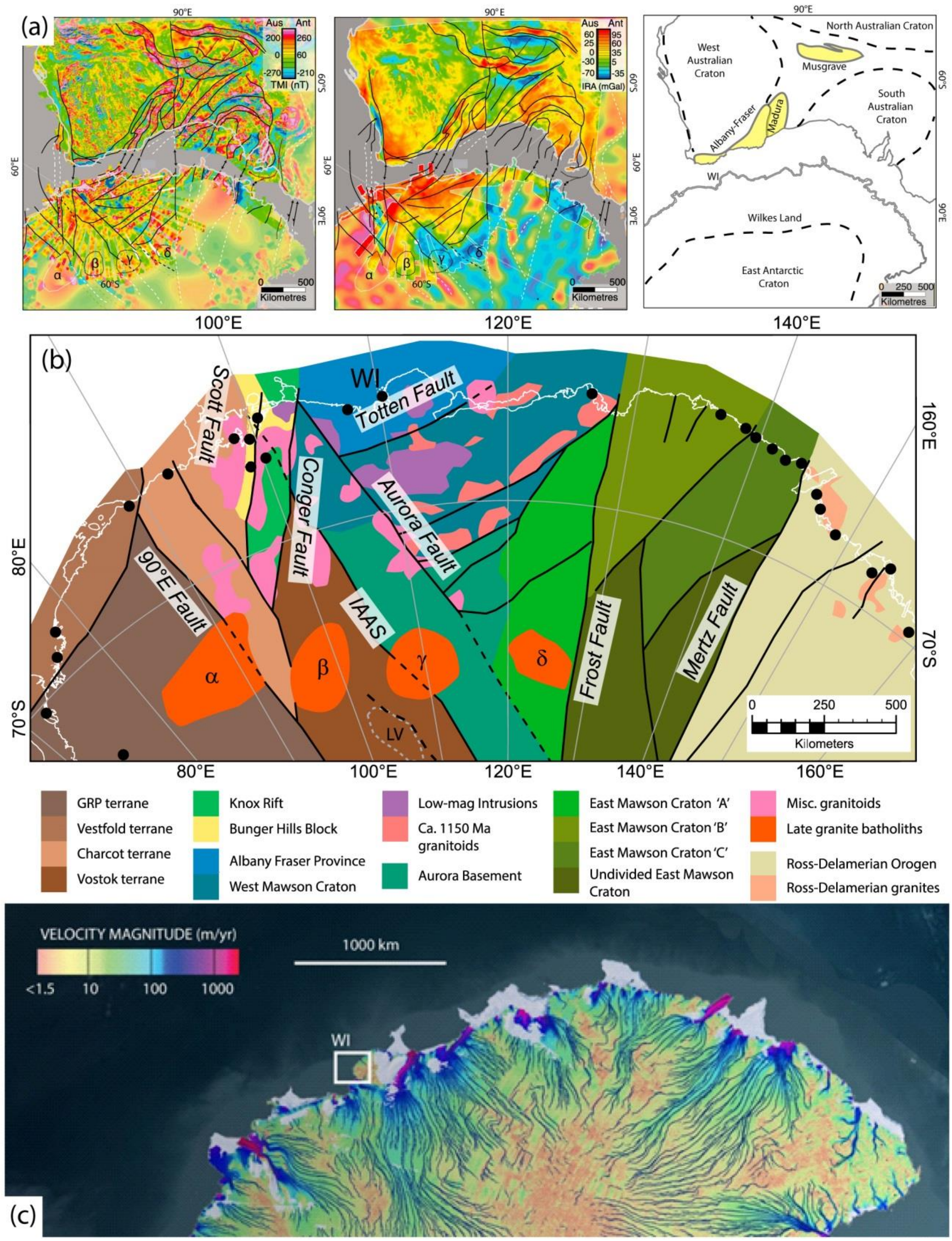


Figure 1. Total magnetic and gravity anomalies for Australia and east Antarctica and their geological interpretations. (a) Total magnetic intensity anomalies (left), isostatic residual gravity anomalies (centre) and Proterozoic cratons and provinces of interest in Australia and east Antarctica (right). The colour stretch is centred on the mean value for each continent but has the same dynamic range. Bold black lines indicate faults. Double headed arrows indicate pierce points where intercontinent correlations can be made. (b) Tectonic interpretation of basement geology, showing the major tectonic regions, and overprinting magmatic suites. Black dots indicate outcrop locations. The α, β, γ,and δ indicate the late granitoid batholiths. (c) Speed and direction of ice flow in east Antarctica. Image modified from Aitken et al. (2014) and Rignot et al. (2011).

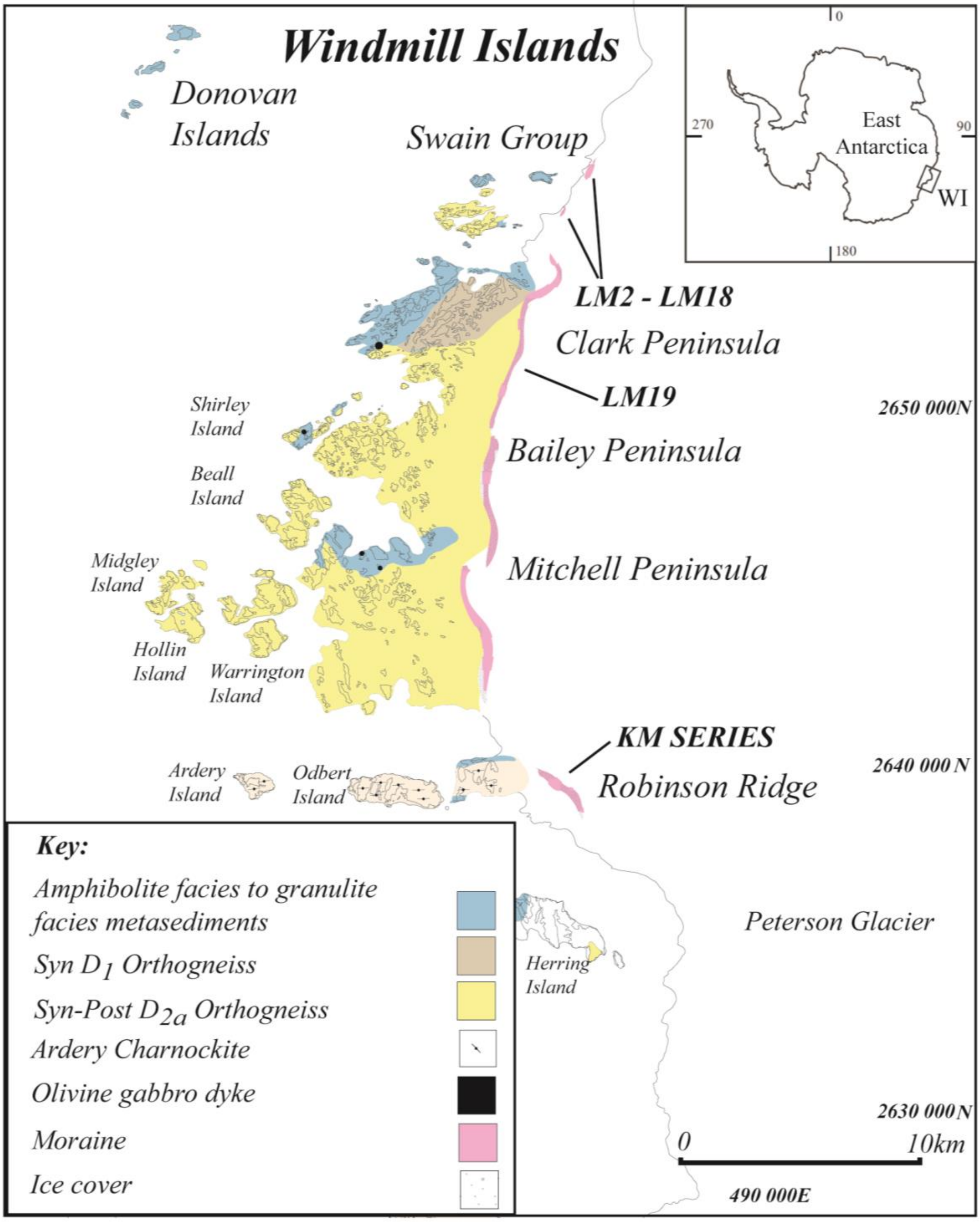


Figure 2. Location and geological map of the Windmill Islands, east Antarctica. Collection locations of samples discussed in this study are shown. WI = Windmill Islands. Modified from Post (2000).

GEOLOGICAL SETTING

The Windmill Islands and adjacent mainland peninsulas cover a c. 400 km2 area consisting of metasedimentary and metaigneous gneisses intruded by an extensive charnockite suite, minor porphyritic granites and late stage dolerite dykes (Paul et al., 1995; Post et al., 1997; Mikhalsky et al., 2006; Möller et al., 2006). From north to south the metamorphic grade changes from upper amphibolite to granulite facies, reflecting a younger M2/D2 granulite facies overprint on early and pervasive M1/D1 amphibolite facies assemblages (Blight & Oliver, 1977 & 1982; Paul et al., 1995; Post et al., 1997; Clark et al., 1999; Post, 2000; Fitzsimmons, 2003). In the northern area peak metamorphic conditions have been estimated at 3–5 kbars and ~750°C (Post, 2000), whereas conditions for the southern granulites have been estimated at 4–5 kbar and ~850°C (Post et al., 1997; Post, 2000). The timing of M1/D1 and M2/D2 have been constrained by U–Pb SHRIMP geochronology on zircon and monazite (e.g. Fitzsimmons, 2000; Post, 2000; see also Appendix A) at 1340–1300 Ma and 1240–1140 Ma, respectively.

Similarities between the lithological associations and geochronological data from the Windmill Islands and neighbouring regions in east Antarctica and in formerly contiguous Australia suggest the existence of a single, large Grenvillian-aged orogenic belt. This belt has been argued to extend from the Musgrave Province in central Australia, through the Albany–Fraser Orogen in SE Western Australia and into the Windmill Islands and the Bunger Hills in east Antarctica (Fitzsimmons, 2003; Möller et al., 2006; Spaggiari et al., 2009; Kirkland et al., 2013; Kirkland et al., 2015). Magmatic intrusions at c. 2600 Ma, 1700–1500 Ma, c.1300 Ma and 1200–1100 Ma, as well as granulite facies metamorphism between 1300 and 1200 Ma have been identified in both the east Antarctic and Albany–Fraser regions (e.g. Nelson et al., 1995; Fitzsimmons, 2000; Post, 2000; Fitzsimmons, 2003; see also Appendix A).

The Albany–Fraser Orogen (Fig. 1a) is considered to be a response to Mesoproterozoic continent–continent collision between the combined North and West Australian Cratons and the combined East Antarctic and South Australian Cratons (also known as the Mawson Craton; Kirkland et al., 2011). The Albany–Fraser region was consequently compressed and tectonically dismembered during two stages. Stage 1 (1345–1260 Ma) was dominated by mafic and granitic magmatism, known as the Recherche Supersuite and the Fraser Zone intrusions, respectively (Kirkland et al., 2011). Stage 2 (1215–1140 Ma) of the Albany–Fraser Orogeny reflects reactivation in an intracratonic setting, producing granulite facies metamorphism at conditions of 5–7 kbars and 800–850°C in the Biranup Zone (Bodorkos and Clark; 2004).

The eastern margin of the Albany–Fraser Orogen and the Madura Province lie under cover of the Cretaceous and Cenozoic Bight and Eucla Basins, and are interpreted from a small number of exploration drill holes and geophysical interpretations (Occhipinti et al., 2014; Spaggiari et al., 2014). Although poorly constrained, all data collected so far from the Madura Province indicate that its geological evolution was different to that of the Albany–Fraser Orogen, until at least 1330 Ma. The available data show that the province contains c. 1410 Ma gabbro bodies intruded by coeval granites, most likely in an oceanic arc setting (Spaggiari et al., 2012; Spaggiari et al., 2014; Kirkland et al., 2015). Abundant c. 1400 Ma detrital zircons in the Fraser Zone of the Albany–Fraser Orogen have no source within the Albany–Fraser Orogen, but are isotopically and geochronologically identical to zircons from the c. 1410 granites of the

Madura Province. This is suggested to have occurred as the Madura Province was thrust onto the edge of the Albany–Fraser Orogen at c. 1330 Ma (Spaggiari et al., 2014).

ANALYTICAL METHODS

Geochronology

U–PB ISOTOPIC DATING OF ZIRCON AND MONAZITE

Separated monazite grains were mounted in epoxy resin and imaged on a Phillips XL-30 Field Emission Scanning Electron Microscope (FESEM). Separated zircon grains were also mounted in epoxy resin and imaged on a FEI Quanta600 Scanning Electron Microscope with attached Gatan Cathodoluminescence (CL) detector at Adelaide Microscopy, University of Adelaide. A full description of geochronology techniques followed is included in Appendix I.

U–Pb isotopic analyses were obtained using a New Wave 213nm Nd–YAG laser in a He ablation atmosphere, coupled to an Agilent 7500cs/7500s ICP–MS at Adelaide Microscopy, University of Adelaide. Ablation of monazites was performed with a frequency of 5Hz and a spot size of 15 µm, with a total acquisition time of 80 s, including 30 s of background measurement, 10 s of the laser firing with the shutter closed to allow for beam stabilization, and 40 s of sample ablation. Isotopes measured were ^{204}Pb, ^{206}Pb, ^{207}Pb and ^{238}U for dwell times of 10, 15, 30 and 15 ms, respectively. Total zircon acquisition time was 60 s, including 20 s of background measurement, 10 s of closed shutter laser stabilization, and 30 s of sample ablation, using a spot size of 30 µm and frequency of 5 Hz. Isotopes measured were ^{204}Pb, ^{206}Pb, ^{207}Pb, ^{208}U, ^{232}Th and ^{238}U for dwell times 10, 15, 30, 10, 10, 15 ms respectively.

Data analysis and correction techniques for elemental fractionation and mass bias follow those of Howard et al. (2011) using the program ‘Glitter’, where a 1% uncertainty is assigned to the age of the primary monazite standard MADel (TIMS normalisation data: $^{207}Pb/^{206}Pb$ age = 491.7 Ma; $^{206}Pb/^{238}U$ age = 514.8 Ma; $^{207}Pb/^{235}U$ age = 510.4 Ma; Payne et al. (2008)), and primary zircon standard GJ (TIMS normalisation data: $^{207}Pb/^{206}Pb$=608.3 Ma, $^{206}Pb/^{238}U$=600.7 Ma and $^{207}Pb/^{235}U$=602.2 Ma; Payne et al. (2008)). Instrument drift was also corrected for with the application of a linear correction and by standard bracketing every 5 analyses for monazite and 12 analyses for zircon. Monazite and zircon standard analyses are provided in Appendix E and F, respectively. Weighted average ages of standard analyses obtained in this study are provided in Appendix I. Ages quoted throughout this study are $^{207}Pb/^{206}Pb$ ages as the data contains ages older than c. 1000 Ma and all errors stated are at the 1σ level. Concordancy was calculated using the ratio of ($^{206}Pb/^{238}U$) / ($^{207}Pb/^{206}Pb$).

Bulk rock and mineral chemistry

MINERAL CHEMISTRY

Bulk rock and mineral chemistry techniques follow those of Tucker et al. (2015). Chemical compositions of garnet, biotite, cordierite, plagioclase, K-feldspar, quartz, spinel, ilmenite, magnetite and sillimanite, as well as elemental x-ray maps of garnet and mantling minerals were obtained using a Cameca SXFive electron microprobe at Adelaide Microscopy, University of Adelaide. A beam current of 20 nA and accelerating voltage of 15 kV was used for all point analyses, and a PAP correction was applied to all data. Routine analyses were made for SiO_2, TiO_2, Cr_2O_3, Al_2O_3, FeO, MnO, MgO, CaO, Na_2O, K_2O, ZnO, Cl and F on Wavelength Dispersive Spectrometers

(WDS). Composition mapping of garnet-bearing regions of thin sections was undertaken using a beam current of 150 nA, accelerating voltage of 15 kV, a dwell time of 50 ms and a step size of 20 µm. Elements Mg, Ca, Mn, Na, Al and Fe were mapped with wavelength dispersive spectrometers (WDS) and Si, K, Ti, Cr, Zn, Zr, P and Ce were mapped with an energy dispersive spectrometer (EDS). Calibration was done on natural and synthetic mineral standards following the standard protocols at Adelaide Microscopy.

WHOLE ROCK GEOCHEMISTRY

Whole-rock geochemical analyses for samples KM-01, KM-05, KM-06, KM-07, LM-06, LM-13 and LM-19 was undertaken by Wavelength Dispersive X-ray Fluorescence (WD–XRF) spectrometry at the Department of Earth and Environment, Franklin and Marshall College, Lancaster PA, USA. Major elements were analysed on fused disks prepared using a lithium tetraborate flux. Ferric vs ferrous iron content was determined by wet chemistry methods.

Phase equilibria modelling

P–*T* pseudosections were calculated for three metapelitic samples (KM07, LM06 and LM19) using the phase equilibrium modelling program THERMOCALC (Powell & Holland, 1988; Holland & Powell, 2011) in the chemical system MnO–Na_2O–CaO–K_2O–FeO–MgO–Al_2O_3–SiO_2–H_2O–TiO_2–O, where ‘O’ is Fe_2O_3, using the latest internally-consistent thermodynamic dataset ‘ds6’ (filename tc-ds62.txt; Holland and Powell, 2011) and activity–composition models (Powell et al. 2014; White et al, 2014). Compositional isopleths were calculated to further constraint the *P*–*T* path. A full description of phase equilibria modelling techniques followed is included in Appendix J.

RESULTS

Samples chosen for analyses were collected from the Windmill Islands moraines (Fig.1, Table 1) on the basis of location, preserved mineral assemblages and comparisons to outcropping Windmill Islands bedrocks. Samples used in this study were collected during the Antarctic field season in January 2014 by University of Adelaide researchers.

Table 1. Sample collection locations and descriptions (UTM grid coordinates, zone 49D)

Sample	Rock Type	Location	Easting	Northing
KM06	gt-bi-cd gneiss	Robinson Ridge – Kross Moraine	483909	2638514
KM07	gt-cd pelite	Robinson Ridge – Kross Moraine	483909	2638514
KM10	felsic gneiss	Robinson Ridge – Kross Moraine	483909	2638514
LM06	gt-cd pelite	Swain Group – Loken Moraine	484460	2654517
LM08	bi-qz-ksp gneiss	Swain Group – Loken Moraine	484460	2654517
LM11	qz-ksp-bi-pl granite	Swain Group – Loken Moraine	484460	2654517
LM15	gt bearing psammitic gneiss	Swain Group – Loken Moraine	484460	2654517
LM19	gt-cd pelite	Clark Peninsula – Loken Moraine	484583	2652659

Geochronology

U–PB MONAZITE GEOCHRONOLOGY

Sample KM06

Thirty analyses were obtained from 30 individual monazite grains. Of the thirty analyses, one was rejected due to a high concentration of ^{204}Pb, and an additional four were excluded from age calculations (>5% concordance). The data records an age spread from 1235–1125Ma, with a weighted average age of 1174 ± 10 Ma (*n*=25, MSWD=1.6, Fig. 3a).

Sample KM07

Twenty analyses were obtained from 17 individual monazite grains, all of which are concordant. An age spread from 1280–1150 Ma can be seen, with a weighted average age value of 1209 ± 17 Ma (*n*=20, MSWD=1.9, Fig. 3b).

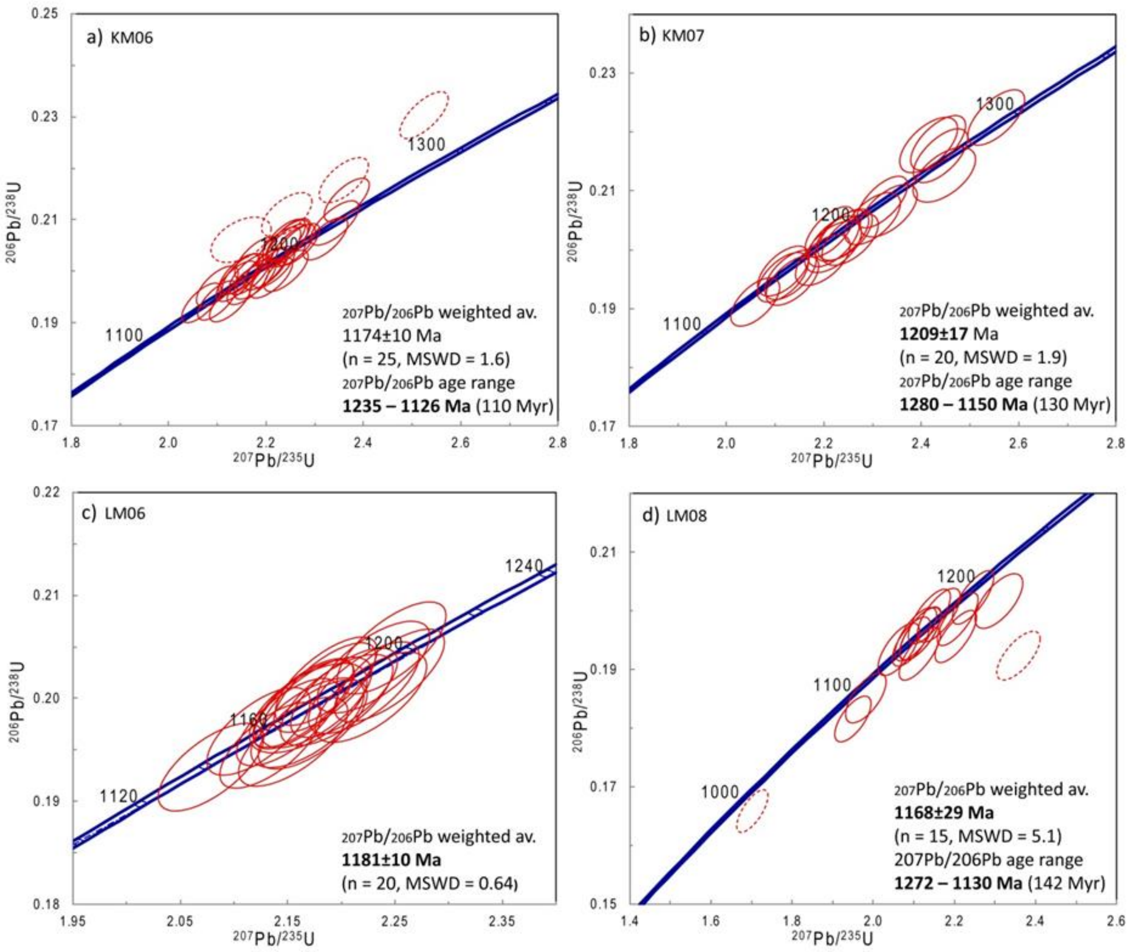


Figure 3. U–Pb LA–ICP–MS monazite geochronology for samples KM06, KM07, LM06 and LM08. Concordant (90–105%) monazite analyses are shown with solid red outlines, excluded analyses (>10% disc., >5% conc.) are represented with dashed red outlines. Data-point error ellipses are 1 sigma and 68.3% confidence. (a) Sample KM06: age spread 1235–1126 Ma, with a weighted average age of 1174 ± 10 (*n*=25). (b) Sample KM07: age spread 1280–1150 Ma, with a weighted average age of 1209 ± 17 Ma (*n*=20). (c) Sample LM06: a single population with a weighted average age of 1181 ± 10 Ma (*n*=20). (d) Sample LM08: age spread 1272–1130 Ma, with a weighted average age of 1168 ± 29 Ma (*n*=15).

Sample LM06

Twenty analyses were obtained from 20 individual monazite grains, all of which fall within 90–105% concordance. A single population is present with a weighted average age of 1181 ± 10 Ma (*n*=20, MSWD=0.64, Fig. 3c).

Sample LM08

Twenty analyses were obtained from 20 individual monazite grains. Of the twenty analyses, one was excluded (>10% discordance), and three were rejected due to high concentrations of ^{204}Pb. One additional outlying analysis was excluded (1053 ± 22 Ma). The age data shows a spread from 1272–1130 Ma, with a weighted average age of 1169 ± 29 Ma (*n*=15, MSWD=5.1, Fig. 3d).

Sample LM11

Thirty analyses were obtained from 25 individual monazite grains. Of the thirty analyses, one was rejected due to high levels of ^{204}Pb, and an additional two non-concordant analyses were excluded from population calculations. A single population is present with a weighted average age of 1195.7 ± 7.9 Ma (*n*=27, MSWD=0.93, Fig. 4a)

Sample LM15

Twenty-five analyses were obtained from 13 individual monazite grains. Of the twenty-five analyses, four were excluded (>10% discordance), and an additional six were rejected due to high levels of ^{204}Pb. The data shows an age spread from 1230–1162 Ma, with a weighted average age of 1203 ± 15 Ma (*n*=15, MSWD=1.4, Fig. 4b).

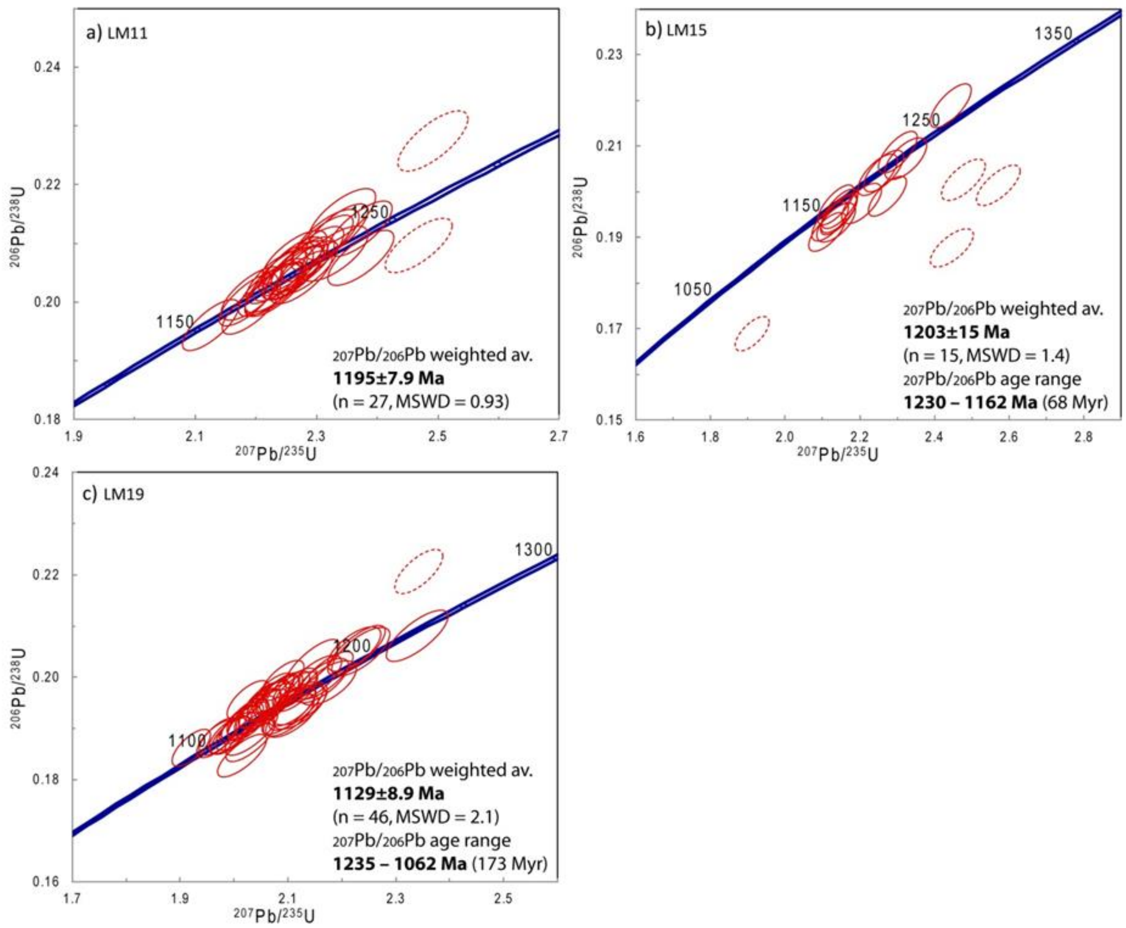


Figure 4. U–Pb LA–ICP–MS monazite geochronology for samples LM11, LM15 and LM19. Concordant (90–105%) monazite analyses are shown with solid red outlines, excluded analyses (>10% disc., >5% conc.) are represented with dashed red outlines. Data-point error ellipses are 1 sigma and 68.3% confidence. (a) Sample LM11: a single population with weighted average age of 1195.7 ± 7.9 Ma. (b) Sample LM15: age spread 1230–1162 Ma, with a weighted average age of 1203 ± 15 Ma. (c) Sample LM19: age spread 1235–1062 Ma, with a weighted average age of 1129.2 ± 8.9 Ma.

Sample LM19

Fifty analyses were obtained from 37 individual monazite grains. Of the fifty analyses, three non-concordant analyses were excluded. One additional outlying analysis was also excluded from age calculations (2351.9 ± 17 Ma). The age data shows a spread from 1235–1062 Ma, with a weighted average age of 1129 ± 8.9 Ma (*n*=46, MSWD=2.1, Figure 4c).

U–PB ZIRCON GEOCHRONOLOGY

Sample KM06 (Figure 5a)

Seventy-five analyses were obtained from 49 individual zircon grains. Of the seventy-five analyses, nine were excluded from age calculations (>10% discordance). The main population for sample KM06 was collected from dark zircon rims and overgrowths, and yields a weighted average age of 1204.5 ± 9.6 Ma (*n*=44, MSWD=1.03). A smaller (*n*=12) population collected from similar zircon rims/growths has a weighted average age of 1307 ± 17 (MSWD=0.98). An additional smaller (*n*=3) 'population' with a weighted average age of 1817 ± 47 Ma (MSWD=0.75) was collected from bright cores showing oscillatory zoning. A range of additional ages collected from bright cores showing oscillatory zoning are seen between c. 1550 and c. 1870 Ma.

Sample KM07 (Figure 5b)

Eighty-three analyses were obtained from 62 individual zircon grains. Of the eighty-three analyses, six were excluded from age calculations (>10% discordance). Three distinct populations can be identified from the data; the youngest of the age peaks has a weighted average age of 1264 ± 11 Ma (*n*=18, MSWD=0.96) and is yielded from zircon rims/overgrowths. Five older, outlying rim analyses range between c. 1340 and c. 1430 Ma (97–100% conc.). Analyses collected from zircon cores, typically luminescent and showing oscillatory zoning, yield ages between c. 1470 Ma and c. 2770 Ma. Within this age range two populations can be seen, the youngest and smallest (*n*=14) has a weighted average age of 1648 ± 13 Ma (MSWD=1.06). The most populated (*n*=20) age peak has a weighted average age of 1752 ± 10 Ma (MSWD=1.00).

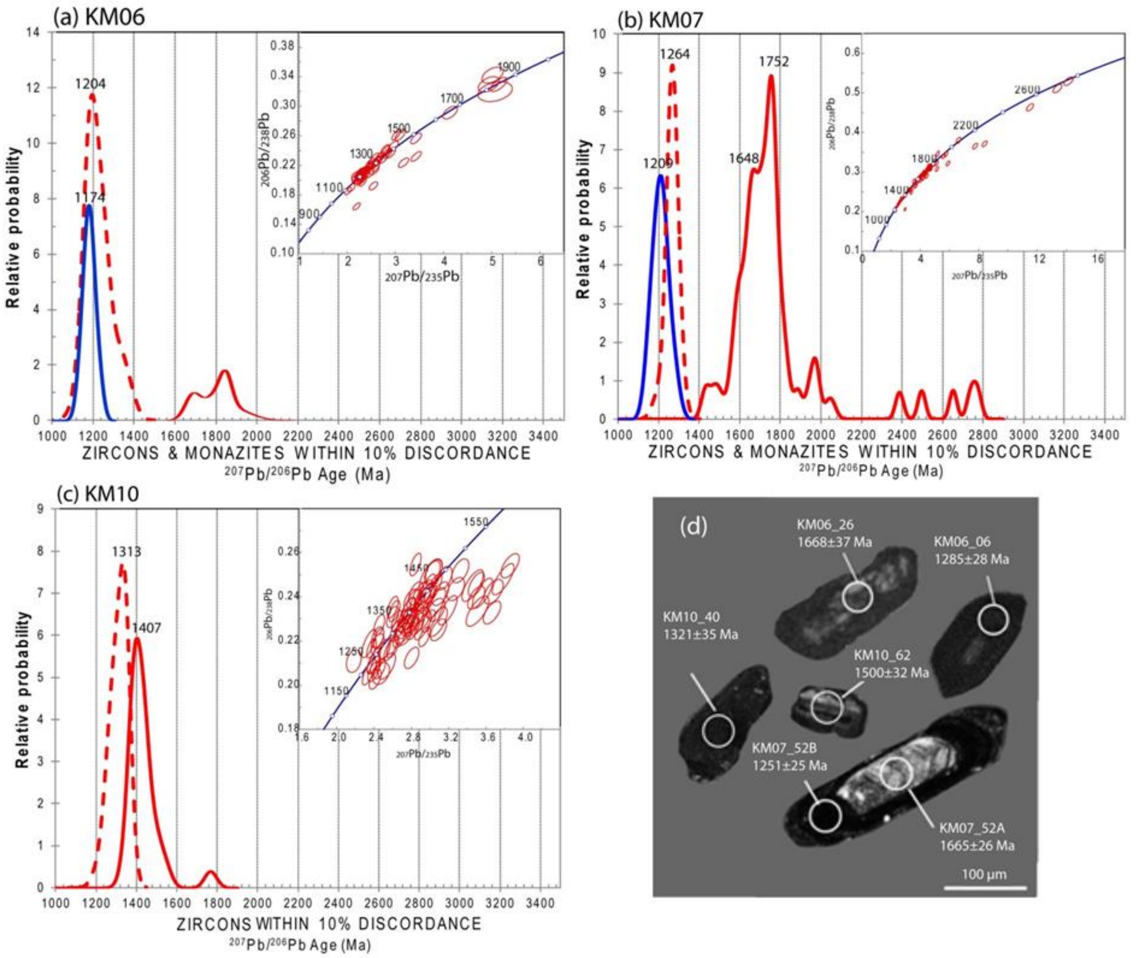


Figure 5. U–Pb LA–ICP–MS Zircon Geochronology for samples KM06, KM07 and KM10. Probability density plots, Concordia plots, and representative cathodoluminescence (CL) images for samples KM06, KM07 & KM10. Probability density plots show concordant (90–105%) age analyses of zircon rims/overgrowths (dashed red line), zircon cores (solid red line), and U–Pb geochronology data for monazites as a comparison (blue line). Data-point error ellipses are 1 sigma and 68.3% confidence. (a) Sample KM06: a dominant population (*n*=44) with a weighted average age of 1204.5 ± 9.6 Ma collected from dark rims/overgrowths, represented by the CL image of KM06_06. A small (*n*=3) age peak was collected from grain cores (such as KM06_26) and yielded a weighted average age of 1817 ± 47 Ma. Monazites from this sample have a weighted average age of 1174 ± 10 Ma (*n*=25). (b) Sample KM07: analyses collected from zircon rims/overgrowths (such as KM07_52B) yielded a weighted average age of 1264 ± 11 Ma (*n*=18). Two populations collected from zircon cores (such as KM07_52A) produced weighted average ages of 1648 ± 13 Ma (*n*=14), and 1752 ± 10 Ma (*n*=20). Monazites from this sample have a weighted average age of 1209 ± 17 Ma (*n*=20). (c) Sample KM10: a population (*n*=15) collected from zircon rims/overgrowths (such as KM10_40) yielded a weighted average age of 1313 ± 14 Ma. Analyses collected from zircon cores (such as KM10_62) produced a weighted average age of 1407 ± 12 (*n*=22). No monazites were analysed for this sample. (d) Representative CL images.

Sample KM10 (Figure 5c)

Eighty analyses were obtained from 62 individual grains. Of the eighty analyses, 25 non-concordant analyses were excluded, and an additional 8 analyses were rejected due to high levels of ^{204}Pb. A spread of ages between c. 1220 Ma and c. 1360 Ma were collected from dark zircon rims and overgrowths. Within this spread one distinct population can be seen, with a weighted average age of 1313 ± 14 Ma (*n*=15, MSWD=0.99). Analyses collected from typically brighter zircon cores show an age spread between c. 1370 and c. 1760 Ma. Within this spread the dominant age peak has a weighted average age of 1407 ± 12 Ma (*n*=22, MSWD=1.01).

Sample LM06 (Figure 6a)

Eighty-two analyses were obtained from 81 individual zircon grains. Of the eighty-two analyses, 13 non-concordant analyses were excluded from age calculations, and an additional 3 analyses were rejected due to high levels of ^{204}Pb. Analyses collected from dark zircon rims and overgrowths show an age spread between c. 1070 and c. 1340 Ma. A single age peak within this spread has a weighted average age of 1184 ± 19 Ma (*n*=9, MSWD=0.84). Analyses collected from typically bright, zoned cores show a wide age spread between c. 1360 and c. 2860 Ma. A single age peak within this spread of analyses has a weighted average age of 1729 ± 12 Ma (*n*=27, MSWD=1.02).

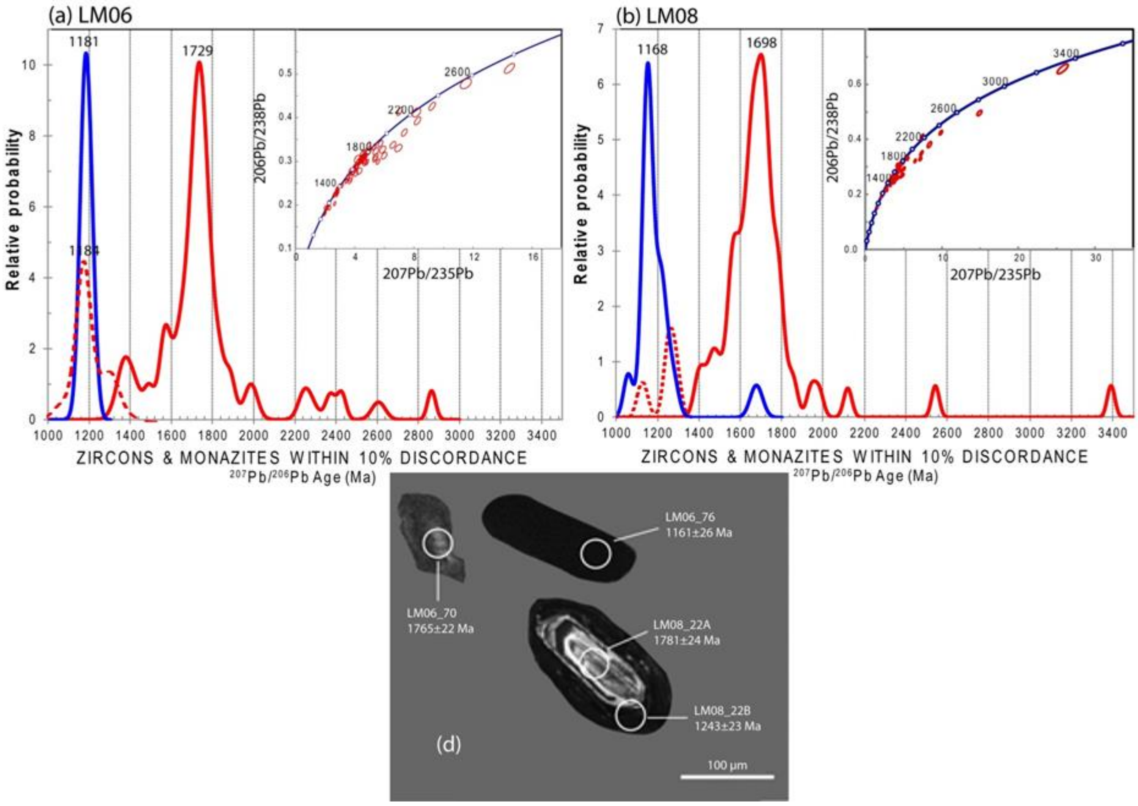


Figure 6. U–Pb LA–ICP–MS Zircon Geochronology for samples LM06 and LM08. Probability density plots, Concordia plots, and representative cathodoluminescence (CL) images for samples LM06 & LM08. Probability density plots show concordant (90–105%) age analyses of zircon rims/overgrowths (dashed red line), zircon cores (solid red line), and U–Pb geochronology data for monazites as a comparison (blue line). Data-point error ellipses are 1 sigma and 68.3% confidence. (a) Sample LM06: a younger population collected from zircon rims/overgrowths (such as LM06_76 from CL images) yielded a weighted average age of 1184 ± 19 Ma (*n*=9). Analyses from brighter zircon cores (such as LM06_70) produced a dominant (*n*=27) population with a weighted average age of 1729 ± 12 Ma. Monazites from this sample have a weighted average age of 1181 ± 10 Ma (*n*=20). (b) Sample LM08: a small (*n*=3) age peak collected from zircon rims/overgrowths (such as LM08_22B) produced a weighted average age of 1264 ± 27 Ma. A dominant population (*n*=21) collected from zircon cores (such as LM08_22A) has a weighted average age of 1698 ± 10 Ma. Monazites from this samples have a weighted average age of 1169 ± 29 Ma (*n*=15). (d) Representative CL images.

Sample LM08 (Figure 6b)

Ninety-four analyses were obtained from 89 individual zircon grains. Of the ninety-four analayses, 31 non concordant analyses were excluded, and an additional 3 analyses were rejected due to high levels of ^{204}Pb. Analyses collected from dark zircon rims and overgrowths show a small ‘population’ (*n*=3) with a weighted average age of 1264 ± 27 Ma (MSWD=0.91). Two additional outlying analyses were also collected from dark zircon overgrowths (1124 ± 25 and 1393 ± 23 Ma). Analyses collected from zircon cores, typically displaying ocsillatory zoning, show a wide age spread between c. 1420 and c. 2500 Ma. A single age peak within this spread of analyses has a weighted average age of 1698 ± 10 Ma (*n*=21, MSWD=1.04).

Sample LM11 (Figure 7a)

Eighty analayses were obtained from 65 individual zircon grains. Of the eighty analyses, 35 analyses were rejected due to high levels of ^{204}Pb. Two populations can be seen from analyses produced by dark zircons which display no zoning. The youngest population has a weighted average age of 1261 ± 12 Ma (*n*=20, MSWD=0.98). The second population has a weighted average age of 1328 ± 12 Ma (*n*=23, MSWD=0.70). Two additional outlying analyses were collected from cores of similar looking zircons with ages c. 1496 and c. 1535 Ma (95% conc.).

Sample LM15 (Figure 7b)

Eighty-three analyses were obtained from 70 individual zircon grains. Of the eighty-three analyses, 23 analyses were excluded (>10% discordance), and an additional 7 analyses were rejected due to high levels of ^{204}Pb. Two populations can be seen from dark zircon rims and overgrowths. The youngest and smallest (*n*=7) 'population' has a weighted average age of 1209 ± 25 (MSWD=0.46). The second age peak is slightly more populated (*n*=10) and has a weighted average age of 1365 ± 18 Ma (MSWD=1.02). An additional analysis from a zircon with similar appearance lies between the two populations at c. 1295 Ma (94% conc.). Analyses from zircons with brighter cores show a wide age spread between c. 1450 and c. 3200 Ma. Within this spread is a single population with a weighted average age of 1731 ± 14 Ma (*n*=20, MSWD=1.03), as well as a smaller (*n*=3) age peak with a weighted average age of 1946 ± 34 (MSWD=1.05).

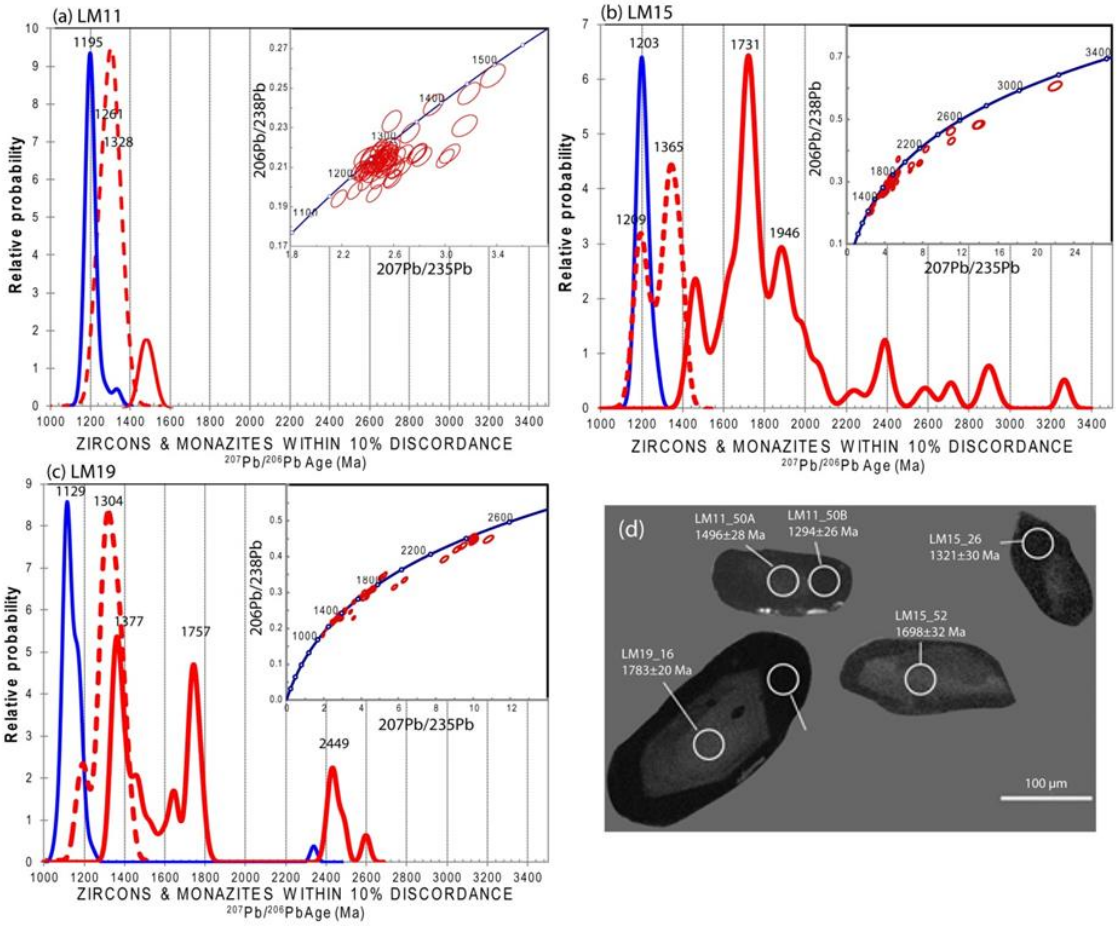


Figure 7. U–Pb LA–ICP–MS Zircon Geochronology for samples LM11, LM15 and LM19. Probability density plots, Concordia plots, and representative cathodoluminescence (CL) images for samples LM11, LM15 & LM19. Probability density plots show concordant (90–105%) age analyses of zircon rims/overgrowths (dashed red line), zircon cores (solid red line), and U–Pb geochronology data for monazites as a comparison (blue line). Data-point error ellipses are 1 sigma and 68.3% confidence. (a) Sample LM11: two populations were collected from zircon rims/overgrowths (such as LM11_50B from CL images) with weighted average ages of 1261 ± 12 Ma (*n*=20) and 1328 ± 12 Ma (*n*=23). Monazites from this sample have a weighted average age of 1195.7 ± 9.7 Ma (*n*=27). (b) Sample LM15: analyses from zircon rims/overgrowths (such as LM15_26) produced two age peaks with weighted average ages of 1209 ± 25 Ma (*n*=7) and 1365 ± 18 Ma (*n*=10). Analyses from zircon cores (such as LM15_52) produced one dominant (*n*=20) population with a weighted average age of 1731 ± 14 Ma. Monazites from this sample have a weighted average age of 1203 ± 15 Ma (*n*=15). (c) Sample LM19: analyses from zircon rims/overgrowths (such as LM19_17) yielded a weighted average age of 1304 ± 9.3 Ma (*n*=14). Analyses obtained from zircon cores (such as LM19_16) produced two age peaks with weighted average ages of 1757 ± 13 Ma (*n*=12) and 2449 ± 19 Ma (*n*=4). Monazites from this sample have a weighted average age of 1129 ± 8.9 Ma (*n*=46). (d) Representative CL images.

Sample LM19 (Figure 7c)

Eighty analyses were obtained from 68 individual zircon grains. Of the eighty analyses, 3 analyses were rejected due to high concentrations of ^{204}Pb. Analyses yielded from dark zircon rims and overgrowths produced two age peaks. The first peak is a small (*n*=4) 'population' with a weighted average age of 1179 ± 18 Ma (MSWD=0.65). The second peak is a distinct population (*n*=24) with a weighted average age of 1304 ± 9.3 Ma (MSWD=0.96). An additional two outlying analyses at c. 1240 Ma were collected from zircons with similar morphologies. Analyses from zircons with typically brighter cores and oscillatory zoning produced a wide spread of ages between c. 1350 and c. 2600 Ma. Three age peaks can be seen within this age spread. The first population has a weighted average age of 1377 ± 12 Ma (*n*=14, MSWD=1.05). The second population has a weighted average age of 1757 ± 13 Ma (*n*=12, MSWD=0.94). A smaller (*n*=4) peak yields a weighted average age of 2449 ± 19 Ma (MSWD=0.94).

Metamorphic geology

METAMORPHIC PETROLOGY

Samples chosen for metamorphic analysis were selected from metapelitic rocks located throughout the Windmill Islands moraines (Fig. 1, Table 1) on the basis of location, age, preservation of peak assemblages and preservation of reaction microstructures. Photomicrographs of key petrological relationships are given in Figure 8.

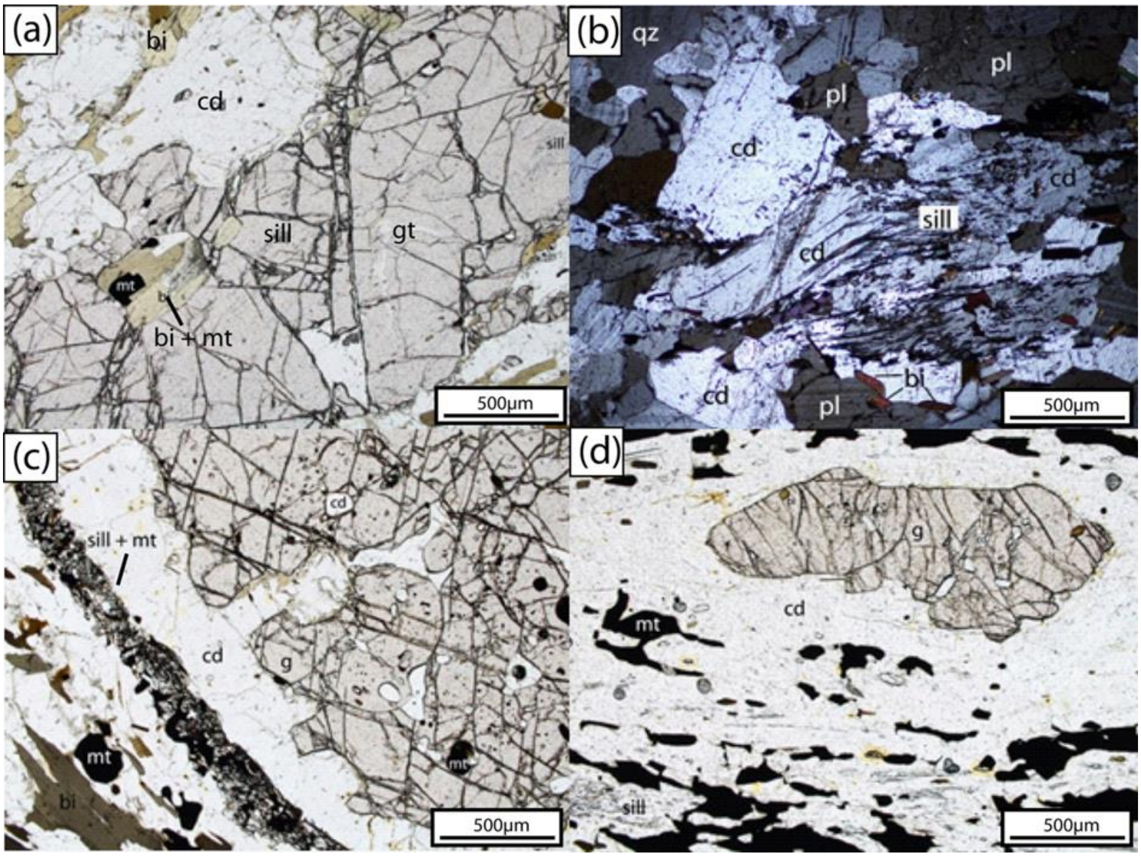


Figure 8. Photomicrographs of metapelites from the Windmill Islands moraines. (a) Sample KM07: Garnet with inclusions of biotite, magnetite and very fine-grained sillimanite, surrounded by coarse grained cordierite and fabric-defining biotite. (b) Sample KM07: Leucosome composed of cordierite (with sillimanite inclusions), quartz and feldspars and minor fine-grained biotite and magnetite. (c) Sample LM06: Garnet with inclusions of cordierite and magnetite surrounded by a layered corona of coarse grained cordierite and intergrown fine-grained sillimanite and magnetite. Biotite wraps around the garnet porphyroblast to define the fabric in the rock. (d) Sample LM19: Garnet with inclusions of cordierite and biotite, separated from fabric-defining magnetite by cordierite. Sillimanite inclusions are confined to cordierite.

