GSA DATA REPOSITORY 2017003

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Table DR1: CA-IDTIMS U-Pb Zircon Geochronology Results

Sample Petrographic Descriptions and GPS Locations

MO-11-19: Lamprophyre Dike (N 46°39'11.7", E 94°14'29.8")

The main mineral phases are biotite, plagioclase, and clinopyroxene with accessory apatite, zircon, and hematite. Biotite (50%) occurs in 100-200 μ m long blocky laths often enclosing zircon and hematite. Subhedral, rounded 20-100 μ m clinopyroxene crystals (5%) are surrounded by plagioclase (45%). Plagioclase crystals display irregular margins and appear to have crystallized after biotite. Zircon is an abundant accessory phase occurring as 20-150 μ m long prismatic crystals within both plagioclase and biotite. Zircons are euhedral and prismatic and vary from 200-400 μ m in length. CL imaging shows oscillatory zoning typical of igneous zircons, though a few of the grains have rounded cores, possibly reflecting resorption of an entrained zircon and followed by a main phase of magmatic growth.

MO-11-10: Biotite Clinopyroxenite (N46°39'10.8", E 94°14'25.9")

This is a biotite-rich (75%) sample with clinopyroxene (20%) and apatite (5%) as less abundant phases. Accessory phases observed in thin section include magnetite-ülvospinel solid solution Fe-Ti oxides. Biotite occurs as elongate (200-500 μ m long) laths intergrown with smaller (generally 100-300 μ m), sub-rounded clinopyroxenes. Apatite occurs as relatively large (up to 100 μ m) euhedral crystals growing within biotite and also along grain boundaries of biotite and clinopyroxene. Zircon observed in thin section was small (generally <50 μ m) and enclosed within this clinopyroxene. No CL imaging was done for the zircon separated from this sample due to their small size (<50 μ m) and relative scarcity.

MO-11-12: Biotite Monzogabbro (N 46°39'10.7", E 94°14'26.7")

This sample is composed of alkali-feldspar and plagioclase (together 30%), biotite (30%), and clinopyroxene (35%) with accessory subhedral titanite, apatite, zircon, and hemo-ilmenite. Biotite grows both interstitially and in large laths (1-2 cm in length), occasionally poikilitically enclosing titanite and apatite. Oligoclase (An \sim 20) and alkali-feldspar occur together in patchy intergrowths. Apatite occurs as stubby, subhedral 1-2 mm long crystals often, but not exclusively, within clinopyroxene and biotite. Zircons are euhedral and vary from being stubby to elongate. CL imaging reveals clear oscillatory zoning typical of igneous zircons. The zircons are generally 300-400 μ m in length, but vary between 200-500 μ m.

MO-11-14: Biotite Monzodiorite (N46°39'11.2", E 94°14'28.1")

Clinopyroxene (10%), biotite (15%), plagioclase (25%), K-feldspar (30%), amphibole (10%), and quartz (10%) constitute the major mineral phases. Apatite, hematite-ilmenite solid solution Fe-Ti oxides, zircon are present as accessory phases. Clinopyroxene is anhedral, with irregular margins, and contains abundant subequant apatite inclusions (up to 200 μ m in length). Biotite occurs as subhedral blocky laths and also contains abundant apatite inclusions. Secondary green actinolite often replaces clinopyroxene, particularly along the rims. Na-rich plagioclase and alkali-feldspar occur together in patchy intergrowths. Zircons are subhedral and vary in length from 150-300 μ m. CL images show sector and igneous zoning. A few contain inclusions of brighter phases, but these were excluded from the CA-IDTIMS analysis. Some zircons also display thin (<5 μ m) bright rims.

MO-11-26: Quartz Monzonite (N46°39'13.1", E 94°14'34.6")

This sample is characterized by large (1-2 cm) alkali-feldspar megacrysts surrounded by smaller crystals of albite, quartz, biotite, amphibole, and clinopyroxene as major constituents and with accessory apatite, titanite, zircon, and hemo-ilmenite. Quartz displays interlobate grain boundaries. Biotite occurs as stubby laths, 1-4 mm in length and contains inclusions of Fe-Ti

oxides and apatite. Secondary green actinolite extensively replaces clinopyroxene. Clinopyroxene contains both biotite and numerous apatite inclusions (5-100 μ m diameter). Zircons are equant to subequant, stubby to elongate, and vary in size between 100-200 μ m. CL images show that the zircons have clear oscillatory, igneous zoning. A few zircons have inclusions of bright phases.

MO-11-16: Felsic Dike (N 46°39'11.1", E 94°14'28.9")

This sample is a fine-grained dike composed primarily of albite (30%), K-feldspar (35%), quartz (30%), and biotite (5%) with accessory Fe-Ti oxides, monazite, and zircon. Albite grains are subhedral and up to ~1 mm in their longest dimension. Smaller (100-300 μ m) anhedral K-feldspar and rounded quartz grains surround the larger albite crystals. Biotite occurs in short laths up to 300 μ m in length. Zircons are generally <100 μ m in length and subequant. No CL images were obtained for the zircons analyzed in this study, however CL images of other zircons from this sample demonstrate that they have weak oscillatory zoning and often display dark cores.

Sample Preparation and U-Pb Geochronology Methods

Zircons were separated from whole rocks through standard crushing and magnetic-/ gravimetric-separation techniques. Samples were first crushed to $<500 \ \mu m$ using a combination of the Bico Braun "Chipmunk" jawcrusher and discmill. Smaller size fractions ($<50 \ \mu m$ and 50-250 μm) were sub-sampled for the biotite clinopyroxenite MO-11-10 as zircons from this sample were expected to be smaller in size. In addition, this sample was hand-panned to remove light biotite fractions. Due to the expected low abundance of zircon in MO-11-10, we took precautions against contamination by other dated samples by crushing the sample in a completely separate mineral separation facility (California Institute of Technology). Ultimately we were able to extract three zircons from this sample after considerable effort. Zircons from all other samples were separated at Massachusetts Institute of Technology (MIT). After crushing, samples were washed and then magnetically separated using first a hand magnet and then the Frantz isodynamic separator (at 0.6 A, 20° slide angle). The non-magnetic fractions were then separated by density using methyl iodide. Heavy minerals were further processed on the Frantz (1.0 A, 20°) when abundant sulfides were observed. Zircons were hand-picked under a binocular microscope in ethanol from the least magnetic mineral separate.

Zircons were analyzed using thermal ionization mass spectrometry (TIMS) following a procedure slightly modified from Mattinson (2005) that is described in Appendix A of Eddy et al. (2015). All isotopic measurements are presented in Table DR1 and were made on the Sector 54 TIMS at the Massachusetts Institute of Technology (MIT). Pb isotopes were measured by peak hopping on a Daly detector and corrected for fractionation based on repeat analyses of the NBS 981 Pb isotopic standard. U was measured statically on Faraday cups and corrected for fractionation using the known ratio of ²³³U to ²³⁵U in the EARTHTIME ²⁰⁵Pb-²³³U-²³⁵U isotopic tracer (Condon et al., 2016; McLean et al., 2016). Data reduction was done in the U-Pb_Redux software package (Bowring et al., 2011) using the decay constants for ²³⁸U and ²³⁵U presented by Jaffey et al. (1971).