Sample KM07

Sample KM07 contains garnet, sillimanite, cordierite, biotite, plagioclase, K-feldspar, spinel, magnetite and quartz with accessory amounts of zircon and monazite. At thin section scale a cordierite-bearing leucosome is wrapped by a biotite-bearing foliation. The leucosome is composed of cordierite (with sillimanite inclusions), quartz and feldspars, with minor fine-grained biotite and magnetite (Fig. 8b). Anhedral garnet poikioblasts are of variable size (up to 5 mm) and contain inclusions of biotite (up to 1 mm in length) and rounded, fine-grained magnetite and quartz (Fig. 8a). Fractures in garnet grains contain fine-grained magnetite and biotite. The foliated matrix assemblage is made up of coarse-grained quartz, K-feldspar, plagioclase, cordierite and finer-grained biotite and magnetite. K-feldspar is the most dominant feldspar and shows minor evidence of perthitic exsolution. Magnetite usually occurs in contact with or included in biotite. Spinel is rare, fine grained and commonly occurs in contact with magnetite or biotite. Sillimanite only occurs as inclusions in cordierite and garnet.

The peak mineral assemblage is interpreted to be garnet + cordierite + K-feldspar + plagioclase + coarse grained biotite + quartz + magnetite + ilmenite. The post-peak evolution is interpreted to have involved the formation of cordierite at the expense of sillimanite and fine-grained biotite. The presence of leucosomes indicates that silicate melt was additionally part of the peak assemblage.

Sample LM06

Sample LM06 contains garnet, sillimanite cordierite, biotite, K-feldspar, spinel, plagioclase magnetite, ilmenite and quartz with accessory amounts of zircon and monazite. The sample has a weak foliation defined by biotite. Garnet grains (2–6mm in diameter) are subhedral in shape and contain inclusions of rounded quartz, sillimanite and magnetite. Some garnet grains are rimmed by cordierite and intergrown fine-grained sillimanite and magnetite (Fig. 8c). Cordierite may form porphyroblasts (up to 2mm) and is in direct contact with rounded quartz, K-feldspar and plagioclase, forming a medium–coarse grained matrix throughout the sample. Sillimanite is commonly fine-grained and occurs most commonly included in garnet or intergrown with magnetite as incomplete coronas on garnet (Fig. 8c). Biotite is up to 2 mm in length and weakly defines the foliation in the sample, occurring commonly included in or in contact with feldspar. Magnetite and ilmenite (both 200–500 µm) are seen within the matrix and as inclusions in garnet, with rare spinel occurring in contact with magnetite. Plagioclase and K- feldspar are both mostly coarse grained (up to 2 mm), with K-feldspar showing some evidence of perthitic exsolution.

The peak assemblage is interpreted to be garnet + cordierite + K-feldspar + plagioclase + biotite + quartz + magnetite + ilmenite. The post-peak evolution is interpreted to have involved the formation of coronal cordierite and fine-grained sillimanite.

Sample LM19

Sample LM19 contains garnet, cordierite, sillimanite, magnetite, biotite, K-feldspar, plagioclase, ilmenite and quartz with accessory amounts of zircon and monazite. Coarse-grained, anhedral garnet porphyroblasts (2–4 mm) are wrapped by a fabric defined by abundant biotite (5%) and magnetite (<5%) (Fig. 8d). Garnet porphyroblasts contain inclusions of euhedral fine-grained biotite, cordierite, and magnetite. Garnet is commonly separated from the magnetite–quartz–sillimanite-bearing matrix by cordierite (Fig. 8d). The sample is interpreted to preserve two mineralogical domains; the first is a coarse-grained cordierite-rich domain with a higher magnetite concentration. This domain also contains fine-grained sillimanite, which occurs as inclusions in cordierite and garnet. The second domain has no sillimanite, rare magnetite, and a higher concentration of biotite. Coarse-grained plagioclase, quartz and less common K-feldspar occur throughout the matrix.

The peak assemblage is interpreted to be garnet + cordierite + plagioclase + quartz + K-feldspar + biotite + magnetite. The post-peak evolution is interpreted to have involved the formation of cordierite at the expense of sillimanite. The presence of leucosomes indicates that silicate melt was additionally part of the peak assemblage.

GEOCHEMISTRY AND MINERAL CHEMISTRY

Whole-rock geochemical data are provided in Appendix B. Electron microprobe mineral compositions used in combination with compositional contouring of phase diagrams to constrain *P–T* conditions are given in Appendix C. The range of values for elements of interest in each mineral are given in Table 2.The chemistry of selected minerals is discussed below. The calculated endmember proportions discussed in the text are defined in Table 2. . Elemental X-Ray maps and chemical zoning profiles of garnet grains for samples LM06, LM19 & KM07 are shown in Figure 9 and Figure 10, respectively.

Table 2. Range of chemistry for selected minerals.

	KM07	LM06	LM19
Garnet core			
X_{alm}	0.633-0.680	0.655-0.685	0.677-0.705
X_{py}	0.195-0.244	0.199-0.207	0.211-0.238
X_{grs}	0.023-0.028	0.033-0.036	0.035-0.045
X_{sps}	0.093-0.106	0.100-0.108	0.044-0.047
Garnet rim			
X_{alm}	0.651-0.692	0.659-0.680	0.614-0.735
X_{py}	0.165-0.22	0.175-0.204	0.160-0.238
X_{grs}	0.023-0.028	0.033-0.036	0.035-0.052
X_{sps}	0.095-0.120	0.100-0.111	0.043-0.052
Biotite			
F (wt%)	0.56-0.81	0.58-0.85	0.31-0.40
Cl (wt%)	0.011-0.024	0.001-0.011	0.030-0.037
TiO_2 (wt%)	3.13-3.93	3.56-4.84	4.27-5.15
X_{Fe}	0.47-0.51	0.46-0.53	0.53-0.55
Cordierite			
X_{Fe}	0.33-0.34	0.32-0.33	0.30-0.31
K-Feldspar			
X_{Or}	0.85-0.86	-	0.90-0.92
Plagioclase			
X_{Ab}	0.71-0.75	0.63-0.65	0.61-0.62
Spinel			
ZnO (wt%)	9.30-9.32	2.41-2.67	-
Ilmenite			
MnO (wt%)	-	1.04-1.12	-
TiO_2 (wt%)	-	42.2-43.1	-

$X_{alm} = Fe^{2+}/(Fe^{2+} + Mg + Ca + Mn)$, $X_{py} = Mg/(Fe^{2+} + Mg + Ca + Mn)$, $X_{grs} = Ca/(Fe^{2+} + Mg + Ca + Mn)$, $X_{sps} = Mn/(Fe^{2+} + Mg + Ca + Mn)$, $X_{fe} = Fe/(Fe^{2+} + Mg)$, $X_{Or} = K/(K+Na+Ca)$,$X_{Ab} = Na/(Na + Ca)$.

Garnet mineral compositions (of elements Fe, Mg, Ca and Mn) are expressed as mole fractions, X, (abbreviations as above, mole fraction x 100 = mole %) recalculated from electron microprobe analyses (see Appendix C).

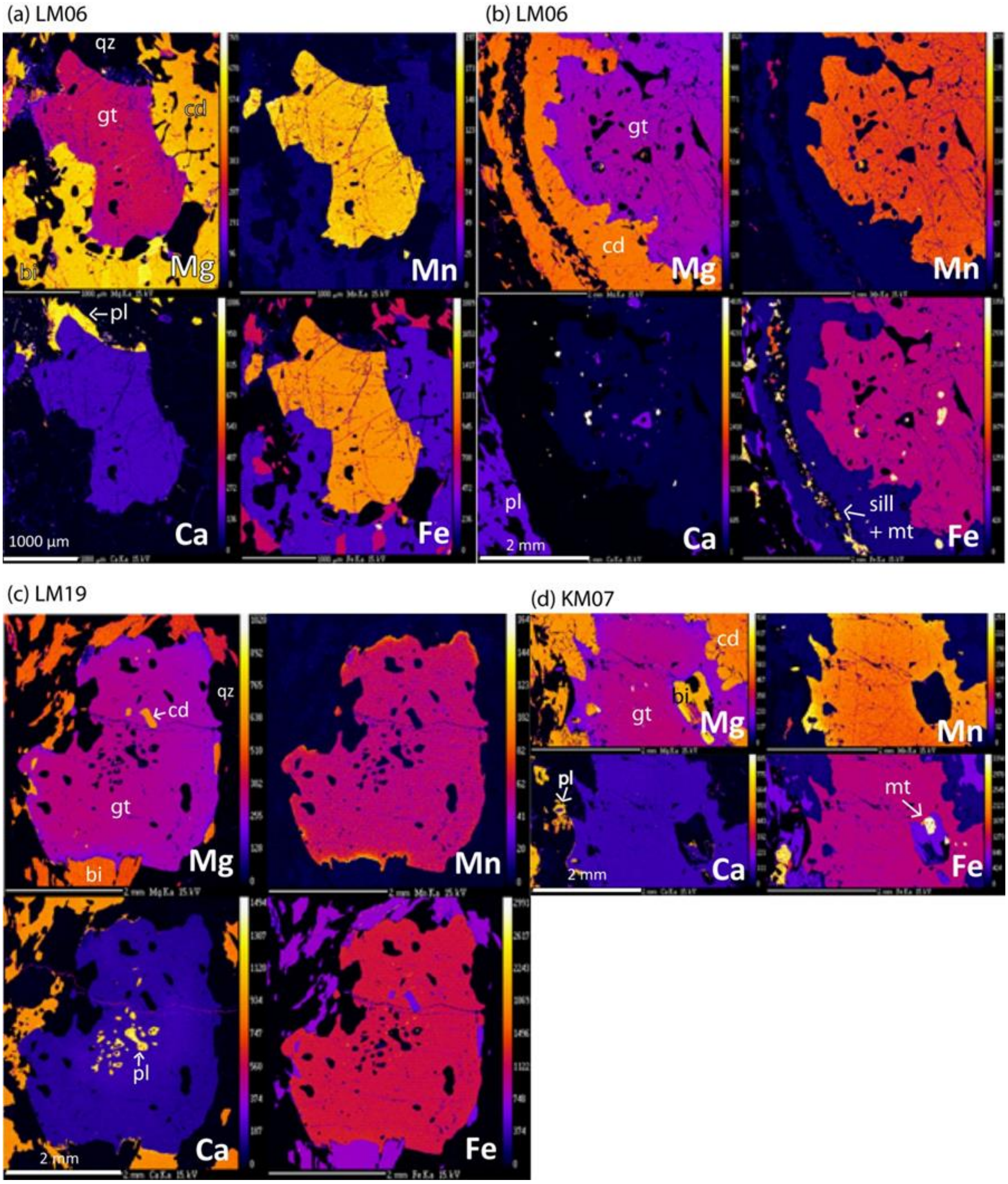


Figure 9. Microprobe elemental maps of garnet and surrounding minerals for magnesium (Mg), manganese (Mn), calcium (Ca) and iron (Fe). Qualitative elemental x-ray maps are shown for garnet grains from sample (a-b) LM06, (c) LM19 & (d) KM07. Colour gradient from black to white reflects an increasing concentration of that particular element.

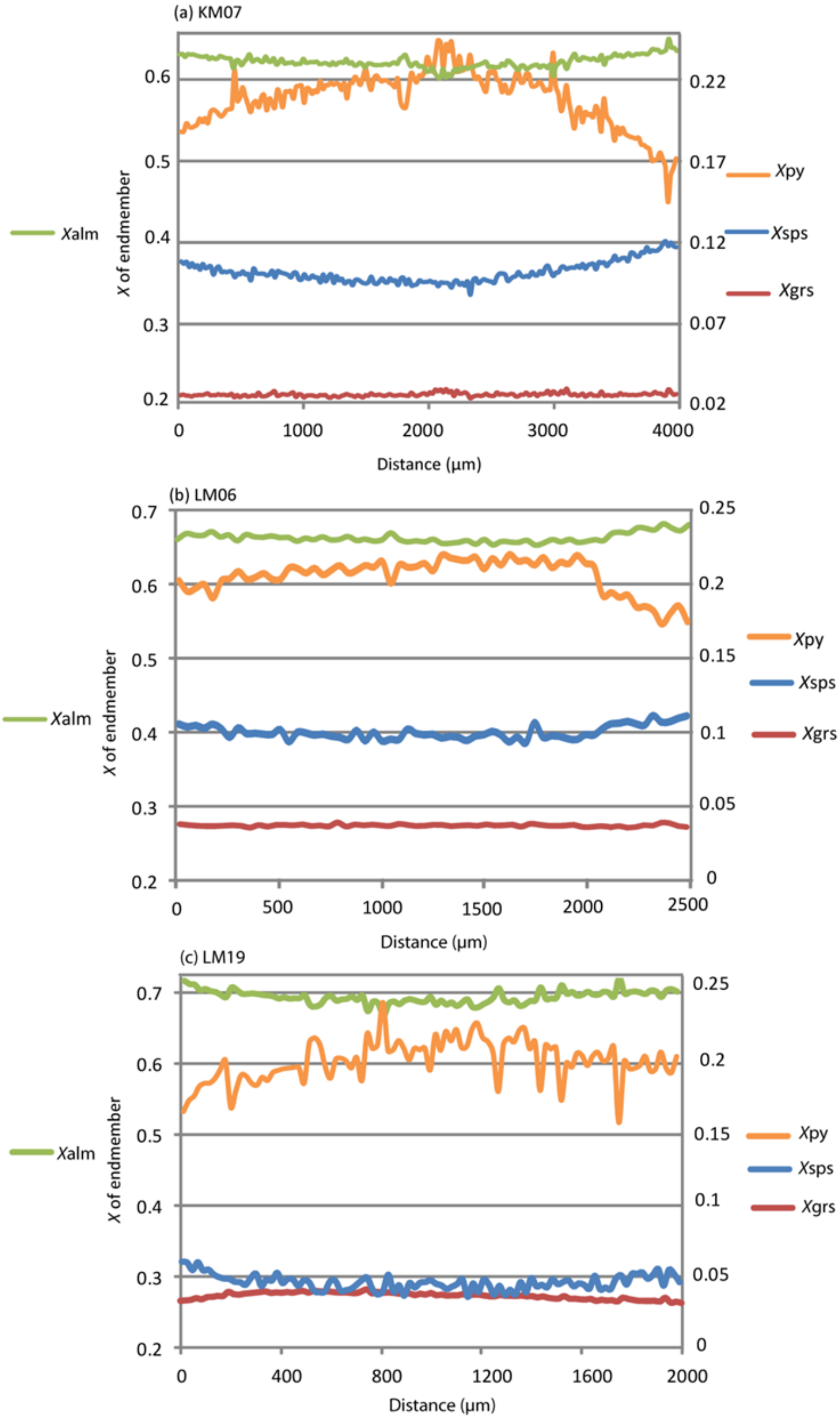


Figure 10. Chemical zoning profile from a single garnet grain for samples KM07, LM06 and LM19. (a) Sample KM07: Predominantly almandine rich (*X*alm=0.633–0.692) and shows a depletion of *X*py and enrichment of *X*sps from core to rim. (b) Sample LM06: Predominantly almandine rich (*X*alm=0.655–0.685) and shows slight depletion of *X*py and enrichment of *X*sps from core to rim. (c) Sample LM19: Predominantly almandine rich (*X*alm=0.614–0.735) and shows a minor depletion of *X*py and enrichment of *X*sps from core to rim.

Garnet

Garnets in all samples are predominantly almandine–pyrope mixtures, with core X_{alm} of 0.633–0.705 and core X_{py} of 0.195–0.244. All sample rims show depletion in X_{py} to values of 0.164–0.238 (Table 2). All samples show no zoning of X_{grs} but show a minor increase in *X*sps from core (0.047–0.093) to rim (0.052–0.095) consistent with garnet resorption (e.g. Spear & Kohn 1996).

Biotite

Biotite in all samples is titanium-rich, with TiO_2 values of 3.13–5.15 wt%. Samples KM07 and LM06 have higher F contents (0.56–0.85 wt%) and lower Cl contents (0.001–0.024 wt%) than sample LM19, which has F contents of 0.31–0.40 wt% and Cl contents of 0.03–0.037 wt%.

Cordierite + Feldspars

Cordierite in all samples has X_{Fe} of 0.30–0.34. K-feldspar in sample KM07 has X_{Or} of 0.85–0.86. Sample LM19 has slightly higher X_{Or} values of 0.90–0.92. No analyses of K-feldspar were obtained for sample LM06. Plagioclase in all samples has X_{Ab} of 0.61–0.71.

Spinel + Ilmenite

Spinel was analysed in samples KM07 and LM06 and has ZnO_2 values of 9.3–9.32 wt% and 2.41–2.67 wt% respectively. No spinel is present in sample LM19. Ilmenite occurs uncommonly in all samples, however it was only analysed in sample LM06. Ilmenite in sample LM06 contains 1.04–1.12 wt% MnO and 42.4–43.1 wt% TiO_2.

PRESSURE–TEMPERATURE CONDITIONS

Pressure–temperature (*P–T*) pseudosections were calculated for samples KM07, LM06 and LM19. These are residual compositions as the result of melt loss occurring as part of granulite facies metamorphism; therefore, they are suitable to determine the peak *P–T* conditions and the immediate retrograde evolution (Kelsey, 2008; Kelsey & Hand, 2015). The objective of the phase equilibria modelling is to constrain *P–T* conditions for a number of moraine samples in order to characterize the thermal regime causing metamorphism. The interpreted peak assemblage fields have been contoured for ca(g) (=Ca/(Fe2+ + Mg + Mn + Ca) = Xgrs). These calculated compositional values are then compared to measured electron microprobe data for garnet cores, as the closest approximation to peak metamorphic conditions (Appendix C).

The principle uncertainty in pseudosection modelling relates to the determination of the effective bulk composition, particularly Fe_2O_3 and H_2O (Korhonen et al., 2012; Kelsey and Hand, 2015; Morrissey et al., 2015). Therefore the appropriate O and H_2O contents for the *P–T* pseudosections were constrained for each sample by calculating, in order, T–M_O and T–M_{H2O} pseudosections. In each T–M_O section the oxidation state along the M axis varies from 0% Fe_2O_3, 100% FeO at M = 0 to 66% Fe_2O_3, 34% FeO at M = 1. In each T–M_{H2O} section the amount of water varies from 0.01 (or 0.001) mole% at M = 0 to the analysed LOI amount (converted to mole%) at M = 1. The fixed pressure for the T–M_O and T–M_{H2O} sections was chosen to be 5 kbar for all three samples on the basis of the silicate mineral assemblage (e.g. White et al. 2014)

Sample KM07

From petrography, the peak assemblage in sample KM07 is interpreted to be garnet + cordierite + K-feldspar + plagioclase + coarse-grained biotite + quartz + magnetite + ilmenite + silicate melt. Spinel is not interpreted to be part of the modelled peak assemblage as it is very uncommon and contains appreciable amounts of Zn (Table 2).

The calculated T–M_O section is shown in Fig. 11a. Magnetite occurs at M_O >0.15, and so provides a lower limit. The approximate relative abundance of interpreted peak minerals further constrain the appropriate composition to $M_O = 0.3$. From the bulk composition at this M_O value a T–M_{H2O} section was calculated at 5 kbar to constrain H_2O within the sample (Fig. 11b). The presence of melt occurs mostly at M_{H2O} compositions >0.4, and so provides a lower limit. The approximate relative abundance of interpreted peak minerals further constrains the appropriate bulk composition for P–T modelling to $M_{H2O} = 0.7$.

The P–T pseudosection calculated using the composition at $M_{H2O} = 0.7$ (above) is shown in Fig. 12a. The presence of coexisting cordierite and biotite in the peak assemblage provides an upper pressure and temperature constraint of 5.8 kbar and 820°C, respectively. The peak assemblage is calculated to be stable over P–T conditions of 3–5.8 kbar and 780–82°C (Fig. 12a). Measured ca(g) contents for garnet cores (0.023–0.028) correspond to modelled compositional values for ca(g) that plot in the peak field, further constraining temperatures to 820°C. The post-peak formation of cordierite occurs within the peak assemblage field, and therefore does not constrain a post-peak evolution.

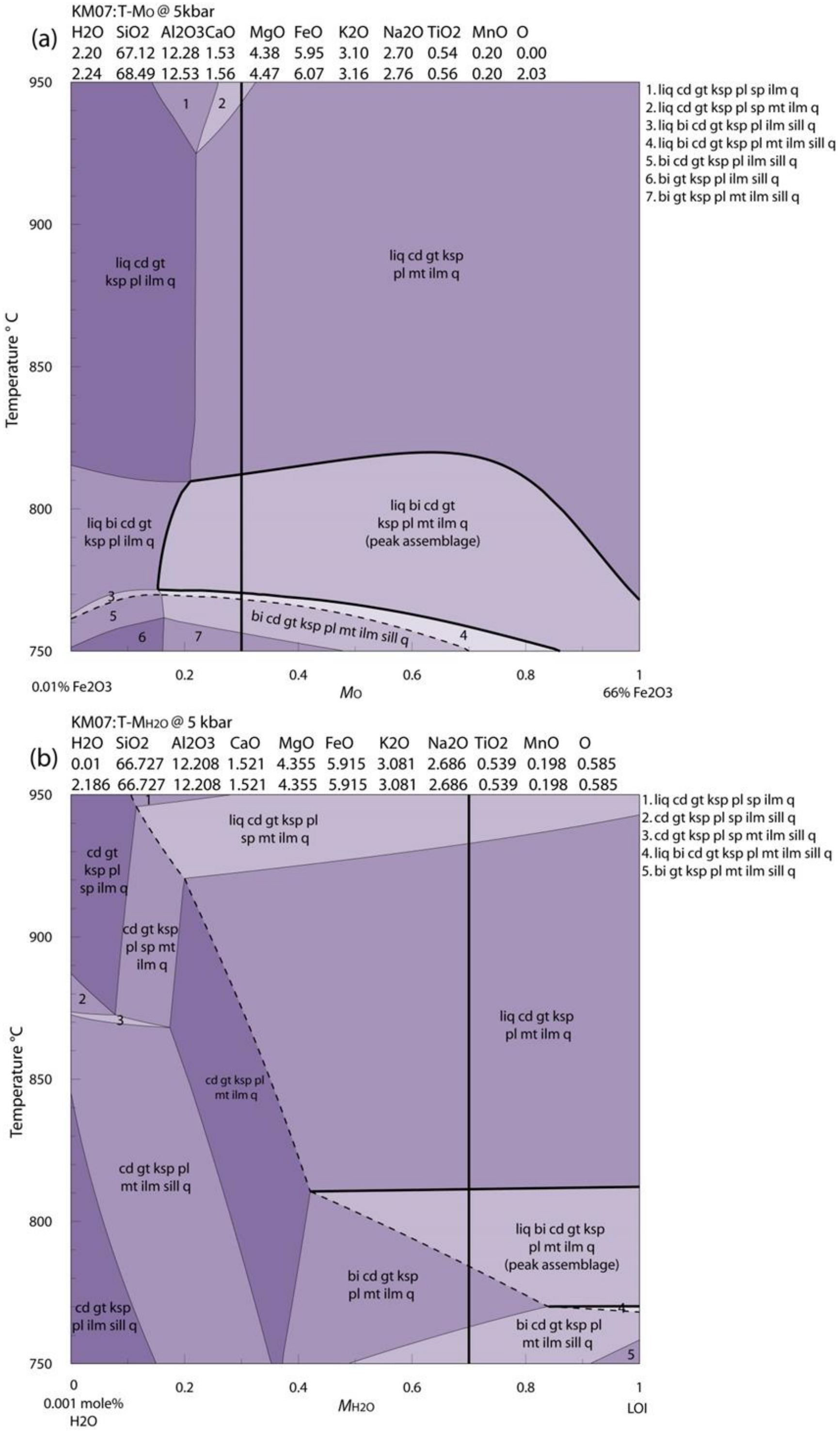


Figure 11. *T–M*$_O$ and *T–M*$_{H2O}$ sections. Compositions are given in mole%. *T–M*o and *T–M*$_{H2O}$ sections calculated for samples KM07, LM06 and LM19. The bold dashed lines represent the solidus. The bold vertical lines represent the O and H_2O values used for *P–T* pseudosection modelling. Peak fields are indicated by bold field boundaries. (a and b) Sample KM07: compositions M_O = 0.3 and M_{H2O} = 0.7 were selected for *P–T* pseudosection modelling. (c and d) Sample LM06: compositions M_O = 0.35 and M_{H2O} = 0.9 were selected as appropriate compositions for *P–T* pseudosection modelling. (e and f) Sample LM19: composition M_O = 0.4 and M_{H2O} = 0.85 were chosen for *P–T* pseudosection modelling.

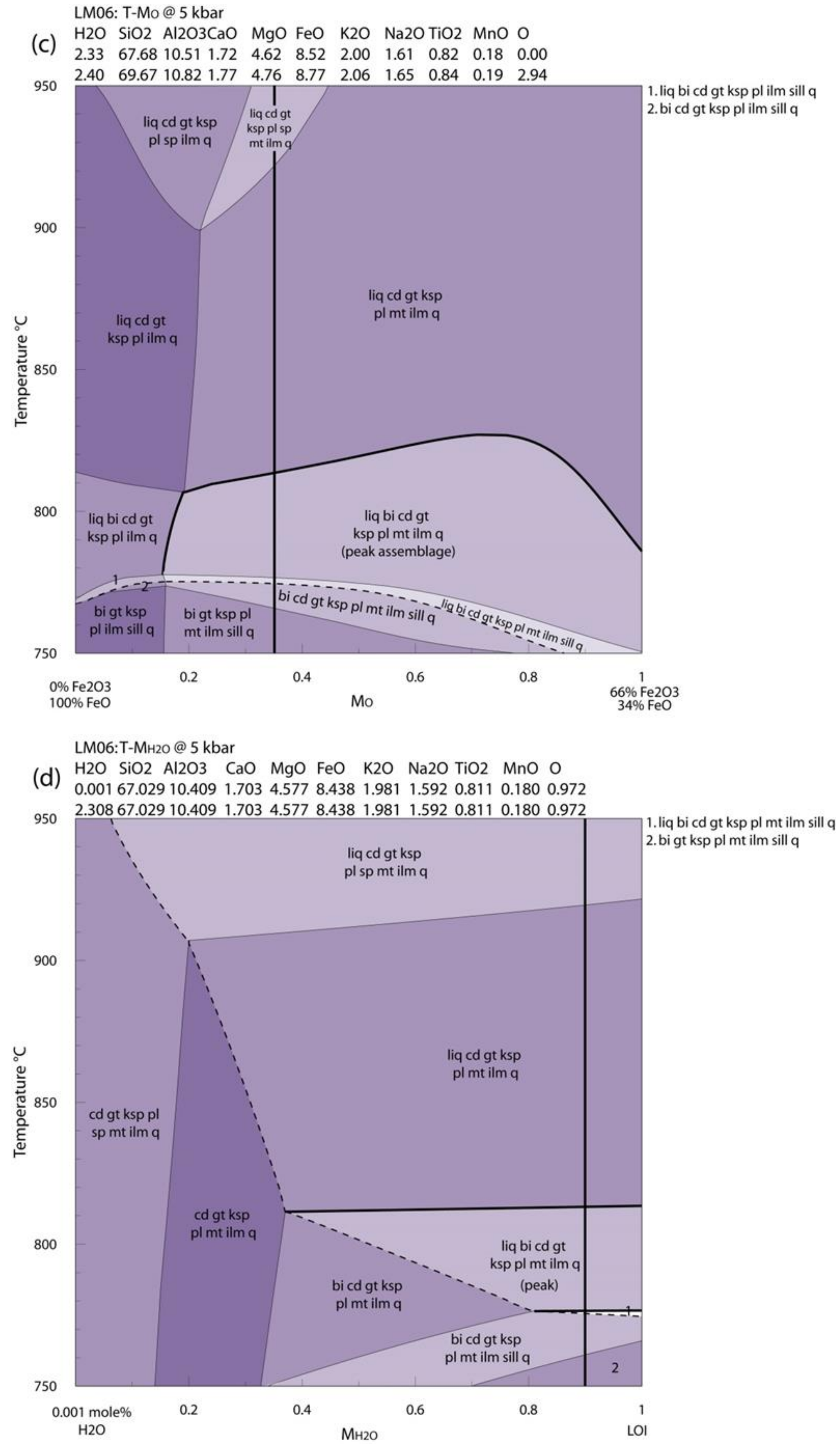
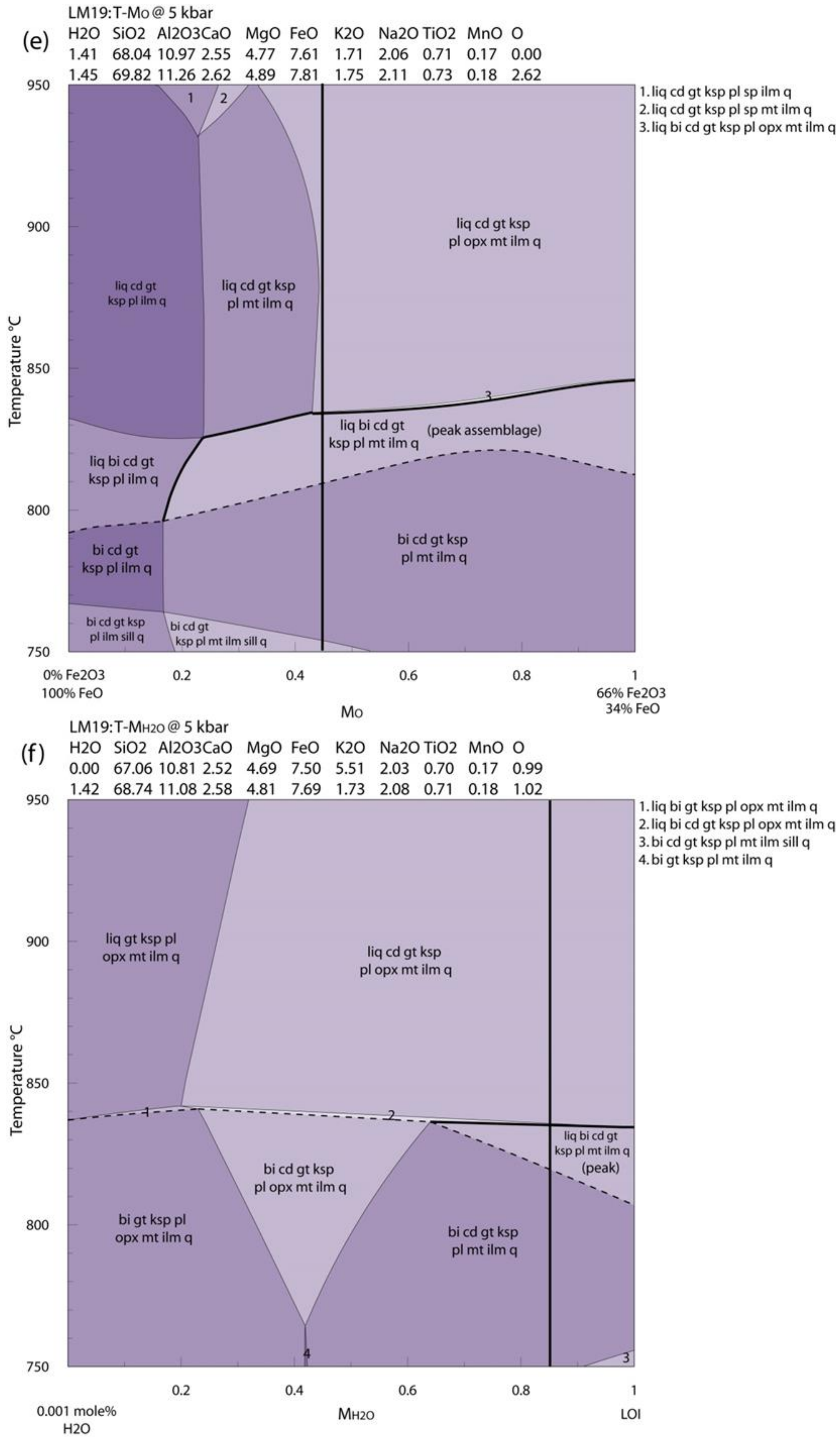


Figure 11 *(continued)*



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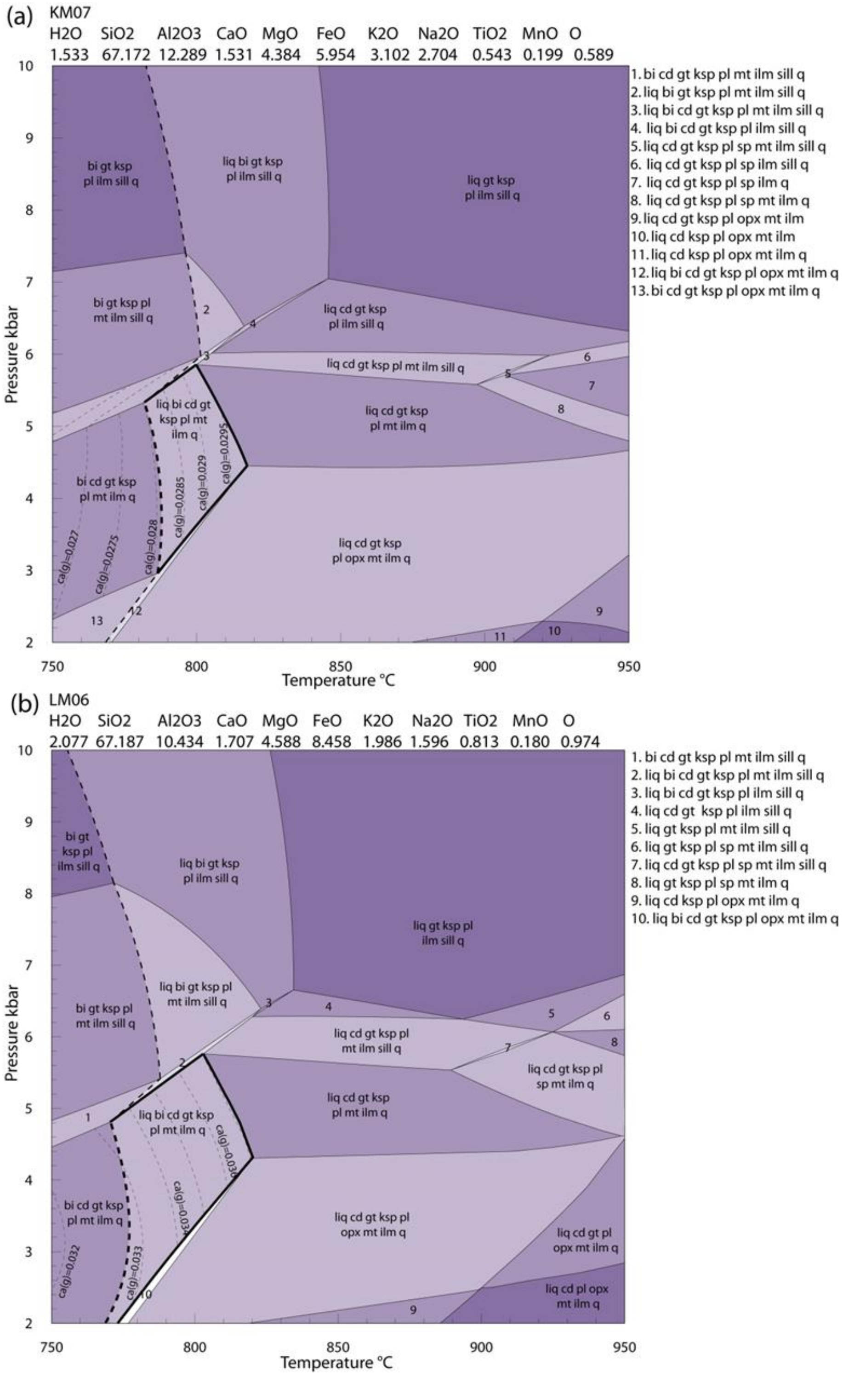

Figure 12. Calculated *P–T* pseudosections for samples KM07, LM06 and LM19. Bulk compositions are given at the top of each diagram and expressed as mole percent. The bold dashed line is the solidus. The peak field for each sample is outlined in bold. The pseudosections have been contoured for ca(g), represented by grey dashed lines. (a) Sample KM07: The field liq + bi + cd + gt + ksp + pl + mt + ilm + q indicates the peak *P–T* conditions of this sample. (b) Sample LM06: The field liq + bi + cd + gt + ksp + pl + mt + ilm + q indicates the peak *P–T* conditions of this sample. (c) Sample LM19: The field liq + bi + cd + gt + ksp + pl + mt + q indicates the peak *P–T* conditions of this sample.

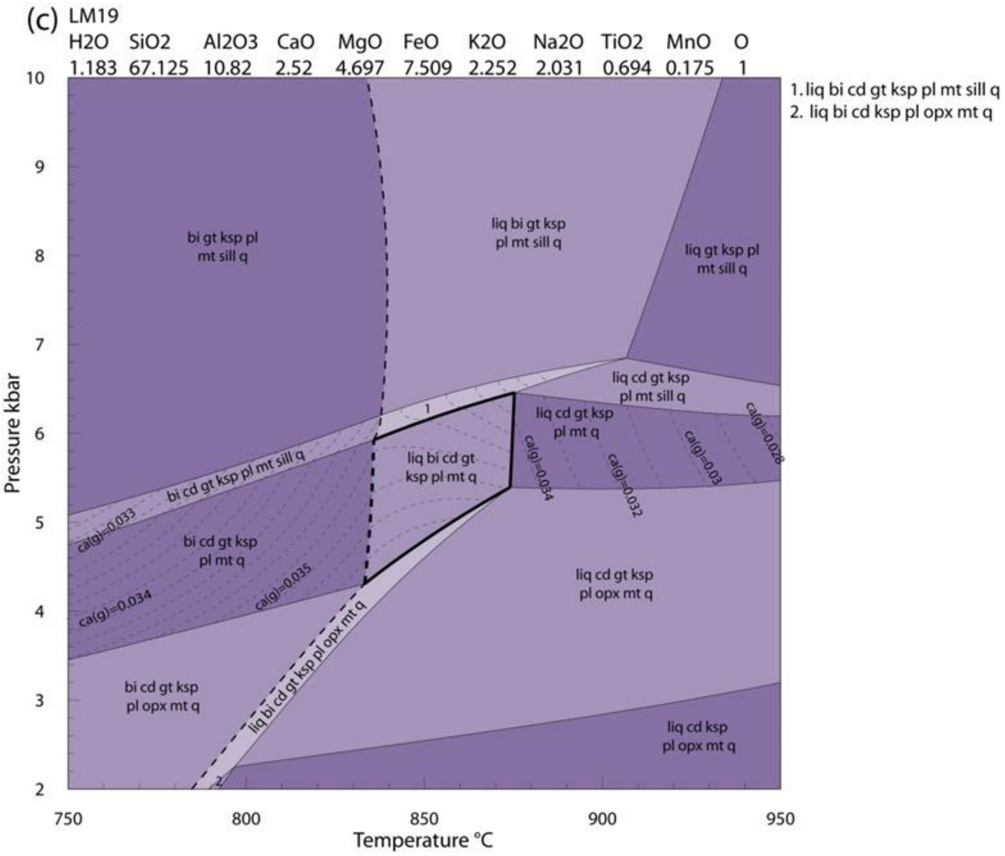

Figure 11 *(continued)*

Sample LM06

The peak assemblage for sample LM06 is interpreted to be garnet + cordierite + K-feldspar + plagioclase + biotite + quartz + magnetite + ilmenite + silicate melt. As spinel is uncommon and contains considerable amounts on Zn (Table 2) it is not interpreted to be part of the modelled peak assemblage.

The calculated T–M_O section (Fig. 11c) for this sample constrains the oxidation state to M_O >0.15 where magnetite is stable. Relative abundances of peak minerals further constrain the appropriate composition to M_O = 0.35. From the bulk composition at M_O = 0.35 a T–M_{H2O} section was calculated to constrain H_2O within the sample (Fig. 11d). The presence of melt occurs mostly at compositions M_{H2O} >0.35, and so provides a lower limit. The approximate relative abundance of interpreted peak minerals further constrains the appropriate bulk composition for *P–T* modelling to M_{H2O} = 0.9.

The presence of cordierite and biotite in the peak assemblage provides an upper pressure and temperature constraint of 5.7 kbar and 820 °C. The peak assemblage is modelled to have formed at conditions of 2–5.8 kbar and 770–820°C (Fig. 12b). Measured ca(g) values for garnet cores (0.033–0.036) correspond to modelled compositional values for ca(g) that plot in the peak field, further constraining temperature conditions to 780–810 °C. The post-peak field containing cordierite and sillimanite occurs to immediately lower temperatures to the peak assemblage field, suggesting a cooling-dominated post-peak evolution.

Sample LM19

The peak assemblage for sample LM19 is interpreted to be garnet + cordierite + plagioclase feldspar + quartz + K-feldspar + biotite + magnetite + silicate melt. The calculated *T*–M_O section for sample LM19 is shown in Fig. 11e. The appropriate oxidation state can initially be constrained above M_O = 0.2 where magnetite becomes stable, and then further constrained to a composition of M_O = 0.45 where relative abundances of minerals replicate the peak mineral assemblage in sample LM19. A *T*–M_{H2O} section was constructed using the bulk composition at M_O = 0.45 to constrain the H_2O content within the sample (Fig. 11f). Melt is stable across all compositions, therefore only the relative abundances of peak minerals were used to constrain the H_2O composition to M_{H2O} = 0.85.

The calculated *P–T* pseudosection is shown in Fig. 12c. The presence of coexisting cordierite and biotite in the peak assemblage provides an upper pressure and temperature constraint of 6.5 kbar and 830 °C, respectively. The peak assemblage is modelled to have formed at conditions of 4.4–6.4 kbar and 830–870 °C. Measured ca(g) values for garnet cores (0.035–0.045) correspond to modelled compositional values for ca(g) that plot in the peak field, further constraining pressure conditions to 4.4–5.2 kbar. The post-peak formation of cordierite occurs within the peak assemblage field, and therefore does not constrain a post-peak evolution.

DISCUSSION

The aim of this study is to provide greater understanding of timing and character of tectonic events within the continental interior of east Antarctica. This requires an evaluation of already known events within neighbouring regions in east Antarctica and formerly contiguous Australia in order to constrain the geological source province/domain of the moraine samples.

Timing and character of events in the Windmill Islands moraines

INTERPRETATION OF AGE DATA

Classifications of U–Pb zircon ages in this study as magmatic, metamorphic or detrital follow those of Corfu et al. (2003). Igneous zircons are commonly characterized by well-developed growth zoning, reflecting compositional variations between two endmembers. Xenocrystic cores (e.g. KM07_52A in Fig. 5d) are interpreted as being of detrital origin. Rims of cores are differentiated by geometrically irregular surfaces, which truncate internal zoning (e.g. KM07_52B in Fig. 5d), and are therefore interpreted as newly grown magmatic or metamorphic rims. Metamorphically grown, or metamorphically modified zircon crystals are characterized by commonly subrounded shapes and homogenously dark textures in cathodoluminescence images (e.g. LM06_76 in Fig. 6d).

CHRONOLOGY OF EVENTS

The new age constraints obtained by this study suggest that the major tectono-metamorphic features of the Windmill Islands moraines formed during the Mesoproterozoic. From these age constraints two distinct episodes of activity can be recognised, a poorly recorded event at c. 1360–1300 Ma, followed by an episode of long-lived activity at c. 1260–1125 Ma. Several inherited zircon populations (e.g. 2449, 1946, 1750–1650 and 1410–1380 Ma) are seen across all of the moraine samples at all locations. Samples KM10, LM15 and LM19 show evidence of metamorphism during the older event at 1360–1300 Ma. Igneous and metamorphic activity at c. 1260–1230 Ma marks the beginning of the younger event and is recorded in all of the samples, excluding KM10. Monazite U–Pb ages from a number of samples from different locations require that this second event continued until at least c. 1160–1125 Ma.

COMPARISONS BETWEEN ZIRCON AND MONAZITE U–PB AGES

Zircon has a tendency to incorporate U and Th and exclude Pb, has a low solubility in crustal melts and fluids (e.g. Watson & Harrison, 2005), is resistant to chemical and physical weathering, and has a sluggish diffusion rate of U and Pb (Cherniak & Watson, 2001; Halpin et al., 2012). Monazite also exhibits some of these favourable characteristics for geochronology (e.g. Kelsey et al., 2008), but the U–Pb systematics tend to be more readily responsive to common crustal processes (e.g. Högdahl et al., 2012; Rubatto et al., 2013), which has implications for the interpretation of monazite and zircon ages in poly-metamorphic terranes, but also reveals great potential to reach high chronological resolution in integrated studies (Rubatto et al., 2001; Seydoux-Guillaume et al., 2002; Kelsey et al., 2008; Spear & Pyle, 2010; Rubatto et al., 2013; Cubley et al., 2013; Kelsey & Hand, 2015; Tucker et al., 2015).

The results of the combined zircon–monazite U–Pb dating program fall into two distinct bands (excluding inheritance) at c. 1360–1300 Ma and c. 1260–1125 Ma, representing the two episodes of activity discussed above. The lack of detrital monazite from the c. 1360–1300 Ma event is significant. All seven samples analysed for U–Pb monazite ages are characterised by a spread of concordant analyses along the Concordia curve between c. 1260 and 1125 Ma, extending to c. 1060 Ma in sample LM19. The spread of monazite ages span 110 Myr in KM06, 130 Myr in KM07, 142 Myr in LM08, 68 Myr in LM15, and 173 Myr in LM19. Single populations with MSWD < 1 are present in only two of seven samples. Due to this considerable age spread it becomes unrealistic to consider a single weighted average age for each of these data sets as the analytical uncertainties are too small to explain the observed spread (MSWD>1) (e.g. Walsh et al., 2015; Tucker et al., 2015). Therefore the spread in ages is interpreted as a result of geological processes. Several potential explanations of this distribution of age data need to be considered:

1) The spread of ages along Concordia could represent multiple discrete short-lived thermal pulses of high-temperature metamorphism, where the U–Pb age data would then reflect single magmatic or metamorphic growth events (e.g. Tucker et al., 2015). The analytical resolution of the LA–ICP–MS must then be larger than the duration of the short-lived events that the monazite growth is responding to (Walsh et al., 2015).
2) The spread of age data in each sample could reflect continuous growth of monazite occurring above the solidus from crystallisation of REE–U–Th–Y–P-bearing silicate melt (Kelsey et al., 2008; Spear & Pyle, 2010; Stepanov et al., 2012). This continuous crystallisation is thought to continue down-temperature until the solidus is reached, where final crystallisation of monazite and melt occurs (Kelsey et al., 2008; Yakymchuk and Brown, 2014). Therefore, growth of monazite occurs over a range of temperatures as the rock cools from peak conditions towards the solidus, potentially explaining the spread of ages seen.

3) The array of ages could reflect fluid–rock interactions and (partial) recrystallisation and resultant partial resetting of the U–Th–Pb system in monazite (Seydoux-Guillaume et al., 2002). Younger ages may therefore reflect isotopic disturbance due to fluid interactions produced during crystallization of silicate melts and/or due to partial recrystallisation of monazite.

Three of the monazite U–Pb age-dated samples (LM11, LM15 & LM19) also contain significantly older zircon ages of c. 1328 Ma, c. 1365 Ma and c. 1304 Ma, respectively. The large difference between zircon and monazite ages is not consistent with a single phase of mineral growth.

During the second metamorphic event the discrepancy between zircon and monazite U–Pb ages of respectively c. 1184 and c. 1181 Ma for sample LM06, and c. 1209 and c. 1203 Ma for sample LM15 are suggestive that: (i) the terrane cooled rapidly, and/or (ii) monazite and zircon growth commenced at the same temperature, and/or (iii) growth commenced at different temperatures, but closure temperatures were the same as the diffusivity of Pb for zircon and monazite (e.g. Kelsey et al., 2008; Halpin et al., 2012). However, while Cherniak & Watson (2001) as well as Cherniak et al. (2004) conclude that Pb diffusivities in monazite and zircon are comparable, they also acknowledge that differences in the response of these minerals to geological conditions may lead to varying patterns of discordance for each, therefore option (iii) is less likely.

On the other hand, samples KM06, KM07, LM11 and LM19 are characterized by significantly younger U–Pb monazite ages than U–Pb zircon ages. The differences of respectively 40 Ma, 55 Ma, 66 Ma and 50 Ma suggest that: (i) the terrane cooled slowly, and/or (ii) zircon and monazite growth commenced at sufficiently different temperatures, and/or (iii) closure temperatures for monazite are lower due to differences in Pb diffusivity between zircon and monazite (e.g. Kelsey et al., 2008; Halpin et al., 2012).

METAMORPHIC CHARACTER OF EVENTS

The metamorphic history of the Windmill Islands moraines, as derived from phase equilibria modelling of peak assemblages and mineral chemistry, along with the previously discussed U–Pb geochronology, confirms a two-stage tectono-thermal history during the Mesoproterozoic. The first thermal event is overprinted to an extent where a robust estimate of the conditions could not be obtained from the investigated samples (KM07, LM06 & LM19). However, the presence of relict sillimanite and peak/retrograde cordierite provides an approximation that pressures experienced during the first thermal event may have been higher than the second event.

The second metamorphic event that is recorded in all samples (excluding KM10) varies in timing and duration between samples, as discussed above. However, despite differences in timing, equilibrium modelling suggests peak *P–T* conditions for samples KM07, LM06 & LM19 were similar at ~5 kbars and ~800°C. An increase in Mn and decrease in Mg from core to rim in garnet grains (Fig. 9, Table 2) in all samples suggests that garnet has undergone partial resorption by Mg-rich matrix minerals (e.g. cordierite), implying that the samples record cooling and/or decompression.

The thermal gradients indicated by the peak M2 conditions for the three samples range between ~140–260°C $kbar^{-1}$ (KM07), ~140 to >385°C $kbar^{-1}$ (LM06) and ~140–195°C $kbar^{-1}$ (LM19). These gradients are very close to and within the ‘ultrahigh’ thermal gradient realm (e.g. Brown, 2014; Kelsey and Hand, 2015; Stüwe, 2007), which is the ‘high-temperature–low-pressure’ part of *P–T* space. In a tectonic context, these thermal gradients suggest that the glacial moraine samples are sourced from crust that was thin at the time of metamorphism, such as an extensional environment.

Regional correlations

Spatial considerations suggest that the tectonothermal events recognised in the Windmill Islands moraines could be repeated in the bedrock record of the Windmill Islands, as well as other southern Australian Mesoproterozoic orogenic belts. The chronological data obtained by this study has been summarised and compared to these regions on U–Pb age data histograms (Fig. 13).

WINDMILL ISLANDS

The two-stage tectonic evolution of the Windmill Islands moraines is comparable with the timing and character of events recorded in the bedrocks of the Windmill Islands, summarised in section 2 (e.g. Oliver and Blight, 1977; Paul et al., 1995; Post et al., 1997; Fitzsimmons, 2000; Post, 2000; Fitzsimmons, 2003; Möller et al., 2002; Zhang et al., 2012). Inherited zircon populations from the Windmill Islands bedrock at c. 2500 Ma, c.1750–1650 Ma and 1410–1380 Ma (Post, 2000) are comparable with ages of inherited zircons (c. 2988, c. 2600–2400, c. 1800–1700, c. 1600–1500, and c. 1450–1400Ma) from within the metasedimentary moraine on Clark Peninsula (Fig. 13 of comparison histograms). The youngest inherited detrital zircon populations from samples KM10 and LM19 are consistent with deposition of the sedimentary precursors after 1360 Ma (Post, 2000; Zhang et al., 2012). Therefore the old zircon populations seen in the moraine samples are conceivably derived from Proterozoic rocks similar to those outcropping in the Windmill Islands. The timing of the two tectono-thermal events recorded in the moraine samples presented by this study

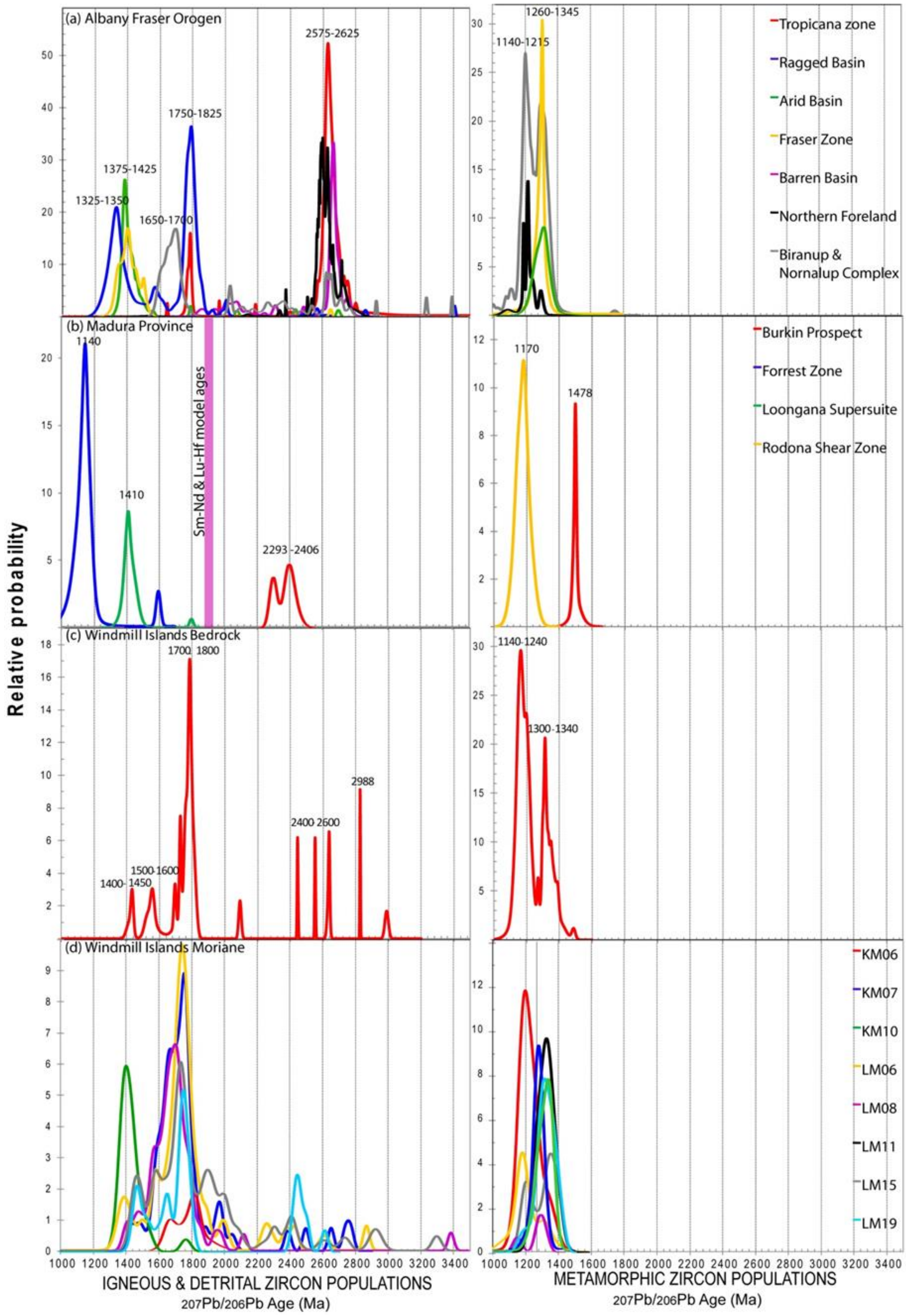

Figure 13. U–Pb geochronology regional correlations histograms. (a) Albany Fraser Orogen: data from Kirkland et al. (2012); (b) Madura Province: U–Pb zircon data from Reid et al. (2013), Sm-Nd & Lu-Hf model ages from Kirkland et al. (2013); (c) Windmill Islands bedrock: data from Post (2000); and (d) Windmill Islands moraines (this study).

are similar to the events recognised by Post et al. (1997), Möller et al. (2006) and Post (2000), with M1 upper amphibolite facies metamorphism and deformation occurring at c. 1340–1300 Ma, followed by M2 granulite facies overprinting and associated igneous activity at c. 1240–1140 Ma. Therefore the source region for the moraine samples is interpreted to have undergone tectonism metamorphism at very similar times to the Windmill Islands. Although the metamorphic character of the first event is not robustly constrained for any of the moraine samples, the second event preserves similar peak temperature and pressures to previous studies of the granulite facies rocks in the Windmill Islands. Post (2000) constrains peak conditions between 4–6 kbars and 750–850°C for the 1240–1140 Ma activity, results that are similar to this study which constrains peak conditions between 3–6 kbars and 780–830 °C. From these comparisons, it is interpreted that the source region of the moraine samples record similar inheritance history and similar timing and character of metamorphic and igneous events to those seen in the Windmill Islands. On the basis of the interpretation of geophysical imagery by Aitken et al. (2014), the crustal block that the outcropping Windmill Islands belongs to continues inland for some 200 kms. Therefore, the possibility exists that the moraine samples have been sourced from as far away as 200 kms, but do not source a geological terrane distinct from that exposed in the Windmill Islands.

ALBANY–FRASER OROGEN, WESTERN AUSTRALIA

The Albany–Fraser Orogen has rocks similar in lithology and age to those in the Windmill Islands, and in turn, the Windmill Islands moraines. A close link between the areas is supported by inherited zircon populations (summarized in Fig. 13). There is also a good correlation between the timing of Mesoproterozoic orogenic cycles in the

Albany–Fraser belt and Windmill Islands, where the timing of the Albany–Fraser orogeny is split into two events, 1345–1260 Ma (stage 1) and 1215–1140 Ma (stage 2) (e.g. Spaggiari et al., 2009; Spaggiari et al., 2011; Smithies et al., 2014; Occhipinti et al., 2014; Kirkland et al., 2015; Spaggiari et al., 2015), which are comparable to the two events recorded in this study (c. 1360–1300 Ma and c. 1260–1125 Ma). In particular, the Nornalup Complex of the Albany–Fraser orogenic belt records an extremely similar chronological record to that of the Windmill Islands moraines (Fig. 13) as well as very similar peak metamorphic conditions of 6 kbar and 800°C for stage 2 of the Albany Fraser Orogen (Clark et al., 1999; Fitzsimmons, 2003). Similar to the moraine samples, the Musgrave–Albany–Fraser Orogen is characterized by high geothermal gradients (140–150 °C $kbar^{-1}$), and preserves a long-lived monazite growth history (>70 Myr) during the Grenvillian (c. 1220–1140 Ma; Tucker et al., 2015; Walsh et al., 2015). The small differences in event timing can be explained by differences in extent of outcrop and extensive sampling and recognized tectonic zones in the Albany–Fraser Orogen versus the Windmill Islands and glacial moraines.

A number of inherited zircon ages between c. 1450–1400 Ma (KM10) and at c. 1900 Ma (LM15) seen in the Windmill Islands moraines are not seen in the Albany–Fraser Orogen in southwestern Australia, suggesting possible other sources such as the Musgrave and newly recognised Madura Provinces (See Fig. 13; Kirkland et al., 2012; Howard et al., 2015; Kirkland et al., 2015).

The c. 1900 Ma timeline characterizing the isotopic evolution trends of the Musgrave and Madura Provinces is in stark contrast with the compositions and evolution of the basement to the Albany–Fraser Orogen (Kirkland et al., 2011; Kirkland et al., 2012; Howard et al., 2015). The only material in the Albany–Fraser Orogen with ages and juvenile isotopic compositions similar to the Madura Province is sedimentary material deposited into the Arid Basin, sourced from the Madura Province itself during accretion between c. 1410–1330 Ma (Spaggiari et al., 2014). On the basis of the interpretation of geophysical imagery by Aitken et al. (2014), the moraine samples with c. 1450–1500 Ma and c. 1900 Ma zircon ages could have been sourced from the West Mawson Craton (see Fig. 1b). If this is the case, then the study of moraine samples provides an innovative 'virtual drillhole' avenue for exploring the formerly contiguous southern Australian geology that is deeply buried beneath the Eucla and Officer basins.

CONCLUSIONS

This study presents the first integrated study of *P–T* conditions and geochronology of the interior of Wilkes Land, east Antarctica. The Windmill Islands moraine samples preserve evidence for Grenvillian-aged, high geothermal gradient metamorphism and magmatism at c. 1360–1300 Ma and 1260–1125 Ma. Phase equilibria modelling indicates peak metamorphic conditions at c. 1260–1125 Ma were around 5 kbars and 800°C, and were associated with the development of cordierite bearing assemblages at the expense of earlier sillimanite and garnet. The formation of cordierite implies that pressures during the first event were higher than the later event. Comparisons of inheritance history and timing and character of metamorphic and igneous events suggest that the moraine samples have been sourced from a geological terrane similar to that exposed in the Windmill Islands and the formerly contiguous Albany–Fraser Orogen. With the integration of recent geophysical data and high-resolution ice sheet drainage maps, the source region of glacial moraine samples from the Windmill Islands therefore extends up to 200 km inland of the Windmill Islands. However, in contrast to the Windmill Islands and Albany–Fraser Orogen, the presence of c. 1450–1400 and c. 1900 Ma detrital zircon ages suggest new links between the interior of Wilkes Land and southern Australian geology such as the Madura and Musgrave Provinces. If this is the case, the possibility exists that the moraine samples could have been sourced from the unknown West Mawson Craton (as per Aitken et al., 2014), and thus provide an avenue for exploring the deeply buried geology of southern Australia.

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APPENDIX A: PREVIOUS STUDIES SUMMARY

STUDY	MAGMATISM (age, Ma)	METAMORPHISM (age, Ma)	INHERITANCE (age peaks)	P-T CONDITIONS	APPARENT THERMAL GRADIENT (°C/kbar)
Spaggiari et al., 2014 (Albany Fraser) *Barren Basin*			2750 – 2600 Ma – most dominant (Yilgarn) 2550 – 1900 Ma 2035 Ma 2250 Ma 2457 Ma 1900-1600 Ma 1700 – 1650 Ma 1800 – 1750 Ma (granitic magmatism in Nornalup & Biranup)		
Kirkland et al., 2011 (Albany Fraser) *Archean Remnant* *Biranup Zone*	2684±11	1171±30 -orthogneiss			
Kirkland et al., 2011 (Albany Fraser)	1708±15 1689±6 1676±6 1679±6 1665±6 1664±7 1686 ± 8 1671±7 1666±11 1675±9 1683±8 1657±5	1203 ± 11 1205±20 1162±39 1193 ± 9 1201±15 1270±11 and 1193±26	1749, 1766 and 1809 Ma 1780Ma, ≥ 2340 Ma		
Spaggiari et al., 2014 (Albany Fraser) *Arid Basin*			1425 – 1375 Ma – most dominant (Loongana oceanic arc) 1475 – 1425 Ma 1375 – 1325 Ma 1600 – 1475 Ma 1700 – 1650 Ma 2750 – 2600, 2550 – 2450, 2075 – 2025 Ma –least dominant		
Spaggiari et al., 2014 (Albany Fraser)		1215-1140 (Stage 2) 1154 ± 15 rutile	1350-1325 Ma 1321 ± 24 Ma	550°C, 4-5kbar	~110 - 135°C/kbar

Ragged Basin			1261 ± 31 Ma		
			1234 ± 32 Ma		
Kirkland et al., 2011					
(Albany Fraser)					
Nornalup	1330-1280	1345–1260 (Stage 1)			
Recherche Supersuite		1215–1140 (stage 2)			
Clark et al., 1999	1305-1290	1290	1425 – 1375 Ma	850°C, 7-9kbar	~95 - 120°C/kbar
(Albany Fraser)			1700 – 1650 Ma		
Fraser Zone		1313-1301 (M1a)		800°C, 6-7kbar	~115 - 135°C/kbar
		1301-1293 (M1b)		750°C, 6-7kbar	~105 - 125°C/kbar
	1297±8		1701–1684 Ma		
	1298 ± 5		1770 Ma		
		1293-1288 (M2a)		650°C, 8-10kbar	~65 - 80°C/kbar
		1288-1260 (M2b)		500°C, 4kbar	~125°C/kbar
Esperance Supersuite	1140	1215–1140 (stage 2)			
Zhang et al., 2012		1340 – 1300 (M1)			
(Windmill Islands)					
Moraine & Bedrock		1240 – 1140 (M2)			
		1342±21 (M1 leucosome -			
Fitzsimmons et al., 2003		partial melting)	3000-2400 Ma	750°C, 4kbar	~190°C/kbar
(Windmill Islands)			1800-1700 Ma		
Bedrock	1315±6		1600-1500 Ma		
	1214±10	1171±9	1450-1400 Ma		
		-metapelite leucosomes		850-900°C, 5-7kbar	~120 - 180°C/kbar
Post, 2000		PEAK M2		750°C, 4kbar	~190°C/kbar
(Windmill Islands)		1215–1140 Ma		800°C, 5kbar	~160°C/kbar
Bailey Peninsula				850°C, 6kbar	~140°C/kbar
Mitchell Peninsula					
Herring Island		M2		Berkley	
Robinson Ridge				700°C, 3kbar	
Boffa Island				750°C, 4kbar	
				800°C, 5kbar	
				Bailey/Herring/Haupt	
				750°C, 5kbar	
				800°C, 6kbar	
				850°C, 7kbar	

		Post M2 Peak		Herring (large uncertainty ±150Ma)	
				500°C, 3kbar	
				500°C, 4kbar	
				500°C, 5kbar	
Spaggiari et al., 2014	1170 ± 4	<1170	2408 – 2293 Ma		
(Madura Province)	1140 ± 8		1598 ± 14 Ma		
	1132 ± 9	1478 ± 4 (basement)	1538 Ma		
	1410 – intruded gabbro bodies				
	1214 ± 8	1182 ± 13		800°C, >5kbar	>160°C/kbar
	1182 ± 13				
	1345 – 1293 (Mount West				
Kirkland et al., 2013	Orogeny)	1220 - 1050	3200-2630 Ma	>900°C ?	≥35 - 40°C / km
(Musgrave Province)	1220 – 1150 (Musgrave Orogeny)		1790-1590 Ma		
	1085 – 1050 (Giles Event)		1570-1470 Ma		
	1600-1540 (volcaniclastic)				
		1205 – 1154,	1463 – 1375 Ma		
		1313 ± 15			
		1206 – 1167,	1423 – 1361 Ma		
		1311 ± 21			
		1196,	1561 – 1351 Ma		
		1197,			
		1298 ± 26			
	1402 ± 4 (papulankutja				
	supersuite)	1316 ± 8	1835 – 1340 Ma		
	1318 ± 9		1879 – 1347 Ma		
	1197 ± 4		1372 ± 14 Ma		
	1326-1312 Ma (Wakanaki				
Kirkland et al., 2015	Supersuite)	1220-1140 Grenvillian	1950-1900 Ma	900 C	140-150°C/kbar
(Musgrave-albany			additional crustal component, magmatic and		
Fraser)			inherited crystals	6-6.5 kbar	
			1575 Ma		
			1560 Ma		
			1500 Ma		
			1410 Ma		
			1360 Ma (Wirku Metamorphics)		
			2630 & 2710 Ma (Latitude Hills – southeast Musgrave - Wirku Metamorphics)		
				>1000 C	35-40°C / km
Pitjantjatjara supersuite				7-8kbar	

APPENDIX B: WHOLE ROCK GEOCHEMICAL ANALYSES

	KM-01	KM-05	KM-06	KM-07	LM-06	LM-08	LM-13	LM-19
Major Elements (wt%)								
SiO2	55.91	67.47	55.94	61.18	62.85	59.53	55.90	62.79
TiO2	1.08	0.62	2.40	0.66	1.01	1.06	1.26	0.87
Al2O3	19.21	15.99	13.14	19.00	16.56	17.66	17.80	17.18
Fe2O3T	10.54	6.48	18.23	7.93	10.52	10.99	14.19	9.33
MnO	0.17	0.10	0.93	0.21	0.20	0.26	0.18	0.19
MgO	4.05	2.38	3.30	2.68	2.88	3.99	3.61	2.95
CaO	2.60	2.02	0.41	1.30	1.49	0.95	1.63	2.20
Na2O	2.79	2.09	0.93	2.54	1.54	2.08	0.46	1.96
K2O	3.26	2.82	4.27	4.43	2.91	3.58	3.87	2.47
P2O5	0.07	0.12	0.10	0.08	0.15	0.05	0.88	0.07
Total	**99.68**	**100.09**	**99.65**	**100.01**	**100.11**	**100.15**	**99.78**	**100.01**
LOI	0.65	1.48	0.09	0.60	0.65	1.39	3.03	0.39
	KM-01	**KM-05**	**KM-06**	**KM-07**	**LM-06**	**LM-08**	**LM-13**	**LM-19**
Trace Elements (ppm)								
Rb	282.6	195.1	262.0	356.6	149.8	227.4	173.6	119.7
Sr	244	153	49	118	129	81	78	157
Y	12.8	27.4	120.8	8.2	16.9	31.5	55.4	32.6
Zr	178	204	454	158	213	276	195	226
V	174	94	165	88	142	151	190	134
Ni	83	60	77	52	65	84	79	74
Cr	124	109	161	90	104	134	149	135
Nb	18.0	12.7	74.6	25.7	14.4	23.3	19.4	17.8
Ga	26.6	21.2	24.5	28.7	23.1	25.5	23.6	23.1
Cu	66	18	38	17	97	26	119	93
Zn	136	69	192	97	118	139	175	104
Co	37	19	57	18	32	37	43	28
Ba	1042	623	507	699	689	794	695	648
La	17	30	37	30	30	30	33	23
Ce	47	62	91	58	60	73	93	45
U	<0.5	<0.5	5.6	<0.5	<0.5	<0.5	2.2	<0.5
Th	20.5	23.0	95.5	19.7	28.2	35.9	37.5	22.3
Sc	18	13	37	13	11	22	29	14
Pb	21	27	<1	16	22	21	21	20

APPENCIX C: REPRESENTATIVE ELECTRON MICROPROBE ANALYSES

Representative electron microprobe analyses for each mineral

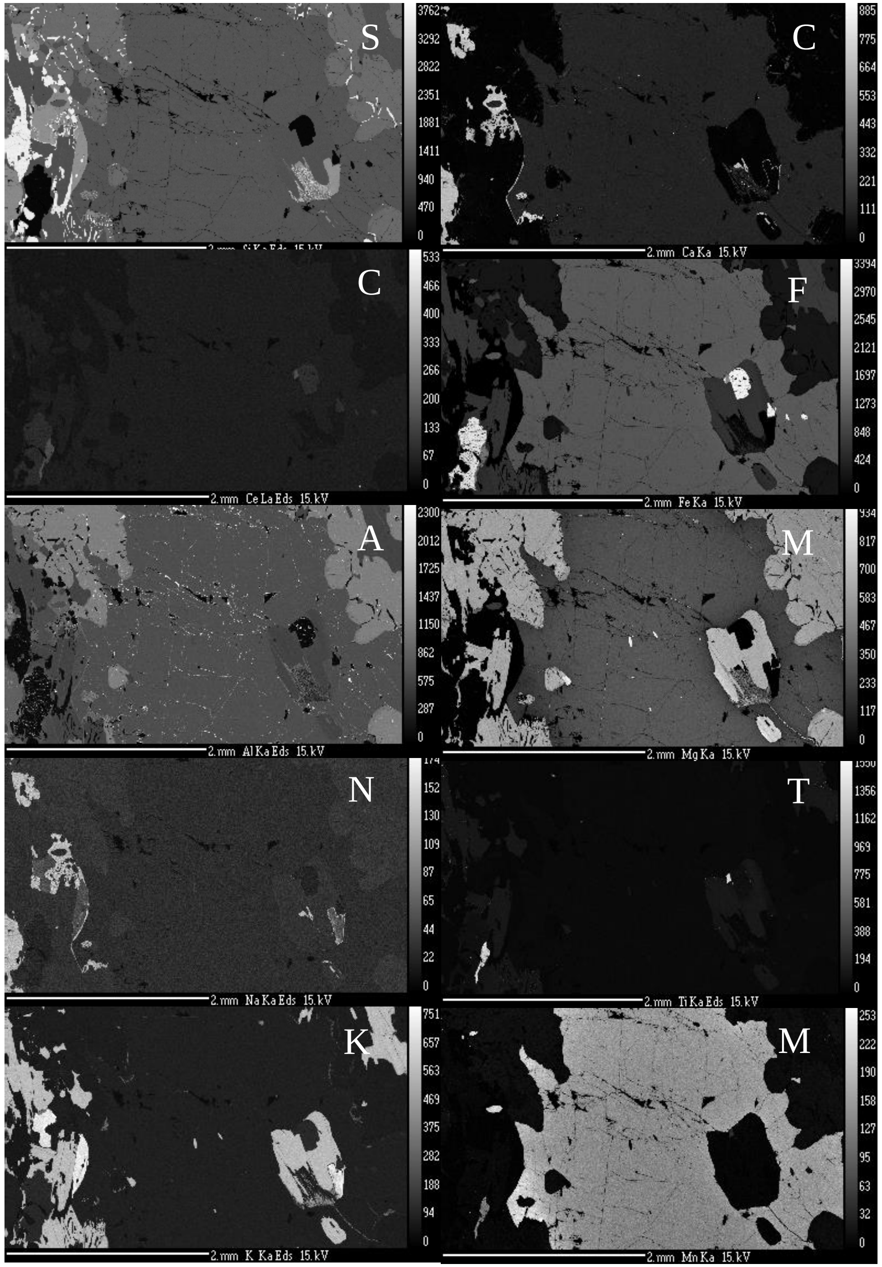
	LM06	map 1							**LM06**	map 2					
	gt rim	gt core	cd	bi	ilm	mt	pl	sp	gt rim	gt core	cd	mt	sil	pl	qz
SiO2	37.66	37.83	49.08	35.75	0.00	0.09	58.97	0.00	37.65	37.62	49.32	0.00	35.29	58.80	101.49
TiO2	0.02	0.01	0.00	3.56	43.15	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.02
Al2O3	20.96	20.91	32.89	17.31	0.21	0.40	25.89	56.66	20.97	24.68	33.10	0.30	59.69	26.22	0.26
Cr2O3	0.01	0.01	0.01	0.03	0.08	0.30	0.02	0.44	0.00	0.01	0.00	0.19	0.03	0.02	0.01
FeO	30.59	29.90	7.73	17.29	46.38	90.28	0.14	35.96	30.21	26.98	7.54	91.67	1.12	0.04	0.00
MnO	4.80	4.62	0.38	0.07	1.04	0.03	0.00	0.84	4.44	3.66	0.32	0.02	0.00	0.00	0.00
MgO	4.66	5.17	8.62	11.14	0.20	0.06	0.01	3.14	5.01	5.73	8.98	0.00	0.05	0.00	0.00
ZnO	0.04	0.01	0.00	0.01	0.11	0.00	0.00	2.42	0.01	0.00	0.02	0.00	0.00	0.03	0.00
CaO	1.23	1.24	0.00	0.02	0.01	0.00	7.70	0.00	1.25	1.23	0.01	0.00	0.09	7.95	0.00
Na2O	0.00	0.00	0.17	0.08	0.07	0.00	7.52	0.06	0.01	0.02	0.14	0.00	0.04	7.11	0.02
K2O	0.00	0.00	0.01	9.70	0.01	0.00	0.12	0.00	0.00	0.01	0.00	0.00	0.03	0.28	0.01
Cl	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01
F	0.07	0.06	0.00	0.85	0.16	0.23	0.00	0.00	0.06	0.00	0.00	0.25	0.00	0.00	0.00
Total	**100.01**	**99.73**	**98.90**	**95.45**	**91.38**	**91.30**	**100.39**	**99.52**	**99.60**	**99.96**	**99.43**	**92.32**	**96.35**	**100.47**	**101.82**
No. Oxygens	12.00	12.00	18.00	11.00	3.00	4.00	8.00	4.00	12.00	12.00	18.00	4.00	5.00	8.00	2.00
Si	3.004	3.01	5.02	2.69	0.00	0.00	2.63	0.00	3.00	2.94	5.01	0.00	0.99	2.619	1.00
Ti	0.001	0.00	0.00	0.20	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00
Al	1.981	1.96	3.96	1.53	0.01	0.02	1.36	1.92	1.97	2.27	3.96	0.01	1.97	1.376	0.00
Cr	0.001	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.001	0.00
Fe3+	0.007	0.00	-	-	0.20	1.94	-	0.08	0.00	0.00	-	1.95	0.05	-	-
Fe2+	1.998	1.99	0.66	1.09	0.86	1.03	0.01	0.79	2.01	1.76	0.64	1.03	-0.02	0.001	0.00
Mn2+	0.311	0.31	0.03	0.00	0.02	0.00	0.00	0.02	0.30	0.24	0.03	0.00	0.00	0.000	0.00
Mg	0.589	0.61	1.31	1.25	0.01	0.00	0.00	0.13	0.60	0.67	1.36	0.00	0.00	0.000	0.00
Zn	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.001	0.00
Ca	0.105	0.11	0.00	0.00	0.00	0.00	0.37	0.00	0.11	0.10	0.00	0.00	0.00	0.379	0.00
Na	0.001	0.00	0.03	0.01	0.00	0.00	0.65	0.00	0.00	0.00	0.02	0.00	0.00	0.614	0.00
K	0.000	0.00	0.00	0.93	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.016	0.00
Cl	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00
F	0.000	0.0141	0.00	0.20	0.014	0.029	0.00	0	0.01	0.00	0.00	0.03	0.00	0.000	0.00
Total Cations (S)	**8.00**	**8.01**	**11.02**	**7.71**	**2.01**	**3.03**	**5.02**	**3.00**	**8.01**	**8.00**	**11.02**	**3.03**	**3.00**	**5.008**	**1.00**

Representative electron microprobe analyses for each mineral continued

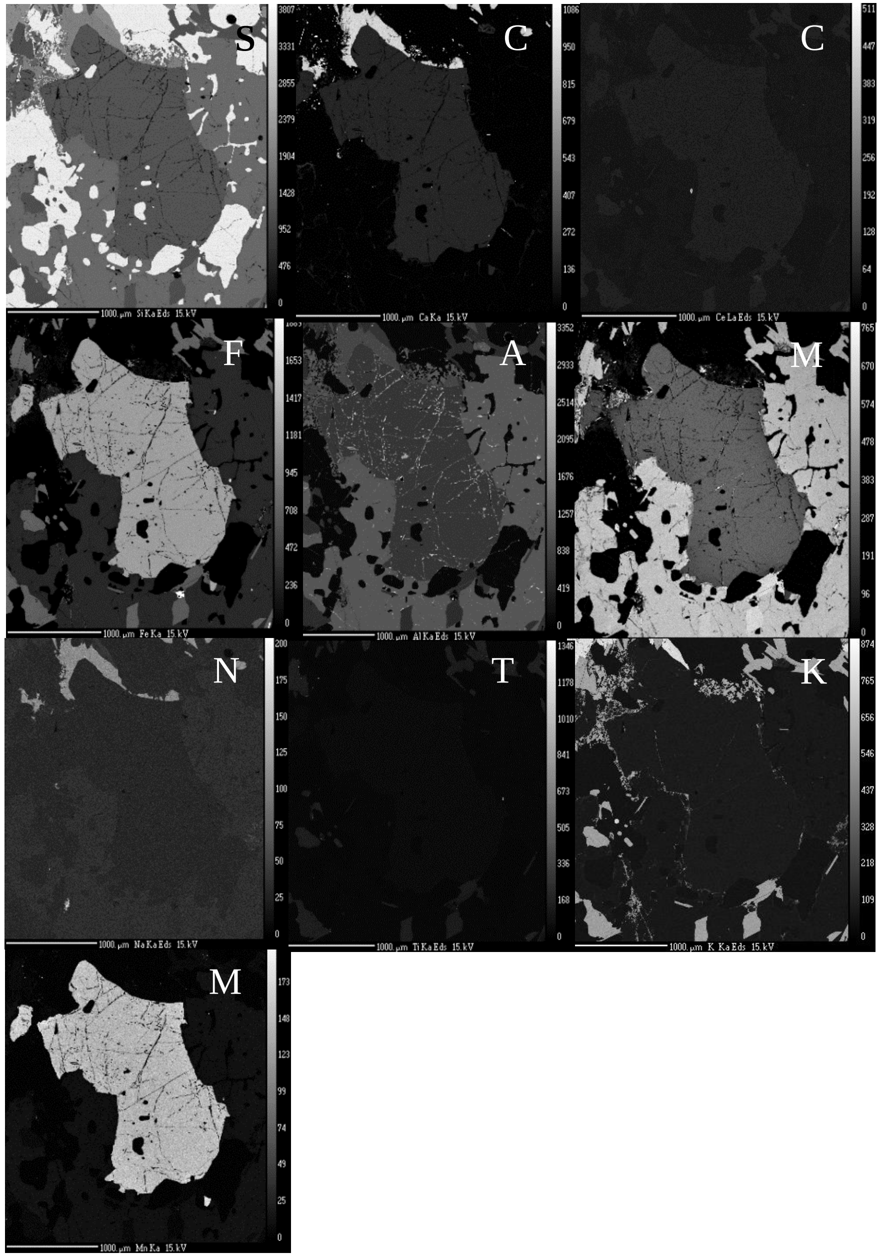
	LM19 map 1						**LM19** map 2						**KM07**								
	gt rim	gt core	cd	ksp	pl	bi	gt rim	gt core	bi	cd	mt	sil	gt rim	gt core	mt	bi	cd	sp	pl	ksp	qz
SiO2	37.87	37.07	51.25	61.95	58.73	35.44	37.60	37.69	33.94	49.03	0.00	49.30	37.75	37.98	0.00	35.94	48.54	0.00	59.01	63.05	98.76
TiO2	0.02	0.00	0.01	0.01	0.02	4.27	0.00	0.02	4.92	0.00	0.00	0.00	0.00	0.00	0.02	3.13	0.00	0.44	0.01	0.00	0.00
Al2O3	21.45	20.80	28.91	18.42	26.07	17.20	21.31	21.25	17.22	33.08	0.21	33.26	20.85	21.11	0.17	17.81	32.66	52.41	23.32	17.78	0.13
Cr2O3	0.00	0.00	0.01	0.00	0.02	0.09	0.04	0.01	0.03	0.01	0.21	0.01	0.02	0.03	0.34	0.00	0.00	0.12	0.00	0.00	0.00
FeO	30.84	31.31	1.61	0.00	0.02	19.53	32.34	31.71	19.27	7.41	89.83	7.50	30.89	30.15	91.39	18.93	7.79	28.47	0.14	0.00	0.00
MnO	2.17	2.15	0.03	0.00	0.00	0.04	2.20	2.00	0.00	0.14	0.00	0.17	4.83	4.32	0.00	0.20	0.41	0.97	0.02	0.00	0.00
MgO	5.90	5.72	0.72	0.00	0.00	9.81	5.02	5.62	9.29	9.19	0.03	9.16	4.72	5.41	0.00	10.48	8.56	3.56	0.01	0.00	0.00
ZnO	0.00	0.00	0.04	0.00	0.05	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.00	9.32	0.00	0.02	0.05
CaO	1.27	1.34	11.30	0.05	8.00	0.00	1.31	1.64	0.01	0.04	0.01	0.04	0.88	0.86	0.00	0.00	0.02	0.01	6.16	0.10	0.00
Na2O	0.00	0.00	4.11	0.82	7.17	0.05	0.00	0.00	0.04	0.11	0.00	0.13	0.01	0.01	0.00	0.16	0.15	0.35	8.24	1.50	0.01
K2O	0.00	0.00	0.21	15.34	0.27	9.78	0.01	0.01	9.47	0.01	0.00	0.01	0.00	0.01	0.02	9.78	0.01	0.00	0.23	14.46	0.01
Cl	0.00	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.03	0.01	0.00	0.02	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.01
F	0.07	0.04	0.00	0.00	0.00	0.41	0.05	0.04	0.33	0.00	0.24	0.00	0.00	0.04	0.27	0.68	0.00	0.00	0.00	0.00	0.00
Total	**99.56**	**98.41**	**98.20**	**96.59**	**100.35**	**96.50**	**99.91**	**99.98**	**94.41**	**99.01**	**90.43**	**99.60**	**99.97**	**99.93**	**92.10**	**96.88**	**98.13**	**95.66**	**97.14**	**96.92**	**98.98**
No. Oxygens	12.00	12.00	18.00	8.00	8.00	11.00	12.00	12.00	11.00	18.00	4.00	5.00	12.00	12.00	4.00	11.00	18.00	4.00	8.00	8.00	2.00
Si	3.00	2.98	5.35	2.97	2.62	2.67	2.99	2.98	2.62	4.99	0.00	1.36	3.01	3.01	0.00	2.69	5.00	0.00	2.71	3.00	1.00
Ti	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.01	0.00	0.00	0.00
Al	2.01	1.97	3.56	1.04	1.37	1.53	2.00	1.98	1.57	3.97	0.01	1.08	1.96	1.97	0.01	1.57	3.97	1.86	1.26	1.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.06	-	-	-	-	0.01	0.04	-	-	1.95	0.21	0.02	0.00	1.95	-	-	0.14	-	-	-
Fe2+	2.05	2.04	0.14	0.00	0.00	1.23	2.15	2.06	1.24	0.63	1.03	-0.04	2.04	2.00	1.03	1.18	0.67	0.58	0.01	0.00	0.00
Mn2+	0.14	0.15	0.00	0.00	0.00	0.00	0.15	0.13	0.00	0.01	0.00	0.00	0.33	0.29	0.00	0.01	0.04	0.02	0.00	0.00	0.00
Mg	0.69	0.69	0.11	0.00	0.00	1.10	0.60	0.66	1.07	1.39	0.00	0.38	0.56	0.64	0.00	1.17	1.32	0.16	0.00	0.00	0.00
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00
Ca	0.10	0.12	1.26	0.00	0.38	0.00	0.11	0.14	0.00	0.00	0.00	0.00	0.08	0.07	0.00	0.00	0.00	0.00	0.30	0.00	0.00
Na	0.00	0.00	0.83	0.08	0.62	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.02	0.03	0.02	0.73	0.14	0.00
K	0.00	0.00	0.03	0.94	0.02	0.94	0.00	0.00	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.00	0.01	0.88	0.00
Cl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F	0.01	0.01	0.00	0.00	0.00	0.10	0.01	0.01	0.08	0.00	0.03	0.00	0.00	0.01	0.03	0.16	0.00	0.00	0.00	0.00	0.00
Total cations (S)	**8.01**	**8.01**	**11.30**	**5.02**	**5.01**	**7.74**	**8.01**	**8.01**	**7.73**	**11.03**	**3.03**	**3.00**	**8.00**	**8.00**	**3.03**	**7.75**	**11.03**	**3.00**	**5.03**	**5.01**	**1.00**

APPENDIX D: ADDITIONAL GARNET ELEMENTAL X-RAY MAPS

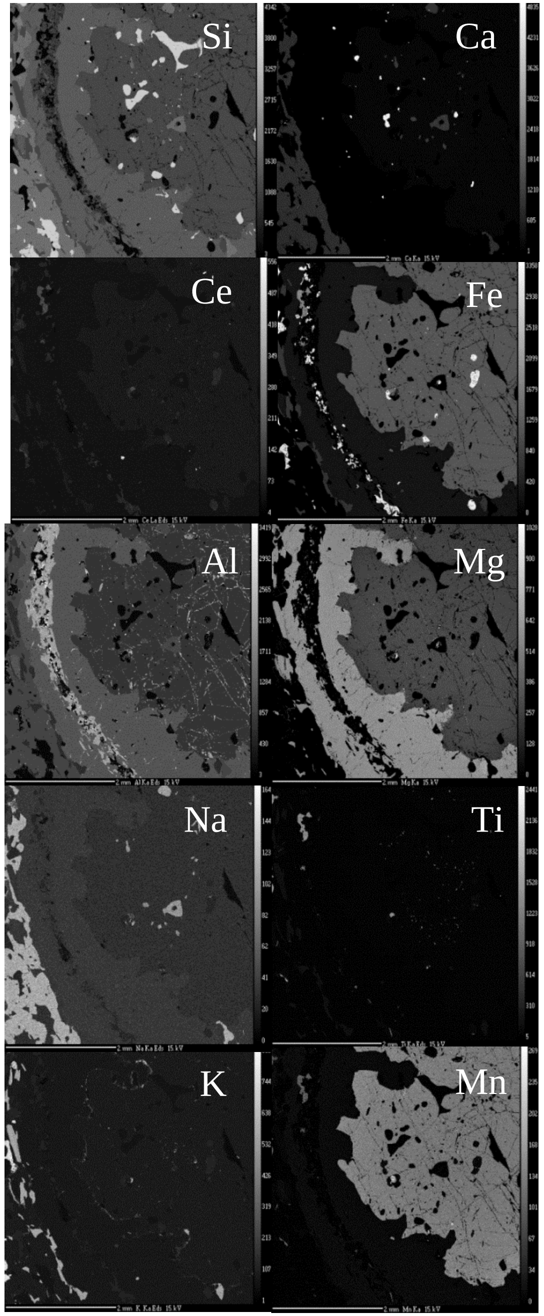
KM07 - 1



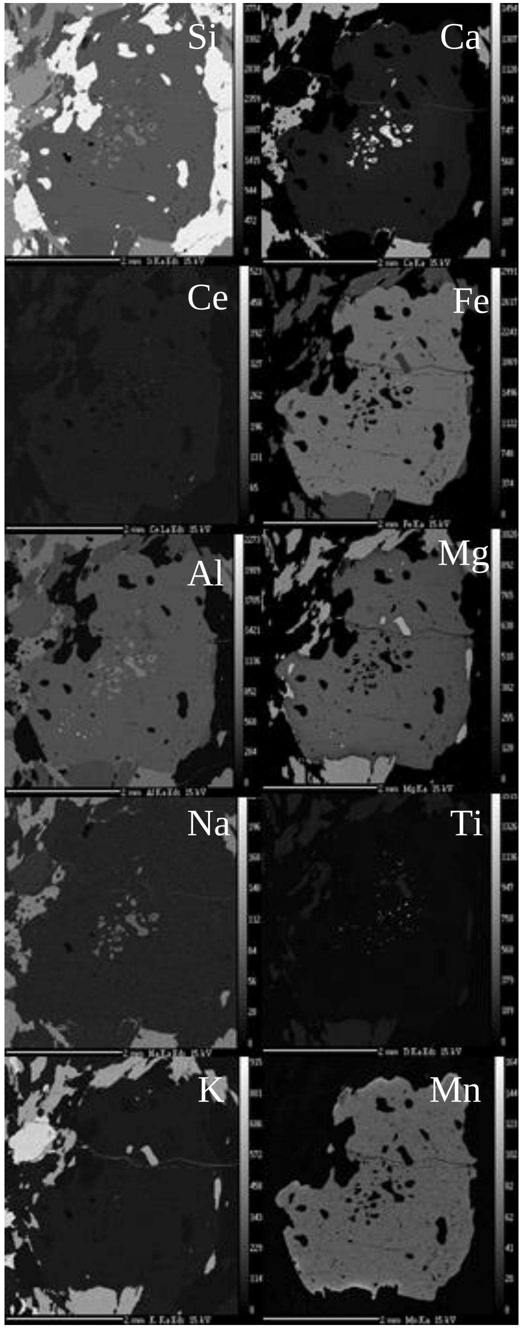
LM06 - 1



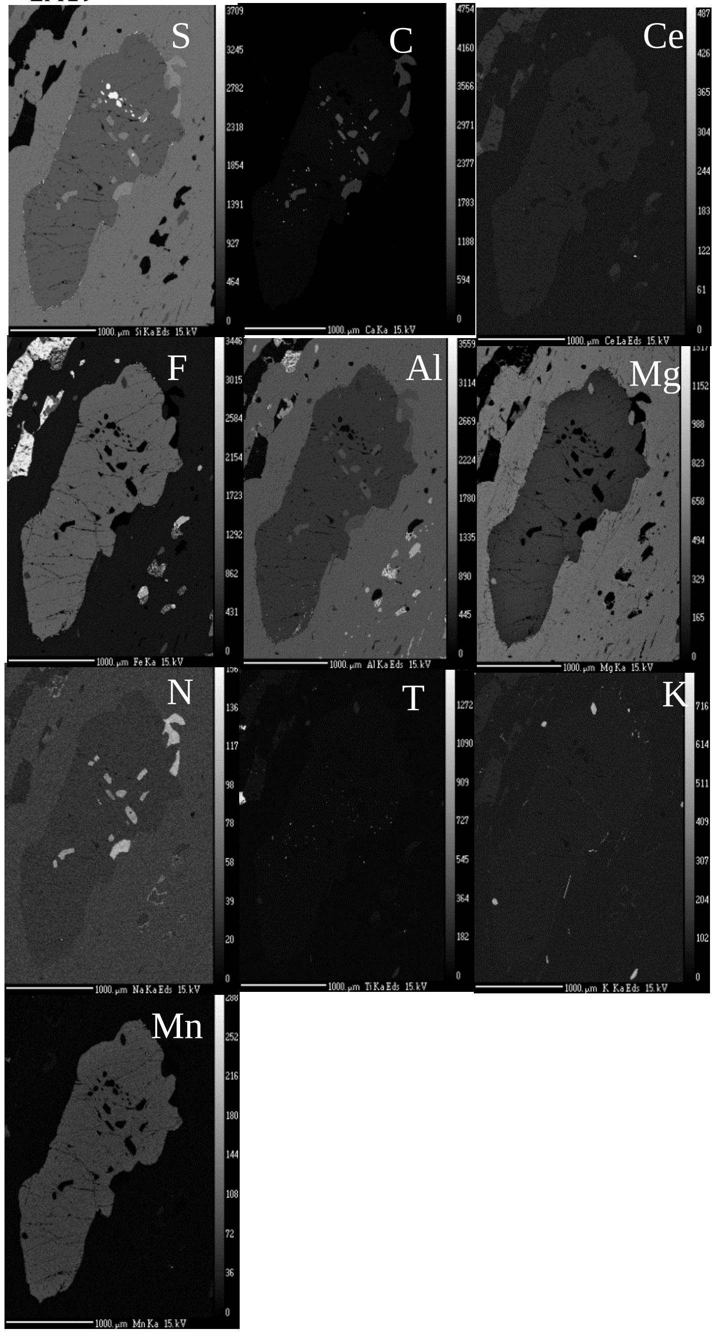
LM06 -



LM19 -



LM19 -



APPENDIX E: U–PB GEOCHRONOLOGY MONAZITE STANDARD ANALYSES

LA-ICP-MS MONAZITE U-PB GEOCHRONOLOGY STANDARD ANALYSES

Analysis	$^{207}Pb/^{206}Pb$	1σ	$^{206}Pb/^{238}U$	1σ	$^{207}Pb/^{235}U$	1σ	% Conc.	$^{207}Pb/^{206}Pb$ age (Ma)	1σ	$^{206}Pb/^{238}U$ age (Ma)	1σ	$^{207}Pb/^{235}U$ age (Ma)	1σ
Madel monazite standard													
stdMAD01	0.0571	0.0007	0.0834	0.0012	0.6561	0.0102	104.5344	494	26.43	516.4	7.26	512.2	6.25
stdMAD02	0.0567	0.0007	0.0829	0.0012	0.6472	0.0101	107.3416	478.1	26.73	513.2	7.23	506.7	6.24
stdMAD03	0.0567	0.0007	0.0813	0.0012	0.6354	0.0098	105.2632	478.8	25.66	504	7.13	499.5	6.07
stdMAD04	0.0575	0.0009	0.0860	0.0012	0.6814	0.0118	103.9906	511.2	33.42	531.6	7.25	527.6	7.11
stdMAD05	0.0569	0.0007	0.0856	0.0012	0.6711	0.0102	109.1040	485.5	27.11	529.7	7.17	521.4	6.2
stdMAD06	0.0576	0.0007	0.0888	0.0011	0.7057	0.0102	106.2997	515.9	28.16	548.4	6.73	542.2	6.08
stdMAD07	0.0567	0.0007	0.0864	0.0012	0.6746	0.0106	111.9656	477.2	28.26	534.3	7.34	523.5	6.44
stdMAD08	0.0572	0.0009	0.0838	0.0012	0.6608	0.0115	103.9471	499.1	33.49	518.8	7.1	515.1	7.03
stdMAD09	0.0570	0.0007	0.0837	0.0013	0.6566	0.0103	105.8667	489.2	25.45	517.9	7.5	512.5	6.31
stdMAD10	0.0570	0.0007	0.0835	0.0012	0.6555	0.0099	105.2342	491	26.66	516.7	7.04	511.9	6.09
stdMAD11	0.0574	0.0008	0.0886	0.0012	0.7012	0.0107	108.3515	505.3	28.92	547.5	6.94	539.5	6.38
stdMAD12	0.0571	0.0007	0.0839	0.0012	0.6602	0.0101	104.6362	496.1	27.1	519.1	7.03	514.7	6.15
stdMAD13	0.0561	0.0009	0.0841	0.0012	0.6505	0.0113	114.1855	456.1	33.4	520.8	7.12	508.8	6.97
stdMAD14	0.0570	0.0007	0.0829	0.0012	0.6516	0.0099	104.2648	492.4	26.9	513.4	7.01	509.5	6.1
stdMAD15	0.0572	0.0007	0.0831	0.0013	0.6548	0.0103	103.2718	498.2	25.49	514.5	7.47	511.4	6.32
stdMAD16	0.0571	0.0007	0.0834	0.0012	0.6567	0.0100	104.0709	496.2	27.21	516.4	7.01	512.6	6.15
stdMAD17	0.0573	0.0007	0.0833	0.0012	0.6573	0.0101	102.9535	501.1	25.65	515.9	7.22	513	6.19
stdMAD18	0.0571	0.0009	0.0829	0.0012	0.6527	0.0113	103.5289	495.9	33.35	513.4	7.02	510.1	6.95
stdMAD19	0.0571	0.0007	0.0830	0.0012	0.6523	0.0100	104.1143	493.4	26.61	513.7	7.06	509.9	6.11
stdMAD20	0.0568	0.0007	0.0845	0.0011	0.6616	0.0096	108.0852	483.6	27.32	522.7	6.61	515.6	5.89
stdMAD21	0.0569	0.0007	0.0833	0.0012	0.6529	0.0100	106.0675	486.2	27.06	515.7	7.01	510.2	6.12
stdMAD22	0.0572	0.0007	0.0822	0.0012	0.6475	0.0098	102.3723	497.4	25.03	509.2	7.11	506.9	6.02
stdMAD23	0.0571	0.0009	0.0823	0.0012	0.6468	0.0115	103.4294	492.8	34.84	509.7	7.01	506.5	7.12
stdMAD24	0.0568	0.0007	0.0847	0.0013	0.6636	0.0106	108.2370	484.4	25.88	524.3	7.68	516.8	6.46
stdMAD25	0.0571	0.0007	0.0823	0.0012	0.6475	0.0101	102.7425	495.9	27.72	509.5	7.02	506.9	6.23
stdMAD26	0.0571	0.0008	0.0825	0.0011	0.6486	0.0099	103.6113	492.9	29.31	510.7	6.54	507.6	6.1
stdMAD27	0.0571	0.0007	0.0822	0.0012	0.6463	0.0099	103.0984	493.8	27.13	509.1	7	506.2	6.13
stdMAD28	0.0567	0.0006	0.0836	0.0012	0.6525	0.0098	108.4014	477.3	24.9	517.4	7.2	510	6.02
stdMAD29	0.0562	0.0009	0.0845	0.0012	0.6544	0.0118	113.6522	460	35.23	522.8	7.2	511.2	7.22
stdMAD30	0.0569	0.0007	0.0845	0.0012	0.6617	0.0106	107.7082	485.2	27.7	522.6	7.37	515.6	6.46
stdMAD31	0.0573	0.0007	0.0828	0.0013	0.6536	0.0105	101.8482	503.2	25.89	512.5	7.52	510.7	6.44
stdMAD32	0.0575	0.0007	0.0830	0.0011	0.6593	0.0093	100.7251	510.3	24.37	514	6.58	514.2	5.7
stdMAD33	0.0568	0.0007	0.0838	0.0012	0.6566	0.0100	107.0338	484.8	26.42	518.9	7.18	512.5	6.16
stdMAD34	0.0582	0.0011	0.0827	0.0013	0.6625	0.0137	95.7383	535	40.73	512.2	7.62	516.2	8.36

stdMAD35	0.0574	0.0009	0.0827	0.0012	0.6536	0.0119	101.1460	506.1	35.21	511.9	7.09	510.7	7.32
stdMAD36	0.0570	0.0007	0.0848	0.0013	0.6662	0.0108	106.6911	491.7	26.3	524.6	7.76	518.4	6.58
stdMAD37	0.0571	0.0007	0.0833	0.0012	0.6557	0.0106	104.0759	495.6	27.92	515.8	7.3	512	6.47
stdMAD38	0.0569	0.0007	0.0819	0.0011	0.6417	0.0093	104.5127	485.3	27.15	507.2	6.43	503.4	5.76
stdMAD39	0.0570	0.0007	0.0830	0.0012	0.6520	0.0099	104.8542	490.3	26.22	514.1	7.11	509.7	6.1
stdMAD40	0.0575	0.0008	0.0813	0.0012	0.6441	0.0109	98.8235	510	29.63	504	7.25	504.9	6.75
stdMAD41	0.0570	0.0010	0.0837	0.0012	0.6573	0.0123	105.4560	491.2	36.81	518	7.21	513	7.52
stdMAD42	0.0570	0.0007	0.0839	0.0012	0.6589	0.0107	106.1070	489.6	28.28	519.5	7.37	513.9	6.55
stdMAD43	0.0568	0.0006	0.0847	0.0011	0.6640	0.0091	108.2147	484.5	24.82	524.3	6.61	517.1	5.57
stdMAD44	0.0567	0.0007	0.0832	0.0012	0.6498	0.0100	107.6489	478.5	26.55	515.1	7.16	508.3	6.16
stdMAD45	0.0569	0.0007	0.0811	0.0012	0.6365	0.0097	102.8647	488.7	25.15	502.7	7.06	500.1	5.99
stdMAD46	0.0576	0.0010	0.0828	0.0012	0.6572	0.0123	99.8054	513.9	36.8	512.9	7.14	512.9	7.52
stdMAD47	0.0573	0.0007	0.0834	0.0013	0.6586	0.0109	103.0110	501.5	26.82	516.6	7.73	513.7	6.68
stdMAD48	0.0580	0.0007	0.0841	0.0011	0.6722	0.0095	98.4487	528.6	25.71	520.4	6.59	522	5.76
stdMAD49	0.0564	0.0007	0.0838	0.0012	0.6516	0.0101	110.6914	468.6	26.68	518.7	7.23	509.5	6.21
stdMAD50	0.0570	0.0006	0.0809	0.0012	0.6358	0.0096	101.7864	492.6	25	501.4	7.04	499.7	5.97
stdMAD51	0.0567	0.0010	0.0835	0.0012	0.6524	0.0125	107.6234	480.1	38.21	516.7	7.23	509.9	7.68
stdMAD52	0.0566	0.0007	0.0837	0.0013	0.6524	0.0108	109.3038	474	27.04	518.1	7.76	509.9	6.65
stdMAD53	0.0570	0.0006	0.0856	0.0013	0.6725	0.0101	107.6032	491.9	24.67	529.3	7.46	522.2	6.15
stdMAD54	0.0564	0.0007	0.0835	0.0012	0.6492	0.0102	110.2838	468.7	27.04	516.9	7.24	508	6.26
stdMAD55	0.0568	0.0007	0.0843	0.0012	0.6597	0.0101	107.8817	483.4	25.54	521.5	7.33	514.4	6.18
stdMAD56	0.0572	0.0010	0.0831	0.0012	0.6544	0.0126	103.3146	497.8	38.02	514.3	7.22	511.2	7.75
stdMAD57	0.0570	0.0007	0.0835	0.0013	0.6560	0.0109	105.4230	490.5	27.25	517.1	7.76	512.2	6.7
stdMAD58	0.0573	0.0007	0.0832	0.0012	0.6565	0.0102	102.6510	501.7	26.63	515	7.22	512.5	6.27
stdMAD59	0.0568	0.0007	0.0839	0.0012	0.6560	0.0101	107.9626	481	25.97	519.3	7.29	512.2	6.2
stdMAD60	0.0592	0.0011	0.0814	0.0012	0.6641	0.0130	87.8461	574.3	38.27	504.5	7.12	517.1	7.95
stdMAD61	0.0566	0.0007	0.0847	0.0013	0.6609	0.0105	110.0147	476.3	27.53	524	7.4	515.1	6.43
stdMAD62	0.0568	0.0010	0.0846	0.0013	0.6626	0.0133	108.2920	483.6	40.27	523.7	7.41	516.2	8.1
stdMAD63	0.0588	0.0007	0.0843	0.0012	0.6827	0.0108	93.1404	559.8	26.77	521.4	7.37	528.4	6.54
stdMAD64	0.0570	0.0011	0.0846	0.0013	0.6647	0.0133	106.3173	492.3	40.05	523.4	7.41	517.5	8.14
stdMAD65	0.0577	0.0006	0.0860	0.0011	0.6844	0.0092	102.5260	518.6	23.04	531.7	6.68	529.4	5.55
stdMAD66	0.0566	0.0008	0.0838	0.0012	0.6537	0.0114	108.9725	475.9	32.88	518.6	7.26	510.7	7.02
stdMAD67	0.0570	0.0006	0.0856	0.0013	0.6725	0.0101	107.6032	491.9	24.67	529.3	7.46	522.2	6.15
stdMAD68	0.0569	0.0006	0.0829	0.0011	0.6507	0.0090	105.5270	486.7	25.02	513.6	6.47	508.9	5.52
stdMAD69	0.0571	0.0007	0.0854	0.0013	0.6714	0.0105	107.1834	492.8	26.31	528.2	7.47	521.6	6.35
stdMAD70	0.0572	0.0007	0.0823	0.0012	0.6489	0.0099	102.3480	498.3	25.2	510	7.18	507.8	6.07
stdMAD71	0.0568	0.0007	0.0836	0.0011	0.6542	0.0091	107.3667	481.9	25.23	517.4	6.52	511.1	5.57
stdMAD72	0.0571	0.0007	0.0823	0.0012	0.6476	0.0102	102.8450	495.6	27.05	509.7	7.2	507	6.29
stdMAD73	0.0567	0.0006	0.0850	0.0013	0.6641	0.0100	109.7245	479.2	24.5	525.8	7.44	517.1	6.11
stdMAD74	0.0572	0.0007	0.0841	0.0011	0.6633	0.0095	104.1642	499.5	26.47	520.3	6.59	516.6	5.82

stdMAD75	0.0565	0.0006	0.0833	0.0012	0.6486	0.0098	109.6493	470.5	24.77	515.9	7.31	507.6	6.06
stdMAD76	0.0579	0.0009	0.0860	0.0012	0.6870	0.0118	100.9303	526.7	34.2	531.6	6.95	531	7.12
stdMAD77	0.0566	0.0007	0.0825	0.0012	0.6436	0.0100	107.4643	475.6	26.09	511.1	7.2	504.6	6.15
stdMAD78	0.0574	0.0008	0.0846	0.0011	0.6694	0.0105	103.3366	506.5	29.88	523.4	6.73	520.3	6.39
stdMAD79	0.0570	0.0007	0.0828	0.0012	0.6501	0.0101	104.6744	489.9	25.83	512.8	7.3	508.5	6.21
stdMAD80	0.0577	0.0007	0.0862	0.0011	0.6851	0.0097	103.2352	516.2	25	532.9	6.74	529.8	5.82
stdMAD81	0.0569	0.0006	0.0810	0.0012	0.6351	0.0097	103.1006	487	24.58	502.1	7.18	499.3	6.01
stdMAD82	0.0572	0.0007	0.0794	0.0012	0.6262	0.0100	98.7177	499.1	27.59	492.7	6.99	493.7	6.26
stdMAD83	0.0571	0.0006	0.0820	0.0012	0.6443	0.0100	103.0229	492.9	25.02	507.8	7.31	505	6.15
stdMAD84	0.0569	0.0006	0.0824	0.0012	0.6461	0.0100	104.8901	486.7	25	510.5	7.35	506.1	6.16
stdMAD85	0.0567	0.0007	0.0818	0.0012	0.6396	0.0100	105.6250	480	25.43	507	7.34	502	6.2
stdMAD86	0.0569	0.0009	0.0867	0.0014	0.6805	0.0132	109.7646	488.5	35.44	536.2	8.2	527.1	7.98
stdMAD87	0.0566	0.0008	0.0853	0.0013	0.6654	0.0116	110.7263	476.4	30.65	527.5	7.72	517.9	7.05
stdMAD88	0.0566	0.0007	0.0844	0.0013	0.6574	0.0108	110.2407	473.6	28	522.1	7.54	513	6.59
stdMAD89	0.0570	0.0008	0.0833	0.0013	0.6549	0.0114	104.7513	492.5	30.8	515.9	7.6	511.5	7.01
stdMAD90	0.0570	0.0007	0.0822	0.0012	0.6462	0.0101	103.5998	491.7	26.17	509.4	7.27	506.1	6.22
222 - in house monazite standard													
222_01	0.0560	0.0007	0.0723	0.0011	0.5580	0.0092	99.3375	452.8	28.69	449.8	6.41	450.2	5.98
222_02	0.0562	0.0006	0.0701	0.0009	0.5432	0.0075	95.1427	459.1	25.08	436.8	5.52	440.5	4.94
222_03	0.0564	0.0006	0.0684	0.0010	0.5316	0.0080	90.9925	468.5	24.4	426.3	6.05	432.9	5.3
222_04	0.0570	0.0007	0.0718	0.0011	0.5640	0.0091	91.2653	490	27.32	447.2	6.5	454.1	5.91
222_05	0.0567	0.0008	0.0709	0.0010	0.5540	0.0090	91.8418	480.5	31.97	441.3	5.77	447.6	5.9
222_06	0.0568	0.0008	0.0714	0.0010	0.5584	0.0089	92.0829	482.5	29.19	444.3	6.09	450.5	5.79
222_07	0.0568	0.0008	0.0714	0.0010	0.5585	0.0089	92.0845	482.6	29.36	444.4	6.09	450.6	5.81
222_08	0.0562	0.0006	0.0681	0.0010	0.5271	0.0081	92.3412	459.6	24.88	424.4	6.06	429.9	5.35
222_09	0.0568	0.0007	0.0721	0.0011	0.5648	0.0086	92.6522	484.5	25.64	448.9	6.3	454.7	5.6
222_10	0.0565	0.0006	0.0712	0.0009	0.5548	0.0077	94.0191	471.5	24.81	443.3	5.64	448.2	5
222_11	0.0566	0.0007	0.0721	0.0012	0.5625	0.0098	94.1251	476.6	27.74	448.6	7.03	453.1	6.38
222_12	0.0566	0.0007	0.0719	0.0010	0.5603	0.0091	94.3273	474.2	28.86	447.3	6.26	451.7	5.9
222_13	0.0567	0.0007	0.0731	0.0010	0.5716	0.0082	94.5496	480.7	26.71	454.5	5.79	459.1	5.31
222_14	0.0568	0.0008	0.0736	0.0011	0.5753	0.0098	94.9367	481.9	29.58	457.5	6.75	461.4	6.31
222_15	0.0560	0.0006	0.0688	0.0010	0.5305	0.0081	94.9712	451.4	24.27	428.7	6.15	432.2	5.38
222_16	0.0558	0.0006	0.0686	0.0010	0.5272	0.0079	96.6998	442.4	24.21	427.8	6.04	429.9	5.28
222_17	0.0564	0.0007	0.0712	0.0010	0.5530	0.0081	95.1675	465.6	27.3	443.1	5.7	446.9	5.31
222_18	0.0565	0.0007	0.0718	0.0011	0.5587	0.0089	95.2899	469.2	27.45	447.1	6.31	450.7	5.77
222_19	0.0563	0.0006	0.0708	0.0009	0.5496	0.0072	95.2906	462.9	23.77	441.1	5.44	444.7	4.7
222_20	0.0563	0.0009	0.0712	0.0010	0.5526	0.0100	95.3323	464.9	35.91	443.2	6.14	446.7	6.57
222_21	0.0564	0.0007	0.0719	0.0009	0.5597	0.0078	95.4991	468.8	25.34	447.7	5.66	451.3	5.07
222_22	0.0566	0.0007	0.0728	0.0011	0.5675	0.0089	95.6513	473.7	27.02	453.1	6.39	456.4	5.79
222_23	0.0562	0.0006	0.0710	0.0009	0.5501	0.0075	96.0235	460.2	24.24	441.9	5.59	445	4.89