We assume that zircon does not incorporate Pb during crystallization and that all measured ²⁰⁴Pb comes from laboratory blank (Pb_c). We corrected all Pb isotopic ratios for the addition of Pb_c using an isotopic composition of 206 Pb/ 204 Pb = 18.145833 ± 0.475155 (1 σ abs.), 207 Pb/ 204 Pb = 15.303903 ± 0.295535 (1 σ abs.), and 208 Pb/ 204 Pb = 37.107788 ± 0.875051 (1 σ abs.), calculated from 149 procedural blanks measured in the MIT isotope geochemistry lab between 2009 and 2015. We also correct for initial secular disequilibrium in the ²³⁸U-²⁰⁶Pb decay chain that results from preferential exclusion of Th during zircon crystallization. To make this correction we use a calculated Th/U for the zircon and an assumed Th/U for the magma for which it crystallized. We consider samples MO-11-16, MO-11-26, MO-11-19, and MO-11-14 to approximate liquid compositions and use the whole rock trace element data presented in Bucholz et al. (2014) to calculate $[Th/U]_{magma}$ and arbitrarily apply an uncertainty of ± 1 (2 σ). Our values are consistent with the range of Th/U seen in 14925 volcanic rocks of the trachytic series from the EarthChem database (http://www.earthchem.org/), providing further justification for their use (Fig. DR4). The [Th/U]_{magma} for samples MO-11-10 and MO-11-12 are more difficult to determine. Both samples are cumulates and likely remained in equilibrium with a range of melt compositions during magmatic differentiation. For sample MO-11-10 we use the Th/U ratio of our most primitive sample with a melt composition (MO-11-19) and for MO-11-2 we use an average of the Th/U for MO-11-14 and MO-11-26. Clinopyroxene from MO-11-12 is in equilibrium with a melt with a Mg# = 38.5 ± 1.5 , which corresponds to a magma with a Th/U=7.70 using the liquid line of descent for the Dariv Igneous Complex presented in Bucholz et al. (2014). However, this likely represents the last melt in equilibrium with this phase and we believe that our average composition is more representative of the equilibrium melt for MO-11-12 during the majority of its crystallization period.

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Modeling of Thermal Evolution of Magma and Crystal Settling

Thermal Modelling

Thermal modelling for the Dariv Igneous Complex was carried out using the assumptions that the magmatic body was a sheet of constant thickness, the magma intruded at its liquidus temperature, that during cooling the only additional heat source added to the intrusion was the latent heat of crystallization, and that heat loss was entirely from the sides. The governing equations for the temperature evolution of the pluton are:

$$\frac{\partial T}{\partial t} = k \frac{\partial^2 T}{\partial x^2} + \frac{H}{c_p} \frac{\partial f_s}{\partial t} \quad \text{for } T_s < T < T_L$$
$$\frac{\partial T}{\partial t} = k \frac{\partial^2 T}{\partial x^2} \quad \text{for } T < T_s$$

where:

T = temperature (°C) *t* = time (s) *x* = distance (m) *k* = thermal diffusivity (m²/s) = 10⁻⁶ m²/s *H* = latent heat of crystallization (J/kg) = 4 x 10⁵ J/kg *c_p* = specific heat capacity of magma (J/kg/°C) =1000 J/kg/°C *f_s* = fraction solid (varies linearly between 0 and 1 between T_L and T_s) T_L = magma liquidus temperature (°C) = 1200 °C T_S = magma solidus temperature (°C) = 700 °C

 T_L was set to 1200°C based on previously estimated magmatic temperatures for the most primitive cumulates in the Dariv Igneous Complex (Bucholz et al., 2014a). T_h was chosen to be 400 °C based on the observed assemblage of brucite+serpentine in the host serpentinites, which is limited to 360–390°C (at 0.3–0.5 GPa) (Trommsdorff and Connolly 1996). f_s was assumed to vary linearly between 0 and 1 between T_L and T_S for simplicity. Incorporation of non-linear relationships between solid fraction and temperature as observed in natural silicic melt systems will increase the volume fraction of melt, but will not significantly change the timescale of solidification (Gelman et al., 2013, see their Figure 3). The equations were solved for sills of 500 and 1000 m thicknesses using an explicit finite difference method.