222_24	0.0564	0.0007	0.0721	0.0012	0.5598	0.0095	96.3074	465.8	26.46	448.6	6.97	451.4	6.18
222_25	0.0564	0.0008	0.0727	0.0010	0.5655	0.0096	96.7301	467.9	32.1	452.6	6.22	455.1	6.21
222_26	0.0562	0.0007	0.0717	0.0010	0.5556	0.0079	97.3833	458.6	25.99	446.6	5.69	448.7	5.15
222_27	0.0573	0.0009	0.0727	0.0010	0.5735	0.0101	90.2415	501.1	34.11	452.2	6.23	460.3	6.54
222_28	0.0559	0.0007	0.0701	0.0011	0.5393	0.0086	97.8042	446.3	25.72	436.5	6.36	437.9	5.66
222_29	0.0563	0.0007	0.0726	0.0011	0.5630	0.0089	97.8567	461.9	26.3	452	6.56	453.5	5.8
222_30	0.0564	0.0007	0.0738	0.0011	0.5737	0.0090	97.9087	468.6	27.08	458.8	6.47	460.4	5.82
222_31	0.0562	0.0007	0.0723	0.0010	0.5594	0.0090	98.0815	458.7	28.4	449.9	6.27	451.2	5.86
222_32	0.0562	0.0007	0.0725	0.0011	0.5616	0.0090	98.1296	459.8	26.45	451.2	6.58	452.6	5.84
222_33	0.0571	0.0007	0.0715	0.0010	0.5618	0.0088	90.2068	493.2	28.1	444.9	6.09	452.7	5.69
222_34	0.0562	0.0007	0.0724	0.0011	0.5607	0.0091	98.2774	458.6	29.08	450.7	6.32	451.9	5.94
222_35	0.0561	0.0008	0.0722	0.0010	0.5582	0.0096	98.5962	455.9	32.6	449.5	6.19	450.4	6.27
222_36	0.0560	0.0007	0.0718	0.0010	0.5546	0.0078	99.0915	451.3	25.25	447.2	5.7	448	5.11
222_37	0.0560	0.0007	0.0718	0.0011	0.5534	0.0089	99.2889	450	27.69	446.8	6.32	447.2	5.81
222_38	0.0561	0.0007	0.0730	0.0011	0.5649	0.0093	99.4964	456.7	28.58	454.4	6.47	454.7	6
222_39	0.0558	0.0007	0.0711	0.0009	0.5471	0.0077	99.5951	444.6	25.23	442.8	5.62	443.1	5.05
222_40	0.0561	0.0007	0.0731	0.0011	0.5655	0.0090	99.6496	456.6	27.22	455	6.41	455.1	5.81
222_41	0.0560	0.0006	0.0724	0.0010	0.5592	0.0077	99.8892	451.3	24.27	450.8	5.7	451	5
222_42	0.0560	0.0009	0.0729	0.0011	0.5630	0.0104	100.0882	453.3	34.49	453.7	6.54	453.5	6.73
222_43	0.0561	0.0009	0.0733	0.0011	0.5662	0.0103	100.2639	454.7	33.38	455.9	6.67	455.6	6.7
222_44	0.0558	0.0006	0.0714	0.0009	0.5494	0.0074	100.4291	442.8	23.19	444.7	5.63	444.6	4.83
222_45	0.0564	0.0009	0.0756	0.0012	0.5874	0.0107	100.4491	467.6	33.98	469.7	6.89	469.2	6.86
222_46	0.0561	0.0007	0.0737	0.0011	0.5693	0.0094	100.5708	455.5	26.96	458.1	6.77	457.5	6.05
222_47	0.0561	0.0007	0.0735	0.0010	0.5674	0.0088	100.5723	454.3	27.11	456.9	6.24	456.3	5.67
222_48	0.0558	0.0006	0.0717	0.0009	0.5521	0.0074	100.5857	443.9	23.08	446.5	5.66	446.4	4.85
222_49	0.0562	0.0007	0.0745	0.0012	0.5772	0.0099	100.7829	459.8	26.34	463.4	7.26	462.7	6.37
222_50	0.0559	0.0007	0.0726	0.0010	0.5598	0.0080	100.8705	448	25.82	451.9	5.76	451.4	5.21
222_51	0.0561	0.0008	0.0742	0.0011	0.5736	0.0104	101.0736	456.4	32.79	461.3	6.8	460.3	6.71
222_52	0.0556	0.0006	0.0710	0.0009	0.5443	0.0074	101.1673	436.9	23.85	442	5.59	441.3	4.86
222_53	0.0556	0.0007	0.0708	0.0009	0.5426	0.0080	101.2632	435.4	27.16	440.9	5.67	440.2	5.29
222_54	0.0559	0.0007	0.0734	0.0011	0.5661	0.0093	101.6014	449.6	26.36	456.8	6.85	455.5	6.06
222_55	0.0557	0.0007	0.0724	0.0011	0.5557	0.0089	101.9701	441.6	26.27	450.3	6.51	448.7	5.78
222_56	0.0558	0.0008	0.0729	0.0010	0.5603	0.0090	101.9798	444.5	29.51	453.3	6.16	451.7	5.87
222_57	0.0557	0.0007	0.0720	0.0010	0.5528	0.0079	102.1417	438.9	25.73	448.3	5.69	446.8	5.14
222_58	0.0558	0.0007	0.0730	0.0011	0.5607	0.0089	102.4831	443	27.73	454	6.28	452	5.77
222_59	0.0557	0.0007	0.0723	0.0010	0.5550	0.0086	102.5279	439.1	27.07	450.2	6.21	448.3	5.64
222_60	0.0555	0.0007	0.0709	0.0009	0.5422	0.0080	102.6977	430	27.38	441.6	5.67	439.9	5.26
222_61	0.0555	0.0007	0.0715	0.0011	0.5472	0.0086	102.8882	432.8	26.03	445.3	6.32	443.2	5.62
222_62	0.0559	0.0007	0.0739	0.0010	0.5692	0.0084	102.9346	446.4	27.24	459.5	5.87	457.5	5.44
222_63	0.0557	0.0009	0.0725	0.0010	0.5556	0.0098	102.9687	437.9	33.48	450.9	6.25	448.7	6.41

222_64	0.0556	0.0007	0.0723	0.0010	0.5541	0.0085	103.0456	436.7	26.55	450	6.2	447.7	5.56
222_65	0.0555	0.0009	0.0718	0.0010	0.5497	0.0098	103.0897	433.7	33.94	447.1	6.21	444.8	6.43
222_66	0.0554	0.0007	0.0705	0.0010	0.5379	0.0083	103.0979	426.1	25.98	439.3	6.19	437	5.47
222_67	0.0560	0.0008	0.0754	0.0010	0.5822	0.0090	103.4216	453	29.38	468.5	6.01	465.9	5.78
222_68	0.0558	0.0007	0.0738	0.0011	0.5673	0.0087	103.7740	442.5	26.69	459.2	6.3	456.3	5.64
222_69	0.0557	0.0007	0.0739	0.0011	0.5676	0.0087	104.2167	441.1	26.56	459.7	6.31	456.5	5.63
222_70	0.0556	0.0007	0.0740	0.0012	0.5673	0.0099	105.2126	437.4	26.32	460.2	7.28	456.3	6.4
222_71	0.0559	0.0006	0.0758	0.0011	0.5835	0.0089	105.6041	446.1	24.46	471.1	6.7	466.7	5.69
222_72	0.0556	0.0006	0.0744	0.0011	0.5692	0.0086	106.3492	434.7	24.59	462.3	6.5	457.5	5.56
222_73	0.0551	0.0006	0.0717	0.0009	0.5445	0.0075	106.8759	417.4	24.51	446.1	5.65	441.4	4.91
222_74	0.0552	0.0007	0.0722	0.0010	0.5487	0.0088	107.4605	418.2	29.07	449.4	6.17	444.1	5.74
222_75	0.0551	0.0009	0.0721	0.0010	0.5474	0.0099	107.5540	417	35.54	448.5	6.21	443.3	6.51
222_76	0.0554	0.0006	0.0745	0.0011	0.5687	0.0084	108.7008	426.4	23.32	463.5	6.56	457.2	5.43
222_77	0.0555	0.0012	0.0762	0.0012	0.5828	0.0136	109.1601	433.4	47.18	473.1	7.31	466.3	8.72
222_78	0.0557	0.0007	0.0781	0.0012	0.5998	0.0095	109.7103	441.8	25.52	484.7	7.06	477.1	6.05

APPENDIX F: U–PB GEOCHRONOLOGY ZIRCON STANDARD ANALYSES

LA-ICP-MS ZIRCON U-PB GEOCHRONOLOGY STANDARD ANALYSES

Analysis	Pb^{207}/Pb^{206}	1σ	Pb^{206}/U^{238}	1σ	Pb^{207}/U^{235}	1σ	Pb^{208}/Th^{232}	1σ	% Conc.	Pb^{207}/Pb^{206}	1σ	Pb^{206}/U^{238}	1σ	Pb^{207}/U^{235}	1σ	Pb^{208}/Th^{232}	1σ
GJ Zircon Standard																	
KM06																	
STDGJ01	0.0598	0.0016	0.0988	0.0020	0.8238	0.0246	0.0344	0.0034	102.1184	594.8000	57.0700	607.4000	11.6800	610.2000	13.6700	683.2000	66.5900
STDGJ02	0.0597	0.0021	0.0974	0.0021	0.8101	0.0298	0.0376	0.0049	101.3363	591.2000	73.6700	599.1000	12.4500	602.5000	16.6900	746.5000	94.6600
STDGJ03	0.0611	0.0016	0.1022	0.0021	0.8713	0.0251	0.0358	0.0033	97.8634	641.2000	53.8200	627.5000	11.9700	636.3000	13.6300	711.2000	64.7100
STDGJ04	0.0611	0.0016	0.0995	0.0020	0.8461	0.0248	0.0359	0.0034	95.1462	642.8000	55.2400	611.6000	11.7000	622.5000	13.6200	712.2000	66.0000
STDGJ05	0.0603	0.0016	0.0998	0.0020	0.8375	0.0248	0.0365	0.0035	99.8860	614.0000	56.2500	613.3000	11.7500	617.7000	13.6800	724.2000	67.2000
STDGJ06	0.0609	0.0017	0.0994	0.0020	0.8395	0.0252	0.0302	0.0032	96.2193	634.8000	57.6600	610.8000	11.7300	618.9000	13.9200	601.1000	61.8700
STDGJ07	0.0605	0.0022	0.1024	0.0023	0.8547	0.0321	0.0381	0.0042	101.4044	619.5000	76.4100	628.2000	13.2400	627.2000	17.5700	756.1000	82.2000
STDGJ08	0.0601	0.0018	0.1000	0.0021	0.8316	0.0262	0.0275	0.0033	101.4203	605.5000	61.6600	614.1000	12.0100	614.5000	14.5500	548.3000	64.5800
STDGJ09	0.0609	0.0017	0.0983	0.0020	0.8283	0.0247	0.0388	0.0036	94.8376	637.3000	57.4800	604.4000	11.5600	612.7000	13.7200	769.0000	69.1600
STDGJ10	0.0611	0.0017	0.0981	0.0020	0.8294	0.0251	0.0323	0.0033	93.6801	644.0000	58.4200	603.3000	11.5800	613.3000	13.9100	641.6000	64.8100
STDGJ11	0.0611	0.0017	0.0987	0.0020	0.8333	0.0248	0.0328	0.0033	94.4721	642.2000	57.1600	606.7000	11.5900	615.5000	13.7100	652.1000	64.2700
STDGJ12	0.0612	0.0018	0.0968	0.0020	0.8170	0.0258	0.0240	0.0030	92.0117	647.2000	62.1800	595.5000	11.5700	606.4000	14.4200	480.0000	58.7800
STDGJ13	0.0601	0.0018	0.1002	0.0020	0.8301	0.0258	0.0387	0.0031	101.3340	607.2000	62.2400	615.3000	11.9200	613.7000	14.3200	767.7000	61.1300
STDGJ14	0.0615	0.0018	0.0983	0.0020	0.8332	0.0256	0.0374	0.0036	91.8796	657.6000	59.9600	604.2000	11.6300	615.4000	14.1800	742.2000	70.2200
STDGJ15	0.0608	0.0019	0.0968	0.0020	0.8098	0.0268	0.0280	0.0033	94.4480	630.4000	65.9800	595.4000	11.7900	602.4000	15.0500	558.2000	65.5800
STDGJ16	0.0601	0.0031	0.0993	0.0025	0.8127	0.0410	0.0310	0.0041	102.5538	595.2000	108.8800	610.4000	14.6900	603.9000	22.9700	617.6000	79.8200
STDGJ17	0.0600	0.0023	0.0963	0.0021	0.7863	0.0313	0.0296	0.0043	98.3237	602.5000	82.8600	592.4000	12.5100	589.1000	17.8100	588.7000	84.5800
STDGJ18	0.0600	0.0019	0.0973	0.0020	0.8009	0.0260	0.0298	0.0033	99.3529	602.7000	65.3100	598.8000	11.6700	597.3000	14.6500	592.5000	65.5300
STDGJ19	0.0601	0.0018	0.0952	0.0019	0.7842	0.0252	0.0266	0.0030	96.8285	605.4000	64.6400	586.2000	11.4000	587.9000	14.3500	531.1000	59.8900
STDGJ20	0.0591	0.0018	0.0979	0.0020	0.7926	0.0254	0.0281	0.0032	105.6150	569.9000	64.7800	601.9000	11.6600	592.7000	14.4000	560.1000	63.5900
KM07																	
STDGJ01	0.0606	0.0010	0.0997	0.0014	0.8321	0.0155	0.0337	0.0021	98.2673	623.3000	36.7900	612.5000	8.0800	614.8000	8.5700	670.6000	40.4700
STDGJ02	0.0611	0.0011	0.0990	0.0014	0.8342	0.0155	0.0303	0.0021	94.7696	642.4000	36.7500	608.8000	8.0400	615.9000	8.5900	603.5000	40.2200
STDGJ03	0.0599	0.0010	0.0978	0.0014	0.8073	0.0151	0.0284	0.0020	100.3672	599.2000	37.0800	601.4000	7.9400	600.9000	8.4500	565.3000	39.2300
STDGJ04	0.0600	0.0010	0.0982	0.0014	0.8120	0.0151	0.0303	0.0020	100.1493	602.9000	37.0300	603.8000	7.9700	603.5000	8.4800	602.5000	39.4700
STDGJ05	0.0615	0.0011	0.0978	0.0014	0.8284	0.0154	0.0313	0.0021	91.7023	655.6000	36.6700	601.2000	7.9500	612.7000	8.5600	622.3000	40.6400

STDGJ06	0.0603	0.0010	0.0961	0.0013	0.7979	0.0143	0.0295	0.0018	96.5388	612.5000	35.2600	591.3000	7.7500	595.6000	8.0900	587.4000	36.2100
STDGJ07	0.0601	0.0010	0.0968	0.0013	0.8018	0.0144	0.0316	0.0019	98.2028	606.5000	35.2100	595.6000	7.8000	597.8000	8.1000	628.1000	36.5600
STDGJ08	0.0597	0.0010	0.0962	0.0013	0.7911	0.0142	0.0320	0.0019	100.1353	591.2000	35.4900	592.0000	7.7600	591.8000	8.0700	636.3000	37.3500
STDGJ09	0.0596	0.0010	0.0974	0.0013	0.8000	0.0144	0.0329	0.0019	101.6978	589.0000	35.5300	599.0000	7.8500	596.8000	8.1300	654.9000	37.9200
STDGJ10	0.0614	0.0010	0.0967	0.0013	0.8185	0.0147	0.0301	0.0019	91.1904	652.7000	34.9400	595.2000	7.8100	607.2000	8.1800	598.9000	36.5900
STDGJ11	0.0598	0.0010	0.0968	0.0013	0.7974	0.0144	0.0308	0.0019	100.0504	595.1000	36.1300	595.4000	7.8100	595.3000	8.1300	613.8000	36.5400
STDGJ12	0.0593	0.0010	0.0969	0.0013	0.7926	0.0144	0.0289	0.0018	103.0937	578.6000	36.0300	596.5000	7.8300	592.6000	8.1600	575.1000	36.1200
STDGJ13	0.0587	0.0010	0.0975	0.0013	0.7886	0.0143	0.0267	0.0018	108.0151	555.2000	35.9100	599.7000	7.8600	590.4000	8.1000	532.6000	34.3900
STDGJ14	0.0603	0.0010	0.0980	0.0014	0.8150	0.0147	0.0322	0.0020	97.9363	615.4000	35.5600	602.7000	7.9100	605.3000	8.2400	640.9000	38.2900
STDGJ15	0.0588	0.0010	0.0973	0.0013	0.7888	0.0143	0.0302	0.0019	106.7797	560.5000	36.0900	598.5000	7.8600	590.5000	8.1400	602.1000	36.2300
STDGJ16	0.0614	0.0010	0.0973	0.0013	0.8235	0.0148	0.0350	0.0020	91.5838	653.5000	35.1800	598.5000	7.8600	610.0000	8.2600	695.8000	39.4800
STDGJ17	0.0595	0.0010	0.0972	0.0013	0.7980	0.0145	0.0339	0.0020	101.9080	587.0000	36.0500	598.2000	7.8600	595.7000	8.2100	674.7000	38.9600
STDGJ18	0.0613	0.0010	0.0967	0.0013	0.8169	0.0148	0.0298	0.0019	91.6230	649.4000	35.3700	595.0000	7.8200	606.3000	8.2500	593.9000	36.4000
STDGJ19	0.0589	0.0010	0.0975	0.0013	0.7917	0.0144	0.0305	0.0019	106.4419	563.5000	36.2700	599.8000	7.8800	592.1000	8.1900	607.5000	36.2500
STDGJ21	0.0595	0.0009	0.0996	0.0014	0.8172	0.0141	0.0295	0.0017	104.2426	586.9000	33.7900	611.8000	7.9200	606.5000	7.9000	587.5000	33.5200
STDGJ22	0.0615	0.0010	0.0965	0.0013	0.8187	0.0144	0.0283	0.0018	90.3437	657.6000	34.2500	594.1000	7.7400	607.3000	8.0600	563.1000	34.6100
STDGJ23	0.0609	0.0010	0.0966	0.0013	0.8103	0.0144	0.0297	0.0018	93.7549	634.1000	34.6400	594.5000	7.7500	602.6000	8.0600	590.6000	35.8900
STDGJ24	0.0610	0.0010	0.0965	0.0013	0.8113	0.0145	0.0314	0.0019	92.8974	639.2000	34.8400	593.8000	7.7500	603.2000	8.1100	624.9000	36.9600
STDGJ25	0.0594	0.0010	0.0972	0.0013	0.7959	0.0144	0.0317	0.0019	102.6614	582.4000	35.6700	597.9000	7.8200	594.5000	8.1200	631.6000	37.8300
STDGJ26	0.0608	0.0010	0.0969	0.0013	0.8118	0.0147	0.0307	0.0019	94.4708	631.2000	35.4700	596.3000	7.8000	603.5000	8.2200	611.4000	37.5500
STDGJ27	0.0606	0.0010	0.0972	0.0013	0.8126	0.0147	0.0328	0.0020	95.4821	626.4000	35.4500	598.1000	7.8300	603.9000	8.2100	651.8000	39.0400
STDGJ28	0.0600	0.0010	0.0988	0.0014	0.8163	0.0150	0.0296	0.0019	100.8972	601.9000	36.2800	607.3000	7.9600	606.0000	8.3600	589.5000	38.0800
STDGJ29	0.0599	0.0010	0.0982	0.0014	0.8108	0.0149	0.0326	0.0021	100.8009	599.3000	36.3300	604.1000	7.9200	602.9000	8.3400	647.4000	40.0700
STDGJ30	0.0607	0.0010	0.0975	0.0013	0.8153	0.0150	0.0307	0.0020	95.4162	628.3000	36.1600	599.5000	7.8700	605.4000	8.3600	611.8000	39.2100
KM10																	
STDGJ01	0.0599	0.0012	0.0981	0.0014	0.8091	0.0172	0.0316	0.0025	100.8193	598.1000	41.5400	603.0000	8.3000	601.9000	9.6300	553.4000	24.2800
STDGJ02	0.0600	0.0011	0.0987	0.0014	0.8161	0.0159	0.0286	0.0010	100.6470	602.8000	37.4200	606.7000	8.2800	605.9000	8.9000	571.9000	20.1900
STDGJ03	0.0599	0.0012	0.0985	0.0014	0.8140	0.0175	0.0278	0.0012	100.9162	600.3000	42.3800	605.8000	8.3400	604.7000	9.7800	620.6000	23.8000
STDGJ04	0.0598	0.0010	0.0978	0.0014	0.8063	0.0157	0.0287	0.0010	100.8890	596.2000	37.2500	601.5000	8.2300	600.4000	8.8300	644.8000	21.8500
STDGJ05	0.0598	0.0010	0.0971	0.0014	0.8007	0.0156	0.0312	0.0012	100.1844	596.4000	37.2600	597.5000	8.1900	597.2000	8.8100	656.5000	22.1900
STDGJ06	0.0603	0.0012	0.0960	0.0014	0.7977	0.0168	0.0324	0.0011	96.5067	612.6000	40.6100	591.2000	8.2300	595.5000	9.4700	697.0000	27.1100
STDGJ07	0.0594	0.0024	0.0951	0.0016	0.7780	0.0318	0.0330	0.0011	100.9483	580.0000	86.3200	585.5000	9.3300	584.3000	18.1600	628.4000	61.3600

STDGJ08	0.0601	0.0012	0.0979	0.0015	0.8115	0.0175	0.0351	0.0014	99.1113	607.6000	42.2600	602.2000	8.8100	603.3000	9.7900	619.9000	43.2500
STDGJ09	0.0604	0.0014	0.0970	0.0015	0.8073	0.0197	0.0316	0.0031	96.8208	616.5000	48.6600	596.9000	8.5000	600.9000	11.0700	565.1000	29.6800
STDGJ10	0.0606	0.0012	0.0973	0.0015	0.8130	0.0183	0.0284	0.0015	95.7920	625.0000	43.6700	598.7000	8.5400	604.1000	10.2600	641.5000	26.3900
STDGJ11	0.0603	0.0013	0.0970	0.0015	0.8063	0.0186	0.0311	0.0022	97.2784	613.6000	46.3200	596.9000	8.8300	600.4000	10.4400	633.4000	49.5800
STDGJ12	0.0604	0.0012	0.0992	0.0015	0.8252	0.0179	0.0328	0.0043	98.8323	616.6000	41.9200	609.4000	8.6100	610.9000	9.9400	588.1000	21.1700
STDGJ13	0.0600	0.0010	0.0965	0.0014	0.7975	0.0154	0.0318	0.0025	98.6376	601.9000	36.7200	593.7000	8.4200	595.4000	8.6800	625.6000	36.5800
STDGJ14	0.0605	0.0013	0.0973	0.0015	0.8121	0.0184	0.0314	0.0019	96.0835	623.0000	43.8900	598.6000	8.5600	603.6000	10.3200	631.5000	26.5300
STDGJ15	0.0600	0.0012	0.0975	0.0015	0.8062	0.0170	0.0305	0.0021	99.3537	603.4000	41.3400	599.5000	8.7100	600.3000	9.5600	607.4000	41.8900
STDGJ16	0.0605	0.0011	0.0981	0.0015	0.8188	0.0169	0.0361	0.0038	96.8845	622.7000	40.0400	603.3000	8.7200	607.4000	9.4200	607.9000	39.5400
STDGJ17	0.0604	0.0012	0.0962	0.0015	0.8017	0.0168	0.0277	0.0039	95.7330	618.7000	40.8800	592.3000	8.6000	597.8000	9.4500	574.7000	38.9700
STDGJ18	0.0603	0.0012	0.0974	0.0015	0.8092	0.0169	0.0311	0.0021	97.7328	613.1000	40.8500	599.2000	8.7000	602.0000	9.5000	644.3000	42.1500
STDGJ19	0.0601	0.0012	0.0978	0.0015	0.8099	0.0170	0.0305	0.0020	99.1263	606.6000	41.2200	601.3000	8.7500	602.4000	9.5600	598.5000	40.7400
STDGJ20	0.0602	0.0010	0.0982	0.0014	0.8148	0.0150	0.0288	0.0020	98.8376	610.8000	36.1500	603.7000	8.0800	605.1000	8.3700	575.8000	30.4600
STDGJ21	0.0603	0.0010	0.0984	0.0014	0.8175	0.0150	0.0324	0.0022	98.5821	613.6000	36.2400	604.9000	8.1000	606.7000	8.4000	580.4000	30.7500
STDGJ22	0.0600	0.0010	0.0977	0.0014	0.8079	0.0149	0.0364	0.0024	99.5031	603.7000	36.4600	600.7000	8.0500	601.3000	8.3800	592.5000	31.7100
STDGJ23	0.0608	0.0011	0.0973	0.0014	0.8157	0.0158	0.0289	0.0016	94.7160	632.1000	38.4300	598.7000	8.0700	605.7000	8.8300	608.6000	37.1000
STDGJ24	0.0593	0.0011	0.0973	0.0014	0.7956	0.0155	0.0291	0.0016	103.4042	578.7000	38.9500	598.4000	8.0800	594.3000	8.7500	635.7000	36.5600
STDGJ25	0.0613	0.0014	0.0968	0.0015	0.8180	0.0190	0.0298	0.0016	91.5577	650.3000	47.4900	595.4000	8.5100	606.9000	10.6100	627.8000	47.9600
STDGJ26	0.0603	0.0011	0.0967	0.0014	0.8032	0.0159	0.0316	0.0017	97.0627	612.8000	39.5700	594.8000	8.0900	598.6000	8.9500	1017.8000	50.3000
STDGJ27	0.0597	0.0014	0.0968	0.0015	0.7961	0.0191	0.0306	0.0019	100.7103	591.3000	49.6600	595.5000	8.6000	594.6000	10.7800	608.6000	47.0300
STDGJ28	0.0599	0.0016	0.0969	0.0015	0.8003	0.0216	0.0320	0.0019	99.2341	600.6000	56.6000	596.0000	9.0300	597.0000	12.1700	543.3000	49.1000
STDGJ29	0.0598	0.0012	0.0970	0.0014	0.7998	0.0165	0.0516	0.0026	99.9163	597.1000	41.7500	596.6000	8.2100	596.7000	9.3200	489.3000	33.3200
STDGJ30	0.0600	0.0013	0.0976	0.0015	0.8072	0.0185	0.0306	0.0024	99.6680	602.4000	46.9700	600.4000	8.5300	600.9000	10.3700	545.9000	40.2700
STDGJ31	0.0606	0.0016	0.0999	0.0016	0.8353	0.0229	0.0272	0.0025	98.0201	626.3000	57.2900	613.9000	9.3600	616.5000	12.6400	688.4000	58.6100
STDGJ32	0.0607	0.0011	0.0948	0.0017	0.7933	0.0177	0.0245	0.0017	93.0244	627.9000	37.8000	584.1000	10.2000	593.0000	10.0000	594.4000	34.0000
STDGJ33	0.0600	0.0011	0.0952	0.0017	0.7878	0.0176	0.0274	0.0021	96.9406	604.7000	38.0800	586.2000	10.2500	589.9000	9.9900	597.5000	34.4600
STDGJ34	0.0597	0.0012	0.0972	0.0018	0.8007	0.0195	0.0346	0.0030	100.6901	594.1000	43.6800	598.2000	10.6900	597.2000	11.0000	597.0000	42.2500
STDGJ35	0.0599	0.0010	0.0991	0.0018	0.8188	0.0179	0.0299	0.0017	101.5159	600.3000	36.5600	609.4000	10.6400	607.4000	10.0200	709.6000	36.6900
STDGJ36	0.0601	0.0011	0.0977	0.0018	0.8099	0.0188	0.0300	0.0018	98.9793	607.4000	40.1700	601.2000	10.6000	602.4000	10.5200	573.2000	36.4700
STDGJ37	0.0598	0.0011	0.0980	0.0018	0.8079	0.0187	0.0300	0.0022	100.8875	597.2000	39.3000	602.5000	10.7800	601.3000	10.4900	624.7000	37.1500
STDGJ38	0.0602	0.0011	0.0980	0.0018	0.8133	0.0188	0.0357	0.0019	98.6252	611.0000	38.9800	602.6000	10.7900	604.3000	10.5000	555.5000	35.3300
STDGJ39	0.0601	0.0015	0.0962	0.0019	0.7973	0.0223	0.0288	0.0019	97.3849	608.0000	52.4800	592.1000	10.9900	595.3000	12.6000	621.6000	54.3100

STDGJ40	0.0605	0.0011	0.0994	0.0019	0.8297	0.0196	0.0314	0.0019	98.0735	622.9000	39.5600	610.9000	11.1400	613.4000	10.8700	639.7000	39.5500
STDGJ41	0.0600	0.0011	0.0995	0.0019	0.8229	0.0194	0.0279	0.0018	101.5272	602.4000	39.5700	611.6000	11.1700	609.7000	10.8100	558.9000	36.2000
STDGJ42	0.0605	0.0011	0.0987	0.0019	0.8227	0.0194	0.0312	0.0028	97.6651	621.0000	39.3000	606.5000	11.0900	609.6000	10.8000	648.0000	39.1700
STDGJ43	0.0607	0.0011	0.1017	0.0020	0.8516	0.0205	0.0322	0.0020	99.2214	629.3000	39.7200	624.4000	11.6000	625.5000	11.2300	722.8000	43.4400
STDGJ44	0.0602	0.0011	0.1018	0.0020	0.8450	0.0204	0.0280	0.0018	102.2586	611.0000	40.0700	624.8000	11.6300	621.9000	11.2400	781.9000	46.5600
STDGJ45	0.0607	0.0014	0.1010	0.0021	0.8450	0.0236	0.0326	0.0020	98.8999	627.2000	49.6400	620.3000	12.0000	621.9000	12.9700	579.0000	50.2300
LM06																	
STDGJ01	0.0596	0.0024	0.1019	0.0020	0.8370	0.0327	0.0346	0.0053	105.9651	590.1000	83.9600	625.3000	11.4800	617.5000	18.0900	686.9000	103.9800
STDGJ02	0.0606	0.0018	0.0955	0.0016	0.7979	0.0234	0.0315	0.0036	93.8069	626.5000	61.1400	587.7000	9.5400	595.7000	13.2000	626.9000	69.5300
STDGJ03	0.0590	0.0017	0.0941	0.0016	0.7660	0.0218	0.0342	0.0034	102.0767	568.2000	59.6400	580.0000	9.3100	577.5000	12.5300	679.1000	65.7900
STDGJ04	0.0599	0.0027	0.0952	0.0020	0.7848	0.0348	0.0209	0.0052	97.9605	598.2000	95.3700	586.0000	11.5400	588.2000	19.7900	417.7000	102.3200
STDGJ05	0.0599	0.0019	0.0929	0.0016	0.7667	0.0239	0.0331	0.0037	95.5934	599.1000	65.7500	572.7000	9.5800	577.9000	13.7300	658.6000	71.4000
STDGJ06	0.0598	0.0024	0.0925	0.0018	0.7620	0.0301	0.0200	0.0044	95.6223	596.2000	84.8000	570.1000	10.5700	575.1000	17.3600	400.0000	87.8100
STDGJ07	0.0597	0.0024	0.0961	0.0019	0.7899	0.0310	0.0319	0.0053	100.1015	591.0000	83.8800	591.6000	10.9600	591.1000	17.5700	634.7000	104.2400
STDGJ08	0.0601	0.0023	0.0955	0.0018	0.7916	0.0300	0.0332	0.0051	96.6475	608.5000	80.6800	588.1000	10.7500	592.1000	17.0100	661.0000	99.4600
STDGJ09	0.0598	0.0020	0.0951	0.0017	0.7834	0.0265	0.0276	0.0043	98.5032	594.6000	71.7700	585.7000	10.1100	587.4000	15.0600	550.1000	84.9200
STDGJ10	0.0596	0.0022	0.0967	0.0018	0.7950	0.0295	0.0309	0.0050	100.8641	590.2000	78.9800	595.3000	10.7700	594.0000	16.6900	615.2000	98.7200
STDGJ11	0.0603	0.0028	0.0961	0.0020	0.7979	0.0360	0.0394	0.0073	96.2885	614.3000	96.7100	591.5000	11.9000	595.6000	20.3400	781.0000	141.9200
STDGJ12	0.0602	0.0024	0.0952	0.0019	0.7896	0.0307	0.0237	0.0041	96.2580	609.3000	82.6700	586.5000	10.9200	591.0000	17.3900	472.4000	80.5500
STDGJ13	0.0598	0.0041	0.0970	0.0026	0.7983	0.0527	0.0301	0.0107	99.8996	597.6000	141.4900	597.0000	15.4100	595.9000	29.7700	599.6000	209.8600
STDGJ14	0.0607	0.0021	0.0978	0.0018	0.8178	0.0285	0.0352	0.0052	95.7186	628.3000	73.2900	601.4000	10.6400	606.8000	15.9200	698.4000	101.7500
STDGJ15	0.0601	0.0021	0.1005	0.0019	0.8322	0.0289	0.0293	0.0049	101.7639	606.6000	73.1900	617.3000	10.8400	614.8000	16.0300	584.2000	95.2100
STDGJ16	0.0607	0.0022	0.0970	0.0018	0.8115	0.0295	0.0295	0.0051	94.9411	628.6000	76.3900	596.8000	10.7800	603.3000	16.5400	586.7000	100.4100
STDGJ17	0.0603	0.0038	0.1021	0.0027	0.8490	0.0511	0.0311	0.0064	101.8859	615.1000	129.5000	626.7000	15.5000	624.1000	28.0500	619.4000	125.2500
STDGJ18	0.0599	0.0022	0.0997	0.0019	0.8230	0.0304	0.0335	0.0057	102.3035	599.1000	78.0400	612.9000	11.0900	609.7000	16.9500	665.0000	112.1000
STDGJ19	0.0601	0.0013	0.1012	0.0016	0.8377	0.0187	0.0333	0.0024	102.4567	606.5000	44.3300	621.4000	9.2600	617.9000	10.3200	661.1000	46.7300
STDGJ20	0.0603	0.0009	0.0973	0.0014	0.8085	0.0144	0.0304	0.0015	97.6031	613.3000	32.6600	598.6000	8.4400	601.6000	8.0700	606.1000	29.4900
STDGJ21	0.0598	0.0010	0.0957	0.0015	0.7891	0.0148	0.0277	0.0014	99.1588	594.4000	34.6200	589.4000	8.6300	590.6000	8.4000	551.4000	27.4200
STDGJ22	0.0605	0.0009	0.1017	0.0015	0.8481	0.0151	0.0307	0.0015	100.5316	620.8000	32.4300	624.1000	8.8500	623.6000	8.2900	611.5000	28.8600
STDGJ23	0.0599	0.0010	0.0932	0.0014	0.7693	0.0145	0.0276	0.0014	95.8598	599.0000	34.5500	574.2000	8.4500	579.4000	8.3300	549.3000	27.1800
STDGJ24	0.0603	0.0010	0.0994	0.0016	0.8253	0.0166	0.0370	0.0018	99.6898	612.5000	36.7800	610.6000	9.2700	611.0000	9.2200	734.2000	34.3900
STDGJ25	0.0609	0.0017	0.0987	0.0017	0.8287	0.0245	0.0356	0.0036	95.3646	636.4000	58.8100	606.9000	10.1900	612.9000	13.5900	707.2000	69.7100

STDGJ26	0.0607	0.0011	0.0981	0.0016	0.8209	0.0168	0.0279	0.0017	95.9752	628.6000	37.2900	603.3000	9.1700	608.6000	9.3600	555.9000	32.6400
LM08																		
STDGJ01	0.0597	0.0010	0.1014	0.0013	0.8343	0.0145	0.0281	0.0016	105.3985	590.9000	34.8300	622.8000	7.8600	616.0000	8.0300	560.5000	30.6100
STDGJ02	0.0605	0.0010	0.0943	0.0013	0.7864	0.0136	0.0271	0.0015	93.6180	620.5000	34.5000	580.9000	7.3500	589.1000	7.7400	541.1000	28.5900
STDGJ03	0.0600	0.0010	0.0944	0.0013	0.7810	0.0140	0.0268	0.0016	96.4511	603.0000	35.9700	581.6000	7.4100	586.0000	7.9600	535.3000	30.8000
STDGJ04	0.0609	0.0010	0.0990	0.0013	0.8318	0.0147	0.0324	0.0017	95.4809	637.3000	35.2100	608.5000	7.7200	614.6000	8.1400	644.2000	33.5900
STDGJ05	0.0608	0.0010	0.0988	0.0013	0.8281	0.0148	0.0283	0.0016	96.0766	632.1000	35.7100	607.3000	7.7200	612.6000	8.2100	563.7000	31.9400
STDGJ06	0.0605	0.0010	0.1018	0.0014	0.8492	0.0150	0.0281	0.0016	100.7088	620.8000	35.2600	625.2000	7.9200	624.2000	8.2300	559.8000	31.9400
STDGJ07	0.0590	0.0010	0.1011	0.0013	0.8223	0.0146	0.0300	0.0016	109.3937	567.4000	35.8000	620.7000	7.8600	609.3000	8.1300	597.8000	31.8600
STDGJ08	0.0600	0.0010	0.0972	0.0013	0.8031	0.0142	0.0290	0.0016	99.3188	601.9000	35.5700	597.8000	7.5900	598.6000	8.0200	578.2000	31.3300
STDGJ09	0.0619	0.0010	0.0953	0.0013	0.8133	0.0144	0.0272	0.0015	87.5447	670.4000	35.0500	586.9000	7.4700	604.3000	8.0500	542.9000	30.1300
STDGJ10	0.0602	0.0010	0.0965	0.0013	0.8009	0.0145	0.0328	0.0018	97.3451	610.2000	36.4600	594.0000	7.5800	597.3000	8.1900	653.2000	35.1200
STDGJ11	0.0603	0.0010	0.0948	0.0013	0.7876	0.0143	0.0285	0.0016	95.2529	613.0000	36.3900	583.9000	7.4600	589.8000	8.1000	568.1000	31.6900
STDGJ12	0.0604	0.0010	0.0939	0.0013	0.7823	0.0142	0.0297	0.0017	93.4733	619.0000	36.5200	578.6000	7.4000	586.8000	8.1000	590.7000	32.6000
STDGJ13	0.0601	0.0015	0.0962	0.0014	0.7975	0.0199	0.0308	0.0028	97.3213	608.5000	52.7000	592.2000	8.3600	595.4000	11.2600	613.8000	55.5600
STDGJ14	0.0598	0.0011	0.0970	0.0013	0.7988	0.0149	0.0289	0.0017	100.3532	594.5000	38.0000	596.6000	7.6600	596.1000	8.3900	576.4000	33.9800
STDGJ15	0.0605	0.0011	0.0971	0.0013	0.8096	0.0150	0.0313	0.0018	96.0901	621.5000	37.4100	597.2000	7.6700	602.2000	8.4300	622.0000	35.9000
STDGJ16	0.0602	0.0011	0.0956	0.0013	0.7936	0.0149	0.0307	0.0018	96.0967	612.3000	37.8900	588.4000	7.5700	593.2000	8.4200	611.2000	35.4900
STDGJ17	0.0591	0.0012	0.0961	0.0013	0.7828	0.0160	0.0257	0.0019	103.4103	571.8000	42.2500	591.3000	7.8200	587.1000	9.1300	512.4000	36.6500
STDGJ18	0.0601	0.0014	0.1014	0.0015	0.8401	0.0202	0.0329	0.0027	102.3015	608.3000	50.5400	622.3000	8.6600	619.2000	11.1600	653.7000	53.3800
STDGJ19	0.0604	0.0014	0.0999	0.0014	0.8313	0.0194	0.0355	0.0027	99.6268	616.3000	48.6300	614.0000	8.4600	614.4000	10.7400	704.1000	53.4800
STDGJ20	0.0532	0.0013	0.0545	0.0008	0.3998	0.0097	0.0167	0.0010	101.5426	337.1000	53.1100	342.3000	4.8100	341.5000	7.0200	334.0000	19.5200
STDGJ21	0.0597	0.0011	0.0969	0.0013	0.7980	0.0151	0.0292	0.0019	100.3366	594.2000	38.6600	596.2000	7.6900	595.7000	8.5500	581.9000	36.4200
STDGJ22	0.0602	0.0011	0.0955	0.0013	0.7923	0.0152	0.0296	0.0019	96.4420	609.9000	38.8700	588.2000	7.6100	592.5000	8.6000	588.6000	36.5700
STDGJ23	0.0592	0.0011	0.0954	0.0013	0.7785	0.0149	0.0331	0.0020	102.4407	573.6000	39.1100	587.6000	7.6000	584.6000	8.5200	657.8000	38.9300
STDGJ24	0.0606	0.0014	0.1014	0.0015	0.8468	0.0193	0.0392	0.0029	99.7597	624.3000	47.4000	622.8000	8.5200	622.9000	10.6200	776.5000	56.6200
STDGJ25	0.0602	0.0011	0.0978	0.0013	0.8114	0.0155	0.0320	0.0020	98.3641	611.3000	38.7700	601.3000	7.7700	603.2000	8.7000	636.2000	38.7500
STDGJ26	0.0600	0.0011	0.1010	0.0014	0.8346	0.0161	0.0320	0.0020	103.0570	601.9000	39.1000	620.3000	8.0100	616.2000	8.8800	636.6000	39.6800
STDGJ27	0.0600	0.0011	0.0934	0.0016	0.7719	0.0170	0.0261	0.0017	95.4711	602.8000	39.4300	575.5000	9.6400	580.9000	9.7300	520.2000	32.8600
STDGJ28	0.0601	0.0010	0.0928	0.0016	0.7692	0.0161	0.0278	0.0016	94.2203	607.3000	36.5300	572.2000	9.4900	579.3000	9.2600	554.8000	30.4900
STDGJ29	0.0590	0.0012	0.0930	0.0016	0.7566	0.0177	0.0286	0.0020	100.8446	568.3000	43.6300	573.1000	9.6500	572.1000	10.2400	570.3000	39.1000
STDGJ30	0.0607	0.0014	0.0930	0.0017	0.7772	0.0196	0.0263	0.0022	91.4327	626.8000	47.5500	573.1000	10.0000	583.9000	11.2000	525.5000	42.8500

STDGJ31	0.0606	0.0010	0.0922	0.0016	0.7697	0.0159	0.0262	0.0014	91.0883	623.9000	34.9200	568.3000	9.5100	579.6000	9.1100	521.9000	27.2000
STDGJ32	0.0606	0.0011	0.0934	0.0017	0.7796	0.0168	0.0294	0.0017	92.0775	624.8000	37.3900	575.3000	9.7300	585.3000	9.6000	585.1000	33.0900
STDGJ33	0.0602	0.0010	0.0952	0.0017	0.7900	0.0169	0.0254	0.0015	96.0039	610.6000	36.5600	586.2000	9.9500	591.1000	9.6000	507.7000	30.4200
STDGJ34	0.0607	0.0013	0.0940	0.0017	0.7861	0.0198	0.0298	0.0023	92.4071	626.9000	46.6900	579.3000	10.2300	588.9000	11.2500	592.8000	45.0800
STDGJ35	0.0607	0.0010	0.0934	0.0017	0.7821	0.0165	0.0295	0.0015	91.4826	629.3000	35.5800	575.7000	9.8100	586.7000	9.4000	587.6000	29.6500
STDGJ36	0.0602	0.0011	0.0972	0.0018	0.8056	0.0187	0.0274	0.0018	98.1284	609.1000	40.5100	597.7000	10.5400	600.0000	10.5000	545.8000	36.0100
STDGJ37	0.0605	0.0013	0.1016	0.0019	0.8470	0.0211	0.0401	0.0026	100.5642	620.4000	45.0100	623.9000	11.2100	623.0000	11.6000	793.9000	51.0900
STDGJ38	0.0597	0.0012	0.0953	0.0018	0.7839	0.0191	0.0280	0.0020	98.8539	593.3000	43.2800	586.5000	10.5000	587.7000	10.8600	557.8000	40.0300
STDGJ39	0.0603	0.0009	0.1084	0.0018	0.9006	0.0171	0.0331	0.0015	108.1892	613.0000	31.8900	663.2000	10.4800	652.0000	9.1600	658.7000	28.8300
STDGJ40	0.0604	0.0009	0.1025	0.0017	0.8542	0.0165	0.0324	0.0015	101.7135	618.6000	32.6200	629.2000	10.0300	627.0000	9.0500	644.3000	29.1900
STDGJ41	0.0600	0.0009	0.0999	0.0017	0.8261	0.0160	0.0275	0.0013	102.0273	601.8000	32.8100	614.0000	9.8200	611.4000	8.9100	548.1000	26.4200
STDGJ42	0.0607	0.0009	0.0998	0.0017	0.8349	0.0162	0.0310	0.0014	97.5183	628.6000	32.6800	613.0000	9.8200	616.3000	8.9700	617.7000	28.2400
STDGJ43	0.0609	0.0010	0.0997	0.0017	0.8363	0.0164	0.0993	0.0031	96.4860	634.6000	33.1300	612.3000	9.8600	617.1000	9.0800	1913.8000	57.3200
STDGJ44	0.0599	0.0015	0.0993	0.0018	0.8202	0.0220	0.0328	0.0029	101.7167	600.0000	52.8600	610.3000	10.4500	608.2000	12.2700	652.2000	57.6000
LM11																	
STDGJ01	0.0608	0.0012	0.1041	0.0016	0.8729	0.0183	0.0297	0.0021	101.2046	630.9000	41.2900	638.5000	9.2100	637.1000	9.9200	592.2000	40.3800
STDGJ02	0.0595	0.0012	0.0948	0.0014	0.7782	0.0167	0.0271	0.0020	99.7438	585.4000	42.7900	583.9000	8.4900	584.5000	9.5300	540.8000	38.5500
STDGJ03	0.0604	0.0012	0.0954	0.0015	0.7947	0.0169	0.0438	0.0026	94.9854	618.2000	42.1400	587.2000	8.5300	593.9000	9.5600	867.2000	49.7600
STDGJ04	0.0612	0.0012	0.0970	0.0015	0.8184	0.0175	0.0409	0.0025	92.4113	645.7000	42.0700	596.7000	8.7000	607.2000	9.7600	811.0000	48.0500
STDGJ05	0.0605	0.0012	0.0957	0.0015	0.7982	0.0171	0.0276	0.0020	95.0016	620.2000	42.2800	589.2000	8.5900	595.8000	9.6300	550.4000	38.8100
STDGJ06	0.0594	0.0012	0.0963	0.0015	0.7892	0.0170	0.0326	0.0022	101.7339	582.5000	43.0000	592.6000	8.6400	590.7000	9.6500	648.4000	42.8500
STDGJ07	0.0599	0.0012	0.0957	0.0015	0.7908	0.0171	0.0267	0.0020	98.0196	600.9000	42.9400	589.0000	8.6000	591.6000	9.6800	532.0000	39.2300
STDGJ08	0.0598	0.0012	0.0975	0.0015	0.8043	0.0174	0.0292	0.0020	100.2844	597.8000	42.8500	599.5000	8.7700	599.2000	9.7700	581.4000	39.9000
STDGJ09	0.0599	0.0012	0.0962	0.0015	0.7951	0.0173	0.0317	0.0022	98.6014	600.6000	43.1200	592.2000	8.6700	594.0000	9.7600	630.6000	43.0200
STDGJ10	0.0602	0.0012	0.0972	0.0015	0.8072	0.0177	0.0278	0.0021	97.7603	611.7000	43.4800	598.0000	8.7900	600.9000	9.9400	554.9000	40.9100
STDGJ11	0.0599	0.0012	0.0970	0.0015	0.8019	0.0176	0.0253	0.0020	99.3179	601.1000	43.7200	597.0000	8.7800	597.9000	9.9300	505.1000	39.1400
STDGJ12	0.0595	0.0012	0.0957	0.0015	0.7854	0.0174	0.0248	0.0020	100.5632	585.9000	44.3300	589.2000	8.7000	588.6000	9.9100	495.7000	39.6100
STDGJ13	0.0599	0.0013	0.0990	0.0015	0.8171	0.0183	0.0316	0.0023	101.5354	599.2000	44.6800	608.4000	9.0000	606.4000	10.2300	627.8000	45.8000
STDGJ14	0.0600	0.0013	0.0981	0.0015	0.8117	0.0185	0.0281	0.0022	99.9006	603.9000	45.5100	603.3000	8.9700	603.4000	10.3500	560.2000	43.4600
STDGJ15	0.0614	0.0013	0.0964	0.0015	0.8162	0.0186	0.0255	0.0021	90.8173	653.4000	45.1900	593.4000	8.8500	605.9000	10.3900	508.4000	41.4200
STDGJ16	0.0600	0.0013	0.0990	0.0016	0.8190	0.0187	0.0392	0.0028	100.5621	604.9000	45.6600	608.3000	9.0700	607.5000	10.4600	777.3000	54.3500
STDGJ17	0.0593	0.0013	0.0972	0.0015	0.7945	0.0184	0.0336	0.0026	103.3184	578.6000	46.5700	597.8000	8.9500	593.7000	10.4200	668.7000	50.7000

STDGJ18	0.0598	0.0020	0.0967	0.0017	0.7965	0.0264	0.0360	0.0042	99.9832	594.8000	70.2100	594.7000	10.2100	594.8000	14.9400	715.3000	81.1700
STDGJ19	0.0602	0.0013	0.0987	0.0016	0.8184	0.0192	0.0311	0.0025	99.5733	609.3000	47.0100	606.7000	9.1400	607.1000	10.7400	618.0000	49.7300
STDGJ20	0.0602	0.0014	0.0991	0.0016	0.8217	0.0197	0.0344	0.0028	100.0164	609.1000	47.9800	609.2000	9.2300	609.0000	10.9700	683.9000	54.6700
STDGJ21	0.0602	0.0014	0.0982	0.0016	0.8140	0.0197	0.0306	0.0026	98.9995	609.7000	48.6800	603.6000	9.1800	604.7000	11.0400	608.7000	51.5000
LM15																	
STDGJ01	0.0600	0.0024	0.1013	0.0019	0.8383	0.0328	0.0335	0.0052	102.8278	604.7000	83.7100	621.8000	11.3800	618.2000	18.1000	666.1000	101.6300
STDGJ02	0.0601	0.0021	0.0958	0.0017	0.7934	0.0273	0.0313	0.0042	97.2621	606.3000	73.0600	589.7000	10.2100	593.1000	15.4600	623.5000	82.0800
STDGJ03	0.0600	0.0024	0.0957	0.0019	0.7919	0.0313	0.0278	0.0048	97.5343	604.3000	84.7100	589.4000	10.8900	592.2000	17.7400	554.6000	94.7600
STDGJ04	0.0609	0.0018	0.0946	0.0016	0.7942	0.0236	0.0261	0.0029	91.6942	635.7000	62.0700	582.9000	9.6800	593.5000	13.3700	520.5000	56.8100
STDGJ05	0.0603	0.0034	0.0969	0.0023	0.8052	0.0439	0.0408	0.0067	96.9909	614.8000	117.1800	596.3000	13.7400	599.8000	24.6700	807.5000	129.6300
STDGJ06	0.0604	0.0021	0.0937	0.0018	0.7792	0.0275	0.0362	0.0037	93.3970	617.9000	74.7300	577.1000	10.3200	585.0000	15.6800	718.5000	72.7800
STDGJ07	0.0604	0.0030	0.0969	0.0021	0.8056	0.0392	0.0298	0.0065	96.6596	616.7000	103.6800	596.1000	12.5900	600.0000	22.0500	593.0000	127.0600
STDGJ08	0.0606	0.0021	0.0959	0.0018	0.8008	0.0281	0.0333	0.0046	94.4631	624.9000	73.4000	590.3000	10.5300	597.3000	15.8600	661.9000	89.4200
STDGJ09	0.0597	0.0021	0.0967	0.0018	0.7958	0.0284	0.0250	0.0040	100.1347	594.0000	74.9700	594.8000	10.6500	594.4000	16.0600	498.7000	79.3800
STDGJ10	0.0608	0.0039	0.1003	0.0026	0.8407	0.0531	0.0459	0.0112	97.4079	632.7000	132.4000	616.3000	15.4200	619.5000	29.2900	907.8000	217.0700
STDGJ11	0.0604	0.0025	0.0996	0.0020	0.8289	0.0341	0.0271	0.0051	99.1898	617.1000	85.7200	612.1000	11.9200	613.0000	18.9400		
STDGJ12	0.0607	0.0012	0.1078	0.0016	0.9032	0.0193	0.0364	0.0025	104.7619	630.0000	42.6200	660.0000	9.4500	653.4000	10.2700	540.8000	99.5700
STDGJ13	0.0603	0.0012	0.1026	0.0015	0.8541	0.0181	0.0301	0.0022	102.3399	615.4000	42.3300	629.8000	9.0200	626.9000	9.9000	723.5000	47.8000
STDGJ14	0.0600	0.0012	0.0942	0.0014	0.7793	0.0168	0.0442	0.0027	96.1551	603.4000	43.1800	580.2000	8.3800	585.1000	9.5600	598.6000	42.1400
STDGJ15	0.0610	0.0013	0.0977	0.0015	0.8217	0.0185	0.0278	0.0022	93.9934	639.3000	44.8900	600.9000	8.9100	609.0000	10.3200	875.1000	52.5000
STDGJ16	0.0600	0.0014	0.0966	0.0015	0.7990	0.0193	0.0314	0.0026	98.4269	603.9000	49.2500	594.4000	8.9600	596.3000	10.9200	624.7000	51.7100
STDGJ17	0.0608	0.0014	0.0970	0.0015	0.8135	0.0194	0.0319	0.0026	94.2068	633.5000	47.7100	596.8000	9.0500	604.4000	10.8600	635.4000	50.5100
STDGJ18	0.0602	0.0014	0.0978	0.0016	0.8114	0.0194	0.0270	0.0023	98.4124	611.0000	47.9900	601.3000	9.1200	603.3000	10.8800	538.1000	45.3000
STDGJ19	0.0606	0.0015	0.0984	0.0016	0.8217	0.0211	0.0296	0.0028	96.6901	625.4000	51.6400	604.7000	9.4500	609.0000	11.7600	588.7000	54.5400
STDGJ20	0.0606	0.0015	0.0986	0.0016	0.8243	0.0210	0.0296	0.0027	96.8845	625.9000	51.1600	606.4000	9.4500	610.4000	11.7000	590.5000	53.0200
STDGJ21	0.0601	0.0015	0.0982	0.0016	0.8133	0.0208	0.0329	0.0029	99.6700	606.0000	51.4600	604.0000	9.4200	604.3000	11.6400	653.4000	56.1400
STDGJ22	0.0605	0.0011	0.1013	0.0015	0.8454	0.0166	0.0315	0.0019	99.9518	622.4000	37.5200	622.1000	8.8900	622.1000	9.1100	627.7000	36.9100
STDGJ23	0.0604	0.0009	0.0969	0.0014	0.8075	0.0144	0.0302	0.0015	96.2694	619.2000	33.0000	596.1000	8.3800	601.0000	8.1100	601.0000	29.6100
LM19																	
STDGJ01	0.0604	0.0009	0.0977	0.0015	0.8126	0.0147	0.0286	0.0013	97.4846	616.2000	32.5100	600.7000	8.7200	603.9000	8.2500	569.6000	26.4100
STDGJ02	0.0599	0.0009	0.0993	0.0015	0.8191	0.0149	0.0302	0.0014	101.9723	598.3000	32.8800	610.1000	8.8300	607.5000	8.3200	601.3000	27.5900
STDGJ03	0.0596	0.0009	0.0985	0.0015	0.8093	0.0148	0.0900	0.0031	102.9922	588.2000	33.3400	605.8000	8.7800	602.1000	8.3300	1741.1000	56.7700

STDGJ04	0.0602	0.0009	0.0982	0.0015	0.8144	0.0149	0.0283	0.0014	98.8534	610.5000	33.1800	603.5000	8.7500	604.9000	8.3500	563.4000	26.8900
STDGJ05	0.0606	0.0010	0.0980	0.0015	0.8183	0.0152	0.0277	0.0014	96.3994	624.9000	33.7500	602.4000	8.7300	607.1000	8.4600	551.8000	27.2800
STDGJ06	0.0597	0.0010	0.0979	0.0015	0.8061	0.0150	0.0294	0.0015	101.3978	593.8000	34.1600	602.1000	8.7300	600.3000	8.4500	585.0000	28.5900
STDGJ07	0.0599	0.0016	0.0998	0.0017	0.8241	0.0223	0.0312	0.0030	102.0306	600.8000	55.8800	613.0000	9.6700	610.3000	12.4100	619.9000	58.2300
STDGJ08	0.0607	0.0010	0.0976	0.0015	0.8161	0.0152	0.0269	0.0014	95.5573	628.0000	34.2200	600.1000	8.6900	605.9000	8.5100	536.6000	27.1400
STDGJ09	0.0596	0.0009	0.0956	0.0015	0.7858	0.0141	0.0298	0.0013	99.6781	590.3000	31.7400	588.4000	8.6100	588.8000	8.0100	592.9000	25.7600
STDGJ10	0.0598	0.0010	0.0990	0.0015	0.8168	0.0152	0.0267	0.0014	101.8574	597.6000	34.2800	608.7000	8.8000	606.3000	8.5000	531.9000	26.6700
STDGJ11	0.0611	0.0012	0.0988	0.0016	0.8319	0.0183	0.0313	0.0021	94.4773	642.8000	43.0400	607.3000	9.1000	614.7000	10.1500	622.3000	41.5100
STDGJ12	0.0599	0.0010	0.0969	0.0015	0.8000	0.0150	0.0279	0.0014	99.5659	599.0000	34.7400	596.4000	8.6400	596.9000	8.4700	556.9000	27.8600
STDGJ13	0.0604	0.0009	0.0970	0.0015	0.8077	0.0143	0.0275	0.0012	96.4748	618.4000	30.8600	596.6000	8.7400	601.1000	8.0300	548.4000	24.3100
STDGJ14	0.0600	0.0009	0.0939	0.0014	0.7770	0.0140	0.0294	0.0013	95.9231	603.4000	31.8500	578.8000	8.4800	583.8000	7.9900	585.5000	25.6100
STDGJ15	0.0597	0.0009	0.0956	0.0015	0.7873	0.0142	0.0289	0.0013	99.1912	593.5000	31.7300	588.7000	8.6000	589.6000	8.0400	575.5000	25.6600
STDGJ16	0.0610	0.0009	0.0943	0.0014	0.7931	0.0143	0.0275	0.0013	91.0544	638.3000	31.8100	581.2000	8.4900	592.9000	8.0800	547.5000	25.2200
STDGJ17	0.0599	0.0009	0.0533	0.0008	0.4404	0.0077	0.0231	0.0007	55.8260	599.9000	31.0500	334.9000	4.9300	370.5000	5.4500	461.8000	13.2800
STDGJ18	0.0599	0.0009	0.0965	0.0015	0.7966	0.0143	0.0317	0.0014	99.0657	599.4000	32.0700	593.8000	8.6400	594.9000	8.0900	630.5000	27.2100
STDGJ19	0.0594	0.0009	0.0965	0.0015	0.7899	0.0142	0.0297	0.0014	102.3961	580.1000	32.3100	594.0000	8.6400	591.1000	8.0800	590.6000	26.4600
STDGJ20	0.0597	0.0012	0.1067	0.0017	0.8784	0.0189	0.0313	0.0020	110.1078	593.6000	41.0800	653.6000	10.0400	640.1000	10.2400	622.7000	39.5700
STDGJ21	0.0605	0.0009	0.1021	0.0016	0.8515	0.0150	0.0298	0.0013	101.0477	620.4000	30.5300	626.9000	9.1600	625.5000	8.2200	594.1000	25.4800
STDGJ22	0.0601	0.0009	0.0952	0.0015	0.7893	0.0142	0.0289	0.0013	96.3669	608.3000	31.7700	586.2000	8.5800	590.8000	8.0500	576.0000	26.0900
STDGJ23	0.0600	0.0009	0.0956	0.0015	0.7898	0.0143	0.0277	0.0013	97.7892	601.6000	32.3100	588.3000	8.5700	591.0000	8.0900	551.5000	25.7400
STDGJ24	0.0602	0.0009	0.0966	0.0015	0.8021	0.0146	0.0337	0.0015	97.3159	611.0000	32.7100	594.6000	8.6400	598.0000	8.2200	669.4000	29.2900
STDGJ25	0.0602	0.0012	0.0960	0.0013	0.7974	0.0168	0.0318	0.0021	96.5692	612.1000	43.2500	591.1000	7.9000	595.3000	9.4700	632.8000	41.7100
Plesovice In-house Zircon Standard																	
KM06																	
PLES_01	0.0537	0.0014	0.0602	0.0012	0.4531	0.0134	0.0221	0.0013	105.1912	358.3000	57.5400	376.9000	7.3300	379.5000	9.3400	441.1000	26.3700
PLES_02	0.0535	0.0025	0.0544	0.0013	0.4061	0.0190	0.0172	0.0020	97.7377	349.2000	100.7400	341.3000	7.8600	346.1000	13.7300	343.7000	38.9400
PLES_03	0.0547	0.0015	0.0555	0.0011	0.4216	0.0126	0.0220	0.0013	87.2618	398.8000	58.4800	348.0000	6.7500	357.2000	8.9700	440.2000	26.3000
PLES_04	0.0542	0.0014	0.0554	0.0011	0.4145	0.0120	0.0151	0.0009	91.7635	378.8000	57.5800	347.6000	6.7800	352.1000	8.6400	303.5000	18.3700
PLES_05	0.0531	0.0008	0.0534	0.0007	0.3899	0.0098	0.0160	0.0006	102.7389	335.9000	36.2000	345.1000	4.4100	334.3000	4.9400	320.2000	11.6200
PLES_06	0.0532	0.0015	0.0544	0.0011	0.4014	0.0126	0.0167	0.0012	100.7967	338.9000	63.8500	341.6000	6.7400	342.7000	9.1400	334.5000	24.0300
PLES_07	0.0538	0.0015	0.0547	0.0011	0.4070	0.0122	0.0199	0.0013	94.5760	363.2000	60.1700	343.5000	6.5900	346.7000	8.7700	398.6000	26.1000
PLES_08	0.0542	0.0012	0.0531	0.0010	0.3981	0.0105	0.0175	0.0010	88.0274	379.2000	50.7300	333.8000	6.2700	340.2000	7.6500	351.5000	19.9200

PLES_09	0.0534	0.0014	0.0537	0.0011	0.3955	0.0113	0.0165	0.0011	97.1206	347.3000	57.0000	337.3000	6.4200	338.4000	8.1900	330.7000	21.3600
PLES_10	0.0529	0.0014	0.0542	0.0011	0.3941	0.0113	0.0157	0.0011	104.5134	325.7000	58.3100	340.4000	6.4700	337.3000	8.2300	314.5000	21.3500
PLES_11	0.0539	0.0010	0.0539	0.0010	0.4005	0.0095	0.0131	0.0005	92.5116	365.9000	41.9400	338.5000	6.2800	342.0000	6.9000	334.6000	15.0400
PLES_12	0.0536	0.0013	0.0555	0.0011	0.4102	0.0118	0.0145	0.0005	98.9205	352.0000	55.1700	348.2000	6.9000	349.0000	8.5000	303.0000	17.9800
PLES_13	0.0540	0.0011	0.0555	0.0011	0.4138	0.0108	0.0138	0.0006	93.7567	371.6000	46.7600	348.4000	6.7600	351.6000	7.7500	315.6000	16.9400
KM07																	
PLES_01	0.0531	0.0008	0.0529	0.0007	0.3876	0.0065	0.0172	0.0005	99.4912	334.1000	33.9200	332.4000	4.3700	332.6000	4.7900	345.3000	10.3400
PLES_02	0.0538	0.0008	0.0534	0.0007	0.3960	0.0067	0.0166	0.0005	92.4455	362.7000	33.7300	335.3000	4.4000	338.7000	4.8300	333.0000	10.0400
PLES_03	0.0543	0.0009	0.0530	0.0007	0.3967	0.0071	0.0175	0.0007	87.4082	381.2000	36.5900	333.2000	4.4300	339.2000	5.1700	350.6000	13.2100
PLES_04	0.0529	0.0009	0.0531	0.0007	0.3871	0.0069	0.0175	0.0007	103.4408	322.6000	36.4200	333.7000	4.4300	332.3000	5.0400	349.7000	13.0500
PLES_05	0.0537	0.0011	0.0532	0.0007	0.3938	0.0081	0.0170	0.0009	93.0362	359.0000	44.1600	334.0000	4.5400	337.1000	5.9300	340.5000	16.8900
PLES_06	0.0533	0.0013	0.0531	0.0008	0.3897	0.0095	0.0169	0.0011	97.7419	341.0000	53.5300	333.3000	4.7300	334.2000	6.9600	339.3000	21.1700
PLES_07	0.0537	0.0009	0.0532	0.0007	0.3935	0.0073	0.0175	0.0008	93.3743	357.7000	38.8300	334.0000	4.4300	336.9000	5.3400	349.9000	15.0000
PLES_08	0.0541	0.0011	0.0537	0.0007	0.3999	0.0081	0.0184	0.0010	90.2759	373.3000	43.0200	337.0000	4.5600	341.6000	5.8900	367.6000	19.0100
PLES_09	0.0534	0.0008	0.0530	0.0007	0.3902	0.0068	0.0182	0.0007	96.6638	344.7000	35.3000	333.2000	4.3900	334.5000	4.9600	364.9000	14.3500
PLES_10	0.0537	0.0009	0.0533	0.0007	0.3946	0.0074	0.0160	0.0007	93.4152	358.4000	39.0200	334.8000	4.4800	337.7000	5.3900	320.5000	14.7400
PLES_11	0.0533	0.0010	0.0530	0.0007	0.3893	0.0076	0.0169	0.0008	97.8261	340.4000	40.5800	333.0000	4.4900	333.8000	5.5200	338.1000	16.2400
PLES_12	0.0540	0.0010	0.0525	0.0007	0.3906	0.0077	0.0166	0.0008	89.5065	368.8000	41.4100	330.1000	4.4800	334.8000	5.6300	332.9000	16.5400
PLES_13	0.0530	0.0011	0.0535	0.0008	0.3912	0.0085	0.0175	0.0010	101.8171	330.2000	46.3900	336.2000	4.7000	335.3000	6.1900	350.4000	19.9700
PLES_14	0.0531	0.0008	0.0533	0.0007	0.3899	0.0068	0.0160	0.0006	100.6013	332.6000	35.2000	334.6000	4.4200	334.3000	4.9400	320.2000	11.6200
KM10																	
PLES_01	0.0540	0.0010	0.0529	0.0008	0.3941	0.0078	0.0164	0.0005	89.4779	371.6000	39.6000	332.5000	4.6500	337.4000	5.7100	328.8000	8.9800
PLES_02	0.0530	0.0011	0.0522	0.0008	0.3817	0.0086	0.0149	0.0005	99.6660	329.3000	46.2100	328.2000	4.6800	328.3000	6.3000	298.5000	9.8800
PLES_03	0.0534	0.0010	0.0528	0.0008	0.3886	0.0077	0.0159	0.0004	96.5387	343.8000	39.5300	331.9000	4.6800	333.3000	5.6600	318.2000	8.3600
PLES_04	0.0531	0.0011	0.0532	0.0008	0.3890	0.0089	0.0160	0.0008	100.9976	330.8000	46.4900	334.1000	4.8500	333.6000	6.5000	322.2000	11.5600
PLES_05	0.0532	0.0012	0.0532	0.0008	0.3898	0.0093	0.0157	0.0009	99.5530	335.6000	48.7600	334.1000	4.9000	334.2000	6.8000	322.7000	12.6300
PLES_06	0.0528	0.0010	0.0532	0.0008	0.3869	0.0079	0.0146	0.0009	104.2473	320.2000	41.3900	333.8000	4.8800	332.1000	5.7800	321.4000	15.0300
PLES_07	0.0545	0.0012	0.0534	0.0008	0.4011	0.0093	0.0155	0.0008	85.8459	390.7000	48.1800	335.4000	5.0700	342.4000	6.7700	315.5000	18.3700
PLES_08	0.0531	0.0012	0.0537	0.0008	0.3928	0.0090	0.0152	0.0007	101.3229	332.6000	48.1700	337.0000	5.0900	336.4000	6.5900	293.0000	17.6600
PLES_09	0.0536	0.0010	0.0553	0.0008	0.4086	0.0082	0.0141	0.0006	97.6626	355.1000	42.1000	346.8000	4.8100	347.9000	5.9300	305.5000	13.0900
PLES_10	0.0533	0.0010	0.0553	0.0008	0.4063	0.0079	0.0129	0.0006	101.5515	341.6000	39.9500	346.9000	4.7600	346.2000	5.6700	282.1000	11.6200
PLES_11	0.0531	0.0011	0.0530	0.0008	0.3882	0.0082	0.0153	0.0008	99.4323	334.7000	44.5100	332.8000	4.6700	333.1000	6.0000	274.2000	13.1000

PLES_12	0.0535	0.0010	0.0541	0.0008	0.3990	0.0080	0.0138	0.0007	97.4197	348.8000	42.1200	339.8000	4.7300	340.9000	5.8300	258.8000	11.1300
PLES_13	0.0537	0.0012	0.0540	0.0008	0.3996	0.0092	0.0146	0.0008	95.2541	356.1000	49.1900	339.2000	4.8700	341.4000	6.6600	306.6000	16.5200
PLES_14	0.0531	0.0013	0.0542	0.0008	0.3969	0.0098	0.0143	0.0010	102.1002	333.3000	53.7100	340.3000	5.0200	339.4000	7.1300	293.5000	16.6000
PLES_15	0.0527	0.0014	0.0536	0.0008	0.3897	0.0104	0.0125	0.0010	106.6498	315.8000	58.7300	336.8000	5.0700	334.2000	7.6200	286.4000	20.7100
PLES_16	0.0531	0.0014	0.0534	0.0008	0.3910	0.0104	0.0124	0.0008	100.6303	333.2000	58.4000	335.3000	5.0600	335.1000	7.6100	290.4000	20.8300
PLES_17	0.0531	0.0016	0.0534	0.0009	0.3909	0.0115	0.0112	0.0004	100.3293	334.0000	66.1000	335.1000	5.3000	335.0000	8.4100	251.3000	19.6500
PLES_18	0.0520	0.0012	0.0543	0.0008	0.3890	0.0090	0.0139	0.0004	119.7540	284.5000	50.3300	340.7000	4.9400	333.7000	6.6100	249.3000	14.9400
PLES_19	0.0532	0.0009	0.0519	0.0010	0.3805	0.0085	0.0112	0.0004	97.1420	335.9000	39.3600	326.3000	5.8500	327.4000	6.2600	280.1000	11.3700
PLES_20	0.0531	0.0009	0.0530	0.0010	0.3882	0.0087	0.0139	0.0004	99.4919	334.6000	39.6000	332.9000	5.9800	333.1000	6.3900	289.7000	11.8500
PLES_21	0.0539	0.0011	0.0528	0.0010	0.3924	0.0094	0.0127	0.0004	90.0842	368.1000	43.3700	331.6000	6.0600	336.1000	6.8400	312.5000	14.2900
PLES_22	0.0536	0.0010	0.0526	0.0010	0.3883	0.0092	0.0144	0.0006	93.8920	352.0000	42.0400	330.5000	6.0600	333.1000	6.6900	303.1000	13.5200
LM06																	
PLES_01	0.0528	0.0015	0.0516	0.0009	0.3759	0.0109	0.0178	0.0011	101.1218	320.9000	63.1400	324.5000	5.2300	324.0000	8.0200	356.3000	22.4500
PLES_02	0.0535	0.0022	0.0538	0.0010	0.3960	0.0159	0.0178	0.0017	97.0673	347.8000	89.0700	337.6000	6.2400	338.7000	11.5300	357.5000	34.4000
PLES_03	0.0533	0.0017	0.0521	0.0009	0.3823	0.0120	0.0164	0.0012	96.0364	340.6000	68.8600	327.1000	5.4600	328.7000	8.8100	327.7000	24.4500
PLES_04	0.0538	0.0022	0.0536	0.0010	0.3972	0.0160	0.0195	0.0019	92.7488	362.7000	89.1700	336.4000	6.3000	339.6000	11.6300	389.5000	37.4500
PLES_05	0.0531	0.0020	0.0542	0.0010	0.3963	0.0145	0.0200	0.0018	102.1935	332.8000	81.4400	340.1000	6.0500	339.0000	10.5700	400.5000	35.4100
PLES_06	0.0524	0.0029	0.0545	0.0012	0.3937	0.0213	0.0200	0.0029	112.5247	304.2000	122.0700	342.3000	7.5800	337.1000	15.5400	399.3000	57.2100
PLES_07	0.0526	0.0018	0.0544	0.0010	0.3939	0.0136	0.0171	0.0016	110.2001	309.8000	76.2900	341.4000	5.9300	337.2000	9.8900	342.8000	30.7500
PLES_08	0.0531	0.0025	0.0547	0.0011	0.4005	0.0182	0.0206	0.0026	102.5381	334.9000	101.6000	343.4000	6.8800	342.0000	13.2300	412.8000	52.2500
PLES_09	0.0533	0.0025	0.0559	0.0012	0.4099	0.0189	0.0207	0.0026	102.9369	340.5000	102.3100	350.5000	7.0800	348.8000	13.6300	413.7000	51.9900
PLES_10	0.0529	0.0017	0.0552	0.0010	0.4027	0.0131	0.0167	0.0016	106.9753	324.0000	71.2200	346.6000	5.9700	343.6000	9.5100	335.4000	31.9200
PLES_11	0.0530	0.0016	0.0551	0.0010	0.4026	0.0121	0.0177	0.0014	105.5844	327.7000	65.2300	346.0000	5.7900	343.6000	8.7800	355.3000	27.3700
PLES_12	0.0532	0.0017	0.0555	0.0010	0.4075	0.0135	0.0208	0.0020	102.8032	338.9000	72.4200	348.4000	6.0400	347.1000	9.7600	415.5000	39.0500
PLES_13	0.0537	0.0016	0.0515	0.0009	0.3815	0.0113	0.0191	0.0012	90.4217	358.1000	64.3600	323.8000	5.2700	328.1000	8.2900	381.8000	23.7200
PLES_14	0.0535	0.0018	0.0531	0.0009	0.3920	0.0132	0.0184	0.0014	95.1512	350.6000	74.4900	333.6000	5.6600	335.8000	9.6200	367.5000	27.7100
PLES_15	0.0538	0.0008	0.0541	0.0008	0.4017	0.0070	0.0153	0.0005	93.9210	361.9000	33.0300	339.9000	4.9400	342.9000	5.0800	306.5000	9.7500
PLES_16	0.0533	0.0009	0.0520	0.0008	0.3821	0.0073	0.0173	0.0008	95.1632	343.2000	36.8600	326.6000	4.8300	328.6000	5.3600	345.8000	14.9600
PLES_17	0.0526	0.0009	0.0529	0.0008	0.3835	0.0074	0.0124	0.0005	107.4014	309.4000	37.1500	332.3000	5.0400	329.6000	5.4000	248.6000	9.2700
PLES_18	0.0525	0.0008	0.0540	0.0008	0.3910	0.0074	0.0135	0.0005	110.0292	308.1000	35.1500	339.0000	5.1400	335.1000	5.3700	270.5000	10.3900
PLES_19	0.0536	0.0010	0.0534	0.0009	0.3946	0.0082	0.0154	0.0008	94.7175	354.0000	39.7700	335.3000	5.2200	337.7000	5.9600	308.4000	14.9200
PLES_20	0.0530	0.0009	0.0535	0.0008	0.3905	0.0076	0.0156	0.0007	102.3780	328.0000	36.6100	335.8000	5.1200	334.7000	5.5600	312.4000	14.2600

LM08																		
PLES_01	0.0536	0.0009	0.0527	0.0007	0.3895	0.0067	0.0148	0.0005	94.0125	352.4000	35.9700	331.3000	4.2400	334.0000	4.9200	297.2000	9.8700
PLES_02	0.0524	0.0009	0.0523	0.0007	0.3778	0.0066	0.0158	0.0005	108.3086	303.3000	36.3100	328.5000	4.2100	325.4000	4.8200	317.7000	10.1800
PLES_03	0.0541	0.0009	0.0541	0.0007	0.4030	0.0070	0.0160	0.0005	90.9188	373.3000	35.9200	339.4000	4.3500	343.8000	5.0400	320.7000	10.4900
PLES_04	0.0527	0.0009	0.0528	0.0007	0.3836	0.0067	0.0142	0.0005	105.4337	314.7000	36.2300	331.8000	4.2500	329.7000	4.8800	285.4000	9.5700
PLES_05	0.0526	0.0009	0.0531	0.0007	0.3854	0.0067	0.0149	0.0005	106.5815	313.0000	36.0900	333.6000	4.2700	331.0000	4.8800	298.4000	9.9400
PLES_06	0.0538	0.0009	0.0551	0.0007	0.4082	0.0070	0.0159	0.0005	95.8946	360.5000	35.4700	345.7000	4.4200	347.6000	5.0400	318.7000	10.6500
PLES_07	0.0529	0.0009	0.0532	0.0007	0.3878	0.0069	0.0155	0.0006	103.4045	323.1000	37.2600	334.1000	4.3000	332.7000	5.0500	310.1000	11.2300
PLES_08	0.0534	0.0008	0.0545	0.0007	0.4008	0.0067	0.0158	0.0005	99.0438	345.1000	34.5000	341.8000	4.3600	342.2000	4.8800	316.2000	10.0100
PLES_10	0.0536	0.0009	0.0538	0.0007	0.3974	0.0074	0.0160	0.0007	95.5047	353.7000	38.9900	337.8000	4.3900	339.8000	5.3500	319.9000	13.2300
PLES_11	0.0529	0.0008	0.0492	0.0008	0.3591	0.0071	0.0112	0.0004	94.9111	326.2000	35.2500	309.6000	5.1900	311.5000	5.3100	225.6000	6.9000
PLES_12	0.0527	0.0008	0.0503	0.0009	0.3655	0.0072	0.0139	0.0004	99.8737	316.7000	34.5000	316.3000	5.2500	316.3000	5.3700	278.0000	8.7400
PLES_13	0.0530	0.0009	0.0503	0.0009	0.3674	0.0077	0.0155	0.0005	96.1386	328.9000	37.7100	316.2000	5.3900	317.7000	5.7500	311.6000	10.7900
PLES_14	0.0530	0.0009	0.0498	0.0009	0.3640	0.0075	0.0127	0.0004	95.6668	327.7000	36.0900	313.5000	5.3700	315.2000	5.5600	255.8000	8.4200
PLES_15	0.0533	0.0010	0.0510	0.0009	0.3740	0.0088	0.0144	0.0006	94.4019	339.4000	43.6500	320.4000	5.6600	322.6000	6.4700	289.8000	12.7400
PLES_16	0.0525	0.0009	0.0511	0.0009	0.3698	0.0082	0.0131	0.0005	105.0670	305.9000	40.1700	321.4000	5.6700	319.5000	6.0700	263.1000	10.1900
PLES_17	0.0530	0.0009	0.0522	0.0009	0.3811	0.0080	0.0150	0.0005	99.8477	328.4000	35.9100	327.9000	5.7100	327.9000	5.8700	300.3000	10.4800
PLES_18	0.0530	0.0009	0.0528	0.0009	0.3856	0.0081	0.0145	0.0005	100.4851	329.8000	36.0600	331.4000	5.7800	331.1000	5.9400	290.5000	10.2800
PLES_19	0.0526	0.0010	0.0518	0.0010	0.3755	0.0088	0.0138	0.0006	103.8302	313.3000	42.6800	325.3000	5.8500	323.8000	6.4600	276.1000	12.1700
PLES_20	0.0530	0.0010	0.0542	0.0009	0.3965	0.0086	0.0167	0.0007	103.0918	329.9000	41.6200	340.1000	5.5200	339.1000	6.2600	335.0000	13.8100
PLES_21	0.0535	0.0009	0.0538	0.0009	0.3967	0.0083	0.0155	0.0006	96.7345	349.1000	38.9300	337.7000	5.5100	339.3000	6.0300	310.6000	11.6800
PLES_22	0.0532	0.0008	0.0531	0.0009	0.3899	0.0076	0.0137	0.0004	98.6111	338.4000	33.7700	333.7000	5.4700	334.3000	5.5200	275.2000	8.6100
PLES_23	0.0531	0.0009	0.0540	0.0009	0.3954	0.0084	0.0154	0.0006	102.1693	331.9000	39.7100	339.1000	5.5600	338.3000	6.1100	309.5000	12.0100
LM11																		
PLES_01	0.0538	0.0010	0.0529	0.0008	0.3923	0.0079	0.0159	0.0006	91.5404	362.9000	40.6800	332.2000	4.8100	336.1000	5.7200	319.0000	12.5400
PLES_02	0.0531	0.0010	0.0535	0.0008	0.3923	0.0078	0.0159	0.0006	100.3883	334.8000	40.1400	336.1000	4.8600	336.1000	5.6700	318.3000	12.3500
PLES_03	0.0535	0.0010	0.0533	0.0008	0.3932	0.0078	0.0162	0.0006	95.4351	350.5000	40.1100	334.5000	4.8300	336.7000	5.6700	325.5000	12.5200
PLES_04	0.0532	0.0019	0.0523	0.0010	0.3839	0.0136	0.0133	0.0012	96.8160	339.2000	78.9000	328.4000	5.8100	329.9000	10.0100	266.9000	23.3000
PLES_05	0.0531	0.0010	0.0533	0.0008	0.3902	0.0080	0.0155	0.0007	100.7220	332.4000	42.0500	334.8000	4.8800	334.5000	5.8600	310.9000	12.9700
PLES_06	0.0539	0.0013	0.0539	0.0009	0.4006	0.0098	0.0164	0.0009	92.4317	366.0000	51.7700	338.3000	5.2000	342.1000	7.1000	328.1000	17.2200
PLES_07	0.0532	0.0011	0.0523	0.0008	0.3838	0.0083	0.0153	0.0007	97.5950	336.8000	44.9600	328.7000	4.8900	329.8000	6.1200	307.5000	14.1400
PLES_08	0.0525	0.0010	0.0535	0.0008	0.3873	0.0082	0.0161	0.0007	108.9199	308.3000	43.3700	335.8000	4.9200	332.4000	5.9600	322.1000	14.1600

PLES_09	0.0529	0.0011	0.0533	0.0008	0.3893	0.0088	0.0153	0.0008	102.8870	325.6000	47.3400	335.0000	5.0400	333.9000	6.4500	306.5000	15.7600
PLES_10	0.0523	0.0011	0.0551	0.0009	0.3979	0.0089	0.0162	0.0008	115.4103	299.8000	46.7400	346.0000	5.2000	340.1000	6.4700	323.8000	16.8000
PLES_11	0.0529	0.0011	0.0543	0.0008	0.3964	0.0088	0.0156	0.0008	104.9216	325.1000	45.8900	341.1000	5.0800	339.0000	6.3800	313.0000	16.2800
PLES_12	0.0526	0.0011	0.0540	0.0008	0.3918	0.0091	0.0192	0.0011	108.5467	312.4000	48.6500	339.1000	5.1400	335.7000	6.6400	384.3000	21.3300
PLES_13	0.0524	0.0010	0.0540	0.0008	0.3898	0.0084	0.0159	0.0008	112.0331	302.5000	44.2900	338.9000	5.0400	334.2000	6.1300	319.1000	16.3900
PLES_14	0.0531	0.0011	0.0540	0.0008	0.3949	0.0086	0.0161	0.0009	102.2631	331.4000	44.7900	338.9000	5.0700	337.9000	6.2800	322.4000	16.9700
PLES_15	0.0536	0.0014	0.0548	0.0009	0.4043	0.0110	0.0179	0.0014	97.6143	352.1000	58.0200	343.7000	5.5000	344.8000	7.9500	358.7000	27.6800
PLES_17	0.0532	0.0011	0.0542	0.0008	0.3974	0.0090	0.0159	0.0009	100.8598	337.3000	46.6200	340.2000	5.1400	339.7000	6.5200	319.5000	18.3300
LM15																	
PLES_01	0.0533	0.0011	0.0522	0.0008	0.3841	0.0082	0.0156	0.0007	95.5737	343.4000	44.4300	328.2000	4.7800	330.0000	5.9900	313.8000	14.5900
PLES_02	0.0534	0.0017	0.0516	0.0009	0.3797	0.0119	0.0173	0.0012	93.6976	345.9000	68.9600	324.1000	5.3900	326.8000	8.7800	347.1000	24.2300
PLES_03	0.0530	0.0010	0.0527	0.0008	0.3853	0.0078	0.0160	0.0007	100.2725	330.3000	41.6800	331.2000	4.7500	330.9000	5.7100	321.0000	13.8700
PLES_04	0.0534	0.0016	0.0526	0.0009	0.3871	0.0115	0.0172	0.0012	95.2683	346.6000	64.8400	330.2000	5.3900	332.2000	8.4200	343.7000	22.7700
PLES_05	0.0534	0.0010	0.0525	0.0008	0.3863	0.0079	0.0160	0.0007	95.2340	346.2000	42.0500	329.7000	4.7400	331.6000	5.7600	321.5000	14.0500
PLES_06	0.0534	0.0026	0.0534	0.0011	0.3932	0.0184	0.0155	0.0019	97.4731	344.3000	104.5200	335.6000	6.7800	336.7000	13.3900	310.0000	38.4800
PLES_07	0.0532	0.0017	0.0523	0.0009	0.3836	0.0122	0.0160	0.0013	97.7124	336.6000	69.1100	328.9000	5.5700	329.7000	8.9200	321.2000	24.8000
PLES_08	0.0537	0.0035	0.0523	0.0013	0.3873	0.0242	0.0178	0.0030	91.4325	359.5000	138.5100	328.7000	8.0900	332.4000	17.7100	356.9000	59.6500
PLES_09	0.0534	0.0019	0.0535	0.0010	0.3932	0.0138	0.0148	0.0013	97.2769	345.2000	76.7700	335.8000	6.0400	336.7000	10.0700	297.1000	25.6800
PLES_10	0.0533	0.0012	0.0550	0.0009	0.4042	0.0098	0.0151	0.0010	100.7297	342.6000	50.2200	345.1000	5.3400	344.7000	7.0500	303.0000	19.5600
PLES_11	0.0543	0.0018	0.0554	0.0010	0.4146	0.0141	0.0157	0.0015	90.8283	382.7000	72.3400	347.6000	6.2300	352.2000	10.1300	314.9000	30.4500
PLES_12	0.0535	0.0014	0.0555	0.0009	0.4091	0.0110	0.0165	0.0013	99.7136	349.2000	57.0600	348.2000	5.6000	348.2000	7.9400	330.9000	25.2900
PLES_13	0.0533	0.0014	0.0551	0.0009	0.4054	0.0108	0.0164	0.0013	101.1105	342.2000	56.3900	346.0000	5.4800	345.5000	7.7700	328.5000	24.7900
PLES_14	0.0527	0.0011	0.0525	0.0008	0.3816	0.0082	0.0155	0.0008	104.2668	316.4000	44.5000	329.9000	4.8500	328.2000	6.0000	309.8000	14.9500
PLES_15	0.0540	0.0011	0.0537	0.0008	0.3992	0.0087	0.0160	0.0008	91.0811	370.0000	44.8500	337.0000	5.0000	341.1000	6.3000	319.8000	16.2800
PLES_16	0.0533	0.0013	0.0540	0.0009	0.3964	0.0101	0.0144	0.0010	99.7059	340.0000	54.7100	339.0000	5.2200	339.0000	7.3500	289.8000	19.2200
PLES_17	0.0527	0.0014	0.0543	0.0009	0.3943	0.0106	0.0173	0.0013	107.9873	315.5000	57.7700	340.7000	5.3800	337.5000	7.7100	347.4000	25.3900
PLES_18	0.0535	0.0023	0.0577	0.0012	0.4255	0.0180	0.0206	0.0026	103.8760	348.3000	92.1800	361.8000	7.0800	360.0000	12.8300	412.4000	52.0200
LM19																	
PLES_01	0.0547	0.0020	0.0539	0.0010	0.4065	0.0147	0.0160	0.0013	84.8796	398.8000	78.2600	338.5000	6.1600	346.4000	10.6100	321.2000	25.4300
PLES_02	0.0537	0.0017	0.0558	0.0010	0.4133	0.0134	0.0173	0.0012	97.9306	357.6000	70.4900	350.2000	6.0400	351.2000	9.6300	347.3000	24.4300
PLES_03	0.0533	0.0008	0.0539	0.0008	0.3958	0.0071	0.0149	0.0005	99.3833	340.5000	33.6800	338.4000	4.9600	338.6000	5.1700	299.5000	10.0700
PLES_04	0.0529	0.0008	0.0535	0.0008	0.3903	0.0070	0.0159	0.0005	103.4483	324.8000	33.3900	336.0000	4.9200	334.6000	5.0800	319.2000	10.3600

PLES_05	0.0538	0.0012	0.0540	0.0009	0.4005	0.0093	0.0189	0.0011	93.7535	361.8000	48.1200	339.2000	5.1800	342.0000	6.7100	378.2000	21.0700
PLES_06	0.0535	0.0008	0.0535	0.0008	0.3946	0.0070	0.0157	0.0005	95.6150	351.2000	33.0700	335.8000	4.9000	337.7000	5.0900	314.9000	10.2600
PLES_07	0.0528	0.0008	0.0541	0.0008	0.3938	0.0070	0.0155	0.0005	106.0899	320.2000	33.7300	339.7000	4.9600	337.2000	5.1300	311.5000	10.4700
PLES_08	0.0531	0.0010	0.0539	0.0009	0.3946	0.0083	0.0155	0.0007	101.0152	334.9000	41.9900	338.3000	5.1700	337.7000	6.0700	310.3000	13.4700
PLES_09	0.0530	0.0008	0.0528	0.0008	0.3856	0.0070	0.0153	0.0005	100.7599	329.0000	33.9000	331.5000	4.8800	331.1000	5.1000	307.5000	10.1200
PLES_10	0.0538	0.0008	0.0518	0.0008	0.3840	0.0066	0.0164	0.0005	89.5896	363.1000	31.3900	325.3000	4.7800	330.0000	4.8700	328.5000	9.2300
PLES_11	0.0530	0.0007	0.0519	0.0008	0.3794	0.0065	0.0155	0.0004	99.1188	329.1000	30.2100	326.2000	4.8200	326.6000	4.7500	310.9000	8.1200
PLES_12	0.0534	0.0018	0.0541	0.0009	0.3981	0.0132	0.0151	0.0014	97.6972	347.4000	72.4600	339.4000	5.7700	340.2000	9.5600	302.9000	28.3100
PLES_13	0.0537	0.0019	0.0550	0.0010	0.4070	0.0144	0.0125	0.0012	96.5884	357.6000	76.4000	345.4000	6.3000	346.7000	10.3800	252.0000	23.4700

APPENDIX G: U–PB GEOCHRONOLOGY MONAZITE RESULTS

LA-ICP-MS MONAZITE U-PB GEOCHRONOLOGY ANALYSES

Analysis	Pb^{207}/Pb^{206}	1σ	Pb^{206}/U^{238}	1σ	Pb^{207}/U^{235}	1σ	% Conc.	Pb^{207}/Pb^{206} Age (Ma)	1σ	Pb^{206}/U^{238} Age (Ma)	1σ	Pb^{207}/U^{235} Age (Ma)	1σ
KM06													
KM06_02	0.0802	0.00081	0.21385	0.00278	2.36537	0.03058	103.94376	1201.9	19.69	1249.3	14.78	1232.2	9.23
KM06_03	0.07924	0.00079	0.20513	0.00266	2.24192	0.02877	102.07927	1178.3	19.67	1202.8	14.22	1194.3	9.01
KM06_04	0.08109	0.00083	0.20009	0.00265	2.24099	0.0299	96.093495	1223.6	19.93	1175.8	14.21	1194	9.37
KM06_05	0.07834	0.00078	0.19436	0.00252	2.10022	0.02689	99.074074	1155.6	19.62	1144.9	13.6	1148.9	8.81
KM06_06	0.08052	0.00082	0.19878	0.00262	2.21004	0.02926	96.602744	1209.8	19.84	1168.7	14.1	1184.2	9.26
KM06_07	0.07877	0.00079	0.19941	0.0026	2.16606	0.02799	100.4973	1166.3	19.77	1172.1	13.95	1170.2	8.98
KM06_08	0.07934	0.0008	0.19408	0.00256	2.12623	0.02813	96.840857	1180.7	19.91	1143.4	13.82	1157.4	9.14
KM06_09	0.08064	0.00085	0.20938	0.00285	2.3408	0.03294	101.0555	1212.7	20.68	1225.5	15.2	1224.8	10.01
KM06_10	0.07941	0.0008	0.19855	0.00262	2.17714	0.02874	98.731501	1182.5	19.85	1167.5	14.08	1173.8	9.18
KM06_11	0.07994	0.00081	0.2052	0.0027	2.26461	0.02975	100.64408	1195.5	19.74	1203.2	14.45	1201.3	9.25
KM06_12	0.07972	0.00081	0.205	0.0027	2.25586	0.02963	101.01681	1190	19.81	1202.1	14.43	1198.6	9.24
KM06_13	0.07945	0.0008	0.2004	0.00264	2.19787	0.02876	99.509845	1183.3	19.7	1177.5	14.15	1180.4	9.13
KM06_14	0.07988	0.0008	0.20086	0.00264	2.2149	0.029	98.819095	1194	19.68	1179.9	14.18	1185.8	9.16
KM06_15	0.07886	0.0008	0.20454	0.00269	2.22657	0.02937	102.67009	1168.5	20.05	1199.7	14.42	1189.4	9.24
KM06_16	0.07935	0.0008	0.19748	0.0026	2.16274	0.02833	98.38259	1180.9	19.89	1161.8	13.97	1169.2	9.1
KM06_17	0.07925	0.00084	0.20054	0.00271	2.19997	0.03024	99.991513	1178.3	20.72	1178.2	14.57	1181	9.59
KM06_18	0.07793	0.00078	0.19939	0.00262	2.14456	0.02787	102.34914	1145.1	19.72	1172	14.06	1163.3	9
KM06_19	0.07897	0.0008	0.20587	0.0027	2.24393	0.02929	103.01323	1171.5	19.81	1206.8	14.46	1194.9	9.17
KM06_20	0.07827	0.00079	0.19808	0.00259	2.13938	0.02786	100.97071	1153.8	19.88	1165	13.96	1161.6	9.01
KM06_21	0.08155	0.00082	0.20631	0.00271	2.32167	0.03019	97.926622	1234.7	19.64	1209.1	14.46	1218.9	9.23
KM06_22	0.07898	0.00079	0.20615	0.0027	2.24678	0.02906	103.14127	1171.5	19.63	1208.3	14.44	1195.8	9.09
KM06_23	0.07726	0.00077	0.19388	0.00254	2.067	0.02672	101.27671	1127.9	19.75	1142.3	13.72	1137.9	8.85
KM06_24	0.07867	0.00079	0.20603	0.0027	2.23675	0.02893	103.7457	1164	19.69	1207.6	14.43	1192.6	9.08
KM06_25	0.07815	0.00078	0.19952	0.00261	2.15183	0.0277	101.91171	1150.8	19.57	1172.8	14.04	1165.6	8.92
KM06_27	0.07793	0.00078	0.20254	0.00265	2.17774	0.02807	103.83406	1145	19.7	1188.9	14.19	1174	8.97
KM06_28	0.07718	0.00084	0.19709	0.0026	2.09967	0.02837	103.01119	1125.8	21.44	1159.7	14.03	1148.7	9.29
KM07													

KM07_01	0.08097	0.00102	0.21816	0.00306	2.43426	0.03725	104.2107	1220.7	24.55	1272.1	16.19	1252.8	11.01
KM07_02	0.08087	0.00097	0.20811	0.0029	2.31914	0.03454	100.04104	1218.2	23.44	1218.7	15.48	1218.2	10.57
KM07_03	0.08195	0.00101	0.21598	0.00302	2.43915	0.03696	101.30997	1244.3	24.04	1260.6	16.03	1254.2	10.91
KM07_04	0.08329	0.00102	0.22246	0.00311	2.55348	0.03851	101.48131	1275.9	23.84	1294.8	16.41	1287.4	11
KM07_05	0.07904	0.00097	0.20304	0.00284	2.21161	0.03343	101.56836	1173.2	24.14	1191.6	15.21	1184.7	10.57
KM07_06	0.08046	0.00111	0.21779	0.0031	2.41479	0.03922	105.1229	1208.3	26.91	1270.2	16.39	1247	11.66
KM07_07	0.07816	0.00106	0.19114	0.00271	2.05864	0.0332	97.966809	1150.9	26.82	1127.5	14.67	1135.2	11.02
KM07_08	0.07858	0.00109	0.19534	0.00278	2.11528	0.03459	99.018595	1161.6	27.34	1150.2	14.99	1153.8	11.27
KM07_09	0.07996	0.00104	0.20142	0.00284	2.21954	0.03475	98.904774	1196.1	25.37	1183	15.23	1187.2	10.96
KM07_10	0.08022	0.0011	0.20236	0.00287	2.2369	0.03621	98.810613	1202.3	26.72	1188	15.4	1192.7	11.36
KM07_11	0.08128	0.00113	0.20529	0.00292	2.29946	0.03776	97.997232	1228.3	27.16	1203.7	15.63	1212.1	11.62
KM07_12	0.07821	0.00111	0.19639	0.0028	2.11668	0.03507	100.31242	1152.3	27.8	1155.9	15.09	1154.3	11.42
KM07_13	0.079	0.00109	0.19575	0.00278	2.13102	0.03479	98.327788	1172.1	27.07	1152.5	14.99	1158.9	11.28
KM07_14	0.08036	0.00112	0.20257	0.00288	2.24316	0.03685	98.615027	1205.8	27.19	1189.1	15.45	1194.6	11.54
KM07_15	0.08043	0.00117	0.19826	0.00284	2.19747	0.03704	96.54687	1207.6	28.26	1165.9	15.27	1180.2	11.76
KM07_16	0.08192	0.00116	0.20664	0.00294	2.3326	0.03875	97.378368	1243.5	27.41	1210.9	15.73	1222.3	11.81
KM07_17	0.08346	0.00126	0.21274	0.00307	2.44689	0.04244	97.148215	1279.9	29.19	1243.4	16.3	1256.5	12.5
KM07_18	0.08106	0.00118	0.20175	0.00289	2.25354	0.0382	96.876278	1222.9	28.31	1184.7	15.49	1197.9	11.92
KM07_19	0.07954	0.00113	0.19479	0.00278	2.13501	0.03576	96.777731	1185.5	27.91	1147.3	14.99	1160.2	11.58
KM07_20	0.0803	0.0012	0.20051	0.00288	2.21859	0.03839	97.824282	1204.2	29.23	1178	15.48	1186.9	12.11
LM06													
LM06_01	0.07866	0.00086	0.20166	0.00283	2.18587	0.03136	101.77037	1163.6	21.61	1184.2	15.18	1176.6	10
LM06_02	0.08056	0.0009	0.20222	0.00297	2.24488	0.03378	98.058974	1210.7	21.78	1187.2	15.93	1195.2	10.57
LM06_03	0.07884	0.00084	0.20105	0.00287	2.18451	0.03131	101.08714	1168.2	20.87	1180.9	15.38	1176.1	9.98
LM06_04	0.0787	0.00083	0.19955	0.00284	2.16425	0.03088	100.71269	1164.6	20.75	1172.9	15.24	1169.6	9.91
LM06_05	0.07879	0.00084	0.1994	0.00284	2.16504	0.03099	100.45423	1166.8	20.85	1172.1	15.25	1169.9	9.94
LM06_06	0.07923	0.0009	0.19545	0.00275	2.13392	0.03114	97.70759	1177.8	22.23	1150.8	14.83	1159.9	10.09
LM06_07	0.07958	0.0009	0.20489	0.00295	2.24676	0.03349	101.25569	1186.6	22.12	1201.5	15.81	1195.8	10.47
LM06_08	0.07892	0.00088	0.1977	0.0028	2.14992	0.03139	99.401709	1170	21.93	1163	15.07	1165	10.12
LM06_09	0.07986	0.00096	0.19748	0.00286	2.17332	0.03348	97.335791	1193.6	23.47	1161.8	15.42	1172.5	10.71
LM06_10	0.07828	0.00091	0.1968	0.00281	2.12283	0.03176	100.36398	1153.9	22.79	1158.1	15.14	1156.3	10.33
LM06_11	0.07973	0.00098	0.19985	0.00292	2.19566	0.03456	98.672604	1190.3	24.12	1174.5	15.71	1179.7	10.98