The results of these calculations indicate that cooling below a solidus temperature of ~700°C would occur on the order of 15,000 to 50,000 years for the Dariv Igneous Complex (Figure DR5a). A solidus of temperature of ~700°C is estimated from the experimentally determined minimum melt temperature for a water under-saturated ($aH_2O = ~0.7$) Qz-Ab-Or-H₂O system (Ebadi and Johannes, 1991), which appears appropriate for the more evolved silicic endmembers of the Dariv Igneous Complex (Bucholz et al., 2014b).

Crystal Settling

The timescales associated with crystal settling can be calculated using hindered settling velocities (Barnea & Mizrahi, 1973; Bachmann & Bergantz, 2004), which are dependent on mineral crystal radius (*r*), the viscosity contrast between the minerals and the melt ($\Delta \rho$), the dynamic viscosity of the melt (μ), and the crystal fraction (c) (see equations 2, 3, & 4 of Bachmann & Bergantz, 2004). Using representative values for a crystallizing basaltic melt, (r =

0.5-1 mm, $\Delta\rho$ of 400 kg/m³, $\mu = 10^2 - 10^4$ Pa·s, c = 0.1-0.3), and assuming a settling distance of 500 m, settling times of tens to hundreds of years are calculated (Fig. DR5b). These timescales are much more rapid than those calculated for cooling and solidification, therefore crystal settling is an efficient fractionation mechanism during crystallization of relatively low viscosity basaltic melts. In more evolved silicic melts, characterized by higher viscosities and smaller $\Delta\rho$ values, crystal settling velocities will be lower. In these melts, crystal settling may not be a viable fractionation mechanism (Hawkesworth et al., 2000).

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Fig. DR1: U-Pb geochronology data showing Th-corrected 206 Pb/ 238 U dates for individual zircons. Each bar is an individual analysis and represents 2σ uncertainty. Weighted means for samples with acceptable MSWD's (MO-11-10, MO-11-12, MO-11-14, MO-11-16) are shown with internal uncertainties. MSWD's for MO-11-19 and MO-11-26 indicate that they are not a single population. Crystallization ages for youngest zircons are shown for all samples.



Figure DR2: Field relationships indicating magma mixing and mingling in more evolved lithologies. A) Left panel shows field photo of multiple felsic dikes cross-cutting a quartz monzonite, which contains numerous mafic enclaves of disaggregated lamprophyre dikes/melts. B) Lamprophyre enclave with K-feldspar xenocrysts in monzonite. Pencil is 13.5 cm long. C) Diffuse contact between monzonite and late stage felsic dike indicating comagmatic formation and interaction between the two melts.



Figure DR3: A: Comparison between the compositions of 14925 whole rock analyses downloaded from Earthchem and the parental melt (yellow hexagon) and liquid line of descent (heavy black line) of rocks from the Dariv Complex (Bucholz et al., 2014). TAS plot is modified from Le Bas et al. (1986). B: Comparison between the Th/U ratios of the volcanic rocks shown in A and the Th/U of samples MO-11-19, MO-11-14, MO-11-26, and MO-11-16. See text for discussion of the [Th/U]_{magma} used for MO-11-12.



Figure DR4: Timescales associated with cooling and crystal settling. A) Temperature evolution of center of sheet-like bodies with thicknesses of 500 and 1000 m, an initial uniform temperature of 1200°C, and external contact temperatures held at 400°C. For more details of the modeling see p. 6 of the Data Repository. B) Crystal settling timescales for varying magmatic viscosities and crystallizing grain sizes. A crystal-melt density difference ($\Delta \rho$) of 400 kg/m³ and settling distance of 500 m were used.

Figure DR5: Cathodoluminescence (CL) images of zircons from samples analyzed with CA-ID-TIMS

Note: no images were obtained for MO-11-16 and MO-11-10 due to the small grain size of zircons from these samples and associated difficulties with mounting, polishing, and imaging prior to CA-ID-TIMS analysis.