LM06_12	0.07802	0.00095	0.19333	0.00281	2.07849	0.03243	99.311427	1147.3	24.11	1139.4	15.17	1141.7	10.7
LM06_13	0.07988	0.00097	0.19579	0.00285	2.15517	0.03357	96.541039	1194	23.8	1152.7	15.35	1166.7	10.8
LM06_14	0.08017	0.00093	0.20103	0.00294	2.22096	0.03406	98.301698	1201.2	22.78	1180.8	15.76	1187.7	10.74
LM06_15	0.07969	0.00091	0.20055	0.00286	2.20249	0.03281	99.066756	1189.4	22.36	1178.3	15.36	1181.8	10.4
LM06_16	0.0797	0.00096	0.20303	0.00294	2.22992	0.03457	100.16812	1189.6	23.59	1191.6	15.78	1190.5	10.87
LM06_17	0.08078	0.00096	0.20011	0.00289	2.2276	0.03422	96.702303	1216	23.21	1175.9	15.52	1189.8	10.76
LM06_18	0.07907	0.0011	0.19906	0.00287	2.16916	0.03617	99.69333	1173.9	27.31	1170.3	15.44	1171.2	11.59
LM06_19	0.07912	0.00097	0.19961	0.0029	2.17658	0.03409	99.821322	1175.3	23.99	1173.2	15.57	1173.6	10.9
LM06_20	0.07962	0.00102	0.19763	0.00287	2.16854	0.03481	97.894914	1187.6	25.21	1162.6	15.44	1171	11.15
LM08													
LM08_01	0.08057	0.00085	0.20231	0.00302	2.24595	0.0337	98.08407	1210.9	20.65	1187.7	16.22	1195.5	10.54
LM08_02	0.08068	0.00085	0.1986	0.00297	2.20791	0.03322	96.226104	1213.6	20.69	1167.8	16	1183.5	10.52
LM08_03	0.08172	0.0009	0.19565	0.00294	2.20328	0.0338	92.977641	1238.9	21.53	1151.9	15.86	1182.1	10.71
LM08_04	0.08308	0.0009	0.1881	0.00283	2.15352	0.03287	87.412477	1271.1	20.95	1111.1	15.37	1166.2	10.58
LM08_05	0.07765	0.00103	0.18517	0.00281	1.9816	0.03299	96.230228	1138	26.1	1095.1	15.3	1109.3	11.23
LM08_06	0.08309	0.00111	0.2017	0.00308	2.30952	0.0389	93.15715	1271.4	25.76	1184.4	16.54	1215.2	11.94
LM08_07	0.0787	0.00096	0.19928	0.00304	2.1613	0.03502	100.59248	1164.6	24.05	1171.5	16.36	1168.7	11.25
LM08_08	0.13713	0.00161	0.20524	0.00313	3.87855	0.06127	54.917172	2191.3	20.23	1203.4	16.74	1609.2	12.75
LM08_09	0.07828	0.00093	0.19609	0.00298	2.11538	0.03382	100.026	1154	23.46	1154.3	16.09	1153.8	11.02
LM08_10	0.0779	0.00092	0.19604	0.00302	2.10465	0.03392	100.84768	1144.3	23.28	1154	16.26	1150.3	11.09
LM08_11	0.07827	0.00092	0.19618	0.00299	2.11622	0.03368	100.078	1153.8	23.05	1154.7	16.1	1154.1	10.98
LM08_12	0.07736	0.00097	0.19347	0.00296	2.06271	0.03386	100.84911	1130.6	24.74	1140.2	15.96	1136.5	11.23
LM08_13	0.07793	0.0009	0.19906	0.00308	2.13803	0.03434	102.19176	1145.2	22.85	1170.3	16.56	1161.2	11.11
LM08_14	0.10268	0.00169	0.32956	0.00541	4.66367	0.09054	109.74779	1673.2	30.12	1836.3	26.23	1760.7	16.23
LM08_15	0.07962	0.0009	0.19271	0.00298	2.11457	0.03367	95.655103	1187.6	22.17	1136	16.12	1153.6	10.98
LM11													
LM11_01	0.08002	0.00083	0.20237	0.00298	2.2317	0.03265	99.206681	1197.5	20.3	1188	15.95	1191.1	10.26
LM11_03	0.08098	0.00086	0.2125	0.00311	2.37139	0.03499	101.72809	1221	20.83	1242.1	16.53	1234	10.54
LM11_04	0.08053	0.00085	0.20585	0.00302	2.28406	0.03363	99.735515	1209.9	20.56	1206.7	16.16	1207.4	10.4
LM11_05	0.08083	0.00085	0.20425	0.003	2.27491	0.03344	98.430825	1217.2	20.45	1198.1	16.06	1204.5	10.37
LM11_06	0.07947	0.00082	0.20649	0.00304	2.26126	0.0332	102.21302	1183.9	20.32	1210.1	16.26	1200.3	10.34
LM11_07	0.07956	0.00084	0.20474	0.00301	2.24448	0.03311	101.23946	1186	20.72	1200.7	16.08	1195.1	10.36

LM11_08	0.07987	0.00083	0.20282	0.00303	2.23207	0.03316	99.723549	1193.7	20.25	1190.4	16.21	1191.2	10.42
LM11_09	0.07991	0.00086	0.2082	0.00309	2.2926	0.03433	102.04218	1194.8	20.99	1219.2	16.48	1210	10.59
LM11_10	0.07937	0.00085	0.20433	0.00303	2.23462	0.03342	101.44744	1181.4	20.95	1198.5	16.22	1192	10.49
LM11_11	0.08001	0.00085	0.20504	0.00303	2.26037	0.03366	100.42599	1197.2	20.8	1202.3	16.21	1200	10.48
LM11_12	0.08014	0.00081	0.20489	0.00301	2.26287	0.03285	100.07496	1200.6	19.85	1201.5	16.11	1200.8	10.22
LM11_13	0.08016	0.00085	0.20208	0.003	2.23207	0.03336	98.792673	1201	20.83	1186.5	16.06	1191.2	10.48
LM11_14	0.08004	0.00088	0.20647	0.00306	2.27697	0.03447	101.0101	1197.9	21.46	1210	16.37	1205.2	10.68
LM11_15	0.08298	0.0009	0.20754	0.0031	2.37287	0.0359	95.822495	1268.7	20.82	1215.7	16.54	1234.5	10.81
LM11_16	0.07979	0.00087	0.20212	0.00301	2.22211	0.03371	99.572076	1191.8	21.48	1186.7	16.12	1188	10.62
LM11_17	0.07914	0.00092	0.20754	0.00308	2.26323	0.0353	103.41102	1175.6	22.9	1215.7	16.44	1200.9	10.98
LM11_18	0.0796	0.00087	0.20574	0.00306	2.25652	0.03419	101.6091	1187	21.44	1206.1	16.35	1198.8	10.66
LM11_20	0.07925	0.00091	0.21447	0.00321	2.34198	0.03652	106.28765	1178.5	22.58	1252.6	17.04	1225.1	11.1
LM11_21	0.08112	0.00099	0.20825	0.00311	2.32836	0.03722	99.599804	1224.4	23.81	1219.5	16.58	1221	11.35
LM11_22	0.07966	0.00089	0.21099	0.00317	2.31584	0.03577	103.8193	1188.7	21.79	1234.1	16.88	1217.2	10.95
LM11_23	0.07866	0.0008	0.19609	0.00287	2.12554	0.03083	99.200756	1163.6	20.05	1154.3	15.49	1157.1	10.01
LM11_24	0.07903	0.00089	0.20147	0.00301	2.19366	0.03381	100.88677	1172.8	22.05	1183.2	16.15	1179	10.75
LM11_25	0.0792	0.0008	0.20041	0.00295	2.18737	0.03176	100.03398	1177.1	19.9	1177.5	15.83	1177	10.12
LM11_26	0.07997	0.00081	0.19895	0.00292	2.19241	0.03173	97.784651	1196.2	19.82	1169.7	15.69	1178.6	10.09
LM11_27	0.07992	0.00081	0.2059	0.00304	2.26758	0.03309	101.00427	1194.9	19.93	1206.9	16.24	1202.3	10.28
LM11_28	0.07986	0.00082	0.21199	0.00313	2.33293	0.03415	103.84583	1193.5	20.06	1239.4	16.65	1222.4	10.4
LM11_29	0.07974	0.00082	0.21012	0.0031	2.3089	0.03382	103.25886	1190.6	20.06	1229.4	16.54	1215	10.38
LM11_30	0.08543	0.00092	0.20965	0.00306	2.46818	0.03642	92.582811	1325.3	20.7	1227	16.33	1262.8	10.66
LM15													
LM15_01	0.08102	0.00089	0.21883	0.00317	2.44307	0.0363	104.40298	1221.9	21.54	1275.7	16.75	1255.4	10.71
LM15_02	0.08004	0.00089	0.20865	0.00302	2.30131	0.03433	101.97846	1197.9	21.77	1221.6	16.13	1212.7	10.56
LM15_04	0.0829	0.0009	0.19902	0.00289	2.27358	0.03362	92.34412	1267	20.97	1170	15.51	1204.1	10.43
LM15_05	0.0802	0.00103	0.19325	0.00282	2.13623	0.03427	94.76662	1201.9	25.21	1139	15.23	1160.6	11.09
LM15_06	0.08132	0.00105	0.20723	0.00302	2.32244	0.03715	98.779595	1229.1	25.08	1214.1	16.14	1219.2	11.35
LM15_09	0.07967	0.00088	0.19532	0.00284	2.14444	0.03199	96.744616	1188.8	21.7	1150.1	15.34	1163.3	10.33
LM15_12	0.08103	0.00102	0.19743	0.00292	2.20447	0.03515	95.033546	1222.2	24.44	1161.5	15.71	1182.5	11.14
LM15_13	0.07979	0.00088	0.19489	0.00285	2.14299	0.03212	96.316187	1191.7	21.69	1147.8	15.37	1162.8	10.38
LM15_14	0.07933	0.00087	0.19627	0.00286	2.14595	0.03193	97.873602	1180.4	21.43	1155.3	15.43	1163.7	10.31

LM15_15	0.08016	0.00095	0.19121	0.00281	2.11246	0.03278	93.913405	1201	23.26	1127.9	15.22	1152.9	10.69
LM15_16	0.08005	0.00095	0.20371	0.003	2.24743	0.03493	99.7413	1198.3	23.32	1195.2	16.06	1196	10.92
LM15_17	0.0786	0.00086	0.19713	0.00288	2.13563	0.03189	99.802099	1162.2	21.61	1159.9	15.51	1160.4	10.33
LM15_18	0.0795	0.00092	0.19352	0.00284	2.12025	0.03245	96.268783	1184.6	22.73	1140.4	15.31	1155.4	10.56
LM15_20	0.0887	0.00107	0.20261	0.00299	2.47694	0.03878	85.08979	1397.7	22.93	1189.3	16.05	1265.3	11.33
LM15_24	0.0803	0.00096	0.20454	0.00301	2.26349	0.03511	99.609732	1204.3	23.28	1199.6	16.08	1201	10.92
LM19													
LM19_01	0.07681	0.00076	0.19702	0.00256	2.08731	0.02635	103.85201	1116.3	19.61	1159.3	13.79	1144.6	8.67
LM19_02	0.0774	0.00078	0.19785	0.00259	2.1125	0.02728	102.84578	1131.5	20.05	1163.7	13.92	1152.9	8.9
LM19_03	0.07713	0.00077	0.19732	0.00258	2.09939	0.02687	103.23699	1124.5	19.76	1160.9	13.86	1148.6	8.8
LM19_04	0.07706	0.00078	0.19497	0.00255	2.07253	0.02672	102.27131	1122.7	20.05	1148.2	13.74	1139.8	8.83
LM19_05	0.07708	0.00078	0.19381	0.00253	2.06075	0.0265	101.67379	1123.2	19.99	1142	13.66	1135.9	8.79
LM19_06	0.07638	0.00076	0.19128	0.00249	2.01538	0.02562	102.1086	1105	19.77	1128.3	13.5	1120.7	8.63
LM19_07	0.07772	0.00077	0.1972	0.00257	2.11418	0.02682	101.80749	1139.7	19.59	1160.3	13.82	1153.4	8.75
LM19_08	0.0766	0.00077	0.19537	0.00255	2.06425	0.02639	103.57432	1110.7	19.96	1150.4	13.73	1137	8.74
LM19_09	0.07679	0.00076	0.1964	0.00256	2.08035	0.02635	103.61208	1115.7	19.64	1156	13.77	1142.3	8.69
LM19_10	0.07634	0.00077	0.1953	0.00254	2.0565	0.02624	104.16667	1104	19.95	1150	13.72	1134.5	8.72
LM19_11	0.07626	0.00075	0.19693	0.00256	2.0715	0.02604	105.15426	1102	19.52	1158.8	13.77	1139.4	8.61
LM19_12	0.07651	0.00077	0.19559	0.00254	2.06399	0.02623	103.89751	1108.4	19.9	1151.6	13.72	1136.9	8.69
LM19_13	0.0768	0.00077	0.19134	0.00249	2.02693	0.02566	101.12893	1116.1	19.77	1128.7	13.46	1124.6	8.61
LM19_14	0.07666	0.00076	0.19376	0.00252	2.04865	0.02584	102.64317	1112.3	19.65	1141.7	13.59	1131.8	8.6
LM19_15	0.07849	0.00091	0.20549	0.00288	2.2226	0.03272	103.92512	1159.2	22.82	1204.7	15.39	1188.2	10.31
LM19_16	0.07936	0.00102	0.19888	0.00286	2.17473	0.03444	98.99255	1181.2	25.09	1169.3	15.4	1173	11.02
LM19_17	0.07896	0.00108	0.19489	0.00278	2.12046	0.03462	98.002049	1171.2	26.89	1147.8	15.02	1155.5	11.27
LM19_18	0.07917	0.0009	0.19262	0.00274	2.10143	0.03109	96.539998	1176.3	22.31	1135.6	14.81	1149.3	10.18
LM19_19	0.07648	0.00076	0.19403	0.00252	2.04661	0.02578	103.21416	1107.6	19.77	1143.2	13.59	1131.2	8.59
LM19_20	0.07874	0.00089	0.19933	0.00287	2.16301	0.03238	100.51471	1165.7	22.34	1171.7	15.4	1169.2	10.39
LM19_21	0.07646	0.00075	0.19068	0.00247	2.01107	0.02505	101.61669	1107.2	19.43	1125.1	13.36	1119.3	8.45
LM19_22	0.07946	0.00094	0.19247	0.00278	2.10765	0.03223	95.868537	1183.6	23.14	1134.7	15.02	1151.3	10.53
LM19_23	0.07668	0.00076	0.18861	0.00244	1.99478	0.02497	100.08986	1112.9	19.56	1113.9	13.26	1113.7	8.47
LM19_24	0.07933	0.00093	0.19404	0.00278	2.12148	0.03224	96.840322	1180.5	23.04	1143.2	15.03	1155.8	10.49
LM19_25	0.07664	0.00076	0.19173	0.00248	2.0267	0.02529	101.6908	1111.9	19.55	1130.7	13.43	1124.5	8.49

LM19_26	0.07675	0.00076	0.1967	0.00255	2.08224	0.02597	103.84857	1114.7	19.5	1157.6	13.71	1143	8.55
LM19_27	0.07667	0.00075	0.18944	0.00245	2.00318	0.02491	100.51231	1112.6	19.43	1118.3	13.28	1116.6	8.42
LM19_28	0.07591	0.00075	0.18795	0.00243	1.96767	0.02448	101.61999	1092.6	19.55	1110.3	13.19	1104.5	8.38
LM19_29	0.0759	0.00075	0.18843	0.00244	1.9724	0.02466	101.8766	1092.4	19.71	1112.9	13.23	1106.1	8.42
LM19_30	0.07679	0.00077	0.19255	0.00249	2.03925	0.02554	101.74778	1115.7	19.81	1135.2	13.47	1128.7	8.53
LM19_31	0.07638	0.00075	0.19219	0.00248	2.02464	0.02508	102.54276	1105.1	19.49	1133.2	13.42	1123.8	8.42
LM19_32	0.07867	0.00087	0.19433	0.00257	2.10803	0.02896	98.367417	1163.8	21.84	1144.8	13.86	1151.4	9.46
LM19_33	0.07648	0.00077	0.18877	0.00246	1.99112	0.0253	100.63194	1107.7	19.95	1114.7	13.33	1112.5	8.59
LM19_34	0.07477	0.00073	0.1862	0.00239	1.92055	0.02353	103.62421	1062.3	19.58	1100.8	13.01	1088.3	8.18
LM19_35	0.07849	0.00081	0.18772	0.00279	2.03039	0.03008	95.669427	1159.2	20.37	1109	15.14	1125.7	10.08
LM19_36	0.07917	0.00082	0.18467	0.00276	2.01477	0.03003	92.867466	1176.3	20.35	1092.4	15.01	1120.5	10.11
LM19_37	0.07806	0.0009	0.19971	0.00302	2.14833	0.03369	102.21197	1148.3	22.61	1173.7	16.25	1164.5	10.86
LM19_38	0.0791	0.00093	0.205	0.00313	2.23484	0.03563	102.33251	1174.7	23.09	1202.1	16.74	1192	11.19
LM19_39	0.15052	0.00155	0.38917	0.00594	8.07334	0.12255	90.097368	2351.9	17.46	2119	27.56	2239.3	13.71
LM19_40	0.07858	0.00082	0.20037	0.00308	2.1701	0.03338	101.34286	1161.7	20.62	1177.3	16.53	1171.5	10.69
LM19_41	0.07884	0.00083	0.19335	0.00299	2.10098	0.03263	97.543229	1168.2	20.81	1139.5	16.14	1149.1	10.68
LM19_42	0.07906	0.00085	0.19419	0.00302	2.1152	0.03336	97.469541	1173.7	21.13	1144	16.29	1153.8	10.87
LM19_43	0.07874	0.00084	0.20527	0.00321	2.22685	0.03525	103.26012	1165.6	20.98	1203.6	17.18	1189.5	11.09
LM19_44	0.07792	0.00084	0.18922	0.00297	2.03215	0.03221	97.589099	1144.8	21.18	1117.2	16.11	1126.3	10.79
LM19_45	0.07684	0.0008	0.20256	0.00319	2.14482	0.0333	106.43631	1117.1	20.53	1189	17.11	1163.4	10.75
LM19_46	0.08156	0.0009	0.20809	0.00331	2.33956	0.03787	98.664076	1235.1	21.43	1218.6	17.66	1224.4	11.52

APPENDIX H: U–PB GEOCHRONOLOGY ZIRCON RESULTS

LA-ICP-MS U-PB ZIRCON ANALYSES

Analysis	Pb^{207}/Pb^{206}	1σ	Pb^{206}/U^{238}	1σ	Pb^{207}/U^{235}	1σ	Pb^{208}/Th^{232} age (Ma)	1σ	% Conc.	Pb^{207}/Pb^{206} age (Ma)	1σ	Pb^{206}/U^{238} age (Ma)	1σ	Pb^{207}/U^{235} age (Ma)	1σ	Pb^{208}/Th^{232} age (Ma)	1σ
Windmill Islands Moraine Samples																	
KM06																	
KM06_01A	0.08255	0.00109	0.26158	0.00491	3.01962	0.06156	0.07493	0.00257	119.0037	1258.7	25.41	1497.9	25.11	1412.6	15.55	1460.4	48.4
KM06_01B	0.08215	0.00107	0.232	0.00433	2.66696	0.05383	0.06928	0.00226	107.6861	1249	24.99	1345	22.64	1319.4	14.91	1354	42.74
KM06_02A	0.08019	0.00137	0.22985	0.00449	2.57281	0.05922	0.07086	0.00711	110.9752	1201.8	33.28	1333.7	23.55	1292.9	16.83	1383.7	134.24
KM06_02B	0.09556	0.00157	0.16438	0.00309	2.19559	0.04868	0.60018	0.03031	63.74505	1539.1	30.61	981.1	17.11	1179.6	15.47	9502.1	382.84
KM06_03A	0.08198	0.00104	0.19814	0.00369	2.27123	0.04541	0.06257	0.00204	93.60591	1244.9	24.68	1165.3	19.83	1203.4	14.09	1226.7	38.74
KM06_03B	0.08268	0.00107	0.20131	0.00375	2.32829	0.04683	0.06234	0.00203	93.7074	1261.8	24.89	1182.4	20.11	1221	14.29	1222.3	38.53
KM06_04	0.11415	0.00527	0.31992	0.00888	5.0704	0.23551	0.07877	0.00876	95.86905	1866.4	81.13	1789.3	43.35	1831.2	39.39	1532.6	164.09
KM06_05	0.11174	0.00184	0.32962	0.00636	5.14472	0.1144	0.0999	0.00392	100.4705	1827.9	29.64	1836.5	30.83	1843.5	18.9	1924.5	72.01
KM06_06A	0.08369	0.0012	0.22605	0.00425	2.64408	0.05527	0.08128	0.00276	102.2174	1285.3	27.71	1313.8	22.35	1313	15.4	1579.5	51.53
KM06_06B	0.08493	0.00143	0.2611	0.00501	3.09898	0.06955	0.07555	0.00261	113.8301	1313.8	32.34	1495.5	25.59	1432.4	17.23	1472.2	49.13
KM06_07A	0.08375	0.00128	0.22633	0.00428	2.64835	0.05676	0.08875	0.00375	102.2227	1286.7	29.43	1315.3	22.5	1314.2	15.8	1718.6	69.7
KM06_07B	0.10585	0.00152	0.2322	0.00437	3.4316	0.07155	0.09596	0.00341	77.84397	1729.1	26.15	1346	22.86	1511.7	16.39	1852.1	62.85
KM06_08	0.07923	0.00109	0.21359	0.00399	2.36109	0.04833	0.06781	0.00306	105.9338	1178	26.99	1247.9	21.19	1230.9	14.6	1326.2	57.83
KM06_10A	0.08277	0.00121	0.22502	0.00422	2.59879	0.05445	0.09158	0.00487	103.5211	1263.8	28.15	1308.3	22.22	1300.3	15.36	1771.1	90.18
KM06_10B	0.1055	0.00278	0.34229	0.00719	5.01699	0.14637	0.10979	0.00645	110.1393	1723	47.53	1897.7	34.52	1822.2	24.7	2105.5	117.56
KM06_11A	0.08572	0.00116	0.21717	0.00405	2.59567	0.0526	0.55316	0.02223	95.1269	1331.8	25.93	1266.9	21.43	1299.4	14.85	8899.3	289.28
KM06_11B	0.08578	0.00173	0.2137	0.00405	2.56327	0.06278	0.12853	0.00835	93.64686	1333.2	38.48	1248.5	21.49	1290.2	17.89	2443.9	149.63
KM06_12A	0.08108	0.00112	0.21291	0.00397	2.40579	0.04906	0.06645	0.00321	101.7	1223.5	26.79	1244.3	21.09	1244.3	14.63	1300.4	60.9
KM06_12B	0.08383	0.00127	0.23979	0.00452	2.80144	0.05954	0.07376	0.00258	107.5442	1288.4	29.33	1385.6	23.49	1355.9	15.9	1438.4	48.63
KM06_13	0.08162	0.00105	0.20176	0.00374	2.29321	0.0455	0.06143	0.00208	95.81884	1236.5	24.95	1184.8	20.04	1210.2	14.03	1204.9	39.61
KM06_14	0.07968	0.00112	0.21037	0.00393	2.33382	0.04795	0.06554	0.00335	103.5069	1189.1	27.52	1230.8	20.9	1222.6	14.6	1283.2	63.5
KM06_15A	0.08634	0.00129	0.22933	0.0043	2.75602	0.05803	0.07763	0.00346	98.90763	1345.7	28.6	1331	22.56	1343.7	15.69	1511.1	64.91
KM06_15B	0.08398	0.00185	0.20938	0.00422	2.45695	0.06503	0.07204	0.0066	94.86028	1291.9	42.39	1225.5	22.52	1259.5	19.1	1406	124.47
KM06_16	0.07984	0.00114	0.21217	0.00396	2.35585	0.04849	0.05943	0.00308	103.9648	1193	27.93	1240.3	21.04	1229.3	14.67	1166.8	58.85
KM06_17A	0.08019	0.00134	0.22301	0.00419	2.4769	0.05475	0.06683	0.00415	108.006	1201.6	32.62	1297.8	22.06	1265.3	15.99	1307.6	78.63
KM06_17B	0.08058	0.00144	0.21913	0.00413	2.44749	0.0558	0.07551	0.00579	105.4487	1211.3	34.76	1277.3	21.86	1256.7	16.43	1471.4	108.76

KM06_18A	0.08851	0.00142	0.23657	0.00448	2.90639	0.06318	0.07336	0.00327	98.23466	1393.5	30.45	1368.9	23.33	1383.6	16.42	1430.9	61.61
KM06_18B	0.08383	0.00137	0.22125	0.00418	2.56886	0.05625	0.0685	0.00331	100	1288.5	31.5	1288.5	22.05	1291.8	16	1339.2	62.68
KM06_19	0.09657	0.00155	0.25659	0.00484	3.42958	0.07454	0.06315	0.00278	94.45727	1558.8	29.84	1472.4	24.83	1511.2	17.09	1237.7	52.9
KM06_20A	0.07931	0.00109	0.21071	0.0039	2.32104	0.04696	0.06697	0.00346	104.4753	1179.8	27.06	1232.6	20.77	1218.7	14.36	1310.1	65.56
KM06_20B	0.07983	0.0011	0.2137	0.00395	2.36922	0.04791	0.06662	0.00349	104.6697	1192.8	27.01	1248.5	21	1233.4	14.44	1303.6	66.22
KM06_22A	0.08335	0.00138	0.24129	0.00454	2.78753	0.06116	0.07146	0.00304	109.0895	1277.3	31.97	1393.4	23.6	1352.2	16.4	1395.1	57.31
KM06_22B	0.08677	0.00163	0.24575	0.00474	2.95525	0.06986	0.07291	0.00342	104.5079	1355.4	35.83	1416.5	24.52	1396.2	17.93	1422.3	64.44
KM06_22C	0.08112	0.00114	0.22024	0.00408	2.47979	0.05039	0.06359	0.00235	104.8027	1224.3	27.31	1283.1	21.55	1266.2	14.7	1246.1	44.65
KM06_23	0.08012	0.00121	0.2083	0.00385	2.31376	0.04835	0.06473	0.00348	101.65	1200	29.43	1219.8	20.54	1216.5	14.82	1267.7	66.07
KM06_24	0.08024	0.00138	0.2832	0.00533	3.14265	0.07045	0.07165	0.00435	133.6465	1202.8	33.62	1607.5	26.8	1443.2	17.27	1398.7	82
KM06_25A	0.07992	0.00211	0.24285	0.00478	2.69493	0.07859	0.08946	0.01114	117.2803	1195	51.15	1401.5	24.82	1327.1	21.6	1731.7	206.76
KM06_25B	0.07961	0.00133	0.23599	0.00445	2.60013	0.05742	0.07012	0.00482	115.0244	1187.4	32.54	1365.8	23.22	1300.7	16.19	1369.9	91.01
KM06_26A	0.10819	0.00289	0.3298	0.00691	4.93805	0.14394	0.09701	0.00552	103.8666	1769	48.14	1837.4	33.51	1808.8	24.61	1871.4	101.66
KM06_26B	0.10241	0.00209	0.29153	0.00572	4.13637	0.10098	0.08581	0.00375	98.86105	1668.2	37.3	1649.2	28.56	1661.5	19.96	1663.9	69.81
KM06_27	0.0801	0.0015	0.21336	0.004	2.36725	0.05489	0.06937	0.00728	103.935	1199.5	36.49	1246.7	21.25	1232.8	16.55	1355.6	137.67
KM06_28A	0.0797	0.00116	0.20851	0.00386	2.30112	0.04719	0.05895	0.00344	102.6225	1189.7	28.47	1220.9	20.57	1212.6	14.52	1157.8	65.63
KM06_28B	0.07908	0.00137	0.20567	0.00382	2.25111	0.04997	0.06545	0.00491	102.7002	1174	33.97	1205.7	20.4	1197.1	15.61	1281.4	93.15
KM06_28C	0.07928	0.00124	0.20368	0.00376	2.23424	0.04725	0.07269	0.0045	101.3399	1179.2	30.72	1195	20.16	1191.9	14.83	1418.2	84.79
KM06_29A	0.07982	0.00137	0.20718	0.00383	2.28813	0.05041	0.04377	0.00229	101.7776	1192.6	33.47	1213.8	20.48	1208.6	15.57	865.9	44.25
KM06_29B	0.08083	0.00164	0.20715	0.00392	2.31635	0.05645	0.06495	0.00428	99.68786	1217.4	39.42	1213.6	20.96	1217.3	17.28	1272	81.15
KM06_30A	0.08327	0.00138	0.22649	0.00426	2.60854	0.05682	0.06699	0.00278	103.1912	1275.4	32.2	1316.1	22.37	1303	15.99	1310.5	52.71
KM06_30B	0.08201	0.00132	0.21587	0.00404	2.44669	0.05246	0.06771	0.00311	101.1479	1245.7	30.9	1260	21.45	1256.4	15.45	1324.2	58.95
KM06_31	0.07931	0.0014	0.21218	0.00398	2.32308	0.05211	0.06778	0.0048	105.1365	1179.8	34.39	1240.4	21.14	1219.4	15.92	1325.5	90.93
KM06_33	0.0821	0.00129	0.21573	0.004	2.44692	0.05171	0.07015	0.00377	100.9135	1247.9	30.34	1259.3	21.23	1256.5	15.23	1370.4	71.15
KM06_34A	0.07912	0.00136	0.20604	0.00387	2.25126	0.04988	0.05653	0.00274	102.7655	1175.2	33.53	1207.7	20.7	1197.2	15.58	1111.5	52.45
KM06_34B	0.07782	0.00138	0.20749	0.00392	2.2294	0.05041	0.05721	0.00314	106.4087	1142.2	34.88	1215.4	20.95	1190.3	15.85	1124.4	60.02
KM06_35A	0.08028	0.00124	0.20632	0.00382	2.28744	0.04787	0.09892	0.00499	100.4319	1204	30.21	1209.2	20.39	1208.4	14.78	1906.5	91.82
KM06_35B	0.08062	0.00178	0.20849	0.00406	2.3184	0.06012	0.10652	0.00865	100.7178	1212.1	42.78	1220.8	21.65	1217.9	18.39	2045.9	158.01
KM06_36A	0.08108	0.00132	0.21095	0.00392	2.36104	0.05057	0.099	0.00523	100.8583	1223.4	31.63	1233.9	20.88	1230.9	15.28	1908.1	96.17
KM06_36B	0.08259	0.0019	0.2071	0.00409	2.36244	0.06304	0.07082	0.00547	96.33217	1259.6	44.3	1213.4	21.86	1231.3	19.04	1383	103.3
KM06_37A	0.07976	0.00162	0.20717	0.00397	2.27869	0.05554	0.06075	0.00522	101.8889	1191.2	39.5	1213.7	21.17	1205.7	17.2	1192	99.52
KM06_37B	0.07835	0.00146	0.21015	0.00394	2.27041	0.05229	0.06809	0.00445	106.376	1155.9	36.59	1229.6	21.01	1203.1	16.23	1331.5	84.3

KM06_38A	0.08014	0.00134	0.20771	0.00387	2.2962	0.04984	0.07155	0.00397	101.3496	1200.4	32.7	1216.6	20.65	1211.1	15.35	1396.8	74.97
KM06_38B	0.079	0.00131	0.20694	0.00385	2.25475	0.04866	0.06022	0.00375	103.4556	1172	32.52	1212.5	20.55	1198.3	15.18	1182	71.53
KM06_39	0.08708	0.00152	0.23631	0.00441	2.83269	0.06245	0.08404	0.00424	100.3817	1362.3	33.27	1367.5	22.99	1364.2	16.55	1631.1	79.03
KM06_42A	0.079	0.00143	0.21031	0.00395	2.28752	0.05171	0.0572	0.00396	104.9825	1172.1	35.35	1230.5	21.05	1208.4	15.97	1124.2	75.63
KM06_42B	0.08153	0.00187	0.20916	0.00407	2.34826	0.06178	0.06855	0.00588	99.2059	1234.1	44.14	1224.3	21.67	1227	18.74	1340.1	111.31
KM06_42C	0.07894	0.00132	0.20773	0.00385	2.25596	0.04851	0.05934	0.00361	103.9293	1170.7	32.79	1216.7	20.52	1198.6	15.13	1165.1	68.89
KM06_43A	0.09615	0.00177	0.19224	0.00362	2.54388	0.05798	0.40838	0.02241	73.09131	1550.8	34.22	1133.5	19.56	1284.7	16.61	6921.5	321.62
KM06_43B	0.08543	0.00143	0.19751	0.00366	2.32064	0.0499	0.30204	0.01526	87.67733	1325.2	32.21	1161.9	19.69	1218.6	15.26	5334.7	236.9
KM06_46A	0.0791	0.00137	0.18541	0.00344	2.01701	0.04416	0.04019	0.00251	93.34298	1174.7	33.89	1096.5	18.73	1121.3	14.86	796.4	48.75
KM06_46B	0.08003	0.00158	0.18985	0.00358	2.08925	0.04927	0.06322	0.00424	93.5465	1197.8	38.46	1120.5	19.38	1145.3	16.19	1239.1	80.59
KM06_47A	0.07876	0.00161	0.21068	0.00396	2.27907	0.05464	0.06758	0.00565	105.6856	1166.1	40.02	1232.4	21.06	1205.8	16.92	1321.7	107.04
KM06_47B	0.08254	0.00143	0.21701	0.00402	2.4618	0.05369	0.19404	0.01018	100.6039	1258.5	33.32	1266.1	21.32	1260.9	15.75	3584.4	172.27
KM06_47C	0.08114	0.00168	0.20114	0.00384	2.24295	0.05491	0.08181	0.00604	96.45656	1224.8	40.22	1181.4	20.63	1194.6	17.19	1589.4	112.87
KM06_47D	0.07944	0.00188	0.20635	0.00401	2.25429	0.06034	0.05521	0.0051	102.2059	1183.2	46.09	1209.3	21.45	1198.1	18.83	1086.3	97.78
KM06_48A	0.07804	0.00257	0.20563	0.00435	2.20388	0.07574	0.04304	0.00522	105.0179	1147.9	64.13	1205.5	23.28	1182.3	24	851.7	101.19
KM06_48B	0.08113	0.00214	0.20117	0.00401	2.23983	0.06456	0.0434	0.00378	96.48077	1224.7	50.8	1181.6	21.52	1193.6	20.23	858.8	73.18
KM06_49	0.07775	0.00137	0.20338	0.00377	2.17128	0.04764	0.05727	0.00359	104.6383	1140.5	34.55	1193.4	20.2	1171.9	15.25	1125.6	68.63
KM07																	
KM07_01	0.10876	0.00131	0.34662	0.00461	5.19741	0.07461	0.09683	0.00229	107.8541	1778.7	21.83	1918.4	22.09	1852.2	12.22	1868.1	42.23
KM07_02A	0.0984	0.00112	0.28429	0.00374	3.85681	0.05361	0.09801	0.00245	101.1793	1594.1	21.14	1612.9	18.8	1604.7	11.21	1889.9	45.15
KM07_02B	0.08616	0.001	0.23016	0.00303	2.734	0.03838	0.12477	0.00343	99.51558	1341.8	22.25	1335.3	15.9	1337.7	10.44	2376.5	61.6
KM07_03	0.08326	0.00093	0.23347	0.00306	2.67983	0.03676	0.06908	0.00206	106.0941	1275	21.69	1352.7	16.01	1322.9	10.14	1350.1	38.95
KM07_04	0.1214	0.00142	0.30782	0.00408	5.15212	0.07255	0.13209	0.00322	87.50632	1977	20.64	1730	20.1	1844.7	11.97	2507.7	57.54
KM07_05	0.09016	0.001	0.24872	0.00326	3.09154	0.04228	0.08996	0.00217	100.217	1428.8	20.99	1431.9	16.84	1430.6	10.49	1741.1	40.19
KM07_06	0.10425	0.00117	0.20635	0.00271	2.96565	0.04088	0.60569	0.01494	71.0893	1701.1	20.57	1209.3	14.49	1398.9	10.47	9571.6	188.1
KM07_07A	0.11904	0.0014	0.34063	0.00452	5.59022	0.07906	0.11071	0.00272	97.31191	1941.9	20.87	1889.7	21.73	1914.6	12.18	2122.2	49.5
KM07_07B	0.10717	0.00124	0.28462	0.00376	4.20527	0.05881	0.11161	0.00277	92.16279	1751.9	20.88	1614.6	18.85	1675	11.47	2138.6	50.46
KM07_08	0.08385	0.00092	0.20227	0.00265	2.33811	0.0317	0.05735	0.00136	92.13283	1288.9	21.12	1187.5	14.19	1223.9	9.64	1127.2	25.95
KM07_09	0.08263	0.00093	0.22068	0.0029	2.51392	0.0348	0.20925	0.00595	101.9833	1260.5	21.79	1285.5	15.31	1276.1	10.06	3840.4	99.5
KM07_10	0.10978	0.00137	0.3097	0.00415	4.68693	0.06884	0.09034	0.00221	96.85359	1795.7	22.59	1739.2	20.43	1764.9	12.29	1748.2	40.99
KM07_11	0.10819	0.00125	0.30657	0.00405	4.57263	0.06408	0.09212	0.00231	97.43938	1769.1	21	1723.8	19.98	1744.3	11.68	1781.1	42.83
KM07_12	0.11548	0.00129	0.3225	0.00423	5.13417	0.07047	0.09594	0.00235	95.46996	1887.4	19.94	1801.9	20.64	1841.8	11.66	1851.8	43.25

KM07_13	0.17988	0.00202	0.46385	0.00612	11.50275	0.1585	0.13741	0.00339	92.63519	2651.8	18.52	2456.5	26.93	2564.8	12.87	2602.4	60.26
KM07_14	0.10491	0.00121	0.3006	0.00397	4.3475	0.061	0.08733	0.00218	98.9199	1712.8	21.15	1694.3	19.67	1702.4	11.58	1692.3	40.45
KM07_15A	0.09209	0.00127	0.25664	0.00349	3.25793	0.05116	0.07948	0.00224	100.2382	1469.1	26.11	1472.6	17.88	1471.1	12.2	1545.9	41.86
KM07_15B	0.0826	0.00102	0.21484	0.00285	2.44637	0.03569	0.07274	0.00285	99.58724	1259.8	23.74	1254.6	15.15	1256.4	10.51	1419.2	53.75
KM07_16	0.12112	0.00136	0.34543	0.00454	5.76774	0.07958	0.10298	0.00255	96.95357	1972.8	19.92	1912.7	21.77	1941.6	11.94	1981.1	46.8
KM07_17	0.10146	0.00121	0.26441	0.00351	3.69816	0.05287	0.09218	0.0023	91.59903	1651	21.99	1512.3	17.88	1571	11.43	1782.2	42.59
KM07_18	0.10253	0.00117	0.29448	0.00388	4.16241	0.05802	0.08618	0.00217	99.60491	1670.5	21.02	1663.9	19.32	1666.7	11.41	1670.8	40.45
KM07_19	0.10212	0.00116	0.29411	0.00387	4.14054	0.05734	0.09174	0.00229	99.94588	1663	20.8	1662.1	19.27	1662.3	11.33	1774.1	42.41
KM07_20A	0.16394	0.00185	0.37178	0.00489	8.40219	0.1159	0.11607	0.00292	81.61974	2496.7	18.83	2037.8	23	2275.4	12.52	2219.6	52.81
KM07_20B	0.08317	0.00096	0.22065	0.00291	2.52992	0.03543	0.07445	0.00253	100.9424	1273.3	22.24	1285.3	15.34	1280.7	10.19	1451.4	47.62
KM07_21	0.10758	0.00129	0.31298	0.00415	4.64134	0.06637	0.08999	0.00232	99.81236	1758.7	21.64	1755.4	20.39	1756.7	11.95	1741.7	43.1
KM07_22A	0.10682	0.00136	0.28691	0.00385	4.2249	0.06275	0.08517	0.00226	93.13821	1745.9	23.02	1626.1	19.28	1678.9	12.19	1652.1	42.14
KM07_22B	0.08811	0.00105	0.23586	0.00312	2.86459	0.04088	0.08699	0.0024	98.57741	1384.8	22.63	1365.1	16.27	1372.7	10.74	1685.9	44.67
KM07_23	0.09869	0.00131	0.27115	0.00366	3.68888	0.05642	0.09262	0.00254	96.68667	1599.6	24.58	1546.6	18.56	1569	12.22	1790.4	47.02
KM07_24	0.0981	0.00117	0.27628	0.00366	3.73599	0.05329	0.09036	0.00242	99.01776	1588.2	22.06	1572.6	18.47	1579.1	11.42	1748.5	44.85
KM07_25A	0.10746	0.0014	0.29621	0.00399	4.38796	0.06621	0.09416	0.00251	95.2015	1756.8	23.58	1672.5	19.86	1710.1	12.48	1818.8	46.3
KM07_25B	0.10499	0.00135	0.29822	0.00401	4.31603	0.06469	0.09374	0.00251	98.15074	1714.2	23.5	1682.5	19.91	1696.4	12.36	1811	46.3
KM07_26A	0.1537	0.0018	0.3659	0.00485	7.75243	0.10955	0.1006	0.00271	84.19267	2387.5	19.84	2010.1	22.9	2202.7	12.71	1937.5	49.78
KM07_26B	0.08198	0.00098	0.21513	0.00284	2.43113	0.03482	0.0882	0.0032	100.8835	1245.1	23.24	1256.1	15.09	1251.9	10.3	1708.4	59.5
KM07_27	0.10507	0.00143	0.30567	0.00415	4.42718	0.06878	0.08937	0.00252	100.2273	1715.5	24.76	1719.4	20.51	1717.4	12.87	1730.2	46.7
KM07_28A	0.10752	0.00143	0.3141	0.00425	4.6554	0.07129	0.09227	0.00251	100.165	1757.9	24.09	1760.8	20.86	1759.3	12.8	1783.9	46.41
KM07_28B	0.08258	0.00096	0.21855	0.00288	2.48782	0.03512	0.06548	0.00192	101.1832	1259.3	22.49	1274.2	15.24	1268.5	10.22	1281.9	36.48
KM07_29	0.0968	0.00124	0.2793	0.00374	3.72665	0.05576	0.08425	0.00239	101.5672	1563.3	23.86	1587.8	18.85	1577.1	11.98	1634.9	44.49
KM07_30	0.10817	0.0013	0.31082	0.00412	4.63438	0.06641	0.09323	0.00263	98.64307	1768.7	21.75	1744.7	20.26	1755.5	11.97	1801.6	48.59
KM07_31A	0.11091	0.00147	0.30877	0.00417	4.7207	0.072	0.09514	0.00277	95.60185	1814.4	23.84	1734.6	20.56	1770.9	12.78	1836.9	51.11
KM07_31B	0.08241	0.00101	0.21625	0.00287	2.45639	0.03569	0.05346	0.00176	100.5417	1255.2	23.55	1262	15.19	1259.3	10.48	1052.6	33.75
KM07_32	0.10068	0.0012	0.27381	0.00362	3.79985	0.05438	0.08245	0.00233	95.32568	1636.6	22.02	1560.1	18.34	1592.7	11.5	1601.4	43.52
KM07_33	0.13273	0.00155	0.32219	0.00425	5.89481	0.08313	0.10461	0.003	84.35157	2134.4	20.26	1800.4	20.73	1960.5	12.24	2010.9	54.98
KM07_34	0.11137	0.00144	0.29013	0.0039	4.45389	0.06681	0.08874	0.00257	90.13667	1821.9	23.22	1642.2	19.48	1722.4	12.44	1718.5	47.76
KM07_35A	0.19351	0.00239	0.53014	0.00714	14.14057	0.20629	0.14015	0.0041	98.91061	2772.2	20.13	2742	30.08	2759.2	13.83	2651	72.67
KM07_35B	0.18969	0.00238	0.5115	0.00692	13.37407	0.19698	0.13892	0.00409	97.20752	2739.5	20.51	2663	29.5	2706.4	13.91	2629.1	72.52
KM07_36	0.10784	0.00132	0.30915	0.00411	4.59556	0.0666	0.08679	0.00255	98.48012	1763.3	22.07	1736.5	20.22	1748.5	12.09	1682.3	47.45

KM07_37A	0.1059	0.00151	0.29715	0.00408	4.3374	0.0697	0.08673	0.00258	96.95358	1729.9	26.01	1677.2	20.26	1700.5	13.26	1681.1	47.94
KM07_37B	0.09907	0.00125	0.24871	0.00332	3.39647	0.05037	0.10586	0.00316	89.10879	1606.8	23.4	1431.8	17.14	1503.6	11.63	2033.8	57.74
KM07_38	0.08295	0.00104	0.225	0.00299	2.57242	0.03789	0.07626	0.00303	103.1782	1268	24.09	1308.3	15.72	1292.8	10.77	1485.4	56.99
KM07_39	0.10782	0.00146	0.3117	0.00421	4.63209	0.07182	0.08841	0.00299	99.22283	1762.8	24.47	1749.1	20.7	1755.1	12.95	1712.3	55.52
KM07_40A	0.09357	0.0013	0.27675	0.00375	3.56894	0.05641	0.08361	0.00296	105.042	1499.4	25.98	1575	18.94	1542.7	12.54	1622.9	55.13
KM07_40B	0.08307	0.00104	0.21946	0.00291	2.51281	0.03711	0.06737	0.0025	100.6373	1270.9	24.18	1279	15.41	1275.7	10.73	1317.9	47.33
KM07_41	0.10771	0.00145	0.31211	0.00422	4.63353	0.07178	0.08663	0.00302	99.43217	1761.1	24.43	1751.1	20.72	1755.3	12.94	1679.3	56.14
KM07_42	0.10141	0.00134	0.29092	0.00391	4.06615	0.06207	0.08346	0.00281	99.76364	1650	24.29	1646.1	19.51	1647.5	12.44	1620.2	52.36
KM07_43A	0.12621	0.00183	0.38022	0.00524	6.61361	0.10771	0.10436	0.00401	101.5397	2045.8	25.39	2077.3	24.48	2061.2	14.36	2006.4	73.41
KM07_43B	0.09701	0.00124	0.25898	0.00345	3.46292	0.05162	0.10204	0.00352	94.71737	1567.4	23.67	1484.6	17.66	1518.8	11.74	1963.8	64.57
KM07_44	0.10746	0.00136	0.30452	0.00406	4.51027	0.06722	0.08713	0.00297	97.54668	1756.8	22.99	1713.7	20.08	1732.9	12.39	1688.6	55.26
KM07_45A	0.10689	0.00137	0.30336	0.00405	4.46927	0.06707	0.09128	0.00319	97.7676	1747	23.28	1708	20.05	1725.3	12.45	1765.5	59.15
KM07_45B	0.08178	0.001	0.21816	0.00289	2.45908	0.03579	0.06455	0.00225	102.572	1240.3	23.81	1272.2	15.27	1260.1	10.51	1264.4	42.69
KM07_46	0.08474	0.00107	0.22647	0.00301	2.64505	0.03921	0.07139	0.0025	100.4964	1309.5	24.31	1316	15.8	1313.3	10.92	1393.7	47.1
KM07_47	0.07975	0.00113	0.20879	0.00284	2.29497	0.03663	0.06252	0.00288	102.6367	1190.9	27.69	1222.3	15.13	1210.7	11.29	1225.8	54.7
KM07_48	0.10244	0.00131	0.29894	0.00398	4.22095	0.06294	0.09189	0.00315	101.0427	1668.7	23.4	1686.1	19.75	1678.1	12.24	1776.8	58.27
KM07_49	0.10727	0.00153	0.31411	0.00429	4.64363	0.07479	0.08824	0.00324	100.422	1753.5	25.86	1760.9	21.02	1757.1	13.46	1709.1	60.12
KM07_50	0.10436	0.00141	0.29777	0.004	4.28281	0.06632	0.08774	0.00317	98.66119	1703	24.64	1680.2	19.89	1690.1	12.75	1699.8	58.85
KM07_51	0.10472	0.00142	0.29437	0.00396	4.24871	0.06599	0.08621	0.00354	97.29746	1709.5	24.71	1663.3	19.73	1683.5	12.77	1671.4	65.96
KM07_52A	0.10227	0.00147	0.2964	0.00405	4.17754	0.06769	0.08509	0.00315	100.4623	1665.7	26.43	1673.4	20.12	1669.6	13.27	1650.6	58.66
KM07_52B	0.08224	0.00109	0.21809	0.00291	2.47199	0.03781	0.07485	0.00353	101.6383	1251.3	25.45	1271.8	15.42	1263.9	11.06	1459	66.41
KM07_53A	0.10518	0.00141	0.31479	0.00424	4.56332	0.0704	0.08923	0.0031	102.7191	1717.5	24.47	1764.2	20.79	1742.6	12.85	1727.5	57.5
KM07_53B	0.08395	0.00109	0.2218	0.00295	2.56638	0.0388	0.08725	0.00347	100	1291.4	25.12	1291.4	15.59	1291.1	11.05	1690.7	64.52
KM07_54A	0.1027	0.00139	0.28929	0.00388	4.09448	0.06366	0.08774	0.00336	97.88455	1673.4	24.89	1638	19.4	1653.2	12.69	1699.9	62.39
KM07_54B	0.09065	0.0012	0.24254	0.00324	3.03021	0.04629	0.08811	0.00326	97.26932	1439.2	24.96	1399.9	16.8	1415.3	11.66	1706.8	60.53
KM07_55	0.08329	0.00112	0.21892	0.00293	2.51296	0.03883	0.08033	0.00314	100.0314	1275.8	26.03	1276.2	15.5	1275.8	11.22	1561.8	58.82
KM07_56A	0.10344	0.0021	0.28005	0.00408	3.99135	0.08407	0.09025	0.00591	94.36177	1686.7	37.05	1591.6	20.54	1632.4	17.1	1746.4	109.57
KM07_56B	0.09021	0.00121	0.24183	0.00323	3.00642	0.04638	0.1043	0.00421	97.65002	1429.8	25.31	1396.2	16.78	1409.2	11.76	2005.4	77.08
KM07_57A	0.09337	0.00129	0.2536	0.00341	3.26308	0.0514	0.08627	0.00344	97.43213	1495.4	25.87	1457	17.56	1472.3	12.24	1672.6	64.07
KM07_57B	0.0822	0.00112	0.2199	0.00295	2.49112	0.03884	0.06433	0.00295	102.4876	1250.2	26.18	1281.3	15.56	1269.5	11.3	1260.2	56.03
KM07_58A	0.11155	0.00189	0.32109	0.00458	4.9363	0.09	0.09076	0.00361	98.37242	1824.8	30.49	1795.1	22.37	1808.5	15.39	1755.9	66.88
KM07_58B	0.10302	0.00142	0.29244	0.00394	4.15184	0.06534	0.08601	0.00344	98.48142	1679.2	25.25	1653.7	19.65	1664.6	12.88	1667.8	64.04

KM07_59	0.1012	0.00179	0.28327	0.00405	3.95054	0.07484	0.07835	0.00412	97.66736	1646.2	32.51	1607.8	20.36	1624.1	15.35	1524.6	77.18
KM07_60	0.1094	0.00153	0.32674	0.00441	4.92624	0.07816	0.09063	0.00372	101.8497	1789.5	25.23	1822.6	21.45	1806.8	13.39	1753.5	69
KM07_61A	0.10015	0.00137	0.28937	0.00389	3.99377	0.06249	0.08154	0.00328	100.7131	1626.8	25.24	1638.4	19.43	1632.9	12.71	1584.4	61.23
KM07_61B	0.08256	0.0012	0.21913	0.00297	2.49314	0.04069	0.07091	0.00417	101.4777	1258.7	28.01	1277.3	15.71	1270	11.83	1384.6	78.73
KM07_62	0.10052	0.00137	0.28839	0.00387	3.99491	0.0622	0.08947	0.0036	99.98776	1633.7	25.02	1633.5	19.34	1633.2	12.64	1732	66.79
KM10																	
KM10_2	0.09963	0.0016	0.22509	0.00326	3.09127	0.05737	0.06958	0.00198	80.92882	1617.1	29.54	1308.7	17.17	1430.5	14.24	1359.5	37.49
KM10_15	0.08534	0.00125	0.22474	0.00329	2.64404	0.04583	0.06296	0.00262	98.7756	1323.1	28.17	1306.9	17.34	1313	12.77	1234.1	49.86
KM10_16	0.09444	0.0013	0.22912	0.00333	2.98296	0.04962	0.06611	0.00244	87.67223	1516.9	25.76	1329.9	17.49	1403.3	12.65	1293.9	46.18
KM10_17	0.08935	0.00126	0.22694	0.00331	2.7954	0.04727	0.06315	0.00253	93.39756	1411.6	26.66	1318.4	17.4	1354.3	12.65	1237.6	48.01
KM10_18	0.11021	0.0018	0.24236	0.00364	3.68241	0.06851	0.05461	0.00245	77.59596	1802.8	29.44	1398.9	18.89	1567.6	14.86	1074.8	46.88
KM10_19	0.14715	0.00217	0.21965	0.00324	4.45584	0.07747	0.05312	0.00221	55.33699	2313.1	25.14	1280	17.14	1722.8	14.42	1046.1	42.42
KM10_22	0.08015	0.00105	0.23538	0.00321	2.60109	0.03853	0.02496	0.00054	113.4933	1200.6	25.72	1362.6	16.75	1300.9	10.86	498.3	10.67
KM10_23	0.09612	0.00114	0.22203	0.00298	2.94231	0.04123	0.04818	0.00099	83.38817	1550.1	22.16	1292.6	15.74	1392.9	10.62	951.1	19
KM10_27	0.0798	0.00135	0.22168	0.00317	2.4396	0.04345	0.0242	0.00067	108.2711	1192.1	33.13	1290.7	16.71	1254.4	12.83	483.4	13.13
KM10_29	0.08419	0.00127	0.21635	0.003	2.5119	0.04133	0.03662	0.00091	97.35523	1296.9	28.99	1262.6	15.91	1275.5	11.95	726.9	17.69
KM10_30	0.07508	0.00187	0.21094	0.00338	2.18298	0.05209	0.01371	0.00045	115.2546	1070.5	49.37	1233.8	18.01	1175.6	16.62	275.2	9
KM10_32	0.08728	0.00159	0.22613	0.00326	2.72144	0.05339	0.05053	0.00284	96.15159	1366.8	34.62	1314.2	17.16	1334.3	14.57	996.4	54.69
KM10_35	0.08624	0.00148	0.23822	0.00341	2.8329	0.05317	0.05935	0.00255	102.5156	1343.6	32.91	1377.4	17.76	1364.3	14.08	1165.3	48.6
KM10_37	0.08901	0.00145	0.23887	0.00337	2.93189	0.05285	0.07328	0.00329	98.32657	1404.3	30.81	1380.8	17.52	1390.2	13.65	1429.4	62.01
KM10_38	0.08923	0.00152	0.23177	0.00331	2.85166	0.05304	0.05747	0.00255	95.36551	1409	32.19	1343.7	17.3	1369.2	13.98	1129.4	48.75
KM10_39	0.09506	0.00179	0.23413	0.00343	3.0687	0.06177	0.06023	0.00303	88.67456	1529.3	35.04	1356.1	17.9	1424.9	15.41	1182.1	57.84
KM10_40	0.08528	0.00154	0.23837	0.00343	2.8033	0.05459	0.05464	0.00274	104.2669	1321.8	34.59	1378.2	17.83	1356.4	14.57	1075.2	52.45
KM10_41	0.08834	0.00179	0.223	0.00332	2.71628	0.05808	0.05255	0.00282	93.37315	1389.8	38.35	1297.7	17.5	1332.9	15.87	1035.2	54.19
KM10_43	0.08755	0.0018	0.22553	0.00437	2.72212	0.06709	0.06687	0.00254	95.50521	1372.7	38.9	1311	23.01	1334.5	18.3	1352.2	59.53
KM10_45	0.08629	0.0011	0.21695	0.00396	2.58061	0.05	0.08573	0.00326	94.13252	1344.7	24.37	1265.8	20.96	1295.2	14.18	1214.2	36.92
KM10_46	0.08975	0.00151	0.23991	0.00445	2.96828	0.06501	0.06541	0.0024	97.61301	1420.2	31.85	1386.3	23.15	1399.5	16.64	1375	51.85
KM10_47	0.10695	0.0015	0.2417	0.00447	3.56366	0.07168	0.06493	0.0023	79.83525	1748.1	25.32	1395.6	23.19	1541.5	15.95	1551.7	46.34
KM10_48	0.0882	0.00112	0.22883	0.00419	2.78232	0.05408	0.06123	0.00222	95.78196	1386.9	24.18	1328.4	21.97	1350.8	14.52	1196.5	35.99
KM10_49	0.09353	0.0013	0.22687	0.0042	2.92517	0.05899	0.06774	0.00256	87.95543	1498.6	26.02	1318.1	22.06	1388.4	15.26	1470.6	45.77
KM10_50	0.09758	0.00172	0.22871	0.00441	3.08182	0.06918	0.06063	0.00221	84.11683	1578.4	32.6	1327.7	23.14	1428.2	17.21	857.9	32.09
KM10_51	0.0856	0.00112	0.2331	0.00433	2.75075	0.05483	0.06866	0.0028	101.6252	1329.1	25.23	1350.7	22.62	1342.3	14.84	1443.6	46.77

KM10_52	0.08273	0.0012	0.20598	0.00387	2.34934	0.04901	0.08882	0.00378	95.59743	1262.9	28.09	1207.3	20.67	1227.4	14.86	1214.4	42.25
KM10_53	0.08697	0.00124	0.23994	0.00452	2.87784	0.05962	0.09248	0.0024	101.9562	1359.8	27.25	1386.4	23.5	1376.1	15.61	1196.9	40.39
KM10_54	0.0989	0.00142	0.23397	0.00441	3.19026	0.06629	0.07648	0.00189	84.52136	1603.5	26.53	1355.3	23.03	1454.8	16.06	1439.5	50.12
KM10_55	0.11067	0.00149	0.24802	0.00467	3.7845	0.07737	0.04163	0.00133	78.88864	1810.4	24.33	1428.2	24.1	1589.5	16.42	999.1	37.94
KM10_56	0.08838	0.00137	0.24074	0.00457	2.93351	0.06339	0.06919	0.00315	99.97843	1390.8	29.41	1390.5	23.76	1390.6	16.36	1292.3	46.71
KM10_57	0.0884	0.00116	0.24339	0.0046	2.96687	0.06038	0.06476	0.00194	100.9344	1391.3	24.82	1404.3	23.85	1399.2	15.46	1541.1	54.64
KM10_60	0.10231	0.00159	0.24512	0.00475	3.45825	0.07583	0.06084	0.00186	84.81157	1666.4	28.42	1413.3	24.58	1517.8	17.27	3050.2	111.25
KM10_62	0.09361	0.00162	0.23728	0.00457	3.06142	0.07047	0.06191	0.00194	91.4878	1500.2	32.4	1372.5	23.8	1423.1	17.62	1362	62.82
KM10_10B	0.08596	0.00118	0.22939	0.00334	2.71852	0.04541	0.0704	0.00275	99.55133	1337.3	26.41	1331.3	17.5	1333.5	12.4	1308.2	48.15
KM10_11A	0.11416	0.00161	0.23292	0.00341	3.66609	0.06215	0.07979	0.00248	72.30942	1866.7	25.29	1349.8	17.85	1564	13.52	1662.5	60.75
KM10_11B	0.08579	0.00122	0.23467	0.00344	2.7755	0.04732	0.06098	0.00189	101.9048	1333.5	27.3	1358.9	17.97	1349	12.73	1280.6	45.57
KM10_12A	0.09066	0.00121	0.22555	0.00326	2.8191	0.04598	0.07547	0.00244	91.09289	1439.3	25.16	1311.1	17.14	1360.6	12.23	1271.4	43.6
KM10_12B	0.08688	0.00118	0.21718	0.00315	2.6014	0.04289	0.04336	0.00166	93.30584	1357.9	25.89	1267	16.67	1301	12.09	1201.2	42.33
KM10_13A	0.0843	0.00119	0.20618	0.00301	2.39617	0.04054	0.07404	0.00249	92.99677	1299.4	27.19	1208.4	16.08	1241.5	12.12	1324.9	48.45
KM10_13B	0.08595	0.00125	0.2076	0.00305	2.45982	0.04241	0.06192	0.00222	90.94989	1337	27.9	1216	16.27	1260.3	12.45	1189.8	42.18
KM10_14A	0.08632	0.0013	0.20275	0.00299	2.41266	0.04257	0.06101	0.00212	88.46354	1345.3	28.8	1190.1	16.03	1246.4	12.67	1342.1	52.96
KM10_14B	0.09576	0.00151	0.21239	0.00317	2.80383	0.05106	0.07382	0.00266	80.46014	1543	29.44	1241.5	16.85	1356.6	13.63	1719.9	70.1
KM10_1A	0.10586	0.00152	0.23961	0.00344	3.49658	0.06021	0.05067	0.00197	80.07286	1729.3	26.12	1384.7	17.86	1526.4	13.6	1787.8	44.34
KM10_1B	0.11018	0.00151	0.2541	0.00364	3.85933	0.06445	0.05862	0.00215	80.98541	1802.3	24.68	1459.6	18.69	1605.2	13.47	1489.5	35.5
KM10_20B	0.08782	0.00122	0.23029	0.00334	2.78806	0.04578	0.06602	0.00246	96.91694	1378.5	26.44	1336	17.49	1352.3	12.27	824.4	25.72
KM10_21B	0.07841	0.00112	0.22724	0.00314	2.45678	0.03836	0.13948	0.00534	114.0586	1157.3	27.97	1320	16.5	1259.4	11.27	528.7	11.41
KM10_24A	0.07945	0.00097	0.21674	0.00293	2.37413	0.03385	0.16289	0.0064	106.8706	1183.3	24.03	1264.6	15.5	1234.8	10.19	641.3	13.59
KM10_24B	0.08131	0.00109	0.23358	0.00318	2.61863	0.03977	0.07644	0.00184	110.1147	1228.9	26.16	1353.2	16.61	1305.9	11.16	662.5	13.94
KM10_25B	0.08104	0.00095	0.25463	0.00339	2.84539	0.03955	0.0709	0.00154	119.6155	1222.5	22.9	1462.3	17.44	1367.6	10.44	744.3	14.93
KM10_26A	0.08166	0.00121	0.23089	0.00321	2.60011	0.04209	0.06049	0.00252	108.2101	1237.5	28.89	1339.1	16.83	1300.7	11.87	507.1	11.95
KM10_26B	0.08363	0.00101	0.22925	0.00306	2.64383	0.03732	0.06971	0.00332	103.6296	1283.9	23.31	1330.5	16.06	1312.9	10.4	738.2	15.9
KM10_28A	0.08388	0.00114	0.20901	0.00285	2.41762	0.03708	0.0265	0.00058	94.88213	1289.6	26.33	1223.6	15.18	1247.8	11.02	667	15.16
KM10_28B	0.08733	0.00129	0.22163	0.00307	2.66918	0.04324	0.03224	0.00069	94.34859	1367.8	28.09	1290.5	16.19	1320	11.97	706.1	16.94
KM10_31A	0.08747	0.00146	0.25088	0.00358	3.02578	0.05556	0.03332	0.00071	105.267	1370.8	31.85	1443	18.43	1414.1	14.01	1148.7	43.87
KM10_31B	0.0877	0.00159	0.25164	0.00367	3.04293	0.05932	0.07406	0.00153	105.1603	1375.9	34.44	1446.9	18.89	1418.5	14.9	1173.2	48.7
KM10_33A	0.08726	0.00142	0.23023	0.00326	2.77005	0.04983	0.03751	0.00077	97.76753	1366.2	31.01	1335.7	17.11	1347.5	13.42	1141.6	43.84
KM10_33B	0.08561	0.00144	0.24163	0.00344	2.85241	0.05258	0.0254	0.00061	104.9575	1329.3	32.34	1395.2	17.88	1369.4	13.86	1101.1	43.63

KM10_34A	0.08744	0.00208	0.20536	0.00326	2.47578	0.05997	0.0372	0.00082	87.8841	1370.1	44.98	1204.1	17.42	1265	17.52	586.6	27.61
KM10_34B	0.08091	0.00143	0.21855	0.00315	2.4382	0.04647	0.03355	0.00078	104.5112	1219.2	34.26	1274.2	16.65	1253.9	13.72	998.3	39.71
KM10_36A	0.09192	0.00154	0.24847	0.00354	3.14948	0.05771	0.03555	0.00087	97.60524	1465.7	31.53	1430.6	18.26	1444.9	14.12	1260.7	51.19
KM10_36B	0.09581	0.00157	0.25181	0.00357	3.32644	0.06022	0.05848	0.0023	93.76943	1544	30.42	1447.8	18.36	1487.3	14.13	1816.2	77.62
KM10_3A	0.09349	0.00155	0.24144	0.00352	3.11158	0.05935	0.05976	0.00255	93.08319	1497.8	31.09	1394.2	18.27	1435.6	14.66	1318.8	37.33
KM10_3B	0.09037	0.0014	0.23301	0.00337	2.90279	0.05288	0.05811	0.00229	94.21574	1433.2	29.27	1350.3	17.63	1382.6	13.76	1322.1	37.25
KM10_42A	0.09167	0.00175	0.23014	0.00338	2.90896	0.05905	0.05599	0.00228	91.43327	1460.3	35.93	1335.2	17.69	1384.2	15.34	1043.2	48.52
KM10_42B	0.09758	0.00169	0.24355	0.00348	3.27711	0.06181	0.02945	0.00141	89.02617	1578.3	32.03	1405.1	18.04	1475.6	14.67	1206.5	55.43
KM10_44A	0.08242	0.0011	0.21099	0.00385	2.39725	0.04712	0.05063	0.00206	98.30333	1255.4	25.75	1234.1	20.5	1241.8	14.08	1268.3	36.8
KM10_44B	0.08684	0.00119	0.23006	0.00422	2.75414	0.05486	0.06436	0.0027	98.36404	1357	26.27	1334.8	22.1	1343.2	14.84	1193.7	35.53
KM10_4A	0.08874	0.00156	0.22864	0.00334	2.79698	0.05588	0.09402	0.0042	94.90919	1398.6	33.24	1327.4	17.51	1354.7	14.94	1309.8	44.68
KM10_4B	0.09122	0.00134	0.22773	0.00329	2.86389	0.05039	0.06743	0.00197	91.13837	1451.2	27.76	1322.6	17.28	1372.5	13.24	1230.2	31.25
KM10_56A	0.09036	0.0012	0.24366	0.00457	3.03551	0.06148	0.0676	0.00197	98.09491	1433	25.08	1405.7	23.69	1416.6	15.47	1151.5	40.99
KM10_56B	0.08825	0.00169	0.20871	0.00396	2.53859	0.06116	0.05297	0.00253	88.04669	1387.9	36.16	1222	21.14	1283.2	17.55	977.1	52.82
KM10_59A	0.10899	0.00184	0.23357	0.00453	3.50991	0.08008	0.06151	0.00291	75.91159	1782.6	30.58	1353.2	23.69	1529.4	18.03	1823.2	80.64
KM10_5A	0.08944	0.00149	0.24031	0.00351	2.96294	0.05686	0.06275	0.00164	98.21719	1413.5	31.43	1388.3	18.26	1398.2	14.57	1327.3	38.95
KM10_5B	0.08286	0.00137	0.20998	0.00307	2.39844	0.046	0.06787	0.00206	97.06138	1265.9	31.85	1228.7	16.33	1242.1	13.74	1417.2	44.07
KM10_61A	0.08755	0.00192	0.24917	0.00509	3.00915	0.08008	0.07263	0.00234	96.06031	1764.1	30.53	1694.6	26.2	1726	17	1488.8	34.55
KM10_61B	0.0777	0.0012	0.21889	0.00423	2.34547	0.05167	0.08253	0.00283	104.4878	1372.6	41.46	1434.2	26.27	1409.9	20.28	1242.7	61.56
KM10_9B	0.10324	0.00137	0.24572	0.00357	3.49719	0.05708	0.0944	0.00437	84.14924	1683.2	24.33	1416.4	18.45	1526.6	12.89	1602.8	52.82
LM06																	
LM06_01	0.10619	0.00156	0.33701	0.00508	4.93243	0.08541	0.0882	0.00264	107.9135	1735	26.74	1872.3	24.47	1807.8	14.62	1708.5	48.99
LM06_02	0.0879	0.00141	0.24319	0.00368	2.94683	0.05409	0.08125	0.00357	101.6589	1380.4	30.51	1403.3	19.1	1394	13.91	1579	66.65
LM06_03	0.15726	0.00201	0.42597	0.00624	9.23393	0.14684	0.14329	0.00542	94.27547	2426.4	21.49	2287.5	28.22	2361.5	14.57	2706.7	95.89
LM06_04	0.14392	0.00314	0.41181	0.00677	8.16761	0.18745	0.1262	0.00967	97.72737	2274.9	37.16	2223.2	30.91	2249.8	20.76	2402.3	173.5
LM06_05	0.07986	0.00101	0.18274	0.00266	2.01156	0.03192	0.05248	0.0017	90.64176	1193.6	24.79	1081.9	14.49	1119.4	10.76	1033.8	32.67
LM06_06	0.09942	0.00317	0.30464	0.00596	4.17426	0.13169	0.28927	0.01545	106.2605	1613.3	58.19	1714.3	29.46	1669	25.84	5135.4	242.19
LM06_07	0.0795	0.00172	0.19498	0.00315	2.13651	0.04885	0.08364	0.00697	96.93567	1184.6	42.13	1148.3	16.99	1160.7	15.81	1623.6	130.01
LM06_08	0.10369	0.00275	0.29898	0.0054	4.27445	0.11503	0.09157	0.0041	99.69846	1691.3	48.16	1686.2	26.79	1688.5	22.14	1770.9	75.83
LM06_09	0.10817	0.00242	0.27256	0.00461	4.06309	0.09463	0.11103	0.00459	87.84983	1768.7	40.31	1553.8	23.36	1646.9	18.98	2128.1	83.52
LM06_10	0.14567	0.00217	0.36586	0.00555	7.34628	0.12837	0.18248	0.00774	87.55064	2295.7	25.39	2009.9	26.19	2154.5	15.62	3387.9	132.38
LM06_11	0.10369	0.00152	0.2877	0.00432	4.11177	0.07122	0.08441	0.00294	96.38697	1691.1	26.78	1630	21.6	1656.6	14.15	1637.8	54.82

LM06_12	0.07901	0.00104	0.17892	0.00262	1.94841	0.03168	0.05182	0.00177	90.51437	1172.3	25.8	1061.1	14.33	1097.9	10.91	1021.2	33.92
LM06_13	0.10512	0.00188	0.29926	0.00471	4.33591	0.0858	0.09101	0.00435	98.3278	1716.3	32.49	1687.6	23.36	1700.2	16.33	1760.6	80.58
LM06_14	0.10247	0.00275	0.28874	0.00523	4.07782	0.11069	0.08596	0.00381	97.95723	1669.3	48.74	1635.2	26.16	1649.9	22.13	1666.7	70.96
LM06_15	0.13861	0.00261	0.31304	0.0051	5.98009	0.12198	0.11069	0.00428	79.44251	2209.9	32.31	1755.6	25.05	1973	17.74	2122	77.93
LM06_16	0.10291	0.00196	0.2765	0.00439	3.92076	0.08127	0.08992	0.00508	93.829	1677.2	34.82	1573.7	22.18	1618	16.77	1740.3	94.25
LM06_17	0.12746	0.00199	0.30515	0.00469	5.36065	0.09676	0.10442	0.00385	83.20651	2063.3	27.23	1716.8	23.15	1878.6	15.45	2007.5	70.43
LM06_18	0.11181	0.00193	0.30105	0.0047	4.64004	0.09004	0.10047	0.00493	92.75053	1829.1	30.94	1696.5	23.28	1756.5	16.21	1935	90.49
LM06_19	0.08673	0.00184	0.23408	0.00375	2.79728	0.06332	0.06734	0.00388	100.1108	1354.4	40.44	1355.9	19.57	1354.8	16.93	1317.3	73.41
LM06_20	0.17501	0.0035	0.4776	0.00762	11.5134	0.2494	0.13429	0.0111	96.57342	2606.1	32.94	2516.8	33.24	2565.7	20.24	2546.9	197.87
LM06_21	0.09004	0.00149	0.22464	0.00344	2.78776	0.05266	0.07194	0.00301	91.59304	1426.2	31.32	1306.3	18.11	1352.3	14.12	1404.1	56.74
LM06_22	0.10547	0.00172	0.30596	0.0047	4.44777	0.08307	0.089	0.00435	99.89551	1722.6	29.69	1720.8	23.21	1721.3	15.48	1723.2	80.74
LM06_23	0.08705	0.00146	0.22458	0.00345	2.69404	0.05149	0.06787	0.00276	95.92361	1361.5	32.06	1306	18.17	1326.8	14.15	1327.2	52.18
LM06_24	0.07955	0.00113	0.20208	0.003	2.21565	0.03797	0.07865	0.00448	100.0422	1186	27.76	1186.5	16.09	1186	11.99	1530.2	84.03
LM06_25	0.10558	0.00263	0.30801	0.0054	4.48127	0.11462	0.09093	0.00475	100.3711	1724.5	44.91	1730.9	26.6	1727.5	21.23	1759.1	87.93
LM06_26	0.12225	0.00201	0.34046	0.00521	5.73514	0.10785	0.10729	0.00675	94.953	1989.3	28.94	1888.9	25.07	1936.7	16.26	2060	123.24
LM06_28	0.10667	0.0018	0.31102	0.00482	4.57246	0.08768	0.08947	0.00477	100.1377	1743.3	30.5	1745.7	23.7	1744.3	15.98	1731.9	88.48
LM06_29	0.08531	0.00139	0.23609	0.0036	2.7758	0.0521	0.06871	0.00342	103.3197	1322.4	31.25	1366.3	18.79	1349.1	14.01	1343.2	64.62
LM06_30	0.10648	0.00188	0.31085	0.00487	4.56201	0.09049	0.09021	0.00453	100.2816	1740	31.97	1744.9	23.96	1742.4	16.52	1745.7	83.9
LM06_31	0.0853	0.00205	0.19362	0.00328	2.27575	0.0573	0.05649	0.00419	86.28904	1322.3	46.14	1141	17.72	1204.8	17.76	1110.6	80.18
LM06_32	0.10737	0.00223	0.31198	0.00512	4.61498	0.10317	0.09215	0.00569	99.73222	1755.2	37.44	1750.5	25.15	1752	18.66	1781.7	105.38
LM06_33	0.10868	0.00164	0.31432	0.00474	4.708	0.08446	0.10149	0.00501	99.13352	1777.3	27.39	1761.9	23.26	1768.7	15.02	1953.7	91.9
LM06_34	0.10248	0.00248	0.26171	0.00454	3.69631	0.09286	0.07361	0.00378	89.7634	1669.5	44.11	1498.6	23.22	1570.6	20.08	1435.6	71.17
LM06_35	0.10147	0.00197	0.27601	0.00444	3.85955	0.0823	0.07825	0.00522	95.1608	1651.1	35.48	1571.2	22.44	1605.3	17.2	1522.9	97.85
LM06_36	0.07504	0.00176	0.19393	0.00322	2.00569	0.04934	0.04226	0.00309	106.815	1069.7	46.4	1142.6	17.41	1117.4	16.67	836.6	60
LM06_37	0.1147	0.00199	0.29643	0.00464	4.68552	0.09268	0.1012	0.00608	89.25391	1875.1	30.99	1673.6	23.08	1764.7	16.55	1948.5	111.63
LM06_38	0.09715	0.00211	0.27795	0.00462	3.72081	0.08637	0.09108	0.00566	100.7006	1570	40.09	1581	23.31	1575.9	18.58	1761.9	104.87
LM06_39	0.10657	0.0019	0.32158	0.00503	4.72292	0.09597	0.09342	0.00636	103.204	1741.6	32.3	1797.4	24.55	1771.3	17.03	1805.2	117.51
LM06_40	0.10588	0.00289	0.3032	0.0055	4.4238	0.1243	0.09533	0.00762	98.69342	1729.7	49.21	1707.1	27.22	1716.8	23.27	1840.5	140.61
LM06_41	0.14134	0.00245	0.3375	0.00529	6.57423	0.12943	0.18883	0.01088	83.54949	2243.7	29.66	1874.6	25.51	2055.9	17.35	3496.1	184.96
LM06_42	0.10704	0.0024	0.31076	0.00521	4.58505	0.10921	0.07507	0.00492	99.70281	1749.7	40.44	1744.5	25.64	1746.6	19.85	1463.1	92.44
LM06_43	0.08904	0.00221	0.23019	0.00386	2.82401	0.07296	0.07347	0.00601	95.05338	1405	46.64	1335.5	20.22	1361.9	19.37	1433	113.2
LM06_44	0.10925	0.00235	0.30781	0.00508	4.63289	0.10786	0.09549	0.00723	96.8047	1787	38.65	1729.9	25.02	1755.2	19.44	1843.4	133.4

LM06_45	0.10297	0.00266	0.29016	0.00498	4.11531	0.11053	0.11541	0.01124	97.84914	1678.4	47.04	1642.3	24.86	1657.3	21.94	2207.6	203.72
LM06_46	0.10926	0.00202	0.3198	0.00506	4.81573	0.09955	0.0941	0.0059	100.0895	1787.1	33.35	1788.7	24.7	1787.6	17.38	1817.8	109.02
LM06_47	0.0862	0.0025	0.22603	0.0041	2.68551	0.07989	0.18136	0.01898	97.84001	1342.6	55.01	1313.6	21.55	1324.5	22.01	3368.7	324.76
LM06_48	0.10884	0.00218	0.31307	0.00507	4.69546	0.10323	0.09754	0.0066	98.63491	1780.1	36.13	1755.8	24.87	1766.4	18.4	1881.1	121.64
LM06_49	0.09673	0.00209	0.2647	0.00436	3.52875	0.0821	0.08318	0.00569	96.91421	1562	40.01	1513.8	22.2	1533.7	18.41	1615	106.21
LM06_50	0.07935	0.00138	0.19247	0.00297	2.10504	0.04198	0.05857	0.00392	96.08806	1181	33.93	1134.8	16.07	1150.5	13.73	1150.5	74.77
LM06_51	0.10634	0.00405	0.31471	0.0064	4.59516	0.17657	0.10684	0.01765	101.5137	1737.5	68.23	1763.8	31.39	1748.4	32.04	2051.8	322.34
LM06_52	0.12617	0.0025	0.31024	0.00502	5.39454	0.11762	0.14187	0.00992	85.16599	2045.3	34.59	1741.9	24.68	1884	18.68	2681.4	175.54
LM06_53	0.12172	0.00251	0.32271	0.0053	5.41277	0.1224	0.13367	0.01015	90.99167	1981.5	36.25	1803	25.85	1886.9	19.38	2535.9	180.88
LM06_54	0.15262	0.00318	0.3304	0.00547	6.94602	0.15842	0.16589	0.01322	77.47001	2375.5	35.14	1840.3	26.5	2104.6	20.24	3102.2	229.25
LM06_55	0.10032	0.00188	0.28297	0.00448	3.9122	0.08247	0.09042	0.00643	98.53997	1630.1	34.35	1606.3	22.52	1616.2	17.05	1749.6	119.11
LM06_56	0.10563	0.00236	0.30477	0.00501	4.43906	0.10704	0.06476	0.00466	99.40297	1725.2	40.45	1714.9	24.76	1719.7	19.98	1268.4	88.48
LM06_57	0.10397	0.00223	0.25548	0.0042	3.66003	0.08543	0.1521	0.01235	86.47485	1696.1	39.02	1466.7	21.59	1562.7	18.61	2861.8	216.67
LM06_58	0.11222	0.00303	0.27782	0.00485	4.29357	0.11978	0.09868	0.01037	86.0925	1835.7	48.09	1580.4	24.49	1692.1	22.98	1902.1	190.84
LM06_59	0.13061	0.00279	0.32676	0.0054	5.8796	0.13784	0.1938	0.01663	86.53974	2106.2	37.04	1822.7	26.25	1958.2	20.34	3580.5	281.52
LM06_60	0.07835	0.00203	0.20524	0.00354	2.21588	0.06004	0.06284	0.00768	104.1364	1155.6	50.55	1203.4	18.96	1186.1	18.96	1231.8	146
LM06_61	0.09308	0.00113	0.24473	0.00356	3.14161	0.04891	0.09161	0.00285	94.7432	1489.5	22.82	1411.2	18.42	1442.9	11.99	1771.7	52.77
LM06_62	0.078	0.00125	0.1928	0.00297	2.07455	0.03846	0.05389	0.00283	99.09321	1146.9	31.46	1136.5	16.04	1140.4	12.7	1060.8	54.31
LM06_63	0.13499	0.00153	0.29932	0.00435	5.57239	0.08238	0.15483	0.00336	78.01091	2163.8	19.58	1688	21.61	1911.8	12.73	2909.6	58.86
LM06_64	0.11714	0.00152	0.29805	0.0044	4.81613	0.07803	0.11506	0.00374	87.89922	1913.1	23.06	1681.6	21.87	1787.7	13.62	2201.2	67.81
LM06_65	0.09706	0.00124	0.2551	0.00378	3.41521	0.05489	0.07717	0.00223	93.38817	1568.4	23.67	1464.7	19.41	1507.9	12.62	1502.5	41.89
LM06_66	0.20471	0.00253	0.51259	0.0075	14.46907	0.22867	0.16172	0.00536	93.1427	2864.1	19.99	2667.7	31.98	2781	15.01	3029.9	93.23
LM06_67	0.10458	0.00129	0.28901	0.00428	4.16873	0.06597	0.07811	0.00226	95.88142	1706.9	22.47	1636.6	21.38	1667.9	12.96	1520.1	42.31
LM06_68	0.08156	0.00108	0.20288	0.00303	2.28236	0.03762	0.05355	0.0023	96.42105	1235	25.69	1190.8	16.22	1206.8	11.64	1054.5	44.07
LM06_69	0.10621	0.00131	0.29916	0.00444	4.38243	0.06958	0.07756	0.00233	97.22238	1735.3	22.4	1687.1	22.02	1709	13.13	1509.9	43.71
LM06_70	0.10795	0.00132	0.31144	0.00462	4.63716	0.07344	0.0791	0.00241	99.01989	1765.1	22.09	1747.8	22.71	1756	13.23	1538.6	45.19
LM06_71	0.09707	0.00123	0.25511	0.00381	3.4156	0.05518	0.07311	0.00252	93.38263	1568.6	23.51	1464.8	19.55	1508	12.69	1426.1	47.42
LM06_72	0.10654	0.00135	0.30532	0.00457	4.48686	0.07263	0.07634	0.00234	98.65036	1741.2	22.98	1717.7	22.55	1728.5	13.44	1486.9	43.86
LM06_73	0.10609	0.00174	0.30776	0.00487	4.50344	0.08732	0.07761	0.00379	99.79806	1733.2	29.87	1729.7	24	1731.6	16.11	1510.8	71.01
LM06_74	0.11551	0.0015	0.33345	0.00505	5.31222	0.08834	0.0843	0.00275	98.26262	1887.9	23.27	1855.1	24.43	1870.8	14.21	1635.9	51.26
LM06_75	0.1231	0.00163	0.41417	0.00628	7.0298	0.11804	0.09765	0.00331	111.6107	2001.6	23.33	2234	28.61	2115.2	14.93	1883.3	60.99
LM06_76	0.07859	0.00107	0.2005	0.00306	2.17309	0.03717	0.05802	0.00214	101.3944	1161.8	26.76	1178	16.43	1172.5	11.89	1140	40.87

LM06_77	0.15232	0.00209	0.39247	0.00598	8.24212	0.1424	0.10245	0.00408	89.97513	2372.1	23.18	2134.3	27.69	2258	15.64	1971.3	74.77
LM06_78	0.11187	0.0015	0.32247	0.00493	4.97505	0.08463	0.07754	0.0026	98.45364	1830.1	24.11	1801.8	24.04	1815.1	14.38	1509.5	48.74
LM06_79	0.0855	0.00119	0.23741	0.00365	2.79934	0.04868	0.05622	0.00192	103.4893	1326.9	26.74	1373.2	19.02	1355.4	13.01	1105.5	36.81
LM06_80	0.08373	0.0012	0.22083	0.00341	2.54972	0.04523	0.05458	0.00192	100.0156	1286.1	27.74	1286.3	18.03	1286.4	12.94	1074.2	36.84
LM06_81	0.10868	0.0015	0.3114	0.0048	4.66681	0.0811	0.08232	0.00292	98.32893	1777.3	25.01	1747.6	23.6	1761.3	14.53	1598.9	54.45
LM06_82	0.0938	0.00153	0.20347	0.00325	2.6322	0.05094	0.16714	0.00684	79.38165	1504	30.54	1193.9	17.41	1309.7	14.24	3124	118.42
LM06_83	0.10542	0.00146	0.28562	0.00442	4.15186	0.07269	0.07983	0.00285	94.07528	1721.6	25.29	1619.6	22.15	1664.6	14.33	1552.3	53.32
LM08																	
LM08_01	0.11864	0.00141	0.2612	0.00335	4.27298	0.05909	0.10499	0.00225	77.28071	1935.8	21.19	1496	17.12	1688.2	11.38	2018	41.07
LM08_02	0.09186	0.0011	0.22417	0.00286	2.83963	0.03938	0.08072	0.00178	89.0338	1464.5	22.64	1303.9	15.08	1366.1	10.41	1569.1	33.28
LM08_03	0.09816	0.00132	0.26066	0.00341	3.52827	0.05295	0.07474	0.00158	93.94149	1589.5	24.89	1493.2	17.44	1533.6	11.87	1456.8	29.7
LM08_04	0.09913	0.00124	0.26558	0.00343	3.62983	0.05202	0.07404	0.00157	94.43926	1607.7	23.23	1518.3	17.47	1556.1	11.41	1443.6	29.53
LM08_05	0.10223	0.00146	0.23781	0.00313	3.35247	0.05239	0.08675	0.00222	82.6006	1665	26.21	1375.3	16.32	1493.4	12.22	1681.6	41.27
LM08_06	0.16849	0.00188	0.42451	0.00539	9.86426	0.13109	0.11222	0.00236	89.70386	2542.7	18.58	2280.9	24.38	2422.2	12.25	2149.7	42.94
LM08_07	0.09623	0.00127	0.255	0.00334	3.38365	0.05037	0.06829	0.00172	94.33063	1552.2	24.52	1464.2	17.14	1500.6	11.67	1335.3	32.63
LM08_08	0.10237	0.00122	0.25695	0.00329	3.6267	0.05021	0.07944	0.00168	88.40249	1667.6	21.88	1474.2	16.87	1555.4	11.02	1545.1	31.37
LM08_09A	0.1272	0.00147	0.27043	0.00344	4.74344	0.06439	0.13154	0.0028	74.91746	2059.6	20.22	1543	17.47	1774.9	11.38	2497.8	50.03
LM08_09B	0.1038	0.00129	0.24297	0.00313	3.47724	0.04961	0.07313	0.00159	82.81259	1693.1	22.82	1402.1	16.25	1522.1	11.25	1426.5	29.89
LM08_10	0.11153	0.00136	0.28239	0.00363	4.34323	0.06096	0.07714	0.00171	87.88161	1824.5	21.89	1603.4	18.23	1701.6	11.58	1502	32.18
LM08_11	0.11291	0.00145	0.24631	0.0032	3.8345	0.05604	0.13871	0.00371	76.86143	1846.7	23	1419.4	16.56	1600	11.77	2625.5	65.87
LM08_12	0.14655	0.0017	0.32194	0.00411	6.5063	0.08851	0.11341	0.00245	78.01917	2306.1	19.74	1799.2	20.05	2046.8	11.97	2171.4	44.57
LM08_13	0.07517	0.00108	0.15278	0.00201	1.58272	0.02538	0.10352	0.00425	85.41473	1073	28.63	916.5	11.24	963.4	9.98	1991	77.82
LM08_14	0.09944	0.0014	0.27372	0.00364	3.75179	0.05853	0.07386	0.00206	96.65964	1613.6	25.97	1559.7	18.44	1582.5	12.51	1440.2	38.86
LM08_15A	0.1017	0.00117	0.2738	0.00348	3.83968	0.05219	0.07461	0.00161	94.24878	1655.3	21.21	1560.1	17.6	1601.1	10.95	1454.4	30.36
LM08_15B	0.10232	0.00115	0.28059	0.00356	3.95803	0.05302	0.06882	0.00144	95.66757	1666.5	20.73	1594.3	17.92	1625.6	10.86	1345.2	27.22
LM08_16	0.10725	0.00133	0.31787	0.0041	4.70116	0.06713	0.07791	0.00178	101.4829	1753.3	22.52	1779.3	20.04	1767.4	11.96	1516.3	33.42
LM08_17	0.09561	0.00122	0.21575	0.00279	2.84402	0.04127	0.06068	0.00138	81.7686	1540.2	23.8	1259.4	14.78	1367.2	10.9	1190.6	26.23
LM08_18	0.09982	0.00117	0.27652	0.00352	3.80563	0.05235	0.07456	0.0017	97.1002	1620.8	21.7	1573.8	17.8	1593.9	11.06	1453.5	31.96
LM08_19	0.1058	0.00129	0.26382	0.00337	3.84841	0.05413	0.08893	0.00236	87.32859	1728.3	22.16	1509.3	17.21	1602.9	11.34	1722	43.75
LM08_20	0.08382	0.00102	0.19882	0.00254	2.29765	0.03239	0.06096	0.00141	90.73973	1288.3	23.56	1169	13.68	1211.6	9.97	1196	26.86
LM08_21	0.10549	0.00127	0.27591	0.00353	4.01304	0.05599	0.08035	0.00186	91.16077	1723	21.89	1570.7	17.84	1636.8	11.34	1562.2	34.8
LM08_22A	0.10892	0.00145	0.3069	0.00402	4.60828	0.06884	0.08514	0.00202	96.86746	1781.3	24.11	1725.5	19.83	1750.8	12.46	1651.5	37.6

LM08_22B	0.08193	0.00099	0.20397	0.00261	2.30393	0.03231	0.07423	0.00257	96.19744	1243.9	23.48	1196.6	13.95	1213.5	9.93	1447.2	48.28
LM08_23	0.11897	0.00141	0.33151	0.00423	5.43818	0.07521	0.1106	0.00265	95.09506	1940.9	20.98	1845.7	20.48	1890.9	11.86	2120.3	48.21
LM08_24	0.10328	0.00134	0.29851	0.00388	4.25027	0.06236	0.07851	0.00193	100.0059	1683.8	23.7	1683.9	19.25	1683.8	12.06	1527.7	36.23
LM08_25	0.1009	0.00123	0.2824	0.00363	3.92844	0.05572	0.07471	0.00189	97.73268	1640.7	22.51	1603.5	18.26	1619.6	11.48	1456.3	35.58
LM08_26	0.10866	0.00132	0.29721	0.00381	4.45206	0.06276	0.07804	0.00189	94.39505	1777	22.09	1677.4	18.94	1722.1	11.69	1518.9	35.45
LM08_27	0.10589	0.00129	0.294	0.00377	4.29186	0.06047	0.07725	0.00185	96.05157	1729.8	22.16	1661.5	18.79	1691.8	11.6	1504	34.72
LM08_28	0.10485	0.00125	0.29503	0.00377	4.26448	0.05933	0.08097	0.00216	97.36519	1711.7	21.77	1666.6	18.76	1686.5	11.44	1573.7	40.33
LM08_29	0.10451	0.00137	0.2784	0.00361	4.01085	0.0596	0.0831	0.00271	92.81862	1705.8	23.97	1583.3	18.18	1636.4	12.08	1613.5	50.58
LM08_30	0.21815	0.00252	0.49568	0.0063	14.90878	0.20356	0.12489	0.00313	87.46588	2967.1	18.52	2595.2	27.17	2809.4	12.99	2378.8	56.21
LM08_31	0.1216	0.00148	0.33057	0.00424	5.54146	0.07825	0.09085	0.00236	92.99929	1979.8	21.6	1841.2	20.55	1907.1	12.15	1757.5	43.81
LM08_32	0.10988	0.0014	0.30644	0.00396	4.64195	0.06743	0.08119	0.00212	95.86092	1797.5	22.99	1723.1	19.55	1756.8	12.14	1577.8	39.59
LM08_33	0.09632	0.00132	0.25051	0.00323	3.32644	0.05073	0.07915	0.00279	92.74085	1553.9	25.48	1441.1	16.63	1487.3	11.91	1539.7	52.26
LM08_34	0.1061	0.00132	0.29882	0.00384	4.37054	0.06273	0.07714	0.00202	97.23088	1733.4	22.73	1685.4	19.08	1706.8	11.86	1502	37.99
LM08_35	0.09627	0.00123	0.25393	0.00328	3.36989	0.04926	0.07667	0.00207	93.92788	1553	23.89	1458.7	16.86	1497.4	11.45	1493.1	38.83
LM08_36	0.10606	0.00144	0.27726	0.00363	4.05353	0.06146	0.08296	0.00231	91.04288	1732.7	24.65	1577.5	18.32	1645	12.35	1610.8	43.09
LM08_37	0.10214	0.00135	0.27294	0.00355	3.84301	0.0573	0.05701	0.00156	93.52531	1663.4	24.24	1555.7	17.97	1601.8	12.01	1120.7	29.87
LM08_38	0.15818	0.00209	0.32927	0.00421	7.18043	0.1067	0.08945	0.00322	75.31503	2436.3	22.18	1834.9	20.44	2134.1	13.24	1731.6	59.69
LM08_39	0.08967	0.00116	0.23737	0.00306	2.93412	0.04328	0.06686	0.00195	96.79921	1418.4	24.57	1373	15.96	1390.8	11.17	1308.2	36.86
LM08_40	0.10037	0.00283	0.30569	0.00504	4.22811	0.11787	0.0684	0.00514	105.4326	1630.9	51.47	1719.5	24.88	1679.5	22.89	1337.3	97.18
LM08_41	0.07712	0.001	0.19382	0.0025	2.06065	0.03051	0.05159	0.00149	101.5742	1124.4	25.75	1142.1	13.49	1135.8	10.12	1016.8	28.68
LM08_42	0.13167	0.00175	0.27135	0.00351	4.92523	0.07377	0.08408	0.00291	72.99095	2120.4	23.12	1547.7	17.78	1806.6	12.64	1631.7	54.17
LM08_43	0.1032	0.00151	0.29304	0.00382	4.16899	0.06676	0.08057	0.00323	98.46657	1682.5	26.77	1656.7	19.02	1667.9	13.11	1566.2	60.5
LM08_44	0.12056	0.00149	0.28708	0.00368	4.77079	0.06813	0.10177	0.00316	82.81497	1964.5	21.85	1626.9	18.42	1779.8	11.99	1959	58.01
LM08_45	0.10507	0.00131	0.30927	0.00397	4.47955	0.06453	0.08242	0.0025	101.2532	1715.6	22.82	1737.1	19.53	1727.2	11.96	1600.7	46.64
LM08_46	0.17877	0.0038	0.14317	0.00212	3.5267	0.07574	0.06372	0.00405	32.6519	2641.5	34.84	862.5	11.93	1533.2	16.99	1248.5	77.02
LM08_47	0.10902	0.00167	0.31904	0.0043	4.79434	0.07974	0.08492	0.00268	100.1122	1783	27.77	1785	21.03	1783.9	13.97	1647.4	49.94
LM08_48	0.10275	0.00171	0.28505	0.00388	4.03635	0.07213	0.08149	0.00389	96.55976	1674.3	30.36	1616.7	19.45	1641.6	14.54	1583.5	72.75
LM08_49	0.10192	0.00166	0.23383	0.00307	3.28522	0.05689	0.07375	0.0038	81.62589	1659.4	29.89	1354.5	16.06	1477.6	13.48	1438.3	71.6
LM08_50	0.09827	0.00137	0.26318	0.00346	3.56462	0.05557	0.08132	0.0027	94.63399	1591.5	25.81	1506.1	17.65	1541.7	12.36	1580.2	50.5
LM08_51	0.09741	0.00138	0.26154	0.00345	3.51107	0.05559	0.08058	0.00288	95.09206	1575	26.36	1497.7	17.62	1529.7	12.51	1566.4	53.81
LM08_52	0.10488	0.00183	0.25523	0.00342	3.6904	0.06724	0.09044	0.00483	85.5858	1712.2	31.67	1465.4	17.57	1569.3	14.56	1750.1	89.51
LM08_53A	0.09581	0.00138	0.3712	0.00491	4.9017	0.07828	0.08894	0.00313	131.807	1544	26.77	2035.1	23.09	1802.5	13.47	1722.1	58.01

LM08_53B	0.12476	0.00197	0.29401	0.004	5.05536	0.08633	0.12425	0.00489	82.03812	2025.4	27.74	1661.6	19.91	1828.6	14.48	2367.2	87.98
LM08_54	0.10372	0.00157	0.30248	0.00405	4.32409	0.07193	0.08508	0.00337	100.6975	1691.8	27.69	1703.6	20.03	1698	13.72	1650.3	62.72
LM08_55	0.09135	0.002	0.25168	0.00356	3.16871	0.07054	0.07941	0.00619	99.55287	1453.7	41.25	1447.2	18.36	1449.6	17.18	1544.5	115.85
LM08_56	0.10194	0.00139	0.28151	0.00367	3.95493	0.06084	0.07565	0.00291	96.34271	1659.7	25.02	1599	18.48	1625	12.47	1474	54.75
LM08_57	0.10571	0.00167	0.30939	0.0042	4.50735	0.077	0.0808	0.00298	100.6429	1726.6	28.65	1737.7	20.67	1732.3	14.2	1570.6	55.74
LM08_58	0.0927	0.0014	0.2478	0.0033	3.166	0.05272	0.07814	0.00318	96.31504	1481.7	28.54	1427.1	17.05	1448.9	12.85	1520.6	59.61
LM08_59	0.11196	0.00171	0.31567	0.00424	4.87083	0.08128	0.0822	0.00313	96.56547	1831.4	27.39	1768.5	20.79	1797.2	14.06	1596.7	58.43
LM08_60	0.13159	0.00152	0.40879	0.0068	7.41817	0.12605	0.10821	0.00232	104.2514	2119.3	20.09	2209.4	31.1	2163.2	15.2	2076.7	42.36
LM08_61A	0.10789	0.00182	0.30066	0.00529	4.47307	0.09161	0.07644	0.00184	96.06031	1764.1	30.53	1694.6	26.2	1726	17	1488.8	34.55
LM08_61B	0.10423	0.00126	0.2856	0.00479	4.10485	0.07132	0.0709	0.00154	95.2255	1700.7	22.11	1619.5	24	1655.3	14.19	1384.6	29.03
LM08_62	0.09676	0.00113	0.26225	0.00439	3.49901	0.05998	0.0691	0.00145	96.07705	1562.6	21.7	1501.3	22.4	1527	13.54	1350.4	27.42
LM08_63	0.10418	0.00157	0.27208	0.00472	3.90816	0.07564	0.07211	0.00182	91.25882	1700	27.46	1551.4	23.9	1615.4	15.65	1407.3	34.37
LM08_64	0.12732	0.00143	0.26705	0.00447	4.68685	0.07964	0.08818	0.00196	74.02125	2061.3	19.74	1525.8	22.76	1764.9	14.22	1708.1	36.42
LM08_65	0.11219	0.00137	0.24588	0.00416	3.80272	0.06676	0.08964	0.00235	77.21898	1835.3	21.91	1417.2	21.51	1593.3	14.11	1735.2	43.62
LM08_67	0.08265	0.00101	0.19523	0.00332	2.2245	0.03944	0.06014	0.00158	91.15851	1261.1	23.5	1149.6	17.89	1188.8	12.42	1180.4	30.15
LM08_68	0.09682	0.00117	0.24076	0.0041	3.21361	0.05678	0.06714	0.00152	88.9301	1563.7	22.5	1390.6	21.3	1460.4	13.68	1313.5	28.75
LM08_69	0.1015	0.00127	0.27136	0.00464	3.79697	0.06811	0.07337	0.00176	93.69778	1651.8	23.02	1547.7	23.53	1592.1	14.42	1431.1	33.12
LM08_70A	0.15212	0.00186	0.34928	0.00598	7.32548	0.12995	0.06835	0.00155	81.48867	2369.9	20.75	1931.2	28.56	2151.9	15.85	1336.3	29.28
LM08_70B	0.13023	0.00152	0.27045	0.0046	4.85535	0.08467	0.07776	0.00178	73.44248	2101.1	20.3	1543.1	23.37	1794.5	14.68	1513.6	33.36
LM08_71	0.10682	0.00165	0.29357	0.00517	4.3232	0.08581	0.07567	0.00194	95.04525	1745.8	28.01	1659.3	25.79	1697.8	16.37	1474.3	36.45
LM08_72	0.10925	0.00137	0.29423	0.00506	4.43147	0.07992	0.0766	0.00181	93.04382	1786.9	22.76	1662.6	25.18	1718.2	14.94	1491.7	34.03
LM08_73	0.10324	0.00144	0.28545	0.00498	4.06225	0.07689	0.0721	0.00173	96.16801	1683.2	25.53	1618.7	24.97	1646.8	15.42	1407.2	32.69
LM08_74	0.10981	0.00126	0.26911	0.00463	4.07385	0.07154	0.08774	0.00211	85.53056	1796.2	20.71	1536.3	23.53	1649.1	14.32	1700	39.23
LM08_75	0.10368	0.00119	0.26716	0.0046	3.81808	0.06737	0.06894	0.00176	90.2602	1691	21.1	1526.3	23.4	1596.6	14.2	1347.6	33.36
LM08_76	0.10731	0.00132	0.27342	0.00474	4.04446	0.0732	0.08072	0.00196	88.82112	1754.2	22.28	1558.1	24.01	1643.2	14.73	1569.1	36.59
LM08_77	0.08849	0.00107	0.21514	0.00372	2.62451	0.04726	0.07719	0.00231	90.15935	1393.2	22.95	1256.1	19.72	1307.5	13.24	1502.9	43.28
LM08_78	0.09386	0.00125	0.25913	0.00454	3.35268	0.06307	0.07198	0.00212	98.678	1505.3	24.96	1485.4	23.25	1493.4	14.71	1404.9	39.93
LM08_79	0.10389	0.00126	0.24289	0.00423	3.47794	0.06307	0.05153	0.00137	82.70592	1694.8	22.18	1401.7	21.97	1522.2	14.3	1015.6	26.27
LM08_80	0.10034	0.00143	0.27623	0.00489	3.81983	0.07429	0.07184	0.00225	96.43646	1630.4	26.24	1572.3	24.69	1596.9	15.65	1402.3	42.51
LM08_81	0.15945	0.00272	0.38094	0.00713	8.37129	0.17672	0.10141	0.00295	84.93346	2449.8	28.57	2080.7	33.3	2272.1	19.15	1952.4	54.12
LM08_82	0.1007	0.00123	0.25789	0.00454	3.57995	0.06581	0.07675	0.00205	90.34268	1637.1	22.57	1479	23.29	1545.1	14.59	1494.6	38.48
LM08_83	0.28526	0.00341	0.65588	0.01155	25.78951	0.46875	0.16053	0.00447	95.84906	3392	18.48	3251.2	44.97	3338.6	17.77	3009.1	77.78