MO-11-12 Monzogabbro

MO-11-12: z4 502.38 ± 0.28 Ma

200µm CL MO-11-12

MO-11-12: z10 502.48 ± 0.26 Ma



CL MO-11-12



CL MO-11-12

MO-11-12: z14 502.61 ± 0.28 Ma

СL MO-11-12



200µm CL MO-11-12

Figure DR5 (continued)

MO-11-14 Monzodiorite



MO-11-14: z18 502.60 ± 0.26 Ma

CL MO-11-14







CL MO-11-14



Figure DR5 (continued)

MO-11-19 Primitive Lamprophyre



CL MO-11-19



CL MO-11-19



CL MO-11-19



CL MO-11-19



CL MO-11-19



Figure DR5 (continued)

MO-11-26: Quartz Monzonite



CL MO-11-26





MO-11-26: z15 502.57 ± 0.37 Ma ∎ 60µm

CL MO-11-26



CL MO-11-26





MO-11-26: Quartz Monzonite (continued)



CL MO-11-26



CL MO-11-26





60µm CL MO-11-26

Figure DR6



Figure DR6: Backscatter electron photomicrographs of samples from the Dariv Igneous Complex showing zircon textural relationships with other phases. Abbreviations used: zcn = zircon, bt = biotite, cpx = clinopyroxene, pl = plagioclase, ab = albite, ksp = K-feldspar, qtz = quartz, ap = apatite. A) MO-11-10 (biotite clinopyroxenite): Small (~20 µm) zircon enclosed within cpx (Mg#_{cpx} = 80.4). B) MO-11-19 (primitive lamprophyre dike) and C) MO-11-12 (monzogabbro): Late crystallization of zircon on grain boundaries with bt and cpx. D) MO-11-14 (monzodiorite): Zircon crystallizing on grain boundaries of plag, bt, cpx, and ap. E) MO-11-26 (quartz monzonite): Early crystallization of zircon within both cpx and bt. F) Zircon crystallization within ksp and along grain boundaries of qtz and ab.