LM08_84	0.10212	0.0013	0.27728	0.00493	3.90306	0.07327	0.07158	0.002	94.87072	1663	23.39	1577.7	24.87	1614.3	15.17	1397.3	37.7
LM08_85	0.11575	0.00186	0.25991	0.00478	4.14707	0.08671	0.08088	0.0028	78.73758	1891.6	28.68	1489.4	24.44	1663.6	17.11	1572	52.28
LM08_86	0.09737	0.00138	0.26862	0.00482	3.60535	0.07074	0.07024	0.0019	97.42743	1574.3	26.29	1533.8	24.51	1550.7	15.6	1372.1	35.87
LM08_87	0.11361	0.00143	0.3188	0.00567	4.9923	0.0934	0.08173	0.00234	96.00646	1858	22.54	1783.8	27.73	1818	15.83	1587.9	43.76
LM08_88	0.10609	0.00147	0.26811	0.00482	3.92082	0.07621	0.07893	0.00214	88.34526	1733.2	25.13	1531.2	24.52	1618	15.72	1535.6	40.17
LM08_89	0.1046	0.00128	0.28229	0.00501	4.07027	0.07545	0.07475	0.00202	93.87958	1707.4	22.32	1602.9	25.2	1648.4	15.11	1457.1	37.96
LM11																	
LM11_01	0.08029	0.00141	0.23326	0.00361	2.58546	0.04897	0.02872	0.0011	112.2405	1204.2	34.32	1351.6	18.86	1296.5	13.87	572.2	21.67
LM11_02	0.08688	0.00137	0.22743	0.00342	2.72689	0.04939	0.05525	0.00237	97.28973	1357.8	29.99	1321	17.95	1335.8	13.46	1086.9	45.45
LM11_03	0.08452	0.00103	0.21675	0.0031	2.52756	0.03866	0.05936	0.00161	96.94902	1304.5	23.49	1264.7	16.43	1280	11.13	1165.5	30.73
LM11_04	0.10136	0.0012	0.21453	0.00307	2.99986	0.04491	0.05175	0.00121	75.97017	1649.2	21.78	1252.9	16.32	1407.6	11.4	1019.8	23.3
LM11_05	0.08067	0.00098	0.20867	0.00299	2.32284	0.03555	0.05064	0.00139	100.684	1213.4	23.76	1221.7	15.94	1219.3	10.86	998.5	26.66
LM11_6A	0.08848	0.00117	0.20348	0.0029	2.48396	0.03976	0.0575	0.00191	85.72044	1392.9	25.02	1194	15.54	1267.4	11.59	1130	36.59
LM11_6B	0.0902	0.00117	0.19674	0.00286	2.44859	0.03897	0.05279	0.00157	80.98202	1429.7	24.47	1157.8	15.39	1257	11.47	1039.8	30.17
LM11_07	0.09105	0.00111	0.20869	0.00299	2.62224	0.04017	0.04004	0.00112	84.4076	1447.5	22.98	1221.8	15.95	1306.9	11.26	793.4	21.86
LM11_08	0.08362	0.00103	0.20766	0.00298	2.39576	0.03695	0.05535	0.00159	94.76432	1283.5	23.84	1216.3	15.93	1241.3	11.05	1088.9	30.37
LM11_09	0.09154	0.00119	0.20449	0.00297	2.58275	0.04129	0.05866	0.00184	82.27466	1457.8	24.59	1199.4	15.89	1295.8	11.7	1152.1	35.04
LM11_10A	0.09308	0.00128	0.21723	0.00318	2.78911	0.04617	0.06813	0.0023	85.08124	1489.4	25.82	1267.2	16.87	1352.6	12.37	1332.1	43.54
LM11_10B	0.09289	0.00131	0.21655	0.00319	2.77474	0.04677	0.05246	0.00183	85.05654	1485.6	26.63	1263.6	16.93	1348.8	12.58	1033.5	35.2
LM11_11	0.08653	0.00113	0.21583	0.00313	2.57685	0.04143	0.05604	0.00185	93.31161	1350.1	25.04	1259.8	16.61	1294.1	11.76	1102.1	35.48
LM11_12	0.08257	0.00105	0.20929	0.00302	2.38388	0.03754	0.05564	0.00174	97.29944	1259	24.43	1225	16.11	1237.8	11.27	1094.4	33.32
LM11_13A	0.08253	0.00105	0.21169	0.00305	2.40887	0.03807	0.05504	0.00176	98.38646	1258.1	24.56	1237.8	16.24	1245.2	11.34	1082.9	33.75
LM11_13B	0.08505	0.00105	0.21455	0.00309	2.51742	0.03914	0.0591	0.00172	95.16215	1316.7	23.89	1253	16.43	1277.1	11.3	1160.5	32.78
LM11_15A	0.0889	0.00154	0.21095	0.00321	2.58501	0.05038	0.03079	0.00152	88.00999	1402	32.8	1233.9	17.09	1296.4	14.27	613	29.74
LM11_15B	0.08456	0.00109	0.214	0.0031	2.4951	0.03984	0.05701	0.00185	95.76375	1305.4	24.97	1250.1	16.44	1270.6	11.57	1120.7	35.35
LM11_16	0.08368	0.00117	0.20777	0.00304	2.39678	0.04021	0.06376	0.00224	94.70776	1284.9	27.15	1216.9	16.23	1241.6	12.02	1249.3	42.57
LM11_17	0.08521	0.00108	0.20262	0.00294	2.38149	0.0376	0.05181	0.00161	90.08559	1320.3	24.46	1189.4	15.73	1237.1	11.29	1021	30.87
LM11_18A	0.08339	0.00105	0.21187	0.00306	2.4373	0.0382	0.05673	0.00176	96.91754	1278.2	24.35	1238.8	16.25	1253.7	11.28	1115.3	33.73
LM11_18B	0.08384	0.00109	0.21184	0.00307	2.44985	0.03917	0.0563	0.00185	96.11982	1288.6	25.06	1238.6	16.33	1257.4	11.53	1107	35.42
LM11_19	0.0877	0.00123	0.20918	0.00307	2.53019	0.04261	0.05214	0.00198	88.99549	1375.8	26.61	1224.4	16.39	1280.8	12.26	1027.4	38.07
LM11_20	0.0822	0.00121	0.21912	0.00324	2.48426	0.04333	0.0635	0.00249	102.1597	1250.2	28.46	1277.2	17.16	1267.5	12.63	1244.3	47.4
LM11_21	0.08406	0.0011	0.21584	0.00314	2.50246	0.04027	0.05841	0.00196	97.36456	1293.9	25.21	1259.8	16.62	1272.7	11.68	1147.4	37.47

LM11_22	0.09288	0.00124	0.21729	0.00317	2.78336	0.04546	0.06422	0.00226	85.3363	1485.3	25.27	1267.5	16.78	1351.1	12.2	1258	43.02
LM11_24	0.08229	0.00113	0.2182	0.00318	2.47574	0.04105	0.06115	0.00222	101.5969	1252.4	26.37	1272.4	16.85	1265	11.99	1199.7	42.3
LM11_25	0.0841	0.00115	0.19824	0.0029	2.29948	0.03805	0.05648	0.00192	90.03784	1294.9	26.38	1165.9	15.6	1212.1	11.71	1110.6	36.75
LM11_26	0.08085	0.00106	0.21506	0.00312	2.39797	0.03875	0.05701	0.00193	103.1206	1217.7	25.63	1255.7	16.56	1242	11.58	1120.7	36.86
LM11_27B	0.0826	0.00118	0.20779	0.00304	2.36649	0.04033	0.05626	0.00227	96.60264	1259.8	27.52	1217	16.24	1232.5	12.16	1106.3	43.53
LM11_28	0.08173	0.0011	0.20882	0.00304	2.35333	0.0387	0.05665	0.00204	98.66828	1239	26.26	1222.5	16.19	1228.6	11.72	1113.8	38.97
LM11_29	0.10151	0.00148	0.2169	0.00319	3.03591	0.0526	0.07275	0.00302	76.60412	1652	26.87	1265.5	16.92	1416.7	13.23	1419.3	56.83
LM11_30	0.08444	0.00145	0.2116	0.00314	2.46191	0.04728	0.06023	0.00326	94.97966	1302.7	32.99	1237.3	16.71	1260.9	13.87	1182.1	62.09
LM11_31	0.08207	0.00117	0.20775	0.00302	2.35051	0.03994	0.05551	0.00227	97.56254	1247.2	27.54	1216.8	16.12	1227.7	12.1	1091.9	43.44
LM11_33	0.09215	0.00129	0.21035	0.00307	2.67251	0.04496	0.05385	0.00218	83.69831	1470.4	26.48	1230.7	16.33	1320.9	12.43	1060.1	41.87
LM11_34A	0.08698	0.0015	0.21316	0.00317	2.55491	0.04925	0.05855	0.00317	91.58824	1360	32.84	1245.6	16.85	1287.8	14.07	1150.1	60.48
LM11_34B	0.11009	0.00186	0.17546	0.0026	2.66192	0.05063	0.04309	0.00228	57.86551	1800.9	30.45	1042.1	14.27	1318	14.04	852.6	44.23
LM11_35	0.08806	0.00159	0.21525	0.00326	2.6125	0.05212	0.06621	0.00385	90.82171	1383.7	34.14	1256.7	17.28	1304.2	14.65	1295.9	73.08
LM11_36	0.08528	0.00117	0.21795	0.00318	2.56232	0.04259	0.0611	0.00233	96.16403	1321.7	26.34	1271	16.85	1290	12.14	1198.7	44.29
LM11_37	0.08528	0.00118	0.21254	0.00312	2.49937	0.04197	0.05781	0.00226	93.98593	1321.9	26.73	1242.4	16.57	1271.9	12.18	1135.8	43.21
LM11_38	0.09226	0.00131	0.20399	0.003	2.59473	0.04414	0.05369	0.0022	81.26443	1472.6	26.74	1196.7	16.06	1299.2	12.47	1057	42.23
LM11_39	0.08431	0.00115	0.21621	0.00314	2.51304	0.04173	0.06065	0.00231	97.09141	1299.6	26.35	1261.8	16.64	1275.8	12.06	1190.2	44
LM11_40	0.09537	0.00157	0.25632	0.00389	3.36967	0.063	0.04081	0.00177	95.81189	1535.3	30.68	1471	19.98	1497.4	14.64	808.5	34.33
LM11_41A	0.08739	0.00133	0.2416	0.0036	2.91106	0.05232	0.07172	0.00349	101.8918	1369.1	29.11	1395	18.68	1384.8	13.58	1400	65.9
LM11_42	0.09891	0.00183	0.23101	0.0036	3.15049	0.06437	0.07866	0.00396	83.5443	1603.7	34.16	1339.8	18.88	1445.1	15.75	1530.4	74.24
LM11_43	0.08606	0.00133	0.21247	0.00317	2.52094	0.04569	0.05931	0.00285	92.72809	1339.4	29.66	1242	16.86	1278.1	13.18	1164.6	54.35
LM11_44	0.08475	0.0013	0.21853	0.00323	2.553	0.04568	0.06204	0.00284	97.28925	1309.6	29.46	1274.1	17.09	1287.3	13.05	1216.7	54.12
LM11_46	0.08541	0.00175	0.20726	0.00328	2.44089	0.05434	0.05923	0.00384	91.65157	1324.8	39.2	1214.2	17.52	1254.7	16.04	1163	73.2
LM11_47	0.11332	0.00176	0.21677	0.00325	3.38637	0.06119	0.07067	0.00319	68.24583	1853.3	27.79	1264.8	17.21	1501.2	14.16	1380.1	60.15
LM11_49A	0.09503	0.0014	0.21531	0.00319	2.82084	0.04946	0.06379	0.00277	82.23327	1528.7	27.53	1257.1	16.93	1361.1	13.14	1249.9	52.64
LM11_49B	0.08507	0.00126	0.21053	0.00311	2.46895	0.04336	0.05965	0.00268	93.52316	1317	28.49	1231.7	16.57	1263	12.69	1171	51.19
LM11_50	0.09341	0.00143	0.24734	0.00368	3.18478	0.05701	0.07517	0.00328	95.22759	1496.1	28.61	1424.7	19.02	1453.5	13.83	1464.9	61.7
LM11_51	0.08368	0.00149	0.21192	0.00318	2.44325	0.0486	0.05811	0.00335	96.42774	1284.9	34.31	1239	16.93	1255.4	14.33	1141.7	63.94
LM11_52A	0.08591	0.00137	0.21442	0.00321	2.53943	0.04699	0.05898	0.00306	93.721	1336.2	30.47	1252.3	17.04	1283.4	13.48	1158.2	58.44
LM11_53A	0.08148	0.00125	0.21406	0.00316	2.40411	0.04317	0.05753	0.00274	101.4112	1233	29.78	1250.4	16.76	1243.8	12.88	1130.5	52.35
LM11_54A	0.08332	0.0037	0.21402	0.00455	2.45769	0.10811	0.05607	0.00962	97.93201	1276.6	84.46	1250.2	24.15	1259.7	31.75	1102.6	184.09
LM11_54B	0.08453	0.00184	0.21971	0.00343	2.55893	0.05953	0.05945	0.00448	98.12984	1304.7	41.7	1280.3	18.15	1289	16.98	1167.2	85.47

LM11_55	0.0907	0.00131	0.20928	0.00308	2.61664	0.04542	0.05474	0.00238	85.05763	1440.2	27.35	1225	16.43	1305.3	12.75	1077.2	45.65
LM11_56	0.08678	0.0013	0.2101	0.00311	2.51307	0.04457	0.06749	0.00309	90.69716	1355.5	28.59	1229.4	16.57	1275.8	12.88	1320	58.46
LM11_57	0.08554	0.00143	0.21647	0.00327	2.55233	0.04896	0.06004	0.00328	95.14914	1327.6	32	1263.2	17.33	1287.1	13.99	1178.4	62.53
LM11_60	0.08401	0.00143	0.21783	0.00331	2.52228	0.04923	0.06344	0.00366	98.28253	1292.6	32.88	1270.4	17.5	1278.5	14.19	1243.2	69.6
LM11_61A	0.08721	0.00149	0.21247	0.00322	2.5542	0.04984	0.06712	0.00377	90.98235	1365.1	32.53	1242	17.14	1287.6	14.24	1313.1	71.41
LM11_61B	0.08969	0.0014	0.21643	0.00322	2.67593	0.04882	0.04991	0.00249	89.01889	1418.8	29.44	1263	17.08	1321.8	13.49	984.4	47.9
LM11_63	0.08446	0.00132	0.21356	0.00318	2.48602	0.04545	0.06171	0.00307	95.7486	1303.1	30.02	1247.7	16.91	1268	13.24	1210.3	58.45
LM11_64	0.0811	0.00127	0.21582	0.00322	2.41256	0.04415	0.06558	0.00328	102.9167	1224	30.35	1259.7	17.06	1246.3	13.14	1283.8	62.29
LM11_65	0.08126	0.00126	0.19416	0.00289	2.17515	0.03955	0.05294	0.00269	93.16664	1227.8	30.03	1143.9	15.58	1173.1	12.65	1042.7	51.65
LM15																	
LM15_01	0.10572	0.00206	0.37236	0.00591	5.43082	0.1129	0.09145	0.00354	118.1597	1726.9	35.38	2040.5	27.77	1889.7	17.83	1768.6	65.55
LM15_02	0.1207	0.00219	0.32882	0.00512	5.47291	0.10715	0.0874	0.0032	93.18656	1966.7	32.02	1832.7	24.82	1896.4	16.81	1693.5	59.49
LM15_03	0.10605	0.0018	0.28972	0.00429	4.23526	0.07887	0.08972	0.00404	94.6612	1732.6	30.74	1640.1	21.43	1680.9	15.3	1736.7	74.92
LM15_04	0.07987	0.00109	0.20521	0.00292	2.25882	0.03653	0.05526	0.00189	100.7874	1193.8	26.62	1203.2	15.63	1199.5	11.38	1087.1	36.19
LM15_05	0.10465	0.00146	0.28305	0.0041	4.08451	0.06709	0.08524	0.00284	94.05807	1708.2	25.43	1606.7	20.59	1651.2	13.4	1653.3	52.97
LM15_06	0.08908	0.00118	0.24087	0.00345	2.95884	0.04715	0.08074	0.0027	98.96849	1405.7	25.04	1391.2	17.93	1397.1	12.09	1569.5	50.41
LM15_07	0.1076	0.00153	0.28236	0.00412	4.19012	0.0698	0.07189	0.00245	91.13751	1759.1	25.71	1603.2	20.7	1672.1	13.65	1403.3	46.14
LM15_08	0.08589	0.00123	0.19649	0.00287	2.32816	0.0391	0.05703	0.00207	86.58381	1335.7	27.41	1156.5	15.46	1220.9	11.93	1121	39.52
LM15_09	0.10052	0.00243	0.20078	0.00345	2.78206	0.0736	0.07724	0.00682	72.19366	1633.8	44.16	1179.5	18.5	1350.7	19.76	1503.9	127.99
LM15_10	0.15402	0.00216	0.36174	0.00528	7.68239	0.12691	0.09364	0.00345	83.2455	2391	23.63	1990.4	25	2194.5	14.84	1809.2	63.69
LM15_11	0.08029	0.00128	0.20027	0.00297	2.21806	0.04006	0.05985	0.00246	97.74086	1204	31.05	1176.8	15.93	1186.8	12.64	1174.8	46.84
LM15_12	0.12225	0.00186	0.30569	0.00453	5.15212	0.09009	0.11547	0.00501	86.43241	1989.3	26.86	1719.4	22.35	1844.7	14.87	2208.8	90.79
LM15_13	0.10012	0.00173	0.28019	0.00428	3.86926	0.07469	0.07195	0.00326	97.90334	1626.4	31.82	1592.3	21.56	1607.3	15.58	1404.3	61.54
LM15_14	0.1053	0.00162	0.30011	0.00441	4.35538	0.07657	0.08045	0.00321	98.38916	1719.6	27.97	1691.9	21.85	1703.9	14.52	1564	60.08
LM15_15	0.10523	0.00169	0.2949	0.00441	4.27777	0.07803	0.07905	0.00339	96.94483	1718.4	29.23	1665.9	21.95	1689.1	15.01	1537.7	63.59
LM15_16	0.09684	0.00147	0.20586	0.00299	2.74743	0.04796	0.07843	0.00339	77.1498	1564.1	28.1	1206.7	15.98	1341.4	13	1526.1	63.61
LM15_17	0.08669	0.00134	0.2028	0.00297	2.42379	0.04294	0.06543	0.00297	87.92938	1353.7	29.49	1190.3	15.9	1249.7	12.73	1281	56.26
LM15_18	0.1037	0.00159	0.31554	0.00469	4.51169	0.07972	0.08413	0.00325	104.5229	1691.4	28.05	1767.9	22.96	1733.1	14.69	1632.7	60.56
LM15_19	0.09113	0.00142	0.19787	0.00293	2.48606	0.04436	0.10871	0.00441	80.31328	1449.2	29.34	1163.9	15.79	1268	12.92	2085.9	80.39
LM15_20	0.08689	0.00123	0.20834	0.00304	2.49574	0.04199	0.06101	0.00229	89.838	1358	27.05	1220	16.2	1270.8	12.2	1197.1	43.61
LM15_21	0.08617	0.00119	0.20676	0.003	2.45606	0.04066	0.06291	0.00234	90.28244	1341.9	26.54	1211.5	16.03	1259.2	11.95	1233.2	44.52
LM15_22	0.14492	0.00202	0.33628	0.00492	6.71866	0.11194	0.06971	0.00266	81.72118	2286.8	23.8	1868.8	23.71	2075.1	14.73	1362	50.17

LM15_23	0.11758	0.00166	0.33068	0.00483	5.36078	0.09009	0.09381	0.00365	95.93187	1919.8	25.1	1841.7	23.42	1878.6	14.38	1812.3	67.36
LM15_24	0.10598	0.00157	0.28666	0.00424	4.18902	0.07295	0.07838	0.00343	93.84313	1731.4	26.94	1624.8	21.23	1671.9	14.28	1525.3	64.34
LM15_25	0.08412	0.0013	0.20649	0.00306	2.39519	0.04292	0.06413	0.00289	93.42237	1295.3	29.67	1210.1	16.37	1241.2	12.83	1256.4	54.94
LM15_26	0.08526	0.00137	0.20658	0.00308	2.4283	0.04489	0.06587	0.00333	91.61495	1321.4	30.88	1210.6	16.45	1251	13.29	1289.4	63.13
LM15_27	0.09046	0.0014	0.2074	0.00309	2.58661	0.04678	0.06902	0.0033	84.66309	1435.1	29.32	1215	16.49	1296.9	13.24	1349	62.42
LM15_28	0.0968	0.00157	0.20631	0.0031	2.75349	0.05131	0.07697	0.00387	77.3428	1563.3	30.06	1209.1	16.56	1343	13.88	1498.8	72.7
LM15_29	0.10609	0.00174	0.30724	0.00465	4.49389	0.08418	0.08623	0.00417	99.6423	1733.3	29.85	1727.1	22.94	1729.8	15.56	1671.9	77.58
LM15_30	0.12176	0.00208	0.28851	0.0044	4.84265	0.09363	0.12438	0.00659	82.44286	1982.1	30.08	1634.1	22.04	1792.3	16.27	2369.5	118.43
LM15_31	0.09276	0.00151	0.24741	0.00372	3.16389	0.05913	0.07352	0.00392	96.10871	1482.8	30.74	1425.1	19.25	1448.4	14.42	1434	73.86
LM15_32	0.07951	0.00127	0.2036	0.00305	2.23176	0.04116	0.05621	0.00275	100.8186	1184.9	31.14	1194.6	16.32	1191.1	12.93	1105.4	52.53
LM15_35	0.10817	0.00249	0.30889	0.00504	4.60572	0.11228	0.0889	0.0069	98.10041	1768.8	41.53	1735.2	24.83	1750.3	20.34	1721.4	128.07
LM15_36	0.17832	0.00345	0.34054	0.00557	8.37118	0.175	0.14444	0.00741	71.63766	2637.3	31.77	1889.3	26.78	2272.1	18.96	2727	130.85
LM15_37	0.0886	0.00142	0.21089	0.00316	2.57563	0.04796	0.06721	0.0034	88.39842	1395.5	30.41	1233.6	16.84	1293.7	13.62	1314.7	64.38
LM15_38	0.08776	0.00142	0.21226	0.00319	2.56791	0.04811	0.06777	0.00339	90.08931	1377.3	30.73	1240.8	16.98	1291.5	13.69	1325.3	64.22
LM15_39	0.10101	0.00172	0.29626	0.00453	4.12521	0.08007	0.08168	0.0041	101.8262	1642.8	31.32	1672.8	22.51	1659.3	15.86	1587	76.53
LM15_40	0.10049	0.00165	0.29422	0.00445	4.07559	0.07724	0.07701	0.0039	101.8001	1633.2	30.21	1662.6	22.18	1649.4	15.45	1499.5	73.14
LM15_41	0.1042	0.00174	0.28675	0.00435	4.11934	0.07912	0.08026	0.00427	95.58901	1700.3	30.48	1625.3	21.77	1658.1	15.69	1560.4	79.92
LM15_42	0.08692	0.00171	0.2039	0.00316	2.44314	0.05302	0.06794	0.00471	88.04004	1358.7	37.54	1196.2	16.93	1255.4	15.63	1328.5	89.08
LM15_43	0.26309	0.00482	0.60683	0.00959	22.00611	0.45276	0.16097	0.01006	93.62999	3265.3	28.51	3057.3	38.49	3184	19.98	3016.8	175.13
LM15_44	0.09102	0.00176	0.23297	0.00362	2.92327	0.06245	0.08516	0.00557	93.30983	1446.9	36.27	1350.1	18.94	1388	16.16	1651.9	103.66
LM15_45	0.08892	0.00157	0.21323	0.00327	2.61373	0.05258	0.07137	0.00425	88.84769	1402.4	33.47	1246	17.39	1304.5	14.78	1393.5	80.11
LM15_46	0.11053	0.00205	0.29576	0.00462	4.50605	0.09339	0.08505	0.005	92.37874	1808.1	33.27	1670.3	23	1732.1	17.22	1649.8	93.1
LM15_47	0.11706	0.00204	0.29649	0.00457	4.78456	0.09523	0.06166	0.00357	87.55165	1911.9	31	1673.9	22.7	1782.2	16.72	1209.4	67.89
LM15_48	0.08071	0.00148	0.20917	0.00321	2.3275	0.048	0.06157	0.00397	100.8235	1214.4	35.68	1224.4	17.1	1220.7	14.65	1207.7	75.52
LM15_49	0.09775	0.00199	0.25228	0.00408	3.39895	0.07418	0.08282	0.00332	91.69196	1581.6	37.67	1450.2	21.03	1504.2	17.12	1608.2	61.95
LM15_50	0.11529	0.00228	0.28752	0.00467	4.56863	0.09691	0.11564	0.00534	86.45192	1884.4	35.17	1629.1	23.36	1743.6	17.67	2211.7	96.79
LM15_51	0.11448	0.00174	0.31823	0.00482	5.0212	0.08929	0.08677	0.00326	95.16457	1871.6	27.12	1781.1	23.55	1822.9	15.06	1681.9	60.57
LM15_52	0.10409	0.00183	0.28203	0.00441	4.04615	0.07952	0.07803	0.00299	94.30607	1698.3	32.08	1601.6	22.19	1643.5	16	1518.7	56.1
LM15_53	0.0966	0.00146	0.2013	0.00303	2.6802	0.04768	0.07517	0.00286	75.81276	1559.5	28.05	1182.3	16.25	1323	13.16	1465	53.83
LM15_54	0.10572	0.00198	0.25632	0.00409	3.73483	0.07684	0.08263	0.00333	85.18154	1726.9	34.05	1471	20.97	1578.9	16.48	1604.8	62.19
LM15_56	0.10477	0.00192	0.259	0.00413	3.73979	0.07512	0.07184	0.00258	86.80933	1710.3	33.3	1484.7	21.12	1579.9	16.09	1402.2	48.58
LM15_57	0.10167	0.00213	0.26768	0.00441	3.75055	0.08403	0.08267	0.00368	92.39787	1654.8	38.32	1529	22.42	1582.2	17.96	1605.5	68.69

LM15_58	0.20776	0.00468	0.48258	0.00843	13.81804	0.32622	0.14101	0.00939	87.89211	2888.2	36.12	2538.5	36.67	2737.3	22.35	2666.3	166.29
LM15_59	0.09658	0.00156	0.25112	0.00385	3.34211	0.06255	0.07097	0.00296	92.62442	1559.2	29.97	1444.2	19.85	1490.9	14.63	1385.8	55.8
LM15_60	0.11594	0.00238	0.26903	0.00446	4.29905	0.09478	0.07966	0.00343	81.06724	1894.6	36.53	1535.9	22.66	1693.2	18.16	1549.2	64.12
LM15_61	0.14085	0.00372	0.35175	0.00647	6.82737	0.18352	0.09567	0.00632	86.83023	2237.7	44.99	1943	30.86	2089.3	23.81	1846.8	116.58
LM15_62	0.09156	0.00182	0.21805	0.00352	2.75034	0.0599	0.06444	0.00347	87.19654	1458.2	37.37	1271.5	18.64	1342.2	16.22	1262.1	65.86
LM15_63	0.09283	0.00199	0.22814	0.00376	2.91732	0.0675	0.06256	0.00381	89.26021	1484.2	40.17	1324.8	19.75	1386.4	17.5	1226.6	72.41
LM15_64	0.10534	0.00294	0.29848	0.00555	4.33153	0.12325	0.08202	0.00465	97.87828	1720.3	50.32	1683.8	27.56	1699.4	23.47	1593.3	86.79
LM15_65	0.11485	0.00191	0.26276	0.00412	4.1578	0.08002	0.08732	0.004	80.1012	1877.5	29.75	1503.9	21.01	1665.7	15.75	1692.1	74.43
LM15_66	0.08111	0.00158	0.19663	0.00315	2.197	0.04773	0.05548	0.00321	94.52704	1224.2	37.84	1157.2	16.97	1180.1	15.16	1091.3	61.41
LM15_67	0.08248	0.00162	0.20282	0.00326	2.30472	0.05022	0.06572	0.00388	94.70963	1257	37.76	1190.5	17.47	1213.7	15.43	1286.5	73.65
LM15_68	0.18648	0.00364	0.43043	0.00722	11.05769	0.23786	0.1463	0.00827	85.11046	2711.3	31.82	2307.6	32.55	2528	20.03	2759.7	145.81
LM15_69	0.10462	0.00224	0.27678	0.00461	3.98962	0.09255	0.07242	0.00472	92.23517	1707.7	38.83	1575.1	23.29	1632.1	18.83	1413.2	88.94
LM15_70	0.09885	0.00181	0.25487	0.00405	3.47092	0.07235	0.07955	0.00495	91.32605	1602.5	33.81	1463.5	20.83	1520.6	16.43	1547.1	92.62
LM15_71	0.09156	0.0018	0.23642	0.00382	2.98281	0.06542	0.07036	0.00416	93.82115	1458.2	37.08	1368.1	19.93	1403.2	16.68	1374.3	78.59
LM15_72	0.12664	0.00261	0.27955	0.00465	4.87734	0.11026	0.10728	0.00654	77.44907	2051.8	35.92	1589.1	23.4	1798.3	19.05	2059.7	119.32
LM15_73	0.11347	0.00211	0.27413	0.0044	4.28502	0.09051	0.19568	0.0121	84.15692	1855.7	33.21	1561.7	22.26	1690.5	17.39	3612.2	204.57
LM15_74	0.12116	0.00247	0.31824	0.00523	5.31375	0.12082	0.06518	0.00441	90.2554	1973.4	35.9	1781.1	25.56	1871.1	19.43	1276.3	83.7
LM15_75	0.15058	0.00293	0.40431	0.00661	8.38599	0.18501	0.10848	0.00726	93.03749	2352.6	32.85	2188.8	30.35	2273.7	20.01	2081.6	132.45
LM15_76	0.11136	0.00291	0.29257	0.00528	4.48956	0.12358	0.07273	0.00527	90.81627	1821.7	46.73	1654.4	26.35	1729	22.86	1419	99.31
LM15_77	0.10952	0.00293	0.25775	0.0047	3.88831	0.10886	0.08416	0.00615	82.52205	1791.4	47.91	1478.3	24.1	1611.3	22.61	1633.3	114.71
LM15_78	0.12776	0.00281	0.29834	0.00504	5.25031	0.12778	0.08605	0.00645	81.41143	2067.4	38.29	1683.1	25.05	1860.8	20.76	1668.5	120.06
LM15_79	0.17274	0.00417	0.46208	0.00816	10.99481	0.28837	0.11459	0.01026	94.75293	2584.3	39.71	2448.7	35.97	2522.7	24.41	2192.7	186.02
LM15_80	0.10822	0.00255	0.28168	0.00486	4.19541	0.10832	0.08767	0.00743	90.40461	1769.6	42.43	1599.8	24.42	1673.1	21.17	1698.7	137.99
LM15_81	0.15549	0.00334	0.35958	0.00607	7.70294	0.18424	0.08953	0.00683	82.26155	2407.2	36.04	1980.2	28.79	2196.9	21.5	1733.1	126.71
LM15_82	0.18236	0.00438	0.22751	0.00404	5.71598	0.14818	0.23324	0.01837	49.40737	2674.5	39.24	1321.4	21.22	1933.8	22.4	4237.4	301.12
LM15_83	0.0807	0.00238	0.20577	0.0038	2.28799	0.07027	0.05745	0.00512	99.34113	1214.2	56.94	1206.2	20.32	1208.6	21.7	1129.1	97.81
LM15_84	0.21015	0.00509	0.48294	0.00837	13.97608	0.37242	0.13037	0.01203	87.38776	2906.7	38.69	2540.1	36.36	2748.1	25.25	2477	215.07
LM15_85	0.11575	0.00302	0.24388	0.00436	3.88775	0.10954	0.11198	0.01034	74.37483	1891.5	46.19	1406.8	22.58	1611.1	22.76	2145.5	188
LM19																	
LM19_01	0.10916	0.00125	0.34867	0.00529	5.24897	0.08238	0.09117	0.0021	107.9982	1785.4	20.81	1928.2	25.27	1860.6	13.39	1763.6	38.91
LM19_02	0.10725	0.00122	0.34202	0.00515	5.05815	0.07856	0.09045	0.00194	108.1618	1753.3	20.54	1896.4	24.76	1829.1	13.17	1750.2	35.98
LM19_03	0.10121	0.00112	0.24629	0.0037	3.43687	0.05267	0.08521	0.00166	86.20627	1646.4	20.34	1419.3	19.14	1512.9	12.05	1652.7	31

LM19_04	0.10634	0.00122	0.31095	0.00469	4.55983	0.07125	0.0823	0.00188	100.4489	1737.6	20.82	1745.4	23.08	1742	13.01	1598.5	35.16
LM19_05	0.10761	0.00121	0.31232	0.0047	4.63416	0.07166	0.08419	0.0017	99.59075	1759.3	20.4	1752.1	23.1	1755.4	12.91	1633.9	31.72
LM19_06	0.08909	0.00112	0.25016	0.00377	3.07225	0.05002	0.07159	0.0018	102.3611	1406.1	23.89	1439.3	19.46	1425.8	12.47	1397.5	33.87
LM19_07	0.13698	0.00148	0.33502	0.00502	6.32752	0.09603	0.11482	0.00229	85.0781	2189.4	18.7	1862.7	24.26	2022.3	13.31	2196.9	41.57
LM19_08	0.10686	0.00122	0.30429	0.00459	4.48324	0.06971	0.08178	0.00162	98.04764	1746.6	20.68	1712.5	22.68	1727.9	12.91	1588.8	30.18
LM19_09	0.08726	0.00096	0.22217	0.00333	2.67323	0.0408	0.08144	0.0017	94.6571	1366.3	20.94	1293.3	17.55	1321.1	11.28	1582.5	31.72
LM19_10	0.10172	0.00115	0.28544	0.0043	4.00296	0.06201	0.07949	0.00157	97.7653	1655.7	20.84	1618.7	21.55	1634.8	12.59	1545.9	29.35
LM19_11	0.0915	0.00106	0.25146	0.00379	3.17241	0.04975	0.06916	0.00138	99.25184	1456.9	21.94	1446	19.52	1450.5	12.11	1351.7	26.02
LM19_12	0.10625	0.00221	0.30298	0.00518	4.43854	0.10036	0.07856	0.00328	98.27199	1736.1	37.57	1706.1	25.63	1719.6	18.74	1528.6	61.54
LM19_14	0.16434	0.00176	0.44312	0.00661	10.04089	0.15148	0.1194	0.00249	94.55374	2500.8	17.94	2364.6	29.55	2438.5	13.93	2279.8	44.96
LM19_15	0.08758	0.00098	0.23776	0.00357	2.87149	0.04427	0.06618	0.00147	100.1165	1373.4	21.28	1375	18.57	1374.5	11.61	1295.2	27.92
LM19_16	0.10903	0.00119	0.2874	0.00431	4.3199	0.06539	0.07596	0.00151	91.32971	1783.1	19.77	1628.5	21.59	1697.2	12.48	1479.7	28.38
LM19_17	0.08637	0.00111	0.22989	0.00345	2.73683	0.0449	0.06259	0.00179	99.0716	1346.4	24.65	1333.9	18.09	1338.5	12.2	1227.1	34.11
LM19_18	0.08354	0.0009	0.22066	0.00329	2.54166	0.0385	0.06247	0.00125	100.2809	1281.7	21.01	1285.3	17.38	1284.1	11.04	1224.8	23.71
LM19_19	0.13236	0.01452	0.28543	0.01505	5.20897	0.53075	0.19986	0.02465	76.00845	2129.5	180.41	1618.6	75.48	1854.1	86.8	3682.7	415.28
LM19_20	0.08485	0.00098	0.22618	0.00337	2.64593	0.04114	0.06371	0.00144	100.1829	1312.1	22.3	1314.5	17.7	1313.5	11.46	1248.3	27.42
LM19_21	0.08541	0.00095	0.21434	0.0032	2.52428	0.03867	0.06275	0.00131	94.49728	1324.8	21.38	1251.9	17	1279.1	11.14	1230.1	24.94
LM19_22	0.08609	0.00093	0.22068	0.00329	2.61918	0.03956	0.06016	0.0012	95.91822	1340.1	20.7	1285.4	17.37	1306	11.1	1180.9	22.97
LM19_23	0.08462	0.00094	0.21796	0.00325	2.54289	0.03896	0.06131	0.00125	97.27558	1306.7	21.57	1271.1	17.22	1284.4	11.16	1202.7	23.89
LM19_24	0.08307	0.00091	0.21857	0.00326	2.50343	0.038	0.06598	0.00135	100.2675	1270.9	21.03	1274.3	17.23	1273	11.01	1291.4	25.56
LM19_25	0.05296	0.00076	0.05238	0.00079	0.38249	0.00673	0.01488	0.00044	100.6114	327.1	32.2	329.1	4.86	328.9	4.94	298.4	8.86
LM19_26	0.10176	0.00114	0.28837	0.0043	4.04567	0.06208	0.08069	0.00171	98.61145	1656.4	20.61	1633.4	21.52	1643.4	12.49	1568.5	31.9
LM19_27	0.15906	0.00173	0.45372	0.00675	9.95044	0.15075	0.11724	0.00247	98.61389	2445.7	18.32	2411.8	29.95	2430.2	13.98	2240.7	44.67
LM19_28	0.09263	0.00105	0.22561	0.00337	2.88137	0.04447	0.06362	0.00134	88.59614	1480.2	21.47	1311.4	17.71	1377.1	11.63	1246.7	25.38
LM19_29	0.08273	0.00091	0.21958	0.00327	2.50454	0.03807	0.06114	0.00126	101.3224	1262.9	21.12	1279.6	17.27	1273.4	11.03	1199.5	24.09
LM19_30	0.09004	0.00107	0.2461	0.00369	3.05522	0.0483	0.06612	0.00143	99.43911	1426.3	22.58	1418.3	19.1	1421.5	12.09	1294.1	27.11
LM19_31	0.11406	0.00125	0.22897	0.0034	3.60078	0.05462	0.16861	0.00356	71.26159	1865.1	19.61	1329.1	17.85	1549.7	12.05	3149.3	61.58
LM19_32	0.08331	0.00099	0.22502	0.00337	2.58466	0.04079	0.06452	0.00145	102.5151	1276.3	23.1	1308.4	17.74	1296.3	11.55	1263.8	27.61
LM19_33	0.08197	0.00093	0.2134	0.00318	2.41161	0.03717	0.06224	0.00135	100.1767	1244.7	22.01	1246.9	16.89	1246.1	11.06	1220.4	25.6
LM19_34	0.08566	0.00135	0.23203	0.00355	2.73969	0.05036	0.0695	0.00259	101.0973	1330.5	30.15	1345.1	18.6	1339.3	13.67	1358.1	48.98
LM19_35	0.09227	0.00114	0.24501	0.00369	3.11695	0.05013	0.06594	0.00146	95.91934	1472.8	23.39	1412.7	19.09	1436.9	12.36	1290.7	27.67
LM19_36	0.0799	0.00099	0.20322	0.00305	2.23866	0.036	0.06309	0.00203	99.8493	1194.4	24.16	1192.6	16.35	1193.2	11.29	1236.6	38.69

LM19_38	0.08647	0.00098	0.23364	0.00347	2.7853	0.04296	0.06484	0.00144	100.3708	1348.6	21.82	1353.6	18.16	1351.6	11.52	1269.9	27.32
LM19_39	0.08453	0.00107	0.22589	0.00343	2.63273	0.04331	0.05982	0.00184	100.6285	1304.7	24.46	1312.9	18.01	1309.8	12.1	1174.3	35
LM19_40	0.08353	0.00096	0.21093	0.00314	2.42895	0.03763	0.05415	0.00121	96.28531	1281.4	22.29	1233.8	16.71	1251.2	11.14	1065.8	23.27
LM19_41	0.08459	0.00097	0.2321	0.00345	2.70672	0.04185	0.0539	0.0012	103.0245	1306	22.23	1345.5	18.06	1330.3	11.46	1061	23
LM19_42	0.07842	0.00086	0.18257	0.00271	1.9738	0.02999	0.04683	0.00103	93.39093	1157.5	21.72	1081	14.75	1106.6	10.24	925	19.86
LM19_43	0.15754	0.00176	0.42093	0.00625	9.1424	0.13978	0.12549	0.00288	93.22055	2429.4	18.86	2264.7	28.36	2352.4	13.99	2389.5	51.67
LM19_44	0.07838	0.00092	0.19898	0.00296	2.15011	0.03358	0.05485	0.00181	101.1588	1156.4	23.03	1169.8	15.92	1165.1	10.83	1079.2	34.63
LM19_45	0.13339	0.00168	0.31491	0.0047	5.79024	0.09344	0.09117	0.00268	82.35184	2143	21.79	1764.8	23.05	1945	13.97	1763.5	49.56
LM19_46	0.09592	0.00154	0.27408	0.00424	3.62432	0.06809	0.0736	0.00299	100.9961	1546.1	29.89	1561.5	21.46	1554.9	14.95	1435.3	56.32
LM19_47	0.08706	0.00107	0.22654	0.00336	2.71873	0.04322	0.06155	0.00171	96.66618	1361.8	23.4	1316.4	17.64	1333.6	11.8	1207.4	32.6
LM19_48	0.08481	0.00107	0.23687	0.00355	2.76971	0.04493	0.06077	0.00144	104.5149	1311.2	24.32	1370.4	18.53	1347.4	12.1	1192.4	27.45
LM19_49	0.0531	0.00077	0.0523	0.00079	0.38284	0.00677	0.01708	0.00051	98.70832	332.9	32.58	328.6	4.84	329.1	4.97	342.2	10.16
LM19_50	0.17504	0.00208	0.44855	0.00671	10.82411	0.17025	0.12489	0.00315	91.65132	2606.4	19.62	2388.8	29.88	2508.1	14.62	2378.7	56.64
LM19_51	0.08383	0.0011	0.21535	0.0032	2.48842	0.04099	0.06283	0.00199	97.57839	1288.4	25.38	1257.2	16.96	1268.7	11.93	1231.7	37.92
LM19_52	0.08385	0.00098	0.22196	0.00331	2.56585	0.04007	0.04035	0.00097	100.2483	1289	22.69	1292.2	17.48	1291	11.41	799.5	18.8
LM19_53	0.16178	0.00187	0.44913	0.0067	10.01674	0.1551	0.10543	0.00255	96.64956	2474.3	19.38	2391.4	29.79	2436.3	14.3	2025.9	46.71
LM19_54	0.15924	0.00184	0.42995	0.00639	9.43916	0.14613	0.11045	0.00267	94.19046	2447.7	19.43	2305.5	28.79	2381.6	14.21	2117.6	48.55
LM19_55	0.09487	0.00123	0.22718	0.00342	2.97121	0.04912	0.07092	0.00203	86.50934	1525.5	24.32	1319.7	17.98	1400.3	12.56	1385	38.32
LM19_56	0.07965	0.00091	0.17929	0.00265	1.96867	0.03035	0.0467	0.00112	89.46394	1188.3	22.44	1063.1	14.5	1104.9	10.38	922.6	21.68
LM19_57	0.07959	0.00091	0.18141	0.00268	1.99046	0.03069	0.04691	0.00113	90.54601	1186.8	22.45	1074.6	14.64	1112.3	10.42	926.6	21.74
LM19_58	0.08577	0.00169	0.22427	0.00365	2.65189	0.05721	0.07582	0.00241	97.86181	1332.9	37.65	1304.4	19.22	1315.2	15.91	1477.2	45.29
LM19_59	0.08801	0.00102	0.23643	0.0035	2.86867	0.04447	0.06598	0.00162	98.94409	1382.7	22.07	1368.1	18.25	1373.7	11.67	1291.5	30.75
LM19_60	0.08535	0.00104	0.23951	0.00356	2.81816	0.04471	0.06854	0.00171	104.5867	1323.4	23.4	1384.1	18.53	1360.4	11.89	1339.9	32.37
LM19_61	0.0875	0.00108	0.23562	0.00351	2.84237	0.04547	0.06452	0.00175	99.43861	1371.6	23.51	1363.9	18.29	1366.8	12.02	1263.8	33.27
LM19_62	0.08404	0.00104	0.22258	0.00332	2.57856	0.04142	0.06454	0.00184	100.1701	1293.3	23.91	1295.5	17.5	1294.6	11.75	1264.2	34.95
LM19_63	0.08835	0.00108	0.24026	0.00357	2.9261	0.04663	0.06394	0.00184	99.85613	1390.1	23.25	1388.1	18.54	1388.7	12.06	1252.7	34.99
LM19_64	0.10997	0.00153	0.30838	0.00469	4.67504	0.07965	0.07918	0.00217	96.33089	1798.8	25.13	1732.8	23.09	1762.8	14.25	1540.3	40.58
LM19_65	0.15622	0.00191	0.39291	0.00586	8.46144	0.13479	0.1056	0.00294	88.4523	2415.2	20.57	2136.3	27.14	2281.8	14.47	2029.1	53.84
LM19_66	0.08437	0.00106	0.22218	0.00333	2.58415	0.04189	0.05621	0.00161	99.41583	1301	24.23	1293.4	17.55	1296.2	11.87	1105.4	30.87
LM19_67	0.08672	0.00104	0.23462	0.00348	2.80482	0.04424	0.06175	0.00167	100.3249	1354.3	22.99	1358.7	18.15	1356.8	11.81	1211.2	31.71
LM19_68	0.08698	0.00107	0.23585	0.00351	2.82807	0.04525	0.06173	0.00176	100.3602	1360.2	23.54	1365.1	18.32	1363	12	1210.7	33.49
LM19_69	0.10551	0.00182	0.28455	0.00446	4.13884	0.08154	0.07428	0.00376	93.67456	1723.2	31.29	1614.2	22.39	1662	16.11	1448.3	70.8

LM19_70	0.08867	0.00107	0.23525	0.00348	2.87571	0.04539	0.06723	0.00179	97.48765	1397.1	22.93	1362	18.16	1375.6	11.89	1315.1	33.86
LM19_71	0.1006	0.00152	0.29967	0.0045	4.15561	0.07434	0.0778	0.0035	103.3268	1635.2	27.8	1689.6	22.33	1665.3	14.64	1514.3	65.64
LM19_72	0.08463	0.00102	0.23132	0.00343	2.69872	0.04276	0.065	0.0018	102.632	1307	23.33	1341.4	17.95	1328.1	11.74	1272.9	34.16
LM19_73	0.08007	0.00104	0.21908	0.00326	2.41829	0.03961	0.05842	0.00175	106.5232	1198.8	25.37	1277	17.25	1248	11.77	1147.6	33.33
LM19_74	0.08391	0.00109	0.22812	0.0034	2.63858	0.04324	0.06086	0.0017	102.6583	1290.3	25.1	1324.6	17.83	1311.5	12.07	1194.2	32.44
LM19_75	0.08545	0.00109	0.23161	0.00344	2.72807	0.04442	0.06223	0.0019	101.2974	1325.7	24.61	1342.9	18.03	1336.1	12.1	1220.2	36.19
LM19_76	0.0818	0.0011	0.2211	0.00332	2.49298	0.04197	0.07521	0.00262	103.7966	1240.6	26.24	1287.7	17.55	1270	12.2	1465.6	49.18
LM19_77	0.09881	0.00143	0.2854	0.00433	3.88721	0.06773	0.07547	0.00226	101.0489	1601.7	26.78	1618.5	21.74	1611	14.07	1470.7	42.4
LM19_78	0.09164	0.00169	0.24383	0.00385	3.07999	0.06358	0.06268	0.00336	96.36227	1459.7	34.82	1406.6	19.97	1427.7	15.82	1228.8	63.89
LM19_79	0.08549	0.00107	0.22243	0.00328	2.62133	0.04197	0.0621	0.0018	97.588	1326.7	24.08	1294.7	17.32	1306.6	11.77	1217.8	34.17
LM19_80	0.1065	0.00136	0.30446	0.00453	4.4697	0.07256	0.07868	0.00223	98.45429	1740.3	23.32	1713.4	22.37	1725.4	13.47	1530.7	41.73
LM19_81	0.10622	0.00135	0.2985	0.00457	4.37193	0.07167	0.07981	0.00168	97.0212	1735.6	23.07	1683.9	22.68	1707	13.55	1552	31.45
LM19_82	0.08609	0.00096	0.22368	0.00334	2.65518	0.04067	0.06143	0.00127	97.0902	1340.3	21.37	1301.3	17.59	1316.1	11.3	1205	24.16
LM19_83	0.08888	0.00128	0.22136	0.00344	2.71257	0.04802	0.05534	0.0019	91.98002	1401.5	27.26	1289.1	18.13	1331.9	13.13	1088.6	36.41
LM19_84	0.10754	0.00127	0.30051	0.00448	4.45546	0.06988	0.08364	0.00195	96.33716	1758.2	21.42	1693.8	22.23	1722.7	13.01	1623.6	36.34

APPENDIX I: EXTENDED U–PB GEOCHRONOLOGY METHODS

Analytical techniques for U–Pb isotopic dating of zircon and monazite follow those of Payne et al. (2006). Rocks were crushed using a jaw crusher and sieved, collecting the 79–300 µm portions. Zircon portions were prepared using a panning technique, Frantz magnetic separator (at 0.6 nT), and heavy liquid methods, followed by hand-picking and epoxy-resin block mounting. Monazites were imaged on a Phillips XL-30 Field Emission Scanning Electron Microscope (FESEM), while zircons were imaged on a FEI Quanta600 Scanning Electron Microscope with attached Gatan Cathodoluminescence (CL) detector at Adelaide Microscopy, University of Adelaide.

U–Pb isotopic analyses were obtained using a New Wave 213nm Nd–YAG laser in a He ablation atmosphere, coupled to an Agilent 7500cs/7500s ICP–MS at Adelaide Microscopy, University of Adelaide. Ablation of monazites was performed with a frequency of 5Hz and a spot size of 15 µm, with a total acquisition time of 80 s, including 30 s of background measurement, 10 s of the laser firing with the shutter closed to allow for beam stabilization, and 40 s of sample ablation. Isotopes measured were ^{204}Pb, ^{206}Pb, ^{207}Pb and ^{238}U for dwell times of 10, 15, 30 and 15 ms respectively. Total zircon acquisition time was 60 s, including 20 s of background measurement, 10 s of closed shutter laser stabilization, and 30 s of sample ablation, using a spot size of 30µm and frequency of 5Hz. Isotopes measured were ^{204}Pb, ^{206}Pb, ^{207}Pb, ^{208}U, ^{232}Th and ^{238}U for dwell times 10, 15, 30, 10, 10, 15 ms respectively.

Data analysis and correction techniques for elemental fractionation and mass bias follow those of Howard et al. (2011) using the program 'Glitter', where a 1% uncertainty is assigned to the age of the primary monazite standard MADel (TIMS normalisation data: ^{207}Pb/^{206}Pb age = 491.7 Ma; ^{206}Pb/^{238}U age = 514.8 Ma; ^{207}Pb/^{235}U age = 510.4 Ma; Payne et al. (2008)), and primary zircon standard GJ (TIMS normalisation data: ^{207}Pb/^{206}Pb=608.3 Ma, ^{206}Pb/^{238}U=600.7Ma and ^{207}Pb/^{235}U=602.2 Ma; Payne et al. (2008)). Instrument drift was also corrected for with the application of a linear correction and by standard bracketing every 5 analyses for monazite and 12 analyses for zircon.

Weighted average ages collected throughout the course of this study for in-house monazite standard 222 were ^{207}Pb/^{206}Pb = 453.6±6.0 Ma (n=78, MSWD=0.41), ^{206}Pb/^{238}U = 449.3±1.5 Ma (n=69, MSWD=1.07), and ^{207}Pb/^{235}U = 450.6±1.6 Ma (n=72, MSWD=1.4) and MADel are ^{207}Pb/^{206}Pb = 492.5±5.7 Ma (n=90, MSWD=0.35), ^{206}Pb/^{238}U = 517.0±1.6 Ma (n=87, MSWD=1.14), and ^{207}Pb/^{235}U = 511.8±1.4 Ma (n=84, MSWD=0.92).

Zircon in-house PLES standard analyses collected throughout the course of this study yielded weighted mean ages of ^{207}Pb/^{206}Pb=340.0±7.5 Ma (n=138, MSWD=0.20), ^{206}Pb/^{238}U =335.9±1.1 Ma (n=132, MSWD=1.4) and ^{207}Pb/^{235}U =336.1±1.1Ma (n=131, MSWD=0.85). Weighted average ages for primary zircon standard GJ were ^{207}Pb/^{206}Pb=610.1±5.4 Ma (n=323, MSWD=0.34), ^{206}Pb/^{238}U =598.8±1.6 Ma (n=317, MSWD=1.7) and ^{207}Pb/^{235}U =601.3±1.4Ma (n=317, MSWD=1.18).

APPENDIX J: EXTENDED PHASE EQUILIBRIA MODELLING METHODS

P–T pseudosections were calculated for three metapelitic samples (KM07, LM06 and LM19) using the phase equilibrium modelling program THERMOCALC (Powell & Holland, 1988; Holland & Powell, 2011) in the chemical system MnO–Na_2O–CaO–K_2O–FeO–MgO–Al_2O_3–SiO_2–H_2O–TiO_2–O, where 'O' is Fe_2O_3, using the latest internally-consistent thermodynamic dataset 'ds6' (filename tc-ds62.txt; Holland and Powell, 2011) and activity–composition models (Powell et al. 2014; White et al, 2014). Compositional isopleths were calculated to further constraint the *P–T* path.

Calculations in THERMOCALC are based on the user specifying the stable assemblage and calculating the diagram line by line, point by point, where lines (field boundaries) represent the zero abundance of a phase and points represent the zero abundance of two phases. The initial stable assemblage is determined by performing a Gibbs energy minimisation calculation at a set pressure–temperature (*P–T*) condition. The diagram is built up and around from that initial assemblage and involves many trial and error calculations in order to determine which phases appear or disappear as a function of pressure, temperature and/or composition. In addition, the so-called 'starting guesses' (values for variables with which THERMOCALC commences its iterative least-squares calculation for a line or point) require regular updating as the pseudosection is calculated in different parts of *P–T–X* space (*X* is composition). Therefore, a single diagram commonly comprises >100 total line and point calculations, and the user is actively (intellectually), rather than passively, involved in the calculations at every step along the way (this amounts to a considerable amount—up to several weeks—per diagram). The most uncertain compositional variables are Fe_2O_3 and H_2O, commonly requiring that these be constrained with *T–M* type diagrams (where *M* refers to amount) prior to the calculation of the pressure–temperature (*P–T*) pseudosection. The choice of pressure at which to calculate the *T–M* diagrams is based on broadly estimating the pressure at which the petrographically-determined peak metamorphic assemblage is stable.