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Frac.	Dates ²⁰⁶ Pb/ ²³⁸ U [*]	2σ abs.	²⁰⁷ Pb/ ²³⁵ U [†]	2σ abs.	²⁰⁷ Pb/ ²⁰⁶ Pb [†]	2σ abs.	% Disc. [§]	Corr. Coef.	Compo Th/ U [#]	Disition Pb _c (pa)	Pb*/ Pbc ^{††}	Isotopic R ²⁰⁶ Pb/ ²⁰⁴ Pb ^{§§}	atios ²⁰⁸ Pb/ ²⁰⁶ Pb ^{##}	²⁰⁶ Pb/ ²³⁸ U ^{*,##}	2σ %	²⁰⁷ Pb/ ²³⁵ U ^{##}	2σ %	²⁰⁷ Pb/ ²⁰⁶ Pb ^{*,##}	2σ %
<u>MO-11-</u> z2 z3 z4	<u>10</u> 503.14 502.98 504.2	0.48 0.29 1.6	505.6 503.57 503.2	3.3 0.84 5.2	517 506.6 499	18 4.1 27	2.76 0.73 -1.04	0.350 0.531 0.355	0.63 0.70 0.44	1.01 0.20 0.25	22 111 16	1274 6283 972	0.198 0.217 0.138	0.081176 0.081150 0.081362	0.099 0.060 0.32	0.6454 0.6420 0.6415	0.83 0.21 1.3	0.057688 0.057407 0.057208	0.80 0.18 1.2
<u>MO-11-</u> z4 z10 z11 z14 z16	12 502.33 502.42 502.66 502.60 502.39	0.28 0.25 0.31 0.28 0.25	502.31 502.65 502.86 503.04 502.69	0.40 0.42 0.42 0.47 0.44	502.6 504.1 504.2 505.4 504.5	1.4 1.6 1.3 1.6 1.8	0.07 0.36 0.31 0.58 0.43	0.812 0.811 0.866 0.875 0.733	0.59 0.45 0.57 0.70 0.50	0.39 0.33 0.37 0.29 0.51	918 756 559 335 472	53159 45391 32575 18848 27949	0.184 0.140 0.177 0.220 0.157	0.081026 0.081040 0.081081 0.081072 0.081036	0.057 0.052 0.064 0.059 0.052	0.64000 0.64056 0.64089 0.64119 0.64062	0.10 0.11 0.10 0.12 0.11	0.057313 0.057352 0.057353 0.057386 0.057361	0.056 0.063 0.049 0.066 0.074
<u>MO-11-</u> z7 z14 z16 z18 z19	14 502.70 502.50 502.66 502.65 502.45	0.24 0.24 0.34 0.26 0.35	502.81 502.58 502.72 502.78 502.48	0.47 0.43 0.63 0.41 0.44	503.7 503.3 503.4 503.8 503.0	2.0 1.6 2.8 1.6 1.3	0.22 0.18 0.16 0.24 0.13	0.691 0.819 0.650 0.728 0.858	0.75 0.85 0.83 0.70 0.71	0.37 0.32 0.88 0.34 0.32	341 497 198 753 1244	18975 26995 10830 42428 69981	0.235 0.266 0.260 0.218 0.220	0.081103 0.081068 0.081096 0.081094 0.081060	0.049 0.049 0.070 0.054 0.072	0.64082 0.64044 0.6407 0.64077 0.64027	0.12 0.11 0.16 0.10 0.11	0.057332 0.057322 0.057323 0.057333 0.057313	0.086 0.065 0.12 0.067 0.052
MO-11- z2 z15 z17 z19 z21 z22 z23 z24	16 503.43 504.3 503.16 502.51 503.6 502.82 502.78 502.59	0.83 1.7 0.58 0.27 1.3 0.32 0.29 0.57	504.5 502 502.3 502.79 510 502.81 503.41 502.61	3.7 13 1.3 0.78 11 0.53 0.69 0.92	510 492 498.9 504.5 540 503.2 506.7 503.1	20 69 6.6 3.9 57 2.1 3.4 4.3	1.28 -2.50 -0.84 0.41 6.81 0.09 0.79 0.12	0.333 0.354 0.384 0.500 0.356 0.710 0.485 0.555	0.68 0.52 0.59 0.66 0.71 0.50 0.57 0.44	0.36 0.39 0.28 0.58 1.02 0.23 0.20 0.31	20 6 74 120 7 339 238 126	1178 356 4299 6849 407 20094 13858 7607	0.211 0.161 0.184 0.204 0.223 0.155 0.178 0.139	0.081224 0.081378 0.081179 0.081071 0.081258 0.081122 0.081117 0.081084	0.17 0.36 0.12 0.057 0.28 0.067 0.061 0.12	0.6436 0.640 0.6400 0.6408 0.653 0.64081 0.6418 0.6405	0.94 3.2 0.32 0.20 2.7 0.13 0.17 0.23	0.057491 0.057025 0.057205 0.057351 0.058297 0.057317 0.057408 0.057315	0.90 3.1 0.30 0.17 2.6 0.092 0.15 0.19
<u>MO-11-</u> z17 z23 z29 z37 z45 z46	19 502.33 502.53 503.05 502.79 502.69 502.51	0.25 0.43 0.28 0.31 0.29 0.25	502.89 502.44 503.03 502.88 502.5 502.35	0.79 0.52 0.58 0.47 1.0 0.43	505.8 502.4 503.3 503.6 501.8 501.9	4.0 1.5 2.7 2.0 5.3 1.7	0.69 -0.01 0.06 0.18 -0.15 -0.10	0.443 0.875 0.600 0.648 0.325 0.756	1.15 1.00 0.84 1.11 1.21 1.11	0.38 0.39 0.41 0.40 0.23 0.36	119 438 222 337 90 676	5994 22759 12020 17120 4475 34303	0.358 0.313 0.262 0.347 0.376 0.346	0.081029 0.081061 0.081149 0.081105 0.081088 0.081058	0.051 0.089 0.057 0.065 0.061 0.052	0.6409 0.64022 0.64117 0.64093 0.6403 0.64006	0.20 0.13 0.15 0.12 0.26 0.11	0.05740 0.057308 0.057331 0.057340 0.05729 0.057295	0.18 0.060 0.12 0.085 0.24 0.069
MO-11- z0 z5 z13 z14 z15 z28 z32 z40 z43 z47	26 503.82 504.23 502.97 503.42 503.42 502.54 503.09 502.70 502.32 502.49 502.50	0.72 0.72 0.48 0.91 0.40 0.49 0.55 0.27 0.30 0.37	506.3 504.6 504.1 503.1 503.3 501.3 504.9 502.52 502.5 502.8	4.6 5.3 2.2 7.6 2.5 2.7 4.3 0.57 1.6 1.8	518 507 510 502 507 494 515 503.8 502.7 505	24 29 12 41 13 14 23 2.5 8.4 10	2.76 0.54 1.34 -0.26 0.94 -1.88 2.44 0.32 0.06 0.45	0.329 0.314 0.324 0.321 0.376 0.344 0.297 0.656 0.442 0.206	0.54 0.48 0.55 0.51 0.49 0.50 0.51 0.79 0.54 0.54	0.69 0.25 0.35 0.54 0.50 0.25 0.54 0.33 0.52 0.52	16 15 35 9 31 30 17 185 50 41	974 883 2075 574 1868 1803 1044 10220 2927 2423	0.170 0.150 0.173 0.160 0.152 0.152 0.157 0.158 0.246 0.167 0.167	0.081291 0.081359 0.081147 0.081224 0.081076 0.081167 0.081039 0.081067 0.081069	0.15 0.099 0.19 0.083 0.10 0.11 0.057 0.062 0.076	0.6465 0.6438 0.6429 0.641 0.6416 0.6384 0.6442 0.64035 0.6402 0.6408	$\begin{array}{c} 1.1 \\ 1.3 \\ 0.56 \\ 1.9 \\ 0.62 \\ 0.67 \\ 1.1 \\ 0.14 \\ 0.40 \\ 0.46 \end{array}$	0.057705 0.057414 0.057487 0.057487 0.057422 0.057071 0.057631 0.057335 0.057305 0.057356	1.1 1.3 0.53 1.9 0.59 0.64 1.0 0.11 0.38 0.45

TABLE DR1: CALIDTIMS LLPB ZIRCON GEOCHRONOLOGY RESULTS

Corrected for initial Th/U disequilibrium using radiogenic ²⁰⁸Pb and Th/U_{[Magmal} of MO-11-12=4.30, MO-11-14=4.65, MO-11-16=5.83, MO-11-10 & MO-11-19=3.95, and MO-11-26=5.05. Uncertainty is ± 1 (2σ). ¹ Isotopic dates calculated using the decay constants X238 = 1.55125E-10 and X235 = 9.8485E-10 (Jaffey et al. 1971). ⁸ % discordance = 100 - (100 * (²⁰⁸Pb/²³⁸U date) / (²⁰⁷Pb/²⁰⁸Pb date)) ⁹ Th contents calculated from radiogenic ²⁰⁸Pb and the ²⁰⁷Pb/²⁰⁶Pb date of the sample, assuming concordance between U-Th and Pb systems. ¹ Total mass of common Pb.

Total mass of common Pb.
¹¹ Ratio of radiogenic Pb (including ²⁰⁸Pb) to common Pb.
^{§§} Measured ratio corrected for fractionation and spike contribution only.
^{##} Measured ratios corrected for fractionation, tracer and blank.